DRAFT
NOVEMBER 2009 (N=19) GROUNDWATER AND METHANE MONITORING REPORT

FOR

THE LAMONT ROAD LCID AND C&D LANDFILLS
NCDENR LANDFILL PERMIT #26G AND #26-08

FORT BRAGG, NORTH CAROLINA

Prepared by:

US Army Corps of Engineers
Savannah District
Hazardous, Toxic & Radioactive Waste Section
CESAS-EN-GH
110 W. Oglethorpe Avenue
Savannah, GA 31401

June 2010

DRAFT
NOVEMBER 2009 (N=19) GROUNDWATER AND METHANE MONITORING REPORT

FOR

THE LAMONT ROAD LCID AND C&D LANDFILLS
NCDENR LANDFILL PERMIT #26G AND #26-08

FORT BRAGG, NORTH CAROLINA

Prepared by:

US Army Corps of Engineers
Savannah District
Hazardous, Toxic & Radioactive Waste Section
CESAS-EN-GH
100 W. Oglethorpe Avenue
Savannah, GA 31401

June 2010

SIGNATURE OF CERTIFIED PROFESSIONAL GEOLOGIST	
Kevin G. Haborak, P. G. Professional License Numbers: Georgia # 1683	Date

DRAFT
JANUARY 2010 (N=19) GROUNDWATER AND METHANE MONITORING REPORT

FOR

THE LAMONT ROAD LCID AND C&D LANDFILLS
NCDENR LANDFILL PERMIT #26G AND #26-08

FORT BRAGG, NORTH CAROLINA

Prepared by:

US Army Corps of Engineers
Savannah District
Hazardous, Toxic & Radioactive Waste Section
CESAS-EN-GH
100 W. Oglethorpe Avenue
Savannah, GA 31401

JANUARY 2010

TABLE OF CONTENTS

SECTION **PAGE**

1.0 INTRODUCTION 1

1.1 Project Background 1

1.2 Project Scope 1

2.0 PROJECT HISTORY 3

2.1 Site Description and History 3

2.2 General Site Geology and Hydrology 3

2.3 Previous Investigation and Results 4

3.0 METHODS 5

3.1 Methane Monitoring 5

3.2 Water-Level Gauging 5

3.3 Groundwater Sampling 5

3.4 Investigation Derived Wastes Handling 6

4.0 ANALYTICAL RESULTS AND STATISTICAL ANALYSIS 8

4.1 Analytical Data Summary 8

4.2 Statistical Analysis Results 8

4.3 Methane Monitoring Results 9

CONCLUSIONS AND RECOMMENATIONS 10

5.0 REFERENCES 11

In Order
Following
Page 11

FIGURES

Figure 1 Site Map – Ft. Bragg, NC

Figure 2 Location Map – Lamont Street Landfill, Ft. Bragg, NC

Figure 3 Methane Monitoring Results

Figure 4 Potentiometric Map

Figure 5 Groundwater Analytical Results

TABLES

Table 1 Methane Monitoring Results

Table 2 Groundwater Elevation Data

Table 3 Field Parameter Measurements

Table 4 Summary of Groundwater Detections

APPENDICES

Appendix A – Groundwater Sampling Logs

Appendix B – Data-Validation Reports

Appendix C – Chains of Custody and Laboratory Analytical Reports – Electronic Only

Appendix D – Statistical Reports – Electronic Only

LIST OF ACRONYMS

C&D	Construction and Demolition
COCs	Chemicals of Concern
DPW	Directorate of Public Works
IDW	Investigation Derived Waste
LCID	Land Clearing and Inert Debris
µg/L	Micrograms Per Liter
MSWLF	Municipal Solid Waste Landfill Facility
NC2L	North Carolina Administrative Code, Title 15A, Subchapter 2L
NCDENR	North Carolina Department of Environmental and Natural Resources
RCRA	Resource Conservation and Recovery Act
SAP	Sampling and Analysis Plan
USACE	US Army Corps of Engineers
VOCs	Volatile Organic Compounds

DRAFT
JANUARY 2010 (N=19)GROUNDWATER AND METHANE MONITORING REPORT FOR THE LAMONT ROAD LCID AND C&D LANDFILLS NCDENR LANDFILL PERMIT #26G AND #26-08 FORT BRAGG, NORTH CAROLINA

1.0 INTRODUCTION

This is the Report for the November 2009 groundwater and methane monitoring at the Lamont Road Landfills (Figure 1) performed by the United States Army Corps of Engineers (USACE), Savannah District in November, 2009. The monitoring is required by the North Carolina Department of Environmental and Natural Resources (NCDENR) Solid Waste Management Division. This was the nineteenth (N=19) event performed for the Site. This report summarizes the methods used for the groundwater and methane monitoring and presents the results of the sampling event.

1.1 Project Background

The USACE was contracted by the Directorate of Public Works (DPW), Fort Bragg, North Carolina to perform groundwater sampling and methane monitoring. The original groundwater monitoring well network for the land clearing and inert debris (LCID) and construction and demolition (C&D) landfills consisted of 11 wells. Four of the original eleven monitoring wells have been permanently abandoned and replaced with new wells at different locations. An additional two wells have also been installed. The current Sampling and Analysis Plan (SAP), approved by NCDENR, includes sampling these 13 monitoring wells. The monitoring wells are LMW-3, LMW-3s, LMW-4, LMW-6, LMW-7, LMW-8, LMW-9, LMW-9s, LMW-9d, LMW-10, LMW-14R, LMW-15R, and LMW-16. Groundwater monitoring locations are shown on Figure 2. All sampling was conducted according to North Carolina Solid Waste Management Guidelines.

1.2 Project Scope

The scope for this project included collecting groundwater samples from 13

monitoring wells at the Lamont Road LCID and C&D Landfill for analyses of Appendix I constituents, sampling for methane at 13 selected methane monitoring wells, evaluating the analytical results, and reporting the results of the investigation. The groundwater sampling and data analyses included obtaining field parameter measurements (i.e. pH, temperature, etc.), measuring water levels at the monitoring well locations, determining groundwater flow directions, validating laboratory analytical data, performing statistical analysis for each detected constituent as required by NC regulations, and determining the concentration changes of chemicals of concern (COCs) with time.

.

2.0 PROJECT HISTORY

2.1 Site Description and History

The Lamont Road LCID and C&D Landfills are on the west side of Cooleyconch Mountain (Figure 2). The site was previously utilized as a maneuver training area (conducted continuously for 50 years), a borrow pit for sands and clays, and a repository for unclassified debris from land clearing and construction demolition. The LCID Landfill started as an uncontrolled dump site which was associated with reclaiming borrow excavation. Its initial operation pre-dated Federal and State regulations governing waste disposal. The LCID Landfill has been operated as a controlled repository for C&D debris as well as for land clearing and inert debris since its permitting under NCDENR Permit No. 26C on August 28, 1987. From February 1993 to date of closure, C&D debris was diverted to the Longstreet Road Sanitary Landfill, and only LCID has been accepted at the LCID Landfill site. It is presumed that asbestos materials are disposed of in this landfill.

Cooleyconch Mountain is the prominent terrain feature west of the main post. The LCID Landfill site is 1.5 miles west of the Longstreet Road municipal solid waste landfill (MSWLF) (closed January 1, 1998) and 200 yards northwest of the Lamont Road C&D Landfill. The area adjacent and east of the LCID Landfill has been excavated to be used as a borrow pit for sandy fill material. To the south of the LCID Landfill, in the C&D Landfill site, petroleum contaminated soils have been spread, dried, and stored for subsequent removal. To the east of the LCID Landfill, petroleum contaminated sludge has been stored in earthen impoundments for subsequent removal. The LCID Landfill drains north to Cypress Creek, which intersects the Little River a mile upstream of the Fort Bragg Water Plant intake.

2.2 General Site Geology and Hydrology

Lithologic descriptions of soil borings and monitoring well borings from previous investigations at Fort Bragg indicate that in general Fort Bragg is underlain by alternating sands, silty sands, clayey sands, sandy clays, and clays, likely belonging to the

Middendorf Formation. The sands and silty sands range in thickness from approximately 2 to 22 ft and are coarse grained. The clay units range in thickness from approximately 2 to 7 ft and are typically plastic.

2.3 Previous Investigation and Results

Several sampling events have been conducted at the landfills. Initially, four monthly sampling events were conducted in July, August, September, and October 1996 by R,S & H Architect, Engineering, & Planning, Inc. Law & Company, Inc. conducted two sampling events in March and September, 1999 in conjunction with the installation of new wells. Then until 2005, sampling events were conducted by BPA Environmental & Engineering, Inc. The USACE has monitored the site since 2005.

The previous sampling event, held in June of 2009 for Lamont Landfill, was conducted by the USACE, Savannah District. There were low level concentrations of Appendix I volatile organic compounds (VOCs) and Appendix I metals. However, most of the detections were below the respective NC2L standard and none of the detections were determined to be statistically significant increases (SSIs) over background concentrations.

3.0 METHODS

3.1 Methane Monitoring

Methane monitoring was performed at 13 wells. The monitoring included measuring levels of methane, carbon dioxide, and oxygen at each of the locations. The results of the monitoring are summarized in Table 1 and are also presented on Figure 3.

3.2 Water-Level Gauging

During this sampling event, USACE personnel measured the water levels in 13 monitoring wells. Measured water levels and calculated groundwater elevations are presented in Table 2. A potentiometric map was developed based on the groundwater elevations; the map is presented as Figure 4. The map shows that the general direction of the groundwater flow at the Lamont Landfill is towards the west-northwest.

3.3 Groundwater Sampling

The groundwater sampling was conducted in accordance with the SAP for the Lamont Road LCID and C&D Landfills (NCDENR Landfill Permits # 26G and #26-08 dated April 2005, which have been updated to reflect the most recent SAP). Groundwater samples were collected from 13 wells. Water quality parameters pH, specific conductivity, temperature, turbidity, dissolved oxygen (DO), and oxidation-reduction potential (ORP) were measured during the purge cycle of each well. The measurements are summarized in Table 3.

Groundwater samples were collected using a low-flow purge method with a bladder pump. Immediately before purging a well, the static water level below the top of the well casing and the total depth of the well were measured to the nearest 0.01 foot and recorded in the field notebook. The volume of water in the well was calculated based on the static water level and the well construction information. Well volume calculations were placed in the field notebook. The inlet of the sampling pump was placed at the mid-point of the screened interval. This level was adjusted for wells where the static water level is within the well screen. The monitoring wells were purged using a variable-flow

bladder pump at a rate of 500 ml/min or less.

The wells were purged until the water quality had stabilized or five purge volumes were removed. The wells were considered stable when the following requirements were met for three consecutive readings: turbidity values within 10% or lower than 10 Nephelometric Turbidity Units (NTUs), temperature values within a range of 0.5 degrees Celcius, pH readings within 0.1 Standard Units (SU), ORP values within a range of 10 milivolts (mV), and conductivity values within 3%, and DO values within 10%.

The rate of pumping was determined and noted in the field notebook. The purge rate was adjusted, as necessary, to avoid purging any well to dryness and to equal the recharge of the aquifer. All sampling equipment was protected from contaminated soil surfaces to prevent contamination of the samples (e.g., equipment may be placed on disposable polyethylene plastic sheeting). Groundwater samples were collected after purging was complete. The tubing was disconnected from the flow through cell, and the samples were collected from the pump outlet. The samples were labeled and placed into an ice-filled cooler for preservation.

Groundwater sampling data (including sample number, location, quantity of water purged, field parameters, site conditions, etc.) were documented in the field notebook. Water samples for Resource Conservation and Recovery Act (RCRA) metal analyses were un-filtered. The results of the groundwater sampling are presented in Table 4 and on Figure 5. The groundwater sampling field data logs are presented in Appendix A.

3.4 Investigation Derived Wastes Handling

The investigation derived wastes (IDW), including the waste water from well purging and decontamination water, were containerized in 55-gallon drums. Those drums were appropriately labeled, sealed, and staged within designated areas until analytical results had been received and reviewed. Based on the analytical results of the groundwater samples, the IDW was classified as non-hazardous. With the concurrence of the Fort Bragg Installation Restoration Program Manager, the IDW was disposed of at an

appropriate disposal facility.

4.0 ANALYTICAL RESULTS AND STATISTICAL ANALYSIS

4.1 Analytical Data Summary

Groundwater samples collected in June 2009 were analyzed for Appendix I VOCs and metals. The summary of detections of the COCs is presented in Table 4. Figure 5 shows the distribution of the detections and their concentrations from this sampling event. The reports of chemical data quality assessment prepared by the Project Chemist are included as Appendix B. The laboratory reports of analytical results are included as Appendix C. For comparison, the analytical results of previous investigations are also presented in the Statistical Analyses Summary Report included in Appendix D.

In accordance with North Carolina guidance, analytical results are compared to North Carolina Groundwater 2L Standards (NC2L standards). The analytical data of the second 2009 sampling event indicated that some VOCs and inorganics were detected at low levels, and all detections were below NC2L standards (Table 4).

Though wells had constituent detections above method detection limits, all are below the respective NC2L standard and most are estimated values that were detected above the method detection limits but below the reporting limit (Table 4).

4.2 Statistical Analysis Results

A statistical test predicts the average behavior (distribution) of a random variable by comparing the means (normal distribution) or medians (lognormal and non-parametric distributions) of the compliance well data to background well data. Different statistical tests were used as appropriate for the different distributional patterns that occur within the data. Prior to testing for statistical significance, the distribution of each parameter was determined to be normal, lognormal, or non-normal.

If the data were non-normally distributed, or the fraction of nondetects exceeded 15% but were less than 90%, then the Kruskal-Wallis Test was applied. If the fraction of non-detects exceeded 90%, then the Non-Parametric Prediction Limit was applied. For

these tests to be sufficiently sensitive, the sample size for any group must be at least 4. A Kruskal-Wallis Test can be used in any situation that the parametric analysis of variance can be used. This test computes the H-statistic, adjusts it for ties, and compares it to the appropriate chi-square critical value. If the H-statistic is less than the critical value, the null-hypothesis is accepted, and it is concluded that there are no differences between median background and compliance well concentrations. If the H-statistic is greater than the critical value, it is concluded that at least one pair of well groups is statistically different. However, the Kruskal-Wallis test is prone to false positives. Therefore, additional statistical analyses were used to determine the validity of the positive results. Intra-well comparisons of data from a single well to previous data from the same well were performed to determine if a trend of increasing concentration is occurring. The Mann-Kendall Trend Analysis and the Shewhart-CUSUM Control Chart statistical tests were selected for these additional analyses.

A detailed discussion of the statistical methods is presented in Appendix D. The results of the statistical analysis indicate that there are no SSIs in the concentrations of the detected constituents.

4.3 Methane Monitoring Results

The methane levels were measured at 12 locations at Lamont Landfill. The results of the monitoring are summarized in Table 1 and are also presented on Figure 3. All of the methane wells that were sampled were below 1% Methane by volume.

5.0 CONCLUSIONS AND RECOMMENATIONS

The annual monitoring program consists of two sampling events conducted six months apart. This was the June 2009 sampling event for groundwater and methane monitoring performed by the USACE, Savannah District. It was the N=19 sampling event for the Lamont Road Landfills. Low levels of Appendix I VOCs and metals were detected, but most of the detections were at estimated levels. All detections were below their NC2L standards.

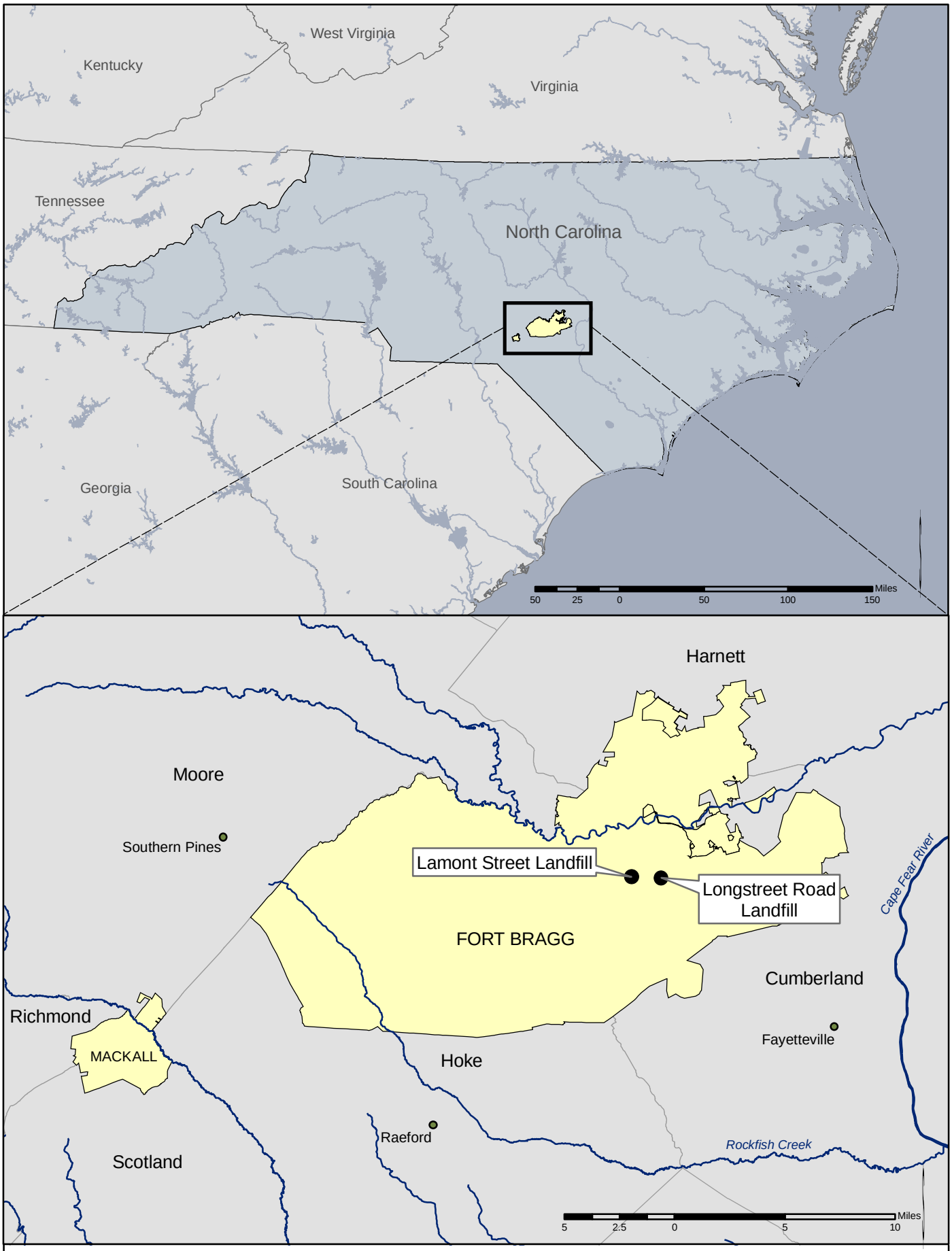
According to the Statistical Analysis of groundwater Data (Appendix D), there is no evidence of an upward trend in constituent concentrations. The statistical findings at the Lamont Road Landfill demonstrated that any statistical abnormalities were due to natural variation in the results. Long-term monitoring should continue at the Lamont Road Landfill because it is still an active site and NC Solid Waste Regulations require it.

6.0 REFERENCES

North Carolina Administrative Code, Title 15A, Department of Environment, Health, and Natural Resources, Division of Solid Waste, Management, Subchapter 13B, Solid Waste Management, Section .1600 (January 4, 1994).

North Carolina Administrative Code, Title 15A, Department of Environment, Health, and Natural Resources, Division of Solid Waste, Management, SubchapterNC2L, Classifications and Water Quality Standards Applicable to the Ground Waters of North Carolina, Sections .0100, .0200, and .0300 (November 8, 1993): from the Environmental Management Commission, Raleigh, North Carolina.

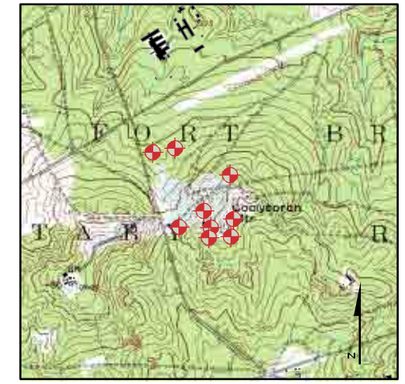
FIGURES



U.S. ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS
SAVANNAH, GEORGIA

Figure 1

Site Map -- Ft. Bragg, NC



LEGEND

- METHANE SAMPLE
- MONITORING WELL
- MONITORING WELL (REMOVED)
- STREAM
- PAVED ROAD
- DIRT ROAD
- BUILDING
- SWMU AREA

1 inch = 256 feet

0 130 260 520'

N

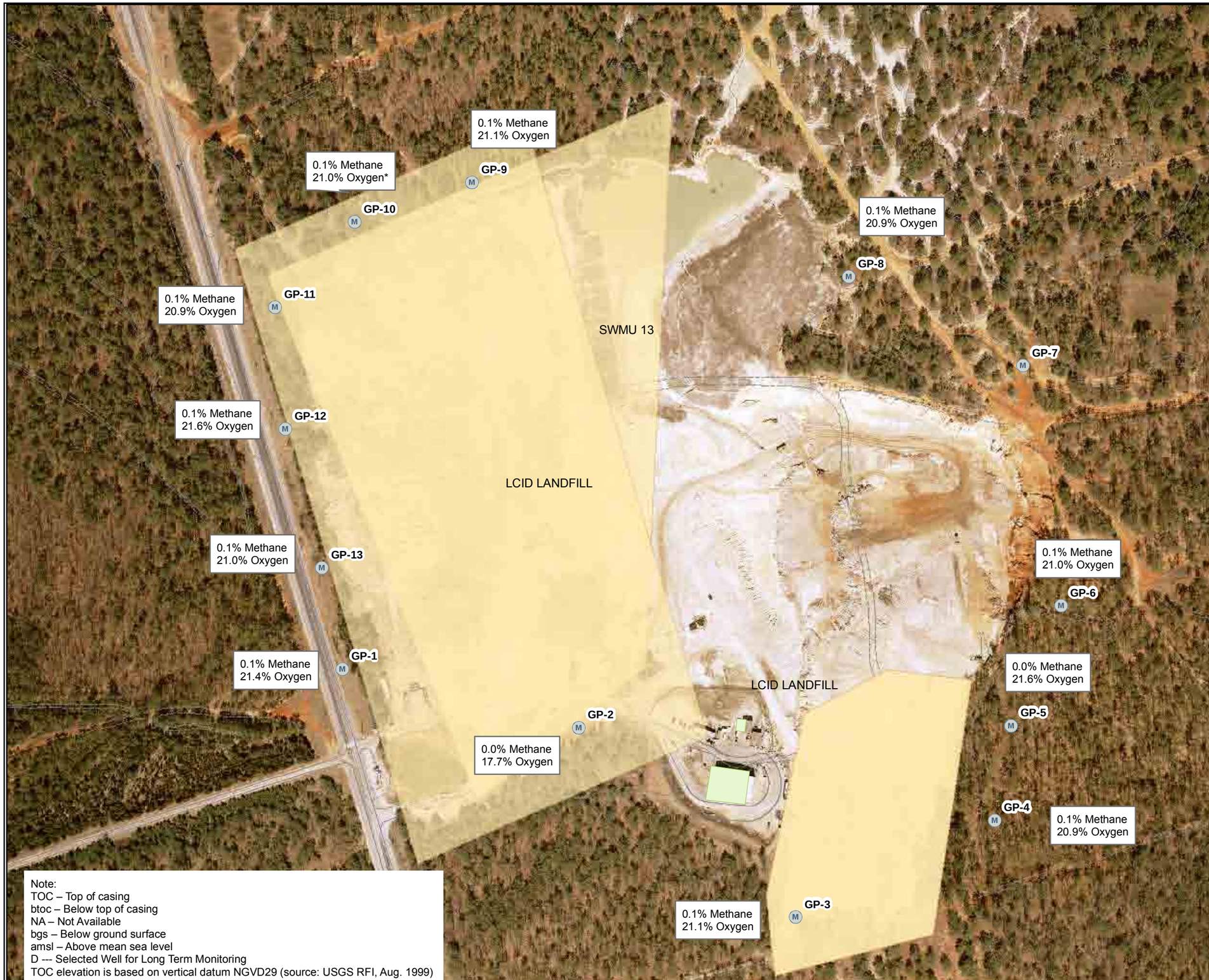
U.S. ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS
SAVANNAH, GEORGIA

LOCATION MAP- LAMONT STREET LANDFILL

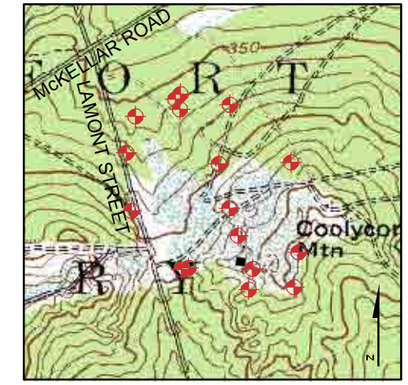
FT. BRAGG, NC

DATE: JAN 2010

FIGURE 2



Note:
TOC – Top of casing
btoc – Below top of casing
NA – Not Available
bgs – Below ground surface
amsl – Above mean sea level
D --- Selected Well for Long Term Monitoring
TOC elevation is based on vertical datum NGVD29 (source: USGS RFI, Aug. 1999)



LEGEND

- METHANE SAMPLE
- STREAM
- BUILDING
- SWMU AREA
- ROAD
- TRAIL

1 inch = 256 feet

0 125 250 500'

N

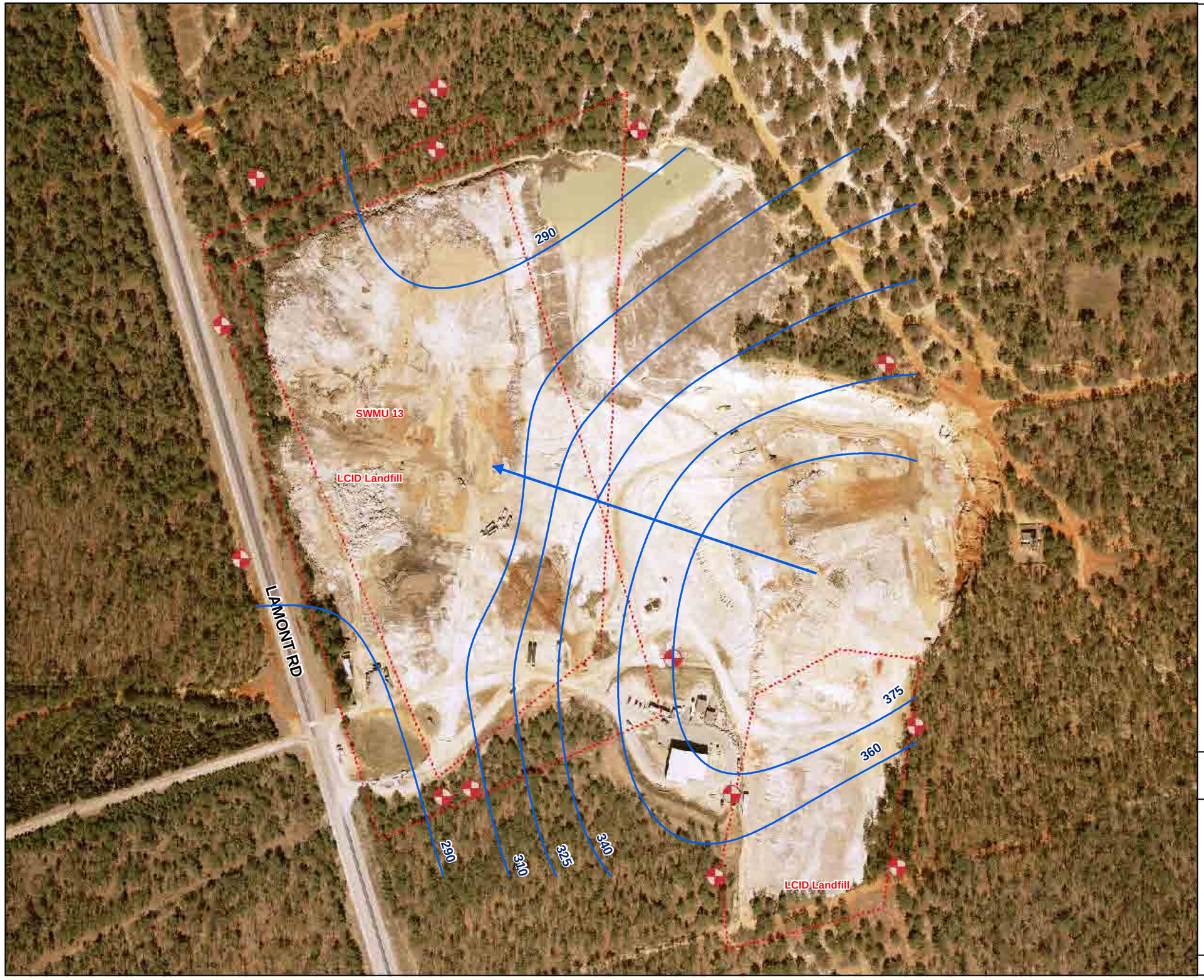
U.S. ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS
SAVANNAH, GEORGIA

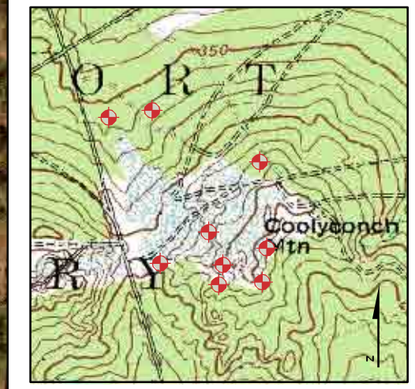
METHANE MONITORING RESULTS

LAMONT STREET LANDFILL
FT. BRAGG, NC

DATE: JAN 2010

FIGURE 3





LEGEND

- Groundwater Flow
- Groundwater Contour
- Monitoring Well
- SWMU Area

Note: Monitoring wells used for potentiometric surface are displayed with elevations in feet above MSL in parenthesis below the label.

1 inch = 258 feet

0 130 260 520'

N

U.S. ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS
SAVANNAH, GEORGIA

LAMONT ST LANDFILL, FORT BRAGG, NC

POTENTIOMETRIC MAP

DATE: JAN 2010

FIGURE 4

TABLES

Table 1. Methane Monitoring Results
Lamont Landfills, Fort Bragg, NC

Well ID	Date Sampled	Time Sampled	%Methane by Volume	%Oxygen	%CO2
Gas-MW-1	Nov 09	--	0.1 %	21.4 %	0.0 %
Gas-MW-2	Nov 09	--	0.0 %	17.7 %	3.1 %
Gas-MW-3	Nov 09	--	0.1 %	21.0 %	0.0 %
Gas-MW-4	Nov 09	--	0.1 %	20.9 %	0.1 %
Gas-MW-5	Nov 09	--	0.0 %	21.6 %	0.0 %
Gas-MW-6	Nov 09	--	0.1 %	21.0 %	0.0 %
Gas-MW-7	Nov 09	--	N/A	N/A	N/A
Gas-MW-8	Nov 09	--	0.1 %	20.9 %	0.0 %
Gas-MW-9	Nov 09	--	0.1 %	21.1 %	0.0 %
Gas-MW-10	Nov 09	--	0.1 %	21.0 %	0.0 %
Gas-MW-11	Nov 09	--	0.1 %	20.9 %	0.0 %
Gas-MW-12	Nov 09	--	0.1 %	21.6 %	0.0 %
Gas-MW-13	Nov 09	--	0.1 %	21.0 %	0.0 %
Bldg 0-3533	Nov 09	--	N/A	N/A	N/A
Workshop	Nov 09	--	N/A	N/A	N/A
Equipment Shed	Nov 09	--	N/A	N/A	N/A
Office	Nov 09	--	N/A	N/A	N/A
Gear House	Nov 09	--	N/A	N/A	N/A
Trailer	Nov 09	--	N/A	N/A	N/A

Note:
TOC – Top of casing, btoc – Below top of casing, NA – Not Available
bgs – Below ground surface, amsl – Above mean sea level
Δ --- Selected Well for Long Term Monitoring
TOC elevation is based on vertical datum NGVD29 (source: USGS RFI, Aug. 1999)
* Erroneous reading not reported in table.

Table 2. Groundwater Elevation Data
Lamont Landfills, Fort Bragg, NC

Well ID	TOC Elev. (ft. amsl)	Water Level (ft. btoc) 04/09	Water Elev. (ft. amsl) 04/09	Water Level (ft. btoc) 11/06	Water Elev. (ft. amsl) 11/06	Water Level (ft. btoc) 5/07to 6/07	Water Elev. (ft. amsl) 5/07to 6/07	Water Level (ft. btoc) 11/07	Water Elev. (ft. amsl) 11/07	Water Level (ft. btoc) 11/08	Water Elev. (ft. amsl) 11/08	Water Level (ft. btoc) 06/09	Water Elev. (ft. amsl) 06/09	Water Level (ft. btoc) 11/09	Water Elev. (ft. amsl) 11/09
LMW-3	408.32	103.51	304.81	102.95	305.37	101.3	307.02	102.18	306.14	103.2	305.12	102.21	306.11	87.27	277.52
LMW-3s	*	NA	NA	NA	NA	58.1	NA	59.19	NA	60.4	NA	59.12	NA	59.61	NA
LMW-4	441.79	75.54	366.25	75.12	366.67	74.71	367.08	75.42	366.37	74.65	367.14	74.74	367.05	75.39	366.4
LMW-6	431.45	80.62	350.83	81.25	350.2	79.12	352.33	80.3	351.15	81.65	349.8	80.15	351.3	80.75	350.7
LMW-7	436.62	126	310.62	125.86	310.76	125.42	311.2	125.87	310.75	125.63	310.99	124.78	311.84	128.8	307.82
LMW-8	354.07	49.81	304.26	47.08	306.99	45.48	308.59	48.68	305.39	76.66	277.41	46.85	307.22	304.86	49.21
LMW-9	364.79	83.78	281.01	83.15	281.64	84.71	280.08	82.16	282.63	80	284.79	80.71	284.08	87.27	277.52
LMW-9s	*	NA	NA	NA	NA	49.46	NA	52.46	NA	49.01	NA	51.01	NA	53.35	NA
LMW-9d	*	NA	NA	NA	NA	74.51	NA	76.95	NA	76.66	NA	75.41	NA	77.03	NA
LMW-10	428.68	77.24	351.44	76.22	352.46	75.13	353.55	76.81	351.87	76.48	352.2	76.38	352.3	72.11	356.57
LMW-14R	*	NA	NA	NA	NA	48.82	NA	50.07	NA	49	NA	48.97	NA	50.06	NA
LMW-15R	*	NA	NA	NA	NA	37.85	NA	40.89	NA	37	NA	37.55	NA	40.31	NA
LMW-16	*	NA	NA	NA	NA	37.2	NA	86.02	NA	36.48	NA	37.5	NA	37.28	NA

Note:
TOC – Top of casing, btoc – Below top of casing, NA – Not Available
bgs – Below ground surface, amsl – Above mean sea level NS – Not Surveyed
Δ --- Selected Well for Long Term Monitoring *Well & ground-water elevations unavailable at this time.
TOC elevation is based on vertical datum NGVD29 (source: USGS RFI, Aug. 1999)

Table 3. Field Parameter Measurements
Lamont Landfills, Fort Bragg, NC

Well ID	Sample Identification	pH	Specific Conductivity (µs/cm)	Temperature (°C)	Turbidity (N.T.U.)	Dissolved Oxygen (mg/L)	ORP
LMW-3	GW-LMW-3-06-09	6.71	0.021	17.1	6.0	2.48	186
LMW-3s	GW-LMW-3s-06-09	4.81	0.023	17.2	5.6	6.48	196.9
LMW-4	GW-LMW-4-06-09	4.29	0.024	19.6	52.1	3.43	210
LMW-6	GW-LMW-6-06-09	4.30	0.256	17.9	9.6	1.09	158.4
LMW-7	GW-LMW-7-06-09	N/A	N/A	N/A	N/A	N/A	N/A
LMW-8	GW-LMW-8-06-09	6.04	0.308	18.7	9.0	1.10	39.9
LMW-9	GW-LMW-9-06-09	5.4	0.020	19.9	10	8.56	207
LMW-9s	GW-LMW-9s-06-09	4.06	0.245	19.9	2.9	1.29	134.5
LMW-9d	GW-LMW-9d-06-09	6.29	0.024	19.4	45.2	7.04	136
LMW-10	GW-LMW-10-06-09	4.93	0.006	20.1	57	0.93	185.2
LMW-14R	GW-LMW-14R-06-09	3.21	0.012	19.3	4.4	4.18	176.3
LMW-15R	GW-LMW-15R-06-09	2.87	0.037	19.4	6.3	5.1	196.3
LMW-16	GW-LMW-16-06-09	5.79	0.254	18.0	8.7	0.90	151.8

==========

Note: N.T.U. --- Nephelometric Turbidity Unit; ORP --- Oxidation Reduction Potential
#Monitoring Wells Permanently Abandoned
*High turbidity has been a continuing problem with this well.

Table 4. Summary of Ground-Water Detections
Lamont Landfills, Fort Bragg, NC

COMPOUNDS (µg/L)	Groundwater NC 2L Standard (ug/l)	EPA Drinking water MCL (ug/l)	Lamont																																											
			LMW-3 04/05	LMW-3 10/05	LMW-3 06/06	LMW-3 11/06	GW-LMW-3 06/07	GW-LMW-3 11/07	GW-LMW-3 05/08	GW-LMW-3 11/08	LMW-3 06/09	LMW-3 11/09	LMW-4 04/05	LMW-4 10/05	LMW-4 10/05 Dup	LMW-4 06/06	LMW-4 11/06	GW-LMW-4 06/07	GW-LMW-4 11/07	GW-LMW-4 05/08	GW-LMW-4 11/08	LMW-4 06/09	LMW-4 11/09	LMW-6 04/05	LMW-6 10/05	LMW-6 6/06	LMW-6 11/06	LMW-6 Dup 11/06	GW-LMW-6 06/07	GW-LMW-6 Dup 06/07	GW-LMW-6 11/07	GW-LMW-6 05/08	GW-LMW-6 11/08	GW-LMW-6 06/09	GW-LMW-6 11/09	LMW-7 04/05	LMW-7 10/05	LMW-7 6/06	LMW-7 6/06 Dup	LMW-7 11/06	GW-LMW-7 06/07	GW-LMW-7 11/07	GW-LMW-7 05/08	GW-LMW-7 11/08	GW-LMW-7 06/09	GW-LMW-7 11/09	LMW-8 04/05	LMW-8 10/05
VOCs (EPA 8260B)																																														
1,1,2,2-tetrachloroethane	0.17	NA	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	NS	<2	<2
1,1-dichloroethane	700	810*	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	NS	<2	<2
1,2,3-trichloropropane	0.005	NA	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	NS	<2	<2
1,2,4-trimethylbenzene	350	15 *	<2	<2	<2	<2	<2	<2	<3	0.24 J	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	0.21 J	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	NS	<2	<2
1,2-dibromo-3-chloropropane	0.025	0.2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	NS	<2	<2
1,2-dibromoethane	0.0004	0.05	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	NS	<2	<2
1,2-dichloroethane	0.38	5	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	NS	<2	<2
1,2-dichloropropane	0.56	5	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	NS	<2	<2
1,4-dichlorobenzene	75	75	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	NS	<2	<2
2-butanone	NA	NA	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	NS	<2	<2
acetone	700	NA	NA	<2	<2	<2	<2	<2	<2	<2	<2	<2	NA	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	NA	<2	<2	<2	<2	<2	<2	<2	4.69 J	<2	<2	<2	NA	<2	<2	<2	<2	<2	<2	282	4.22 J	<2	NS	NA	<2
acrolein	NA	NA	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	NS	<2	<2
benzene	1	5	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	NS	<2	<2
carbon disulfide	700	NA	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	NS	<2	<2
chlorobenzene	50	100	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	NS	<2	<2
chloroethane	2800	4.6*	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	NS	<2	<2
chloroform	70	80	<2	<2	<2	<2	<2	<2	0.27 J	0.27 J	0.33 J	0.5 J	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	NS	<2	<2
chloromethane (methyl chloride)	2.6	NA	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	0.5 J	<2	NS	<2	<2
cis-1,2-dichloroethene	70	70	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	NS	<2	0.27J
dibromochloromethane	0.41	80	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	NS	<2	<2
dichlorodifluoromethane	1400	390*	<2	<2	<2	<2	<2	<2	0.45 J	0.43 J	<2	0.41 J	<2	<2	<2	0.57J	0.92J	<2	<2	0.71 J	0.95 J	<2	1.1	<2	<2	0.93J	2.67	2.80	<2	<2	<2	0.83 J	0.82 J	<2	<2	<2	<2	<2	<2	<2	<2	0.71 J	<2	<2	NS	<2	<2
diisopropyl ether	70	NA	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	NS	<2	<2
isopropylbenzene	70	660*	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	NS	<2	<2
m&p xylene	530#	10000#	<2	<2	<2	<2	<2	<2	<2	0.44 J	<2	<2	<2	0.25J	<2	<2	0.23J	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	0.230J	<2	<2	<2	<2	NS	<2	<2
methylene chloride (dichloromethane)	4.6	5	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	NS	<2	<2
MTBE	200	13*	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	NS	<2	<2
o-xylene	530#	10000#	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	NS	<2	<2
sec-butylbenzene	70	NA	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	NS	<2	<2
tetrachloroethene	0.7	5	<2	<2	<2	<2	<2	.025 J	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	NS	<2	0.6J
toluene	1000	1000	<2	<2	<2	<2	<2	<2	<2	0.3 J	<2	<2	0.33 J	<2	<2	<2	0.47J	<2	<2	<2	0.25 J	< 2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	0.30 J	<2	<2	1.07 J	<2	<2	<2	0.850J	<2	<2	<2	<2	0.5 J	NS	<2	<2
trans-1,2-dichloroethene	70	100	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	NS	<2	<2
trichloroethene	2.8	5	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	NS	<2	0.24J
trichlorofluoromethane	2100	1300*	0.25 J	0.34J	0.52J	<2	<2	<2	0.74 J	0.63 J	0.84 J	0.68 J	2.37	0.68J	0.47J	2.53	2.37	<2	<2	3.79	2.66	0.82 J	2.4	0.63 J	1.54J	1.13J	<2	0.860J	<2	<2	<2	1.22 J	0.72 J	0.95 J	1.1	<2	<2	<2	<2	<2	2.5	4.79	<2	<2	NS	<2	<2
Total Xylenes	530	0.01	<2	<2	<2	<2	<2	<2	<2	<2	<2	0.32 J	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	NS	<2	<2
vinyl chloride	0.015	2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	NS	<2	<2
Appendix I Metals (EPA 6010B/6020A)																																															
Arsenic	10	10	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	1.13 J	<2	<2	<2	0.51 J	<2	<2	<2	<2	<2	<2	1.1 J	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	1.05 J	<2	<2	**10.8**	<2	NS	<2	<2
Barium	2000	2000	<10	7.2J	5.0J	7.4	5.33	<10	5.47	5.8	<10	6.4	14.2	12.5	11.8	10	13.6	24.7	1.14J	11.20	14.7	15	13	9.5 J	12.3	20	33.9	33.7	52.4	46.4	42	49.2	73.7	92	74	31.7	30	20	10	11.6	27.4	6.28	5.48 J	7	12	NS	48.5	38.1
Beryllium	NA	4	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.071 J	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.15 J	0.15 J	NA	NA	NA	NA	NA	NA	NA	NA	0.15 J	NS	NA	NA
Cadmium	5	5	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	0.701J	0.57J	<1	<1	<1	<1	<1	<1	NS	<1	<1
Cobalt	NA	NA	<2	<2	<2	<2	<2	<2	<2	<2	0.16 J	0.16 J	<2	<2	<2	<2	<2	<2	<2	<2	<2	0.24	0.24	<2	<2	<2	0.734J	0.733J	<2	<2	<2	0.93 J	<2	1.4	1.2	<2	<2	<2	<2	1.03	<2	<2	<2	<4	0.63	NS	<2	<2
Chromium	50	100	<20	<20	<20	<20	<20	<20	<20	<20	< 20	1.1 J	10.8 J	<20	<20	<20	<20	21.7	<20	<20	<20	0.84 J	1 B	<20	<20	<20	<20	<20	4.74 J	3.75 J	<20	7.82	<20	< 20	<20	19.0 J	23.2	<20	<20	5.28	24.7	<20	7.18	<10	5.8	NS	<20	<20
Copper	1000	1000	<20	<20	<20	<20	<20	<20	<20	<20	< 20	1.1	<20	<20	<20	<20	<20	8.06 J	5.45 J	8.80	<20	< 20	0.78 J	<20	<20	<20	<20	<20	7.78 J	<20	<20	2.70 J	<20	< 20	1.2	10.8 J	11.1	10J	<20	6.64	6.05 J	7.53 J	<20	<20	4	NS	<20	<20
Lead	15	15	<1	<1	<1	<1	<1	<1	<1	<1	<1	0.37	<1	<1	0.534J	<1	0.644J	3.52	<1	0.644J	<1	0.13 J	0.3 J	<1	<1	<1	<1	<1	0.839 J	0.873 J	<1	<1	<1	0.084 J	<1	3.11	3.07	3.37	2.31	1.81	3.51	<1	<1	0.533 J	0.88	NS	<1	<1
Nickel	100	730*	<50	<50	<50	<50	<50	<50	1.12 J	<50	<50	1.1	<50	<50	<50	<50	1.6J	6.98	3.46	5.38	<50	< 50	1.2	<50	<50	<50	1.13J	1.12J	5.53 J	<50	<50	2.06	<50	2.2	1.8 J	18.9 J	<50	<50	<50	4.23	7.73	4.71 J	2.42	3 J	5.5	NS	<50	<50
Selenium	50	50	<2	<2	<2	<2	<2	<2	<2	<2	0.54 J	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	1.8J	2.12	2.83	2.91	2.93	2.46	4.3	2.99 J	<2	3.2	2.6	<2	<2	<2	<2	<2	<2	<2	<2	<4	<2	NS	3.28	1.67J
Silver	17.5	180	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	NS	<10	<10
Thallium	NA	2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	NS	<2	<2
Tin	NA	NA	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	NS	<10	<10
Vanadium	NA	260*	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	15.8	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	3.7 J	4.21	<20	<20	<20	<20	<20	12.6 J	18.5J	8.0J	<20	3.56J	14.8	<20	<20	<8	2.9 J	NS	<20	<20
Zinc	2100	5000	<60	<60	<60	6.46J	<60	<60	12	<60	<60	32 J	<60	<60	<60	<60	11.1	47.0	<60	15.30	<60	6.7 J	16 J	<60	<60	20J	7.63J	7.85J	17.3 J	15.2 J	27 J	10.1	<60	<60	41	27.5 J	31.4J	40J	20J	21.6	51.0	<60	10.9	<50	<60	NS	<60	<60
Other Analyses																																															
Nitrate/Nitrite as N (SM 4500)	10,000	10,000	NA	<40	NA	0.333	209	139	510	5220	N/A	870 J	NA	<40	<40	NA	0.050	**643,000**	107	370	44	N/A	40	NA	<40	NA	1.15	1.14	1,220	1,290	950	1410	908	NA	5000	NA	<40	NA	NA	0.119	295	528	130	113	NA	NS	NA	<40

Note: NA -- Not Available; NS -- Not Sampled; U -- Target analytes were not detected above the reporting limits; J -- Analyte was present but concentration is an estimated value. **Bold**--Concentration exceeds NC 2L Std. * No MCL, used PRG. #Used total values. **Used values for Chlordane. <> -- Data not recieved from laboratory

Table 4. Summary of Ground-Water Detections
Lamont Landfills, Fort Bragg, NC

COMPOUNDS (µg/L)	Groundwater NC 2L Standard (ug/l)	EPA Drinking water MCL (ug/l)	Lamont																																													
			LMW-8 6/06	LMW-8 11/06	GW-LMW-8 06/07	GW-LMW-8 11/07	GW-LMW-8 05/08	GW-LMW-8 11/08	GW-LMW-8 06/09	GW-LMW-8 11/09	LMW-9 04/05	MW-DUP2 04/05	LMW-9 10/05	LMW-9 6/06	LMW-9 11/06	GW-LMW-9 06/07	GW-LMW-9 11/07	GW-LMW-9 05/08	GW-LMW-9 11/08	LMW-9 06/09	LMW-9 11/09	LMW-10 04/05	LMW-10 10/05	LMW-10 6/06	LMW-10 11/06	GW-LMW-10 06/07	GW-BLK 11/06	GW-LMW-10 11/07	GW-LMW-10 05/08	GW-LMW-10 11/08	LMW-10 06/09	LMW-10 11/09	LMW-1 11/06	LMW-3S 11/06	GW-LMW-3S 06/07	GW-LMW-3S 11/07	GW-LMW-3S 05/08	GW-LMW-3S 11/08	LMW-3S 06/09	LMW-3S 11/09	LMW-9D 11/06	GW-LMW-9D 06/07	GW-LMW-9D 11/07	GW-LMW-9D 05/08	GW-LMW-9D 11/08	LMW-9D 06/09	LMW-9D 11/09	LMW-9S 11/06	GW-LMW-9S 06/07
VOCs (EPA 8260B)																																																	
1,1,2,2-tetrachloroethane	0.17	NA	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
1,1-dichloroethane	700	810*	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	0.43J	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
1,2,3-trichloropropane	0.005	NA	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
1,2,4-trimethylbenzene	350	15 *	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	0.21 J	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
1,2-dibromo-3-chloropropane	0.025	0.2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
1,2-dibromoethane	0.0004	0.05	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
1,2-dichloroethane	0.38	5	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
1,2-dichloropropane	0.56	5	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
1,4-dichlorobenzene	75	75	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
2-butanone	NA	NA	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
acetone	700	NA	<2	<2	<2	<2	<2	<2	<2	<2	NA	NA	<2	<2	<2	<2	<2	<2	<2	<2	<2	NA	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	1.60J	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
acrolein	NA	NA	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
benzene	1	5	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	**1.3**	<3	<2	<2	<2	<2	<2	<2
carbon disulfide	700	NA	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
chlorobenzene	50	100	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
chloroethane	2800	4.6*	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
chloroform	70	80	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
chloromethane (methyl chloride)	2.6	NA	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
cis-1,2-dichloroethene	70	70	0.43J	0.300J	<2	0.35 J	0.35 J	<2	2.4	<2	<2	0.44 J	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
dibromochloromethane	0.41	80	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	**2.08**	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
dichlorodifluoromethane	1400	390*	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	2.02	9.35	2.5	<2	3.4	4.66	2.42	<2	4.9	<2	12.6	<2	<2	0.62 J	2.76	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
diisopropyl ether	70	NA	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
isopropylbenzene	70	660*	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
m&p xylene	530#	10000#	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	0.41 J	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
methylene chloride (dichloromethane)	4.6	5	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	0.69 J	0.63 J	0.49 J	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
MTBE	200	13*	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
o-xylene	530#	10000#	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	0.22 J	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
sec-butylbenzene	70	NA	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
tetrachloroethene	0.7	5	<2	0.370J	<2	0.22 J	0.22 J	0.22 J	0.31 J	0.26 J	<2	1.87 J	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	4.94	<2	0.24 J	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
toluene	1000	1000	<2	<2	<2	<2	<2	0.39 J	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	0.52 J	<2	0.41 J	0.26 J	<2	<2	<2	<2	0.57J	<2	<2	0.24 J	<2	<2	<2	<2	1.4	1.4	<2	0.22 J	<2	<2	<2	<2	<2	<2	0.30 J	<2	<2	<2
trans-1,2-dichloroethene	70	100	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
trichloroethene	2.8	5	0.23J	<2	<2	<2	<2	<2	0.41 J	0.19 J	<2	0.83 J	<2	<2	<2	<2	<2	<2	<2	<2	<2	0.39 J	0.56J	0.91J	0.440J	<2	<2	0.48 J	<2	0.58 J	0.88 J	1.7	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
trichlorofluoromethane	2100	1300*	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	0.26J	2.07	7.01	3.3	<2	7.73	10.6	<2	6.6	13	<2	0.330J	<2	1.03 J	0.52 J	1.05 J	1.1	0.97 J	<2	<2	<2	<2	<2	<2	<2	<2
Total Xylenes	530	0.01	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
vinyl chloride	0.015	2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
Appendix I Metals (EPA 6010B/6020A)																																																
Arsenic	10	10	<2	<2	<2	<2	<2	<2	0.49 J	0.53 J	1.04 J	<2	<2	1.52J	<2	1.12 J	<2	<2	8.7	1.1 J	<2	<2	<2	<2	<2	1.15 J	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	7.67	7.66	<2	3.84	3.39	2.1	2	<2	1.68 J
Barium	2000	2000	40	32.0	34.0	41.0	34.9	29	40	40	<10	<10	<10	10	3.84	6.29	3 J	2.71	4	3.1	2.9	13.5	<10	20	11.9	21.3	<10	16.7	12	12.7	13	12	<10	5.95	18.7	13	8.86	13.8	12	10	13.9	5.57	120	10.1	3	3.1	2.9	77.3	80.9
Beryllium	NA	4	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.089 J	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.076 J	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cadmium	5	5	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	0.94J	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Cobalt	NA	NA	<2	<2	<2	<2	0.83 J	<4	0.47	0.71	<2	<2	<2	<2	<2	<2	<2	<2	<4	0.15 J	0.13 J	<2	<2	<2	<2	<2	<2	<2	<2	<2	0.13 J	0.15 J	<2	<2	<2	<2	0.53 J	<2	0.42	0.42	<2	<2	3	<2	<4	<2	<2	1.27	1.04 J
Chromium	50	100	<20	<20	<20	<20	<20	<10	0.28 J	0.69 J	<20	<20	<20	10J	<20	7.14	<20	<20	<10	1.2	0.62 J	<20	<20	<20	<20	2.72 J	<20	<20	<20	<20	0.36 J	0.26 J	<20	<20	11.6	<20	<20	<20	1.7 J	0.54 J	6.51	<20	<20	3.32 J	<10	1	1.1	<20	5.73
Copper	1000	1000	<20	<20	<20	6 J	<20	<20	0.75 J	0.65 J	<20	<20	<20	10J	<20	5.28 J	7 J	<20	<20	0.88 J	0.59 J	<20	<20	<20	<20	<20	<20	5.41 J	2.79 J	<20	0.51 J	<20	8.51	2.54J	<20	6	<20	<20	< 20	0.82 J	6.37	<20	9	2.63 J	<20	0.69 J	0.75 J	<20	<20
Lead	15	15	<1	<1	<1	<1	<1	<1	<1	<1	0.525 J	<1	<1	0.87J	0.989J	1.40	<1	1.41	<1	0.17 J	<1	<1	<1	0.78J	<1	4.15	<1	<1	<1	0.524 J	<1	<1	<1	<1	3.71	1.47	<1	<1	0.58	<1	3.60	3.97	0.68	3.94	<1	0.71	0.31	<1	2.16
Nickel	100	730*	<50	1.72J	<50	<50	1.76 J	<6	0.61	0.64	<50	<50	<50	<50	<50	3.26 J	<50	1.49 J	9	0.33 J	0.46 J	<50	<50	<50	<50	<50	<50	3.24 J	1.53 J	<50	0.38 J	0.5 J	<50	2.41	4.92 J	5	3.72	3.7 J	2.6	2.8	2.16	<50	<50	1.45 J	<6	0.55 J	0.69	1.15J	<50
Selenium	50	50	1.87J	1.67J	1.04 J	3.73 J	<2	<4	0.64	0.59	<2	<2	<2	<2	<2	<2	<2	<2	<4	0.28 J	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	1.15J	<2	<2	<2	<2	<2	<2	<2	<2	<2	4.95 J	<2	<4	<4	<2	4.56	4.53
Silver	17.5	180	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	**33**	<10	<10	<10	<10
Thallium	NA	2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
Tin	NA	NA	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	0.63 J	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Vanadium	NA	260*	<20	<20	<20	<20	<20	<8	<20	<20	8.4 J	8.4 J	<20	30	<20	7.06	<20	2.78 J	<8	2.6 J	<20	<20	<20	8.0J	<20	3.12 J	<20	<20	<20	<20	<20	<20	<20	<20	9.91	<20	<20	<20	2.1 J	<20	10.0	5.73	<20	5.5	5	2.5 J	2.3 J	<20	5.99
Zinc	2100	5000	<60	<60	<60	<60	5.20 J	<50	8.2 J	19	<60	<60	<60	20J	<60	17.1 J	<60	7.93 J	<50	<60	7 J	<60	<60	<60	<60	<60	<60	<60	40.8	<60	<60	21	<60	10.1	16.6 J	48	15.2	<60	<60	13	7.91	<60	<60	18	<50	3.5 J	25	<60	<60
Other Analyses																																																
Nitrate/Nitrite as N (SM 4500)	10,000	10,000	NA	0.216	398	527	570	466	NA	740 J	NA	NA	<40	NA	0.10	**17,200**	222	460	236	NA	450 J	NA	<40	NA	0.551	1,020	<40	964	410	513	NA	2,400	<40	0.321	196	228	550	343	NA	710 J	0.107	461	39	<40	130	NA	430 J	0.190	1,000

Table 4. Summary of Ground-Water Detections
Lamont Landfills, Fort Bragg, NC

COMPOUNDS (µg/L)	Groundwater NC 2L Standard (ug/l)	EPA Drinking water MCL (ug/l)	Lamont																																
			GW-LMW-9S 11/07	GW-LMW-9S 05/08	GW-LMW-9S 11/08	LMW-9S 06/09	LMW-9S 11/09	LMW-15 11/06	LMW-16 11/06	GW-LMW-16 06/07	GW-LMW-16 11/07	GM-LMW-16 05/08	GW-LMW-16 11/08	LMW-16 06/09	LMW-16 11/09	GW-LMW-16-DUP 11/07	GW-LMW-16-DUP 11/08	GW-LMW-14R 06/07	GW-LMW-14R 11/07	GW-LMW-14R 05/08	GW-LMW-14R 11/08	LMW-14R 06/09	LMW-14R 11/09	GW-LMW-14R DUP 11/08	GW-LMW-15R 06/07	GW-LMW-15R 11/07	GW-LMW-15R 05/08	GW-LMW-15R 11/08	LMW-15R 06/09	LMW-15R 11/09	GW-LMW-15R DUP '11/08	GW-BLK 06/07	GW-BLK 11/07	GW-BLK 11/08	Trip Blank 11/07	Trip Blank 11/08
VOCs (EPA 8260B)																																			
1,1,2,2-tetrachloroethane	0.17	NA	**0.66 J**	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	NS	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
1,1-dichloroethane	700	810*	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	NS	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
1,2,3-trichloropropane	0.005	NA	**0.76 J**	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	NS	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
1,2,4-trimethylbenzene	350	15 *	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	NS	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	0.3 J	<2	<2	<2	<2	<2	<2	<2
1,2-dibromo-3-chloropropane	0.025	0.2	**0.82 J**	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	NS	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
1,2-dibromoethane	0.0004	0.05	**0.43 J**	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	NS	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
1,2-dichloroethane	0.38	5	0.24 J	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	NS	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
1,2-dichloropropane	0.56	5	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	NS	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
1,4-dichlorobenzene	75	75	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	NS	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
2-butanone	NA	NA	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	NS	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
acetone	700	NA	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	NS	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	2.19 J
acrolein	NA	NA	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	NS	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
benzene	1	5	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	NS	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
carbon disulfide	700	NA	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	NS	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
chlorobenzene	50	100	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	NS	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
chloroethane	2800	4.6*	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	NS	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
chloroform	70	80	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	NS	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
chloromethane (methyl chloride)	2.6	NA	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	NS	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	1.8	<2	<2	<2	<2	<2	0.40 J
cis-1,2-dichloroethene	70	70	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	NS	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
dibromochloromethane	0.41	80	0.20 J	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	NS	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
dichlorodifluoromethane	1400	390*	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	NS	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
diisopropyl ether	70	NA	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	NS	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
isopropylbenzene	70	660*	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	NS	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
m&p xylene	530#	10000#	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	NS	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	0.47 J	<2	<2	<2	<2	<2	<2	<2
methylene chloride (dichloromethane)	4.6	5	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	NS	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
MTBE	200	13*	0.33 J	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	NS	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
o-xylene	530#	10000#	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	NS	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	0.24 J	<2	<2	<2	<2	<2	<2	<2
sec-butylbenzene	70	NA	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	NS	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
tetrachloroethene	0.7	5	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	NS	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
toluene	1000	1000	<2	<2	0.20 J	<2	<2	<2	0.240J	<2	<2	<2	<2	<2	<2	<2	NS	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	0.29 J	<2	<2	<2	<2	<2	<2	<2
trans-1,2-dichloroethene	70	100	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	NS	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
trichloroethene	2.8	5	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	NS	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
trichlorofluoromethane	2100	1300*	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	NS	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
Total Xylenes	530	0.01	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	NS	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
vinyl chloride	0.015	2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	NS	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
Appendix I Metals (EPA 6010B/6020A)																																			
Arsenic	10	10	4.54	<2	<2	2.1	0.47 J	<2	<2	2.13	<2	<2	9.27	0.56 J	0.59 J	<2	11	1.11 J	<2	<2	9.08	0.41 J	<2	NS	<2	<2	<2	**12.7**	2.5	<2	9.47	<2	NS	**10.4**	<2	<2
Barium	2000	2000	2	75.3	61	3.1	48	37.4	23.1	41.3	35	22.9	23	14	13	29	4 J	14.6	12	9.72	133	13	12	NS	38.5	27	24.3	37.6	42	14	38.3	<10	NS	<4	<10	<4
Beryllium	NA	4	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.29	NA	NA	NA		NA	NA	NA
Cadmium	5	5	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	0.002 J	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	NS	<1	<1	<1	<1	<1	<1	<1	<1	NS	<1	<1	<1
Cobalt	NA	NA	<2	1.13	<4	<4	0.25	<2	<2	<2	<2	<2	<4	<4	0.08 J	<2	<4	<2	<2	0.51 J	<4	0.24	0.3	NS	<2	<2	0.65 J	<4	0.83	0.26	<4	<2	NS	<4	<2	<4
Chromium	50	100	<20	<20	<10	<10	0.44 J	<20	<20	20.7	<20	<20	<10	0.83 J	0.53 J	<20	<10	<20	<20	<20	<10	1.6	0.53 J	NS	<20	<20	<20	<10	5.5	0.16 J	<10	<20	NS	<10	<20	<10
Copper	1000	1000	7	<20	<20	0.69 J	1.7	3.66J	<20	7.37 J	6	<20	5 J	0.36 J	0.59 J	6	<20	<20	<20	<20	<20	0.81 J	0.92 J	NS	5.33 J	5 J	<20	5.2 J	3.7	0.57 J	<20	<20	NS	<20	<20	<20
Lead	15	15	1.19	<1	0.761	0.71	0.21 J	0.559J	0.643J	5.28	2.62	<1	<1	<1	0.099 J	4.21	<1	4.42	<1	<1	<1	0.22 J	0.14 J	NS	<1	<1	<1	1.08	0.89	<1	<1	<1	NS	<1	<1	<1
Nickel	100	730*	<50	1.51 J	<6	0.55 J	0.97 J	1.80J	1.03J	<50	<50	<50	<6	0.72	0.66	<50	<6	<50	<50	2.39	3.2 J	2.2	1.6 J	NS	<50	<50	1.12 J	<6	3	0.8 J	<6	<50	NS	<6	<50	<6
Selenium	50	50	<2	<2	<4	<4	<2	<2	<2	<2	2.20 J	<2	<4	<4	<2	2.50 J	<4	<2	<2	<2	<4	<4	<2	NS	<2	<2	<2	<4	0.24 J	<2	<4	<2	NS	<4	<2	<4
Silver	17.5	180	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	NS	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Thallium	NA	2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	0.17 J	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
Tin	NA	NA	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	NS	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Vanadium	NA	260*	<20	<20	<8	2.5 J	<20	<20	<20	41.9	69	<20	<8	<8	<20	26	<8	2.30 J	<20	<20	<8	<8	<20	NS	<20	<20	<20	<8	7.5	<20	<8	<20	NS	<8	<20	<8
Zinc	2100	5000	<60	32.2	<50	3.5 J	15 B	14.0	<60	16.5 J	<60	15.8	<50	<50	9.3 J	<60	<50	15.4 J	<60	18.2	<50	6.3 J	26 J	NS	<60	<60	39.3	<50	6.5 J	9.1 J	<50	<60	NS	<50	<60	<50
Other Analyses																																			
Nitrate/Nitrite as N (SM 4500)	10,000	10,000	147	<40	132	NA	770 J	4.78	#####	166	1020	380	33 J	NA	<40	1010	< 40	326	143	370	960	NA	<40	2260	1,400	1620	<40	1460	NA	7,300	1400	<40	NS	106	<40	139

arge code+A1

APPENDICES

APPENDIX A

GROUNDWATER SAMPLING LOGS

	U.S. ARMY CORPS OF ENGINEERS SAVANNAH DISTRICT GEOLOGY and HYDROGEOLOGY	GROUND WATER FIELD DATA LOG

1. CLIENT:Ft. Bragg, NC
DATE: 11/08/2009 TIME: 1117
SAMPLED BY: Louis and Jackson
WEATHER CONDITIONS: Sunny,chilly

Location: Lamont Landfill	**Sample ID:GW-LMW-15R-11-09**

PRESERVATIVE: HCL, HNO3,H2SO4,ICE
ANALYSES REQUESTED: VOC 8260, Appendix I Metals, Nitrates
OF CONTAINERS: 5
SAMPLING METHOD: ☐ Peristaltic Pump
☒ Bladder Pump LOW FLOW: XYES ☐ NO
SAMPLES FILTERED: ☐YES ☒NO DUPLICATE SAMPLE: ☐YES ☐NO

2. **WATER LEVEL DATA**

MEASURING POINT: ☒Top of casing ☐Other:
METHOD OF MEASUREMENT: Water Level Indicator

3. **WELL EVACUATION DATA**

Well Depth (wd): 50.04 (ft) Diameter (d): 2.00 (in)
Depth to Water (dw): 40.31 (ft) Diameter (d): 0.167 (ft)
Well Volume = (5.904 × d^2 (wd-dw)) = 1.6 (gallons)
Flow Rate : 500 (ml/min) Purge vol: 0.80 (gallons)
Length of Time Purged: 65 (minutes) Purge time: 830
Amount Purged= 5.0 (gallons) Pump depth:

4. **FIELD PARAMETERS**

INSTRUMENT	CALIBRATED
pH Meter –YSI 556	☒
Conductivity Meter – YSI 556	☒
Temperature – YSI 556	☒
Turbidity Meter – Hach 2100 P	☒
DO Meter – YSI 556	☒
ORP Meter – YSI 556	☒
CO_2– Hach Digital Titrator	☐

Time	110	1105	1110	1115		
pH	.3.18	2.75	2.78	2.87		
Sp. Cond	38	37	37	37		
Temp. °C	19.6	19.3	19.4	19.4		
Turbidity	20.1	12.0	7.7	6.3		
DO	4.71	5.34	5.27	5.10		
ORP	164.0	199.0	201.1	196.3		
Water Level						

5.

	U.S. ARMY CORPS OF ENGINEERS SAVANNAH DISTRICT GEOLOGY and HYDROGEOLOGY	GROUND WATER FIELD DATA LOG

1. CLIENT:Ft. Bragg, NC
DATE: 11/08/2009 TIME: 1228
SAMPLED BY: Louis and Jackson
WEATHER CONDITIONS: Sunny,chilly

Location: Lamont Landfill	**Sample ID:GW-LMW-14R-11-09**

PRESERVATIVE: HCL, HNO3,H2SO4,ICE
ANALYSES REQUESTED: VOC 8260, Appendix I Metals, Nitrates
OF CONTAINERS: 5
SAMPLING METHOD: ☐ Peristaltic Pump
☒ Bladder Pump LOW FLOW: XYES ☐ NO
SAMPLES FILTERED: ☐YES ☒NO DUPLICATE SAMPLE: ☐YES ☐NO

2. **WATER LEVEL DATA**

MEASURING POINT: ☒Top of casing ☐Other:
METHOD OF MEASUREMENT: Water Level Indicator

3. **WELL EVACUATION DATA**

Well Depth (wd): 54.00 (ft) Diameter (d): 2.00 (in)
Depth to Water (dw): 50.04 (ft) Diameter (d): 0.167 (ft)
Well Volume = ($5.904 \times d^2$ (wd-dw)) = 0.6 (gallons)
Flow Rate : 500 (ml/min) Purge vol: 0.80 (gallons)
Length of Time Purged: 43 (minutes) Purge time: 830
Amount Purged= 2.0 (gallons) Pump depth:

4. **FIELD PARAMETERS**

INSTRUMENT	CALIBRATED
pH Meter –YSI 556	☒
Conductivity Meter – YSI 556	☒
Temperature – YSI 556	☒
Turbidity Meter – Hach 2100 P	☒
DO Meter – YSI 556	☒
ORP Meter – YSI 556	☒
CO_2– Hach Digital Titrator	☐

Time	1210	1215	1220	1225		
pH	3.08	3.07	3.05	3.21		
Sp. Cond	13	12	12	12		
Temp. °C	19.2	19.0	19.2	19.3		
Turbidity	9.3	6.9	5.4	4.4		
DO	5.98	5.20	4.10	4.18		
ORP	174.5	172.8	185.0	176.3		
Water Level						

5.

	U.S. ARMY CORPS OF ENGINEERS SAVANNAH DISTRICT GEOLOGY and HYDROGEOLOGY	GROUND WATER FIELD DATA LOG

1. CLIENT:Ft. Bragg, NC
DATE: 11/16/2009 TIME: 1700
SAMPLED BY: Louis and Jackson
WEATHER CONDITIONS: Sunny,chilly

Location: Lamont Landfill	**Sample ID:GW-LMW-10-11-09**

PRESERVATIVE: HCL, HNO3,H2SO4,ICE
ANALYSES REQUESTED: VOC 8260, Appendix I Metals, Nitrates
OF CONTAINERS: 5
SAMPLING METHOD: ☐ Peristaltic Pump
☒ Bladder Pump LOW FLOW: XYES ☐ NO
SAMPLES FILTERED: ☐YES ☒NO DUPLICATE SAMPLE: ☐YES ☐NO

2. **WATER LEVEL DATA**

MEASURING POINT: ☒Top of casing ☐Other:
METHOD OF MEASUREMENT: Water Level Indicator

3. **WELL EVACUATION DATA**

Well Depth (wd): 80.50 (ft) Diameter (d): 2.00 (in)
Depth to Water (dw): 77.11 (ft) Diameter (d): 0.167 (ft)
Well Volume = (5.904 × d^2 (wd-dw)) = 0.6 (gallons)
Flow Rate : 500 (ml/min) Purge vol: 0.80 (gallons)
Length of Time Purged: 52 (minutes) Purge time: 830
Amount Purged= 5.5 (gallons) Pump depth:

4. **FIELD PARAMETERS**

INSTRUMENT	CALIBRATED
pH Meter –YSI 556	☒
Conductivity Meter – YSI 556	☒
Temperature – YSI 556	☒
Turbidity Meter – Hach 2100 P	☒
DO Meter – YSI 556	☒
ORP Meter – YSI 556	☒
CO_2– Hach Digital Titrator	☐

Time	1640	1645	1650			
pH	4.99	4.94	4.93			
Sp. Cond	6	6	6			
Temp. °C	20.1	20.2	20.1			
Turbidity	8.3	6.6	5.7			
DO	0.92	0.86	0.93			
ORP	170.6	184.8	185.2			
Water Level						

5.

	U.S. ARMY CORPS OF ENGINEERS SAVANNAH DISTRICT GEOLOGY and HYDROGEOLOGY	GROUND WATER FIELD DATA LOG

1. CLIENT:Ft. Bragg, NC
DATE: 11/08/2009 TIME: 1622
SAMPLED BY: Louis and Jackson
WEATHER CONDITIONS: Sunny,chilly

Location: Lamont Landfill	**Sample ID:GW-LMW-9s-11-09**

PRESERVATIVE: HCL, HNO3,H2SO4,ICE
ANALYSES REQUESTED: VOC 8260, Appendix I Metals, Nitrates
OF CONTAINERS: 5
SAMPLING METHOD: ☐ Peristaltic Pump
☒ Bladder Pump LOW FLOW: XYES ☐ NO
SAMPLES FILTERED: ☐YES ☒NO DUPLICATE SAMPLE: ☐YES ☐NO

2. **WATER LEVEL DATA**

MEASURING POINT: ☒Top of casing ☐Other:
METHOD OF MEASUREMENT: Water Level Indicator

3. **WELL EVACUATION DATA**

Well Depth (wd): 60.00 (ft) Diameter (d): 2.00 (in)
Depth to Water (dw): 53.35 (ft) Diameter (d): 0.167 (ft)
Well Volume = ($5.904 \times d^2$ (wd-dw)) = 1.1 (gallons)
Flow Rate : 500 (ml/min) Purge vol: 0.80 (gallons)
Length of Time Purged: 52 (minutes) Purge time: 830
Amount Purged= 3.5 (gallons) Pump depth:

4. **FIELD PARAMETERS**

INSTRUMENT	CALIBRATED
pH Meter –YSI 556	☒
Conductivity Meter – YSI 556	☒
Temperature – YSI 556	☒
Turbidity Meter – Hach 2100 P	☒
DO Meter – YSI 556	☒
ORP Meter – YSI 556	☒
CO_2– Hach Digital Titrator	☐

Time	1610	1615	1620			
pH	4.07	4.08	4.06			
Sp. Cond	241	243	245			
Temp. °C	20.1	20.0	19.9			
Turbidity	47.1	46.4	45.2			
DO	1.33	1.31	1.29			
ORP	127.9	132.0	134.5			
Water Level						

	U.S. ARMY CORPS OF ENGINEERS SAVANNAH DISTRICT GEOLOGY and HYDROGEOLOGY	GROUND WATER FIELD DATA LOG

1. CLIENT:Ft. Bragg, NC
DATE: 11/09/2009 TIME: 1153
SAMPLED BY: Louis and Jackson
WEATHER CONDITIONS: Sunny,chilly

Location: Lamont Landfill	**Sample ID:GW-LMW-9d-11-09**

PRESERVATIVE: HCL, HNO3,H2SO4,ICE
ANALYSES REQUESTED: VOC 8260, Appendix I Metals, Nitrates
OF CONTAINERS: 5
SAMPLING METHOD: ☐ Peristaltic Pump
☒ Bladder Pump LOW FLOW: XYES ☐ NO
SAMPLES FILTERED: ☐YES ☒NO DUPLICATE SAMPLE: ☐YES ☐NO

2. **WATER LEVEL DATA**

MEASURING POINT: ☒Top of casing ☐Other:
METHOD OF MEASUREMENT: Water Level Indicator

3. **WELL EVACUATION DATA**

Well Depth (wd): 85.00 (ft) Diameter (d): 2.00 (in)
Depth to Water (dw): 77.03 (ft) Diameter (d): 0.167 (ft)
Well Volume = (5.904 × d^2 (wd-dw)) = 1.3 (gallons)
Flow Rate : 500 (ml/min) Purge vol: 0.80 (gallons)
Length of Time Purged: 93 (minutes) Purge time: 830
Amount Purged= 10.5 (gallons) Pump depth:

4. **FIELD PARAMETERS**

INSTRUMENT	CALIBRATED
pH Meter –YSI 556	☒
Conductivity Meter – YSI 556	☒
Temperature – YSI 556	☒
Turbidity Meter – Hach 2100 P	☒
DO Meter – YSI 556	☒
ORP Meter – YSI 556	☒
CO_2– Hach Digital Titrator	☐

Time	1141	1146	1151			
pH	6.49	6.35	6.29			
Sp. Cond	25	24	24			
Temp. °C	19.5	19.5	19.4			
Turbidity	47.1	46.4	45.2			
DO	7.20	7.31	7.04			
ORP	107	125	136			
Water Level						

5. Purged 5x volume

	U.S. ARMY CORPS OF ENGINEERS SAVANNAH DISTRICT GEOLOGY and HYDROGEOLOGY	GROUND WATER FIELD DATA LOG

1. CLIENT:Ft. Bragg, NC
DATE: 11/09/2009 TIME: 1000
SAMPLED BY: Louis and Jackson
WEATHER CONDITIONS: Sunny,chilly

Location: Lamont Landfill	**Sample ID:GW-LMW-9-11-09**

PRESERVATIVE: HCL, HNO3,H2SO4,ICE
ANALYSES REQUESTED: VOC 8260, Appendix I Metals, Nitrates
OF CONTAINERS: 5
SAMPLING METHOD: ☐ Peristaltic Pump
☒ Bladder Pump LOW FLOW: XYES ☐ NO
SAMPLES FILTERED: ☐YES ☒NO DUPLICATE SAMPLE: ☐YES ☐NO

2. **WATER LEVEL DATA**

MEASURING POINT: ☒Top of casing ☐Other:
METHOD OF MEASUREMENT: Water Level Indicator

3. **WELL EVACUATION DATA**

Well Depth (wd): 137.00 (ft) Diameter (d): 2.00 (in)
Depth to Water (dw): 87.27 (ft) Diameter (d): 0.167 (ft)
Well Volume = (5.904 × d^2 (wd-dw)) = 8.2 (gallons)
Flow Rate : 500 (ml/min) Purge vol: 0.80 (gallons)
Length of Time Purged: 43 (minutes) Purge time: 830
Amount Purged= 5.5 (gallons) Pump depth:

4. **FIELD PARAMETERS**

INSTRUMENT	CALIBRATED
pH Meter –YSI 556	☒
Conductivity Meter – YSI 556	☒
Temperature – YSI 556	☒
Turbidity Meter – Hach 2100 P	☒
DO Meter – YSI 556	☒
ORP Meter – YSI 556	☒
CO_2– Hach Digital Titrator	☐

Time	0942	0947	0952			
pH	6.80	5.80	5.40			
Sp. Cond	24	20	20			
Temp. °C	19.9	19.9	19.9			
Turbidity	7.4	6.2	10.0			
DO	9.04	8.95	8.56			
ORP	168.0	170.0	207.0			
Water Level						

5. Duplicate 1 taken @ 0800

	U.S. ARMY CORPS OF ENGINEERS SAVANNAH DISTRICT GEOLOGY and HYDROGEOLOGY	GROUND WATER FIELD DATA LOG

1. CLIENT:Ft. Bragg, NC
DATE: 11/09/2009 TIME: 1705
SAMPLED BY: Louis and Jackson
WEATHER CONDITIONS: Sunny,chilly

Location: Lamont Landfill	**Sample ID:GW-LMW-3s-11-09**

PRESERVATIVE: HCL, HNO3,H2SO4,ICE
ANALYSES REQUESTED: VOC 8260, Appendix I Metals, Nitrates
OF CONTAINERS: 5
SAMPLING METHOD: ☐ Peristaltic Pump
☒ Bladder Pump LOW FLOW: XYES ☐ NO
SAMPLES FILTERED: ☐YES ☒NO DUPLICATE SAMPLE: ☐YES ☐NO

2. **WATER LEVEL DATA**

MEASURING POINT: ☒Top of casing ☐Other:
METHOD OF MEASUREMENT: Water Level Indicator

3. **WELL EVACUATION DATA**

Well Depth (wd): 67.00 (ft) Diameter (d): 2.00 (in)
Depth to Water (dw): 59.61 (ft) Diameter (d): 0.167 (ft)
Well Volume = (5.904 × d^2 (wd-dw)) = 1.2 (gallons)
Flow Rate : 500 (ml/min) Purge vol: 0.80 (gallons)
Length of Time Purged: 95 (minutes) Purge time: 830
Amount Purged= 7.5 (gallons) Pump depth:

4. **FIELD PARAMETERS**

INSTRUMENT	CALIBRATED
pH Meter –YSI 556	☒
Conductivity Meter – YSI 556	☒
Temperature – YSI 556	☒
Turbidity Meter – Hach 2100 P	☒
DO Meter – YSI 556	☒
ORP Meter – YSI 556	☒
CO_2– Hach Digital Titrator	☐

Time	1645	1650	1655	1700		
pH	5.68	4.91	4.96	4.81		
Sp. Cond	28	26	24	23		
Temp. °C	17.5	17.4	17.3	17.2		
Turbidity	8.8	7.2	6.3	5.6		
DO	6.94	6.44	6.31	6.48		
ORP	139.5	178.0	181.9	196.9		
Water Level						

5. Matrix Spike taken @ 1145, Matrix Spike Duplicate taken @1345

	U.S. ARMY CORPS OF ENGINEERS SAVANNAH DISTRICT GEOLOGY and HYDROGEOLOGY	GROUND WATER FIELD DATA LOG

1. CLIENT:Ft. Bragg, NC
DATE: 11/17/2009 TIME:
SAMPLED BY: Louis and Jackson
WEATHER CONDITIONS: Sunny,chilly

Location: Lamont Landfill	**Sample ID:GW-LMW-7-11-09**

PRESERVATIVE: HCL, HNO3,H2SO4,ICE
ANALYSES REQUESTED: VOC 8260, Appendix I Metals, Nitrates
OF CONTAINERS: 5
SAMPLING METHOD: ☐ Peristaltic Pump
☒ Bladder Pump LOW FLOW: XYES ☐ NO
SAMPLES FILTERED: ☐YES ☒NO DUPLICATE SAMPLE: ☐YES ☐NO

2. **WATER LEVEL DATA**

MEASURING POINT: ☒Top of casing ☐Other:
METHOD OF MEASUREMENT: Water Level Indicator

3. **WELL EVACUATION DATA**

Well Depth (wd): 130.75 (ft) Diameter (d): 2.00 (in)
Depth to Water (dw): 128.80 (ft) Diameter (d): 0.167 (ft)
Well Volume = (5.904 × d^2 (wd-dw)) = 0.3 (gallons)
Flow Rate : 500 (ml/min) Purge vol: 0.80 (gallons)
Length of Time Purged: 0 (minutes) Purge time: 830
Amount Purged= 0.0 (gallons) Pump depth:

4. **FIELD PARAMETERS**

INSTRUMENT	CALIBRATED
pH Meter –YSI 556	☒
Conductivity Meter – YSI 556	☒
Temperature – YSI 556	☒
Turbidity Meter – Hach 2100 P	☒
DO Meter – YSI 556	☒
ORP Meter – YSI 556	☒
CO_2– Hach Digital Titrator	☐

Time						
pH						
Sp. Cond						
Temp. °C						
Turbidity						
DO						
ORP						
Water Level						

5. Well went dry, got approx 1 liteer with sand. PM was notified

	U.S. ARMY CORPS OF ENGINEERS SAVANNAH DISTRICT GEOLOGY and HYDROGEOLOGY	GROUND WATER FIELD DATA LOG

1. CLIENT:Ft. Bragg, NC
DATE: 11/16/2009 TIME: 1530
SAMPLED BY: Louis and Jackson
WEATHER CONDITIONS: Sunny,chilly

Location: Lamont Landfill	**Sample ID:GW-LMW-6-11-09**

PRESERVATIVE: HCL, HNO3,H2SO4,ICE
ANALYSES REQUESTED: VOC 8260, Appendix I Metals, Nitrates
OF CONTAINERS: 5
SAMPLING METHOD: ☐ Peristaltic Pump
☒ Bladder Pump LOW FLOW: XYES ☐ NO
SAMPLES FILTERED: ☐YES ☒NO DUPLICATE SAMPLE: ☐YES ☐NO

2. **WATER LEVEL DATA**

MEASURING POINT: ☒Top of casing ☐Other:
METHOD OF MEASUREMENT: Water Level Indicator

3. **WELL EVACUATION DATA**

Well Depth (wd): 95.70 (ft) Diameter (d): 2.00 (in)
Depth to Water (dw): 80.75 (ft) Diameter (d): 0.167 (ft)
Well Volume = ($5.904 \times d^2$ (wd-dw)) = 2.5 (gallons)
Flow Rate : 500 (ml/min) Purge vol: 0.80 (gallons)
Length of Time Purged: 50 (minutes) Purge time: 830
Amount Purged= 6.0 (gallons) Pump depth:

4. **FIELD PARAMETERS**

INSTRUMENT	CALIBRATED
pH Meter –YSI 556	☒
Conductivity Meter – YSI 556	☒
Temperature – YSI 556	☒
Turbidity Meter – Hach 2100 P	☒
DO Meter – YSI 556	☒
ORP Meter – YSI 556	☒
CO_2– Hach Digital Titrator	☐

Time	1515	1520	1525			
pH	4.41	4.39	4.30			
Sp. Cond	253	254	256			
Temp. °C	18.0	17.9	17.9			
Turbidity	9.4	9.1	9.6			
DO	1.17	1.09	1.09			
ORP	142.5	157.4	158.4			
Water Level						

5.

	U.S. ARMY CORPS OF ENGINEERS SAVANNAH DISTRICT GEOLOGY and HYDROGEOLOGY	GROUND WATER FIELD DATA LOG

1. CLIENT:Ft. Bragg, NC
DATE: 11/10/2009 TIME: 1225
SAMPLED BY: Louis and Jackson
WEATHER CONDITIONS: Sunny,chilly

Location: Lamont Landfill	**Sample ID:GW-LMW-3-11-09**

PRESERVATIVE: HCL, HNO3,H2SO4,ICE
ANALYSES REQUESTED: VOC 8260, Appendix I Metals, Nitrates
OF CONTAINERS: 5
SAMPLING METHOD: ☐ Peristaltic Pump
☒ Bladder Pump LOW FLOW: XYES ☐ NO
SAMPLES FILTERED: ☐YES ☒NO DUPLICATE SAMPLE: ☐YES ☐NO

2. **WATER LEVEL DATA**

MEASURING POINT: ☒Top of casing ☐Other:
METHOD OF MEASUREMENT: Water Level Indicator

3. **WELL EVACUATION DATA**

Well Depth (wd): 82.35 (ft) Diameter (d): 2.00 (in)
Depth to Water (dw): 75.39 (ft) Diameter (d): 0.167 (ft)
Well Volume = (5.904 × d^2 (wd-dw)) = 1.1 (gallons)
Flow Rate : 500 (ml/min) Purge vol: 0.80 (gallons)
Length of Time Purged: 90 (minutes) Purge time: 830
Amount Purged= 8.5 (gallons) Pump depth:

4. **FIELD PARAMETERS**

INSTRUMENT	CALIBRATED
pH Meter –YSI 556	☒
Conductivity Meter – YSI 556	☒
Temperature – YSI 556	☒
Turbidity Meter – Hach 2100 P	☒
DO Meter – YSI 556	☒
ORP Meter – YSI 556	☒
CO_2– Hach Digital Titrator	☐

Time	1215	1220	1225			
pH	4.23	4.26	4.29			
Sp. Cond	25	25	24			
Temp. °C	19.6	19.6	19.6			
Turbidity	65.2	60.6	52.1			
DO	3.73	3.49	3.43			
ORP	208	209	210			
Water Level						

5. Pumped more than 5x volume turbidity out of range PM notified.

	U.S. ARMY CORPS OF ENGINEERS SAVANNAH DISTRICT GEOLOGY and HYDROGEOLOGY	GROUND WATER FIELD DATA LOG

1. CLIENT:Ft. Bragg, NC
DATE: 11/09/2009 TIME: 1705
SAMPLED BY: Louis and Jackson
WEATHER CONDITIONS: Sunny,chilly

Location: Lamont Landfill	**Sample ID:GW-LMW-3s-11-09**

PRESERVATIVE: HCL, HNO3,H2SO4,ICE
ANALYSES REQUESTED: VOC 8260, Appendix I Metals, Nitrates
OF CONTAINERS: 5
SAMPLING METHOD: ☐ Peristaltic Pump
☒ Bladder Pump LOW FLOW: XYES ☐ NO
SAMPLES FILTERED: ☐YES ☒NO DUPLICATE SAMPLE: ☐YES ☐NO

2. **WATER LEVEL DATA**

MEASURING POINT: ☒Top of casing ☐Other:
METHOD OF MEASUREMENT: Water Level Indicator

3. **WELL EVACUATION DATA**

Well Depth (wd): 67.00 (ft) Diameter (d): 2.00 (in)
Depth to Water (dw): 59.61 (ft) Diameter (d): 0.167 (ft)
Well Volume = (5.904 × d^2 (wd-dw)) = 1.2 (gallons)
Flow Rate : 500 (ml/min) Purge vol: 0.80 (gallons)
Length of Time Purged: 95 (minutes) Purge time: 830
Amount Purged= 7.5 (gallons) Pump depth:

4. **FIELD PARAMETERS**

INSTRUMENT	CALIBRATED
pH Meter –YSI 556	☒
Conductivity Meter – YSI 556	☒
Temperature – YSI 556	☒
Turbidity Meter – Hach 2100 P	☒
DO Meter – YSI 556	☒
ORP Meter – YSI 556	☒
CO_2– Hach Digital Titrator	☐

Time	1645	1650	1655	1700		
pH	5.68	4.91	4.96	4.81		
Sp. Cond	28	26	24	23		
Temp. °C	17.5	17.4	17.3	17.2		
Turbidity	8.8	7.2	6.3	5.6		
DO	6.94	6.44	6.31	6.48		
ORP	139.5	178.0	181.9	196.9		
Water Level						

5.

	U.S. ARMY CORPS OF ENGINEERS SAVANNAH DISTRICT GEOLOGY and HYDROGEOLOGY	GROUND WATER FIELD DATA LOG

1. CLIENT:Ft. Bragg, NC
DATE: 11/10/2009 TIME: 1005
SAMPLED BY: Louis and Jackson
WEATHER CONDITIONS: Sunny,chilly

Location: Lamont Landfill	**Sample ID:GW-LMW-3-11-09**

PRESERVATIVE: HCL, HNO3,H2SO4,ICE
ANALYSES REQUESTED: VOC 8260, Appendix I Metals, Nitrates
OF CONTAINERS: 5
SAMPLING METHOD: ☐ Peristaltic Pump
☒ Bladder Pump LOW FLOW: XYES ☐ NO
SAMPLES FILTERED: ☐YES ☒NO DUPLICATE SAMPLE: ☐YES ☐NO

2. **WATER LEVEL DATA**

MEASURING POINT: ☒Top of casing ☐Other:
METHOD OF MEASUREMENT: Water Level Indicator

3. **WELL EVACUATION DATA**

Well Depth (wd): 122.90 (ft) Diameter (d): 2.00 (in)
Depth to Water (dw): 102.87 (ft) Diameter (d): 0.167 (ft)
Well Volume = (5.904 × d^2 (wd-dw)) = 3.3 (gallons)
Flow Rate : 500 (ml/min) Purge vol: 0.80 (gallons)
Length of Time Purged: 95 (minutes) Purge time: 830
Amount Purged= 5.0 (gallons) Pump depth:

4. **FIELD PARAMETERS**

INSTRUMENT	CALIBRATED
pH Meter –YSI 556	☒
Conductivity Meter – YSI 556	☒
Temperature – YSI 556	☒
Turbidity Meter – Hach 2100 P	☒
DO Meter – YSI 556	☒
ORP Meter – YSI 556	☒
CO_2– Hach Digital Titrator	☐

Time	0950	0955	1000			
pH	6.83	6.79	6.71			
Sp. Cond	22	21	21			
Temp. °C	17.2	17.2	17.1			
Turbidity	10.0	8.6	6.0			
DO	2.63	2.43	2.48			
ORP	169	184	186			
Water Level						

5.

	U.S. ARMY CORPS OF ENGINEERS SAVANNAH DISTRICT GEOLOGY and HYDROGEOLOGY	GROUND WATER FIELD DATA LOG

1. CLIENT:Ft. Bragg, NC
DATE: 11/10/2009 TIME: 1545
SAMPLED BY: Louis and Jackson
WEATHER CONDITIONS: Sunny,chilly

Location: Lamont Landfill	**Sample ID:GW-LMW-16-11-09**

PRESERVATIVE: HCL, HNO3,H2SO4,ICE
ANALYSES REQUESTED: VOC 8260, Appendix I Metals, Nitrates
OF CONTAINERS: 5
SAMPLING METHOD: ☐ Peristaltic Pump
☒ Bladder Pump LOW FLOW: XYES ☐ NO
SAMPLES FILTERED: ☐YES ☒NO DUPLICATE SAMPLE: ☐YES ☐NO

2. **WATER LEVEL DATA**

MEASURING POINT: ☒Top of casing ☐Other:
METHOD OF MEASUREMENT: Water Level Indicator

3. **WELL EVACUATION DATA**

Well Depth (wd): 42.00 (ft) Diameter (d): 2.00 (in)
Depth to Water (dw): 37.28 (ft) Diameter (d): 0.167 (ft)
Well Volume = (5.904 × d^2 (wd-dw)) = 0.8 (gallons)
Flow Rate : 500 (ml/min) Purge vol: 0.80 (gallons)
Length of Time Purged: 140 (minutes) Purge time: 830
Amount Purged= 4.0 (gallons) Pump depth:

4. **FIELD PARAMETERS**

INSTRUMENT	CALIBRATED
pH Meter –YSI 556	☒
Conductivity Meter – YSI 556	☒
Temperature – YSI 556	☒
Turbidity Meter – Hach 2100 P	☒
DO Meter – YSI 556	☒
ORP Meter – YSI 556	☒
CO_2– Hach Digital Titrator	☐

Time	1525	1530	1535			
pH	5.74	5.78	5.79			
Sp. Cond	252	253	254			
Temp. °C	18.1	18.1	18.0			
Turbidity	10.0	8.2	8.7			
DO	1.07	0.97	0.90			
ORP	147.5	152.6	151.8			
Water Level						

5. Duplicate 2 taken @ 1400

APPENDIX B

DATA VALIDATION REPORTS

QA LEVEL II - DATA EVALUATION CHECKLIST

Company Name: USACE
Project Name: Lamont Landfill
Reviewer: Kevin Halvorak

Project Manager: Zainul Kidwia
Project Number: NA
Validation Date: 1/22

Laboratory: TestAmerica
SDG #: 680-52429-1
Analytical Method (type and no.): ~~VOCs~~ 8260(4), 6020(3), Nitrate by 300 (3)
Matrix: ☐ Air ☐ Soil/Sed. ☒ Water ☐ Waste ☐
Sample Names GW-LMW-15R-11-09
GW-LMW-14R-11-09
GW-LMW-9S-11-09
Trip Blank

NOTE: Please provide calculation in Comment areas or on the back (if on the back please indicate in comment areas).

Field Information	**YES**	**NO**	**NA**	**COMMENTS**
a) Sampling dates noted?	☑	☐	☐	
b) Sampling team indicated?	☑	☐	☐	
c) Sample location noted?	☑	☐	☐	
d) Sample depth indicated (Soils)?	☐	☐	☑	
e) Sample type indicated (grab/composite)?	☑	☐	☐	
f) Field QC noted?	☑	☐	☐	
g) Field parameters collected (note types)?	☑	☐	☐	pH, turb, cond, DO, ORP
h) Field Calibration within control limits?	☑	☐	☐	
i) Notations of unacceptable field conditions/performances from field logs or field notes?	☐	☐	☑	
j) Does the laboratory narrative indicate deficiencies:	☑	☐	☐	

Note Deficiencies: Method 300 samples recieved after hold time expired

Chain-of-Custody (COC)	**YES**	**NO**	**NA**	**COMMENTS**
k) Was the COC properly completed?	☑	☐	☐	
l) Was the COC signed by both field and laboratory personnel?	☑	☐	☐	
m) Were samples received in good condition?	☑	☐	☐	

General (Reference QAPP or Method)	**YES**	**NO**	**NA**	**COMMENTS**
a) Were hold times met for sample pretreatment?	☐	☑	☐	Method 300 out
b) Were hold times met for sample analysis?	☐	☑	☐	SAT
c) Were the correct preservatives used?	☑	☐	☐	
d) Was the correct method used?	☑	☐	☐	
e) Were appropriate reporting limits achieved?	☑	☐	☐	
f) Were any sample dilutions noted?	☑	☐	☐	Nitrate diluted 5x
g) Were any matrix problems noted?	☐	☑	☐	

Blanks	YES	NO	NA	COMMENTS
a) Were analytes detected in the method blank(s)?	☑	☐	☐	Cr, Ni, Zn, results qualified by lab
b) Were analytes detected in the field blank(s)?	☐	☐	☑	
c) Were analytes detected in the equipment blank(s)?	☐	☐	☑	
d) Were analytes detected in the trip blank(s)?	☐	☑	☐	

Laboratory Control Sample (LCS)	YES	NO	NA	COMMENTS
a) Was a LCS analyzed once per SDG?	☑	☐	☐	
b) Were the proper compounds included in the LCS?	☑	☐	☐	
c) Was the LCS accuracy criteria met?	☐	☑	☐	carbon disulfide biased high RPD w/in limits

Duplicates	YES	NO	NA	COMMENTS
a) Were field duplicates collected (note original and duplicate sample names)?	☐	☑	☐	
b) Were field dup. precision criteria met (note RPD)?	☐	☐	☑	
c) Were lab duplicates analyzed (note original and duplicate samples)?	☐	☑	☐	
d) Were lab dup. precision criteria met (note RPD)?	☐	☐	☑	

Blind Standards	YES	NO	NA	COMMENTS
a) Was a blind standard used (indicate name, compounds included and concentrations)?	☐	☑	☐	
b) Was the %D within control limits?	☐	☐	☑	

Matrix Spike/Matrix Spike Duplicate (MS/MSD)	YES	NO	NA	COMMENTS
a) Was MS accuracy criteria met?	☑	☐	☐	
b) Recovery could not be calculated since sample contained high concentration of analyte?	☐	☑	☐	Cr, Zn, Ni not calculated due to Blank Contamination
c) Was MSD accuracy criteria met?	☑	☐	☐	
Recovery could not be calculated since sample contained high concentration of analyte?	☐	☑	☐	
d) Were MS/MSD precision criteria met?	☑	☐	☐	

Reagent Water Spike and Duplicate (RWS & RWSD)	YES	NO	NA	COMMENTS
a) Was RWS accuracy criteria met?	☐	☑	☐	
b) Was RWSD accuracy criteria met?	☐	☑	☐	
c) Was RWS/RWSD precision criteria met (RPD)?	☐	☑	☐	

Surrogate Spikes	YES	NO	NA	COMMENTS
a) Were surrogate recoveries within control limits?	☑	☐	☐	
b) Were surrogate recoveries not calculated due to dilutions?	☐	☑	☐	

Comments/Notes: Nitrate analyzed out of hold time by 6 hours, detections should be flagged as estimated (J)

Data Qualification:

Sample Name	Constituent(s)	Result	Qualifier	Reason
All	Nitrate	var.	J	out of hold time

Signature: _____ Date: 1/22/2010

QA LEVEL II - DATA EVALUATION CHECKLIST

Company Name: USACE
Project Name: Lamont Landfill
Reviewer: Kevin Nabaral

Project Manager: Zainul Kidwai
Project Number: NA
Validation Date: 1/22

Laboratory: Test America
SDG #: 680-52474-1
Analytical Method (type and no.): 8260B (8), 6020 (7), 300 (7) for Nitrate
Matrix: ☐ Air ☐ Soil/Sed. ☒ Water ☐ Waste ☐
Sample Names GW-LMW-Dup2, GW-LMW-8-11-09 (includes MS/MSD) GW-LMW-9-11-09, GW-LMW-9D-11-09, GW-LMW-3S-11-09 Trip Blank

NOTE: Please provide calculation in Comment areas or on the back (if on the back please indicate in comment areas).

Field Information	YES	NO	NA	COMMENTS
a) Sampling dates noted?	☑	☐	☐	
b) Sampling team indicated?	☑	☐	☐	
c) Sample location noted?	☑	☐	☐	
d) Sample depth indicated (Soils)?	☐	☐	☑	
e) Sample type indicated (grab/composite)?	☐	☑	☐	grab samples
f) Field QC noted?	☑	☐	☐	
g) Field parameters collected (note types)?	☑	☐	☐	pH, ORP, temp, turb, DO, cond.
h) Field Calibration within control limits?	☑	☐	☐	
i) Notations of unacceptable field conditions/performances from field logs or field notes?	☐	☑	☐	
j) Does the laboratory narrative indicate deficiencies:	☐	☐	☐	

Note Deficiencies: Nitrate by 300 recieved out of hold time

Chain-of-Custody (COC)	YES	NO	NA	COMMENTS
k) Was the COC properly completed?	☐	☑	☐	didn't mark grab
l) Was the COC signed by both field and laboratory personnel?	☑	☐	☐	
m) Were samples received in good condition?	☑	☐	☐	

General (Reference QAPP or Method)	YES	NO	NA	COMMENTS
a) Were hold times met for sample pretreatment?	☐	☑	☐	Nitrate out of hold
b) Were hold times met for sample analysis?	☐	☑	☐	SAA
c) Were the correct preservatives used?	☑	☐	☐	
d) Was the correct method used?	☑	☐	☐	
e) Were appropriate reporting limits achieved?	☑	☐	☐	
f) Were any sample dilutions noted?	☑	☐	☐	Nitrate 5x
g) Were any matrix problems noted?	☐	☑	☐	

Blanks	YES	NO	NA	COMMENTS
a) Were analytes detected in the method blank(s)?	☑	☐	☐	Cr + Sn @ estimated levels
b) Were analytes detected in the field blank(s)?	☐	☐	☑	0.423(J) 0.410(J)
c) Were analytes detected in the equipment blank(s)?	☐	☐	☑	
d) Were analytes detected in the trip blank(s)?	☐	☑	☐	

Laboratory Control Sample (LCS)	YES	NO	NA	COMMENTS
a) Was a LCS analyzed once per SDG?	☑	☐	☐	
b) Were the proper compounds included in the LCS?	☑	☐	☐	
c) Was the LCS accuracy criteria met?	☑	☐	☐	

Duplicates	YES	NO	NA	COMMENTS
a) Were field duplicates collected (note original and duplicate sample names)?	☑	☐	☐	GW-LMW-Dup1 / GW-LMW-8A-0
b) Were field dup. precision criteria met (note RPD)?	☑	☐	☐	
c) Were lab duplicates analyzed (note original and duplicate samples)?	☐	☑	☐	
d) Were lab dup. precision criteria met (note RPD)?	☐	☐	☑	

Blind Standards	YES	NO	NA	COMMENTS
a) Was a blind standard used (indicate name, compounds included and concentrations)?	☐	☑	☐	
b) Was the %D within control limits?	☐	☐	☑	

Matrix Spike/Matrix Spike Duplicate (MS/MSD)	YES	NO	NA	COMMENTS
a) Was MS accuracy criteria met?	☑	☐	☐	
b) Recovery could not be calculated since sample contained high concentration of analyte?	☐	☑	☐	
c) Was MSD accuracy criteria met?	☑	☐	☐	
Recovery could not be calculated since sample contained high concentration of analyte?	☐	☑	☐	
d) Were MS/MSD precision criteria met?	☑	☐	☐	

Reagent Water Spike and Duplicate (RWS & RWSD)	YES	NO	NA	COMMENTS
a) Was RWS accuracy criteria met?	☐	☑	☑	
b) Was RWSD accuracy criteria met?	☐	☐	☑	
c) Was RWS/RWSD precision criteria met (RPD)?	☐	☐	☑	

Surrogate Spikes	YES	NO	NA	COMMENTS
a) Were surrogate recoveries within control limits?	☑	☐	☐	
b) Were surrogate recoveries not calculated due to dilutions?	☐	☑	☐	

Comments/Notes:

Dup-1 Acetone 5.4J, xylenes 0.39J, Ba-2.7, Cr-0.51J, Co-0.13J
Cu-0.57J, Ni-0.41J, Zn-5.7J, Nitrate 0.40J
LMW-8 PCE 0.26J, TCE 0.19J, Ba-2.9, Cr-0.62J, Co-0.13J, Cu-0.59J
Ni-0.46J, Zn 7.0J, Nitrate 0.74J

Barium is w/in limits all others are detected @ estimated levels below the reporting limit

Several nitrate samples were analyzed out of hold time. Detection should be flagged (J) + non-detects (UJ).

Cr + Sn detected in blank, associated samples non-detect for Sn. Only Cr in GW-LMW-09D-11-09 detected above RL. Concentration is not 5x the blank so it should be flagged as estimated (J)

Data Qualification:

Sample Name	Constituent(s)	Result	Qualifier	Reason
~~Nitrate~~ A'				
All	Nitrate	var	J/UJ	out of hold time
GW-LMW-09D-11-09	Cr	1.1	J	detected in blank @ estimated levels

Signature: [signature] Date: 1/22/10

QA LEVEL II - DATA EVALUATION CHECKLIST

Company Name: USACE
Project Name: Lamont
Reviewer: Kevin Alabama
Laboratory: Test America
Analytical Method (type and no.): 8260B (5), 6020 (4), Nitrate by 300 (4)
Matrix: ☐ Air ☐ Soil/Sed. ☒ Water ☐ Waste ☐
Sample Names Trip Blank, GW-LMW-3-11-09, GW-LMW-4-11-09, GW-LMW-Dup2, GW-LMW-16-11-09

Project Manager: Zainul Kidwai
Project Number:
Validation Date: 1/22/10
SDG #: 680-52551-1

NOTE: Please provide calculation in Comment areas or on the back (if on the back please indicate in comment areas).

Field Information	YES	NO	NA	COMMENTS
a) Sampling dates noted?	☒	☐	☐	
b) Sampling team indicated?	☒	☐	☐	
c) Sample location noted?	☒	☐	☐	
d) Sample depth indicated (Soils)?	☐	☐	☒	
e) Sample type indicated (grab/composite)?	☒	☐	☐	
f) Field QC noted?	☒	☐	☐	
g) Field parameters collected (note types)?	☒	☐	☐	pH, ORP, temp, turb, cond, DO
h) Field Calibration within control limits?	☒	☐	☐	
i) Notations of unacceptable field conditions/performances from field logs or field notes?	☐	☒	☐	
j) Does the laboratory narrative indicate deficiencies:	☒	☐	☐	

Note Deficiencies: Nitrate recieved late so holding time expired for some samples, results were flagged

Chain-of-Custody (COC)	YES	NO	NA	COMMENTS
k) Was the COC properly completed?	☒	☐	☐	
l) Was the COC signed by both field and laboratory personnel?	☒	☐	☐	
m) Were samples received in good condition?	☒	☐	☐	

General (Reference QAPP or Method)	YES	NO	NA	COMMENTS
a) Were hold times met for sample pretreatment?	☐	☒	☐	Nitrate out in some samples
b) Were hold times met for sample analysis?	☐	☒	☐	SAA
c) Were the correct preservatives used?	☒	☐	☐	
d) Was the correct method used?	☒	☐	☐	
e) Were appropriate reporting limits achieved?	☒	☐	☐	
f) Were any sample dilutions noted?	☒	☐	☐	Nitrate 5x
g) Were any matrix problems noted?	☒	☐	☐	Zn PR out in MS/MSD by RPD w/in limits

Blanks	YES	NO	NA	COMMENTS
a) Were analytes detected in the method blank(s)?	☑	☐	☐	Cr + Zn @ estimated levels
b) Were analytes detected in the field blank(s)?	☐	☐	☑	0.268(J) + 3.87(J)
c) Were analytes detected in the equipment blank(s)?	☐	☐	☑	
d) Were analytes detected in the trip blank(s)?	☐	☑	☐	

Laboratory Control Sample (LCS)	YES	NO	NA	COMMENTS
a) Was a LCS analyzed once per SDG?	☑	☐	☐	
b) Were the proper compounds included in the LCS?	☑	☐	☐	
c) Was the LCS accuracy criteria met?	☐	☑	☐	carbon disulfide biased high

Duplicates	YES	NO	NA	COMMENTS
a) Were field duplicates collected (note original and duplicate sample names)?	☑	☐	☐	GW-LMW-16-11-09/ GW-LMW-Dup
b) Were field dup. precision criteria met (note RPD)?	☐	☑	☐	see noted
c) Were lab duplicates analyzed (note original and duplicate samples)?	☐	☑	☐	
d) Were lab dup. precision criteria met (note RPD)?	☐	☐	☑	

Blind Standards	YES	NO	NA	COMMENTS
a) Was a blind standard used (indicate name, compounds included and concentrations)?	☐	☑	☐	
b) Was the %D within control limits?	☐	☐	☑	

Matrix Spike/Matrix Spike Duplicate (MS/MSD)	YES	NO	NA	COMMENTS
a) Was MS accuracy criteria met?	☐	☑	☐	Zn biased low
b) Recovery could not be calculated since sample contained high concentration of analyte?	☐	☐	☑	
c) Was MSD accuracy criteria met?	☐	☑	☐	Zn biased low
Recovery could not be calculated since sample contained high concentration of analyte?	☐	☐	☑	
d) Were MS/MSD precision criteria met?	☑	☐	☐	

Reagent Water Spike and Duplicate (RWS & RWSD)	YES	NO	NA	COMMENTS
a) Was RWS accuracy criteria met?	☐	☐	☑	
b) Was RWSD accuracy criteria met?	☐	☐	☑	
c) Was RWS/RWSD precision criteria met (RPD)?	☐	☐	☑	

Surrogate Spikes	YES	NO	NA	COMMENTS
a) Were surrogate recoveries within control limits?	☑	☐	☐	
b) Were surrogate recoveries not calculated due to dilutions?	☐	☑	☐	

Comments/Notes:

Dup-2 Xylenes - 0.2(J), Ba - 12, Cr - 0.29J, Cu - 0.39J, Ni - 0.96
Se - 0.22(J), Zn - 6.5J,
LMW-16 ~~Arsenic~~ As - 0.59(J), Ba - 13, Cr - 0.53J, Co - 0.08J, Cu - 0.59J, Pb - 0.099
Ni - 0.66, Zn - 9.3J
Ba w/in limits Ni exceeds RPD, all other reported below RL @ estimated levels. Ni detection should be flagged as estimated in 16 + Dup-2

Data Qualification:

Sample Name	Constituent(s)	Result	Qualifier	Reason
GW-LMW-16-~~11~~-09	Ni	0.66	J	RPD exceeds limits
GW-LMW-Dup-2	Ni	0.96	J	

Signature: [signature] Date: 1/22/10

QA LEVEL II - DATA EVALUATION CHECKLIST

Company Name: USACE
Project Manager: Zainul Kidwai
Project Name: Lamont
Project Number:
Reviewer: Kevin Rabourn
Validation Date: 1/22/10
Laboratory: Test America
SDG #: 680-52693-1
Analytical Method (type and no.): 8260B (3), 6020 (3), Nitrate by 300 (3)
Matrix: ☐ Air ☐ Soil/Sed. ☒ Water ☐ Waste ☐
Sample Names GW-LMW-6-11-09, GW-LMW-10-11-09, ~~GW-LMW-10~~ GW-Blank-11-09

NOTE: Please provide calculation in Comment areas or on the back (if on the back please indicate in comment areas).

Field Information	YES	NO	NA	COMMENTS
a) Sampling dates noted?	☑	☐	☐	
b) Sampling team indicated?	☑	☐	☐	
c) Sample location noted?	☑	☐	☐	
d) Sample depth indicated (Soils)?	☐	☐	☑	
e) Sample type indicated (grab/composite)?	☑	☐	☐	
f) Field QC noted?	☑	☐	☐	
g) Field parameters collected (note types)?	☑	☐	☐	pH, cond, turb, DO, ORP, temp
h) Field Calibration within control limits?	☑	☐	☐	
i) Notations of unacceptable field conditions/performances from field logs or field notes?	☐	☑	☐	
j) Does the laboratory narrative indicate deficiencies:	☐	☐	☐	

Note Deficiencies: LCS failed for Nitrate, reanalyzed outside of hold time both sets of data reported

Chain-of-Custody (COC)	YES	NO	NA	COMMENTS
k) Was the COC properly completed?	☑	☑	☐	Trip Blank listed but not included w/ shipment
l) Was the COC signed by both field and laboratory personnel?	☑	☐	☐	
m) Were samples received in good condition?	☑	☐	☐	

General (Reference QAPP or Method)	YES	NO	NA	COMMENTS
a) Were hold times met for sample pretreatment?	☑	☐	☐	
b) Were hold times met for sample analysis?	☑	☐	☐	
c) Were the correct preservatives used?	☑	☐	☐	
d) Was the correct method used?	☑	☐	☐	
e) Were appropriate reporting limits achieved?	☑	☐	☐	
f) Were any sample dilutions noted?	☑	☐	☐	Nitrate 5x
g) Were any matrix problems noted?	☐	☑	☐	

Blanks	YES	NO	NA	COMMENTS
a) Were analytes detected in the method blank(s)?	☐	☑	☐	
b) Were analytes detected in the field blank(s)?	☑ KH	☐	☑	acetone, MEK, Zn @ estimated level
c) Were analytes detected in the equipment blank(s)?	☑	☐	☑	
d) Were analytes detected in the trip blank(s)?	☐	☐	☑	

Laboratory Control Sample (LCS)	YES	NO	NA	COMMENTS
a) Was a LCS analyzed once per SDG?	☑	☐	☐	
b) Were the proper compounds included in the LCS?	☑	☐	☐	
c) Was the LCS accuracy criteria met?	☐	☑	☐	Nitrate out, sample remn out of hold ~~both data~~ reported

Duplicates	YES	NO	NA	COMMENTS
a) Were field duplicates collected (note original and duplicate sample names)?	☐	☑	☐	
b) Were field dup. precision criteria met (note RPD)?	☐	☐	☑	
c) Were lab duplicates analyzed (note original and duplicate samples)?	☐	☑	☐	
d) Were lab dup. precision criteria met (note RPD)?	☐	☐	☑	

Blind Standards	YES	NO	NA	COMMENTS
a) Was a blind standard used (indicate name, compounds included and concentrations)?	☐	☑	☐	
b) Was the %D within control limits?	☐	☐	☑	

Matrix Spike/Matrix Spike Duplicate (MS/MSD)	YES	NO	NA	COMMENTS
a) Was MS accuracy criteria met?	☑	☐	☐	
b) Recovery could not be calculated since sample contained high concentration of analyte?	☐	☐	☑	
c) Was MSD accuracy criteria met?	☐	☐	☑	
Recovery could not be calculated since sample contained high concentration of analyte?	☐	☐	☑	
d) Were MS/MSD precision criteria met?	☐	☐	☑	

Reagent Water Spike and Duplicate (RWS & RWSD)	YES	NO	NA	COMMENTS
a) Was RWS accuracy criteria met?	☐	☐	☑	
b) Was RWSD accuracy criteria met?	☐	☐	☑	
c) Was RWS/RWSD precision criteria met (RPD)?	☐	☐	☑	

Surrogate Spikes	YES	NO	NA	COMMENTS
a) Were surrogate recoveries within control limits?	☑	☐	☐	
b) Were surrogate recoveries not calculated due to dilutions?	☐	☑	☐	

Comments/Notes: Ag, Cr, Acetone, MEK & Zn were detected in the blank @ estimated levels. The associated samples were non-detect for acetone & MEK and had Zn present @ > 20 RL. No qualification necessary

Data Qualification:

Sample Name	Constituent(s)	Result	Qualifier	Reason

Signature: [signature] Date: 1/22/10

APPENDIX C

CHAIN OF CUSTODY AND LABORATORY ANALYTICAL REPORTS

(Electronic Only)

ANALYTICAL REPORT

Job Number: 680-52429-1

Job Description: Ft. Bragg Lamont Landfill

For:
U.S. Army Corps of Engineers
PO BOX 889
Savannah, GA 31402-0889

Attention: Mr. Kevin Haborak

Approved for release.
Terry Hornsby
Project Manager I
11/25/2009 9:48 AM

Terry Hornsby
Project Manager I
terry.hornsby@testamericainc.com
11/25/2009

cc: Mr. Judson Smith

The test results in this report meet NELAP requirements for parameters for which accreditation is required or available. Any exceptions to the NELAP requirements are noted. Results pertain only to samples listed in this report. This report may not be reproduced, except in full, without the written approval of the laboratory. Questions should be directed to the person who signed this report.

Savannah Certifications and ID #s: A2LA: 0399.01; AL: 41450; ARDEQ: 88-0692; ARDOH; CA: 03217CA; CO; CT: PH0161; DE; FL: E87052; GA: 803; Guam; HI; IL: 200022; IN; IA: 353; KS: E-10322; KY EPPC: 90084; KY UST; LA DEQ: 30690; LA DHH: LA080008; ME: 2008022; MD: 250; MA: M-GA006; MI: 9925; MS; NFESC: 249; NV: GA00006; NJ: GA769; NM; NY: 10842; NC DWQ: 269; NC DHHS: 13701; PA: 68-00474; PR: GA00006; RI: LAO00244; SC: 98001001; TN: TN0296; TX: T104704185; USEPA: GA00006; VT: VT-87052; VA: 00302; WA; WV DEP: 094; WV DHHR: 9950 C; WI DNR: 999819810; WY/EPAR8: 8TMS-Q

Job Narrative
680-52429-1

Receipt
All samples were received in good condition within temperature requirements.

GC/MS VOA
No analytical or quality issues were noted.

Metals
Method 6020: The instrument blank for analytical batch 152979 contained Zn greater than one-half the reporting limit (RL). The data have been qualified and reported.

No other analytical or quality issues were noted.

General Chemistry
Method 300.0: The following samples were received with greater than 50% of holding time expired: GW-LMW-14R-11-09 (680-52429-2), GW-LMW-15R-11-09 (680-52429-1), and GW-LMW-9S-11-09 (680-52429-3). As such, the laboratory had insufficient time remaining to perform the analysis within holding time.

No other analytical or quality issues were noted.

VOA Prep
No analytical or quality issues were noted.

METHOD / ANALYST SUMMARY

Client: U.S. Army Corps of Engineers

Job Number: 680-52429-1

Method	Analyst	Analyst ID
SW846 8260B	Bearden, Robert	RB
SW846 6020	Boyuk, Brian	BB
MCAWW 300.0	Campbell, Sophia M	SMC

SAMPLE SUMMARY

Client: U.S. Army Corps of Engineers

Job Number: 680-52429-1

Lab Sample ID	Client Sample ID	Client Matrix	Date/Time Sampled	Date/Time Received
680-52429-1	GW-LMW-15R-11-09	Water	11/08/2009 1117	11/10/2009 0917
680-52429-2	GW-LMW-14R-11-09	Water	11/08/2009 1228	11/10/2009 0917
680-52429-3	GW-LMW-9S-11-09	Water	11/08/2009 1622	11/10/2009 0917
680-52429-4	Trip Blank	Water	11/08/2009 0000	11/10/2009 0917

Client: U.S. Army Corps of Engineers

Job Number: 680-52429-1

Client Sample ID: **GW-LMW-15R-11-09**

Lab Sample ID: 680-52429-1

Client Matrix: Water

Date Sampled: 11/08/2009 1117

Date Received: 11/10/2009 0917

8260B Volatile Organic Compounds (GC/MS)

Method:	8260B	Analysis Batch: 680-153862	Instrument ID:	MSO2
Preparation:	5030B		Lab File ID:	o3024.d
Dilution:	1.0		Initial Weight/Volume:	5 mL
Date Analyzed:	11/18/2009 1646		Final Weight/Volume:	5 mL
Date Prepared:	11/18/2009 1646			

Analyte	Result (ug/L)	Qualifier	MDL	RL
Acetone	5.0	U	5.0	25
Acetonitrile	10	U	10	40
Acrolein	7.4	U	7.4	20
Acrylonitrile	7.2	U	7.2	20
Benzene	0.25	U	0.25	1.0
Bromoform	0.50	U	0.50	1.0
Bromomethane	0.80	U	0.80	1.0
2-Butanone (MEK)	1.0	U	1.0	10
Carbon disulfide	0.60	U	0.60	2.0
Carbon tetrachloride	0.50	U	0.50	1.0
Chlorobenzene	0.25	U	0.25	1.0
2-Chloro-1,3-butadiene	0.30	U	0.30	1.0
Chlorodibromomethane	0.10	U	0.10	1.0
Chloroethane	1.0	U	1.0	1.0
Chloroform	0.14	U	0.14	1.0
Chloromethane	0.33	U	0.33	1.0
3-Chloro-1-propene	0.20	U	0.20	1.0
cis-1,3-Dichloropropene	0.11	U	0.11	1.0
1,2-Dibromo-3-Chloropropane	0.44	U	0.44	1.0
Dibromomethane	0.20	U	0.20	1.0
Dichlorobromomethane	0.25	U	0.25	1.0
Dichlorodifluoromethane	0.25	U	0.25	1.0
1,1-Dichloroethane	0.25	U	0.25	1.0
1,2-Dichloroethane	0.10	U	0.10	1.0
1,1-Dichloroethene	0.11	U	0.11	1.0
1,2-Dichloropropane	0.13	U	0.13	1.0
Ethylbenzene	0.11	U	0.11	1.0
Ethylene Dibromide	0.25	U	0.25	1.0
Ethyl methacrylate	0.25	U	0.25	1.0
2-Hexanone	1.0	U	1.0	10
Iodomethane	1.0	U	1.0	5.0
Isobutyl alcohol	11	U	11	40
Methacrylonitrile	3.3	U	3.3	20
Methylene Chloride	1.0	U	1.0	5.0
Methyl methacrylate	0.48	U	0.48	1.0
4-Methyl-2-pentanone (MIBK)	1.0	U	1.0	10
Pentachloroethane	1.2	U	1.2	5.0
Propionitrile	4.6	U	4.6	20
Styrene	0.11	U	0.11	1.0
1,1,1,2-Tetrachloroethane	0.33	U	0.33	1.0
1,1,2,2-Tetrachloroethane	0.18	U	0.18	1.0
Tetrachloroethene	0.15	U	0.15	1.0
Toluene	0.33	U	0.33	1.0
trans-1,4-Dichloro-2-butene	0.50	U	0.50	2.0
trans-1,2-Dichloroethene	0.20	U	0.20	1.0
trans-1,3-Dichloropropene	0.21	U	0.21	1.0

Client: U.S. Army Corps of Engineers

Job Number: 680-52429-1

Client Sample ID: **GW-LMW-15R-11-09**

Lab Sample ID: 680-52429-1

Client Matrix: Water

Date Sampled: 11/08/2009 1117

Date Received: 11/10/2009 0917

8260B Volatile Organic Compounds (GC/MS)

Method:	8260B	Analysis Batch: 680-153862	Instrument ID:	MSO2
Preparation:	5030B		Lab File ID:	o3024.d
Dilution:	1.0		Initial Weight/Volume:	5 mL
Date Analyzed:	11/18/2009 1646		Final Weight/Volume:	5 mL
Date Prepared:	11/18/2009 1646			

Analyte	Result (ug/L)	Qualifier	MDL	RL
1,1,1-Trichloroethane	0.50	U	0.50	1.0
1,1,2-Trichloroethane	0.13	U	0.13	1.0
Trichloroethene	0.13	U	0.13	1.0
Trichlorofluoromethane	0.25	U	0.25	1.0
1,2,3-Trichloropropane	0.41	U	0.41	1.0
Vinyl acetate	0.28	U	0.28	2.0
Vinyl chloride	0.18	U	0.18	1.0
Xylenes, Total	0.20	U	0.20	2.0

Surrogate	%Rec	Qualifier	Acceptance Limits
4-Bromofluorobenzene	95		75 - 120
Dibromofluoromethane	99		75 - 121
Toluene-d8 (Surr)	102		75 - 120

Client: U.S. Army Corps of Engineers

Job Number: 680-52429-1

Client Sample ID: **GW-LMW-14R-11-09**

Lab Sample ID: 680-52429-2

Client Matrix: Water

Date Sampled: 11/08/2009 1228

Date Received: 11/10/2009 0917

8260B Volatile Organic Compounds (GC/MS)

Method:	8260B	Analysis Batch: 680-153862	Instrument ID:	MSO2
Preparation:	5030B		Lab File ID:	o3026.d
Dilution:	1.0		Initial Weight/Volume:	5 mL
Date Analyzed:	11/18/2009 1716		Final Weight/Volume:	5 mL
Date Prepared:	11/18/2009 1716			

Analyte	Result (ug/L)	Qualifier	MDL	RL
Acetone	5.0	U	5.0	25
Acetonitrile	10	U	10	40
Acrolein	7.4	U	7.4	20
Acrylonitrile	7.2	U	7.2	20
Benzene	0.25	U	0.25	1.0
Bromoform	0.50	U	0.50	1.0
Bromomethane	0.80	U	0.80	1.0
2-Butanone (MEK)	1.0	U	1.0	10
Carbon disulfide	0.60	U	0.60	2.0
Carbon tetrachloride	0.50	U	0.50	1.0
Chlorobenzene	0.25	U	0.25	1.0
2-Chloro-1,3-butadiene	0.30	U	0.30	1.0
Chlorodibromomethane	0.10	U	0.10	1.0
Chloroethane	1.0	U	1.0	1.0
Chloroform	0.14	U	0.14	1.0
Chloromethane	0.33	U	0.33	1.0
3-Chloro-1-propene	0.20	U	0.20	1.0
cis-1,3-Dichloropropene	0.11	U	0.11	1.0
1,2-Dibromo-3-Chloropropane	0.44	U	0.44	1.0
Dibromomethane	0.20	U	0.20	1.0
Dichlorobromomethane	0.25	U	0.25	1.0
Dichlorodifluoromethane	0.25	U	0.25	1.0
1,1-Dichloroethane	0.25	U	0.25	1.0
1,2-Dichloroethane	0.10	U	0.10	1.0
1,1-Dichloroethene	0.11	U	0.11	1.0
1,2-Dichloropropane	0.13	U	0.13	1.0
Ethylbenzene	0.11	U	0.11	1.0
Ethylene Dibromide	0.25	U	0.25	1.0
Ethyl methacrylate	0.25	U	0.25	1.0
2-Hexanone	1.0	U	1.0	10
Iodomethane	1.0	U	1.0	5.0
Isobutyl alcohol	11	U	11	40
Methacrylonitrile	3.3	U	3.3	20
Methylene Chloride	1.0	U	1.0	5.0
Methyl methacrylate	0.48	U	0.48	1.0
4-Methyl-2-pentanone (MIBK)	1.0	U	1.0	10
Pentachloroethane	1.2	U	1.2	5.0
Propionitrile	4.6	U	4.6	20
Styrene	0.11	U	0.11	1.0
1,1,1,2-Tetrachloroethane	0.33	U	0.33	1.0
1,1,2,2-Tetrachloroethane	0.18	U	0.18	1.0
Tetrachloroethene	0.15	U	0.15	1.0
Toluene	0.33	U	0.33	1.0
trans-1,4-Dichloro-2-butene	0.50	U	0.50	2.0
trans-1,2-Dichloroethene	0.20	U	0.20	1.0
trans-1,3-Dichloropropene	0.21	U	0.21	1.0

Client: U.S. Army Corps of Engineers

Job Number: 680-52429-1

Client Sample ID: **GW-LMW-14R-11-09**

Lab Sample ID: 680-52429-2

Client Matrix: Water

Date Sampled: 11/08/2009 1228

Date Received: 11/10/2009 0917

8260B Volatile Organic Compounds (GC/MS)

Method:	8260B	Analysis Batch: 680-153862	Instrument ID:	MSO2
Preparation:	5030B		Lab File ID:	o3026.d
Dilution:	1.0		Initial Weight/Volume:	5 mL
Date Analyzed:	11/18/2009 1716		Final Weight/Volume:	5 mL
Date Prepared:	11/18/2009 1716			

Analyte	Result (ug/L)	Qualifier	MDL	RL
1,1,1-Trichloroethane	0.50	U	0.50	1.0
1,1,2-Trichloroethane	0.13	U	0.13	1.0
Trichloroethene	0.13	U	0.13	1.0
Trichlorofluoromethane	0.25	U	0.25	1.0
1,2,3-Trichloropropane	0.41	U	0.41	1.0
Vinyl acetate	0.28	U	0.28	2.0
Vinyl chloride	0.18	U	0.18	1.0
Xylenes, Total	0.20	U	0.20	2.0

Surrogate	%Rec	Qualifier	Acceptance Limits
4-Bromofluorobenzene	96		75 - 120
Dibromofluoromethane	102		75 - 121
Toluene-d8 (Surr)	101		75 - 120

Client: U.S. Army Corps of Engineers

Job Number: 680-52429-1

Client Sample ID: **GW-LMW-9S-11-09**

Lab Sample ID: 680-52429-3

Client Matrix: Water

Date Sampled: 11/08/2009 1622

Date Received: 11/10/2009 0917

8260B Volatile Organic Compounds (GC/MS)

Method: 8260B

Preparation: 5030B

Dilution: 1.0

Date Analyzed: 11/18/2009 1745

Date Prepared: 11/18/2009 1745

Analysis Batch: 680-153862

Instrument ID: MSO2

Lab File ID: o3028.d

Initial Weight/Volume: 5 mL

Final Weight/Volume: 5 mL

Analyte	Result (ug/L)	Qualifier	MDL	RL
Acetone	5.0	U	5.0	25
Acetonitrile	10	U	10	40
Acrolein	7.4	U	7.4	20
Acrylonitrile	7.2	U	7.2	20
Benzene	0.25	U	0.25	1.0
Bromoform	0.50	U	0.50	1.0
Bromomethane	0.80	U	0.80	1.0
2-Butanone (MEK)	1.0	U	1.0	10
Carbon disulfide	0.60	U	0.60	2.0
Carbon tetrachloride	0.50	U	0.50	1.0
Chlorobenzene	0.25	U	0.25	1.0
2-Chloro-1,3-butadiene	0.30	U	0.30	1.0
Chlorodibromomethane	0.10	U	0.10	1.0
Chloroethane	1.0	U	1.0	1.0
Chloroform	0.14	U	0.14	1.0
Chloromethane	0.33	U	0.33	1.0
3-Chloro-1-propene	0.20	U	0.20	1.0
cis-1,3-Dichloropropene	0.11	U	0.11	1.0
1,2-Dibromo-3-Chloropropane	0.44	U	0.44	1.0
Dibromomethane	0.20	U	0.20	1.0
Dichlorobromomethane	0.25	U	0.25	1.0
Dichlorodifluoromethane	0.25	U	0.25	1.0
1,1-Dichloroethane	0.25	U	0.25	1.0
1,2-Dichloroethane	0.10	U	0.10	1.0
1,1-Dichloroethene	0.11	U	0.11	1.0
1,2-Dichloropropane	0.13	U	0.13	1.0
Ethylbenzene	0.11	U	0.11	1.0
Ethylene Dibromide	0.25	U	0.25	1.0
Ethyl methacrylate	0.25	U	0.25	1.0
2-Hexanone	1.0	U	1.0	10
Iodomethane	1.0	U	1.0	5.0
Isobutyl alcohol	11	U	11	40
Methacrylonitrile	3.3	U	3.3	20
Methylene Chloride	1.0	U	1.0	5.0
Methyl methacrylate	0.48	U	0.48	1.0
4-Methyl-2-pentanone (MIBK)	1.0	U	1.0	10
Pentachloroethane	1.2	U	1.2	5.0
Propionitrile	4.6	U	4.6	20
Styrene	0.11	U	0.11	1.0
1,1,1,2-Tetrachloroethane	0.33	U	0.33	1.0
1,1,2,2-Tetrachloroethane	0.18	U	0.18	1.0
Tetrachloroethene	0.15	U	0.15	1.0
Toluene	0.33	U	0.33	1.0
trans-1,4-Dichloro-2-butene	0.50	U	0.50	2.0
trans-1,2-Dichloroethene	0.20	U	0.20	1.0
trans-1,3-Dichloropropene	0.21	U	0.21	1.0

Client: U.S. Army Corps of Engineers

Job Number: 680-52429-1

Client Sample ID: **GW-LMW-9S-11-09**

Lab Sample ID: 680-52429-3

Client Matrix: Water

Date Sampled: 11/08/2009 1622

Date Received: 11/10/2009 0917

8260B Volatile Organic Compounds (GC/MS)

Method:	8260B	Analysis Batch: 680-153862	Instrument ID:	MSO2
Preparation:	5030B		Lab File ID:	o3028.d
Dilution:	1.0		Initial Weight/Volume:	5 mL
Date Analyzed:	11/18/2009 1745		Final Weight/Volume:	5 mL
Date Prepared:	11/18/2009 1745			

Analyte	Result (ug/L)	Qualifier	MDL	RL
1,1,1-Trichloroethane	0.50	U	0.50	1.0
1,1,2-Trichloroethane	0.13	U	0.13	1.0
Trichloroethene	0.13	U	0.13	1.0
Trichlorofluoromethane	0.25	U	0.25	1.0
1,2,3-Trichloropropane	0.41	U	0.41	1.0
Vinyl acetate	0.28	U	0.28	2.0
Vinyl chloride	0.18	U	0.18	1.0
Xylenes, Total	0.20	U	0.20	2.0

Surrogate	%Rec	Qualifier	Acceptance Limits
4-Bromofluorobenzene	95		75 - 120
Dibromofluoromethane	99		75 - 121
Toluene-d8 (Surr)	97		75 - 120

Client: U.S. Army Corps of Engineers

Job Number: 680-52429-1

Client Sample ID: **Trip Blank**

Lab Sample ID: 680-52429-4

Client Matrix: Water

Date Sampled: 11/08/2009 0000

Date Received: 11/10/2009 0917

8260B Volatile Organic Compounds (GC/MS)

Method: 8260B

Preparation: 5030B

Dilution: 1.0

Date Analyzed: 11/12/2009 1544

Date Prepared: 11/12/2009 1544

Analysis Batch: 680-153299

Instrument ID: MSO2

Lab File ID: o2790.d

Initial Weight/Volume: 5 mL

Final Weight/Volume: 5 mL

Analyte	Result (ug/L)	Qualifier	MDL	RL
Acetone	5.0	U	5.0	25
Acetonitrile	10	U	10	40
Acrolein	7.4	U	7.4	20
Acrylonitrile	7.2	U	7.2	20
Benzene	0.25	U	0.25	1.0
Bromoform	0.50	U	0.50	1.0
Bromomethane	0.80	U	0.80	1.0
2-Butanone (MEK)	1.0	U	1.0	10
Carbon disulfide	0.60	U Q	0.60	2.0
Carbon tetrachloride	0.50	U	0.50	1.0
Chlorobenzene	0.25	U	0.25	1.0
2-Chloro-1,3-butadiene	0.30	U	0.30	1.0
Chlorodibromomethane	0.10	U	0.10	1.0
Chloroethane	1.0	U	1.0	1.0
Chloroform	0.14	U	0.14	1.0
Chloromethane	0.33	U	0.33	1.0
3-Chloro-1-propene	0.20	U	0.20	1.0
cis-1,3-Dichloropropene	0.11	U	0.11	1.0
1,2-Dibromo-3-Chloropropane	0.44	U	0.44	1.0
Dibromomethane	0.20	U	0.20	1.0
Dichlorobromomethane	0.25	U	0.25	1.0
Dichlorodifluoromethane	0.25	U	0.25	1.0
1,1-Dichloroethane	0.25	U	0.25	1.0
1,2-Dichloroethane	0.10	U	0.10	1.0
1,1-Dichloroethene	0.11	U	0.11	1.0
1,2-Dichloropropane	0.13	U	0.13	1.0
Ethylbenzene	0.11	U	0.11	1.0
Ethylene Dibromide	0.25	U	0.25	1.0
Ethyl methacrylate	0.25	U	0.25	1.0
2-Hexanone	1.0	U	1.0	10
Iodomethane	1.0	U	1.0	5.0
Isobutyl alcohol	11	U	11	40
Methacrylonitrile	3.3	U	3.3	20
Methylene Chloride	1.0	U	1.0	5.0
Methyl methacrylate	0.48	U	0.48	1.0
4-Methyl-2-pentanone (MIBK)	1.0	U	1.0	10
Pentachloroethane	1.2	U	1.2	5.0
Propionitrile	4.6	U	4.6	20
Styrene	0.11	U	0.11	1.0
1,1,1,2-Tetrachloroethane	0.33	U	0.33	1.0
1,1,2,2-Tetrachloroethane	0.18	U	0.18	1.0
Tetrachloroethene	0.15	U	0.15	1.0
Toluene	0.33	U	0.33	1.0
trans-1,4-Dichloro-2-butene	0.50	U	0.50	2.0
trans-1,2-Dichloroethene	0.20	U	0.20	1.0
trans-1,3-Dichloropropene	0.21	U	0.21	1.0

Client: U.S. Army Corps of Engineers

Job Number: 680-52429-1

Client Sample ID: **Trip Blank**

Lab Sample ID: 680-52429-4

Client Matrix: Water

Date Sampled: 11/08/2009 0000

Date Received: 11/10/2009 0917

8260B Volatile Organic Compounds (GC/MS)

Method:	8260B	Analysis Batch: 680-153299	Instrument ID:	MSO2
Preparation:	5030B		Lab File ID:	o2790.d
Dilution:	1.0		Initial Weight/Volume:	5 mL
Date Analyzed:	11/12/2009 1544		Final Weight/Volume:	5 mL
Date Prepared:	11/12/2009 1544			

Analyte	Result (ug/L)	Qualifier	MDL	RL
1,1,1-Trichloroethane	0.50	U	0.50	1.0
1,1,2-Trichloroethane	0.13	U	0.13	1.0
Trichloroethene	0.13	U	0.13	1.0
Trichlorofluoromethane	0.25	U	0.25	1.0
1,2,3-Trichloropropane	0.41	U	0.41	1.0
Vinyl acetate	0.28	U	0.28	2.0
Vinyl chloride	0.18	U	0.18	1.0
Xylenes, Total	0.20	U	0.20	2.0

Surrogate	%Rec	Qualifier	Acceptance Limits
4-Bromofluorobenzene	103		75 - 120
Dibromofluoromethane	96		75 - 121
Toluene-d8 (Surr)	105		75 - 120

Client: U.S. Army Corps of Engineers

Job Number: 680-52429-1

Client Sample ID: **GW-LMW-15R-11-09**

Lab Sample ID: 680-52429-1

Client Matrix: Water

Date Sampled: 11/08/2009 1117

Date Received: 11/10/2009 0917

6020 Inductively Coupled Plasma - Mass Spectrometry

Method:	6020	Analysis Batch: 680-153893		Instrument ID:	ICPMSA
Preparation:	3030C	Prep Batch: 680-152979		Lab File ID:	N/A
Dilution:	1.0			Initial Weight/Volume:	50 mL
Date Analyzed:	11/16/2009 2044			Final Weight/Volume:	50 mL
Date Prepared:	11/10/2009 1505				

Analyte	Result (ug/L)	Qualifier	MDL	RL
Antimony	0.99	U	0.99	2.0
Arsenic	0.40	U	0.40	1.0
Barium	14		0.15	1.0
Beryllium	0.070	U	0.070	0.20
Cadmium	0.20	U	0.20	0.50
Chromium	0.16	J B	0.16	1.0
Cobalt	0.26		0.078	0.20
Copper	0.57	J	0.21	1.0
Lead	0.080	U	0.080	0.30
Nickel	0.80	J B	0.20	2.0
Selenium	0.21	U	0.21	0.50
Silver	0.10	U	0.10	0.20
Thallium	0.10	U	0.10	0.20
Tin	0.40	U	0.40	1.0
Vanadium	1.4	U	1.4	5.0

Method:	6020	Analysis Batch: 680-153965		Instrument ID:	ICPMSA
Preparation:	3030C	Prep Batch: 680-152979		Lab File ID:	N/A
Dilution:	1.0			Initial Weight/Volume:	50 mL
Date Analyzed:	11/18/2009 1632			Final Weight/Volume:	50 mL
Date Prepared:	11/10/2009 1505				

Analyte	Result (ug/L)	Qualifier	MDL	RL
Zinc	9.1	J B	2.6	10

Client: U.S. Army Corps of Engineers

Job Number: 680-52429-1

Client Sample ID: **GW-LMW-14R-11-09**

Lab Sample ID: 680-52429-2

Client Matrix: Water

Date Sampled: 11/08/2009 1228

Date Received: 11/10/2009 0917

6020 Inductively Coupled Plasma - Mass Spectrometry

Method:	6020	Analysis Batch: 680-153893		Instrument ID:	ICPMSA
Preparation:	3030C	Prep Batch: 680-152979		Lab File ID:	N/A
Dilution:	1.0			Initial Weight/Volume:	50 mL
Date Analyzed:	11/16/2009 2119			Final Weight/Volume:	50 mL
Date Prepared:	11/10/2009 1505				

Analyte	Result (ug/L)	Qualifier	MDL	RL
Antimony	0.99	U	0.99	2.0
Arsenic	0.40	U	0.40	1.0
Barium	12		0.15	1.0
Beryllium	0.070	U	0.070	0.20
Cadmium	0.20	U	0.20	0.50
Chromium	0.53	J B	0.16	1.0
Cobalt	0.30		0.078	0.20
Copper	0.92	J	0.21	1.0
Lead	0.14	J	0.080	0.30
Nickel	1.6	J B	0.20	2.0
Selenium	0.21	U	0.21	0.50
Silver	0.10	U	0.10	0.20
Thallium	0.17	J	0.10	0.20
Tin	0.40	U	0.40	1.0
Vanadium	1.4	U	1.4	5.0

Method:	6020	Analysis Batch: 680-153965		Instrument ID:	ICPMSA
Preparation:	3030C	Prep Batch: 680-152979		Lab File ID:	N/A
Dilution:	1.0			Initial Weight/Volume:	50 mL
Date Analyzed:	11/18/2009 1707			Final Weight/Volume:	50 mL
Date Prepared:	11/10/2009 1505				

Analyte	Result (ug/L)	Qualifier	MDL	RL
Zinc	26	B	2.6	10

Client: U.S. Army Corps of Engineers

Job Number: 680-52429-1

Client Sample ID: **GW-LMW-9S-11-09**

Lab Sample ID: 680-52429-3

Client Matrix: Water

Date Sampled: 11/08/2009 1622

Date Received: 11/10/2009 0917

6020 Inductively Coupled Plasma - Mass Spectrometry

Method:	6020	Analysis Batch: 680-153893		Instrument ID:	ICPMSA
Preparation:	3030C	Prep Batch: 680-152979		Lab File ID:	N/A
Dilution:	1.0			Initial Weight/Volume:	50 mL
Date Analyzed:	11/16/2009 2126			Final Weight/Volume:	50 mL
Date Prepared:	11/10/2009 1505				

Analyte	Result (ug/L)	Qualifier	MDL	RL
Antimony	0.99	U	0.99	2.0
Arsenic	0.47	J	0.40	1.0
Barium	48		0.15	1.0
Beryllium	0.070	U	0.070	0.20
Cadmium	0.20	U	0.20	0.50
Chromium	0.44	J B	0.16	1.0
Cobalt	0.25		0.078	0.20
Copper	1.7		0.21	1.0
Lead	0.21	J	0.080	0.30
Nickel	0.97	J B	0.20	2.0
Selenium	0.21	U	0.21	0.50
Silver	0.10	U	0.10	0.20
Thallium	0.10	U	0.10	0.20
Tin	0.40	U	0.40	1.0
Vanadium	1.4	U	1.4	5.0

Method:	6020	Analysis Batch: 680-153965		Instrument ID:	ICPMSA
Preparation:	3030C	Prep Batch: 680-152979		Lab File ID:	N/A
Dilution:	1.0			Initial Weight/Volume:	50 mL
Date Analyzed:	11/18/2009 1713			Final Weight/Volume:	50 mL
Date Prepared:	11/10/2009 1505				

Analyte	Result (ug/L)	Qualifier	MDL	RL
Zinc	15	B	2.6	10

General Chemistry

Client Sample ID: **GW-LMW-15R-11-09**

Lab Sample ID: 680-52429-1

Client Matrix: Water

Date Sampled: 11/08/2009 1117

Date Received: 11/10/2009 0917

Analyte	Result	Qual	Units	MDL	RL	Dil	Method
Nitrate as NO3	7.3	H	mg/L	0.36	1.1	5.0	300.0

Analysis Batch: 680-153085 Date Analyzed: 11/10/2009 2154

General Chemistry

Client Sample ID: **GW-LMW-14R-11-09**

Lab Sample ID: 680-52429-2

Client Matrix: Water

Date Sampled: 11/08/2009 1228

Date Received: 11/10/2009 0917

Analyte	Result	Qual	Units	MDL	RL	Dil	Method
Nitrate as NO3	0.36	U M H	mg/L	0.36	1.1	5.0	300.0

Analysis Batch: 680-153085 Date Analyzed: 11/10/2009 2218

General Chemistry

Client Sample ID: **GW-LMW-9S-11-09**

Lab Sample ID: 680-52429-3

Client Matrix: Water

Date Sampled: 11/08/2009 1622

Date Received: 11/10/2009 0917

Analyte	Result	Qual	Units	MDL	RL	Dil	Method
Nitrate as NO3	0.77	J M H	mg/L	0.36	1.1	5.0	300.0

Analysis Batch: 680-153085 Date Analyzed: 11/10/2009 2230

DATA REPORTING QUALIFIERS

Client: U.S. Army Corps of Engineers

Job Number: 680-52429-1

Lab Section	Qualifier	Description
GC/MS VOA		
	Q	One or more quality control criteria failed.
	U	Undetected at the Limit of Detection.
Metals		
	B	Blank contamination: The analyte was detected above one-half the reporting limit in an associated blank.
	J	Estimated: The analyte was positively identified; the quantitation is an estimation
	U	Undetected at the Limit of Detection.
General Chemistry		
	J	Estimated: The analyte was positively identified; the quantitation is an estimation
	M	Manual integrated compound.
	H	Sample was prepped or analyzed beyond the specified holding time
	U	Undetected at the Limit of Detection.

Client: U.S. Army Corps of Engineers

Job Number: 680-52429-1

Method Blank - Batch: 680-153299

Method: 8260B
Preparation: 5030B

Lab Sample ID: MB 680-153299/10
Client Matrix: Water
Dilution: 1.0
Date Analyzed: 11/12/2009 1433
Date Prepared: 11/12/2009 1433

Analysis Batch: 680-153299
Prep Batch: N/A
Units: ug/L

Instrument ID: GC/MS Volatiles - O C2
Lab File ID: oq166.d
Initial Weight/Volume: 5 mL
Final Weight/Volume: 5 mL

Analyte	Result	Qual	MDL	RL
Acetone	5.0	U	5.0	25
Acetonitrile	10	U	10	40
Acrolein	7.4	U	7.4	20
Acrylonitrile	7.2	U	7.2	20
Benzene	0.25	U	0.25	1.0
Bromoform	0.50	U	0.50	1.0
Bromomethane	0.80	U	0.80	1.0
2-Butanone (MEK)	1.0	U	1.0	10
Carbon disulfide	0.60	U	0.60	2.0
Carbon tetrachloride	0.50	U	0.50	1.0
Chlorobenzene	0.25	U	0.25	1.0
2-Chloro-1,3-butadiene	0.30	U	0.30	1.0
Chlorodibromomethane	0.10	U	0.10	1.0
Chloroethane	1.0	U	1.0	1.0
Chloroform	0.14	U	0.14	1.0
Chloromethane	0.33	U	0.33	1.0
3-Chloro-1-propene	0.20	U	0.20	1.0
cis-1,3-Dichloropropene	0.11	U	0.11	1.0
1,2-Dibromo-3-Chloropropane	0.44	U	0.44	1.0
Dibromomethane	0.20	U	0.20	1.0
Dichlorobromomethane	0.25	U	0.25	1.0
Dichlorodifluoromethane	0.25	U	0.25	1.0
1,1-Dichloroethane	0.25	U	0.25	1.0
1,2-Dichloroethane	0.10	U	0.10	1.0
1,1-Dichloroethene	0.11	U	0.11	1.0
1,2-Dichloropropane	0.13	U	0.13	1.0
Ethylbenzene	0.11	U	0.11	1.0
Ethylene Dibromide	0.25	U	0.25	1.0
Ethyl methacrylate	0.25	U	0.25	1.0
2-Hexanone	1.0	U	1.0	10
Iodomethane	1.0	U	1.0	5.0
Isobutyl alcohol	11	U	11	40
Methacrylonitrile	3.3	U	3.3	20
Methylene Chloride	1.0	U	1.0	5.0
Methyl methacrylate	0.48	U	0.48	1.0
4-Methyl-2-pentanone (MIBK)	1.0	U	1.0	10
Pentachloroethane	1.2	U	1.2	5.0
Propionitrile	4.6	U	4.6	20
Styrene	0.11	U	0.11	1.0
1,1,1,2-Tetrachloroethane	0.33	U	0.33	1.0
1,1,2,2-Tetrachloroethane	0.18	U	0.18	1.0

Calculations are performed before rounding to avoid round-off errors in calculated results.

Client: U.S. Army Corps of Engineers

Job Number: 680-52429-1

Method Blank - Batch: 680-153299

Method: 8260B
Preparation: 5030B

Lab Sample ID: MB 680-153299/10
Client Matrix: Water
Dilution: 1.0
Date Analyzed: 11/12/2009 1433
Date Prepared: 11/12/2009 1433

Analysis Batch: 680-153299
Prep Batch: N/A
Units: ug/L

Instrument ID: GC/MS Volatiles - O C2
Lab File ID: oq166.d
Initial Weight/Volume: 5 mL
Final Weight/Volume: 5 mL

Analyte	Result	Qual	MDL	RL
Tetrachloroethene	0.15	U	0.15	1.0
Toluene	0.33	U	0.33	1.0
trans-1,4-Dichloro-2-butene	0.50	U	0.50	2.0
trans-1,2-Dichloroethene	0.20	U	0.20	1.0
trans-1,3-Dichloropropene	0.21	U	0.21	1.0
1,1,1-Trichloroethane	0.50	U	0.50	1.0
1,1,2-Trichloroethane	0.13	U	0.13	1.0
Trichloroethene	0.13	U	0.13	1.0
Trichlorofluoromethane	0.25	U	0.25	1.0
1,2,3-Trichloropropane	0.41	U	0.41	1.0
Vinyl acetate	0.28	U	0.28	2.0
Vinyl chloride	0.18	U	0.18	1.0
Xylenes, Total	0.20	U	0.20	2.0

Surrogate	% Rec	Acceptance Limits
4-Bromofluorobenzene	104	75 - 120
Dibromofluoromethane	100	75 - 121
Toluene-d8 (Surr)	108	75 - 120

Calculations are performed before rounding to avoid round-off errors in calculated results.

Client: U.S. Army Corps of Engineers

Job Number: 680-52429-1

Lab Control Sample/
Lab Control Sample Duplicate Recovery Report - Batch: 680-153299

Method: 8260B
Preparation: 5030B

LCS Lab Sample ID: LCS 680-153299/7
Client Matrix: Water
Dilution: 1.0
Date Analyzed: 11/12/2009 1236
Date Prepared: 11/12/2009 1236

Analysis Batch: 680-153299
Prep Batch: N/A
Units: ug/L

Instrument ID: GC/MS Volatiles - O C2
Lab File ID: oq158.d
Initial Weight/Volume: 5 mL
Final Weight/Volume: 5 mL

LCSD Lab Sample ID: LCSD 680-153299/8
Client Matrix: Water
Dilution: 1.0
Date Analyzed: 11/12/2009 1306
Date Prepared: 11/12/2009 1306

Analysis Batch: 680-153299
Prep Batch: N/A
Units: ug/L

Instrument ID: GC/MS Volatiles - O C2
Lab File ID: oq160.d
Initial Weight/Volume: 5 mL
Final Weight/Volume: 5 mL

Analyte	% Rec. LCS	% Rec. LCSD	Limit	RPD	RPD Limit	LCS Qual	LCSD Qual
Acetone	93	95	17 - 175	3	50		
Benzene	104	101	77 - 119	2	30		
Bromoform	105	104	62 - 133	1	30		
Bromomethane	120	126	12 - 184	5	50		
2-Butanone (MEK)	106	107	33 - 157	1	30		
Carbon disulfide	156	150	55 - 131	4	30	Q	Q
Carbon tetrachloride	107	105	71 - 135	2	30		
Chlorobenzene	105	103	85 - 116	2	30		
Chlorodibromomethane	101	101	75 - 133	1	30		
Chloroethane	110	106	40 - 165	4	50		
Chloroform	100	99	82 - 120	1	30		
Chloromethane	108	104	48 - 142	4	50		
cis-1,3-Dichloropropene	104	102	76 - 126	1	30		
1,2-Dibromo-3-Chloropropane	110	105	49 - 140	4	30		
Dibromomethane	107	103	78 - 119	4	30		
Dichlorobromomethane	109	106	78 - 127	3	30		
Dichlorodifluoromethane	103	99	34 - 154	4	30		
1,1-Dichloroethane	103	101	74 - 127	2	30		
1,2-Dichloroethane	111	108	66 - 132	3	30		
1,1-Dichloroethene	95	94	62 - 141	0	30		
1,2-Dichloropropane	105	101	73 - 124	4	30		
Ethylbenzene	108	105	86 - 116	3	30		
Ethylene Dibromide	104	104	80 - 121	1	30		
2-Hexanone	106	108	34 - 161	1	30		
Methylene Chloride	105	99	70 - 125	6	30		
4-Methyl-2-pentanone (MIBK)	109	108	40 - 151	1	30		
Styrene	109	105	82 - 122	3	30		
1,1,1,2-Tetrachloroethane	100	102	81 - 128	2	30		
1,1,2,2-Tetrachloroethane	103	101	69 - 129	2	30		
Tetrachloroethene	101	102	76 - 126	1	30		
Toluene	109	105	81 - 117	4	30		
trans-1,2-Dichloroethene	96	95	72 - 131	1	30		

Calculations are performed before rounding to avoid round-off errors in calculated results.

Client: U.S. Army Corps of Engineers

Job Number: 680-52429-1

Lab Control Sample/
Lab Control Sample Duplicate Recovery Report - Batch: 680-153299

Method: 8260B
Preparation: 5030B

LCS Lab Sample ID:	LCS 680-153299/7	Analysis Batch:	680-153299	Instrument ID:	GC/MS Volatiles - O C2
Client Matrix:	Water	Prep Batch:	N/A	Lab File ID:	oq158.d
Dilution:	1.0	Units:	ug/L	Initial Weight/Volume:	5 mL
Date Analyzed:	11/12/2009 1236			Final Weight/Volume:	5 mL
Date Prepared:	11/12/2009 1236				

LCSD Lab Sample ID:	LCSD 680-153299/8	Analysis Batch:	680-153299	Instrument ID:	GC/MS Volatiles - O C2
Client Matrix:	Water	Prep Batch:	N/A	Lab File ID:	oq160.d
Dilution:	1.0	Units:	ug/L	Initial Weight/Volume:	5 mL
Date Analyzed:	11/12/2009 1306			Final Weight/Volume:	5 mL
Date Prepared:	11/12/2009 1306				

Analyte	% Rec. LCS	% Rec. LCSD	Limit	RPD	RPD Limit	LCS Qual	LCSD Qual
trans-1,3-Dichloropropene	105	104	73 - 128	1	30		
1,1,1-Trichloroethane	109	106	76 - 127	4	30		
1,1,2-Trichloroethane	101	102	75 - 121	0	30		
Trichloroethene	100	101	84 - 115	1	30		
Trichlorofluoromethane	109	105	58 - 149	3	50		
1,2,3-Trichloropropane	105	104	70 - 130	1	30		
Vinyl acetate	103	107	10 - 217	4	30		
Vinyl chloride	104	101	59 - 144	3	50		
Xylenes, Total	109	105	84 - 118	4	30		

Surrogate	LCS % Rec	LCSD % Rec	Acceptance Limits
4-Bromofluorobenzene	105	101	75 - 120
Dibromofluoromethane	101	98	75 - 121
Toluene-d8 (Surr)	111	106	75 - 120

Calculations are performed before rounding to avoid round-off errors in calculated results.

Client: U.S. Army Corps of Engineers

Job Number: 680-52429-1

Method Blank - Batch: 680-153862

Method: 8260B
Preparation: 5030B

Lab Sample ID: MB 680-153862/10
Client Matrix: Water
Dilution: 1.0
Date Analyzed: 11/18/2009 1055
Date Prepared: 11/18/2009 1055

Analysis Batch: 680-153862
Prep Batch: N/A
Units: ug/L

Instrument ID: GC/MS Volatiles - O C2
Lab File ID: oq306.d
Initial Weight/Volume: 5 mL
Final Weight/Volume: 5 mL

Analyte	Result	Qual	MDL	RL
Acetone	5.0	U	5.0	25
Acetonitrile	10	U	10	40
Acrolein	7.4	U	7.4	20
Acrylonitrile	7.2	U	7.2	20
Benzene	0.25	U	0.25	1.0
Bromoform	0.50	U	0.50	1.0
Bromomethane	0.80	U	0.80	1.0
2-Butanone (MEK)	1.0	U	1.0	10
Carbon disulfide	0.60	U	0.60	2.0
Carbon tetrachloride	0.50	U	0.50	1.0
Chlorobenzene	0.25	U	0.25	1.0
2-Chloro-1,3-butadiene	0.30	U	0.30	1.0
Chlorodibromomethane	0.10	U	0.10	1.0
Chloroethane	1.0	U	1.0	1.0
Chloroform	0.14	U	0.14	1.0
Chloromethane	0.33	U	0.33	1.0
3-Chloro-1-propene	0.20	U	0.20	1.0
cis-1,3-Dichloropropene	0.11	U	0.11	1.0
1,2-Dibromo-3-Chloropropane	0.44	U	0.44	1.0
Dibromomethane	0.20	U	0.20	1.0
Dichlorobromomethane	0.25	U	0.25	1.0
Dichlorodifluoromethane	0.25	U	0.25	1.0
1,1-Dichloroethane	0.25	U	0.25	1.0
1,2-Dichloroethane	0.10	U	0.10	1.0
1,1-Dichloroethene	0.11	U	0.11	1.0
1,2-Dichloropropane	0.13	U	0.13	1.0
Ethylbenzene	0.11	U	0.11	1.0
Ethylene Dibromide	0.25	U	0.25	1.0
Ethyl methacrylate	0.25	U	0.25	1.0
2-Hexanone	1.0	U	1.0	10
Iodomethane	1.0	U	1.0	5.0
Isobutyl alcohol	11	U	11	40
Methacrylonitrile	3.3	U	3.3	20
Methylene Chloride	1.0	U	1.0	5.0
Methyl methacrylate	0.48	U	0.48	1.0
4-Methyl-2-pentanone (MIBK)	1.0	U	1.0	10
Pentachloroethane	1.2	U	1.2	5.0
Propionitrile	4.6	U	4.6	20
Styrene	0.11	U	0.11	1.0
1,1,1,2-Tetrachloroethane	0.33	U	0.33	1.0
1,1,2,2-Tetrachloroethane	0.18	U	0.18	1.0

Calculations are performed before rounding to avoid round-off errors in calculated results.

Client: U.S. Army Corps of Engineers

Job Number: 680-52429-1

Method Blank - Batch: 680-153862

Method: 8260B
Preparation: 5030B

Lab Sample ID: MB 680-153862/10
Client Matrix: Water
Dilution: 1.0
Date Analyzed: 11/18/2009 1055
Date Prepared: 11/18/2009 1055

Analysis Batch: 680-153862
Prep Batch: N/A
Units: ug/L

Instrument ID: GC/MS Volatiles - O C2
Lab File ID: oq306.d
Initial Weight/Volume: 5 mL
Final Weight/Volume: 5 mL

Analyte	Result	Qual	MDL	RL
Tetrachloroethene	0.15	U	0.15	1.0
Toluene	0.33	U	0.33	1.0
trans-1,4-Dichloro-2-butene	0.50	U	0.50	2.0
trans-1,2-Dichloroethene	0.20	U	0.20	1.0
trans-1,3-Dichloropropene	0.21	U	0.21	1.0
1,1,1-Trichloroethane	0.50	U	0.50	1.0
1,1,2-Trichloroethane	0.13	U	0.13	1.0
Trichloroethene	0.13	U	0.13	1.0
Trichlorofluoromethane	0.25	U	0.25	1.0
1,2,3-Trichloropropane	0.41	U	0.41	1.0
Vinyl acetate	0.28	U	0.28	2.0
Vinyl chloride	0.18	U	0.18	1.0
Xylenes, Total	0.20	U	0.20	2.0

Surrogate	% Rec	Acceptance Limits
4-Bromofluorobenzene	95	75 - 120
Dibromofluoromethane	100	75 - 121
Toluene-d8 (Surr)	95	75 - 120

Calculations are performed before rounding to avoid round-off errors in calculated results.

Client: U.S. Army Corps of Engineers

Job Number: 680-52429-1

Lab Control Sample/
Lab Control Sample Duplicate Recovery Report - Batch: 680-153862

Method: 8260B
Preparation: 5030B

LCS Lab Sample ID: LCS 680-153862/7
Client Matrix: Water
Dilution: 1.0
Date Analyzed: 11/18/2009 0858
Date Prepared: 11/18/2009 0858

Analysis Batch: 680-153862
Prep Batch: N/A
Units: ug/L

Instrument ID: GC/MS Volatiles - O C2
Lab File ID: oq298.d
Initial Weight/Volume: 5 mL
Final Weight/Volume: 5 mL

LCSD Lab Sample ID: LCSD 680-153862/8
Client Matrix: Water
Dilution: 1.0
Date Analyzed: 11/18/2009 0927
Date Prepared: 11/18/2009 0927

Analysis Batch: 680-153862
Prep Batch: N/A
Units: ug/L

Instrument ID: GC/MS Volatiles - O C2
Lab File ID: oq300.d
Initial Weight/Volume: 5 mL
Final Weight/Volume: 5 mL

Analyte	% Rec. LCS	% Rec. LCSD	Limit	RPD	RPD Limit	LCS Qual	LCSD Qual
Acetone	96	103	17 - 175	7	50		
Benzene	99	101	77 - 119	2	30		
Bromoform	92	92	62 - 133	0	30		
Bromomethane	108	129	12 - 184	18	50		
2-Butanone (MEK)	103	103	33 - 157	0	30		
Carbon disulfide	96	110	55 - 131	14	30		
Carbon tetrachloride	82	87	71 - 135	6	30		
Chlorobenzene	99	101	85 - 116	1	30		
Chlorodibromomethane	94	92	75 - 133	2	30		
Chloroethane	95	104	40 - 165	8	50		
Chloroform	99	106	82 - 120	7	30		
Chloromethane	94	108	48 - 142	14	50		
cis-1,3-Dichloropropene	105	105	76 - 126	0	30		
1,2-Dibromo-3-Chloropropane	102	110	49 - 140	8	30		
Dibromomethane	97	99	78 - 119	2	30		
Dichlorobromomethane	96	98	78 - 127	2	30		
Dichlorodifluoromethane	93	107	34 - 154	13	30		
1,1-Dichloroethane	101	108	74 - 127	7	30		
1,2-Dichloroethane	95	95	66 - 132	0	30		
1,1-Dichloroethene	101	108	62 - 141	7	30		
1,2-Dichloropropane	99	100	73 - 124	0	30		
Ethylbenzene	100	102	86 - 116	2	30		
Ethylene Dibromide	100	102	80 - 121	2	30		
2-Hexanone	105	102	34 - 161	3	30		
Methylene Chloride	95	107	70 - 125	11	30		
4-Methyl-2-pentanone (MIBK)	101	100	40 - 151	1	30		
Styrene	102	106	82 - 122	3	30		
1,1,1,2-Tetrachloroethane	85	81	81 - 128	4	30		
1,1,2,2-Tetrachloroethane	101	100	69 - 129	1	30		
Tetrachloroethene	100	99	76 - 126	1	30		
Toluene	98	105	81 - 117	6	30		
trans-1,2-Dichloroethene	102	107	72 - 131	4	30		

Calculations are performed before rounding to avoid round-off errors in calculated results.

Client: U.S. Army Corps of Engineers

Job Number: 680-52429-1

Lab Control Sample/
Lab Control Sample Duplicate Recovery Report - Batch: 680-153862

Method: 8260B
Preparation: 5030B

LCS Lab Sample ID:	LCS 680-153862/7	Analysis Batch:	680-153862	Instrument ID:	GC/MS Volatiles - O C2
Client Matrix:	Water	Prep Batch:	N/A	Lab File ID:	oq298.d
Dilution:	1.0	Units:	ug/L	Initial Weight/Volume:	5 mL
Date Analyzed:	11/18/2009 0858			Final Weight/Volume:	5 mL
Date Prepared:	11/18/2009 0858				

LCSD Lab Sample ID:	LCSD 680-153862/8	Analysis Batch:	680-153862	Instrument ID:	GC/MS Volatiles - O C2
Client Matrix:	Water	Prep Batch:	N/A	Lab File ID:	oq300.d
Dilution:	1.0	Units:	ug/L	Initial Weight/Volume:	5 mL
Date Analyzed:	11/18/2009 0927			Final Weight/Volume:	5 mL
Date Prepared:	11/18/2009 0927				

	% Rec.						
Analyte	LCS	LCSD	Limit	RPD	RPD Limit	LCS Qual	LCSD Qual
trans-1,3-Dichloropropene	104	102	73 - 128	2	30		
1,1,1-Trichloroethane	100	104	76 - 127	4	30		
1,1,2-Trichloroethane	98	97	75 - 121	1	30		
Trichloroethene	97	98	84 - 115	1	30		
Trichlorofluoromethane	94	103	58 - 149	10	50		
1,2,3-Trichloropropane	104	101	70 - 130	3	30		
Vinyl acetate	121	116	10 - 217	4	30		
Vinyl chloride	98	111	59 - 144	12	50		
Xylenes, Total	102	105	84 - 118	3	30		

Surrogate	LCS % Rec	LCSD % Rec	Acceptance Limits
4-Bromofluorobenzene	99	102	75 - 120
Dibromofluoromethane	99	108	75 - 121
Toluene-d8 (Surr)	99	106	75 - 120

Calculations are performed before rounding to avoid round-off errors in calculated results.

Client: U.S. Army Corps of Engineers

Job Number: 680-52429-1

Method Blank - Batch: 680-152979

Method: 6020
Preparation: 3030C

Lab Sample ID:	MB 680-152979/6-A	Analysis Batch:	680-153893	Instrument ID:	ICP MS - A
Client Matrix:	Water	Prep Batch:	680-152979	Lab File ID:	N/A
Dilution:	1.0	Units:	ug/L	Initial Weight/Volume:	50 mL
Date Analyzed:	11/16/2009 2030			Final Weight/Volume:	50 mL
Date Prepared:	11/10/2009 1505				

Analyte	Result	Qual	MDL	RL
Antimony	0.99	U	0.99	2.0
Arsenic	0.40	U	0.40	1.0
Barium	0.15	U	0.15	1.0
Beryllium	0.070	U	0.070	0.20
Cadmium	0.20	U	0.20	0.50
Chromium	0.362	J	0.16	1.0
Cobalt	0.078	U	0.078	0.20
Copper	0.21	U	0.21	1.0
Lead	0.080	U	0.080	0.30
Nickel	0.779	J	0.20	2.0
Selenium	0.21	U	0.21	0.50
Silver	0.10	U	0.10	0.20
Thallium	0.10	U	0.10	0.20
Tin	0.40	U	0.40	1.0
Vanadium	1.4	U	1.4	5.0

Method Blank - Batch: 680-152979

Method: 6020
Preparation: 3030C

Lab Sample ID:	MB 680-152979/6-A	Analysis Batch:	680-153965	Instrument ID:	ICP MS - A
Client Matrix:	Water	Prep Batch:	680-152979	Lab File ID:	N/A
Dilution:	1.0	Units:	ug/L	Initial Weight/Volume:	50 mL
Date Analyzed:	11/18/2009 1619			Final Weight/Volume:	50 mL
Date Prepared:	11/10/2009 1505				

Analyte	Result	Qual	MDL	RL
Zinc	8.53	J	2.6	10

Calculations are performed before rounding to avoid round-off errors in calculated results.

Client: U.S. Army Corps of Engineers

Job Number: 680-52429-1

Lab Control Sample - Batch: 680-152979

Method: 6020
Preparation: 3030C

Lab Sample ID: LCS 680-152979/7-A
Client Matrix: Water
Dilution: 200
Date Analyzed: 11/16/2009 2037
Date Prepared: 11/10/2009 1505

Analysis Batch: 680-153893
Prep Batch: 680-152979
Units: ug/L

Instrument ID: ICP MS - A
Lab File ID: N/A
Initial Weight/Volume: 50 mL
Final Weight/Volume: 50 mL

Analyte	Spike Amount	Result	% Rec.	Limit	Qual
Antimony	500	504	101	75 - 125	
Arsenic	2000	1940	97	75 - 125	
Barium	2000	1970	99	75 - 125	
Beryllium	50.0	47.4	95	75 - 125	
Cadmium	50.0	51.8	104	75 - 125	J
Chromium	200	187	94	75 - 125	J
Cobalt	500	467	93	75 - 125	
Copper	250	250	100	75 - 125	
Lead	500	489	98	75 - 125	
Nickel	500	505	101	75 - 125	
Selenium	2000	2040	102	75 - 125	
Silver	50.0	44.6	89	75 - 125	
Thallium	2000	2000	100	75 - 125	
Tin	1000	931	93	75 - 125	
Vanadium	500	466	93	75 - 125	J

Lab Control Sample - Batch: 680-152979

Method: 6020
Preparation: 3030C

Lab Sample ID: LCS 680-152979/7-A
Client Matrix: Water
Dilution: 200
Date Analyzed: 11/18/2009 1626
Date Prepared: 11/10/2009 1505

Analysis Batch: 680-153965
Prep Batch: 680-152979
Units: ug/L

Instrument ID: ICP MS - A
Lab File ID: N/A
Initial Weight/Volume: 50 mL
Final Weight/Volume: 50 mL

Analyte	Spike Amount	Result	% Rec.	Limit	Qual
Zinc	500	597	119	75 - 125	J

Calculations are performed before rounding to avoid round-off errors in calculated results.

Client: U.S. Army Corps of Engineers

Job Number: 680-52429-1

Matrix Spike/
Matrix Spike Duplicate Recovery Report - Batch: 680-152979

Method: 6020
Preparation: 3030C

MS Lab Sample ID:	680-52429-1	Analysis Batch:	680-153893	Instrument ID:	ICP MS - A
Client Matrix:	Water	Prep Batch:	680-152979	Lab File ID:	N/A
Dilution:	200			Initial Weight/Volume:	50 mL
Date Analyzed:	11/16/2009 2104			Final Weight/Volume:	50 mL
Date Prepared:	11/10/2009 1505				

MSD Lab Sample ID:	680-52429-1	Analysis Batch:	680-153893	Instrument ID:	ICP MS - A
Client Matrix:	Water	Prep Batch:	680-152979	Lab File ID:	N/A
Dilution:	200			Initial Weight/Volume:	50 mL
Date Analyzed:	11/16/2009 2111			Final Weight/Volume:	50 mL
Date Prepared:	11/10/2009 1505				

	% Rec.						
Analyte	MS	MSD	Limit	RPD	RPD Limit	MS Qual	MSD Qual
Antimony	107	101	75 - 125	6	20		
Arsenic	99	98	75 - 125	1	20		
Barium	103	99	75 - 125	4	20		
Beryllium	88	92	75 - 125	4	20		
Cadmium	109	98	75 - 125	11	20	J	J
Chromium	95	93	75 - 125	2	20	J	J
Cobalt	94	93	75 - 125	2	20		
Copper	101	98	75 - 125	3	20		
Lead	100	98	75 - 125	2	20		
Nickel	124	105	75 - 125	16	20		
Selenium	100	98	75 - 125	2	20		
Silver	92	90	75 - 125	2	20		
Thallium	102	100	75 - 125	2	20		
Tin	95	93	75 - 125	2	20		
Vanadium	95	94	75 - 125	0	20	J	J

Calculations are performed before rounding to avoid round-off errors in calculated results.

Client: U.S. Army Corps of Engineers

Job Number: 680-52429-1

Matrix Spike/
Matrix Spike Duplicate Recovery Report - Batch: 680-152979

Method: 6020
Preparation: 3030C

MS Lab Sample ID:	680-52429-1	Analysis Batch:	680-153965	Instrument ID:	ICP MS - A
Client Matrix:	Water	Prep Batch:	680-152979	Lab File ID:	N/A
Dilution:	200			Initial Weight/Volume:	50 mL
Date Analyzed:	11/18/2009 1653			Final Weight/Volume:	50 mL
Date Prepared:	11/10/2009 1505				

MSD Lab Sample ID:	680-52429-1	Analysis Batch:	680-153965	Instrument ID:	ICP MS - A
Client Matrix:	Water	Prep Batch:	680-152979	Lab File ID:	N/A
Dilution:	200			Initial Weight/Volume:	50 mL
Date Analyzed:	11/18/2009 1700			Final Weight/Volume:	50 mL
Date Prepared:	11/10/2009 1505				

	% Rec.						
Analyte	MS	MSD	Limit	RPD	RPD Limit	MS Qual	MSD Qual
Zinc	NC	NC	75 - 125	22	20	J	J J

Calculations are performed before rounding to avoid round-off errors in calculated results.

Client: U.S. Army Corps of Engineers

Job Number: 680-52429-1

Method Blank - Batch: 680-153085

Method: 300.0
Preparation: N/A

Lab Sample ID: MB 680-153085/7
Client Matrix: Water
Dilution: 5.0
Date Analyzed: 11/10/2009 1847
Date Prepared: N/A

Analysis Batch: 680-153085
Prep Batch: N/A
Units: mg/L

Instrument ID: ICCS200 - G
Lab File ID: 0045.d
Initial Weight/Volume: 1.0 mL
Final Weight/Volume: 5 mL

Analyte	Result	Qual	MDL	RL
Nitrate as NO3	0.36	U	0.36	1.1

Lab Control Sample - Batch: 680-153085

Method: 300.0
Preparation: N/A

Lab Sample ID: LCS 680-153085/9
Client Matrix: Water
Dilution: 5.0
Date Analyzed: 11/10/2009 1913
Date Prepared: N/A

Analysis Batch: 680-153085
Prep Batch: N/A
Units: mg/L

Instrument ID: ICCS200 - G
Lab File ID: 0047.d
Initial Weight/Volume: 1.0 mL
Final Weight/Volume: 5 mL

Analyte	Spike Amount	Result	% Rec.	Limit	Qual
Nitrate as NO3	11.0	10.2	92	90 - 110	M

Matrix Spike - Batch: 680-153085

Method: 300.0
Preparation: N/A

Lab Sample ID: 680-52429-1
Client Matrix: Water
Dilution: 5.0
Date Analyzed: 11/10/2009 2206
Date Prepared: N/A

Analysis Batch: 680-153085
Prep Batch: N/A
Units: mg/L

Instrument ID: ICCS200 - G
Lab File ID: 0061.d
Initial Weight/Volume: 1.0 mL
Final Weight/Volume: 5 mL
1 uL

Analyte	Sample Result/Qual	Spike Amount	Result	% Rec.	Limit	Qual
Nitrate as NO3	7.3	22.1	31.6	110	90 - 110	

Calculations are performed before rounding to avoid round-off errors in calculated results.

Serial Number 020638

ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Savannah
5102 LaRoche Avenue
Savannah, GA 31404

Website: www.testamericainc.com
Phone: (912) 354-7858
Fax: (912) 352-0165

Alternate Laboratory Name/Location

Phone:
Fax:

PROJECT REFERENCE: Fort Bragg (Lamont Land Fill)	PROJECT NO.	PROJECT LOCATION (STATE)
TAL (LAB) PROJECT MANAGER: Terry Hornsby	P.O. NUMBER	CONTRACT NO.
CLIENT (SITE) PM: Kevin G. Haborak	CLIENT PHONE: 912 549-3255	CLIENT FAX
CLIENT NAME: USACE	CLIENT E-MAIL	
CLIENT ADDRESS: 100 W Oglethorpe Ave, Savannah Georgia 31402		
COMPANY CONTRACTING THIS WORK (if applicable)		

PAGE ___ OF ___

STANDARD REPORT DELIVERY ◯

DATE DUE ___

EXPEDITED REPORT DELIVERY (SURCHARGE) ◯

DATE DUE ___

NUMBER OF COOLERS SUBMITTED PER SHIPMENT:

REQUIRED ANALYSIS / NUMBER OF CONTAINERS SUBMITTED

SAMPLE DATE	SAMPLE TIME	SAMPLE IDENTIFICATION	MATRIX TYPE: COMPOSITE (C) OR GRAB (G) INDICATE	AQUEOUS (WATER)	SOLID OR SEMISOLID	AIR	NONAQUEOUS LIQUID (OIL, SOLVENT, ...)	8260 VOC (HCL)	Appendix IX Metals (HNO3)	Nitrate (H2SO4)								REMARKS
11-8-09	1117	GW-2MW-15R-11-09	G	A				3	1	1								
11-8-09	1228	GW-2MW-14R-11-09	G	A				3	1	1								
11-8-09	1622	GW-2MW-95-11-09	G	A				3	1	1								
—	—	Trip Blank		A				2										

PRESERVATIVE

RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RELINQUISHED BY: (SIGNATURE)	DATE	TIME
James S. Jackson Shipped by FedEx	11/09/09	0900	Shipped by FedEx					
RECEIVED BY: (SIGNATURE)	DATE	TIME	RECEIVED BY: (SIGNATURE)	DATE	TIME	RECEIVED BY: (SIGNATURE)	DATE	TIME

LABORATORY USE ONLY

RECEIVED FOR LABORATORY BY: (SIGNATURE)	DATE	TIME	CUSTODY INTACT	CUSTODY SEAL NO.	SAVANNAH LOG NO.	LABORATORY REMARKS
Beth a Daughtry	11/10/9	0917	YES ◯ NO ◯		680-52429	TEMP 5.2

TAL8240-680 (1207)

11/25/2009

ANALYTICAL REPORT

Job Number: 680-52474-1

Job Description: Ft. Bragg Lamont Landfill

For:
U.S. Army Corps of Engineers
PO BOX 889
Savannah, GA 31402-0889

Attention: Mr. Kevin Haborak

Approved for release.
Terry Hornsby
Project Manager I
11/25/2009 10:17 AM

Terry Hornsby
Project Manager I
terry.hornsby@testamericainc.com
11/25/2009

The test results in this report meet NELAP requirements for parameters for which accreditation is required or available. Any exceptions to the NELAP requirements are noted. Results pertain only to samples listed in this report. This report may not be reproduced, except in full, without the written approval of the laboratory. Questions should be directed to the person who signed this report.

Savannah Certifications and ID #s: A2LA: 0399.01; AL: 41450; ARDEQ: 88-0692; ARDOH; CA: 03217CA; CO; CT: PH0161; DE; FL: E87052; GA: 803; Guam; HI; IL: 200022; IN; IA: 353; KS: E-10322; KY EPPC: 90084; KY UST; LA DEQ: 30690; LA DHH: LA080008; ME: 2008022; MD: 250; MA: M-GA006; MI: 9925; MS; NFESC: 249; NV: GA00006; NJ: GA769; NM; NY: 10842; NC DWQ: 269; NC DHHS: 13701; PA: 68-00474; PR: GA00006; RI: LAO00244; SC: 98001001; TN: TN0296; TX: T104704185; USEPA: GA00006; VT: VT-87052; VA: 00302; WA; WV DEP: 094; WV DHHR: 9950 C; WI DNR: 999819810; WY/EPAR8: 8TMS-Q

TestAmerica Laboratories, Inc.
TestAmerica Savannah 5102 LaRoche Avenue, Savannah, GA 31404
Tel (912) 354-7858 Fax (912) 352-0165 www.testamericainc.com

Job Narrative
680-52474-1

Receipt
All samples were received in good condition within temperature requirements.

GC/MS VOA
No analytical or quality issues were noted.

Metals
No analytical or quality issues were noted.

General Chemistry
Method 300.0: The following samples were received outside of holding time: GW-LMW-8-11-09 (680-52474-3 MS), GW-LMW-8-11-09 (680-52474-3 MSD), GW-LMW-9-11-09 (680-52474-2), GW-LMW-9D-11-09 (680-52474-4), and GW-LMW-Dup1 (680-52474-1).

No other analytical or quality issues were noted.

VOA Prep
No analytical or quality issues were noted.

METHOD / ANALYST SUMMARY

Client: U.S. Army Corps of Engineers

Job Number: 680-52474-1

Method	Analyst	Analyst ID
SW846 8260B	Bearden, Robert	RB
SW846 6020	Boyuk, Brian	BB
MCAWW 300.0	Campbell, Sophia M	SMC

SAMPLE SUMMARY

Client: U.S. Army Corps of Engineers

Job Number: 680-52474-1

Lab Sample ID	Client Sample ID	Client Matrix	Date/Time Sampled	Date/Time Received
680-52474-1FD	GW-LMW-Dup1	Water	11/09/2009 0800	11/11/2009 1010
680-52474-2	GW-LMW-9-11-09	Water	11/09/2009 1000	11/11/2009 1010
680-52474-3	GW-LMW-8-11-09	Water	11/09/2009 1400	11/11/2009 1010
680-52474-3MS	GW-LMW-8-11-09	Water	11/09/2009 1145	11/11/2009 1010
680-52474-3MSD	GW-LMW-8-11-09	Water	11/09/2009 1345	11/11/2009 1010
680-52474-4	GW-LMW-9D-11-09	Water	11/09/2009 1153	11/11/2009 1010
680-52474-5	GW-LMW-3S-11-09	Water	11/09/2009 1705	11/11/2009 1010
680-52474-6TB	Trip Blank	Water	11/09/2009 0000	11/11/2009 1010

Client: U.S. Army Corps of Engineers

Job Number: 680-52474-1

Client Sample ID: **GW-LMW-Dup1**

Lab Sample ID: 680-52474-1FD

Client Matrix: Water

Date Sampled: 11/09/2009 0800

Date Received: 11/11/2009 1010

8260B Volatile Organic Compounds (GC/MS)

Method: 8260B

Preparation: 5030B

Dilution: 1.0

Date Analyzed: 11/18/2009 1533

Date Prepared: 11/18/2009 1533

Analysis Batch: 680-153865

Instrument ID: MSO

Lab File ID: o3019.d

Initial Weight/Volume: 5 mL

Final Weight/Volume: 5 mL

Analyte	Result (ug/L)	Qualifier	MDL	RL
Acetone	5.4	J	5.0	25
Acetonitrile	10	U	10	40
Acrolein	7.4	U	7.4	20
Acrylonitrile	7.2	U	7.2	20
Benzene	0.25	U	0.25	1.0
Bromoform	0.50	U	0.50	1.0
Bromomethane	0.80	U	0.80	1.0
2-Butanone (MEK)	1.0	U	1.0	10
Carbon disulfide	0.60	U	0.60	2.0
Carbon tetrachloride	0.50	U	0.50	1.0
Chlorobenzene	0.25	U	0.25	1.0
2-Chloro-1,3-butadiene	0.30	U	0.30	1.0
Chlorodibromomethane	0.10	U	0.10	1.0
Chloroethane	1.0	U	1.0	1.0
Chloroform	0.14	U	0.14	1.0
Chloromethane	0.33	U	0.33	1.0
3-Chloro-1-propene	0.20	U	0.20	1.0
cis-1,3-Dichloropropene	0.11	U	0.11	1.0
1,2-Dibromo-3-Chloropropane	0.44	U	0.44	1.0
Dibromomethane	0.20	U	0.20	1.0
Dichlorobromomethane	0.25	U	0.25	1.0
Dichlorodifluoromethane	0.25	U	0.25	1.0
1,1-Dichloroethane	0.25	U	0.25	1.0
1,2-Dichloroethane	0.10	U	0.10	1.0
1,1-Dichloroethene	0.11	U	0.11	1.0
1,2-Dichloropropane	0.13	U	0.13	1.0
Ethylbenzene	0.11	U	0.11	1.0
Ethylene Dibromide	0.25	U	0.25	1.0
Ethyl methacrylate	0.25	U	0.25	1.0
2-Hexanone	1.0	U	1.0	10
Iodomethane	1.0	U	1.0	5.0
Isobutyl alcohol	11	U	11	40
Methacrylonitrile	3.3	U	3.3	20
Methylene Chloride	1.0	U	1.0	5.0
Methyl methacrylate	0.48	U	0.48	1.0
4-Methyl-2-pentanone (MIBK)	1.0	U	1.0	10
Pentachloroethane	1.2	U	1.2	5.0
Propionitrile	4.6	U	4.6	20
Styrene	0.11	U	0.11	1.0
1,1,1,2-Tetrachloroethane	0.33	U	0.33	1.0
1,1,2,2-Tetrachloroethane	0.18	U	0.18	1.0
Tetrachloroethene	0.15	U	0.15	1.0
Toluene	0.41	J	0.33	1.0
trans-1,4-Dichloro-2-butene	0.50	U	0.50	2.0
trans-1,2-Dichloroethene	0.20	U	0.20	1.0
trans-1,3-Dichloropropene	0.21	U	0.21	1.0

Client: U.S. Army Corps of Engineers

Job Number: 680-52474-1

Client Sample ID: **GW-LMW-Dup1**

Lab Sample ID: 680-52474-1FD

Client Matrix: Water

Date Sampled: 11/09/2009 0800

Date Received: 11/11/2009 1010

8260B Volatile Organic Compounds (GC/MS)

Method:	8260B	Analysis Batch: 680-153865	Instrument ID:	MSO
Preparation:	5030B		Lab File ID:	o3019.d
Dilution:	1.0		Initial Weight/Volume:	5 mL
Date Analyzed:	11/18/2009 1533		Final Weight/Volume:	5 mL
Date Prepared:	11/18/2009 1533			

Analyte	Result (ug/L)	Qualifier	MDL	RL
1,1,1-Trichloroethane	0.50	U	0.50	1.0
1,1,2-Trichloroethane	0.13	U	0.13	1.0
Trichloroethene	0.13	U	0.13	1.0
Trichlorofluoromethane	0.25	U	0.25	1.0
1,2,3-Trichloropropane	0.41	U	0.41	1.0
Vinyl acetate	0.28	U	0.28	2.0
Vinyl chloride	0.18	U	0.18	1.0
Xylenes, Total	0.39	J	0.20	2.0

Surrogate	%Rec	Qualifier	Acceptance Limits
4-Bromofluorobenzene	100		75 - 120
Dibromofluoromethane	96		75 - 121
Toluene-d8 (Surr)	100		75 - 120

Client: U.S. Army Corps of Engineers

Job Number: 680-52474-1

Client Sample ID: **GW-LMW-9-11-09**

Lab Sample ID: 680-52474-2

Client Matrix: Water

Date Sampled: 11/09/2009 1000

Date Received: 11/11/2009 1010

8260B Volatile Organic Compounds (GC/MS)

Method: 8260B

Preparation: 5030B

Dilution: 1.0

Date Analyzed: 11/18/2009 1603

Date Prepared: 11/18/2009 1603

Analysis Batch: 680-153865

Instrument ID: MSO

Lab File ID: o3021.d

Initial Weight/Volume: 5 mL

Final Weight/Volume: 5 mL

Analyte	Result (ug/L)	Qualifier	MDL	RL
Acetone	5.0	U	5.0	25
Acetonitrile	10	U	10	40
Acrolein	7.4	U	7.4	20
Acrylonitrile	7.2	U	7.2	20
Benzene	0.25	U	0.25	1.0
Bromoform	0.50	U	0.50	1.0
Bromomethane	0.80	U	0.80	1.0
2-Butanone (MEK)	1.0	U	1.0	10
Carbon disulfide	0.60	U	0.60	2.0
Carbon tetrachloride	0.50	U	0.50	1.0
Chlorobenzene	0.25	U	0.25	1.0
2-Chloro-1,3-butadiene	0.30	U	0.30	1.0
Chlorodibromomethane	0.10	U	0.10	1.0
Chloroethane	1.0	U	1.0	1.0
Chloroform	0.14	U	0.14	1.0
Chloromethane	0.33	U	0.33	1.0
3-Chloro-1-propene	0.20	U	0.20	1.0
cis-1,3-Dichloropropene	0.11	U	0.11	1.0
1,2-Dibromo-3-Chloropropane	0.44	U	0.44	1.0
Dibromomethane	0.20	U	0.20	1.0
Dichlorobromomethane	0.25	U	0.25	1.0
Dichlorodifluoromethane	0.25	U	0.25	1.0
1,1-Dichloroethane	0.25	U	0.25	1.0
1,2-Dichloroethane	0.10	U	0.10	1.0
1,1-Dichloroethene	0.11	U	0.11	1.0
1,2-Dichloropropane	0.13	U	0.13	1.0
Ethylbenzene	0.11	U	0.11	1.0
Ethylene Dibromide	0.25	U	0.25	1.0
Ethyl methacrylate	0.25	U	0.25	1.0
2-Hexanone	1.0	U	1.0	10
Iodomethane	1.0	U	1.0	5.0
Isobutyl alcohol	11	U	11	40
Methacrylonitrile	3.3	U	3.3	20
Methylene Chloride	1.0	U	1.0	5.0
Methyl methacrylate	0.48	U	0.48	1.0
4-Methyl-2-pentanone (MIBK)	1.0	U	1.0	10
Pentachloroethane	1.2	U	1.2	5.0
Propionitrile	4.6	U	4.6	20
Styrene	0.11	U	0.11	1.0
1,1,1,2-Tetrachloroethane	0.33	U	0.33	1.0
1,1,2,2-Tetrachloroethane	0.18	U	0.18	1.0
Tetrachloroethene	0.15	U	0.15	1.0
Toluene	0.41	J	0.33	1.0
trans-1,4-Dichloro-2-butene	0.50	U	0.50	2.0
trans-1,2-Dichloroethene	0.20	U	0.20	1.0
trans-1,3-Dichloropropene	0.21	U	0.21	1.0

Client: U.S. Army Corps of Engineers

Job Number: 680-52474-1

Client Sample ID: **GW-LMW-9-11-09**

Lab Sample ID: 680-52474-2

Client Matrix: Water

Date Sampled: 11/09/2009 1000

Date Received: 11/11/2009 1010

8260B Volatile Organic Compounds (GC/MS)

Method:	8260B	Analysis Batch: 680-153865	Instrument ID:	MSO
Preparation:	5030B		Lab File ID:	o3021.d
Dilution:	1.0		Initial Weight/Volume:	5 mL
Date Analyzed:	11/18/2009 1603		Final Weight/Volume:	5 mL
Date Prepared:	11/18/2009 1603			

Analyte	Result (ug/L)	Qualifier	MDL	RL
1,1,1-Trichloroethane	0.50	U	0.50	1.0
1,1,2-Trichloroethane	0.13	U	0.13	1.0
Trichloroethene	0.13	U	0.13	1.0
Trichlorofluoromethane	0.25	U	0.25	1.0
1,2,3-Trichloropropane	0.41	U	0.41	1.0
Vinyl acetate	0.28	U	0.28	2.0
Vinyl chloride	0.18	U	0.18	1.0
Xylenes, Total	0.20	U	0.20	2.0

Surrogate	%Rec	Qualifier	Acceptance Limits
4-Bromofluorobenzene	100		75 - 120
Dibromofluoromethane	98		75 - 121
Toluene-d8 (Surr)	101		75 - 120

Client: U.S. Army Corps of Engineers

Job Number: 680-52474-1

Client Sample ID: **GW-LMW-8-11-09**

Lab Sample ID: 680-52474-3

Client Matrix: Water

Date Sampled: 11/09/2009 1400

Date Received: 11/11/2009 1010

8260B Volatile Organic Compounds (GC/MS)

Method:	8260B	Analysis Batch: 680-153865	Instrument ID:	MSO
Preparation:	5030B		Lab File ID:	o3023.d
Dilution:	1.0		Initial Weight/Volume:	5 mL
Date Analyzed:	11/18/2009 1632		Final Weight/Volume:	5 mL
Date Prepared:	11/18/2009 1632			

Analyte	Result (ug/L)	Qualifier	MDL	RL
Acetone	5.0	U	5.0	25
Acetonitrile	10	U	10	40
Acrolein	7.4	U	7.4	20
Acrylonitrile	7.2	U	7.2	20
Benzene	0.25	U	0.25	1.0
Bromoform	0.50	U	0.50	1.0
Bromomethane	0.80	U	0.80	1.0
2-Butanone (MEK)	1.0	U	1.0	10
Carbon disulfide	0.60	U	0.60	2.0
Carbon tetrachloride	0.50	U	0.50	1.0
Chlorobenzene	0.25	U	0.25	1.0
2-Chloro-1,3-butadiene	0.30	U	0.30	1.0
Chlorodibromomethane	0.10	U	0.10	1.0
Chloroethane	1.0	U	1.0	1.0
Chloroform	0.14	U	0.14	1.0
Chloromethane	0.33	U	0.33	1.0
3-Chloro-1-propene	0.20	U	0.20	1.0
cis-1,3-Dichloropropene	0.11	U	0.11	1.0
1,2-Dibromo-3-Chloropropane	0.44	U	0.44	1.0
Dibromomethane	0.20	U	0.20	1.0
Dichlorobromomethane	0.25	U	0.25	1.0
Dichlorodifluoromethane	0.25	U	0.25	1.0
1,1-Dichloroethane	0.25	U	0.25	1.0
1,2-Dichloroethane	0.10	U	0.10	1.0
1,1-Dichloroethene	0.11	U	0.11	1.0
1,2-Dichloropropane	0.13	U	0.13	1.0
Ethylbenzene	0.11	U	0.11	1.0
Ethylene Dibromide	0.25	U	0.25	1.0
Ethyl methacrylate	0.25	U	0.25	1.0
2-Hexanone	1.0	U	1.0	10
Iodomethane	1.0	U	1.0	5.0
Isobutyl alcohol	11	U	11	40
Methacrylonitrile	3.3	U	3.3	20
Methylene Chloride	1.0	U	1.0	5.0
Methyl methacrylate	0.48	U	0.48	1.0
4-Methyl-2-pentanone (MIBK)	1.0	U	1.0	10
Pentachloroethane	1.2	U	1.2	5.0
Propionitrile	4.6	U	4.6	20
Styrene	0.11	U	0.11	1.0
1,1,1,2-Tetrachloroethane	0.33	U	0.33	1.0
1,1,2,2-Tetrachloroethane	0.18	U	0.18	1.0
Tetrachloroethene	0.26	J	0.15	1.0
Toluene	0.33	U	0.33	1.0
trans-1,4-Dichloro-2-butene	0.50	U	0.50	2.0
trans-1,2-Dichloroethene	0.20	U	0.20	1.0
trans-1,3-Dichloropropene	0.21	U	0.21	1.0

Client: U.S. Army Corps of Engineers

Job Number: 680-52474-1

Client Sample ID: **GW-LMW-8-11-09**

Lab Sample ID: 680-52474-3

Client Matrix: Water

Date Sampled: 11/09/2009 1400

Date Received: 11/11/2009 1010

8260B Volatile Organic Compounds (GC/MS)

Method:	8260B	Analysis Batch: 680-153865	Instrument ID:	MSO
Preparation:	5030B		Lab File ID:	o3023.d
Dilution:	1.0		Initial Weight/Volume:	5 mL
Date Analyzed:	11/18/2009 1632		Final Weight/Volume:	5 mL
Date Prepared:	11/18/2009 1632			

Analyte	Result (ug/L)	Qualifier	MDL	RL
1,1,1-Trichloroethane	0.50	U	0.50	1.0
1,1,2-Trichloroethane	0.13	U	0.13	1.0
Trichloroethene	0.19	J	0.13	1.0
Trichlorofluoromethane	0.25	U	0.25	1.0
1,2,3-Trichloropropane	0.41	U	0.41	1.0
Vinyl acetate	0.28	U	0.28	2.0
Vinyl chloride	0.18	U	0.18	1.0
Xylenes, Total	0.20	U	0.20	2.0

Surrogate	%Rec	Qualifier	Acceptance Limits
4-Bromofluorobenzene	100		75 - 120
Dibromofluoromethane	97		75 - 121
Toluene-d8 (Surr)	101		75 - 120

Client: U.S. Army Corps of Engineers

Job Number: 680-52474-1

Client Sample ID: **GW-LMW-9D-11-09**

Lab Sample ID: 680-52474-4

Client Matrix: Water

Date Sampled: 11/09/2009 1153

Date Received: 11/11/2009 1010

8260B Volatile Organic Compounds (GC/MS)

Method:	8260B	Analysis Batch: 680-153865	Instrument ID:	MSO
Preparation:	5030B		Lab File ID:	o3025.d
Dilution:	1.0		Initial Weight/Volume:	5 mL
Date Analyzed:	11/18/2009 1701		Final Weight/Volume:	5 mL
Date Prepared:	11/18/2009 1701			

Analyte	Result (ug/L)	Qualifier	MDL	RL
Acetone	5.0	U	5.0	25
Acetonitrile	10	U	10	40
Acrolein	7.4	U	7.4	20
Acrylonitrile	7.2	U	7.2	20
Benzene	0.25	U	0.25	1.0
Bromoform	0.50	U	0.50	1.0
Bromomethane	0.80	U	0.80	1.0
2-Butanone (MEK)	1.0	U	1.0	10
Carbon disulfide	0.60	U	0.60	2.0
Carbon tetrachloride	0.50	U	0.50	1.0
Chlorobenzene	0.25	U	0.25	1.0
2-Chloro-1,3-butadiene	0.30	U	0.30	1.0
Chlorodibromomethane	0.10	U	0.10	1.0
Chloroethane	1.0	U	1.0	1.0
Chloroform	0.14	U	0.14	1.0
Chloromethane	0.33	U	0.33	1.0
3-Chloro-1-propene	0.20	U	0.20	1.0
cis-1,3-Dichloropropene	0.11	U	0.11	1.0
1,2-Dibromo-3-Chloropropane	0.44	U	0.44	1.0
Dibromomethane	0.20	U	0.20	1.0
Dichlorobromomethane	0.25	U	0.25	1.0
Dichlorodifluoromethane	0.25	U	0.25	1.0
1,1-Dichloroethane	0.25	U	0.25	1.0
1,2-Dichloroethane	0.10	U	0.10	1.0
1,1-Dichloroethene	0.11	U	0.11	1.0
1,2-Dichloropropane	0.13	U	0.13	1.0
Ethylbenzene	0.11	U	0.11	1.0
Ethylene Dibromide	0.25	U	0.25	1.0
Ethyl methacrylate	0.25	U	0.25	1.0
2-Hexanone	1.0	U	1.0	10
Iodomethane	1.0	U	1.0	5.0
Isobutyl alcohol	11	U	11	40
Methacrylonitrile	3.3	U	3.3	20
Methylene Chloride	1.0	U	1.0	5.0
Methyl methacrylate	0.48	U	0.48	1.0
4-Methyl-2-pentanone (MIBK)	1.0	U	1.0	10
Pentachloroethane	1.2	U	1.2	5.0
Propionitrile	4.6	U	4.6	20
Styrene	0.11	U	0.11	1.0
1,1,1,2-Tetrachloroethane	0.33	U	0.33	1.0
1,1,2,2-Tetrachloroethane	0.18	U	0.18	1.0
Tetrachloroethene	0.15	U	0.15	1.0
Toluene	0.33	U	0.33	1.0
trans-1,4-Dichloro-2-butene	0.50	U	0.50	2.0
trans-1,2-Dichloroethene	0.20	U	0.20	1.0
trans-1,3-Dichloropropene	0.21	U	0.21	1.0

Client: U.S. Army Corps of Engineers

Job Number: 680-52474-1

Client Sample ID: **GW-LMW-9D-11-09**

Lab Sample ID: 680-52474-4

Client Matrix: Water

Date Sampled: 11/09/2009 1153

Date Received: 11/11/2009 1010

8260B Volatile Organic Compounds (GC/MS)

Method:	8260B	Analysis Batch: 680-153865	Instrument ID:	MSO
Preparation:	5030B		Lab File ID:	o3025.d
Dilution:	1.0		Initial Weight/Volume:	5 mL
Date Analyzed:	11/18/2009 1701		Final Weight/Volume:	5 mL
Date Prepared:	11/18/2009 1701			

Analyte	Result (ug/L)	Qualifier	MDL	RL
1,1,1-Trichloroethane	0.50	U	0.50	1.0
1,1,2-Trichloroethane	0.13	U	0.13	1.0
Trichloroethene	0.13	U	0.13	1.0
Trichlorofluoromethane	0.25	U	0.25	1.0
1,2,3-Trichloropropane	0.41	U	0.41	1.0
Vinyl acetate	0.28	U	0.28	2.0
Vinyl chloride	0.18	U	0.18	1.0
Xylenes, Total	0.20	U	0.20	2.0

Surrogate	%Rec	Qualifier	Acceptance Limits
4-Bromofluorobenzene	99		75 - 120
Dibromofluoromethane	99		75 - 121
Toluene-d8 (Surr)	101		75 - 120

Client: U.S. Army Corps of Engineers

Job Number: 680-52474-1

Client Sample ID: **GW-LMW-3S-11-09**

Lab Sample ID: 680-52474-5

Client Matrix: Water

Date Sampled: 11/09/2009 1705

Date Received: 11/11/2009 1010

8260B Volatile Organic Compounds (GC/MS)

Method: 8260B

Preparation: 5030B

Dilution: 1.0

Date Analyzed: 11/18/2009 1730

Date Prepared: 11/18/2009 1730

Analysis Batch: 680-153865

Instrument ID: MSO

Lab File ID: o3027.d

Initial Weight/Volume: 5 mL

Final Weight/Volume: 5 mL

Analyte	Result (ug/L)	Qualifier	MDL	RL
Acetone	5.0	U	5.0	25
Acetonitrile	10	U	10	40
Acrolein	7.4	U	7.4	20
Acrylonitrile	7.2	U	7.2	20
Benzene	0.25	U	0.25	1.0
Bromoform	0.50	U	0.50	1.0
Bromomethane	0.80	U	0.80	1.0
2-Butanone (MEK)	1.0	U	1.0	10
Carbon disulfide	0.60	U	0.60	2.0
Carbon tetrachloride	0.50	U	0.50	1.0
Chlorobenzene	0.25	U	0.25	1.0
2-Chloro-1,3-butadiene	0.30	U	0.30	1.0
Chlorodibromomethane	0.10	U	0.10	1.0
Chloroethane	1.0	U	1.0	1.0
Chloroform	0.14	U	0.14	1.0
Chloromethane	0.33	U	0.33	1.0
3-Chloro-1-propene	0.20	U	0.20	1.0
cis-1,3-Dichloropropene	0.11	U	0.11	1.0
1,2-Dibromo-3-Chloropropane	0.44	U	0.44	1.0
Dibromomethane	0.20	U	0.20	1.0
Dichlorobromomethane	0.25	U	0.25	1.0
Dichlorodifluoromethane	2.2		0.25	1.0
1,1-Dichloroethane	0.25	U	0.25	1.0
1,2-Dichloroethane	0.10	U	0.10	1.0
1,1-Dichloroethene	0.11	U	0.11	1.0
1,2-Dichloropropane	0.13	U	0.13	1.0
Ethylbenzene	0.11	U	0.11	1.0
Ethylene Dibromide	0.25	U	0.25	1.0
Ethyl methacrylate	0.25	U	0.25	1.0
2-Hexanone	1.0	U	1.0	10
Iodomethane	1.0	U	1.0	5.0
Isobutyl alcohol	11	U	11	40
Methacrylonitrile	3.3	U	3.3	20
Methylene Chloride	1.0	U	1.0	5.0
Methyl methacrylate	0.48	U	0.48	1.0
4-Methyl-2-pentanone (MIBK)	1.0	U	1.0	10
Pentachloroethane	1.2	U	1.2	5.0
Propionitrile	4.6	U	4.6	20
Styrene	0.11	U	0.11	1.0
1,1,1,2-Tetrachloroethane	0.33	U	0.33	1.0
1,1,2,2-Tetrachloroethane	0.18	U	0.18	1.0
Tetrachloroethene	0.15	U	0.15	1.0
Toluene	0.33	U	0.33	1.0
trans-1,4-Dichloro-2-butene	0.50	U	0.50	2.0
trans-1,2-Dichloroethene	0.20	U	0.20	1.0
trans-1,3-Dichloropropene	0.21	U	0.21	1.0

Client: U.S. Army Corps of Engineers

Job Number: 680-52474-1

Client Sample ID: **GW-LMW-3S-11-09**

Lab Sample ID: 680-52474-5

Client Matrix: Water

Date Sampled: 11/09/2009 1705

Date Received: 11/11/2009 1010

8260B Volatile Organic Compounds (GC/MS)

Method:	8260B	Analysis Batch: 680-153865	Instrument ID:	MSO
Preparation:	5030B		Lab File ID:	o3027.d
Dilution:	1.0		Initial Weight/Volume:	5 mL
Date Analyzed:	11/18/2009 1730		Final Weight/Volume:	5 mL
Date Prepared:	11/18/2009 1730			

Analyte	Result (ug/L)	Qualifier	MDL	RL
1,1,1-Trichloroethane	0.50	U	0.50	1.0
1,1,2-Trichloroethane	0.13	U	0.13	1.0
Trichloroethene	0.13	U	0.13	1.0
Trichlorofluoromethane	0.97	J	0.25	1.0
1,2,3-Trichloropropane	0.41	U	0.41	1.0
Vinyl acetate	0.28	U	0.28	2.0
Vinyl chloride	0.18	U	0.18	1.0
Xylenes, Total	0.20	U	0.20	2.0

Surrogate	%Rec	Qualifier	Acceptance Limits
4-Bromofluorobenzene	100		75 - 120
Dibromofluoromethane	99		75 - 121
Toluene-d8 (Surr)	101		75 - 120

Client: U.S. Army Corps of Engineers

Job Number: 680-52474-1

Client Sample ID: **Trip Blank**

Lab Sample ID: 680-52474-6TB

Client Matrix: Water

Date Sampled: 11/09/2009 0000

Date Received: 11/11/2009 1010

8260B Volatile Organic Compounds (GC/MS)

Method: 8260B

Preparation: 5030B

Dilution: 1.0

Date Analyzed: 11/18/2009 1110

Date Prepared: 11/18/2009 1110

Analysis Batch: 680-153865

Instrument ID: MSO

Lab File ID: o3001.d

Initial Weight/Volume: 5 mL

Final Weight/Volume: 5 mL

Analyte	Result (ug/L)	Qualifier	MDL	RL
Acetone	5.0	U	5.0	25
Acetonitrile	10	U	10	40
Acrolein	7.4	U	7.4	20
Acrylonitrile	7.2	U	7.2	20
Benzene	0.25	U	0.25	1.0
Bromoform	0.50	U	0.50	1.0
Bromomethane	0.80	U	0.80	1.0
2-Butanone (MEK)	1.0	U	1.0	10
Carbon disulfide	0.60	U	0.60	2.0
Carbon tetrachloride	0.50	U	0.50	1.0
Chlorobenzene	0.25	U	0.25	1.0
2-Chloro-1,3-butadiene	0.30	U	0.30	1.0
Chlorodibromomethane	0.10	U	0.10	1.0
Chloroethane	1.0	U	1.0	1.0
Chloroform	0.14	U	0.14	1.0
Chloromethane	0.33	U	0.33	1.0
3-Chloro-1-propene	0.20	U	0.20	1.0
cis-1,3-Dichloropropene	0.11	U	0.11	1.0
1,2-Dibromo-3-Chloropropane	0.44	U	0.44	1.0
Dibromomethane	0.20	U	0.20	1.0
Dichlorobromomethane	0.25	U	0.25	1.0
Dichlorodifluoromethane	0.25	U	0.25	1.0
1,1-Dichloroethane	0.25	U	0.25	1.0
1,2-Dichloroethane	0.10	U	0.10	1.0
1,1-Dichloroethene	0.11	U	0.11	1.0
1,2-Dichloropropane	0.13	U	0.13	1.0
Ethylbenzene	0.11	U	0.11	1.0
Ethylene Dibromide	0.25	U	0.25	1.0
Ethyl methacrylate	0.25	U	0.25	1.0
2-Hexanone	1.0	U	1.0	10
Iodomethane	1.0	U	1.0	5.0
Isobutyl alcohol	11	U	11	40
Methacrylonitrile	3.3	U	3.3	20
Methylene Chloride	1.0	U	1.0	5.0
Methyl methacrylate	0.48	U	0.48	1.0
4-Methyl-2-pentanone (MIBK)	1.0	U	1.0	10
Pentachloroethane	1.2	U	1.2	5.0
Propionitrile	4.6	U	4.6	20
Styrene	0.11	U	0.11	1.0
1,1,1,2-Tetrachloroethane	0.33	U	0.33	1.0
1,1,2,2-Tetrachloroethane	0.18	U	0.18	1.0
Tetrachloroethene	0.15	U	0.15	1.0
Toluene	0.33	U	0.33	1.0
trans-1,4-Dichloro-2-butene	0.50	U	0.50	2.0
trans-1,2-Dichloroethene	0.20	U	0.20	1.0
trans-1,3-Dichloropropene	0.21	U	0.21	1.0

Client: U.S. Army Corps of Engineers

Job Number: 680-52474-1

Client Sample ID: **Trip Blank**

Lab Sample ID: 680-52474-6TB

Client Matrix: Water

Date Sampled: 11/09/2009 0000

Date Received: 11/11/2009 1010

8260B Volatile Organic Compounds (GC/MS)

Method:	8260B	Analysis Batch: 680-153865	Instrument ID:	MSO
Preparation:	5030B		Lab File ID:	o3001.d
Dilution:	1.0		Initial Weight/Volume:	5 mL
Date Analyzed:	11/18/2009 1110		Final Weight/Volume:	5 mL
Date Prepared:	11/18/2009 1110			

Analyte	Result (ug/L)	Qualifier	MDL	RL
1,1,1-Trichloroethane	0.50	U	0.50	1.0
1,1,2-Trichloroethane	0.13	U	0.13	1.0
Trichloroethene	0.13	U	0.13	1.0
Trichlorofluoromethane	0.25	U	0.25	1.0
1,2,3-Trichloropropane	0.41	U	0.41	1.0
Vinyl acetate	0.28	U	0.28	2.0
Vinyl chloride	0.18	U	0.18	1.0
Xylenes, Total	0.20	U	0.20	2.0

Surrogate	%Rec	Qualifier	Acceptance Limits
4-Bromofluorobenzene	101		75 - 120
Dibromofluoromethane	101		75 - 121
Toluene-d8 (Surr)	101		75 - 120

Client: U.S. Army Corps of Engineers

Job Number: 680-52474-1

Client Sample ID: **GW-LMW-Dup1**

Lab Sample ID: 680-52474-1FD

Client Matrix: Water

Date Sampled: 11/09/2009 0800

Date Received: 11/11/2009 1010

6020 Inductively Coupled Plasma - Mass Spectrometry

Method:	6020	Analysis Batch: 680-153875		Instrument ID:	ICPMSA
Preparation:	3030C	Prep Batch: 680-153123		Lab File ID:	N/A
Dilution:	1.0			Initial Weight/Volume:	50 mL
Date Analyzed:	11/16/2009 1432			Final Weight/Volume:	50 mL
Date Prepared:	11/11/2009 1457				

Analyte	Result (ug/L)	Qualifier	MDL	RL
Antimony	0.99	U	0.99	2.0
Arsenic	0.40	U	0.40	1.0
Barium	2.7		0.15	1.0
Beryllium	0.070	U	0.070	0.20
Cadmium	0.20	U	0.20	0.50
Chromium	0.51	J	0.16	1.0
Cobalt	0.13	J	0.078	0.20
Copper	0.57	J	0.21	1.0
Lead	0.080	U	0.080	0.30
Nickel	0.41	J	0.20	0.50
Selenium	0.21	U	0.21	0.50
Silver	0.10	U	0.10	0.20
Thallium	0.10	U	0.10	0.20
Tin	0.40	U	0.40	1.0
Vanadium	1.4	U	1.4	5.0
Zinc	5.7	J	2.6	10

Client: U.S. Army Corps of Engineers

Job Number: 680-52474-1

Client Sample ID: **GW-LMW-9-11-09**

Lab Sample ID: 680-52474-2

Client Matrix: Water

Date Sampled: 11/09/2009 1000

Date Received: 11/11/2009 1010

6020 Inductively Coupled Plasma - Mass Spectrometry

Method:	6020	Analysis Batch: 680-153875		Instrument ID:	ICPMSA
Preparation:	3030C	Prep Batch: 680-153123		Lab File ID:	N/A
Dilution:	1.0			Initial Weight/Volume:	50 mL
Date Analyzed:	11/16/2009 1438			Final Weight/Volume:	50 mL
Date Prepared:	11/11/2009 1457				

Analyte	Result (ug/L)	Qualifier	MDL	RL
Antimony	0.99	U	0.99	2.0
Arsenic	0.40	U	0.40	1.0
Barium	2.9		0.15	1.0
Beryllium	0.070	U	0.070	0.20
Cadmium	0.20	U	0.20	0.50
Chromium	0.62	J	0.16	1.0
Cobalt	0.13	J	0.078	0.20
Copper	0.59	J	0.21	1.0
Lead	0.080	U	0.080	0.30
Nickel	0.46	J	0.20	0.50
Selenium	0.21	U	0.21	0.50
Silver	0.10	U	0.10	0.20
Thallium	0.10	U	0.10	0.20
Tin	0.40	U	0.40	1.0
Vanadium	1.4	U	1.4	5.0
Zinc	7.0	J	2.6	10

Client: U.S. Army Corps of Engineers

Job Number: 680-52474-1

Client Sample ID: **GW-LMW-8-11-09**

Lab Sample ID: 680-52474-3

Client Matrix: Water

Date Sampled: 11/09/2009 1400

Date Received: 11/11/2009 1010

6020 Inductively Coupled Plasma - Mass Spectrometry

Method:	6020	Analysis Batch: 680-153875		Instrument ID:	ICPMSA
Preparation:	3030C	Prep Batch: 680-153123		Lab File ID:	N/A
Dilution:	1.0			Initial Weight/Volume:	50 mL
Date Analyzed:	11/16/2009 1445			Final Weight/Volume:	50 mL
Date Prepared:	11/11/2009 1457				

Analyte	Result (ug/L)	Qualifier	MDL	RL
Antimony	0.99	U	0.99	2.0
Arsenic	0.53	J	0.40	1.0
Barium	40		0.15	1.0
Beryllium	0.070	U	0.070	0.20
Cadmium	0.20	U	0.20	0.50
Chromium	0.69	J	0.16	1.0
Cobalt	0.71		0.078	0.20
Copper	0.65	J	0.21	1.0
Lead	0.080	U	0.080	0.30
Nickel	0.64		0.20	0.50
Selenium	0.59		0.21	0.50
Silver	0.10	U	0.10	0.20
Thallium	0.10	U	0.10	0.20
Tin	0.40	U	0.40	1.0
Vanadium	1.4	U	1.4	5.0
Zinc	19		2.6	10

Client: U.S. Army Corps of Engineers

Job Number: 680-52474-1

Client Sample ID: **GW-LMW-9D-11-09**

Lab Sample ID: 680-52474-4

Client Matrix: Water

Date Sampled: 11/09/2009 1153

Date Received: 11/11/2009 1010

6020 Inductively Coupled Plasma - Mass Spectrometry

Method:	6020	Analysis Batch: 680-153875		Instrument ID:	ICPMSA
Preparation:	3030C	Prep Batch: 680-153123		Lab File ID:	N/A
Dilution:	1.0			Initial Weight/Volume:	50 mL
Date Analyzed:	11/16/2009 1521			Final Weight/Volume:	50 mL
Date Prepared:	11/11/2009 1457				

Analyte	Result (ug/L)	Qualifier	MDL	RL
Antimony	0.99	U	0.99	2.0
Arsenic	2.0		0.40	1.0
Barium	2.9		0.15	1.0
Beryllium	0.070	U	0.070	0.20
Cadmium	0.20	U	0.20	0.50
Chromium	1.1		0.16	1.0
Cobalt	0.078	U	0.078	0.20
Copper	0.75	J	0.21	1.0
Lead	0.31		0.080	0.30
Nickel	0.69		0.20	0.50
Selenium	0.21	U	0.21	0.50
Silver	0.10	U	0.10	0.20
Thallium	0.10	U	0.10	0.20
Tin	0.40	U	0.40	1.0
Vanadium	2.3	J	1.4	5.0
Zinc	25		2.6	10

Client: U.S. Army Corps of Engineers

Job Number: 680-52474-1

Client Sample ID: **GW-LMW-3S-11-09**

Lab Sample ID: 680-52474-5

Client Matrix: Water

Date Sampled: 11/09/2009 1705

Date Received: 11/11/2009 1010

6020 Inductively Coupled Plasma - Mass Spectrometry

Method:	6020	Analysis Batch: 680-153875		Instrument ID:	ICPMSA
Preparation:	3030C	Prep Batch: 680-153123		Lab File ID:	N/A
Dilution:	1.0			Initial Weight/Volume:	50 mL
Date Analyzed:	11/16/2009 1541			Final Weight/Volume:	50 mL
Date Prepared:	11/11/2009 1457				

Analyte	Result (ug/L)	Qualifier	MDL	RL
Antimony	0.99	U	0.99	2.0
Arsenic	0.40	U	0.40	1.0
Barium	10		0.15	1.0
Beryllium	0.070	U	0.070	0.20
Cadmium	0.20	U	0.20	0.50
Chromium	0.54	J	0.16	1.0
Cobalt	0.42		0.078	0.20
Copper	0.82	J	0.21	1.0
Lead	0.080	U	0.080	0.30
Nickel	2.8		0.20	0.50
Selenium	0.21	U	0.21	0.50
Silver	0.10	U	0.10	0.20
Thallium	0.10	U	0.10	0.20
Tin	0.40	U	0.40	1.0
Vanadium	1.4	U	1.4	5.0
Zinc	13		2.6	10

General Chemistry

Client Sample ID: **GW-LMW-Dup1**

Lab Sample ID: 680-52474-1FD

Client Matrix: Water

Date Sampled: 11/09/2009 0800

Date Received: 11/11/2009 1010

Analyte	Result	Qual	Units	MDL	RL	Dil	Method
Nitrate as NO3	0.40	J M H	mg/L	0.36	1.1	5.0	300.0

Analysis Batch: 680-153234 Date Analyzed: 11/11/2009 1614

General Chemistry

Client Sample ID: **GW-LMW-9-11-09**

Lab Sample ID: 680-52474-2

Client Matrix: Water

Date Sampled: 11/09/2009 1000

Date Received: 11/11/2009 1010

Analyte	Result	Qual	Units	MDL	RL	Dil	Method
Nitrate as NO3	0.45	J M H	mg/L	0.36	1.1	5.0	300.0

Analysis Batch: 680-153234 Date Analyzed: 11/11/2009 1601

General Chemistry

Client Sample ID: **GW-LMW-8-11-09**

Lab Sample ID: 680-52474-3

Client Matrix: Water

Date Sampled: 11/09/2009 1400

Date Received: 11/11/2009 1010

Analyte	Result	Qual	Units	MDL	RL	Dil	Method
Nitrate as NO3	0.74	J	mg/L	0.36	1.1	5.0	300.0

Analysis Batch: 680-153234 Date Analyzed: 11/11/2009 1310

General Chemistry

Client Sample ID: **GW-LMW-9D-11-09**

Lab Sample ID: 680-52474-4

Client Matrix: Water

Date Sampled: 11/09/2009 1153

Date Received: 11/11/2009 1010

Analyte	Result	Qual	Units	MDL	RL	Dil	Method
Nitrate as NO3	0.43	J M H	mg/L	0.36	1.1	5.0	300.0

Analysis Batch: 680-153234 Date Analyzed: 11/11/2009 1522

General Chemistry

Client Sample ID: **GW-LMW-3S-11-09**

Lab Sample ID: 680-52474-5

Client Matrix: Water

Date Sampled: 11/09/2009 1705

Date Received: 11/11/2009 1010

Analyte	Result	Qual	Units	MDL	RL	Dil	Method
Nitrate as NO3	0.71	J M	mg/L	0.36	1.1	5.0	300.0

Analysis Batch: 680-153234 Date Analyzed: 11/11/2009 1347

DATA REPORTING QUALIFIERS

Client: U.S. Army Corps of Engineers

Job Number: 680-52474-1

Lab Section	Qualifier	Description
GC/MS VOA		
	J	Estimated: The analyte was positively identified; the quantitation is an estimation
	U	Undetected at the Limit of Detection.
Metals		
	J	Estimated: The analyte was positively identified; the quantitation is an estimation
	U	Undetected at the Limit of Detection.
General Chemistry		
	J	Estimated: The analyte was positively identified; the quantitation is an estimation
	M	Manual integrated compound.
	H	Sample was prepped or analyzed beyond the specified holding time
	U	Undetected at the Limit of Detection.

Client: U.S. Army Corps of Engineers

Job Number: 680-52474-1

Method Blank - Batch: 680-153865

Method: 8260B
Preparation: 5030B

Lab Sample ID: MB 680-153865/11
Client Matrix: Water
Dilution: 1.0
Date Analyzed: 11/18/2009 1040
Date Prepared: 11/18/2009 1040

Analysis Batch: 680-153865
Prep Batch: N/A
Units: ug/L

Instrument ID: GC/MS Volatiles - O
Lab File ID: oq305.d
Initial Weight/Volume: 5 mL
Final Weight/Volume: 5 mL

Analyte	Result	Qual	MDL	RL
Acetone	5.0	U	5.0	25
Acetonitrile	10	U	10	40
Acrolein	7.4	U	7.4	20
Acrylonitrile	7.2	U	7.2	20
Benzene	0.25	U	0.25	1.0
Bromoform	0.50	U	0.50	1.0
Bromomethane	0.80	U	0.80	1.0
2-Butanone (MEK)	1.0	U	1.0	10
Carbon disulfide	0.60	U	0.60	2.0
Carbon tetrachloride	0.50	U	0.50	1.0
Chlorobenzene	0.25	U	0.25	1.0
2-Chloro-1,3-butadiene	0.30	U	0.30	1.0
Chlorodibromomethane	0.10	U	0.10	1.0
Chloroethane	1.0	U	1.0	1.0
Chloroform	0.14	U	0.14	1.0
Chloromethane	0.33	U	0.33	1.0
3-Chloro-1-propene	0.20	U	0.20	1.0
cis-1,3-Dichloropropene	0.11	U	0.11	1.0
1,2-Dibromo-3-Chloropropane	0.44	U	0.44	1.0
Dibromomethane	0.20	U	0.20	1.0
Dichlorobromomethane	0.25	U	0.25	1.0
Dichlorodifluoromethane	0.25	U	0.25	1.0
1,1-Dichloroethane	0.25	U	0.25	1.0
1,2-Dichloroethane	0.10	U	0.10	1.0
1,1-Dichloroethene	0.11	U	0.11	1.0
1,2-Dichloropropane	0.13	U	0.13	1.0
Ethylbenzene	0.11	U	0.11	1.0
Ethylene Dibromide	0.25	U	0.25	1.0
Ethyl methacrylate	0.25	U	0.25	1.0
2-Hexanone	1.0	U	1.0	10
Iodomethane	1.0	U	1.0	5.0
Isobutyl alcohol	11	U	11	40
Methacrylonitrile	3.3	U	3.3	20
Methylene Chloride	1.0	U	1.0	5.0
Methyl methacrylate	0.48	U	0.48	1.0
4-Methyl-2-pentanone (MIBK)	1.0	U	1.0	10
Pentachloroethane	1.2	U	1.2	5.0
Propionitrile	4.6	U	4.6	20
Styrene	0.11	U	0.11	1.0
1,1,1,2-Tetrachloroethane	0.33	U	0.33	1.0
1,1,2,2-Tetrachloroethane	0.18	U	0.18	1.0

Calculations are performed before rounding to avoid round-off errors in calculated results.

Client: U.S. Army Corps of Engineers

Job Number: 680-52474-1

Method Blank - Batch: 680-153865

Method: 8260B
Preparation: 5030B

Lab Sample ID: MB 680-153865/11
Client Matrix: Water
Dilution: 1.0
Date Analyzed: 11/18/2009 1040
Date Prepared: 11/18/2009 1040

Analysis Batch: 680-153865
Prep Batch: N/A
Units: ug/L

Instrument ID: GC/MS Volatiles - O
Lab File ID: oq305.d
Initial Weight/Volume: 5 mL
Final Weight/Volume: 5 mL

Analyte	Result	Qual	MDL	RL
Tetrachloroethene	0.15	U	0.15	1.0
Toluene	0.33	U	0.33	1.0
trans-1,4-Dichloro-2-butene	0.50	U	0.50	2.0
trans-1,2-Dichloroethene	0.20	U	0.20	1.0
trans-1,3-Dichloropropene	0.21	U	0.21	1.0
1,1,1-Trichloroethane	0.50	U	0.50	1.0
1,1,2-Trichloroethane	0.13	U	0.13	1.0
Trichloroethene	0.13	U	0.13	1.0
Trichlorofluoromethane	0.25	U	0.25	1.0
1,2,3-Trichloropropane	0.41	U	0.41	1.0
Vinyl acetate	0.28	U	0.28	2.0
Vinyl chloride	0.18	U	0.18	1.0
Xylenes, Total	0.20	U	0.20	2.0

Surrogate	% Rec	Acceptance Limits
4-Bromofluorobenzene	101	75 - 120
Dibromofluoromethane	100	75 - 121
Toluene-d8 (Surr)	100	75 - 120

Calculations are performed before rounding to avoid round-off errors in calculated results.

Client: U.S. Army Corps of Engineers

Job Number: 680-52474-1

Lab Control Sample/
Lab Control Sample Duplicate Recovery Report - Batch: 680-153865

Method: 8260B
Preparation: 5030B

LCS Lab Sample ID:	LCS 680-153865/8	Analysis Batch:	680-153865	Instrument ID:	GC/MS Volatiles - O
Client Matrix:	Water	Prep Batch:	N/A	Lab File ID:	oq297.d
Dilution:	1.0	Units:	ug/L	Initial Weight/Volume:	5 mL
Date Analyzed:	11/18/2009 0844			Final Weight/Volume:	5 mL
Date Prepared:	11/18/2009 0844				

LCSD Lab Sample ID:	LCSD 680-153865/9	Analysis Batch:	680-153865	Instrument ID:	GC/MS Volatiles - O
Client Matrix:	Water	Prep Batch:	N/A	Lab File ID:	oq299.d
Dilution:	1.0	Units:	ug/L	Initial Weight/Volume:	5 mL
Date Analyzed:	11/18/2009 0913			Final Weight/Volume:	5 mL
Date Prepared:	11/18/2009 0913				

	% Rec.						
Analyte	LCS	LCSD	Limit	RPD	RPD Limit	LCS Qual	LCSD Qual
Acetone	98	104	17 - 175	6	50		
Benzene	100	99	77 - 119	1	30		
Bromoform	91	100	62 - 133	9	30		
Bromomethane	116	135	12 - 184	15	50		
2-Butanone (MEK)	99	103	33 - 157	4	30		
Carbon disulfide	104	104	55 - 131	0	30		
Carbon tetrachloride	101	106	71 - 135	5	30		
Chlorobenzene	100	101	85 - 116	1	30		
Chlorodibromomethane	99	104	75 - 133	5	30		
Chloroethane	92	95	40 - 165	3	50		
Chloroform	105	105	82 - 120	0	30		
Chloromethane	96	98	48 - 142	2	50		
cis-1,3-Dichloropropene	106	106	76 - 126	0	30		
1,2-Dibromo-3-Chloropropane	98	107	49 - 140	9	30		
Dibromomethane	98	98	78 - 119	0	30		
Dichlorobromomethane	100	101	78 - 127	1	30		
Dichlorodifluoromethane	103	103	34 - 154	0	30		
1,1-Dichloroethane	105	104	74 - 127	0	30		
1,2-Dichloroethane	98	98	66 - 132	0	30		
1,1-Dichloroethene	104	106	62 - 141	2	30		
1,2-Dichloropropane	100	100	73 - 124	0	30		
Ethylbenzene	102	103	86 - 116	1	30		
Ethylene Dibromide	101	103	80 - 121	2	30		
2-Hexanone	98	101	34 - 161	3	30		
Methylene Chloride	104	104	70 - 125	0	30		
4-Methyl-2-pentanone (MIBK)	103	104	40 - 151	0	30		
Styrene	105	106	82 - 122	0	30		
1,1,1,2-Tetrachloroethane	101	106	81 - 128	4	30		
1,1,2,2-Tetrachloroethane	100	103	69 - 129	3	30		
Tetrachloroethene	101	100	76 - 126	1	30		
Toluene	102	103	81 - 117	1	30		
trans-1,2-Dichloroethene	104	106	72 - 131	1	30		

Calculations are performed before rounding to avoid round-off errors in calculated results.

Client: U.S. Army Corps of Engineers

Job Number: 680-52474-1

Lab Control Sample/
Lab Control Sample Duplicate Recovery Report - Batch: 680-153865

Method: 8260B
Preparation: 5030B

LCS Lab Sample ID:	LCS 680-153865/8	Analysis Batch:	680-153865	Instrument ID:	GC/MS Volatiles - O
Client Matrix:	Water	Prep Batch:	N/A	Lab File ID:	oq297.d
Dilution:	1.0	Units:	ug/L	Initial Weight/Volume:	5 mL
Date Analyzed:	11/18/2009 0844			Final Weight/Volume:	5 mL
Date Prepared:	11/18/2009 0844				

LCSD Lab Sample ID:	LCSD 680-153865/9	Analysis Batch:	680-153865	Instrument ID:	GC/MS Volatiles - O
Client Matrix:	Water	Prep Batch:	N/A	Lab File ID:	oq299.d
Dilution:	1.0	Units:	ug/L	Initial Weight/Volume:	5 mL
Date Analyzed:	11/18/2009 0913			Final Weight/Volume:	5 mL
Date Prepared:	11/18/2009 0913				

	% Rec.						
Analyte	LCS	LCSD	Limit	RPD	RPD Limit	LCS Qual	LCSD Qual
trans-1,3-Dichloropropene	108	106	73 - 128	2	30		
1,1,1-Trichloroethane	101	102	76 - 127	1	30		
1,1,2-Trichloroethane	99	99	75 - 121	1	30		
Trichloroethene	101	102	84 - 115	1	30		
Trichlorofluoromethane	102	101	58 - 149	1	50		
1,2,3-Trichloropropane	98	104	70 - 130	6	30		
Vinyl acetate	118	121	10 - 217	2	30		
Vinyl chloride	95	94	59 - 144	1	50		
Xylenes, Total	103	104	84 - 118	1	30		

Surrogate	LCS % Rec	LCSD % Rec	Acceptance Limits
4-Bromofluorobenzene	101	102	75 - 120
Dibromofluoromethane	106	106	75 - 121
Toluene-d8 (Surr)	103	103	75 - 120

Calculations are performed before rounding to avoid round-off errors in calculated results.

Client: U.S. Army Corps of Engineers

Job Number: 680-52474-1

Method Blank - Batch: 680-153991

Method: 8260B
Preparation: 5030B

Lab Sample ID: MB 680-153991/7
Client Matrix: Water
Dilution: 1.0
Date Analyzed: 11/19/2009 1038
Date Prepared: 11/19/2009 1038

Analysis Batch: 680-153991
Prep Batch: N/A
Units: ug/L

Instrument ID: GC/MS Volatiles - O
Lab File ID: oq319.d
Initial Weight/Volume: 5 mL
Final Weight/Volume: 5 mL

Analyte	Result	Qual	MDL	RL
Acetone	5.0	U	5.0	25
Acetonitrile	10	U	10	40
Acrolein	7.4	U	7.4	20
Acrylonitrile	7.2	U	7.2	20
Benzene	0.25	U	0.25	1.0
Bromoform	0.50	U	0.50	1.0
Bromomethane	0.80	U	0.80	1.0
2-Butanone (MEK)	1.0	U	1.0	10
Carbon disulfide	0.60	U	0.60	2.0
Carbon tetrachloride	0.50	U	0.50	1.0
Chlorobenzene	0.25	U	0.25	1.0
2-Chloro-1,3-butadiene	0.30	U	0.30	1.0
Chlorodibromomethane	0.10	U	0.10	1.0
Chloroethane	1.0	U	1.0	1.0
Chloroform	0.14	U	0.14	1.0
Chloromethane	0.33	U	0.33	1.0
3-Chloro-1-propene	0.20	U	0.20	1.0
cis-1,3-Dichloropropene	0.11	U	0.11	1.0
1,2-Dibromo-3-Chloropropane	0.44	U	0.44	1.0
Dibromomethane	0.20	U	0.20	1.0
Dichlorobromomethane	0.25	U	0.25	1.0
Dichlorodifluoromethane	0.25	U	0.25	1.0
1,1-Dichloroethane	0.25	U	0.25	1.0
1,2-Dichloroethane	0.10	U	0.10	1.0
1,1-Dichloroethene	0.11	U	0.11	1.0
1,2-Dichloropropane	0.13	U	0.13	1.0
Ethylbenzene	0.11	U	0.11	1.0
Ethylene Dibromide	0.25	U	0.25	1.0
Ethyl methacrylate	0.25	U	0.25	1.0
2-Hexanone	1.0	U	1.0	10
Iodomethane	1.0	U	1.0	5.0
Isobutyl alcohol	11	U	11	40
Methacrylonitrile	3.3	U	3.3	20
Methylene Chloride	1.0	U	1.0	5.0
Methyl methacrylate	0.48	U	0.48	1.0
4-Methyl-2-pentanone (MIBK)	1.0	U	1.0	10
Pentachloroethane	1.2	U	1.2	5.0
Propionitrile	4.6	U	4.6	20
Styrene	0.11	U	0.11	1.0
1,1,1,2-Tetrachloroethane	0.33	U	0.33	1.0
1,1,2,2-Tetrachloroethane	0.18	U	0.18	1.0

Calculations are performed before rounding to avoid round-off errors in calculated results.

Client: U.S. Army Corps of Engineers

Job Number: 680-52474-1

Method Blank - Batch: 680-153991

Method: 8260B
Preparation: 5030B

Lab Sample ID: MB 680-153991/7
Client Matrix: Water
Dilution: 1.0
Date Analyzed: 11/19/2009 1038
Date Prepared: 11/19/2009 1038

Analysis Batch: 680-153991
Prep Batch: N/A
Units: ug/L

Instrument ID: GC/MS Volatiles - O
Lab File ID: oq319.d
Initial Weight/Volume: 5 mL
Final Weight/Volume: 5 mL

Analyte	Result	Qual	MDL	RL
Tetrachloroethene	0.15	U	0.15	1.0
Toluene	0.33	U	0.33	1.0
trans-1,4-Dichloro-2-butene	0.50	U	0.50	2.0
trans-1,2-Dichloroethene	0.20	U	0.20	1.0
trans-1,3-Dichloropropene	0.21	U	0.21	1.0
1,1,1-Trichloroethane	0.50	U	0.50	1.0
1,1,2-Trichloroethane	0.13	U	0.13	1.0
Trichloroethene	0.13	U	0.13	1.0
Trichlorofluoromethane	0.25	U	0.25	1.0
1,2,3-Trichloropropane	0.41	U	0.41	1.0
Vinyl acetate	0.28	U	0.28	2.0
Vinyl chloride	0.18	U	0.18	1.0
Xylenes, Total	0.20	U	0.20	2.0

Surrogate	% Rec	Acceptance Limits
4-Bromofluorobenzene	102	75 - 120
Dibromofluoromethane	102	75 - 121
Toluene-d8 (Surr)	99	75 - 120

Calculations are performed before rounding to avoid round-off errors in calculated results.

Client: U.S. Army Corps of Engineers

Job Number: 680-52474-1

Lab Control Sample/
Lab Control Sample Duplicate Recovery Report - Batch: 680-153991

Method: 8260B
Preparation: 5030B

LCS Lab Sample ID:	LCS 680-153991/4	Analysis Batch:	680-153991	Instrument ID:	GC/MS Volatiles - O
Client Matrix:	Water	Prep Batch:	N/A	Lab File ID:	oq311.d
Dilution:	1.0	Units:	ug/L	Initial Weight/Volume:	5 mL
Date Analyzed:	11/19/2009 0841			Final Weight/Volume:	5 mL
Date Prepared:	11/19/2009 0841				

LCSD Lab Sample ID:	LCSD 680-153991/5	Analysis Batch:	680-153991	Instrument ID:	GC/MS Volatiles - O
Client Matrix:	Water	Prep Batch:	N/A	Lab File ID:	oq313.d
Dilution:	1.0	Units:	ug/L	Initial Weight/Volume:	5 mL
Date Analyzed:	11/19/2009 0911			Final Weight/Volume:	5 mL
Date Prepared:	11/19/2009 0911				

	% Rec.						
Analyte	LCS	LCSD	Limit	RPD	RPD Limit	LCS Qual	LCSD Qual
Acetone	105	108	17 - 175	3	50		
Benzene	100	96	77 - 119	4	30		
Bromoform	95	99	62 - 133	4	30		
Bromomethane	132	138	12 - 184	5	50		
2-Butanone (MEK)	101	102	33 - 157	1	30		
Carbon disulfide	101	100	55 - 131	1	30		
Carbon tetrachloride	101	101	71 - 135	0	30		
Chlorobenzene	104	101	85 - 116	3	30		
Chlorodibromomethane	103	105	75 - 133	1	30		
Chloroethane	91	90	40 - 165	1	50		
Chloroform	103	103	82 - 120	0	30		
Chloromethane	97	94	48 - 142	3	50		
cis-1,3-Dichloropropene	107	104	76 - 126	3	30		
1,2-Dibromo-3-Chloropropane	101	103	49 - 140	2	30		
Dibromomethane	96	95	78 - 119	1	30		
Dichlorobromomethane	99	99	78 - 127	0	30		
Dichlorodifluoromethane	99	99	34 - 154	0	30		
1,1-Dichloroethane	103	103	74 - 127	0	30		
1,2-Dichloroethane	96	93	66 - 132	3	30		
1,1-Dichloroethene	103	104	62 - 141	1	30		
1,2-Dichloropropane	100	97	73 - 124	3	30		
Ethylbenzene	105	102	86 - 116	3	30		
Ethylene Dibromide	101	100	80 - 121	1	30		
2-Hexanone	103	99	34 - 161	4	30		
Methylene Chloride	101	103	70 - 125	2	30		
4-Methyl-2-pentanone (MIBK)	100	98	40 - 151	1	30		
Styrene	108	106	82 - 122	2	30		
1,1,1,2-Tetrachloroethane	104	106	81 - 128	2	30		
1,1,2,2-Tetrachloroethane	104	101	69 - 129	2	30		
Tetrachloroethene	102	101	76 - 126	2	30		
Toluene	102	99	81 - 117	3	30		
trans-1,2-Dichloroethene	102	103	72 - 131	1	30		

Calculations are performed before rounding to avoid round-off errors in calculated results.

Client: U.S. Army Corps of Engineers

Job Number: 680-52474-1

Lab Control Sample/
Lab Control Sample Duplicate Recovery Report - Batch: 680-153991

Method: 8260B
Preparation: 5030B

LCS Lab Sample ID:	LCS 680-153991/4	Analysis Batch:	680-153991	Instrument ID:	GC/MS Volatiles - O
Client Matrix:	Water	Prep Batch:	N/A	Lab File ID:	oq311.d
Dilution:	1.0	Units:	ug/L	Initial Weight/Volume:	5 mL
Date Analyzed:	11/19/2009 0841			Final Weight/Volume:	5 mL
Date Prepared:	11/19/2009 0841				

LCSD Lab Sample ID:	LCSD 680-153991/5	Analysis Batch:	680-153991	Instrument ID:	GC/MS Volatiles - O
Client Matrix:	Water	Prep Batch:	N/A	Lab File ID:	oq313.d
Dilution:	1.0	Units:	ug/L	Initial Weight/Volume:	5 mL
Date Analyzed:	11/19/2009 0911			Final Weight/Volume:	5 mL
Date Prepared:	11/19/2009 0911				

	% Rec.						
Analyte	LCS	LCSD	Limit	RPD	RPD Limit	LCS Qual	LCSD Qual
trans-1,3-Dichloropropene	107	104	73 - 128	3	30		
1,1,1-Trichloroethane	101	97	76 - 127	4	30		
1,1,2-Trichloroethane	99	96	75 - 121	3	30		
Trichloroethene	102	98	84 - 115	4	30		
Trichlorofluoromethane	98	98	58 - 149	0	50		
1,2,3-Trichloropropane	101	100	70 - 130	1	30		
Vinyl acetate	115	116	10 - 217	1	30		
Vinyl chloride	91	89	59 - 144	2	50		
Xylenes, Total	107	103	84 - 118	3	30		

Surrogate	LCS % Rec	LCSD % Rec	Acceptance Limits
4-Bromofluorobenzene	103	101	75 - 120
Dibromofluoromethane	104	106	75 - 121
Toluene-d8 (Surr)	103	100	75 - 120

Calculations are performed before rounding to avoid round-off errors in calculated results.

Client: U.S. Army Corps of Engineers

Job Number: 680-52474-1

Matrix Spike/
Matrix Spike Duplicate Recovery Report - Batch: 680-153991

Method: 8260B
Preparation: 5030B

MS Lab Sample ID:	680-52474-3	Analysis Batch:	680-153991	Instrument ID:	GC/MS Volatiles - O
Client Matrix:	Water	Prep Batch: N/A		Lab File ID:	o3065.d
Dilution:	1.0			Initial Weight/Volume:	5 mL
Date Analyzed:	11/19/2009 1827			Final Weight/Volume:	5 mL
Date Prepared:	11/19/2009 1827				

MSD Lab Sample ID:	680-52474-3	Analysis Batch:	680-153991	Instrument ID:	GC/MS Volatiles - O
Client Matrix:	Water	Prep Batch: N/A		Lab File ID:	o3067.d
Dilution:	1.0			Initial Weight/Volume:	5 mL
Date Analyzed:	11/19/2009 1857			Final Weight/Volume:	5 mL
Date Prepared:	11/19/2009 1857				

	% Rec.						
Analyte	MS	MSD	Limit	RPD	RPD Limit	MS Qual	MSD Qual
Acetone	96	94	17 - 175	3	50		
Benzene	105	101	77 - 119	3	30		
Bromoform	87	84	62 - 133	3	30		
Bromomethane	144	149	12 - 184	3	50		
2-Butanone (MEK)	98	96	33 - 157	2	30		
Carbon disulfide	90	86	55 - 131	4	30		
Carbon tetrachloride	102	97	71 - 135	5	30		
Chlorobenzene	103	97	85 - 116	7	30		
Chlorodibromomethane	92	88	75 - 133	5	30		
Chloroethane	118	111	40 - 165	6	50		
Chloroform	109	105	82 - 120	4	30		
Chloromethane	113	108	48 - 142	4	50		
cis-1,3-Dichloropropene	97	95	76 - 126	2	30		
1,2-Dibromo-3-Chloropropane	90	85	49 - 140	6	30		
Dibromomethane	97	93	78 - 119	3	30		
Dichlorobromomethane	96	91	78 - 127	5	30		
Dichlorodifluoromethane	121	118	34 - 154	3	30		
1,1-Dichloroethane	107	105	74 - 127	2	30		
1,2-Dichloroethane	99	95	66 - 132	4	30		
1,1-Dichloroethene	110	109	62 - 141	1	30		
1,2-Dichloropropane	100	96	73 - 124	4	30		
Ethylbenzene	110	102	86 - 116	7	30		
Ethylene Dibromide	93	92	80 - 121	1	30		
2-Hexanone	97	92	34 - 161	5	30		
Methylene Chloride	112	108	70 - 125	3	30		
4-Methyl-2-pentanone (MIBK)	97	93	40 - 151	4	30		
Styrene	108	101	82 - 122	6	30		
1,1,1,2-Tetrachloroethane	98	91	81 - 128	7	30		
1,1,2,2-Tetrachloroethane	95	89	69 - 129	7	30		

Calculations are performed before rounding to avoid round-off errors in calculated results.

Client: U.S. Army Corps of Engineers

Job Number: 680-52474-1

Matrix Spike/
Matrix Spike Duplicate Recovery Report - Batch: 680-153991

Method: 8260B
Preparation: 5030B

MS Lab Sample ID:	680-52474-3	Analysis Batch:	680-153991	Instrument ID:	GC/MS Volatiles - O
Client Matrix:	Water	Prep Batch:	N/A	Lab File ID:	o3065.d
Dilution:	1.0			Initial Weight/Volume:	5 mL
Date Analyzed:	11/19/2009 1827			Final Weight/Volume:	5 mL
Date Prepared:	11/19/2009 1827				

MSD Lab Sample ID:	680-52474-3	Analysis Batch:	680-153991	Instrument ID:	GC/MS Volatiles - O
Client Matrix:	Water	Prep Batch:	N/A	Lab File ID:	o3067.d
Dilution:	1.0			Initial Weight/Volume:	5 mL
Date Analyzed:	11/19/2009 1857			Final Weight/Volume:	5 mL
Date Prepared:	11/19/2009 1857				

	% Rec.						
Analyte	MS	MSD	Limit	RPD	RPD Limit	MS Qual	MSD Qual
Tetrachloroethene	102	96	76 - 126	7	30		
Toluene	104	102	81 - 117	2	30		
trans-1,2-Dichloroethene	111	107	72 - 131	3	30		
trans-1,3-Dichloropropene	95	93	73 - 128	2	30		
1,1,1-Trichloroethane	99	95	76 - 127	4	30		
1,1,2-Trichloroethane	96	94	75 - 121	2	30		
Trichloroethene	103	98	84 - 115	5	30		
Trichlorofluoromethane	109	106	58 - 149	3	50		
1,2,3-Trichloropropane	97	90	70 - 130	7	30		
Vinyl acetate	117	113	10 - 217	3	30		
Vinyl chloride	106	103	59 - 144	4	50		
Xylenes, Total	109	102	84 - 118	6	30		

Surrogate	MS % Rec	MSD % Rec	Acceptance Limits
4-Bromofluorobenzene	100	95	75 - 120
Dibromofluoromethane	105	104	75 - 121
Toluene-d8 (Surr)	105	100	75 - 120

Calculations are performed before rounding to avoid round-off errors in calculated results.

Client: U.S. Army Corps of Engineers

Job Number: 680-52474-1

Method Blank - Batch: 680-153123

Method: 6020
Preparation: 3030C

Lab Sample ID:	MB 680-153123/6-A	Analysis Batch:	680-153875	Instrument ID:	ICP MS - A
Client Matrix:	Water	Prep Batch:	680-153123	Lab File ID:	N/A
Dilution:	1.0	Units:	ug/L	Initial Weight/Volume:	50 mL
Date Analyzed:	11/16/2009 1418			Final Weight/Volume:	50 mL
Date Prepared:	11/11/2009 1457				

Analyte	Result	Qual	MDL	RL
Antimony	0.99	U	0.99	2.0
Arsenic	0.40	U	0.40	1.0
Barium	0.15	U	0.15	1.0
Beryllium	0.070	U	0.070	0.20
Cadmium	0.20	U	0.20	0.50
Chromium	0.423	J	0.16	1.0
Cobalt	0.078	U	0.078	0.20
Copper	0.21	U	0.21	1.0
Lead	0.080	U	0.080	0.30
Nickel	0.20	U	0.20	0.50
Selenium	0.21	U	0.21	0.50
Silver	0.10	U	0.10	0.20
Thallium	0.10	U	0.10	0.20
Tin	0.410	J	0.40	1.0
Vanadium	1.4	U	1.4	5.0
Zinc	2.6	U	2.6	10

Calculations are performed before rounding to avoid round-off errors in calculated results.

Client: U.S. Army Corps of Engineers

Job Number: 680-52474-1

Lab Control Sample - Batch: 680-153123

Method: 6020
Preparation: 3030C

Lab Sample ID: LCS 680-153123/7-A
Client Matrix: Water
Dilution: 5.0
Date Analyzed: 11/16/2009 1425
Date Prepared: 11/11/2009 1457

Analysis Batch: 680-153875
Prep Batch: 680-153123
Units: ug/L

Instrument ID: ICP MS - A
Lab File ID: N/A
Initial Weight/Volume: 50 mL
Final Weight/Volume: 50 mL

Analyte	Spike Amount	Result	% Rec.	Limit	Qual
Antimony	50.0	49.5	99	75 - 125	
Arsenic	100	100	100	75 - 125	
Barium	100	98.2	98	75 - 125	
Beryllium	50.0	49.3	99	75 - 125	
Cadmium	50.0	50.0	100	75 - 125	
Chromium	100	96.2	96	75 - 125	
Cobalt	50.0	46.7	93	75 - 125	
Copper	100	99.8	100	75 - 125	
Lead	50.0	48.8	98	75 - 125	
Nickel	100	100	100	75 - 125	
Selenium	100	102	102	75 - 125	
Silver	50.0	45.7	91	75 - 125	
Thallium	40.0	39.2	98	75 - 125	
Tin	100	93.6	94	75 - 125	
Vanadium	100	96.4	96	75 - 125	
Zinc	100	107	107	75 - 125	

Calculations are performed before rounding to avoid round-off errors in calculated results.

Client: U.S. Army Corps of Engineers

Job Number: 680-52474-1

Matrix Spike/
Matrix Spike Duplicate Recovery Report - Batch: 680-153123

Method: 6020
Preparation: 3030C

MS Lab Sample ID:	680-52474-3	Analysis Batch:	680-153875	Instrument ID:	ICP MS - A
Client Matrix:	Water	Prep Batch:	680-153123	Lab File ID:	N/A
Dilution:	5.0			Initial Weight/Volume:	50 mL
Date Analyzed:	11/16/2009 1506			Final Weight/Volume:	50 mL
Date Prepared:	11/11/2009 1457				

MSD Lab Sample ID:	680-52474-3	Analysis Batch:	680-153875	Instrument ID:	ICP MS - A
Client Matrix:	Water	Prep Batch:	680-153123	Lab File ID:	N/A
Dilution:	5.0			Initial Weight/Volume:	50 mL
Date Analyzed:	11/16/2009 1514			Final Weight/Volume:	50 mL
Date Prepared:	11/11/2009 1457				

	% Rec.						
Analyte	MS	MSD	Limit	RPD	RPD Limit	MS Qual	MSD Qual
Antimony	96	102	75 - 125	5	20		
Arsenic	99	101	75 - 125	2	20		
Barium	91	100	75 - 125	7	20		
Beryllium	95	100	75 - 125	5	20		
Cadmium	99	102	75 - 125	3	20		
Chromium	93	97	75 - 125	4	20		
Cobalt	90	94	75 - 125	4	20		
Copper	97	105	75 - 125	8	20		
Lead	94	100	75 - 125	5	20		
Nickel	96	99	75 - 125	3	20		
Selenium	98	103	75 - 125	5	20		
Silver	90	95	75 - 125	6	20		
Thallium	95	99	75 - 125	5	20		
Tin	92	96	75 - 125	4	20		
Vanadium	95	98	75 - 125	3	20		
Zinc	102	112	75 - 125	9	20		

Calculations are performed before rounding to avoid round-off errors in calculated results.

Client: U.S. Army Corps of Engineers

Job Number: 680-52474-1

Method Blank - Batch: 680-153234

Method: 300.0
Preparation: N/A

Lab Sample ID: MB 680-153234/2
Client Matrix: Water
Dilution: 5.0
Date Analyzed: 11/11/2009 1233
Date Prepared: N/A

Analysis Batch: 680-153234
Prep Batch: N/A
Units: mg/L

Instrument ID: ICCS200 - G
Lab File ID: 0006.d
Initial Weight/Volume: 1.0 mL
Final Weight/Volume: 5 mL

Analyte	Result	Qual	MDL	RL
Nitrate as NO3	0.36	U	0.36	1.1

Lab Control Sample - Batch: 680-153234

Method: 300.0
Preparation: N/A

Lab Sample ID: LCS 680-153234/3
Client Matrix: Water
Dilution: 5.0
Date Analyzed: 11/11/2009 1245
Date Prepared: N/A

Analysis Batch: 680-153234
Prep Batch: N/A
Units: mg/L

Instrument ID: ICCS200 - G
Lab File ID: 0007.d
Initial Weight/Volume: 1.0 mL
Final Weight/Volume: 5 mL

Analyte	Spike Amount	Result	% Rec.	Limit	Qual
Nitrate as NO3	11.0	10.3	93	90 - 110	

Matrix Spike - Batch: 680-153234

Method: 300.0
Preparation: N/A

Lab Sample ID: 680-52474-1
Client Matrix: Water
Dilution: 5.0
Date Analyzed: 11/11/2009 1626
Date Prepared: N/A

Analysis Batch: 680-153234
Prep Batch: N/A
Units: mg/L

Instrument ID: ICCS200 - G
Lab File ID: 0023.d
Initial Weight/Volume: 1.0 mL
Final Weight/Volume: 5 mL
1 uL

Analyte	Sample Result/Qual		Spike Amount	Result	% Rec.	Limit	Qual
Nitrate as NO3	0.40	J	22.1	22.6	101	90 - 110	

Calculations are performed before rounding to avoid round-off errors in calculated results.

Client: U.S. Army Corps of Engineers

Job Number: 680-52474-1

Matrix Spike/
Matrix Spike Duplicate Recovery Report - Batch: 680-153234

Method: 300.0
Preparation: N/A

MS Lab Sample ID:	680-52474-3	Analysis Batch:	680-153234	Instrument ID:	ICCS200 - G
Client Matrix:	Water	Prep Batch:	N/A	Lab File ID:	0010.d
Dilution:	5.0			Initial Weight/Volume:	1.0 mL
Date Analyzed:	11/11/2009 1323			Final Weight/Volume:	5 mL
Date Prepared:	N/A				1 uL

MSD Lab Sample ID:	680-52474-3	Analysis Batch:	680-153234	Instrument ID:	ICCS200 - G
Client Matrix:	Water	Prep Batch:	N/A	Lab File ID:	0011.d
Dilution:	5.0			Initial Weight/Volume:	1.0 mL
Date Analyzed:	11/11/2009 1335			Final Weight/Volume:	5 mL
Date Prepared:	N/A				1 uL

	% Rec.						
Analyte	MS	MSD	Limit	RPD	RPD Limit	MS Qual	MSD Qual
Nitrate as NO3	100	104	90 - 110	4	30	H	

Calculations are performed before rounding to avoid round-off errors in calculated results.

Serial Number 020639

ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Savannah
5102 LaRoche Avenue
Savannah, GA 31404

Website: www.testamericainc.com
Phone: (912) 354-7858
Fax: (912) 352-0165

Alternate Laboratory Name/Location

Phone:
Fax:

PROJECT REFERENCE: Fort Bragg (Lamon Fill)	PROJECT NO.	PROJECT LOCATION (STATE)	PAGE / OF
TAL (LAB) PROJECT MANAGER: Terry Hornsby	P.O. NUMBER	CONTRACT NO.	STANDARD REPORT DELIVERY ◯
CLIENT (SITE) PM: Kevin G Haborak	CLIENT PHONE: 912 547 3255	CLIENT FAX	DATE DUE
CLIENT NAME: USACE	CLIENT E-MAIL		EXPEDITED REPORT DELIVERY (SURCHARGE) ◯
CLIENT ADDRESS: 100 W Oglethorpe Ave, Savannah Georgia 31402			DATE DUE
COMPANY CONTRACTING THIS WORK (if applicable)			NUMBER OF COOLERS SUBMITTED PER SHIPMENT:

MATRIX TYPE: COMPOSITE (C) OR GRAB (G) INDICATE; AQUEOUS (WATER); SOLID OR SEMISOLID; AIR; NONAQUEOUS LIQUID (OIL, SOLVENT, ...)

REQUIRED ANALYSIS / PRESERVATIVE: HCL 8260 VOC; HNO3 Priority Metals (Alc); H2SO4 Nitrate

SAMPLE DATE	SAMPLE TIME	SAMPLE IDENTIFICATION	COMPOSITE (C) OR GRAB (G)	AQUEOUS (WATER)	SOLID OR SEMISOLID	AIR	NONAQUEOUS LIQUID (OIL, SOLVENT, ...)	HCL 8260 VOC	HNO3 Priority Metals (Alc)	H2SO4 Nitrate	REMARKS
11-9-09	0800	GW-LMW-Dup 1						3	1	1	
11-9-09	1000	GW-LMW-9-11-09						3	1	1	
11-9-09	1145	GW-LMW-MS						3	1	1	
11-9-09	1345	GW-LMW-MSD						3	1	1	
11-9-09	1400	GW-LMW-8-11-09						3	1	1	
11-9-09	1153	GW-LMW-9D-11-09						3	1	1	
11-9-09	1705	GW-LMW-35-11-09						3	1	1	
—	—	Trip Blank						2			

RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RELINQUISHED BY: (SIGNATURE)	DATE	TIME
Samuel Jackson	11/09/09	0830	Shipped by Fedex					
RECEIVED BY: (SIGNATURE)	**DATE**	**TIME**	**RECEIVED BY: (SIGNATURE)**	**DATE**	**TIME**	**RECEIVED BY: (SIGNATURE)**	**DATE**	**TIME**

LABORATORY USE ONLY

RECEIVED FOR LABORATORY BY: (SIGNATURE)	DATE	TIME	CUSTODY INTACT	CUSTODY SEAL NO.	SAVANNAH LOG NO.	LABORATORY REMARKS
Beth A Daughtry	11/11/9	1010	YES ◯ NO ◯		680-52474	TEMP 0.4

TAL8240-680 (1207)

11/25/2009

ANALYTICAL REPORT

Job Number: 680-52551-1

Job Description: Ft. Bragg Lamont Landfill

For:
U.S. Army Corps of Engineers
PO BOX 889
Savannah, GA 31402-0889

Attention: Mr. Kevin Haborak

Approved for release.
Terry Hornsby
Project Manager I
11/27/2009 9:18 AM

Terry Hornsby
Project Manager I
terry.hornsby@testamericainc.com
11/27/2009

cc: Mr. Judson Smith

The test results in this report meet NELAP requirements for parameters for which accreditation is required or available. Any exceptions to the NELAP requirements are noted. Results pertain only to samples listed in this report. This report may not be reproduced, except in full, without the written approval of the laboratory. Questions should be directed to the person who signed this report.

Savannah Certifications and ID #s: A2LA: 0399.01; AL: 41450; ARDEQ: 88-0692; ARDOH; CA: 03217CA; CO; CT: PH0161; DE; FL: E87052; GA: 803; Guam; HI; IL: 200022; IN; IA: 353; KS: E-10322; KY EPPC: 90084; KY UST; LA DEQ: 30690; LA DHH: LA080008; ME: 2008022; MD: 250; MA: M-GA006; MI: 9925; MS; NFESC: 249; NV: GA00006; NJ: GA769; NM; NY: 10842; NC DWQ: 269; NC DHHS: 13701; PA: 68-00474; PR: GA00006; RI: LAO00244; SC: 98001001; TN: TN0296; TX: T104704185; USEPA: GA00006; VT: VT-87052; VA: 00302; WA; WV DEP: 094; WV DHHR: 9950 C; WI DNR: 999819810; WY/EPAR8: 8TMS-Q

Job Narrative
680-52551-1

Receipt
All samples were received in good condition within temperature requirements.

GC/MS VOA
No analytical or quality issues were noted.

Metals
No analytical or quality issues were noted.

General Chemistry
Method 300.0: The following samples were received with greater than 50% of holding time expired: GW-LMW-16-11-09 (680-52551-4), GW-LMW-DUP 2 (680-52551-3), GW-LMW-3-11-09 (680-52551-1), and GW-LMW-4-11-09 (680-52551-2). As such, the laboratory had insufficient time remaining to perform the analysis within holding time.

No other analytical or quality issues were noted.

VOA Prep
No analytical or quality issues were noted.

METHOD / ANALYST SUMMARY

Client: U.S. Army Corps of Engineers

Job Number: 680-52551-1

Method	Analyst	Analyst ID
SW846 8260B	Bearden, Robert	RB
SW846 6020	Boyuk, Brian	BB
MCAWW 300.0	Campbell, Sophia M	SMC

SAMPLE SUMMARY

Client: U.S. Army Corps of Engineers

Job Number: 680-52551-1

Lab Sample ID	Client Sample ID	Client Matrix	Date/Time Sampled	Date/Time Received
680-52551-1	GW-LMW-3-11-09	Water	11/10/2009 1005	11/12/2009 0947
680-52551-2	GW-LMW-4-11-09	Water	11/10/2009 1225	11/12/2009 0947
680-52551-3FD	GW-LMW-DUP 2	Water	11/10/2009 1400	11/12/2009 0947
680-52551-4	GW-LMW-16-11-09	Water	11/10/2009 1545	11/12/2009 0947
680-52551-5TB	Trip Blank	Water	11/10/2009 0000	11/12/2009 0947

Client: U.S. Army Corps of Engineers

Job Number: 680-52551-1

Client Sample ID: **GW-LMW-3-11-09**

Lab Sample ID: 680-52551-1

Client Matrix: Water

Date Sampled: 11/10/2009 1005

Date Received: 11/12/2009 0947

8260B Volatile Organic Compounds (GC/MS)

Method: 8260B

Preparation: 5030B

Dilution: 1.0

Date Analyzed: 11/20/2009 1542

Date Prepared: 11/20/2009 1542

Analysis Batch: 680-154184

Instrument ID: MSO

Lab File ID: o3081.d

Initial Weight/Volume: 5 mL

Final Weight/Volume: 5 mL

Analyte	Result (ug/L)	Qualifier	MDL	RL
Acetone	5.0	U	5.0	25
Acetonitrile	10	U	10	40
Acrolein	7.4	U	7.4	20
Acrylonitrile	7.2	U	7.2	20
Benzene	0.25	U	0.25	1.0
Bromoform	0.50	U	0.50	1.0
Bromomethane	0.80	U	0.80	1.0
2-Butanone (MEK)	1.0	U	1.0	10
Carbon disulfide	0.60	U	0.60	2.0
Carbon tetrachloride	0.50	U	0.50	1.0
Chlorobenzene	0.25	U	0.25	1.0
2-Chloro-1,3-butadiene	0.30	U	0.30	1.0
Chlorodibromomethane	0.10	U	0.10	1.0
Chloroethane	1.0	U	1.0	1.0
Chloroform	0.50	J	0.14	1.0
Chloromethane	0.33	U	0.33	1.0
3-Chloro-1-propene	0.20	U	0.20	1.0
cis-1,3-Dichloropropene	0.11	U	0.11	1.0
1,2-Dibromo-3-Chloropropane	0.44	U	0.44	1.0
Dibromomethane	0.20	U	0.20	1.0
Dichlorobromomethane	0.25	U	0.25	1.0
Dichlorodifluoromethane	0.41	J	0.25	1.0
1,1-Dichloroethane	0.25	U	0.25	1.0
1,2-Dichloroethane	0.10	U	0.10	1.0
1,1-Dichloroethene	0.11	U	0.11	1.0
1,2-Dichloropropane	0.13	U	0.13	1.0
Ethylbenzene	0.11	U	0.11	1.0
Ethylene Dibromide	0.25	U	0.25	1.0
Ethyl methacrylate	0.25	U	0.25	1.0
2-Hexanone	1.0	U	1.0	10
Iodomethane	1.0	U	1.0	5.0
Isobutyl alcohol	11	U	11	40
Methacrylonitrile	3.3	U	3.3	20
Methylene Chloride	1.0	U	1.0	5.0
Methyl methacrylate	0.48	U	0.48	1.0
4-Methyl-2-pentanone (MIBK)	1.0	U	1.0	10
Pentachloroethane	1.2	U	1.2	5.0
Propionitrile	4.6	U	4.6	20
Styrene	0.11	U	0.11	1.0
1,1,1,2-Tetrachloroethane	0.33	U	0.33	1.0
1,1,2,2-Tetrachloroethane	0.18	U	0.18	1.0
Tetrachloroethene	0.15	U	0.15	1.0
Toluene	0.33	U	0.33	1.0
trans-1,4-Dichloro-2-butene	0.50	U	0.50	2.0
trans-1,2-Dichloroethene	0.20	U	0.20	1.0
trans-1,3-Dichloropropene	0.21	U	0.21	1.0

Client: U.S. Army Corps of Engineers

Job Number: 680-52551-1

Client Sample ID: **GW-LMW-3-11-09**

Lab Sample ID: 680-52551-1

Client Matrix: Water

Date Sampled: 11/10/2009 1005

Date Received: 11/12/2009 0947

8260B Volatile Organic Compounds (GC/MS)

Method:	8260B	Analysis Batch: 680-154184	Instrument ID:	MSO
Preparation:	5030B		Lab File ID:	o3081.d
Dilution:	1.0		Initial Weight/Volume:	5 mL
Date Analyzed:	11/20/2009 1542		Final Weight/Volume:	5 mL
Date Prepared:	11/20/2009 1542			

Analyte	Result (ug/L)	Qualifier	MDL	RL
1,1,1-Trichloroethane	0.50	U	0.50	1.0
1,1,2-Trichloroethane	0.13	U	0.13	1.0
Trichloroethene	0.13	U	0.13	1.0
Trichlorofluoromethane	0.68	J	0.25	1.0
1,2,3-Trichloropropane	0.41	U	0.41	1.0
Vinyl acetate	0.28	U	0.28	2.0
Vinyl chloride	0.18	U	0.18	1.0
Xylenes, Total	0.32	J	0.20	2.0

Surrogate	%Rec	Qualifier	Acceptance Limits
4-Bromofluorobenzene	101		75 - 120
Dibromofluoromethane	102		75 - 121
Toluene-d8 (Surr)	99		75 - 120

Client: U.S. Army Corps of Engineers

Job Number: 680-52551-1

Client Sample ID: **GW-LMW-4-11-09**

Lab Sample ID: 680-52551-2

Client Matrix: Water

Date Sampled: 11/10/2009 1225

Date Received: 11/12/2009 0947

8260B Volatile Organic Compounds (GC/MS)

Method:	8260B	Analysis Batch: 680-154184	Instrument ID:	MSO
Preparation:	5030B		Lab File ID:	o3083.d
Dilution:	1.0		Initial Weight/Volume:	5 mL
Date Analyzed:	11/20/2009 1611		Final Weight/Volume:	5 mL
Date Prepared:	11/20/2009 1611			

Analyte	Result (ug/L)	Qualifier	MDL	RL
Acetone	5.0	U	5.0	25
Acetonitrile	10	U	10	40
Acrolein	7.4	U	7.4	20
Acrylonitrile	7.2	U	7.2	20
Benzene	0.25	U	0.25	1.0
Bromoform	0.50	U	0.50	1.0
Bromomethane	0.80	U	0.80	1.0
2-Butanone (MEK)	1.0	U	1.0	10
Carbon disulfide	0.60	U	0.60	2.0
Carbon tetrachloride	0.50	U	0.50	1.0
Chlorobenzene	0.25	U	0.25	1.0
2-Chloro-1,3-butadiene	0.30	U	0.30	1.0
Chlorodibromomethane	0.10	U	0.10	1.0
Chloroethane	1.0	U	1.0	1.0
Chloroform	0.14	U	0.14	1.0
Chloromethane	0.33	U	0.33	1.0
3-Chloro-1-propene	0.20	U	0.20	1.0
cis-1,3-Dichloropropene	0.11	U	0.11	1.0
1,2-Dibromo-3-Chloropropane	0.44	U	0.44	1.0
Dibromomethane	0.20	U	0.20	1.0
Dichlorobromomethane	0.25	U	0.25	1.0
Dichlorodifluoromethane	1.1		0.25	1.0
1,1-Dichloroethane	0.25	U	0.25	1.0
1,2-Dichloroethane	0.10	U	0.10	1.0
1,1-Dichloroethene	0.11	U	0.11	1.0
1,2-Dichloropropane	0.13	U	0.13	1.0
Ethylbenzene	0.11	U	0.11	1.0
Ethylene Dibromide	0.25	U	0.25	1.0
Ethyl methacrylate	0.25	U	0.25	1.0
2-Hexanone	1.0	U	1.0	10
Iodomethane	1.0	U	1.0	5.0
Isobutyl alcohol	11	U	11	40
Methacrylonitrile	3.3	U	3.3	20
Methylene Chloride	1.0	U	1.0	5.0
Methyl methacrylate	0.48	U	0.48	1.0
4-Methyl-2-pentanone (MIBK)	1.0	U	1.0	10
Pentachloroethane	1.2	U	1.2	5.0
Propionitrile	4.6	U	4.6	20
Styrene	0.11	U	0.11	1.0
1,1,1,2-Tetrachloroethane	0.33	U	0.33	1.0
1,1,2,2-Tetrachloroethane	0.18	U	0.18	1.0
Tetrachloroethene	0.15	U	0.15	1.0
Toluene	0.33	U	0.33	1.0
trans-1,4-Dichloro-2-butene	0.50	U	0.50	2.0
trans-1,2-Dichloroethene	0.20	U	0.20	1.0
trans-1,3-Dichloropropene	0.21	U	0.21	1.0

Client: U.S. Army Corps of Engineers

Job Number: 680-52551-1

Client Sample ID: **GW-LMW-4-11-09**

Lab Sample ID: 680-52551-2

Client Matrix: Water

Date Sampled: 11/10/2009 1225

Date Received: 11/12/2009 0947

8260B Volatile Organic Compounds (GC/MS)

Method:	8260B	Analysis Batch: 680-154184	Instrument ID:	MSO
Preparation:	5030B		Lab File ID:	o3083.d
Dilution:	1.0		Initial Weight/Volume:	5 mL
Date Analyzed:	11/20/2009 1611		Final Weight/Volume:	5 mL
Date Prepared:	11/20/2009 1611			

Analyte	Result (ug/L)	Qualifier	MDL	RL
1,1,1-Trichloroethane	0.50	U	0.50	1.0
1,1,2-Trichloroethane	0.13	U	0.13	1.0
Trichloroethene	0.13	U	0.13	1.0
Trichlorofluoromethane	2.4		0.25	1.0
1,2,3-Trichloropropane	0.41	U	0.41	1.0
Vinyl acetate	0.28	U	0.28	2.0
Vinyl chloride	0.18	U	0.18	1.0
Xylenes, Total	0.20	U	0.20	2.0

Surrogate	%Rec	Qualifier	Acceptance Limits
4-Bromofluorobenzene	101		75 - 120
Dibromofluoromethane	101		75 - 121
Toluene-d8 (Surr)	98		75 - 120

Client: U.S. Army Corps of Engineers

Job Number: 680-52551-1

Client Sample ID: **GW-LMW-DUP 2**

Lab Sample ID: 680-52551-3FD

Client Matrix: Water

Date Sampled: 11/10/2009 1400

Date Received: 11/12/2009 0947

8260B Volatile Organic Compounds (GC/MS)

Method:	8260B	Analysis Batch: 680-154184	Instrument ID:	MSO
Preparation:	5030B		Lab File ID:	o3085.d
Dilution:	1.0		Initial Weight/Volume:	5 mL
Date Analyzed:	11/20/2009 1640		Final Weight/Volume:	5 mL
Date Prepared:	11/20/2009 1640			

Analyte	Result (ug/L)	Qualifier	MDL	RL
Acetone	5.0	U	5.0	25
Acetonitrile	10	U	10	40
Acrolein	7.4	U	7.4	20
Acrylonitrile	7.2	U	7.2	20
Benzene	0.25	U	0.25	1.0
Bromoform	0.50	U	0.50	1.0
Bromomethane	0.80	U	0.80	1.0
2-Butanone (MEK)	1.0	U	1.0	10
Carbon disulfide	0.60	U	0.60	2.0
Carbon tetrachloride	0.50	U	0.50	1.0
Chlorobenzene	0.25	U	0.25	1.0
2-Chloro-1,3-butadiene	0.30	U	0.30	1.0
Chlorodibromomethane	0.10	U	0.10	1.0
Chloroethane	1.0	U	1.0	1.0
Chloroform	0.14	U	0.14	1.0
Chloromethane	0.33	U	0.33	1.0
3-Chloro-1-propene	0.20	U	0.20	1.0
cis-1,3-Dichloropropene	0.11	U	0.11	1.0
1,2-Dibromo-3-Chloropropane	0.44	U	0.44	1.0
Dibromomethane	0.20	U	0.20	1.0
Dichlorobromomethane	0.25	U	0.25	1.0
Dichlorodifluoromethane	0.25	U	0.25	1.0
1,1-Dichloroethane	0.25	U	0.25	1.0
1,2-Dichloroethane	0.10	U	0.10	1.0
1,1-Dichloroethene	0.11	U	0.11	1.0
1,2-Dichloropropane	0.13	U	0.13	1.0
Ethylbenzene	0.11	U	0.11	1.0
Ethylene Dibromide	0.25	U	0.25	1.0
Ethyl methacrylate	0.25	U	0.25	1.0
2-Hexanone	1.0	U	1.0	10
Iodomethane	1.0	U	1.0	5.0
Isobutyl alcohol	11	U	11	40
Methacrylonitrile	3.3	U	3.3	20
Methylene Chloride	1.0	U	1.0	5.0
Methyl methacrylate	0.48	U	0.48	1.0
4-Methyl-2-pentanone (MIBK)	1.0	U	1.0	10
Pentachloroethane	1.2	U	1.2	5.0
Propionitrile	4.6	U	4.6	20
Styrene	0.11	U	0.11	1.0
1,1,1,2-Tetrachloroethane	0.33	U	0.33	1.0
1,1,2,2-Tetrachloroethane	0.18	U	0.18	1.0
Tetrachloroethene	0.15	U	0.15	1.0
Toluene	0.33	U	0.33	1.0
trans-1,4-Dichloro-2-butene	0.50	U	0.50	2.0
trans-1,2-Dichloroethene	0.20	U	0.20	1.0
trans-1,3-Dichloropropene	0.21	U	0.21	1.0

Client: U.S. Army Corps of Engineers

Job Number: 680-52551-1

Client Sample ID: **GW-LMW-DUP 2**

Lab Sample ID: 680-52551-3FD

Client Matrix: Water

Date Sampled: 11/10/2009 1400

Date Received: 11/12/2009 0947

8260B Volatile Organic Compounds (GC/MS)

Method:	8260B	Analysis Batch: 680-154184	Instrument ID:	MSO
Preparation:	5030B		Lab File ID:	o3085.d
Dilution:	1.0		Initial Weight/Volume:	5 mL
Date Analyzed:	11/20/2009 1640		Final Weight/Volume:	5 mL
Date Prepared:	11/20/2009 1640			

Analyte	Result (ug/L)	Qualifier	MDL	RL
1,1,1-Trichloroethane	0.50	U	0.50	1.0
1,1,2-Trichloroethane	0.13	U	0.13	1.0
Trichloroethene	0.13	U	0.13	1.0
Trichlorofluoromethane	0.25	U	0.25	1.0
1,2,3-Trichloropropane	0.41	U	0.41	1.0
Vinyl acetate	0.28	U	0.28	2.0
Vinyl chloride	0.18	U	0.18	1.0
Xylenes, Total	0.20	J	0.20	2.0

Surrogate	%Rec	Qualifier	Acceptance Limits
4-Bromofluorobenzene	100		75 - 120
Dibromofluoromethane	99		75 - 121
Toluene-d8 (Surr)	101		75 - 120

Client: U.S. Army Corps of Engineers

Job Number: 680-52551-1

Client Sample ID: **GW-LMW-16-11-09**

Lab Sample ID: 680-52551-4

Client Matrix: Water

Date Sampled: 11/10/2009 1545

Date Received: 11/12/2009 0947

8260B Volatile Organic Compounds (GC/MS)

Method:	8260B	Analysis Batch: 680-154394	Instrument ID:	MSO
Preparation:	5030B		Lab File ID:	o3213.d
Dilution:	1.0		Initial Weight/Volume:	5 mL
Date Analyzed:	11/23/2009 1752		Final Weight/Volume:	5 mL
Date Prepared:	11/23/2009 1752			

Analyte	Result (ug/L)	Qualifier	MDL	RL
Acetone	5.0	U	5.0	25
Acetonitrile	10	U	10	40
Acrolein	7.4	U	7.4	20
Acrylonitrile	7.2	U	7.2	20
Benzene	0.25	U	0.25	1.0
Bromoform	0.50	U	0.50	1.0
Bromomethane	0.80	U	0.80	1.0
2-Butanone (MEK)	1.0	U	1.0	10
Carbon disulfide	0.60	U	0.60	2.0
Carbon tetrachloride	0.50	U	0.50	1.0
Chlorobenzene	0.25	U	0.25	1.0
2-Chloro-1,3-butadiene	0.30	U	0.30	1.0
Chlorodibromomethane	0.10	U	0.10	1.0
Chloroethane	1.0	U	1.0	1.0
Chloroform	0.14	U	0.14	1.0
Chloromethane	0.33	U	0.33	1.0
3-Chloro-1-propene	0.20	U	0.20	1.0
cis-1,3-Dichloropropene	0.11	U	0.11	1.0
1,2-Dibromo-3-Chloropropane	0.44	U	0.44	1.0
Dibromomethane	0.20	U	0.20	1.0
Dichlorobromomethane	0.25	U	0.25	1.0
Dichlorodifluoromethane	0.25	U	0.25	1.0
1,1-Dichloroethane	0.25	U	0.25	1.0
1,2-Dichloroethane	0.10	U	0.10	1.0
1,1-Dichloroethene	0.11	U	0.11	1.0
1,2-Dichloropropane	0.13	U	0.13	1.0
Ethylbenzene	0.11	U	0.11	1.0
Ethylene Dibromide	0.25	U	0.25	1.0
Ethyl methacrylate	0.25	U	0.25	1.0
2-Hexanone	1.0	U	1.0	10
Iodomethane	1.0	U	1.0	5.0
Isobutyl alcohol	11	U	11	40
Methacrylonitrile	3.3	U	3.3	20
Methylene Chloride	1.0	U	1.0	5.0
Methyl methacrylate	0.48	U	0.48	1.0
4-Methyl-2-pentanone (MIBK)	1.0	U	1.0	10
Pentachloroethane	1.2	U	1.2	5.0
Propionitrile	4.6	U	4.6	20
Styrene	0.11	U	0.11	1.0
1,1,1,2-Tetrachloroethane	0.33	U	0.33	1.0
1,1,2,2-Tetrachloroethane	0.18	U	0.18	1.0
Tetrachloroethene	0.15	U	0.15	1.0
Toluene	0.33	U	0.33	1.0
trans-1,4-Dichloro-2-butene	0.50	U	0.50	2.0
trans-1,2-Dichloroethene	0.20	U	0.20	1.0
trans-1,3-Dichloropropene	0.21	U	0.21	1.0

Client: U.S. Army Corps of Engineers

Job Number: 680-52551-1

Client Sample ID: **GW-LMW-16-11-09**

Lab Sample ID: 680-52551-4

Client Matrix: Water

Date Sampled: 11/10/2009 1545

Date Received: 11/12/2009 0947

8260B Volatile Organic Compounds (GC/MS)

Method:	8260B	Analysis Batch: 680-154394	Instrument ID:	MSO
Preparation:	5030B		Lab File ID:	o3213.d
Dilution:	1.0		Initial Weight/Volume:	5 mL
Date Analyzed:	11/23/2009 1752		Final Weight/Volume:	5 mL
Date Prepared:	11/23/2009 1752			

Analyte	Result (ug/L)	Qualifier	MDL	RL
1,1,1-Trichloroethane	0.50	U	0.50	1.0
1,1,2-Trichloroethane	0.13	U	0.13	1.0
Trichloroethene	0.13	U	0.13	1.0
Trichlorofluoromethane	0.25	U	0.25	1.0
1,2,3-Trichloropropane	0.41	U	0.41	1.0
Vinyl acetate	0.28	U	0.28	2.0
Vinyl chloride	0.18	U	0.18	1.0
Xylenes, Total	0.20	U	0.20	2.0

Surrogate	%Rec	Qualifier	Acceptance Limits
4-Bromofluorobenzene	99		75 - 120
Dibromofluoromethane	103		75 - 121
Toluene-d8 (Surr)	102		75 - 120

Client: U.S. Army Corps of Engineers

Job Number: 680-52551-1

Client Sample ID: **Trip Blank**

Lab Sample ID: 680-52551-5TB

Client Matrix: Water

Date Sampled: 11/10/2009 0000

Date Received: 11/12/2009 0947

8260B Volatile Organic Compounds (GC/MS)

Method:	8260B	Analysis Batch: 680-153532	Instrument ID:	MSO
Preparation:	5030B		Lab File ID:	o2887.d
Dilution:	1.0		Initial Weight/Volume:	5 mL
Date Analyzed:	11/15/2009 1311		Final Weight/Volume:	5 mL
Date Prepared:	11/15/2009 1311			

Analyte	Result (ug/L)	Qualifier	MDL	RL
Acetone	5.0	U	5.0	25
Acetonitrile	10	U	10	40
Acrolein	7.4	U	7.4	20
Acrylonitrile	7.2	U	7.2	20
Benzene	0.25	U	0.25	1.0
Bromoform	0.50	U	0.50	1.0
Bromomethane	0.80	U	0.80	1.0
2-Butanone (MEK)	1.0	U	1.0	10
Carbon disulfide	0.60	U Q	0.60	2.0
Carbon tetrachloride	0.50	U	0.50	1.0
Chlorobenzene	0.25	U	0.25	1.0
2-Chloro-1,3-butadiene	0.30	U	0.30	1.0
Chlorodibromomethane	0.10	U	0.10	1.0
Chloroethane	1.0	U	1.0	1.0
Chloroform	0.14	U	0.14	1.0
Chloromethane	0.33	U	0.33	1.0
3-Chloro-1-propene	0.20	U	0.20	1.0
cis-1,3-Dichloropropene	0.11	U	0.11	1.0
1,2-Dibromo-3-Chloropropane	0.44	U	0.44	1.0
Dibromomethane	0.20	U	0.20	1.0
Dichlorobromomethane	0.25	U	0.25	1.0
Dichlorodifluoromethane	0.25	U	0.25	1.0
1,1-Dichloroethane	0.25	U	0.25	1.0
1,2-Dichloroethane	0.10	U	0.10	1.0
1,1-Dichloroethene	0.11	U	0.11	1.0
1,2-Dichloropropane	0.13	U	0.13	1.0
Ethylbenzene	0.11	U	0.11	1.0
Ethylene Dibromide	0.25	U	0.25	1.0
Ethyl methacrylate	0.25	U	0.25	1.0
2-Hexanone	1.0	U	1.0	10
Iodomethane	1.0	U	1.0	5.0
Isobutyl alcohol	11	U	11	40
Methacrylonitrile	3.3	U	3.3	20
Methylene Chloride	1.0	U	1.0	5.0
Methyl methacrylate	0.48	U	0.48	1.0
4-Methyl-2-pentanone (MIBK)	1.0	U	1.0	10
Pentachloroethane	1.2	U	1.2	5.0
Propionitrile	4.6	U	4.6	20
Styrene	0.11	U	0.11	1.0
1,1,1,2-Tetrachloroethane	0.33	U	0.33	1.0
1,1,2,2-Tetrachloroethane	0.18	U	0.18	1.0
Tetrachloroethene	0.15	U	0.15	1.0
Toluene	0.33	U	0.33	1.0
trans-1,4-Dichloro-2-butene	0.50	U	0.50	2.0
trans-1,2-Dichloroethene	0.20	U	0.20	1.0
trans-1,3-Dichloropropene	0.21	U	0.21	1.0

Client: U.S. Army Corps of Engineers

Job Number: 680-52551-1

Client Sample ID: **Trip Blank**

Lab Sample ID: 680-52551-5TB

Client Matrix: Water

Date Sampled: 11/10/2009 0000

Date Received: 11/12/2009 0947

8260B Volatile Organic Compounds (GC/MS)

Method:	8260B	Analysis Batch: 680-153532	Instrument ID:	MSO
Preparation:	5030B		Lab File ID:	o2887.d
Dilution:	1.0		Initial Weight/Volume:	5 mL
Date Analyzed:	11/15/2009 1311		Final Weight/Volume:	5 mL
Date Prepared:	11/15/2009 1311			

Analyte	Result (ug/L)	Qualifier	MDL	RL
1,1,1-Trichloroethane	0.50	U	0.50	1.0
1,1,2-Trichloroethane	0.13	U	0.13	1.0
Trichloroethene	0.13	U	0.13	1.0
Trichlorofluoromethane	0.25	U	0.25	1.0
1,2,3-Trichloropropane	0.41	U	0.41	1.0
Vinyl acetate	0.28	U	0.28	2.0
Vinyl chloride	0.18	U	0.18	1.0
Xylenes, Total	0.20	U	0.20	2.0

Surrogate	%Rec	Qualifier	Acceptance Limits
4-Bromofluorobenzene	100		75 - 120
Dibromofluoromethane	86		75 - 121
Toluene-d8 (Surr)	104		75 - 120

Client: U.S. Army Corps of Engineers

Job Number: 680-52551-1

Client Sample ID: **GW-LMW-3-11-09**

Lab Sample ID: 680-52551-1

Client Matrix: Water

Date Sampled: 11/10/2009 1005

Date Received: 11/12/2009 0947

6020 Inductively Coupled Plasma - Mass Spectrometry

Method:	6020	Analysis Batch: 680-153601		Instrument ID:	ICPMSA
Preparation:	3030C	Prep Batch: 680-153263		Lab File ID:	N/A
Dilution:	1.0			Initial Weight/Volume:	50 mL
Date Analyzed:	11/13/2009 1447			Final Weight/Volume:	50 mL
Date Prepared:	11/12/2009 1405				

Analyte	Result (ug/L)	Qualifier	MDL	RL
Antimony	0.99	U	0.99	2.0
Arsenic	0.40	U	0.40	1.0
Barium	6.4		0.15	1.0
Beryllium	0.070	U	0.070	0.20
Cadmium	0.20	U	0.20	0.50
Chromium	1.1	B	0.16	1.0
Cobalt	0.16	J	0.078	0.20
Copper	1.1		0.21	1.0
Lead	0.37		0.080	0.30
Nickel	1.1		0.20	0.50
Selenium	0.21	U	0.21	0.50
Silver	0.10	U	0.10	0.20
Thallium	0.10	U	0.10	0.20
Tin	0.40	U	0.40	1.0
Vanadium	1.4	U	1.4	5.0
Zinc	32	B	2.6	10

Client: U.S. Army Corps of Engineers

Job Number: 680-52551-1

Client Sample ID: **GW-LMW-4-11-09**

Lab Sample ID: 680-52551-2

Client Matrix: Water

Date Sampled: 11/10/2009 1225

Date Received: 11/12/2009 0947

6020 Inductively Coupled Plasma - Mass Spectrometry

Method:	6020	Analysis Batch: 680-153601		Instrument ID:	ICPMSA
Preparation:	3030C	Prep Batch: 680-153263		Lab File ID:	N/A
Dilution:	1.0			Initial Weight/Volume:	50 mL
Date Analyzed:	11/13/2009 1507			Final Weight/Volume:	50 mL
Date Prepared:	11/12/2009 1405				

Analyte	Result (ug/L)	Qualifier	MDL	RL
Antimony	0.99	U	0.99	2.0
Arsenic	0.40	U	0.40	1.0
Barium	13		0.15	1.0
Beryllium	0.071	J	0.070	0.20
Cadmium	0.20	U	0.20	0.50
Chromium	1.0	B	0.16	1.0
Cobalt	0.24		0.078	0.20
Copper	0.78	J	0.21	1.0
Lead	0.30	J	0.080	0.30
Nickel	1.2		0.20	0.50
Selenium	0.21	U	0.21	0.50
Silver	0.10	U	0.10	0.20
Thallium	0.10	U	0.10	0.20
Tin	0.40	U	0.40	1.0
Vanadium	1.4	U	1.4	5.0
Zinc	16	B	2.6	10

Client: U.S. Army Corps of Engineers

Job Number: 680-52551-1

Client Sample ID: **GW-LMW-DUP 2**

Lab Sample ID: 680-52551-3FD

Client Matrix: Water

Date Sampled: 11/10/2009 1400

Date Received: 11/12/2009 0947

6020 Inductively Coupled Plasma - Mass Spectrometry

Method:	6020	Analysis Batch: 680-153601		Instrument ID:	ICPMSA
Preparation:	3030C	Prep Batch: 680-153263		Lab File ID:	N/A
Dilution:	1.0			Initial Weight/Volume:	50 mL
Date Analyzed:	11/13/2009 1531			Final Weight/Volume:	50 mL
Date Prepared:	11/12/2009 1405				

Analyte	Result (ug/L)	Qualifier	MDL	RL
Antimony	0.99	U	0.99	2.0
Arsenic	0.50	J	0.40	1.0
Barium	12		0.15	1.0
Beryllium	0.070	U	0.070	0.20
Cadmium	0.20	U	0.20	0.50
Chromium	0.29	J B	0.16	1.0
Cobalt	0.078	U	0.078	0.20
Copper	0.39	J	0.21	1.0
Lead	0.080	U	0.080	0.30
Nickel	0.96		0.20	0.50
Selenium	0.22	J	0.21	0.50
Silver	0.10	U	0.10	0.20
Thallium	0.10	U	0.10	0.20
Tin	0.40	U	0.40	1.0
Vanadium	1.4	U	1.4	5.0
Zinc	6.5	J B	2.6	10

Client: U.S. Army Corps of Engineers

Job Number: 680-52551-1

Client Sample ID: **GW-LMW-16-11-09**

Lab Sample ID: 680-52551-4

Client Matrix: Water

Date Sampled: 11/10/2009 1545

Date Received: 11/12/2009 0947

6020 Inductively Coupled Plasma - Mass Spectrometry

Method:	6020	Analysis Batch: 680-153601		Instrument ID:	ICPMSA
Preparation:	3030C	Prep Batch: 680-153263		Lab File ID:	N/A
Dilution:	1.0			Initial Weight/Volume:	50 mL
Date Analyzed:	11/13/2009 1539			Final Weight/Volume:	50 mL
Date Prepared:	11/12/2009 1405				

Analyte	Result (ug/L)	Qualifier	MDL	RL
Antimony	0.99	U	0.99	2.0
Arsenic	0.59	J	0.40	1.0
Barium	13		0.15	1.0
Beryllium	0.070	U	0.070	0.20
Cadmium	0.20	U	0.20	0.50
Chromium	0.53	J B	0.16	1.0
Cobalt	0.080	J	0.078	0.20
Copper	0.59	J	0.21	1.0
Lead	0.099	J	0.080	0.30
Nickel	0.66		0.20	0.50
Selenium	0.21	U	0.21	0.50
Silver	0.10	U	0.10	0.20
Thallium	0.10	U	0.10	0.20
Tin	0.40	U	0.40	1.0
Vanadium	1.4	U	1.4	5.0
Zinc	9.3	J B	2.6	10

General Chemistry

Client Sample ID: **GW-LMW-3-11-09**

Lab Sample ID: 680-52551-1

Client Matrix: Water

Date Sampled: 11/10/2009 1005

Date Received: 11/12/2009 0947

Analyte	Result	Qual	Units	MDL	RL	Dil	Method
Nitrate as NO3	0.87	J H	mg/L	0.36	1.1	5.0	300.0

Analysis Batch: 680-153362 Date Analyzed: 11/12/2009 1754

General Chemistry

Client Sample ID: **GW-LMW-4-11-09**

Lab Sample ID: 680-52551-2

Client Matrix: Water

Date Sampled: 11/10/2009 1225

Date Received: 11/12/2009 0947

Analyte	Result	Qual	Units	MDL	RL	Dil	Method
Nitrate as NO3	0.36	U M H	mg/L	0.36	1.1	5.0	300.0

Analysis Batch: 680-153362 Date Analyzed: 11/12/2009 1742

General Chemistry

Client Sample ID: **GW-LMW-DUP 2**

Lab Sample ID: 680-52551-3FD

Client Matrix: Water

Date Sampled: 11/10/2009 1400

Date Received: 11/12/2009 0947

Analyte	Result	Qual	Units	MDL	RL	Dil	Method
Nitrate as NO3	0.36	U M	mg/L	0.36	1.1	5.0	300.0

Analysis Batch: 680-153306 Date Analyzed: 11/12/2009 1335

General Chemistry

Client Sample ID: **GW-LMW-16-11-09**

Lab Sample ID: 680-52551-4

Client Matrix: Water

Date Sampled: 11/10/2009 1545

Date Received: 11/12/2009 0947

Analyte	Result	Qual	Units	MDL	RL	Dil	Method
Nitrate as NO3	0.36	U M	mg/L	0.36	1.1	5.0	300.0

Analysis Batch: 680-153306 Date Analyzed: 11/12/2009 1425

DATA REPORTING QUALIFIERS

Client: U.S. Army Corps of Engineers

Job Number: 680-52551-1

Lab Section	Qualifier	Description
GC/MS VOA		
	J	Estimated: The analyte was positively identified; the quantitation is an estimation
	Q	One or more quality control criteria failed.
	U	Undetected at the Limit of Detection.
Metals		
	B	Blank contamination: The analyte was detected above one-half the reporting limit in an associated blank.
	J	Estimated: The analyte was positively identified; the quantitation is an estimation
	U	Undetected at the Limit of Detection.
General Chemistry		
	J	Estimated: The analyte was positively identified; the quantitation is an estimation
	M	Manual integrated compound.
	H	Sample was prepped or analyzed beyond the specified holding time
	U	Undetected at the Limit of Detection.

Client: U.S. Army Corps of Engineers

Job Number: 680-52551-1

Method Blank - Batch: 680-153532

Method: 8260B
Preparation: 5030B

Lab Sample ID: MB 680-153532/21
Client Matrix: Water
Dilution: 1.0
Date Analyzed: 11/15/2009 1241
Date Prepared: 11/15/2009 1241

Analysis Batch: 680-153532
Prep Batch: N/A
Units: ug/L

Instrument ID: GC/MS Volatiles - O
Lab File ID: oq211.d
Initial Weight/Volume: 5 mL
Final Weight/Volume: 5 mL

Analyte	Result	Qual	MDL	RL
Acetone	5.0	U	5.0	25
Acetonitrile	10	U	10	40
Acrolein	7.4	U	7.4	20
Acrylonitrile	7.2	U	7.2	20
Benzene	0.25	U	0.25	1.0
Bromoform	0.50	U	0.50	1.0
Bromomethane	0.80	U	0.80	1.0
2-Butanone (MEK)	1.0	U	1.0	10
Carbon disulfide	0.60	U	0.60	2.0
Carbon tetrachloride	0.50	U	0.50	1.0
Chlorobenzene	0.25	U	0.25	1.0
2-Chloro-1,3-butadiene	0.30	U	0.30	1.0
Chlorodibromomethane	0.10	U	0.10	1.0
Chloroethane	1.0	U	1.0	1.0
Chloroform	0.14	U	0.14	1.0
Chloromethane	0.33	U	0.33	1.0
3-Chloro-1-propene	0.20	U	0.20	1.0
cis-1,3-Dichloropropene	0.11	U	0.11	1.0
1,2-Dibromo-3-Chloropropane	0.44	U	0.44	1.0
Dibromomethane	0.20	U	0.20	1.0
Dichlorobromomethane	0.25	U	0.25	1.0
Dichlorodifluoromethane	0.25	U	0.25	1.0
1,1-Dichloroethane	0.25	U	0.25	1.0
1,2-Dichloroethane	0.10	U	0.10	1.0
1,1-Dichloroethene	0.11	U	0.11	1.0
1,2-Dichloropropane	0.13	U	0.13	1.0
Ethylbenzene	0.11	U	0.11	1.0
Ethylene Dibromide	0.25	U	0.25	1.0
Ethyl methacrylate	0.25	U	0.25	1.0
2-Hexanone	1.0	U	1.0	10
Iodomethane	1.0	U	1.0	5.0
Isobutyl alcohol	11	U	11	40
Methacrylonitrile	3.3	U	3.3	20
Methylene Chloride	1.0	U	1.0	5.0
Methyl methacrylate	0.48	U	0.48	1.0
4-Methyl-2-pentanone (MIBK)	1.0	U	1.0	10
Pentachloroethane	1.2	U	1.2	5.0
Propionitrile	4.6	U	4.6	20
Styrene	0.11	U	0.11	1.0
1,1,1,2-Tetrachloroethane	0.33	U	0.33	1.0
1,1,2,2-Tetrachloroethane	0.18	U	0.18	1.0

Calculations are performed before rounding to avoid round-off errors in calculated results.

Client: U.S. Army Corps of Engineers

Job Number: 680-52551-1

Method Blank - Batch: 680-153532

Method: 8260B
Preparation: 5030B

Lab Sample ID: MB 680-153532/21
Client Matrix: Water
Dilution: 1.0
Date Analyzed: 11/15/2009 1241
Date Prepared: 11/15/2009 1241

Analysis Batch: 680-153532
Prep Batch: N/A
Units: ug/L

Instrument ID: GC/MS Volatiles - O
Lab File ID: oq211.d
Initial Weight/Volume: 5 mL
Final Weight/Volume: 5 mL

Analyte	Result	Qual	MDL	RL
Tetrachloroethene	0.15	U	0.15	1.0
Toluene	0.33	U	0.33	1.0
trans-1,4-Dichloro-2-butene	0.50	U	0.50	2.0
trans-1,2-Dichloroethene	0.20	U	0.20	1.0
trans-1,3-Dichloropropene	0.21	U	0.21	1.0
1,1,1-Trichloroethane	0.50	U	0.50	1.0
1,1,2-Trichloroethane	0.13	U	0.13	1.0
Trichloroethene	0.13	U	0.13	1.0
Trichlorofluoromethane	0.25	U	0.25	1.0
1,2,3-Trichloropropane	0.41	U	0.41	1.0
Vinyl acetate	0.28	U	0.28	2.0
Vinyl chloride	0.18	U	0.18	1.0
Xylenes, Total	0.20	U	0.20	2.0

Surrogate	% Rec	Acceptance Limits
4-Bromofluorobenzene	100	75 - 120
Dibromofluoromethane	87	75 - 121
Toluene-d8 (Surr)	104	75 - 120

Calculations are performed before rounding to avoid round-off errors in calculated results.

Client: U.S. Army Corps of Engineers

Job Number: 680-52551-1

Lab Control Sample/
Lab Control Sample Duplicate Recovery Report - Batch: 680-153532

Method: 8260B
Preparation: 5030B

LCS Lab Sample ID:	LCS 680-153532/18	Analysis Batch:	680-153532	Instrument ID:	GC/MS Volatiles - O
Client Matrix:	Water	Prep Batch:	N/A	Lab File ID:	oq203.d
Dilution:	1.0	Units:	ug/L	Initial Weight/Volume:	5 mL
Date Analyzed:	11/15/2009 1028			Final Weight/Volume:	5 mL
Date Prepared:	11/15/2009 1028				

LCSD Lab Sample ID:	LCSD 680-153532/19	Analysis Batch:	680-153532	Instrument ID:	GC/MS Volatiles - O
Client Matrix:	Water	Prep Batch:	N/A	Lab File ID:	oq205.d
Dilution:	1.0	Units:	ug/L	Initial Weight/Volume:	5 mL
Date Analyzed:	11/15/2009 1057			Final Weight/Volume:	5 mL
Date Prepared:	11/15/2009 1057				

	% Rec.						
Analyte	LCS	LCSD	Limit	RPD	RPD Limit	LCS Qual	LCSD Qual
Acetone	104	105	17 - 175	1	50		
Benzene	109	109	77 - 119	0	30		
Bromoform	69	78	62 - 133	11	30		
Bromomethane	100	113	12 - 184	13	50		
2-Butanone (MEK)	118	118	33 - 157	0	30		
Carbon disulfide	142	143	55 - 131	0	30	Q	Q
Carbon tetrachloride	88	93	71 - 135	6	30		
Chlorobenzene	104	104	85 - 116	0	30		
Chlorodibromomethane	84	88	75 - 133	4	30		
Chloroethane	124	125	40 - 165	1	50		
Chloroform	95	99	82 - 120	4	30		
Chloromethane	102	102	48 - 142	1	50		
cis-1,3-Dichloropropene	105	105	76 - 126	1	30		
1,2-Dibromo-3-Chloropropane	92	93	49 - 140	1	30		
Dibromomethane	109	111	78 - 119	2	30		
Dichlorobromomethane	102	104	78 - 127	2	30		
Dichlorodifluoromethane	90	91	34 - 154	1	30		
1,1-Dichloroethane	97	99	74 - 127	2	30		
1,2-Dichloroethane	125	122	66 - 132	3	30		
1,1-Dichloroethene	91	92	62 - 141	1	30		
1,2-Dichloropropane	109	106	73 - 124	2	30		
Ethylbenzene	107	107	86 - 116	1	30		
Ethylene Dibromide	106	107	80 - 121	1	30		
2-Hexanone	120	122	34 - 161	2	30		
Methylene Chloride	93	94	70 - 125	2	30		
4-Methyl-2-pentanone (MIBK)	119	118	40 - 151	1	30		
Styrene	106	106	82 - 122	0	30		
1,1,1,2-Tetrachloroethane	91	93	81 - 128	2	30		
1,1,2,2-Tetrachloroethane	104	105	69 - 129	1	30		
Tetrachloroethene	103	104	76 - 126	1	30		
Toluene	108	107	81 - 117	0	30		
trans-1,2-Dichloroethene	92	93	72 - 131	2	30		

Calculations are performed before rounding to avoid round-off errors in calculated results.

Client: U.S. Army Corps of Engineers

Job Number: 680-52551-1

Lab Control Sample/
Lab Control Sample Duplicate Recovery Report - Batch: 680-153532

Method: 8260B
Preparation: 5030B

LCS Lab Sample ID:	LCS 680-153532/18	Analysis Batch:	680-153532	Instrument ID:	GC/MS Volatiles - O
Client Matrix:	Water	Prep Batch:	N/A	Lab File ID:	oq203.d
Dilution:	1.0	Units:	ug/L	Initial Weight/Volume:	5 mL
Date Analyzed:	11/15/2009 1028			Final Weight/Volume:	5 mL
Date Prepared:	11/15/2009 1028				

LCSD Lab Sample ID:	LCSD 680-153532/19	Analysis Batch:	680-153532	Instrument ID:	GC/MS Volatiles - O
Client Matrix:	Water	Prep Batch:	N/A	Lab File ID:	oq205.d
Dilution:	1.0	Units:	ug/L	Initial Weight/Volume:	5 mL
Date Analyzed:	11/15/2009 1057			Final Weight/Volume:	5 mL
Date Prepared:	11/15/2009 1057				

	% Rec.						
Analyte	LCS	LCSD	Limit	RPD	RPD Limit	LCS Qual	LCSD Qual
trans-1,3-Dichloropropene	107	109	73 - 128	2	30		
1,1,1-Trichloroethane	106	106	76 - 127	0	30		
1,1,2-Trichloroethane	107	107	75 - 121	0	30		
Trichloroethene	105	105	84 - 115	1	30		
Trichlorofluoromethane	102	103	58 - 149	1	50		
1,2,3-Trichloropropane	107	108	70 - 130	0	30		
Vinyl acetate	106	110	10 - 217	3	30		
Vinyl chloride	95	94	59 - 144	1	50		
Xylenes, Total	105	105	84 - 118	0	30		

Surrogate	LCS % Rec	LCSD % Rec	Acceptance Limits
4-Bromofluorobenzene	102	102	75 - 120
Dibromofluoromethane	90	91	75 - 121
Toluene-d8 (Surr)	107	108	75 - 120

Calculations are performed before rounding to avoid round-off errors in calculated results.

Client: U.S. Army Corps of Engineers

Job Number: 680-52551-1

Method Blank - Batch: 680-154184

Method: 8260B
Preparation: 5030B

Lab Sample ID:	MB 680-154184/8	Analysis Batch:	680-154184	Instrument ID:	GC/MS Volatiles - O
Client Matrix:	Water	Prep Batch:	N/A	Lab File ID:	oq347.d
Dilution:	1.0	Units:	ug/L	Initial Weight/Volume:	5 mL
Date Analyzed:	11/20/2009 1217			Final Weight/Volume:	5 mL
Date Prepared:	11/20/2009 1217				

Analyte	Result	Qual	MDL	RL
Acetone	5.0	U	5.0	25
Acetonitrile	10	U	10	40
Acrolein	7.4	U	7.4	20
Acrylonitrile	7.2	U	7.2	20
Benzene	0.25	U	0.25	1.0
Bromoform	0.50	U	0.50	1.0
Bromomethane	0.80	U	0.80	1.0
2-Butanone (MEK)	1.0	U	1.0	10
Carbon disulfide	0.60	U	0.60	2.0
Carbon tetrachloride	0.50	U	0.50	1.0
Chlorobenzene	0.25	U	0.25	1.0
2-Chloro-1,3-butadiene	0.30	U	0.30	1.0
Chlorodibromomethane	0.10	U	0.10	1.0
Chloroethane	1.0	U	1.0	1.0
Chloroform	0.14	U	0.14	1.0
Chloromethane	0.33	U	0.33	1.0
3-Chloro-1-propene	0.20	U	0.20	1.0
cis-1,3-Dichloropropene	0.11	U	0.11	1.0
1,2-Dibromo-3-Chloropropane	0.44	U	0.44	1.0
Dibromomethane	0.20	U	0.20	1.0
Dichlorobromomethane	0.25	U	0.25	1.0
Dichlorodifluoromethane	0.25	U	0.25	1.0
1,1-Dichloroethane	0.25	U	0.25	1.0
1,2-Dichloroethane	0.10	U	0.10	1.0
1,1-Dichloroethene	0.11	U	0.11	1.0
1,2-Dichloropropane	0.13	U	0.13	1.0
Ethylbenzene	0.11	U	0.11	1.0
Ethylene Dibromide	0.25	U	0.25	1.0
Ethyl methacrylate	0.25	U	0.25	1.0
2-Hexanone	1.0	U	1.0	10
Iodomethane	1.0	U	1.0	5.0
Isobutyl alcohol	11	U	11	40
Methacrylonitrile	3.3	U	3.3	20
Methylene Chloride	1.0	U	1.0	5.0
Methyl methacrylate	0.48	U	0.48	1.0
4-Methyl-2-pentanone (MIBK)	1.0	U	1.0	10
Pentachloroethane	1.2	U	1.2	5.0
Propionitrile	4.6	U	4.6	20
Styrene	0.11	U	0.11	1.0
1,1,1,2-Tetrachloroethane	0.33	U	0.33	1.0
1,1,2,2-Tetrachloroethane	0.18	U	0.18	1.0

Calculations are performed before rounding to avoid round-off errors in calculated results.

Client: U.S. Army Corps of Engineers

Job Number: 680-52551-1

Method Blank - Batch: 680-154184

Method: 8260B
Preparation: 5030B

Lab Sample ID: MB 680-154184/8
Client Matrix: Water
Dilution: 1.0
Date Analyzed: 11/20/2009 1217
Date Prepared: 11/20/2009 1217

Analysis Batch: 680-154184
Prep Batch: N/A
Units: ug/L

Instrument ID: GC/MS Volatiles - O
Lab File ID: oq347.d
Initial Weight/Volume: 5 mL
Final Weight/Volume: 5 mL

Analyte	Result	Qual	MDL	RL
Tetrachloroethene	0.15	U	0.15	1.0
Toluene	0.33	U	0.33	1.0
trans-1,4-Dichloro-2-butene	0.50	U	0.50	2.0
trans-1,2-Dichloroethene	0.20	U	0.20	1.0
trans-1,3-Dichloropropene	0.21	U	0.21	1.0
1,1,1-Trichloroethane	0.50	U	0.50	1.0
1,1,2-Trichloroethane	0.13	U	0.13	1.0
Trichloroethene	0.13	U	0.13	1.0
Trichlorofluoromethane	0.25	U	0.25	1.0
1,2,3-Trichloropropane	0.41	U	0.41	1.0
Vinyl acetate	0.28	U	0.28	2.0
Vinyl chloride	0.18	U	0.18	1.0
Xylenes, Total	0.20	U	0.20	2.0

Surrogate	% Rec	Acceptance Limits
4-Bromofluorobenzene	103	75 - 120
Dibromofluoromethane	100	75 - 121
Toluene-d8 (Surr)	99	75 - 120

Calculations are performed before rounding to avoid round-off errors in calculated results.

Client: U.S. Army Corps of Engineers

Job Number: 680-52551-1

Lab Control Sample/
Lab Control Sample Duplicate Recovery Report - Batch: 680-154184

Method: 8260B
Preparation: 5030B

LCS Lab Sample ID:	LCS 680-154184/5	Analysis Batch:	680-154184	Instrument ID:	GC/MS Volatiles - O
Client Matrix:	Water	Prep Batch:	N/A	Lab File ID:	oq339.d
Dilution:	1.0	Units:	ug/L	Initial Weight/Volume:	5 mL
Date Analyzed:	11/20/2009 1020			Final Weight/Volume:	5 mL
Date Prepared:	11/20/2009 1020				

LCSD Lab Sample ID:	LCSD 680-154184/6	Analysis Batch:	680-154184	Instrument ID:	GC/MS Volatiles - O
Client Matrix:	Water	Prep Batch:	N/A	Lab File ID:	oq341.d
Dilution:	1.0	Units:	ug/L	Initial Weight/Volume:	5 mL
Date Analyzed:	11/20/2009 1049			Final Weight/Volume:	5 mL
Date Prepared:	11/20/2009 1049				

	% Rec.						
Analyte	LCS	LCSD	Limit	RPD	RPD Limit	LCS Qual	LCSD Qual
Acetone	105	108	17 - 175	2	50		
Benzene	100	99	77 - 119	1	30		
Bromoform	95	101	62 - 133	6	30		
Bromomethane	136	145	12 - 184	6	50		
2-Butanone (MEK)	102	102	33 - 157	0	30		
Carbon disulfide	104	104	55 - 131	1	30		
Carbon tetrachloride	101	104	71 - 135	3	30		
Chlorobenzene	101	100	85 - 116	1	30		
Chlorodibromomethane	103	105	75 - 133	3	30		
Chloroethane	99	97	40 - 165	3	50		
Chloroform	105	105	82 - 120	0	30		
Chloromethane	98	98	48 - 142	0	50		
cis-1,3-Dichloropropene	104	104	76 - 126	0	30		
1,2-Dibromo-3-Chloropropane	99	102	49 - 140	3	30		
Dibromomethane	99	97	78 - 119	2	30		
Dichlorobromomethane	98	100	78 - 127	1	30		
Dichlorodifluoromethane	97	97	34 - 154	1	30		
1,1-Dichloroethane	103	105	74 - 127	2	30		
1,2-Dichloroethane	96	94	66 - 132	2	30		
1,1-Dichloroethene	107	108	62 - 141	1	30		
1,2-Dichloropropane	101	99	73 - 124	2	30		
Ethylbenzene	103	103	86 - 116	0	30		
Ethylene Dibromide	100	100	80 - 121	1	30		
2-Hexanone	100	100	34 - 161	0	30		
Methylene Chloride	106	106	70 - 125	0	30		
4-Methyl-2-pentanone (MIBK)	101	99	40 - 151	2	30		
Styrene	105	106	82 - 122	0	30		
1,1,1,2-Tetrachloroethane	104	104	81 - 128	0	30		
1,1,2,2-Tetrachloroethane	101	101	69 - 129	1	30		
Tetrachloroethene	100	100	76 - 126	0	30		
Toluene	102	101	81 - 117	1	30		
trans-1,2-Dichloroethene	106	106	72 - 131	0	30		

Calculations are performed before rounding to avoid round-off errors in calculated results.

Client: U.S. Army Corps of Engineers

Job Number: 680-52551-1

Lab Control Sample/
Lab Control Sample Duplicate Recovery Report - Batch: 680-154184

Method: 8260B
Preparation: 5030B

LCS Lab Sample ID:	LCS 680-154184/5	Analysis Batch:	680-154184	Instrument ID:	GC/MS Volatiles - O
Client Matrix:	Water	Prep Batch: N/A		Lab File ID:	oq339.d
Dilution:	1.0	Units:	ug/L	Initial Weight/Volume:	5 mL
Date Analyzed:	11/20/2009 1020			Final Weight/Volume:	5 mL
Date Prepared:	11/20/2009 1020				

LCSD Lab Sample ID:	LCSD 680-154184/6	Analysis Batch:	680-154184	Instrument ID:	GC/MS Volatiles - O
Client Matrix:	Water	Prep Batch: N/A		Lab File ID:	oq341.d
Dilution:	1.0	Units:	ug/L	Initial Weight/Volume:	5 mL
Date Analyzed:	11/20/2009 1049			Final Weight/Volume:	5 mL
Date Prepared:	11/20/2009 1049				

	% Rec.						
Analyte	LCS	LCSD	Limit	RPD	RPD Limit	LCS Qual	LCSD Qual
trans-1,3-Dichloropropene	103	103	73 - 128	0	30		
1,1,1-Trichloroethane	100	101	76 - 127	1	30		
1,1,2-Trichloroethane	97	96	75 - 121	1	30		
Trichloroethene	100	99	84 - 115	1	30		
Trichlorofluoromethane	103	103	58 - 149	0	50		
1,2,3-Trichloropropane	99	100	70 - 130	1	30		
Vinyl acetate	116	118	10 - 217	1	30		
Vinyl chloride	95	95	59 - 144	0	50		
Xylenes, Total	103	103	84 - 118	0	30		

Surrogate	LCS % Rec	LCSD % Rec	Acceptance Limits
4-Bromofluorobenzene	100	101	75 - 120
Dibromofluoromethane	106	106	75 - 121
Toluene-d8 (Surr)	101	100	75 - 120

Calculations are performed before rounding to avoid round-off errors in calculated results.

Client: U.S. Army Corps of Engineers

Job Number: 680-52551-1

Method Blank - Batch: 680-154394

Method: 8260B
Preparation: 5030B

Lab Sample ID:	MB 680-154394/9	Analysis Batch:	680-154394	Instrument ID:	GC/MS Volatiles - O
Client Matrix:	Water	Prep Batch:	N/A	Lab File ID:	oq405.d
Dilution:	1.0	Units:	ug/L	Initial Weight/Volume:	5 mL
Date Analyzed:	11/23/2009 1141			Final Weight/Volume:	5 mL
Date Prepared:	11/23/2009 1141				

Analyte	Result	Qual	MDL	RL
Acetone	5.0	U	5.0	25
Acetonitrile	10	U	10	40
Acrolein	7.4	U	7.4	20
Acrylonitrile	7.2	U	7.2	20
Benzene	0.25	U	0.25	1.0
Bromoform	0.50	U	0.50	1.0
Bromomethane	0.80	U	0.80	1.0
2-Butanone (MEK)	1.0	U	1.0	10
Carbon disulfide	0.60	U	0.60	2.0
Carbon tetrachloride	0.50	U	0.50	1.0
Chlorobenzene	0.25	U	0.25	1.0
2-Chloro-1,3-butadiene	0.30	U	0.30	1.0
Chlorodibromomethane	0.10	U	0.10	1.0
Chloroethane	1.0	U	1.0	1.0
Chloroform	0.14	U	0.14	1.0
Chloromethane	0.33	U	0.33	1.0
3-Chloro-1-propene	0.20	U	0.20	1.0
cis-1,3-Dichloropropene	0.11	U	0.11	1.0
1,2-Dibromo-3-Chloropropane	0.44	U	0.44	1.0
Dibromomethane	0.20	U	0.20	1.0
Dichlorobromomethane	0.25	U	0.25	1.0
Dichlorodifluoromethane	0.25	U	0.25	1.0
1,1-Dichloroethane	0.25	U	0.25	1.0
1,2-Dichloroethane	0.10	U	0.10	1.0
1,1-Dichloroethene	0.11	U	0.11	1.0
1,2-Dichloropropane	0.13	U	0.13	1.0
Ethylbenzene	0.11	U	0.11	1.0
Ethylene Dibromide	0.25	U	0.25	1.0
Ethyl methacrylate	0.25	U	0.25	1.0
2-Hexanone	1.0	U	1.0	10
Iodomethane	1.0	U	1.0	5.0
Isobutyl alcohol	11	U	11	40
Methacrylonitrile	3.3	U	3.3	20
Methylene Chloride	1.0	U	1.0	5.0
Methyl methacrylate	0.48	U	0.48	1.0
4-Methyl-2-pentanone (MIBK)	1.0	U	1.0	10
Pentachloroethane	1.2	U	1.2	5.0
Propionitrile	4.6	U	4.6	20
Styrene	0.11	U	0.11	1.0
1,1,1,2-Tetrachloroethane	0.33	U	0.33	1.0
1,1,2,2-Tetrachloroethane	0.18	U	0.18	1.0

Calculations are performed before rounding to avoid round-off errors in calculated results.

Client: U.S. Army Corps of Engineers

Job Number: 680-52551-1

Method Blank - Batch: 680-154394

Method: 8260B
Preparation: 5030B

Lab Sample ID: MB 680-154394/9
Client Matrix: Water
Dilution: 1.0
Date Analyzed: 11/23/2009 1141
Date Prepared: 11/23/2009 1141

Analysis Batch: 680-154394
Prep Batch: N/A
Units: ug/L

Instrument ID: GC/MS Volatiles - O
Lab File ID: oq405.d
Initial Weight/Volume: 5 mL
Final Weight/Volume: 5 mL

Analyte	Result	Qual	MDL	RL
Tetrachloroethene	0.15	U	0.15	1.0
Toluene	0.33	U	0.33	1.0
trans-1,4-Dichloro-2-butene	0.50	U	0.50	2.0
trans-1,2-Dichloroethene	0.20	U	0.20	1.0
trans-1,3-Dichloropropene	0.21	U	0.21	1.0
1,1,1-Trichloroethane	0.50	U	0.50	1.0
1,1,2-Trichloroethane	0.13	U	0.13	1.0
Trichloroethene	0.13	U	0.13	1.0
Trichlorofluoromethane	0.25	U	0.25	1.0
1,2,3-Trichloropropane	0.41	U	0.41	1.0
Vinyl acetate	0.28	U	0.28	2.0
Vinyl chloride	0.18	U	0.18	1.0
Xylenes, Total	0.20	U	0.20	2.0

Surrogate	% Rec	Acceptance Limits
4-Bromofluorobenzene	103	75 - 120
Dibromofluoromethane	102	75 - 121
Toluene-d8 (Surr)	101	75 - 120

Calculations are performed before rounding to avoid round-off errors in calculated results.

Client: U.S. Army Corps of Engineers

Job Number: 680-52551-1

Lab Control Sample/
Lab Control Sample Duplicate Recovery Report - Batch: 680-154394

Method: 8260B
Preparation: 5030B

LCS Lab Sample ID:	LCS 680-154394/6	Analysis Batch:	680-154394	Instrument ID:	GC/MS Volatiles - O
Client Matrix:	Water	Prep Batch:	N/A	Lab File ID:	oq397.d
Dilution:	1.0	Units:	ug/L	Initial Weight/Volume:	5 mL
Date Analyzed:	11/23/2009 0944			Final Weight/Volume:	5 mL
Date Prepared:	11/23/2009 0944				

LCSD Lab Sample ID:	LCSD 680-154394/7	Analysis Batch:	680-154394	Instrument ID:	GC/MS Volatiles - O
Client Matrix:	Water	Prep Batch:	N/A	Lab File ID:	oq399.d
Dilution:	1.0	Units:	ug/L	Initial Weight/Volume:	5 mL
Date Analyzed:	11/23/2009 1013			Final Weight/Volume:	5 mL
Date Prepared:	11/23/2009 1013				

	% Rec.						
Analyte	LCS	LCSD	Limit	RPD	RPD Limit	LCS Qual	LCSD Qual
Acetone	110	106	17 - 175	4	50		
Benzene	99	99	77 - 119	0	30		
Bromoform	93	96	62 - 133	4	30		
Bromomethane	92	89	12 - 184	3	50		
2-Butanone (MEK)	107	101	33 - 157	5	30		
Carbon disulfide	103	104	55 - 131	1	30		
Carbon tetrachloride	98	99	71 - 135	2	30		
Chlorobenzene	98	99	85 - 116	1	30		
Chlorodibromomethane	99	104	75 - 133	5	30		
Chloroethane	85	70	40 - 165	20	50		
Chloroform	105	107	82 - 120	2	30		
Chloromethane	84	80	48 - 142	5	50		
cis-1,3-Dichloropropene	104	105	76 - 126	1	30		
1,2-Dibromo-3-Chloropropane	95	100	49 - 140	5	30		
Dibromomethane	97	96	78 - 119	1	30		
Dichlorobromomethane	100	99	78 - 127	1	30		
Dichlorodifluoromethane	82	82	34 - 154	0	30		
1,1-Dichloroethane	105	105	74 - 127	0	30		
1,2-Dichloroethane	97	95	66 - 132	2	30		
1,1-Dichloroethene	104	104	62 - 141	1	30		
1,2-Dichloropropane	99	98	73 - 124	1	30		
Ethylbenzene	100	102	86 - 116	2	30		
Ethylene Dibromide	101	102	80 - 121	1	30		
2-Hexanone	101	99	34 - 161	1	30		
Methylene Chloride	105	106	70 - 125	1	30		
4-Methyl-2-pentanone (MIBK)	104	101	40 - 151	3	30		
Styrene	103	103	82 - 122	0	30		
1,1,1,2-Tetrachloroethane	96	101	81 - 128	5	30		
1,1,2,2-Tetrachloroethane	99	99	69 - 129	1	30		
Tetrachloroethene	95	97	76 - 126	2	30		
Toluene	103	101	81 - 117	1	30		
trans-1,2-Dichloroethene	106	106	72 - 131	0	30		

Calculations are performed before rounding to avoid round-off errors in calculated results.

Client: U.S. Army Corps of Engineers

Job Number: 680-52551-1

Lab Control Sample/
Lab Control Sample Duplicate Recovery Report - Batch: 680-154394

Method: 8260B
Preparation: 5030B

LCS Lab Sample ID:	LCS 680-154394/6	Analysis Batch:	680-154394	Instrument ID:	GC/MS Volatiles - O
Client Matrix:	Water	Prep Batch:	N/A	Lab File ID:	oq397.d
Dilution:	1.0	Units:	ug/L	Initial Weight/Volume:	5 mL
Date Analyzed:	11/23/2009 0944			Final Weight/Volume:	5 mL
Date Prepared:	11/23/2009 0944				

LCSD Lab Sample ID:	LCSD 680-154394/7	Analysis Batch:	680-154394	Instrument ID:	GC/MS Volatiles - O
Client Matrix:	Water	Prep Batch:	N/A	Lab File ID:	oq399.d
Dilution:	1.0	Units:	ug/L	Initial Weight/Volume:	5 mL
Date Analyzed:	11/23/2009 1013			Final Weight/Volume:	5 mL
Date Prepared:	11/23/2009 1013				

	% Rec.						
Analyte	LCS	LCSD	Limit	RPD	RPD Limit	LCS Qual	LCSD Qual
trans-1,3-Dichloropropene	103	102	73 - 128	1	30		
1,1,1-Trichloroethane	99	98	76 - 127	1	30		
1,1,2-Trichloroethane	100	98	75 - 121	2	30		
Trichloroethene	99	100	84 - 115	1	30		
Trichlorofluoromethane	96	93	58 - 149	3	50		
1,2,3-Trichloropropane	98	97	70 - 130	1	30		
Vinyl acetate	173	175	10 - 217	1	30		
Vinyl chloride	84	82	59 - 144	3	50		
Xylenes, Total	100	102	84 - 118	1	30		

Surrogate	LCS % Rec	LCSD % Rec	Acceptance Limits
4-Bromofluorobenzene	98	99	75 - 120
Dibromofluoromethane	107	110	75 - 121
Toluene-d8 (Surr)	103	103	75 - 120

Calculations are performed before rounding to avoid round-off errors in calculated results.

Client: U.S. Army Corps of Engineers

Job Number: 680-52551-1

Method Blank - Batch: 680-153263

Method: 6020
Preparation: 3030C

Lab Sample ID:	MB 680-153263/7-A	Analysis Batch:	680-153601	Instrument ID:	ICP MS - A
Client Matrix:	Water	Prep Batch:	680-153263	Lab File ID:	N/A
Dilution:	1.0	Units:	ug/L	Initial Weight/Volume:	50 mL
Date Analyzed:	11/13/2009 1433			Final Weight/Volume:	50 mL
Date Prepared:	11/12/2009 1405				

Analyte	Result	Qual	MDL	RL
Antimony	0.99	U	0.99	2.0
Arsenic	0.40	U	0.40	1.0
Barium	0.15	U	0.15	1.0
Beryllium	0.070	U	0.070	0.20
Cadmium	0.20	U	0.20	0.50
Chromium	0.268	J	0.16	1.0
Cobalt	0.078	U	0.078	0.20
Copper	0.21	U	0.21	1.0
Lead	0.080	U	0.080	0.30
Nickel	0.20	U	0.20	0.50
Selenium	0.21	U	0.21	0.50
Silver	0.10	U	0.10	0.20
Thallium	0.10	U	0.10	0.20
Tin	0.40	U	0.40	1.0
Vanadium	1.4	U	1.4	5.0
Zinc	3.87	J	2.6	10

Calculations are performed before rounding to avoid round-off errors in calculated results.

Client: U.S. Army Corps of Engineers

Job Number: 680-52551-1

Lab Control Sample - Batch: 680-153263

Method: 6020
Preparation: 3030C

Lab Sample ID: LCS 680-153263/8-A
Client Matrix: Water
Dilution: 1.0
Date Analyzed: 11/13/2009 1440
Date Prepared: 11/12/2009 1405

Analysis Batch: 680-153601
Prep Batch: 680-153263
Units: ug/L

Instrument ID: ICP MS - A
Lab File ID: N/A
Initial Weight/Volume: 50 mL
Final Weight/Volume: 50 mL

Analyte	Spike Amount	Result	% Rec.	Limit	Qual
Antimony	10.0	9.98	100	75 - 125	
Arsenic	20.0	19.6	98	75 - 125	
Barium	20.0	19.5	98	75 - 125	
Beryllium	10.0	10.0	100	75 - 125	
Cadmium	10.0	9.85	99	75 - 125	
Chromium	20.0	18.8	94	75 - 125	
Cobalt	10.0	8.81	88	75 - 125	
Copper	20.0	19.6	98	75 - 125	
Lead	10.0	9.70	97	75 - 125	
Nickel	20.0	19.2	96	75 - 125	
Selenium	20.0	20.7	103	75 - 125	
Silver	10.0	9.14	91	75 - 125	
Thallium	8.00	7.90	99	75 - 125	
Tin	20.0	18.1	90	75 - 125	
Vanadium	20.0	18.7	94	75 - 125	
Zinc	20.0	23.7	118	75 - 125	

Calculations are performed before rounding to avoid round-off errors in calculated results.

Client: U.S. Army Corps of Engineers

Job Number: 680-52551-1

Matrix Spike/
Matrix Spike Duplicate Recovery Report - Batch: 680-153263

Method: 6020
Preparation: 3030C

MS Lab Sample ID:	680-52551-1	Analysis Batch:	680-153601	Instrument ID:	ICP MS - A
Client Matrix:	Water	Prep Batch:	680-153263	Lab File ID:	N/A
Dilution:	1.0			Initial Weight/Volume:	50 mL
Date Analyzed:	11/13/2009 1454			Final Weight/Volume:	50 mL
Date Prepared:	11/12/2009 1405				

MSD Lab Sample ID:	680-52551-1	Analysis Batch:	680-153601	Instrument ID:	ICP MS - A
Client Matrix:	Water	Prep Batch:	680-153263	Lab File ID:	N/A
Dilution:	1.0			Initial Weight/Volume:	50 mL
Date Analyzed:	11/13/2009 1500			Final Weight/Volume:	50 mL
Date Prepared:	11/12/2009 1405				

	% Rec.						
Analyte	MS	MSD	Limit	RPD	RPD Limit	MS Qual	MSD Qual
Antimony	99	100	75 - 125	2	20		
Arsenic	96	97	75 - 125	1	20		
Barium	99	101	75 - 125	2	20		
Beryllium	102	103	75 - 125	2	20		
Cadmium	100	99	75 - 125	1	20		
Chromium	89	91	75 - 125	2	20		
Cobalt	88	88	75 - 125	0	20		
Copper	94	96	75 - 125	2	20		
Lead	96	96	75 - 125	0	20		
Nickel	92	94	75 - 125	2	20		
Selenium	98	99	75 - 125	1	20		
Silver	93	93	75 - 125	1	20		
Thallium	99	99	75 - 125	0	20		
Tin	92	98	75 - 125	6	20		
Vanadium	93	94	75 - 125	1	20		
Zinc	57	54	75 - 125	1	20	J	J

Calculations are performed before rounding to avoid round-off errors in calculated results.

Client: U.S. Army Corps of Engineers

Job Number: 680-52551-1

Method Blank - Batch: 680-153306

Method: 300.0
Preparation: N/A

Lab Sample ID: MB 680-153306/2
Client Matrix: Water
Dilution: 5.0
Date Analyzed: 11/12/2009 0908
Date Prepared: N/A

Analysis Batch: 680-153306
Prep Batch: N/A
Units: mg/L

Instrument ID: ICCS200 - G
Lab File ID: 0004.d
Initial Weight/Volume: 1.0 mL
Final Weight/Volume: 5 mL

Analyte	Result	Qual	MDL	RL
Nitrate as NO3	0.36	U	0.36	1.1

Lab Control Sample - Batch: 680-153306

Method: 300.0
Preparation: N/A

Lab Sample ID: LCS 680-153306/3
Client Matrix: Water
Dilution: 5.0
Date Analyzed: 11/12/2009 0920
Date Prepared: N/A

Analysis Batch: 680-153306
Prep Batch: N/A
Units: mg/L

Instrument ID: ICCS200 - G
Lab File ID: 0005.d
Initial Weight/Volume: 1.0 mL
Final Weight/Volume: 5 mL

Analyte	Spike Amount	Result	% Rec.	Limit	Qual
Nitrate as NO3	11.0	10.7	96	90 - 110	

Matrix Spike - Batch: 680-153306

Method: 300.0
Preparation: N/A

Lab Sample ID: 680-52551-3
Client Matrix: Water
Dilution: 5.0
Date Analyzed: 11/12/2009 1347
Date Prepared: N/A

Analysis Batch: 680-153306
Prep Batch: N/A
Units: mg/L

Instrument ID: ICCS200 - G
Lab File ID: 0023.d
Initial Weight/Volume: 1.0 mL
Final Weight/Volume: 5 mL
1 uL

Analyte	Sample Result/Qual		Spike Amount	Result	% Rec.	Limit	Qual
Nitrate as NO3	0.36	U	22.1	23.5	106	90 - 110	

Calculations are performed before rounding to avoid round-off errors in calculated results.

Client: U.S. Army Corps of Engineers

Job Number: 680-52551-1

Method Blank - Batch: 680-153362

Method: 300.0
Preparation: N/A

Lab Sample ID: MB 680-153362/2
Client Matrix: Water
Dilution: 5.0
Date Analyzed: 11/12/2009 1627
Date Prepared: N/A

Analysis Batch: 680-153362
Prep Batch: N/A
Units: mg/L

Instrument ID: ICCS200 - G
Lab File ID: 0030.d
Initial Weight/Volume: 1.0 mL
Final Weight/Volume: 5 mL

Analyte	Result	Qual	MDL	RL
Nitrate as NO3	0.36	U	0.36	1.1

Lab Control Sample - Batch: 680-153362

Method: 300.0
Preparation: N/A

Lab Sample ID: LCS 680-153362/3
Client Matrix: Water
Dilution: 5.0
Date Analyzed: 11/12/2009 1640
Date Prepared: N/A

Analysis Batch: 680-153362
Prep Batch: N/A
Units: mg/L

Instrument ID: ICCS200 - G
Lab File ID: 0031.d
Initial Weight/Volume: 1.0 mL
Final Weight/Volume: 5 mL

Analyte	Spike Amount	Result	% Rec.	Limit	Qual
Nitrate as NO3	11.0	10.5	95	90 - 110	

Calculations are performed before rounding to avoid round-off errors in calculated results.

Serial Number 020640

ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Savannah
5102 LaRoche Avenue
Savannah, GA 31404

Website: www.testamericainc.com
Phone: (912) 354-7858
Fax: (912) 352-0165

Alternate Laboratory Name/Location

Phone:
Fax:

PROJECT REFERENCE: Fort Braggs (Lamont Landfill)	PROJECT NO.	PROJECT LOCATION (STATE)
TAL (LAB) PROJECT MANAGER: Terry Hornsby	P.O. NUMBER	CONTRACT NO.
CLIENT (SITE) PM: Kevin G. Holowak	CLIENT PHONE: 912 652 6083	CLIENT FAX
CLIENT NAME: USACE	CLIENT E-MAIL	
CLIENT ADDRESS: 100 W. Oglethorpe Savannah Georgia 31402		
COMPANY CONTRACTING THIS WORK (if applicable)		

PAGE ___ OF ___

STANDARD REPORT DELIVERY ◯

DATE DUE _____

EXPEDITED REPORT DELIVERY (SURCHARGE) ◯

DATE DUE _____

NUMBER OF COOLERS SUBMITTED PER SHIPMENT:

REQUIRED ANALYSIS / PRESERVATIVE

SAMPLE DATE	SAMPLE TIME	SAMPLE IDENTIFICATION	MATRIX TYPE: COMPOSITE (C) OR GRAB (G) INDICATE	AQUEOUS (WATER)	SOLID OR SEMISOLID	AIR	NONAQUEOUS LIQUID (OIL, SOLVENT, ...)	8260 VOC (HCL)	Metals (HNO3)	8270 SVOC (None)								REMARKS
11/10/09	1005	GW-LMW-3-11-09	G	A				3	1	1								
11/10/09	1225	GW-LMW-4-11-09	G	A				3	1	1								
11/10/09	1400	GW-LMW-DUP2	G	A				3	1	1								
11/10/09	1545	GW-LMW-16-11-09	G	A				3	1	1								
		Trip Blank		A				2										

NUMBER OF CONTAINERS SUBMITTED

RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RELINQUISHED BY: (SIGNATURE)	DATE	TIME
James D. Jackson	11/10/09	0900	Shipped via Fedex					
RECEIVED BY: (SIGNATURE)	**DATE**	**TIME**	**RECEIVED BY: (SIGNATURE)**	**DATE**	**TIME**	**RECEIVED BY: (SIGNATURE)**	**DATE**	**TIME**

LABORATORY USE ONLY

RECEIVED FOR LABORATORY BY: (SIGNATURE)	DATE	TIME	CUSTODY INTACT	CUSTODY SEAL NO.	SAVANNAH LOG NO.	LABORATORY REMARKS
Ruth A Daughtry	11/12/9	0947	YES ◯ NO ◯		680-52551	TEMP 2.4

TAL8240-680 (1207)

ANALYTICAL REPORT

Job Number: 680-52693-1

Job Description: Ft. Bragg Lamont Landfill

For:
U.S. Army Corps of Engineers
PO BOX 889
Savannah, GA 31402-0889

Attention: Mr. Kevin Haborak

Approved for release.
Terry Hornsby
Project Manager I
11/27/2009 9:22 AM

Terry Hornsby
Project Manager I
terry.hornsby@testamericainc.com
11/27/2009

cc: Mr. Judson Smith

The test results in this report meet NELAP requirements for parameters for which accreditation is required or available. Any exceptions to the NELAP requirements are noted. Results pertain only to samples listed in this report. This report may not be reproduced, except in full, without the written approval of the laboratory. Questions should be directed to the person who signed this report.

Savannah Certifications and ID #s: A2LA: 0399.01; AL: 41450; ARDEQ: 88-0692; ARDOH; CA: 03217CA; CO; CT: PH0161; DE; FL: E87052; GA: 803; Guam; HI; IL: 200022; IN; IA: 353; KS: E-10322; KY EPPC: 90084; KY UST; LA DEQ: 30690; LA DHH: LA080008; ME: 2008022; MD: 250; MA: M-GA006; MI: 9925; MS; NFESC: 249; NV: GA00006; NJ: GA769; NM; NY: 10842; NC DWQ: 269; NC DHHS: 13701; PA: 68-00474; PR: GA00006; RI: LAO00244; SC: 98001001; TN: TN0296; TX: T104704185; USEPA: GA00006; VT: VT-87052; VA: 00302; WA; WV DEP: 094; WV DHHR: 9950 C; WI DNR: 999819810; WY/EPAR8: 8TMS-Q

TestAmerica Laboratories, Inc.
TestAmerica Savannah 5102 LaRoche Avenue, Savannah, GA 31404
Tel (912) 354-7858 Fax (912) 352-0165 www.testamericainc.com

Job Narrative
680-52693-1

Receipt
All samples were received in good condition within temperature requirements.

GC/MS VOA
No analytical or quality issues were noted.

Metals
No analytical or quality issues were noted.

General Chemistry
Method 300.0: Reanalysis of the following sample was performed due to the LCS failing QC criteria in the initial batch (153866). The reanalysis was performed outside of the analytical holding time: GW-SLMW-10-11-09 (680-52658-2). Both sets of data have been reported.

No other analytical or quality issues were noted.

VOA Prep
No analytical or quality issues were noted.

METHOD / ANALYST SUMMARY

Client: U.S. Army Corps of Engineers

Job Number: 680-52693-1

Method	Analyst	Analyst ID
SW846 8260B	Bearden, Robert	RB
SW846 6020	Boyuk, Brian	BB
MCAWW 300.0	Brazell, Connie	CB

SAMPLE SUMMARY

Client: U.S. Army Corps of Engineers

Job Number: 680-52693-1

Lab Sample ID	Client Sample ID	Client Matrix	Date/Time Sampled	Date/Time Received
680-52693-1	GW-LMW-6-11-09	Water	11/16/2009 1530	11/17/2009 0956
680-52693-2	GW-LMW-10-11-09	Water	11/16/2009 1700	11/17/2009 0956
680-52693-3	GW-Blank-11-09	Water	11/16/2009 1800	11/17/2009 0956

Client: U.S. Army Corps of Engineers

Job Number: 680-52693-1

Client Sample ID: **GW-LMW-6-11-09**

Lab Sample ID: 680-52693-1

Client Matrix: Water

Date Sampled: 11/16/2009 1530

Date Received: 11/17/2009 0956

8260B Volatile Organic Compounds (GC/MS)

Method:	8260B	Analysis Batch: 680-154508	Instrument ID:	MSO
Preparation:	5030B		Lab File ID:	o3241.d
Dilution:	1.0		Initial Weight/Volume:	5 mL
Date Analyzed:	11/24/2009 1628		Final Weight/Volume:	5 mL
Date Prepared:	11/24/2009 1628			

Analyte	Result (ug/L)	Qualifier	MDL	RL
Acetone	5.0	U	5.0	25
Acetonitrile	10	U	10	40
Acrolein	7.4	U	7.4	20
Acrylonitrile	7.2	U	7.2	20
Benzene	0.25	U	0.25	1.0
Bromoform	0.50	U	0.50	1.0
Bromomethane	0.80	U	0.80	1.0
2-Butanone (MEK)	1.0	U	1.0	10
Carbon disulfide	0.60	U	0.60	2.0
Carbon tetrachloride	0.50	U	0.50	1.0
Chlorobenzene	0.25	U	0.25	1.0
2-Chloro-1,3-butadiene	0.30	U	0.30	1.0
Chlorodibromomethane	0.10	U	0.10	1.0
Chloroethane	1.0	U	1.0	1.0
Chloroform	0.14	U	0.14	1.0
Chloromethane	0.33	U	0.33	1.0
3-Chloro-1-propene	0.20	U	0.20	1.0
cis-1,3-Dichloropropene	0.11	U	0.11	1.0
1,2-Dibromo-3-Chloropropane	0.44	U	0.44	1.0
Dibromomethane	0.20	U	0.20	1.0
Dichlorobromomethane	0.25	U	0.25	1.0
Dichlorodifluoromethane	0.25	U	0.25	1.0
1,1-Dichloroethane	0.25	U	0.25	1.0
1,2-Dichloroethane	0.10	U	0.10	1.0
1,1-Dichloroethene	0.11	U	0.11	1.0
1,2-Dichloropropane	0.13	U	0.13	1.0
Ethylbenzene	0.11	U	0.11	1.0
Ethylene Dibromide	0.25	U	0.25	1.0
Ethyl methacrylate	0.25	U	0.25	1.0
2-Hexanone	1.0	U	1.0	10
Iodomethane	1.0	U	1.0	5.0
Isobutyl alcohol	11	U	11	40
Methacrylonitrile	3.3	U	3.3	20
Methylene Chloride	1.0	U	1.0	5.0
Methyl methacrylate	0.48	U	0.48	1.0
4-Methyl-2-pentanone (MIBK)	1.0	U	1.0	10
Pentachloroethane	1.2	U	1.2	5.0
Propionitrile	4.6	U	4.6	20
Styrene	0.11	U	0.11	1.0
1,1,1,2-Tetrachloroethane	0.33	U	0.33	1.0
1,1,2,2-Tetrachloroethane	0.18	U	0.18	1.0
Tetrachloroethene	0.15	U	0.15	1.0
Toluene	0.33	U	0.33	1.0
trans-1,4-Dichloro-2-butene	0.50	U	0.50	2.0
trans-1,2-Dichloroethene	0.20	U	0.20	1.0
trans-1,3-Dichloropropene	0.21	U	0.21	1.0

Client: U.S. Army Corps of Engineers

Job Number: 680-52693-1

Client Sample ID: **GW-LMW-6-11-09**

Lab Sample ID: 680-52693-1

Client Matrix: Water

Date Sampled: 11/16/2009 1530

Date Received: 11/17/2009 0956

8260B Volatile Organic Compounds (GC/MS)

Method:	8260B	Analysis Batch: 680-154508	Instrument ID:	MSO
Preparation:	5030B		Lab File ID:	o3241.d
Dilution:	1.0		Initial Weight/Volume:	5 mL
Date Analyzed:	11/24/2009 1628		Final Weight/Volume:	5 mL
Date Prepared:	11/24/2009 1628			

Analyte	Result (ug/L)	Qualifier	MDL	RL
1,1,1-Trichloroethane	0.50	U	0.50	1.0
1,1,2-Trichloroethane	0.13	U	0.13	1.0
Trichloroethene	0.13	U	0.13	1.0
Trichlorofluoromethane	1.1		0.25	1.0
1,2,3-Trichloropropane	0.41	U	0.41	1.0
Vinyl acetate	0.28	U	0.28	2.0
Vinyl chloride	0.18	U	0.18	1.0
Xylenes, Total	0.20	U	0.20	2.0

Surrogate	%Rec	Qualifier	Acceptance Limits
4-Bromofluorobenzene	100		75 - 120
Dibromofluoromethane	100		75 - 121
Toluene-d8 (Surr)	102		75 - 120

Client: U.S. Army Corps of Engineers

Job Number: 680-52693-1

Client Sample ID: **GW-LMW-10-11-09**

Lab Sample ID: 680-52693-2

Client Matrix: Water

Date Sampled: 11/16/2009 1700

Date Received: 11/17/2009 0956

8260B Volatile Organic Compounds (GC/MS)

Method:	8260B	Analysis Batch: 680-154508	Instrument ID:	MSO
Preparation:	5030B		Lab File ID:	o3243.d
Dilution:	1.0		Initial Weight/Volume:	5 mL
Date Analyzed:	11/24/2009 1657		Final Weight/Volume:	5 mL
Date Prepared:	11/24/2009 1657			

Analyte	Result (ug/L)	Qualifier	MDL	RL
Acetone	5.0	U	5.0	25
Acetonitrile	10	U	10	40
Acrolein	7.4	U	7.4	20
Acrylonitrile	7.2	U	7.2	20
Benzene	0.25	U	0.25	1.0
Bromoform	0.50	U	0.50	1.0
Bromomethane	0.80	U	0.80	1.0
2-Butanone (MEK)	1.0	U	1.0	10
Carbon disulfide	0.60	U	0.60	2.0
Carbon tetrachloride	0.50	U	0.50	1.0
Chlorobenzene	0.25	U	0.25	1.0
2-Chloro-1,3-butadiene	0.30	U	0.30	1.0
Chlorodibromomethane	0.10	U	0.10	1.0
Chloroethane	1.0	U	1.0	1.0
Chloroform	0.14	U	0.14	1.0
Chloromethane	0.33	U	0.33	1.0
3-Chloro-1-propene	0.20	U	0.20	1.0
cis-1,3-Dichloropropene	0.11	U	0.11	1.0
1,2-Dibromo-3-Chloropropane	0.44	U	0.44	1.0
Dibromomethane	0.20	U	0.20	1.0
Dichlorobromomethane	0.25	U	0.25	1.0
Dichlorodifluoromethane	4.9		0.25	1.0
1,1-Dichloroethane	0.25	U	0.25	1.0
1,2-Dichloroethane	0.10	U	0.10	1.0
1,1-Dichloroethene	0.11	U	0.11	1.0
1,2-Dichloropropane	0.13	U	0.13	1.0
Ethylbenzene	0.11	U	0.11	1.0
Ethylene Dibromide	0.25	U	0.25	1.0
Ethyl methacrylate	0.25	U	0.25	1.0
2-Hexanone	1.0	U	1.0	10
Iodomethane	1.0	U	1.0	5.0
Isobutyl alcohol	11	U	11	40
Methacrylonitrile	3.3	U	3.3	20
Methylene Chloride	1.0	U	1.0	5.0
Methyl methacrylate	0.48	U	0.48	1.0
4-Methyl-2-pentanone (MIBK)	1.0	U	1.0	10
Pentachloroethane	1.2	U	1.2	5.0
Propionitrile	4.6	U	4.6	20
Styrene	0.11	U	0.11	1.0
1,1,1,2-Tetrachloroethane	0.33	U	0.33	1.0
1,1,2,2-Tetrachloroethane	0.18	U	0.18	1.0
Tetrachloroethene	0.24	J	0.15	1.0
Toluene	0.33	U	0.33	1.0
trans-1,4-Dichloro-2-butene	0.50	U	0.50	2.0
trans-1,2-Dichloroethene	0.20	U	0.20	1.0
trans-1,3-Dichloropropene	0.21	U	0.21	1.0

Client: U.S. Army Corps of Engineers

Job Number: 680-52693-1

Client Sample ID: **GW-LMW-10-11-09**

Lab Sample ID: 680-52693-2

Client Matrix: Water

Date Sampled: 11/16/2009 1700

Date Received: 11/17/2009 0956

8260B Volatile Organic Compounds (GC/MS)

Method:	8260B	Analysis Batch: 680-154508	Instrument ID:	MSO
Preparation:	5030B		Lab File ID:	o3243.d
Dilution:	1.0		Initial Weight/Volume:	5 mL
Date Analyzed:	11/24/2009 1657		Final Weight/Volume:	5 mL
Date Prepared:	11/24/2009 1657			

Analyte	Result (ug/L)	Qualifier	MDL	RL
1,1,1-Trichloroethane	0.50	U	0.50	1.0
1,1,2-Trichloroethane	0.13	U	0.13	1.0
Trichloroethene	1.7		0.13	1.0
Trichlorofluoromethane	13		0.25	1.0
1,2,3-Trichloropropane	0.41	U	0.41	1.0
Vinyl acetate	0.28	U	0.28	2.0
Vinyl chloride	0.18	U	0.18	1.0
Xylenes, Total	0.20	U	0.20	2.0

Surrogate	%Rec	Qualifier	Acceptance Limits
4-Bromofluorobenzene	100		75 - 120
Dibromofluoromethane	98		75 - 121
Toluene-d8 (Surr)	100		75 - 120

Client: U.S. Army Corps of Engineers

Job Number: 680-52693-1

Client Sample ID: **GW-Blank-11-09**

Lab Sample ID: 680-52693-3

Client Matrix: Water

Date Sampled: 11/16/2009 1800

Date Received: 11/17/2009 0956

8260B Volatile Organic Compounds (GC/MS)

Method: 8260B

Preparation: 5030B

Dilution: 1.0

Date Analyzed: 11/24/2009 1530

Date Prepared: 11/24/2009 1530

Analysis Batch: 680-154508

Instrument ID: MSO

Lab File ID: o3237.d

Initial Weight/Volume: 5 mL

Final Weight/Volume: 5 mL

Analyte	Result (ug/L)	Qualifier	MDL	RL
Acetone	15	J	5.0	25
Acetonitrile	10	U	10	40
Acrolein	7.4	U	7.4	20
Acrylonitrile	7.2	U	7.2	20
Benzene	0.25	U	0.25	1.0
Bromoform	0.50	U	0.50	1.0
Bromomethane	0.80	U	0.80	1.0
2-Butanone (MEK)	4.0	J	1.0	10
Carbon disulfide	0.60	U	0.60	2.0
Carbon tetrachloride	0.50	U	0.50	1.0
Chlorobenzene	0.25	U	0.25	1.0
2-Chloro-1,3-butadiene	0.30	U	0.30	1.0
Chlorodibromomethane	0.10	U	0.10	1.0
Chloroethane	1.0	U	1.0	1.0
Chloroform	0.14	U	0.14	1.0
Chloromethane	0.33	U	0.33	1.0
3-Chloro-1-propene	0.20	U	0.20	1.0
cis-1,3-Dichloropropene	0.11	U	0.11	1.0
1,2-Dibromo-3-Chloropropane	0.44	U	0.44	1.0
Dibromomethane	0.20	U	0.20	1.0
Dichlorobromomethane	0.25	U	0.25	1.0
Dichlorodifluoromethane	0.25	U	0.25	1.0
1,1-Dichloroethane	0.25	U	0.25	1.0
1,2-Dichloroethane	0.10	U	0.10	1.0
1,1-Dichloroethene	0.11	U	0.11	1.0
1,2-Dichloropropane	0.13	U	0.13	1.0
Ethylbenzene	0.11	U	0.11	1.0
Ethylene Dibromide	0.25	U	0.25	1.0
Ethyl methacrylate	0.25	U	0.25	1.0
2-Hexanone	1.0	U	1.0	10
Iodomethane	1.0	U	1.0	5.0
Isobutyl alcohol	11	U	11	40
Methacrylonitrile	3.3	U	3.3	20
Methylene Chloride	1.0	U	1.0	5.0
Methyl methacrylate	0.48	U	0.48	1.0
4-Methyl-2-pentanone (MIBK)	1.0	U	1.0	10
Pentachloroethane	1.2	U	1.2	5.0
Propionitrile	4.6	U	4.6	20
Styrene	0.11	U	0.11	1.0
1,1,1,2-Tetrachloroethane	0.33	U	0.33	1.0
1,1,2,2-Tetrachloroethane	0.18	U	0.18	1.0
Tetrachloroethene	0.15	U	0.15	1.0
Toluene	0.33	U	0.33	1.0
trans-1,4-Dichloro-2-butene	0.50	U	0.50	2.0
trans-1,2-Dichloroethene	0.20	U	0.20	1.0
trans-1,3-Dichloropropene	0.21	U	0.21	1.0

Client: U.S. Army Corps of Engineers

Job Number: 680-52693-1

Client Sample ID: **GW-Blank-11-09**

Lab Sample ID: 680-52693-3

Client Matrix: Water

Date Sampled: 11/16/2009 1800

Date Received: 11/17/2009 0956

8260B Volatile Organic Compounds (GC/MS)

Method:	8260B	Analysis Batch: 680-154508	Instrument ID:	MSO
Preparation:	5030B		Lab File ID:	o3237.d
Dilution:	1.0		Initial Weight/Volume:	5 mL
Date Analyzed:	11/24/2009 1530		Final Weight/Volume:	5 mL
Date Prepared:	11/24/2009 1530			

Analyte	Result (ug/L)	Qualifier	MDL	RL
1,1,1-Trichloroethane	0.50	U	0.50	1.0
1,1,2-Trichloroethane	0.13	U	0.13	1.0
Trichloroethene	0.13	U	0.13	1.0
Trichlorofluoromethane	0.25	U	0.25	1.0
1,2,3-Trichloropropane	0.41	U	0.41	1.0
Vinyl acetate	0.28	U	0.28	2.0
Vinyl chloride	0.18	U	0.18	1.0
Xylenes, Total	0.20	U	0.20	2.0

Surrogate	%Rec	Qualifier	Acceptance Limits
4-Bromofluorobenzene	100		75 - 120
Dibromofluoromethane	100		75 - 121
Toluene-d8 (Surr)	101		75 - 120

Client: U.S. Army Corps of Engineers

Job Number: 680-52693-1

Client Sample ID: **GW-LMW-6-11-09**

Lab Sample ID: 680-52693-1

Client Matrix: Water

Date Sampled: 11/16/2009 1530

Date Received: 11/17/2009 0956

6020 Inductively Coupled Plasma - Mass Spectrometry

Method:	6020	Analysis Batch: 680-154028		Instrument ID:	ICPMSA
Preparation:	3030C	Prep Batch: 680-153719		Lab File ID:	N/A
Dilution:	1.0			Initial Weight/Volume:	50 mL
Date Analyzed:	11/19/2009 0543			Final Weight/Volume:	50 mL
Date Prepared:	11/17/2009 1250				

Analyte	Result (ug/L)	Qualifier	MDL	RL
Antimony	0.99	U	0.99	2.0
Arsenic	0.40	U	0.40	1.0
Barium	74		0.15	1.0
Beryllium	0.15	J	0.070	0.20
Cadmium	0.20	U	0.20	0.50
Chromium	0.16	U	0.16	1.0
Cobalt	1.2		0.078	0.20
Copper	1.2		0.21	1.0
Lead	0.080	U	0.080	0.30
Nickel	1.8	J	0.20	2.0
Selenium	2.6		0.21	0.50
Silver	0.10	U	0.10	0.20
Thallium	0.10	U	0.10	0.20
Tin	0.40	U	0.40	1.0
Vanadium	1.4	U	1.4	5.0
Zinc	41		2.6	10

Client: U.S. Army Corps of Engineers

Job Number: 680-52693-1

Client Sample ID: **GW-LMW-10-11-09**

Lab Sample ID: 680-52693-2

Client Matrix: Water

Date Sampled: 11/16/2009 1700

Date Received: 11/17/2009 0956

6020 Inductively Coupled Plasma - Mass Spectrometry

Method:	6020	Analysis Batch: 680-154028		Instrument ID:	ICPMSA
Preparation:	3030C	Prep Batch: 680-153719		Lab File ID:	N/A
Dilution:	1.0			Initial Weight/Volume:	50 mL
Date Analyzed:	11/19/2009 0550			Final Weight/Volume:	50 mL
Date Prepared:	11/17/2009 1250				

Analyte	Result (ug/L)	Qualifier	MDL	RL
Antimony	0.99	U	0.99	2.0
Arsenic	0.40	U	0.40	1.0
Barium	12		0.15	1.0
Beryllium	0.070	U	0.070	0.20
Cadmium	0.20	U	0.20	0.50
Chromium	0.26	J	0.16	1.0
Cobalt	0.15	J	0.078	0.20
Copper	0.21	U	0.21	1.0
Lead	0.080	U	0.080	0.30
Nickel	0.50	J	0.20	2.0
Selenium	0.21	U	0.21	0.50
Silver	0.10	U	0.10	0.20
Thallium	0.10	U	0.10	0.20
Tin	0.63	J	0.40	1.0
Vanadium	1.4	U	1.4	5.0
Zinc	21		2.6	10

Client: U.S. Army Corps of Engineers

Job Number: 680-52693-1

Client Sample ID: **GW-Blank-11-09**

Lab Sample ID: 680-52693-3

Client Matrix: Water

Date Sampled: 11/16/2009 1800

Date Received: 11/17/2009 0956

6020 Inductively Coupled Plasma - Mass Spectrometry

Method:	6020	Analysis Batch: 680-154028		Instrument ID:	ICPMSA
Preparation:	3030C	Prep Batch: 680-153719		Lab File ID:	N/A
Dilution:	1.0			Initial Weight/Volume:	50 mL
Date Analyzed:	11/19/2009 0557			Final Weight/Volume:	50 mL
Date Prepared:	11/17/2009 1250				

Analyte	Result (ug/L)	Qualifier	MDL	RL
Antimony	0.99	U	0.99	2.0
Arsenic	0.40	U	0.40	1.0
Barium	0.15	U	0.15	1.0
Beryllium	0.070	U	0.070	0.20
Cadmium	0.20	U	0.20	0.50
Chromium	0.16	U	0.16	1.0
Cobalt	0.078	U	0.078	0.20
Copper	0.21	U	0.21	1.0
Lead	0.080	U	0.080	0.30
Nickel	0.20	U	0.20	2.0
Selenium	0.21	U	0.21	0.50
Silver	0.10	U	0.10	0.20
Thallium	0.10	U	0.10	0.20
Tin	0.40	U	0.40	1.0
Vanadium	1.4	U	1.4	5.0
Zinc	4.8	J	2.6	10

General Chemistry

Client Sample ID: **GW-LMW-6-11-09**

Lab Sample ID: 680-52693-1

Client Matrix: Water

Date Sampled: 11/16/2009 1530

Date Received: 11/17/2009 0956

Analyte	Result	Qual	Units	MDL	RL	Dil	Method
Nitrate as NO3	5.0		mg/L	0.36	1.1	5.0	300.0

Analysis Batch: 680-153812 Date Analyzed: 11/17/2009 1457

General Chemistry

Client Sample ID: **GW-LMW-10-11-09**

Lab Sample ID: 680-52693-2

Client Matrix: Water

Date Sampled: 11/16/2009 1700

Date Received: 11/17/2009 0956

Analyte	Result	Qual	Units	MDL	RL	Dil	Method
Nitrate as NO3	2.4		mg/L	0.36	1.1	5.0	300.0

Analysis Batch: 680-153812 Date Analyzed: 11/17/2009 1510

General Chemistry

Client Sample ID: **GW-Blank-11-09**

Lab Sample ID: 680-52693-3

Client Matrix: Water

Date Sampled: 11/16/2009 1800

Date Received: 11/17/2009 0956

Analyte	Result	Qual	Units	MDL	RL	Dil	Method
Nitrate as NO3	0.36	U M	mg/L	0.36	1.1	5.0	300.0

Analysis Batch: 680-153812 Date Analyzed: 11/17/2009 1522

DATA REPORTING QUALIFIERS

Client: U.S. Army Corps of Engineers

Job Number: 680-52693-1

Lab Section	Qualifier	Description
GC/MS VOA		
	J	Estimated: The analyte was positively identified; the quantitation is an estimation
	U	Undetected at the Limit of Detection.
Metals		
	J	Estimated: The analyte was positively identified; the quantitation is an estimation
	U	Undetected at the Limit of Detection.
General Chemistry		
	M	Manual integrated compound.
	U	Undetected at the Limit of Detection.

Client: U.S. Army Corps of Engineers

Job Number: 680-52693-1

Method Blank - Batch: 680-154508

Method: 8260B
Preparation: 5030B

Lab Sample ID: MB 680-154508/9
Client Matrix: Water
Dilution: 1.0
Date Analyzed: 11/24/2009 1206
Date Prepared: 11/24/2009 1206

Analysis Batch: 680-154508
Prep Batch: N/A
Units: ug/L

Instrument ID: GC/MS Volatiles - O
Lab File ID: oq419.d
Initial Weight/Volume: 5 mL
Final Weight/Volume: 5 mL

Analyte	Result	Qual	MDL	RL
Acetone	5.0	U	5.0	25
Acetonitrile	10	U	10	40
Acrolein	7.4	U	7.4	20
Acrylonitrile	7.2	U	7.2	20
Benzene	0.25	U	0.25	1.0
Bromoform	0.50	U	0.50	1.0
Bromomethane	0.80	U	0.80	1.0
2-Butanone (MEK)	1.0	U	1.0	10
Carbon disulfide	0.60	U	0.60	2.0
Carbon tetrachloride	0.50	U	0.50	1.0
Chlorobenzene	0.25	U	0.25	1.0
2-Chloro-1,3-butadiene	0.30	U	0.30	1.0
Chlorodibromomethane	0.10	U	0.10	1.0
Chloroethane	1.0	U	1.0	1.0
Chloroform	0.14	U	0.14	1.0
Chloromethane	0.33	U	0.33	1.0
3-Chloro-1-propene	0.20	U	0.20	1.0
cis-1,3-Dichloropropene	0.11	U	0.11	1.0
1,2-Dibromo-3-Chloropropane	0.44	U	0.44	1.0
Dibromomethane	0.20	U	0.20	1.0
Dichlorobromomethane	0.25	U	0.25	1.0
Dichlorodifluoromethane	0.25	U	0.25	1.0
1,1-Dichloroethane	0.25	U	0.25	1.0
1,2-Dichloroethane	0.10	U	0.10	1.0
1,1-Dichloroethene	0.11	U	0.11	1.0
1,2-Dichloropropane	0.13	U	0.13	1.0
Ethylbenzene	0.11	U	0.11	1.0
Ethylene Dibromide	0.25	U	0.25	1.0
Ethyl methacrylate	0.25	U	0.25	1.0
2-Hexanone	1.0	U	1.0	10
Iodomethane	1.0	U	1.0	5.0
Isobutyl alcohol	11	U	11	40
Methacrylonitrile	3.3	U	3.3	20
Methylene Chloride	1.0	U	1.0	5.0
Methyl methacrylate	0.48	U	0.48	1.0
4-Methyl-2-pentanone (MIBK)	1.0	U	1.0	10
Pentachloroethane	1.2	U	1.2	5.0
Propionitrile	4.6	U	4.6	20
Styrene	0.11	U	0.11	1.0
1,1,1,2-Tetrachloroethane	0.33	U	0.33	1.0
1,1,2,2-Tetrachloroethane	0.18	U	0.18	1.0

Calculations are performed before rounding to avoid round-off errors in calculated results.

Client: U.S. Army Corps of Engineers

Job Number: 680-52693-1

Method Blank - Batch: 680-154508

Method: 8260B
Preparation: 5030B

Lab Sample ID: MB 680-154508/9
Client Matrix: Water
Dilution: 1.0
Date Analyzed: 11/24/2009 1206
Date Prepared: 11/24/2009 1206

Analysis Batch: 680-154508
Prep Batch: N/A
Units: ug/L

Instrument ID: GC/MS Volatiles - O
Lab File ID: oq419.d
Initial Weight/Volume: 5 mL
Final Weight/Volume: 5 mL

Analyte	Result	Qual	MDL	RL
Tetrachloroethene	0.15	U	0.15	1.0
Toluene	0.33	U	0.33	1.0
trans-1,4-Dichloro-2-butene	0.50	U	0.50	2.0
trans-1,2-Dichloroethene	0.20	U	0.20	1.0
trans-1,3-Dichloropropene	0.21	U	0.21	1.0
1,1,1-Trichloroethane	0.50	U	0.50	1.0
1,1,2-Trichloroethane	0.13	U	0.13	1.0
Trichloroethene	0.13	U	0.13	1.0
Trichlorofluoromethane	0.25	U	0.25	1.0
1,2,3-Trichloropropane	0.41	U	0.41	1.0
Vinyl acetate	0.28	U	0.28	2.0
Vinyl chloride	0.18	U	0.18	1.0
Xylenes, Total	0.20	U	0.20	2.0

Surrogate	% Rec	Acceptance Limits
4-Bromofluorobenzene	103	75 - 120
Dibromofluoromethane	102	75 - 121
Toluene-d8 (Surr)	101	75 - 120

Calculations are performed before rounding to avoid round-off errors in calculated results.

Client: U.S. Army Corps of Engineers

Job Number: 680-52693-1

Lab Control Sample/
Lab Control Sample Duplicate Recovery Report - Batch: 680-154508

Method: 8260B
Preparation: 5030B

LCS Lab Sample ID:	LCS 680-154508/6	Analysis Batch:	680-154508	Instrument ID:	GC/MS Volatiles - O
Client Matrix:	Water	Prep Batch:	N/A	Lab File ID:	oq411.d
Dilution:	1.0	Units:	ug/L	Initial Weight/Volume:	5 mL
Date Analyzed:	11/24/2009 1009			Final Weight/Volume:	5 mL
Date Prepared:	11/24/2009 1009				

LCSD Lab Sample ID:	LCSD 680-154508/7	Analysis Batch:	680-154508	Instrument ID:	GC/MS Volatiles - O
Client Matrix:	Water	Prep Batch:	N/A	Lab File ID:	oq413.d
Dilution:	1.0	Units:	ug/L	Initial Weight/Volume:	5 mL
Date Analyzed:	11/24/2009 1038			Final Weight/Volume:	5 mL
Date Prepared:	11/24/2009 1038				

	% Rec.						
Analyte	LCS	LCSD	Limit	RPD	RPD Limit	LCS Qual	LCSD Qual
Acetone	106	110	17 - 175	4	50		
Benzene	100	98	77 - 119	1	30		
Bromoform	92	94	62 - 133	2	30		
Bromomethane	102	103	12 - 184	2	50		
2-Butanone (MEK)	110	109	33 - 157	1	30		
Carbon disulfide	103	103	55 - 131	0	30		
Carbon tetrachloride	94	97	71 - 135	3	30		
Chlorobenzene	97	96	85 - 116	1	30		
Chlorodibromomethane	98	99	75 - 133	1	30		
Chloroethane	87	84	40 - 165	3	50		
Chloroform	107	106	82 - 120	1	30		
Chloromethane	84	84	48 - 142	0	50		
cis-1,3-Dichloropropene	104	102	76 - 126	3	30		
1,2-Dibromo-3-Chloropropane	96	95	49 - 140	0	30		
Dibromomethane	98	96	78 - 119	2	30		
Dichlorobromomethane	100	98	78 - 127	2	30		
Dichlorodifluoromethane	82	79	34 - 154	3	30		
1,1-Dichloroethane	107	105	74 - 127	1	30		
1,2-Dichloroethane	94	94	66 - 132	0	30		
1,1-Dichloroethene	103	104	62 - 141	1	30		
1,2-Dichloropropane	101	97	73 - 124	4	30		
Ethylbenzene	100	98	86 - 116	2	30		
Ethylene Dibromide	101	99	80 - 121	1	30		
2-Hexanone	101	100	34 - 161	2	30		
Methylene Chloride	106	105	70 - 125	1	30		
4-Methyl-2-pentanone (MIBK)	105	101	40 - 151	3	30		
Styrene	102	100	82 - 122	2	30		
1,1,1,2-Tetrachloroethane	95	95	81 - 128	0	30		
1,1,2,2-Tetrachloroethane	99	99	69 - 129	0	30		
Tetrachloroethene	94	94	76 - 126	0	30		
Toluene	102	100	81 - 117	2	30		
trans-1,2-Dichloroethene	105	105	72 - 131	1	30		

Calculations are performed before rounding to avoid round-off errors in calculated results.

Client: U.S. Army Corps of Engineers

Job Number: 680-52693-1

Lab Control Sample/
Lab Control Sample Duplicate Recovery Report - Batch: 680-154508

Method: 8260B
Preparation: 5030B

LCS Lab Sample ID:	LCS 680-154508/6	Analysis Batch:	680-154508	Instrument ID:	GC/MS Volatiles - O
Client Matrix:	Water	Prep Batch:	N/A	Lab File ID:	oq411.d
Dilution:	1.0	Units:	ug/L	Initial Weight/Volume:	5 mL
Date Analyzed:	11/24/2009 1009			Final Weight/Volume:	5 mL
Date Prepared:	11/24/2009 1009				

LCSD Lab Sample ID:	LCSD 680-154508/7	Analysis Batch:	680-154508	Instrument ID:	GC/MS Volatiles - O
Client Matrix:	Water	Prep Batch:	N/A	Lab File ID:	oq413.d
Dilution:	1.0	Units:	ug/L	Initial Weight/Volume:	5 mL
Date Analyzed:	11/24/2009 1038			Final Weight/Volume:	5 mL
Date Prepared:	11/24/2009 1038				

	% Rec.						
Analyte	LCS	LCSD	Limit	RPD	RPD Limit	LCS Qual	LCSD Qual
trans-1,3-Dichloropropene	101	99	73 - 128	2	30		
1,1,1-Trichloroethane	96	96	76 - 127	0	30		
1,1,2-Trichloroethane	100	99	75 - 121	1	30		
Trichloroethene	100	99	84 - 115	1	30		
Trichlorofluoromethane	94	94	58 - 149	0	50		
1,2,3-Trichloropropane	97	94	70 - 130	3	30		
Vinyl acetate	122	121	10 - 217	1	30		
Vinyl chloride	82	81	59 - 144	1	50		
Xylenes, Total	100	98	84 - 118	2	30		

Surrogate	LCS % Rec	LCSD % Rec	Acceptance Limits
4-Bromofluorobenzene	98	96	75 - 120
Dibromofluoromethane	108	110	75 - 121
Toluene-d8 (Surr)	103	100	75 - 120

Calculations are performed before rounding to avoid round-off errors in calculated results.

Client: U.S. Army Corps of Engineers

Job Number: 680-52693-1

Method Blank - Batch: 680-153719

Method: 6020
Preparation: 3030C

Lab Sample ID: MB 680-153719/11-A
Client Matrix: Water
Dilution: 1.0
Date Analyzed: 11/19/2009 0415
Date Prepared: 11/17/2009 1250

Analysis Batch: 680-154028
Prep Batch: 680-153719
Units: ug/L

Instrument ID: ICP MS - A
Lab File ID: N/A
Initial Weight/Volume: 50 mL
Final Weight/Volume: 50 mL

Analyte	Result	Qual	MDL	RL
Antimony	0.99	U	0.99	2.0
Arsenic	0.40	U	0.40	1.0
Barium	0.15	U	0.15	1.0
Beryllium	0.070	U	0.070	0.20
Cadmium	0.20	U	0.20	0.50
Chromium	0.16	U	0.16	1.0
Cobalt	0.078	U	0.078	0.20
Copper	0.21	U	0.21	1.0
Lead	0.080	U	0.080	0.30
Nickel	0.20	U	0.20	2.0
Selenium	0.21	U	0.21	0.50
Silver	0.10	U	0.10	0.20
Thallium	0.10	U	0.10	0.20
Tin	0.40	U	0.40	1.0
Vanadium	1.4	U	1.4	5.0
Zinc	2.6	U	2.6	10

Calculations are performed before rounding to avoid round-off errors in calculated results.

Client: U.S. Army Corps of Engineers

Job Number: 680-52693-1

Lab Control Sample - Batch: 680-153719

Method: 6020
Preparation: 3030C

Lab Sample ID: LCS 680-153719/12-A
Client Matrix: Water
Dilution: 1.0
Date Analyzed: 11/19/2009 0422
Date Prepared: 11/17/2009 1250

Analysis Batch: 680-154028
Prep Batch: 680-153719
Units: ug/L

Instrument ID: ICP MS - A
Lab File ID: N/A
Initial Weight/Volume: 50 mL
Final Weight/Volume: 50 mL

Analyte	Spike Amount	Result	% Rec.	Limit	Qual
Antimony	10.0	9.97	100	75 - 125	
Arsenic	20.0	20.3	102	75 - 125	
Barium	20.0	19.3	96	75 - 125	
Beryllium	10.0	9.92	99	75 - 125	
Cadmium	10.0	10.2	102	75 - 125	
Chromium	20.0	19.0	95	75 - 125	
Cobalt	10.0	9.15	92	75 - 125	
Copper	20.0	19.6	98	75 - 125	
Lead	10.0	9.84	98	75 - 125	
Nickel	20.0	20.0	100	75 - 125	
Selenium	20.0	21.5	108	75 - 125	
Silver	10.0	9.60	96	75 - 125	
Thallium	8.00	7.70	96	75 - 125	
Tin	20.0	18.1	90	75 - 125	
Vanadium	20.0	19.5	98	75 - 125	
Zinc	20.0	23.8	119	75 - 125	

Calculations are performed before rounding to avoid round-off errors in calculated results.

Client: U.S. Army Corps of Engineers

Job Number: 680-52693-1

Method Blank - Batch: 680-153812

Method: 300.0
Preparation: N/A

Lab Sample ID: MB 680-153812/2
Client Matrix: Water
Dilution: 5.0
Date Analyzed: 11/17/2009 1233
Date Prepared: N/A

Analysis Batch: 680-153812
Prep Batch: N/A
Units: mg/L

Instrument ID: ICCS200 - G
Lab File ID: 0005.d
Initial Weight/Volume: 1 mL
Final Weight/Volume: 5 mL

Analyte	Result	Qual	MDL	RL
Nitrate as NO3	0.36	U	0.36	1.1

Lab Control Sample - Batch: 680-153812

Method: 300.0
Preparation: N/A

Lab Sample ID: LCS 680-153812/3
Client Matrix: Water
Dilution: 5.0
Date Analyzed: 11/17/2009 1246
Date Prepared: N/A

Analysis Batch: 680-153812
Prep Batch: N/A
Units: mg/L

Instrument ID: ICCS200 - G
Lab File ID: 0006.d
Initial Weight/Volume: 1 mL
Final Weight/Volume: 5 mL

Analyte	Spike Amount	Result	% Rec.	Limit	Qual
Nitrate as NO3	11.0	9.99	90	90 - 110	

Matrix Spike - Batch: 680-153812

Method: 300.0
Preparation: N/A

Lab Sample ID: 680-52693-3
Client Matrix: Water
Dilution: 5.0
Date Analyzed: 11/17/2009 1536
Date Prepared: N/A

Analysis Batch: 680-153812
Prep Batch: N/A
Units: mg/L

Instrument ID: ICCS200 - G
Lab File ID: 0017.d
Initial Weight/Volume: 1 mL
Final Weight/Volume: 5 mL
1 uL

Analyte	Sample Result/Qual		Spike Amount	Result	% Rec.	Limit	Qual
Nitrate as NO3	0.36	U	22.1	21.5	97	90 - 110	

Calculations are performed before rounding to avoid round-off errors in calculated results.

Serial Number 028018

ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Savannah
5102 LaRoche Avenue
Savannah, GA 31404

Website: www.testamericainc.com
Phone: (912) 354-7858
Fax: (912) 352-0165

Alternate Laboratory Name/Location

Phone:
Fax:

PROJECT REFERENCE: Ft Bragg (LaMont)	PROJECT NO.	PROJECT LOCATION (STATE)
TAL (LAB) PROJECT MANAGER: Terry Hornsby	P.O. NUMBER	CONTRACT NO.
CLIENT (SITE) PM: Kevin Haborak	CLIENT PHONE: 912 652 6083	CLIENT FAX
CLIENT NAME: USACE	CLIENT E-MAIL	
CLIENT ADDRESS: 100 W Oglethorpe Avenue Savannah GA 31402		
COMPANY CONTRACTING THIS WORK (if applicable)		

PAGE ___ OF ___

STANDARD REPORT DELIVERY ◯

DATE DUE _____

EXPEDITED REPORT DELIVERY (SURCHARGE) ◯

DATE DUE _____

NUMBER OF COOLERS SUBMITTED PER SHIPMENT:

MATRIX TYPE: COMPOSITE (C) OR GRAB (G) INDICATE; AQUEOUS (WATER); SOLID OR SEMISOLID; AIR; NONAQUEOUS LIQUID (OIL, SOLVENT, ...)

REQUIRED ANALYSIS / PRESERVATIVE: VOC (HCL); Approx Alkalinity (3°C); Nitrate (HNO3)

SAMPLE DATE	SAMPLE TIME	SAMPLE IDENTIFICATION	COMPOSITE (C) OR GRAB (G)	AQUEOUS (WATER)	SOLID OR SEMISOLID	AIR	NONAQUEOUS LIQUID	VOC (HCL)	Approx Alkalinity (3°C)	Nitrate (HNO3)	REMARKS
11/16/09	1530	GW-LMW-6-11-09	G	A				3	1	1	
11/16/09	1900	GW-LMW-10-11-09	G	A				3	1	1	
11/16/09	1800	GW-Blank-11-09	G	A				3	1	1	
		Trip Blank		A				2			

NUMBER OF CONTAINERS SUBMITTED

RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RELINQUISHED BY: (SIGNATURE)	DATE	TIME
[signature]	11/16/09	1830	Shipped via Fedex					

RECEIVED BY: (SIGNATURE)	DATE	TIME	RECEIVED BY: (SIGNATURE)	DATE	TIME	RECEIVED BY: (SIGNATURE)	DATE	TIME

LABORATORY USE ONLY

RECEIVED FOR LABORATORY BY: (SIGNATURE)	DATE	TIME	CUSTODY INTACT	CUSTODY SEAL NO.	SAVANNAH LOG NO.	LABORATORY REMARKS
[signature]	11/17/09	0956	YES ◯ NO ◯		680-52693	3.8°C

TAL8240-680 (1207)

11/27/2009

APPENDIX D

STATISTICAL REPORTS
(Electronic Only)

US Army Corps
of Engineers
Savannah District

DIRECTORATE OF PUBLIC
WORKS and ENVIRONMENT
Fort Bragg, North Carolina

Statistical Analysis of Ground-Water Data
Lamont Road Land Clearing and Inert Debris Landfill
Fort Bragg, North Carolina
Rounds N1 through N19

Permit No. 26G and 26-08

JUNE 2009

Prepared by
U.S. Army Corps of Engineers, Savannah District
100 West Oglethorpe Ave.
Savannah, Georgia 31401

Statistical Analysis of Ground-Water Data
Lamont Road Land Clearing and Inert Debris Landfill
Fort Bragg, North Carolina
Rounds N1 through N19

EXECUTIVE SUMMARY

Fort Bragg authorized the U.S. Army Corps of Engineers, Savannah District to perform the required sampling of the Lamont Land Clearing and Inert Debris Landfill. The evaluation of ground-water data was in accordance with 15A NC3AC 13B.1634 for detection monitoring systems.

Sampling activities occurred in November, 2009. The background and compliance wells sampled are listed on Table 1. The monitoring well network was originally comprised of 11 wells, 4 of the original wells have been abandoned and 6 additional wells have been installed. Therefore, the current monitoring well network consists of 13 wells. Ground-water data were statistically analyzed to determine if the mean concentration for each analyte deviated significantly from the mean concentration from the background well data. All ground-water samples were analyzed for Appendix I Organics by EPA method 8260B and Appendix I Inorganics by EPA methods 6010B and 6020A. Any analyte with a detection during this event was tested to determine if the detection was a statistically significant increase over background levels.

Analysis of the arsenic data using the Kruskal-Wallis test indicated a possible SSI in monitoring well LMW-9D. The SSI was not confirmed by the Mann-Kendall Trend Analysis but was confirmed by the Shewhart-CUSUM Control Chart. Since the statistical tests are inconclusive, further data is needed to confirm the SSI.

Analysis of the barium data using the Kruskal-Wallis test indicated a possible SSI in monitoring well LMW-9S. The SSI was not confirmed by the Mann-Kendall Trend Analysis but was confirmed by the Shewhart-CUSUM Control Chart. Since the statistical tests are inconclusive, further data is needed to confirm the SSI.

Analysis of the cobalt data using the Kruskal-Wallis test indicated a possible SSI in monitoring well LMW-9S. The SSI was not confirmed by either the Mann-Kendall Trend Analysis or the Shewhart-CUSUM Control Chart. The fluctuations in the cobalt data in monitoring well LMW-9S are not SSIs.

Analysis of the copper data using the Kruskal-Wallis test indicated a possible SSI at the group level, no single well was indicated to have an SSI. Therefore, the Non-Parametric Prediction Limit was used to test if the data contained SSIs. The Non-Parametric Prediction Limit did not indicate that the data contained SSIs for any of the wells.

Analysis of the dichlorodifluoromethane data using the Kruskal-Wallis test indicated a possible SSI in monitoring wells LMW-3S and LMW-10. The SSI was not confirmed by the

Mann-Kendall Trend Analysis but was confirmed by the Shewhart-CUSUM Control Chart. Since the statistical tests are inconclusive, further data is needed to confirm the SSI.

Analysis of the nickel data using the Kruskal-Wallis test indicated a possible SSI in monitoring well LMW-3S. The SSI was not confirmed by either the Mann-Kendall Trend Analysis or the Shewhart-CUSUM Control Chart. The fluctuations in the nickel data in monitoring well LMW-3S are not SSIs.

Analysis of the selenium data using the Kruskal-Wallis test indicated a possible SSI in monitoring well LMW-6. The SSI was not confirmed by the Mann-Kendall Trend Analysis but was confirmed by the Shewhart-CUSUM Control Chart. Since the statistical tests are inconclusive, further data is needed to confirm the SSI.

Analysis of the trichloroethene data using the Non-Parametric Prediction Limit test indicated that the data for LMW-10 possibly contained a SSI. The SSI was not confirmed by either the Mann-Kendall Trend Analysis or the Shewhart-CUSUM Control Chart. The fluctuations in the trichloroethene data in monitoring well LMW-10 are not SSIs.

Analysis of the trichlorofluoromethane data using the Kruskal-Wallis test indicated a possible SSI at the group level, no single well was indicated to have an SSI. Therefore, the Non-Parametric Prediction Limit was used to test if the data contained SSIs. The Non-Parametric Prediction Limit indicated that the data for LMW-10 possibly contained a SSI. The SSI was not confirmed by the Mann-Kendall Trend Analysis but was confirmed by the Shewhart-CUSUM Control Chart. Since the statistical tests are inconclusive, further data is needed to confirm the SSI.

Analysis of the vanadium data using the Kruskal-Wallis test indicated a possible SSI in monitoring well LMW-9D. The SSI was not confirmed by either the Mann-Kendall Trend Analysis or the Shewhart-CUSUM Control Chart. The fluctuations in the vanadium data in monitoring well LMW-9D are not SSIs.

Analysis of the zinc data using the Kruskal-Wallis test indicated a possible SSI at the group level, no single well was indicated to have an SSI. Therefore, the Non-Parametric Prediction Limit was used to test if the data contained SSIs. The Non-Parametric Prediction Limit did not indicate that the data contained SSIs for any of the wells.

The results of the statistical analysis indicate that the compliance well concentrations do not vary significantly from background concentrations for any of the other parameters analyzed. Future analytical results will be evaluated using the same procedures.

The arsenic, barium, dichlorofluoromethane, selenium, and trichlorofluoromethane results from Lamont Road Land Clearing and Inert Debris Landfill require additional sampling events to determine if evidence of a SSI or an upward trend exists. Compliance well concentrations do not vary significantly from background concentrations for any of the other parameters analyzed. Future analytical results will be evaluated using the same statistical procedures.

REGISTERED PROFESSIONAL GEOLOGIST CERTIFICATION

I certify that I am a qualified ground-water scientist who has received a baccalaureate or post graduate degree in the natural sciences or engineering and have sufficient training and experience in ground-water hydrology and related fields as demonstrated by state registration and completion of accredited university courses that enable me to make sound professional judgments regarding ground-water monitoring and contaminant fate and transport. I further certify that this report was prepared by me or by a subordinate working under my direction.

_____

.Kevin G. Haborak, P.G.

DATE: April 2009

TABLE OF CONTENTS

SECTION Page

EXECUTIVE SUMMARY i

1.0 BACKGROUND 1

2.0 DETERMINATION OF APPROPRIATE DISTRIBUTIONAL MODEL 1

3.0 SELECTION OF STATISTICAL METHOD 2

4.0 FIELD ACTIVITIES 4

5.0 RESULTS 5

6.0 CONCLUSIONS 7

7.0 REFERENCES 7

LIST OF TABLES

Table 1 Ground-Water Monitoring Network 2

FIGURES

Figure 1: Flowchart of the Statistical Tests Performed for Each Analyte Detected in Compliance Wells

LIST OF SUPPLEMENTAL MATERIAL

Lamont Road Land Clearing and Inert Debris Landfill N=18 Statistical Data on CD Format

1.0 BACKGROUND

Fort Bragg authorized the U.S. Army Corps of Engineers, Savannah District to perform the required sampling of the Lamont LCID Landfill. Sampling activities for the eighteenth round of sampling (N=19) were conducted during November, 2009. This facility is a Land Clearing and Inert Debris Landfill (LCID) located east of Lamont Road at Fort Bragg in Cumberland County, North Carolina.

A comparison of statistical procedures was performed using this data to determine an adequate statistical analysis for future monitoring at the facility. Guidance for determining proper statistical methods was obtained from the EPA guidance document titled: Statistical Analysis of Ground Water Monitoring Data at RCRA Facilities - Interim Final Guidance, April 1989 (herein referenced as the Guidance) and it's addendum Statistical Analysis of Ground Water Monitoring Data at RCRA Facilities - Addendum to Interim Final Guidance, July 1992 (herein referenced as the Addendum). The statistical computer software ChemStat (version 5.0) used for this analysis is based on the guidance documents referenced above.

Factors that were considered in selecting a statistical method include departures from normality, unequal variances, temporal and spatial variability, and the percentage of non-detects. Tests for normality that were considered include: Probability Plots, Chi-Squared, Shapiro-Wilk Test, and Shapiro-Francia Test. Statistical analysis procedures considered were: parametric Two Sample t-Test, non-parametric Wilcoxin Rank-Sum Test; parametric ANOVA Tests, non-parametric Kruskal-Wallis Test, Tolerance and Prediction Intervals, and Control Charts.

2.0 DETERMINATION OF APPROPRIATE DISTRIBUTIONAL MODEL

A statistical test predicts the average behavior (distribution) of a random variable by comparing the means (normal distribution) or medians (lognormal and non-parametric distributions) of the compliance well data to background well data. Before conducting a statistical analysis, a distributional assumption must be tested to determine whether the data conform to the assumed distribution.

Prior to testing for significance, the distribution of each parameter is determined to be normal, lognormal, or neither. First, the dataset is used to test the assumption that the distribution is normal. If this assumption is rejected, the same data are log transformed and the hypothesis that the distribution is lognormal is tested. If these assumptions are rejected, it is concluded that the data are neither normally nor lognormally distributed. The data is determined to be non-normal if the distribution of each parameter is determined to be neither normal nor lognormal.

The Shapiro-Francia Test was selected as the main test to determine whether the data conform to the assumed distribution. This test has a good likelihood of distinguishing between the target distribution (normal) and other common distributions (for example, uniform or skewed), and is recommended for data sets with 50 or more samples.

3.0 SELECTION OF STATISTICAL METHOD

The ground-water samples were analyzed for Appendix I organics and inorganics. Monitoring well MW-4 serves as the background well. The compliance monitoring well results were compared to the background results by means of an applicable statistical procedure. These monitoring wells are listed on Table 1.

Table 1 Ground-Water Monitoring Network

WELL NAME	STATUS
MW-3	**Active - Compliance Monitoring Well**
MW-5	**Abandoned - Compliance Monitoring Well**
MW-6	**Active - Compliance Monitoring Well**
MW-7	**Active - Compliance Monitoring Well**
MW-8	**Active - Compliance Monitoring Well**
MW-9	**Active - Compliance Monitoring Well**
MW-10	**Active - Compliance Monitoring Well**
MW-11	**Abandoned - Compliance Monitoring Well**
MW-12	**Abandoned - Compliance Monitoring Well**
MW-13	**Abandoned - Compliance Monitoring Well**
MW-4	**Active - Compliance Monitoring Well (Background)**
MW-1	**Active - Compliance Monitoring Well**
MW-3S	**Active - Compliance Monitoring Well**
MW-9D	**Active - Compliance Monitoring Well**
MW-9S	**Active - Compliance Monitoring Well**
MW-15	**Active - Compliance Monitoring Well**
MW-16	**Active - Compliance Monitoring Wells**

For this report, contamination is described as the difference in average concentrations between the background and compliance sample data. Random variation of the sample results occurred, but this variation does not necessarily represent contamination. The statistical test used for this report predicted the average behavior (distribution) of a random variable by comparing the means (normal) or medians (lognormal and non-parametric) of compliance well data to background data. It tested the hypothesis that all background and compliance wells have the same median concentration of a constituent. If the hypothesis of equal medians was rejected, then additional calculations were required to determine which compliance wells showed evidence of contamination.

Different statistical tests were used as appropriate for the different distributional patterns that occur within the data. Prior to testing for statistical significance, the distribution of each parameter was determined to be normal, lognormal, or non-normal if the amount of non-detects was less than 15%. The Shapiro-Francia Test was selected as the primary test to determine whether the data conform to the assumed distribution. This test has a good

likelihood of distinguishing between the target distribution (normal) and other common distributions (for example, uniform or skewed) and is valid for samples with 50 or more observations. The process of choosing the appropriate statistical analyses is illustrated on Figure 1.

If the data were either normally or lognormally distributed the ANOVA Test was applied. The ANOVA Test assumed that there were at least three groups of data (including background), with a minimum of four samples per group. It also assumed that the results were normally or lognormally distributed. This test calculated the F-statistic and its corresponding significance probability. If the computed F-statistic was not significant (less than the tabulated F-statistic), it was concluded that there was no significant difference between the average background concentration and the average concentrations of compliance wells. If the F-statistic was significant, it was concluded that at least one pair of well groups is probably different. In this case, ANOVA proceeded to make individual comparisons between background and compliance well data to isolate which well(s) showed evidence of contamination.

If the data were non-normally distributed, or the fraction of nondetects exceeded 15% but were less than 90%, then the Kruskal-Wallis Test was applied. If the fraction of non-detects exceeded 90%, then the Non-Parametric Prediction Limit was applied. For these tests to be sufficiently sensitive, the sample size for any group must be at least 4. A Kruskal-Wallis Test can be used in any situation that the parametric analysis of variance can be used. This test computes the H-statistic, adjusts it for ties, and compares it to the appropriate chi-square critical value. If the H-statistic is less than the critical value, the null-hypothesis is accepted, and it is concluded that there are no differences between median background and compliance well concentrations. If the H-statistic is greater than the critical value, it is concluded that at least one pair of well groups is statistically different.

In this case, the Kruskal-Wallis Test performs post-hoc comparisons between background and compliance well data to determine which wells, if any, show evidence of contamination. If the difference between the average ranks and the mean background rank of any individual well exceeds the critical difference calculated for that well, then evidence of contamination exists. A drawback to the Kruskal-Wallis Test is the dependence on background samples. Fewer background samples will result in an increase of incidence of false positives. An additional drawback to the Kruskal-Wallis Test is that past detections can be the cause for the determination of a statistically significant increase since the test does not discriminate between present and past values.

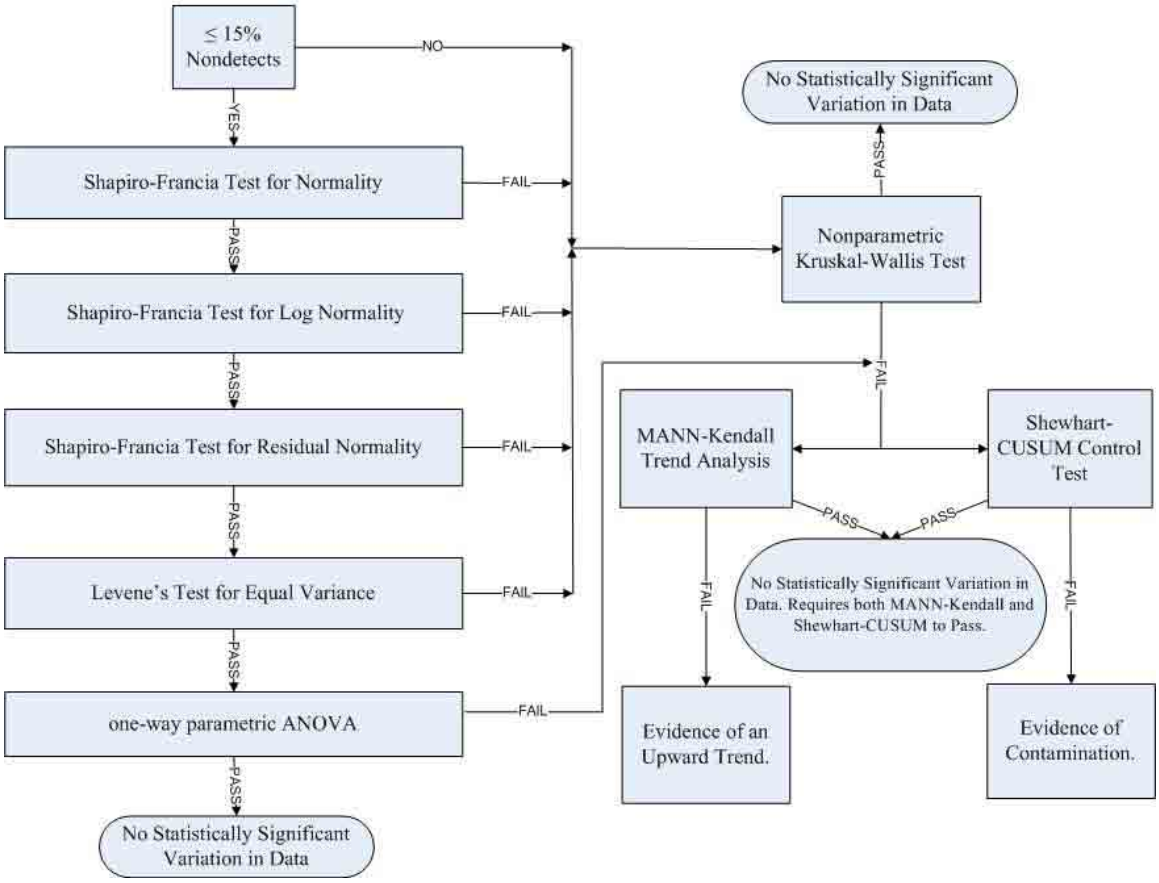
Additional statistical analyses can help to determine the validity of the positive results. Intra-well comparisons of data from a single well to previous data from the same well are performed to determine if a trend of increasing concentration is occurring. The Mann-Kendall Trend Analysis and the Shewhart-CUSUM Control Chart statistical tests were selected for these additional analyses.

The purpose for the Mann-Kendall Trend Analysis is to determine trends in sets of data. The assumption of the Mann-Kendall Trend Analysis procedure is the idea that, if an

increasing trend really exists, the sample taken first from any randomly selected pair of measurements should, on average, have a lower concentration than the measurement collected at a later point. The result for a data set being examined by the Mann-Kendall Trend Analysis is either a downward trend, an upward trend, or no trend.

The Shewhart-CUSUM Control Chart is a graphical method to assess contamination levels for individual wells. This analysis visually tracks concentrations at a given well over time to determine whether they exceed critical thresholds, thus implying a significant increase over the baseline value. Shewhart-CUSUM Control Charts are very susceptible to false positives. However, the graph is useful in providing a visual indication of changing trends in parameter concentrations.

Figure 1: Flowchart of the Statistical Tests Performed for Each Analyte Detected in Compliance Wells



4.0 FIELD ACTIVITIES

This section describes the procedures that were followed for equipment decontamination, ground-water sampling, quality assurance sampling, preservation, handling, and shipment of samples. Ground-water samples were collected using a low-flow purge method with a bladder pump. Immediately before purging a well, the static water level below

the top of the well casing and the total depth of the well were measured to the nearest 0.01 foot and recorded in the field notebook.

The volume of water in the well, including the saturated pore volume (assumed to be 30%) of the sand-packed annulus, was calculated based on the static water level and the well construction information. Well volume calculations were placed in the field notebook. The inlet of the sampling pump was placed at the mid-point of the screened interval. This level was adjusted for wells where the static water level is within the well screen. The monitoring wells were purged using a variable-flow bladder pump at a rate of 500 ml/min or less.

Temperature and specific conductance were monitored to ensure the water quality had stabilized to within 10% of the previous reading. Turbidity readings should either stabilize at or be lower than 10 Nephelometric Turbidity Units (NTUs). Stabilization occurs with pH measurements when readings remain constant within 0.1 Standard Units (SU). The rate of pumping was determined and noted in the field notebook. The purge rate was adjusted, as necessary, to avoid purging any well to dryness and to equal the recharge of the aquifer.

All sampling equipment was protected from contaminated soil surfaces to prevent contamination of the samples (e.g., equipment may be placed on disposable polyethylene plastic sheeting). Ground-water sampling data (including sample number, location, quantity of water purged, field parameters, site conditions, etc.) were documented in the field notebook.

5.0 RESULTS

The U.S. Army Corps of Engineers, Savannah District performed the required sampling of the Lamont Road LCID Landfill in accordance with the Fort Bragg request. The evaluation of ground-water data is according to 15A NC3AC 13B.1634 for detection monitoring systems.

Sampling activities were completed during June, 2009. The background and compliance wells sampled are listed on Table 1. Ground-water data were statistically analyzed to determine if the mean concentration for each sample analyte deviates significantly from the mean concentration from the background well. All ground-water samples were analyzed for Appendix I Organics by EPA method 8260B and Appendix I Inorganics by EPA methods 6010B and 6020A.

Analysis of the arsenic data using the Kruskal-Wallis test indicated a possible SSI in monitoring well LMW-9D. The SSI was not confirmed by the Mann-Kendall Trend Analysis but was confirmed by the Shewhart-CUSUM Control Chart. Since the statistical tests are inconclusive, further data is needed to confirm the SSI.

Analysis of the barium data using the Kruskal-Wallis test indicated a possible SSI in monitoring well LMW-9S. The SSI was not confirmed by the Mann-Kendall Trend Analysis but was confirmed by the Shewhart-CUSUM Control Chart. Since the statistical tests are inconclusive, further data is needed to confirm the SSI.

Analysis of the cobalt data using the Kruskal-Wallis test indicated a possible SSI in monitoring well LMW-9S. The SSI was not confirmed by either the Mann-Kendall Trend Analysis or the Shewhart-CUSUM Control Chart. The fluctuations in the cobalt data in monitoring well LMW-9S are not SSIs.

Analysis of the copper data using the Kruskal-Wallis test indicated a possible SSI at the group level, no single well was indicated to have an SSI. Therefore, the Non-Parametric Prediction Limit was used to test if the data contained SSIs. The Non-Parametric Prediction Limit did not indicate that the data contained SSIs for any of the wells.

Analysis of the dichlorodifluoromethane data using the Kruskal-Wallis test indicated a possible SSI in monitoring wells LMW-3S and LMW-10. The SSI was not confirmed by the Mann-Kendall Trend Analysis but was confirmed by the Shewhart-CUSUM Control Chart. Since the statistical tests are inconclusive, further data is needed to confirm the SSI.

Analysis of the nickel data using the Kruskal-Wallis test indicated a possible SSI in monitoring well LMW-3S. The SSI was not confirmed by either the Mann-Kendall Trend Analysis or the Shewhart-CUSUM Control Chart. The fluctuations in the nickel data in monitoring well LMW-3S are not SSIs.

Analysis of the selenium data using the Kruskal-Wallis test indicated a possible SSI in monitoring well LMW-6. The SSI was not confirmed by the Mann-Kendall Trend Analysis but was confirmed by the Shewhart-CUSUM Control Chart. Since the statistical tests are inconclusive, further data is needed to confirm the SSI.

Analysis of the trichloroethene data using the Non-Parametric Prediction Limit test indicated that the data for LMW-10 possibly contained a SSI. The SSI was not confirmed by either the Mann-Kendall Trend Analysis or the Shewhart-CUSUM Control Chart. The fluctuations in the trichloroethene data in monitoring well LMW-10 are not SSIs.

Analysis of the trichlorofluoromethane data using the Kruskal-Wallis test indicated a possible SSI at the group level, no single well was indicated to have an SSI. Therefore, the Non-Parametric Prediction Limit was used to test if the data contained SSIs. The Non-Parametric Prediction Limit indicated that the data for LMW-10 possibly contained a SSI. The SSI was not confirmed by the Mann-Kendall Trend Analysis but was confirmed by the Shewhart-CUSUM Control Chart. Since the statistical tests are inconclusive, further data is needed to confirm the SSI.

Analysis of the vanadium data using the Kruskal-Wallis test indicated a possible SSI in monitoring well LMW-9D. The SSI was not confirmed by either the Mann-Kendall Trend Analysis or the Shewhart-CUSUM Control Chart. The fluctuations in the vanadium data in monitoring well LMW-9D are not SSIs.

Analysis of the zinc data using the Kruskal-Wallis test indicated a possible SSI at the group level, no single well was indicated to have an SSI. Therefore, the Non-Parametric

Prediction Limit was used to test if the data contained SSIs. The Non-Parametric Prediction Limit did not indicate that the data contained SSIs for any of the wells.

The results of the statistical analysis indicate that the compliance well concentrations do not vary significantly from background concentrations for any of the other parameters analyzed. Future analytical results will be evaluated using the same procedures.

6.0 CONCLUSIONS

The arsenic, barium, dichlorofluoromethane, selenium, and trichlorofluoromethane results from Lamont Road Land Clearing and Inert Debris Landfill require additional sampling events to determine if evidence of a SSI or an upward trend exists. Compliance well concentrations do not vary significantly from background concentrations for any of the other parameters analyzed. Future analytical results will be evaluated using the same statistical procedures.

7.0 REFERENCES

EPA, Statistical Analysis of Ground Water Monitoring Data at RCRA Facilities - Interim Final Guidance, April 1989

EPA, Statistical Analysis of Ground Water Monitoring Data at RCRA Facilities - Addendum to Interim Final Guidance, July 1992

EPA, Region IV, Standard Operating Procedures and Quality Assurance Manual, Revision 1, November, 2001.

Concentrations (ug/L)

Parameter: Arsenic

Natural Logarithm Transformation
Non-Detects Replaced with 1/2 DL
Total Measurements: 199
Total Non-Detect: 154
Percent Non-Detects: 77.3869%
Total Background Measurements: 16
There is 1 background location

Loc.	Meas.	ND	Date	Conc.	Original
LMW-4	16	14 (87.5%)	1/16/1998	ND<0	ND<2
			3/16/1999	ND<0	ND<2
			9/23/1999	ND<0	ND<2
			3/14/2000	ND<0	ND<2
			9/23/2003	ND<0	ND<2
			3/10/2004	ND<0	ND<2
			10/12/2004	ND<0	ND<2
			4/1/2005	ND<0	ND<2
			10/26/2005	ND<0	ND<2
			6/19/2006	ND<0	ND<2
			11/18/2006	ND<0	ND<2
			6/2/2007	0 J	1 J
			11/15/2007	0 J	1 J
			5/20/2008	ND<0	ND<2
			11/20/2008	ND<0	ND<2
			6/11/2009	ND<-1.60944 U	ND<0.4 U

There are 16 compliance locations

Loc.	Meas.	ND	Date	Conc.	Original
LMW-8	17	15 (88.2353%)	1/16/1998	ND<0	ND<2
			3/16/1999	ND<0	ND<2
			9/23/1999	ND<0	ND<2
			3/14/2000	ND<0	ND<2
			9/23/2003	ND<0	ND<2
			3/10/2004	ND<0	ND<2
			10/12/2004	ND<0	ND<2
			4/1/2005	ND<0	ND<2
			10/26/2005	ND<0	ND<2
			6/19/2006	ND<0	ND<2
			11/18/2006	ND<0	ND<2
			6/2/2007	ND<0	ND<2
			11/15/2007	ND<0	ND<2
			5/20/2008	ND<0	ND<2
			11/20/2008	ND<0	ND<2
			6/11/2009	-0.71335 J	0.49 J
			11/14/2009	-0.634878 J	0.53 J
LMW-16	7	3 (42.8571%)	11/18/2006	ND<0	ND<2
			6/2/2007	0.693147	2
			11/15/2007	ND<0	ND<2
			5/20/2008	ND<0	ND<2
			11/20/2008	2.19722	9
			6/11/2009	-0.579818 J	0.56 J

		11/14/2009	-0.527633 J	0.59 J		
LMW-9D	7	1 (14.2857%)	11/18/2006	1.94591	7	
		6/2/2007	1.94591	7		
		11/15/2007	ND<0	ND<2		
		5/20/2008	1.09861	3		
		11/20/2008	1.09861	3		
		6/11/2009	0.741937	2.1		
		11/14/2009	0.693147	2		
LMW-9S	7	3 (42.8571%)	11/18/2006	ND<0	ND<2	
		6/2/2007	0 J	1 J		
		11/15/2007	1.38629	4		
		5/20/2008	ND<0	ND<2		
		11/20/2008	ND<0	ND<2		
		6/11/2009	-0.776529 J	0.46 J		
		11/14/2009	-0.755023 J	0.47 J		
LMW-7	16	12 (75%)	1/16/1998	ND<0	ND<2	
		3/16/1999	ND<0	ND<2		
		9/23/1999	ND<0	ND<2		
		3/14/2000	2.30259	10		
		9/23/2003	ND<0	ND<2		
		3/10/2004	ND<0	ND<2		
		10/12/2004	ND<0	ND<2		
		4/1/2005	ND<0	ND<2		
		10/26/2005	ND<0	ND<2		
		6/19/2006	ND<0	ND<2		
		11/18/2006	ND<0	ND<2		
		6/2/2007	0 J	1 J		
		11/15/2007	ND<0	ND<2		
		5/20/2008	ND<0	ND<2		
		11/20/2008	2.30259	10		
		6/11/2009	0.0953102 J B	1.1 J B		
LMW-14R	5	2 (40%)	6/2/2007	0 J	1 J	
		11/15/2007	ND<0	ND<2		
		5/20/2008	ND<0	ND<2		
		11/20/2008	2.19722	9		
		6/11/2009	-0.891598 J	0.41 J		
LMW-15R	9	8 (88.8889%)	11/18/2006	ND<0	ND<2	
		6/2/2007	ND<0	ND<2		
		11/15/2007	ND<0	ND<2		
		11/15/2007	ND<0	ND<2		
		5/20/2008	ND<0	ND<2		
		5/20/2008	ND<0	ND<2		
		11/20/2008	ND<0	ND<2		
		11/20/2008	ND<0	ND<2		
		6/11/2009	0.916291	2.5		
LMW-9	16	10 (62.5%)	1/16/1998	ND<0	ND<2	
		3/16/1999	ND<0	ND<2		
		9/23/1999	1.09861	3		
		3/14/2000	ND<0	ND<2		
		9/23/2003	ND<0	ND<2		
		3/10/2004	ND<0	ND<2		
		10/12/2004	ND<0	ND<2		
		4/1/2005	0 J	1 J		
		10/26/2005	ND<0	ND<2		
		6/19/2006	0 J	1 J		

			11/18/2006	ND<0	ND<2	
			6/2/2007	0 J	1 J	
			11/15/2007	ND<0	ND<2	
			5/20/2008	ND<0	ND<2	
			11/20/2008	2.07944		8
			6/11/2009	0.0953102 J		1.1 J
LMW-6	16	14 (87.5%)	1/16/1998	ND<0	ND<2	
			3/16/1999	ND<0	ND<2	
			9/23/1999	ND<0	ND<2	
			3/14/2000	ND<0	ND<2	
			9/23/2003	ND<0	ND<2	
			3/10/2004	ND<0	ND<2	
			10/12/2004	ND<0	ND<2	
			4/1/2005	ND<0	ND<2	
			10/26/2005	ND<0	ND<2	
			6/19/2006	ND<0	ND<2	
			11/18/2006	ND<0	ND<2	
			6/2/2007	0 J	1 J	
			11/15/2007	ND<0	ND<2	
			5/20/2008	ND<0	ND<2	
			11/20/2008	ND<0	ND<2	
			6/11/2009	-0.430783 J B		0.65 J B
LMW-3S	6	5 (83.3333%)	11/18/2006	ND<0	ND<2	
			6/2/2007	ND<0	ND<2	
			11/15/2007	ND<0	ND<2	
			5/20/2008	ND<0	ND<2	
			11/20/2008	ND<0	ND<2	
			6/11/2009	-0.314711 J B		0.73 J B
LMW-10	13	10 (76.9231%)	3/14/2000	3.13549		23
			9/23/2003	ND<0	ND<2	
			3/10/2004	3.21888		25
			10/12/2004	ND<0	ND<2	
			4/1/2005	ND<0	ND<2	
			10/26/2005	ND<0	ND<2	
			6/19/2006	ND<0	ND<2	
			11/18/2006	ND<0	ND<2	
			6/2/2007	0 J	1 J	
			11/15/2007	ND<0	ND<2	
			5/20/2008	ND<0	ND<2	
			11/20/2008	ND<0	ND<2	
			6/11/2009	ND<-1.60944 U		ND<0.4 U
LMW-3	18	17 (94.4444%)	11/19/1996	ND<0	ND<2	
			3/24/1997	ND<0	ND<2	
			1/16/1998	ND<0	ND<2	
			3/16/1999	ND<0	ND<2	
			9/23/1999	ND<0	ND<2	
			3/14/2000	ND<0	ND<2	
			9/23/2003	ND<0	ND<2	
			3/10/2004	ND<0	ND<2	
			10/12/2004	ND<0	ND<2	
			4/1/2005	ND<0	ND<2	
			10/26/2005	ND<0	ND<2	
			6/19/2006	ND<0	ND<2	
			11/18/2006	ND<0	ND<2	
			6/2/2007	ND<0	ND<2	
			11/15/2007	ND<0	ND<2	
			5/20/2008	ND<0	ND<2	
			11/20/2008	ND<0	ND<2	

			6/11/2009	-0.867501 J B	0.42 J B	
MW-5	13	11 (84.6154%)	1/16/1998	ND<0	ND<2	
			3/16/1999	ND<0	ND<2	
			9/23/1999	ND<0	ND<2	
			3/14/2000	3.52636	34	
			9/23/2003	ND<0	ND<2	
			3/10/2004	4.09434	60	
			10/12/2004	ND<0	ND<2	
			4/1/2005	ND<0	ND<2	
			10/26/2005	ND<0	ND<2	
			6/19/2006	ND<0	ND<2	
			11/15/2007	ND<0	ND<2	
			5/20/2008	ND<0	ND<2	
			11/20/2008	ND<0	ND<2	
LMW-13	11	10 (90.9091%)	3/14/2000	2.77259	16	
			9/23/2003	ND<0	ND<2	
			3/10/2004	ND<0	ND<2	
			10/12/2004	ND<0	ND<2	
			4/1/2005	ND<0	ND<2	
			10/26/2005	ND<0	ND<2	
			6/19/2006	ND<0	ND<2	
			6/2/2007	ND<0	ND<2	
			11/15/2007	ND<0	ND<2	
			5/20/2008	ND<0	ND<2	
			11/20/2008	ND<0	ND<2	
LMW-12	11	10 (90.9091%)	3/14/2000	4.04305	57	
			9/23/2003	ND<0	ND<2	
			3/10/2004	ND<0	ND<2	
			10/12/2004	ND<0	ND<2	
			4/1/2005	ND<0	ND<2	
			10/26/2005	ND<0	ND<2	
			6/19/2006	ND<0	ND<2	
			6/2/2007	ND<0	ND<2	
			11/15/2007	ND<0	ND<2	
			5/20/2008	ND<0	ND<2	
			11/20/2008	ND<0	ND<2	
LMW-11	11	9 (81.8182%)	3/14/2000	2.48491	12	
			9/23/2003	ND<0	ND<2	
			3/10/2004	2.89037	18	
			10/12/2004	ND<0	ND<2	
			4/1/2005	ND<0	ND<2	
			10/26/2005	ND<0	ND<2	
			6/19/2006	ND<0	ND<2	
			6/2/2007	ND<0	ND<2	
			11/15/2007	ND<0	ND<2	
			5/20/2008	ND<0	ND<2	
			11/20/2008	ND<0	ND<2	

There are 0 unused locations

Loc.	Meas.	ND	Date	Conc.	Original

Shapiro-Francia Test of Normality

Parameter: Arsenic

All Locations

Normality Test of Parameter Concentrations

Original Data (Not Transformed)
Non-Detects Replaced with 1/2 DL
Total Number of Measurements = 199

i	x(i)	m(i)	sum(m^2)	sum(mx)
1	0.2	-2.575836	3.63492	-0.515167
2	0.2	-2.326341	2.0468	-0.980435
3	0.41	-2.170091	6.7561	-1.87017
4	0.42	-2.053752	0.974	-2.73275
5	0.46	-1.959962	4.8154	-3.63433
6	0.47	-1.880792	8.3528	-4.5183
7	0.49	-1.811913	1.6358	-5.40614
8	0.53	-1.750693	4.7007	-6.334
9	0.56	-1.6954	37.5751	-7.28342
10	0.59	-1.644854	0.2806	-8.25389
11	0.65	-1.598194	2.8348	-9.29271
12	0.73	-1.554774	5.2522	-10.4277
13	1	-1.5141	47.5447	-11.9418
14	1	-1.475794	9.7226	-13.4176
15	1	-1.439535	1.7949	-14.8571
16	1	-1.405075	3.7691	-16.2622
17	1	-1.3722	55.6521	-17.6344
18	1	-1.340755	7.4497	-18.9752
19	1	-1.310585	9.1673	-20.2857
20	1	-1.281556	0.8097	-21.5673
21	1	-1.253576	2.3811	-22.8209
22	1	-1.226536	3.8855	-24.0474
23	1	-1.200366	5.3263	-25.2477
24	1	-1.174996	6.7069	-26.4227
25	1	-1.150356	8.0302	-27.5731
26	1	-1.126396	9.299	-28.6995
27	1	-1.103067	0.5157	-29.8025
28	1	-1.080327	1.6828	-30.8828
29	1	-1.058127	2.8025	-31.941
30	1	-1.036437	3.8766	-32.9774
31	1	-1.015227	4.9073	-33.9926
32	1	-0.994457	75.8963	-34.9871
33	1	-0.974114	76.8452	-35.9612
34	1	-0.954165	77.7556	-36.9154
35	1	-0.934597	8.6291	-37.85
36	1	-0.919183	79.474	-38.7691
37	1	-0.896473	80.2776	-39.6656
38	1	-0.877897	81.0483	-40.5435
39	1	-0.859618	81.7873	-41.4031
40	1	-0.841621	82.4956	-42.2447
41	1	-0.823893	83.1744	-43.0686
42	1	-0.806422	83.8247	-43.8751
43	1	-0.789191	84.4475	-44.6643
44	1	-0.772193	85.0438	-45.4364
45	1	-0.755415	85.6145	-46.1919
46	1	-0.738846	86.1604	-46.9307
47	1	-0.722479	86.6823	-47.6532
48	1	-0.706302	87.1812	-48.3595
49	1	-0.690309	87.6577	-49.0498

50	1	-0.674498	88.1127	-49.7243
51	1	-0.658838	88.5467	-50.3831
52	1	-0.643345	88.9606	-51.0265
53	1	-0.628006	89.355	-51.6545
54	1	-0.612813	89.7305	-52.2673
55	1	-0.597761	90.0879	-52.865
56	1	-0.582841	90.4276	-53.4479
57	1	-0.570999	90.7536	-54.0189
58	1	-0.553384	91.0598	-54.5723
59	1	-0.541736	91.3533	-55.114
60	1	-0.524401	91.6283	-55.6384
61	1	-0.512939	91.8914	-56.1513
62	1	-0.495859	92.1373	-56.6472
63	1	-0.481728	92.3693	-57.1289
64	1	-0.467699	92.5881	-57.5966
65	1	-0.453763	92.794	-58.0504
66	1	-0.439913	92.9875	-58.4903
67	1	-0.426148	93.1691	-58.9164
68	1	-0.412463	93.3392	-59.3289
69	1	-0.398855	93.4983	-59.7278
70	1	-0.385321	93.6468	-60.1131
71	1	-0.371856	93.7851	-60.4849
72	1	-0.358459	93.9136	-60.8434
73	1	-0.345126	94.0327	-61.1885
74	1	-0.331854	94.1428	-61.5204
75	1	-0.318639	94.2443	-61.839
76	1	-0.305481	94.3377	-62.1445
77	1	-0.292375	94.4231	-62.4369
78	1	-0.279319	94.5012	-62.7162
79	1	-0.266311	94.5721	-62.9825
80	1	-0.253347	94.6363	-63.2358
81	1	-0.240426	94.6941	-63.4763
82	1	-0.230118	94.747	-63.7064
83	1	-0.214702	94.7931	-63.9211
84	1	-0.204452	94.8349	-64.1255
85	1	-0.189118	94.8707	-64.3147
86	1	-0.178929	94.9027	-64.4936
87	1	-0.163659	94.9295	-64.6572
88	1	-0.150969	94.9523	-64.8082
89	1	-0.138305	94.9714	-64.9465
90	1	-0.125661	94.9872	-65.0722
91	1	-0.113039	95	-65.1852
92	1	-0.100433	95.0101	-65.2856
93	1	-0.0878447	95.0178	-65.3735
94	1	-0.0752698	95.0234	-65.4488
95	1	-0.0627062	95.0274	-65.5115
96	1	-0.0501541	95.0299	-65.5616
97	1	-0.0376076	95.0313	-65.5992
98	1	-0.0250691	95.0319	-65.6243
99	1	-0.0125328	95.0321	-65.6368
100	1	0	95.0321	-65.6368
101	1	0.0125328	95.0322	-65.6243
102	1	0.0250691	95.0329	-65.5992
103	1	0.0376076	95.0343	-65.5616
104	1	0.0501541	95.0368	-65.5115
105	1	0.0627062	95.0407	-65.4488
106	1	0.0752698	95.0464	-65.3735
107	1	0.0878447	95.0541	-65.2856
108	1	0.100433	95.0642	-65.1852
109	1	0.113039	95.077	-65.0722
110	1	0.125661	95.0928	-64.9465
111	1	0.138305	95.1119	-64.8082

112	1	0.150969	95.1347	-64.6572
113	1	0.163659	95.1615	-64.4936
114	1	0.176374	95.1926	-64.3172
115	1	0.189118	95.2283	-64.1281
116	1	0.201894	95.2691	-63.9262
117	1	0.214702	95.3152	-63.7115
118	1	0.227545	95.367	-63.4839
119	1	0.240426	95.4248	-63.2435
120	1	0.253347	95.489	-62.9902
121	1	0.266311	95.5599	-62.7239
122	1	0.279319	95.6379	-62.4445
123	1	0.292375	95.7234	-62.1522
124	1	0.305481	95.8167	-61.8467
125	1	0.318639	95.9182	-61.528
126	1	0.331854	96.0284	-61.1962
127	1	0.345126	96.1475	-60.8511
128	1	0.358459	96.276	-60.4926
129	1	0.371856	96.4143	-60.1208
130	1	0.385321	96.5627	-59.7354
131	1	0.398855	96.7218	-59.3366
132	1	0.412463	96.8919	-58.9241
133	1	0.426148	97.0735	-58.498
134	1	0.439913	97.2671	-58.0581
135	1	0.453763	97.473	-57.6043
136	1	0.467699	97.6917	-57.1366
137	1	0.481728	97.9238	-56.6549
138	1	0.49585	98.1696	-56.159
139	1	0.510074	98.4298	-55.6489
140	1	0.524401	98.7048	-55.1245
141	1	0.538836	98.9952	-54.5857
142	1	0.553384	99.3014	-54.0323
143	1	0.568052	99.6241	-53.4643
144	1	0.582841	99.9638	-52.8814
145	1	0.597761	100.321	-52.2837
146	1	0.612813	100.697	-51.6709
147	1	0.628006	101.091	-51.0428
148	1	0.643345	101.505	-50.3995
149	1	0.658838	101.939	-49.7407
150	1	0.67449	102.394	-49.0662
151	1	0.690309	102.87	-48.3759
152	1	0.706302	103.369	-47.6696
153	1	0.722479	103.891	-46.9471
154	1	0.738846	104.437	-46.2082
155	1	0.755415	105.008	-45.4528
156	1	0.772193	105.604	-44.6806
157	1	0.789191	106.227	-43.8914
158	1	0.806422	106.877	-43.085
159	1	0.823893	107.556	-42.2611
160	1	0.841621	108.264	-41.4195
161	1	0.859618	109.003	-40.5599
162	1	0.877897	109.774	-39.682
163	1	0.896473	110.578	-38.7855
164	1	0.915365	111.416	-37.8701
165	1	0.93459	112.289	-36.9356
166	1	0.954165	113.199	-35.9814
167	1	0.974114	114.148	-35.0073
168	1	0.994457	115.137	-34.0128
169	1	1.01522	116.168	-32.9976
170	1	1.03643	117.242	-31.9612
171	1	1.05812	118.362	-30.903
172	1	1.08032	119.529	-29.8227
173	1	1.10306	120.746	-28.7197

174	1	1.12639	122.014	-27.5933
175	1.1	1.15035	123.338	-26.3279
176	1.1	1.17499	124.718	-25.0354
177	2	1.20036	126.159	-22.6347
178	2	1.22653	127.664	-20.1816
179	2.1	1.25357	129.235	-17.5491
180	2.5	1.28155	130.877	-14.3453
181	3	1.31058	132.595	-10.4135
182	3	1.34075	134.393	-6.39126
183	3	1.3722	136.276	-2.27464
184	4	1.40507	138.25	3.34565
185	7	1.43953	140.322	13.4224
186	7	1.47579	142.5	23.7529
187	8	1.5141	144.792	35.8657
188	9	1.55477	147.21	49.8587
189	9	1.59819	149.764	64.2424
190	10	1.64485	152.47	80.6909
191	10	1.6954	155.344	97.6449
192	12	1.75069	158.409	118.653
193	16	1.81191	161.692	147.644
194	18	1.88079	165.229	181.498
195	23	1.95996	169.071	226.577
196	25	2.05375	173.289	277.921
197	34	2.17009	177.998	351.704
198	57	2.32634	183.41	484.305
199	60	2.57583	190.045	638.855

Data Set Standard Deviation = 6.88919
Numerator = 408136
Denominator = 1.7859e+006
W Statistic = 0.228532 = 408136 / 1.7859e+006

5% Critical value of 0.976 exceeds 0.228532
Evidence of non-normality at 95% level of significance

1% Critical value of 0.967 exceeds 0.228532
Evidence of non-normality at 99% level of significance

Shapiro-Francia Test of Normality

Parameter: Arsenic

All Locations

Normality Test of Parameter Concentrations

Natural Logarithm Transformation
Non-Detects Replaced with 1/2 DL
Total Number of Measurements = 199

i	x(i)	m(i)	sum(m^2)	sum(mx)
1	-1.60944	-2.57583	6.63492	4.14565
2	-1.60944	-2.32634	12.0468	7.88975
3	-0.891598	-2.17009	16.7561	9.8246
4	-0.867501	-2.05375	20.974	11.6062
5	-0.776529	-1.95996	24.8154	13.1282
6	-0.755023	-1.88079	28.3528	14.5482
7	-0.71335	-1.81191	31.6358	15.8408
8	-0.634878	-1.75069	34.7007	16.9522
9	-0.579818	-1.6954	37.5751	17.9353
10	-0.527633	-1.64485	40.2806	18.8031
11	-0.430783	-1.59819	42.8348	19.4916
12	-0.314711	-1.55477	45.2522	19.9809
13	0	-1.5141	47.5447	19.9809
14	0	-1.47579	49.7226	19.9809
15	0	-1.43953	51.7949	19.9809
16	0	-1.40507	53.7691	19.9809
17	0	-1.3722	55.6521	19.9809
18	0	-1.34075	57.4497	19.9809
19	0	-1.31058	59.1673	19.9809
20	0	-1.28155	60.8097	19.9809
21	0	-1.25357	62.3811	19.9809
22	0	-1.22653	63.8855	19.9809
23	0	-1.20036	65.3263	19.9809
24	0	-1.17499	66.7069	19.9809
25	0	-1.15035	68.0302	19.9809
26	0	-1.12639	69.299	19.9809
27	0	-1.10306	70.5157	19.9809
28	0	-1.08032	71.6828	19.9809
29	0	-1.05812	72.8025	19.9809
30	0	-1.03643	73.8766	19.9809
31	0	-1.01522	74.9073	19.9809
32	0	-0.994457	75.8963	19.9809
33	0	-0.974114	76.8452	19.9809
34	0	-0.954165	77.7556	19.9809
35	0	-0.93459	78.6291	19.9809
36	0	-0.919183	79.474	19.9809
37	0	-0.896473	80.2776	19.9809
38	0	-0.877897	81.0483	19.9809
39	0	-0.859618	81.7873	19.9809
40	0	-0.841621	82.4956	19.9809
41	0	-0.823893	83.1744	19.9809
42	0	-0.806422	83.8247	19.9809
43	0	-0.789191	84.4475	19.9809
44	0	-0.772193	85.0438	19.9809
45	0	-0.755415	85.6145	19.9809
46	0	-0.738846	86.1604	19.9809
47	0	-0.722479	86.6823	19.9809
48	0	-0.706302	87.1812	19.9809
49	0	-0.690309	87.6577	19.9809

50	0	-0.674	988.1127	19.9809
51	0	-0.658838	88.5467	19.9809
52	0	-0.643345	88.9606	19.9809
53	0	-0.628006	89.355	19.9809
54	0	-0.612813	89.7305	19.9809
55	0	-0.597761	90.0879	19.9809
56	0	-0.582841	90.4276	19.9809
57	0	-0.570999	90.7536	19.9809
58	0	-0.553384	91.0598	19.9809
59	0	-0.541736	91.3533	19.9809
60	0	-0.524401	91.6283	19.9809
61	0	-0.512	939	1.8914 19.9809
62	0	-0.495	859	2.1373 19.9809
63	0	-0.481728	92.3693	19.9809
64	0	-0.467699	92.5881	19.9809
65	0	-0.453763	92.794	19.9809
66	0	-0.439913	92.9875	19.9809
67	0	-0.426148	93.1691	19.9809
68	0	-0.412463	93.3392	19.9809
69	0	-0.398855	93.4983	19.9809
70	0	-0.385321	93.6468	19.9809
71	0	-0.371856	93.7851	19.9809
72	0	-0.358459	93.9136	19.9809
73	0	-0.345126	94.0327	19.9809
74	0	-0.331854	94.1428	19.9809
75	0	-0.318639	94.2443	19.9809
76	0	-0.305481	94.3377	19.9809
77	0	-0.292375	94.4231	19.9809
78	0	-0.279319	94.5012	19.9809
79	0	-0.266311	94.5721	19.9809
80	0	-0.253347	94.6363	19.9809
81	0	-0.240426	94.6941	19.9809
82	0	-0.230118	94.747	19.9809
83	0	-0.214702	94.7931	19.9809
84	0	-0.204452	94.8349	19.9809
85	0	-0.189118	94.8707	19.9809
86	0	-0.178	929	4.9027 19.9809
87	0	-0.163659	94.9295	19.9809
88	0	-0.150969	94.9523	19.9809
89	0	-0.138305	94.9714	19.9809
90	0	-0.125661	94.9872	19.9809
91	0	-0.113039	95	19.9809
92	0	-0.100433	95.0101	19.9809
93	0	-0.0878447	95.0178	19.9809
94	0	-0.0752698	95.0234	19.9809
95	0	-0.0627062	95.0274	19.9809
96	0	-0.0501541	95.0299	19.9809
97	0	-0.0376076	95.0313	19.9809
98	0	-0.0250691	95.0319	19.9809
99	0	-0.0125328	95.0321	19.9809
100	0	0	95.0321	19.9809
101	0	0.0125328	95.0322	19.9809
102	0	0.0250691	95.0329	19.9809
103	0	0.0376076	95.0343	19.9809
104	0	0.0501541	95.0368	19.9809
105	0	0.0627062	95.0407	19.9809
106	0	0.0752698	95.0464	19.9809
107	0	0.0878447	95.0541	19.9809
108	0	0.100433	95.0642	19.9809
109	0	0.113039	95.077	19.9809
110	0	0.125661	95.0928	19.9809
111	0	0.138305	95.1119	19.9809

112	0	0.150969	95.1347	19.9809
113	0	0.163659	95.1615	19.9809
114	0	0.176374	95.1926	19.9809
115	0	0.189118	95.2283	19.9809
116	0	0.201894	95.2691	19.9809
117	0	0.214702	95.3152	19.9809
118	0	0.227545	95.367	19.9809
119	0	0.240426	95.4248	19.9809
120	0	0.253347	95.489	19.9809
121	0	0.266311	95.5599	19.9809
122	0	0.279319	95.6379	19.9809
123	0	0.292375	95.7234	19.9809
124	0	0.305481	95.8167	19.9809
125	0	0.318639	95.9182	19.9809
126	0	0.331854	96.0284	19.9809
127	0	0.345126	96.1475	19.9809
128	0	0.358459	96.276	19.9809
129	0	0.371856	96.4143	19.9809
130	0	0.385321	96.5627	19.9809
131	0	0.398855	96.7218	19.9809
132	0	0.412463	96.8919	19.9809
133	0	0.426148	97.0735	19.9809
134	0	0.439913	97.2671	19.9809
135	0	0.453763	97.473	19.9809
136	0	0.467699	97.6917	19.9809
137	0	0.481728	97.9238	19.9809
138	0	0.49585	98.1696	19.9809
139	0	0.510074	98.4298	19.9809
140	0	0.524401	98.7048	19.9809
141	0	0.538836	98.9952	19.9809
142	0	0.553384	99.3014	19.9809
143	0	0.568052	99.6241	19.9809
144	0	0.582841	99.9638	19.9809
145	0	0.597761	100.321	19.9809
146	0	0.612813	100.697	19.9809
147	0	0.628006	101.091	19.9809
148	0	0.643345	101.505	19.9809
149	0	0.658838	101.939	19.9809
150	0	0.67449	102.394	19.9809
151	0	0.690309	102.87	19.9809
152	0	0.706302	103.369	19.9809
153	0	0.722479	103.891	19.9809
154	0	0.738846	104.437	19.9809
155	0	0.755415	105.008	19.9809
156	0	0.772193	105.604	19.9809
157	0	0.789191	106.227	19.9809
158	0	0.806422	106.877	19.9809
159	0	0.823893	107.556	19.9809
160	0	0.841621	108.264	19.9809
161	0	0.859618	109.003	19.9809
162	0	0.877897	109.774	19.9809
163	0	0.896473	110.578	19.9809
164	0	0.915365	111.416	19.9809
165	0	0.93459	112.289	19.9809
166	0	0.954165	113.199	19.9809
167	0	0.974114	114.148	19.9809
168	0	0.994457	115.137	19.9809
169	0	1.01522	116.168	19.9809
170	0	1.03643	117.242	19.9809
171	0	1.05812	118.362	19.9809
172	0	1.08032	119.529	19.9809
173	0	1.10306	120.746	19.9809

174	0	1.12639	122.014	19.9809	
175	0.0953102		1.15035	123.338	20.0905
176	0.0953102		1.17499	124.718	20.2025
177	0.693147		1.20036	126.159	21.0346
178	0.693147		1.22653	127.664	21.8847
179	0.741937		1.25357	129.235	22.8148
180	0.916291		1.28155	130.877	23.9891
181	1.09861	1.31058	132.595	25.4289	
182	1.09861	1.34075	134.393	26.9019	
183	1.09861	1.3722	136.276	28.4094	
184	1.38629	1.40507	138.25	30.3572	
185	1.94591	1.43953	140.322	33.1584	
186	1.94591	1.47579	142.5	36.0302	
187	2.07944	1.5141	144.792	39.1787	
188	2.19722	1.55477	147.21	42.5949	
189	2.19722	1.59819	149.764	46.1064	
190	2.30259	1.64485	152.47	49.8939	
191	2.30259	1.6954	155.344	53.7977	
192	2.48491	1.75069	158.409	58.1479	
193	2.77259	1.81191	161.692	63.1716	
194	2.89037	1.88079	165.229	68.6078	
195	3.13549	1.95996	169.071	74.7533	
196	3.21888	2.05375	173.289	81.364	
197	3.52636	2.17009	177.998	89.0165	
198	4.04305	2.32634	183.41	98.4221	
199	4.09434	2.57583	190.045	108.968	

Data Set Standard Deviation = 0.810151
Numerator = 11874.1
Denominator = 24697.5
W Statistic = 0.480783 = 11874.1 / 24697.5

5% Critical value of 0.976 exceeds 0.480783
Evidence of non-normality at 95% level of significance

1% Critical value of 0.967 exceeds 0.480783
Evidence of non-normality at 99% level of significance

Kruskal-Wallis Non-Parametric Test

Parameter: Arsenic

Natural Logarithm Transformation
Non-Detects Replaced with 1/2 DL

Kruskal Wallis Ranks

Background Wells

Well ID	Date	Result	Rank
LMW-4	1/16/1998	ND<0	77.5
	3/16/1999	ND<0	77.5
	9/23/1999	ND<0	77.5
	3/14/2000	ND<0	77.5
	9/23/2003	ND<0	77.5
	3/10/2004	ND<0	77.5
	10/12/2004	ND<0	77.5
	4/1/2005	ND<0	77.5
	10/26/2005	ND<0	77.5
	6/19/2006	ND<0	77.5
	11/18/2006	ND<0	77.5
	6/2/2007	0 J	165
	11/15/2007	0 J	166
	5/20/2008	ND<0	77.5
	11/20/2008	ND<0	77.5
	6/11/2009	ND<-1.60944 U	77.5

Rank Sum = 1416
Rank Mean = 88.5

Background Rank Sum = 1416
Background Rank Mean = 88.5

Compliance Wells

Well ID	Date	Result	Rank
LMW-8	1/16/1998	ND<0	77.5
	3/16/1999	ND<0	77.5
	9/23/1999	ND<0	77.5
	3/14/2000	ND<0	77.5
	9/23/2003	ND<0	77.5
	3/10/2004	ND<0	77.5
	10/12/2004	ND<0	77.5
	4/1/2005	ND<0	77.5
	10/26/2005	ND<0	77.5
	6/19/2006	ND<0	77.5
	11/18/2006	ND<0	77.5
	6/2/2007	ND<0	77.5
	11/15/2007	ND<0	77.5
	5/20/2008	ND<0	77.5
	11/20/2008	ND<0	77.5
	6/11/2009	-0.71335 J	159
	11/14/2009	-0.634878 J	160

Rank Sum = 1481.5
Rank Mean = 87.1471

LMW-16	11/18/2006	ND<0	77.5

	6/2/2007	0.693147		177
	11/15/2007	ND<0		77.5
	5/20/2008	ND<0		77.5
	11/20/2008	2.19722		188
	6/11/2009	-0.579818	J	161
	11/14/2009	-0.527633	J	162

Rank Sum = 920.5
Rank Mean = 131.5

LMW-9D	11/18/2006	1.94591		185
	6/2/2007	1.94591		186
	11/15/2007	ND<0		77.5
	5/20/2008	1.09861		181
	11/20/2008	1.09861		182
	6/11/2009	0.741937		179
	11/14/2009	0.693147		178

Rank Sum = 1168.5
Rank Mean = 166.929

LMW-9S	11/18/2006	ND<0		77.5
	6/2/2007	0	J	167
	11/15/2007	1.38629		184
	5/20/2008	ND<0		77.5
	11/20/2008	ND<0		77.5
	6/11/2009	-0.776529	J	157
	11/14/2009	-0.755023	J	158

Rank Sum = 898.5
Rank Mean = 128.357

LMW-7	1/16/1998	ND<0		77.5
	3/16/1999	ND<0		77.5
	9/23/1999	ND<0		77.5
	3/14/2000	2.30259		190
	9/23/2003	ND<0		77.5
	3/10/2004	ND<0		77.5
	10/12/2004	ND<0		77.5
	4/1/2005	ND<0		77.5
	10/26/2005	ND<0		77.5
	6/19/2006	ND<0		77.5
	11/18/2006	ND<0		77.5
	6/2/2007	0	J	168
	11/15/2007	ND<0		77.5
	5/20/2008	ND<0		77.5
	11/20/2008	2.30259		191
	6/11/2009	0.0953102	J B	175

Rank Sum = 1654
Rank Mean = 103.375

LMW-14R	6/2/2007	0	J	169
	11/15/2007	ND<0		77.5
	5/20/2008	ND<0		77.5
	11/20/2008	2.19722		189
	6/11/2009	-0.891598	J	155

Rank Sum = 668
Rank Mean = 133.6

LMW-15R	11/18/2006	ND<0		77.5
	6/2/2007	ND<0		77.5
	11/15/2007	ND<0		77.5
	11/15/2007	ND<0		77.5
	5/20/2008	ND<0		77.5
	5/20/2008	ND<0		77.5

	11/20/2008	ND<0	77.5	
	11/20/2008	ND<0	77.5	
	6/11/2009	0.916291		180

Rank Sum = 800
Rank Mean = 88.8889

LMW-9	1/16/1998	ND<0	77.5	
	3/16/1999	ND<0	77.5	
	9/23/1999	1.09861		183
	3/14/2000	ND<0	77.5	
	9/23/2003	ND<0	77.5	
	3/10/2004	ND<0	77.5	
	10/12/2004	ND<0	77.5	
	4/1/2005	0 J	170	
	10/26/2005	ND<0	77.5	
	6/19/2006	0 J	171	
	11/18/2006	ND<0	77.5	
	6/2/2007	0 J	172	
	11/15/2007	ND<0	77.5	
	5/20/2008	ND<0	77.5	
	11/20/2008	2.07944		187
	6/11/2009	0.0953102 J		176

Rank Sum = 1834
Rank Mean = 114.625

LMW-6	1/16/1998	ND<0	77.5	
	3/16/1999	ND<0	77.5	
	9/23/1999	ND<0	77.5	
	3/14/2000	ND<0	77.5	
	9/23/2003	ND<0	77.5	
	3/10/2004	ND<0	77.5	
	10/12/2004	ND<0	77.5	
	4/1/2005	ND<0	77.5	
	10/26/2005	ND<0	77.5	
	6/19/2006	ND<0	77.5	
	11/18/2006	ND<0	77.5	
	6/2/2007	0 J	173	
	11/15/2007	ND<0	77.5	
	5/20/2008	ND<0	77.5	
	11/20/2008	ND<0	77.5	
	6/11/2009	-0.430783 J B		163

Rank Sum = 1421
Rank Mean = 88.8125

LMW-3S	11/18/2006	ND<0	77.5	
	6/2/2007	ND<0	77.5	
	11/15/2007	ND<0	77.5	
	5/20/2008	ND<0	77.5	
	11/20/2008	ND<0	77.5	
	6/11/2009	-0.314711 J B		164

Rank Sum = 551.5
Rank Mean = 91.9167

LMW-10	3/14/2000	3.13549		195
	9/23/2003	ND<0	77.5	
	3/10/2004	3.21888		196
	10/12/2004	ND<0	77.5	
	4/1/2005	ND<0	77.5	
	10/26/2005	ND<0	77.5	
	6/19/2006	ND<0	77.5	
	11/18/2006	ND<0	77.5	
	6/2/2007	0 J	174	

	11/15/2007	ND<0	77.5	
	5/20/2008	ND<0	77.5	
	11/20/2008	ND<0	77.5	
	6/11/2009	ND<-1.60944 U		77.5

Rank Sum = 1340
Rank Mean = 103.077

LMW-3	11/19/1996	ND<0	77.5	
	3/24/1997	ND<0	77.5	
	1/16/1998	ND<0	77.5	
	3/16/1999	ND<0	77.5	
	9/23/1999	ND<0	77.5	
	3/14/2000	ND<0	77.5	
	9/23/2003	ND<0	77.5	
	3/10/2004	ND<0	77.5	
	10/12/2004	ND<0	77.5	
	4/1/2005	ND<0	77.5	
	10/26/2005	ND<0	77.5	
	6/19/2006	ND<0	77.5	
	11/18/2006	ND<0	77.5	
	6/2/2007	ND<0	77.5	
	11/15/2007	ND<0	77.5	
	5/20/2008	ND<0	77.5	
	11/20/2008	ND<0	77.5	
	6/11/2009	-0.867501 J B		156

Rank Sum = 1473.5
Rank Mean = 81.8611

MW-5	1/16/1998	ND<0	77.5	
	3/16/1999	ND<0	77.5	
	9/23/1999	ND<0	77.5	
	3/14/2000	3.52636		197
	9/23/2003	ND<0	77.5	
	3/10/2004	4.09434		199
	10/12/2004	ND<0	77.5	
	4/1/2005	ND<0	77.5	
	10/26/2005	ND<0	77.5	
	6/19/2006	ND<0	77.5	
	11/15/2007	ND<0	77.5	
	5/20/2008	ND<0	77.5	
	11/20/2008	ND<0	77.5	

Rank Sum = 1248.5
Rank Mean = 96.0385

LMW-13	3/14/2000	2.77259		193
	9/23/2003	ND<0	77.5	
	3/10/2004	ND<0	77.5	
	10/12/2004	ND<0	77.5	
	4/1/2005	ND<0	77.5	
	10/26/2005	ND<0	77.5	
	6/19/2006	ND<0	77.5	
	6/2/2007	ND<0	77.5	
	11/15/2007	ND<0	77.5	
	5/20/2008	ND<0	77.5	
	11/20/2008	ND<0	77.5	

Rank Sum = 968
Rank Mean = 88

LMW-12	3/14/2000	4.04305		198
	9/23/2003	ND<0	77.5	
	3/10/2004	ND<0	77.5	
	10/12/2004	ND<0	77.5	

	4/1/2005	ND<0	77.5	
	10/26/2005	ND<0	77.5	
	6/19/2006	ND<0	77.5	
	6/2/2007	ND<0	77.5	
	11/15/2007	ND<0	77.5	
	5/20/2008	ND<0	77.5	
	11/20/2008	ND<0	77.5	

Rank Sum = 973
Rank Mean = 88.4545

LMW-11	3/14/2000	2.48491		192
	9/23/2003	ND<0	77.5	
	3/10/2004	2.89037		194
	10/12/2004	ND<0	77.5	
	4/1/2005	ND<0	77.5	
	10/26/2005	ND<0	77.5	
	6/19/2006	ND<0	77.5	
	6/2/2007	ND<0	77.5	
	11/15/2007	ND<0	77.5	
	5/20/2008	ND<0	77.5	
	11/20/2008	ND<0	77.5	

Rank Sum = 1083.5
Rank Mean = 98.5

Calculation Results:

Kruskal-Wallis H Statistic = 21.3873
Kruskal-Wallis H Statistic (adjusted for tied non-detects) = 39.8602
95% Confidence comparison value is 26.2962 at 16 degrees of freedom
21.3873 < 26.2962 indicating no significant group difference at 5% significance level
39.8602 > 26.2962 indicating a significant group difference at 5% significance level when adjusted for ties

Individual Well Comparisons at 1% Significance Level per Comparison

1% Z score is 2.32634
Mean background rank is 88.5

Well	Mean Rank	Dif from Bkg	Critical Value	
LMW-8	87.1471	-1.3529	46.6656	
LMW-16	131.5	43	60.7127	
LMW-9D	166.929	78.4286	60.7127	
LMW-9S	128.357	39.8571	60.7127	
LMW-7	103.375	14.875	47.3674	
LMW-14R	133.6	45.1	68.6419	
LMW-15R	88.8889	0.388889		55.823
LMW-9	114.625	26.125	47.3674	
LMW-6	88.8125	0.3125	47.3674	
LMW-3S	91.9167	3.41667	64.1358	
LMW-10	103.077	14.5769	50.0255	
LMW-3	81.8611	-6.6388	46.0328	
MW-5	96.0385	7.53846	50.0255	
LMW-13	88	-0.5	52.4747	
LMW-12	88.4545	-0.0454545		52.4747
LMW-11	98.5	10	52.4747	

Individual Well Comparisons at Groupwise 5% Significance Level (0.3125% Significance Level per comparison)

0.3125% Z score is 2.74777
Mean background rank is 88.5

Well	Mean Rank	Dif from Bkg	Critical Value
LMW-8	87.1471	-1.3529	55.1192

LMW-16	131.5	43	71.7109		
LMW-9D	166.929	78.4286	71.7109		
LMW-9S	128.357	39.8571	71.7109		
LMW-7	103.375	14.875	55.9481		
LMW-14R		133.6	45.1	81.0765	
LMW-15R		88.8889	0.388889		65.9355
LMW-9	114.625	26.125	55.9481		
LMW-6	88.8125	0.3125	55.9481		
LMW-3S	91.9167	3.41667	75.7541		
LMW-10	103.077	14.5769	59.0878		
LMW-3	81.8611	-6.6388	54.3718		
MW-5	96.0385	7.53846	59.0878		
LMW-13	88	-0.5	61.9806		
LMW-12	88.4545	-0.0454545		61.9806	
LMW-11	98.5	10	61.9806		

Mann-Kendall Trend Analysis

Parameter: Arsenic

Location: LMW-9D

Natural Logarithm Transformation
Non-Detects Replaced with 1/2 DL

95% Confidence Level

Xj	Xk	Xj - Xk	Positives	Negatives	
1.94591	1.94591	0	0	0	
ND<0	1.94591	-1.94591	0	1	
1.09861	1.94591	-0.847298	0	2	
1.09861	1.94591	-0.847298	0	3	
0.741937	1.94591	-1.203970	4		
0.693147	1.94591	-1.252760	5		
ND<0	1.94591	-1.94591	0	6	
1.09861	1.94591	-0.847298	0	7	
1.09861	1.94591	-0.847298	0	8	
0.741937	1.94591	-1.203970	9		
0.693147	1.94591	-1.252760	10		
1.09861	ND<0	1.09861	1	10	
1.09861	ND<0	1.09861	2	10	
0.741937	ND<0	0.741937	3	10	
0.693147	ND<0	0.693147	4	10	
1.09861	1.09861	0	4	10	
0.741937	1.09861	-0.356675	4	11	
0.693147	1.09861	-0.405465	4	12	
0.741937	1.09861	-0.356675	4	13	
0.693147	1.09861	-0.405465	4	14	
0.693147	0.741937	-0.0487902	4	15	

S Statistic = 4 - 15 = -11
Comparing at 1.0 - (0.05 / 2) = 97.5% confidence level (two-tailed)
Probability of obtaining S >= |-11| is 0.136
0.136 >= 0.025 indicating no evidence of a trend

Concentrations (ug/L)

Parameter: Barium

Natural Logarithm Transformation
Non-Detects Replaced with 1/2 DL
Total Measurements: 207
Total Non-Detect: 88
Percent Non-Detects: 42.5121%
Total Background Measurements: 17
There is 1 background location

Loc.	Meas.	ND	Date	Conc.	Original
LMW-4	17	5 (29.4118%)	1/16/1998	ND<1.60944	ND<10
			3/16/1999	2.99573	20
			9/23/1999	2.07944 J	8 J
			3/14/2000	ND<1.60944	ND<10
			9/23/2003	ND<1.60944	ND<10
			3/10/2004	ND<1.60944	ND<10
			10/12/2004	ND<1.60944	ND<10
			4/1/2005	2.63906	14
			10/26/2005	2.48491	12
			6/19/2006	2.30259	10
			11/18/2006	2.56495	13
			6/2/2007	3.17805	24
			11/15/2007	2.56495	13
			5/20/2008	2.3979	11
			11/20/2008	2.63906	14
			6/11/2009	2.56495	13
			11/14/2009	2.56495	13

There are 16 compliance locations

Loc.	Meas.	ND	Date	Conc.	Original
LMW-9D	7	0 (0%)	11/18/2006	2.56495	13
			6/2/2007	1.60944	5
			11/15/2007	4.78749	120
			5/20/2008	2.30259	10
			11/20/2008	1.09861 J	3 J
			6/11/2009	1.1314	3.1
			11/14/2009	1.06471	2.9
LMW-3S	7	0 (0%)	11/18/2006	1.60944 J	5 J
			6/2/2007	2.89037	18
			11/15/2007	2.56495	13
			5/20/2008	2.07944 J	8 J
			11/20/2008	2.56495	13
			6/11/2009	2.48491	12
			11/14/2009	2.30259	10
LMW-10	14	6 (42.8571%)	3/14/2000	ND<1.60944	ND<10
			9/23/2003	ND<1.60944	ND<10
			3/10/2004	ND<1.60944	ND<10
			10/12/2004	ND<1.60944	ND<10
			4/1/2005	2.56495	13
			10/26/2005	ND<1.60944	ND<10
			6/19/2006	2.99573	20
			11/18/2006	2.3979	11

			6/2/2007	3.04452	21	
			11/15/2007	ND<1.60944	ND<10	
			5/20/2008	2.48491	12	
			11/20/2008	2.48491	12	
			6/11/2009	2.56495	13	
			11/14/2009	2.48491	12	
LMW-9	17	7 (41.1765%)	1/16/1998	ND<1.60944	ND<10	
			3/16/1999	2.30259	10	
			9/23/1999	3.09104	22	
			3/14/2000	ND<1.60944	ND<10	
			9/23/2003	ND<1.60944	ND<10	
			3/10/2004	ND<1.60944	ND<10	
			10/12/2004	ND<1.60944	ND<10	
			4/1/2005	ND<1.60944	ND<10	
			10/26/2005	ND<1.60944	ND<10	
			6/19/2006	2.30259	10	
			11/18/2006	1.09861 J	3 J	
			6/2/2007	1.79176	6	
			11/15/2007	1.09861 J	3 J	
			5/20/2008	0.693147 J	2 J	
			11/20/2008	1.38629 J	4 J	
			6/11/2009	1.1314	3.1	
			11/14/2009	1.06471	2.9	
LMW-8	17	5 (29.4118%)	1/16/1998	ND<1.60944	ND<10	
			3/16/1999	2.30259	10	
			9/23/1999	4.69135	109	
			3/14/2000	ND<1.60944	ND<10	
			9/23/2003	ND<1.60944	ND<10	
			3/10/2004	ND<1.60944	ND<10	
			10/12/2004	ND<1.60944	ND<10	
			4/1/2005	3.8712	48	
			10/26/2005	3.63759	38	
			6/19/2006	3.68888	40	
			11/18/2006	3.46574	32	
			6/2/2007	3.52636	34	
			11/15/2007	3.71357	41	
			5/20/2008	3.52636	34	
			11/20/2008	3.3673	29	
			6/11/2009	3.68888	40	
			11/14/2009	3.68888	40	
LMW-6	17	5 (29.4118%)	1/16/1998	ND<1.60944	ND<10	
			3/16/1999	2.07944 J	8 J	
			9/23/1999	2.89037	18	
			3/14/2000	ND<1.60944	ND<10	
			9/23/2003	ND<1.60944	ND<10	
			3/10/2004	ND<1.60944	ND<10	
			10/12/2004	ND<1.60944	ND<10	
			4/1/2005	2.19722 J	9 J	
			10/26/2005	2.48491	12	
			6/19/2006	2.99573	20	
			11/18/2006	3.49651	33	
			6/2/2007	3.95124	52	
			11/15/2007	3.73767	42	
			5/20/2008	3.89182	49	
			11/20/2008	4.29046	73	
			6/11/2009	4.52179	92	
			11/14/2009	4.30407	74	
LMW-3	19	9 (47.3684%)	11/19/1996	ND<1.60944	ND<10	

			3/24/1997	ND<1.60944	ND<10	
			1/16/1998	ND<1.60944	ND<10	
			3/16/1999	2.07944 J	8 J	
			9/23/1999	1.94591 J	7 J	
			3/14/2000	ND<1.60944	ND<10	
			9/23/2003	ND<1.60944	ND<10	
			3/10/2004	ND<1.60944	ND<10	
			10/12/2004	ND<1.60944	ND<10	
			4/1/2005	ND<1.60944	ND<10	
			10/26/2005	1.94591 J	7 J	
			6/19/2006	1.60944 J	5 J	
			11/18/2006	1.94591 J	7 J	
			6/2/2007	1.60944	5	
			11/15/2007	ND<1.60944	ND<10	
			5/20/2008	1.60944 J	5 J	
			11/20/2008	1.60944 J	5 J	
			6/11/2009	1.97408	7.2	
			11/14/2009	1.8563	6.4	
LMW-16	7	0 (0%)	11/18/2006	3.13549	23	
			6/2/2007	3.71357	41	
			11/15/2007	3.55535	35	
			5/20/2008	3.09104	22	
			11/20/2008	3.13549	23	
			6/11/2009	2.63906	14	
			11/14/2009	2.56495	13	
LMW-9S	7	0 (0%)	11/18/2006	4.34381	77	
			6/2/2007	4.38203	80	
			11/15/2007	0.693147 J	2 J	
			5/20/2008	4.31749	75	
			11/20/2008	4.11087	61	
			6/11/2009	3.3322	28	
			11/14/2009	3.8712	48	
LMW-15R	10	3 (30%)	11/18/2006	3.61092	37	
			6/2/2007	3.63759	38	
			11/15/2007	3.29584	27	
			11/15/2007	ND<1.60944	ND<10	
			5/20/2008	3.17805	24	
			5/20/2008	ND<1.60944	ND<10	
			11/20/2008	ND<1.60944	ND<10	
			11/20/2008	3.63759	38	
			6/11/2009	3.73767	42	
			11/14/2009	2.63906	14	
LMW-14R	6	0 (0%)	6/2/2007	2.63906	14	
			11/15/2007	2.48491	12	
			5/20/2008	2.19722 J	9 J	
			11/20/2008	2.56495	13	
			6/11/2009	2.56495	13	
			11/14/2009	2.48491	12	
LMW-7	16	5 (31.25%)	1/16/1998	ND<1.60944	ND<10	
			3/16/1999	2.99573	20	
			9/23/1999	3.09104	22	
			3/14/2000	ND<1.60944	ND<10	
			9/23/2003	ND<1.60944	ND<10	
			3/10/2004	ND<1.60944	ND<10	
			10/12/2004	ND<1.60944	ND<10	
			4/1/2005	3.43399	31	
			10/26/2005	3.4012	30	

			6/19/2006	2.99573	20	
			11/18/2006	2.3979	11	
			6/2/2007	3.29584	27	
			11/15/2007	1.79176 J	6 J	
			5/20/2008	1.60944 J	5 J	
			11/20/2008	1.94591 J	7 J	
			6/11/2009	2.48491	12	
LMW-11	11	11 (100%)	3/14/2000	ND<1.60944	ND<10	
			9/23/2003	ND<1.60944	ND<10	
			3/10/2004	ND<1.60944	ND<10	
			10/12/2004	ND<1.60944	ND<10	
			4/1/2005	ND<1.60944	ND<10	
			10/26/2005	ND<1.60944	ND<10	
			6/19/2006	ND<1.60944	ND<10	
			6/2/2007	ND<1.60944	ND<10	
			11/15/2007	ND<1.60944	ND<10	
			5/20/2008	ND<1.60944	ND<10	
			11/20/2008	ND<1.60944	ND<10	
LMW-13	11	11 (100%)	3/14/2000	ND<1.60944	ND<10	
			9/23/2003	ND<1.60944	ND<10	
			3/10/2004	ND<1.60944	ND<10	
			10/12/2004	ND<1.60944	ND<10	
			4/1/2005	ND<1.60944	ND<10	
			10/26/2005	ND<1.60944	ND<10	
			6/19/2006	ND<1.60944	ND<10	
			6/2/2007	ND<1.60944	ND<10	
			11/15/2007	ND<1.60944	ND<10	
			5/20/2008	ND<1.60944	ND<10	
			11/20/2008	ND<1.60944	ND<10	
MW-5	13	10 (76.9231%)	1/16/1998	ND<1.60944	ND<10	
			3/16/1999	2.99573	20	
			9/23/1999	2.19722 J	9 J	
			3/14/2000	ND<1.60944	ND<10	
			9/23/2003	ND<1.60944	ND<10	
			3/10/2004	ND<1.60944	ND<10	
			10/12/2004	ND<1.60944	ND<10	
			4/1/2005	ND<1.60944	ND<10	
			10/26/2005	ND<1.60944	ND<10	
			6/19/2006	ND<1.60944	ND<10	
			11/15/2007	2.83321	17	
			5/20/2008	ND<1.60944	ND<10	
			11/20/2008	ND<1.60944	ND<10	
LMW-12	11	11 (100%)	3/14/2000	ND<1.60944	ND<10	
			9/23/2003	ND<1.60944	ND<10	
			3/10/2004	ND<1.60944	ND<10	
			10/12/2004	ND<1.60944	ND<10	
			4/1/2005	ND<1.60944	ND<10	
			10/26/2005	ND<1.60944	ND<10	
			6/19/2006	ND<1.60944	ND<10	
			6/2/2007	ND<1.60944	ND<10	
			11/15/2007	ND<1.60944	ND<10	
			5/20/2008	ND<1.60944	ND<10	
			11/20/2008	ND<1.60944	ND<10	

There are 0 unused locations

Loc.	Meas.	ND	Date	Conc.	Original

Shapiro-Francia Test of Normality

Parameter: Barium

All Locations

Normality Test of Parameter Concentrations

Original Data (Not Transformed)
Non-Detects Replaced with 1/2 DL
Total Number of Measurements = 207

i	x(i)	m(i)	sum(m^2)	sum(mx)
1	2	-2.65209	7.03356	-5.30417
2	2	-2.365	6.12297	-10.0354
3	2.9	-2.197	8.17458	-16.4075
4	2.9	-2.074	8.52176	-22.4246
5	3	-1.977	8.72567	-28.3567
6	3	-1.911	9.32483	-34.0898
7	3	-1.838	4.33270	-39.6051
8	3.1	-1.774	3.85358	-45.1056
9	3.1	-1.716	8.83807	-50.428
10	4	-1.664	5.57156	-57.0862
11	5	-1.625	7.44214	-65.215
12	5	-1.580	4.67124	-73.1174
13	5	-1.538	2 49.0785	-80.8084
14	5	-1.498	5.25132	-88.3009
15	5	-1.461	0.65345	-95.6062
16	5	-1.432	5 55.5108	-102.769
17	5	-1.398	3.85746	-109.761
18	5	-1.365	8.15933	-116.59
19	5	-1.334	6.26111	-123.263
20	5	-1.304	6.28151	-129.786
21	5	-1.281	5.56445	-136.194
22	5	-1.253	5.76600	-142.462
23	5	-1.226	5.36753	-148.594
24	5	-1.200	3.66897	-154.596
25	5	-1.174	9.97035	-160.471
26	5	-1.150	3.57167	-166.223
27	5	-1.131	1.37295	-171.879
28	5	-1.107	6.87418	-177.417
29	5	-1.084	8.27536	-182.841
30	5	-1.062	5.27649	-188.154
31	5	-1.040	7.37577	-193.357
32	5	-1.023	6.57862	-198.476
33	5	-1.002	7.17962	-203.489
34	5	-0.982202	80.5914	-208.4
35	5	-0.962	1 81.517	-213.211
36	5	-0.942375	82.4051	-217.923
37	5	-0.926859	83.2642	-222.557
38	5	-0.907769	84.0882	-227.096
39	5	-0.889006	84.8785	-231.541
40	5	-0.870	5585.6364	-235.893
41	5	-0.852385	86.363	-240.155
42	5	-0.838054	87.0653	-244.346
43	5	-0.820379	87.7383	-248.448
44	5	-0.802956	88.3831	-252.462
45	5	-0.785774	89.0005	-256.391
46	5	-0.768821	89.5916	-260.235
47	5	-0.755415	90.1622	-264.012
48	5	-0.738846	90.7081	-267.707
49	5	-0.722479	91.2301	-271.319

50	5	-0.706302	91.729	-274.851
51	5	-0.690309	92.2055	-278.302
52	5	-0.6744992.6604	-281.675	
53	5	-0.661955	93.0986	-284.984
54	5	-0.646431	93.5165	-288.216
55	5	-0.631062	93.9147	-291.372
56	5	-0.615839	94.294	-294.451
57	5	-0.6007694.6549	-297.455	
58	5	-0.588793	95.0016	-300.399
59	5	-0.573953	95.331	-303.269
60	5	-0.559237	95.6437	-306.065
61	5	-0.544642	95.9404	-308.788
62	5	-0.530162	96.2214	-311.439
63	5	-0.518658	96.4905	-314.032
64	5	-0.504372	96.7448	-316.554
65	5	-0.490189	96.9851	-319.005
66	5	-0.476105	97.2118	-321.385
67	5	-0.462114	97.4254	-323.696
68	5	-0.450985	97.6287	-325.951
69	5	-0.437153	97.8198	-328.137
70	5	-0.423405	97.9991	-330.254
71	5	-0.409735	98.167	-332.302
72	5	-0.396142	98.3239	-334.283
73	5	-0.385321	98.4724	-336.21
74	5	-0.371856	98.6107	-338.069
75	5	-0.358459	98.7392	-339.861
76	5	-0.345126	98.8583	-341.587
77	5	-0.331854	98.9684	-343.246
78	5	-0.318639	99.0699	-344.839
79	5	-0.308108	99.1649	-346.38
80	5	-0.294992	99.2519	-347.855
81	5	-0.281926	99.3314	-349.264
82	5	-0.268908	99.4037	-350.609
83	5	-0.255936	99.4692	-351.889
84	5	-0.2455999.5295	-353.117	
85	5	-0.232693	99.5836	-354.28
86	5	-0.219834	99.632	-355.379
87	5	-0.207012	99.6748	-356.414
88	5	-0.194225	99.7126	-357.385
89	5	-0.184017	99.7464	-358.305
90	5	-0.171285	99.7758	-359.162
91	5	-0.158579	99.8009	-359.955
92	5	-0.1459 99.8222	-360.684	
93	5	-0.133244	99.8399	-361.351
94	5	-0.123135	99.8551	-361.966
95	5	-0.110516	99.8673	-362.519
96	5	-0.0979139	99.8769	-363.008
97	5	-0.0853288	99.8842	-363.435
98	5	-0.0727562	99.8895	-363.799
99	5	-0.0627062	99.8934	-364.112
100	5	-0.0501541	99.8959	-364.363
101	5	-0.0376076	99.8973	-364.551
102	5	-0.0250691	99.898	-364.676
103	5	-0.0125328	99.8981	-364.739
104	5	0 99.8981	-364.739	
105	5	0.0125328	99.8983	-364.676
106	6	0.0250691	99.8989	-364.526
107	6	0.0376076	99.9003	-364.3
108	6.4	0.0501541	99.9028	-363.979
109	7	0.0627062	99.9068	-363.54
110	7	0.0727562	99.9121	-363.031
111	7	0.0853288	99.9193	-362.434

112	7	0.0979139	99.9289	-361.748
113	7.2	0.110516	99.9411	-360.953
114	8	0.123135	99.9563	-359.968
115	8	0.133244	99.9741	-358.902
116	8	0.1459	99.9954	-357.735
117	8	0.158579	100.02	-356.466
118	9	0.171285	100.05	-354.924
119	9	0.184017	100.084	-353.268
120	9	0.194225	100.121	-351.52
121	10	0.207012	100.164	-349.45
122	10	0.219834	100.213	-347.252
123	10	0.232693	100.267	-344.925
124	10	0.24559	100.327	-342.469
125	10	0.255936	100.393	-339.909
126	10	0.268908	100.465	-337.22
127	11	0.281926	100.544	-334.119
128	11	0.294992	100.631	-330.874
129	11	0.308108	100.726	-327.485
130	12	0.318639	100.828	-323.661
131	12	0.331854	100.938	-319.679
132	12	0.345126	101.057	-315.538
133	12	0.358459	101.186	-311.236
134	12	0.371856	101.324	-306.774
135	12	0.385321	101.472	-302.15
136	12	0.396142	101.629	-297.396
137	12	0.409735	101.797	-292.48
138	12	0.423405	101.976	-287.399
139	13	0.437153	102.168	-281.716
140	13	0.450985	102.371	-275.853
141	13	0.462114	102.584	-269.845
142	13	0.476105	102.811	-263.656
143	13	0.490189	103.051	-257.284
144	13	0.504372	103.306	-250.727
145	13	0.518658	103.575	-243.984
146	13	0.530162	103.856	-237.092
147	13	0.544642	104.153	-230.012
148	13	0.559237	104.465	-222.742
149	13	0.573953	104.795	-215.28
150	13	0.588793	105.141	-207.626
151	14	0.60076	105.502	-199.215
152	14	0.615839	105.882	-190.594
153	14	0.631062	106.28	-181.759
154	14	0.646431	106.698	-172.709
155	14	0.661955	107.136	-163.441
156	17	0.67449	107.591	-151.975
157	18	0.690309	108.067	-139.549
158	18	0.706302	108.566	-126.836
159	20	0.722479	109.088	-112.386
160	20	0.738846	109.634	-97.6095
161	20	0.755415	110.205	-82.5012
162	20	0.768821	110.796	-67.1247
163	20	0.785774	111.413	-51.4093
164	20	0.802956	112.058	-35.3501
165	21	0.820379	112.731	-18.1222
166	22	0.838054	113.433	0.315004
167	22	0.852385	114.16	19.0675
168	22	0.87055	114.918	38.2196
169	23	0.889006	115.708	58.6667
170	23	0.907769	116.532	79.5454
171	24	0.926859	117.391	101.79
172	24	0.942375	118.279	124.407
173	27	0.9621	119.205	150.384

174	27	0.982202		120.17	176.903
175	28	1.00271	121.175	204.979	
176	29	1.02365	122.223	234.665	
177	30	1.04073	123.306	265.887	
178	31	1.06252	124.435	298.825	
179	32	1.08482	125.612	333.539	
180	33	1.10768	126.839	370.093	
181	34	1.13113	128.118	408.551	
182	34	1.15035	129.442	447.663	
183	35	1.17499	130.822	488.788	
184	37	1.20036	132.263	533.201	
185	38	1.22653	133.767	579.809	
186	38	1.25357	135.339	627.445	
187	38	1.28155	136.981	676.144	
188	40	1.30469	138.683	728.331	
189	40	1.33462	140.465	781.716	
190	40	1.36581	142.33	836.348	
191	41	1.39838	144.285	893.682	
192	41	1.4325	146.338	952.414	
193	42	1.46106	148.472	1013.78	
194	42	1.49852	150.718	1076.72	
195	48	1.5382	153.084	1150.55	
196	48	1.58047	155.582	1226.41	
197	49	1.62576	158.225	1306.07	
198	52	1.66456	160.996	1392.63	
199	61	1.71688	163.943	1497.36	
200	73	1.77438	167.092	1626.89	
201	74	1.83843	170.471	1762.94	
202	75	1.91103	174.124	1906.26	
203	77	1.97737	178.034	2058.52	
204	80	2.07485	182.339	2224.51	
205	92	2.19728	187.167	2426.66	
206	109	2.36561	192.763	2684.51	
207	120	2.65209	199.796	3002.76	

Data Set Standard Deviation = 18.8948
Numerator = 9.01657e+006
Denominator = 1.4694e+007
W Statistic = 0.61362 = 9.01657e+006 / 1.4694e+007

5% Critical value of 0.976 exceeds 0.61362
Evidence of non-normality at 95% level of significance

1% Critical value of 0.967 exceeds 0.61362
Evidence of non-normality at 99% level of significance

Shapiro-Francia Test of Normality

Parameter: Barium

All Locations

Normality Test of Parameter Concentrations

Natural Logarithm Transformation
Non-Detects Replaced with 1/2 DL
Total Number of Measurements = 207

i	x(i)	m(i)	sum(m^2)	sum(mx)
1	0.693147	-2.65209	7.03356	-1.83829
2	0.693147	-2.36561	12.6297	-3.478
3	1.06471	-2.19728	17.4578	-5.81748
4	1.06471	-2.07485	21.7627	-8.02659
5	1.09861	-1.97737	25.6727	-10.199
6	1.09861	-1.91103	29.3248	-12.2984
7	1.09861	-1.83843	32.7046	-14.3182
8	1.1314	-1.77438	35.853	-16.3257
9	1.1314	-1.71688	38.8007	-18.2682
10	1.38629	-1.66456	41.5715	-20.5757
11	1.60944	-1.62576	44.2146	-23.1923
12	1.60944	-1.58047	46.7124	-25.736
13	1.60944	-1.5382	49.0785	-28.2116
14	1.60944	-1.49852	51.324	-30.6234
15	1.60944	-1.46106	53.4587	-32.9749
16	1.60944	-1.4325	55.5108	-35.2804
17	1.60944	-1.39838	57.4663	-37.531
18	1.60944	-1.36581	59.3317	-39.7292
19	1.60944	-1.33462	61.1129	-41.8772
20	1.60944	-1.30469	62.8151	-43.977
21	1.60944	-1.28155	64.4575	-46.0395
22	1.60944	-1.25357	66.0289	-48.0571
23	1.60944	-1.22653	67.5333	-50.0311
24	1.60944	-1.20036	68.9741	-51.963
25	1.60944	-1.17499	70.3547	-53.8541
26	1.60944	-1.15035	71.678	-55.7055
27	1.60944	-1.13113	72.9575	-57.526
28	1.60944	-1.10768	74.1845	-59.3087
29	1.60944	-1.08482	75.3613	-61.0547
30	1.60944	-1.06252	76.4903	-62.7647
31	1.60944	-1.04073	77.5734	-64.4397
32	1.60944	-1.02365	78.6212	-66.0872
33	1.60944	-1.00271	79.6267	-67.701
34	1.60944	-0.982202	80.5914	-69.2818
35	1.60944	-0.9621	81.517	-70.8303
36	1.60944	-0.942375	82.4051	-72.347
37	1.60944	-0.926859	83.2642	-73.8387
38	1.60944	-0.907769	84.0882	-75.2997
39	1.60944	-0.889006	84.8785	-76.7305
40	1.60944	-0.87055	85.6364	-78.1316
41	1.60944	-0.852385	86.363	-79.5034
42	1.60944	-0.838054	87.0653	-80.8522
43	1.60944	-0.820379	87.7383	-82.1726
44	1.60944	-0.802956	88.3831	-83.4649
45	1.60944	-0.785774	89.0005	-84.7296
46	1.60944	-0.768821	89.5916	-85.9669
47	1.60944	-0.755415	90.1622	-87.1827
48	1.60944	-0.738846	90.7081	-88.3718
49	1.60944	-0.722479	91.2301	-89.5346

50	1.60944	-0.706302	91.729	-90.6714
51	1.60944	-0.690309	92.2055	-91.7824
52	1.60944	-0.6744992.6604	-92.8679	
53	1.60944	-0.661955	93.0986	-93.9333
54	1.60944	-0.646431	93.5165	-94.9737
55	1.60944	-0.631062	93.9147	-95.9894
56	1.60944	-0.615839	94.294	-96.9805
57	1.60944	-0.6007694.6549	-97.9474	
58	1.60944	-0.588793	95.0016	-98.895
59	1.60944	-0.573953	95.331	-99.8188
60	1.60944	-0.559237	95.6437	-100.719
61	1.60944	-0.544642	95.9404	-101.595
62	1.60944	-0.530162	96.2214	-102.449
63	1.60944	-0.518658	96.4905	-103.283
64	1.60944	-0.504372	96.7448	-104.095
65	1.60944	-0.490189	96.9851	-104.884
66	1.60944	-0.476105	97.2118	-105.65
67	1.60944	-0.462114	97.4254	-106.394
68	1.60944	-0.450985	97.6287	-107.12
69	1.60944	-0.437153	97.8198	-107.823
70	1.60944	-0.423405	97.9991	-108.505
71	1.60944	-0.409735	98.167	-109.164
72	1.60944	-0.396142	98.3239	-109.802
73	1.60944	-0.385321	98.4724	-110.422
74	1.60944	-0.371856	98.6107	-111.021
75	1.60944	-0.358459	98.7392	-111.597
76	1.60944	-0.345126	98.8583	-112.153
77	1.60944	-0.331854	98.9684	-112.687
78	1.60944	-0.318639	99.0699	-113.2
79	1.60944	-0.308108	99.1649	-113.696
80	1.60944	-0.294992	99.2519	-114.171
81	1.60944	-0.281926	99.3314	-114.624
82	1.60944	-0.268908	99.4037	-115.057
83	1.60944	-0.255936	99.4692	-115.469
84	1.60944	-0.2455999.5295	-115.864	
85	1.60944	-0.232693	99.5836	-116.239
86	1.60944	-0.219834	99.632	-116.593
87	1.60944	-0.207012	99.6748	-116.926
88	1.60944	-0.194225	99.7126	-117.238
89	1.60944	-0.184017	99.7464	-117.534
90	1.60944	-0.171285	99.7758	-117.81
91	1.60944	-0.158579	99.8009	-118.065
92	1.60944	-0.1459 99.8222	-118.3	
93	1.60944	-0.133244	99.8399	-118.515
94	1.60944	-0.123135	99.8551	-118.713
95	1.60944	-0.110516	99.8673	-118.891
96	1.60944	-0.0979139	99.8769	-119.048
97	1.60944	-0.0853288	99.8842	-119.186
98	1.60944	-0.0727562	99.8895	-119.303
99	1.60944	-0.0627062	99.8934	-119.404
100	1.60944	-0.0501541	99.8959	-119.484
101	1.60944	-0.0376076	99.8973	-119.545
102	1.60944	-0.0250691	99.898	-119.585
103	1.60944	-0.0125328	99.8981	-119.605
104	1.60944	0 99.8981	-119.605	
105	1.60944	0.0125328	99.8983	-119.585
106	1.79176	0.0250691	99.8989	-119.54
107	1.79176	0.0376076	99.9003	-119.473
108	1.8563	0.0501541	99.9028	-119.38
109	1.94591	0.0627062	99.9068	-119.258
110	1.94591	0.0727562	99.9121	-119.116
111	1.94591	0.0853288	99.9193	-118.95

112	1.94591	0.0979139	99.9289	-118.76
113	1.97408	0.110516	99.9411	-118.541
114	2.07944	0.123135	99.9563	-118.285
115	2.07944	0.133244	99.9741	-118.008
116	2.07944	0.1459	99.9954	-117.705
117	2.07944	0.158579	100.02	-117.375
118	2.19722	0.171285	100.05	-116.999
119	2.19722	0.184017	100.084	-116.595
120	2.19722	0.194225	100.121	-116.168
121	2.30259	0.207012	100.164	-115.691
122	2.30259	0.219834	100.213	-115.185
123	2.30259	0.232693	100.267	-114.649
124	2.30259	0.24559	100.327	-114.084
125	2.30259	0.255936	100.393	-113.494
126	2.30259	0.268908	100.465	-112.875
127	2.3979	0.281926	100.544	-112.199
128	2.3979	0.294992	100.631	-111.492
129	2.3979	0.308108	100.726	-110.753
130	2.48491	0.318639	100.828	-109.961
131	2.48491	0.331854	100.938	-109.137
132	2.48491	0.345126	101.057	-108.279
133	2.48491	0.358459	101.186	-107.388
134	2.48491	0.371856	101.324	-106.464
135	2.48491	0.385321	101.472	-105.507
136	2.48491	0.396142	101.629	-104.522
137	2.48491	0.409735	101.797	-103.504
138	2.48491	0.423405	101.976	-102.452
139	2.56495	0.437153	102.168	-101.331
140	2.56495	0.450985	102.371	-100.174
141	2.56495	0.462114	102.584	-98.9887
142	2.56495	0.476105	102.811	-97.7675
143	2.56495	0.490189	103.051	-96.5102
144	2.56495	0.504372	103.306	-95.2165
145	2.56495	0.518658	103.575	-93.8862
146	2.56495	0.530162	103.856	-92.5263
147	2.56495	0.544642	104.153	-91.1294
148	2.56495	0.559237	104.465	-89.6949
149	2.56495	0.573953	104.795	-88.2228
150	2.56495	0.588793	105.141	-86.7126
151	2.63906	0.60076	105.502	-85.1271
152	2.63906	0.615839	105.882	-83.5019
153	2.63906	0.631062	106.28	-81.8365
154	2.63906	0.646431	106.698	-80.1305
155	2.63906	0.661955	107.136	-78.3836
156	2.83321	0.67449	107.591	-76.4726
157	2.89037	0.690309	108.067	-74.4773
158	2.89037	0.706302	108.566	-72.4359
159	2.99573	0.722479	109.088	-70.2715
160	2.99573	0.738846	109.634	-68.0581
161	2.99573	0.755415	110.205	-65.7951
162	2.99573	0.768821	110.796	-63.4919
163	2.99573	0.785774	111.413	-61.138
164	2.99573	0.802956	112.058	-58.7325
165	3.04452	0.820379	112.731	-56.2349
166	3.09104	0.838054	113.433	-53.6444
167	3.09104	0.852385	114.16	-51.0096
168	3.09104	0.87055	114.918	-48.3187
169	3.13549	0.889006	115.708	-45.5313
170	3.13549	0.907769	116.532	-42.6849
171	3.17805	0.926859	117.391	-39.7393
172	3.17805	0.942375	118.279	-36.7444
173	3.29584	0.9621	119.205	-33.5735

174	3.29584	0.982202		120.17	-30.3363
175	3.3322	1.00271	121.175	-26.9951	
176	3.3673	1.02365	122.223	-23.5481	
177	3.4012	1.04073	123.306	-20.0084	
178	3.43399	1.06252	124.435	-16.3597	
179	3.46574	1.08482	125.612	-12.6	
180	3.49651	1.10768	126.839	-8.727	
181	3.52636	1.13113	128.118	-4.73823	
182	3.52636	1.15035	129.442	-0.681679	
183	3.55535	1.17499	130.822	3.49581	
184	3.61092	1.20036	132.263	7.83021	
185	3.63759	1.22653	133.767	12.2918	
186	3.63759	1.25357	135.339	16.8518	
187	3.63759	1.28155	136.981	21.5135	
188	3.68888	1.30469	138.683	26.3264	
189	3.68888	1.33462	140.465	31.2496	
190	3.68888	1.36581	142.33	36.2879	
191	3.71357	1.39838	144.285	41.4809	
192	3.71357	1.4325	146.338	46.8006	
193	3.73767	1.46106	148.472	52.2615	
194	3.73767	1.49852	150.718	57.8625	
195	3.8712	1.5382	153.084	63.8172	
196	3.8712	1.58047	155.582	69.9355	
197	3.89182	1.62576	158.225	76.2627	
198	3.95124	1.66456	160.996	82.8397	
199	4.11087	1.71688	163.943	89.8976	
200	4.29046	1.77438	167.092	97.5105	
201	4.30407	1.83843	170.471	105.423	
202	4.31749	1.91103	174.124	113.674	
203	4.34381	1.97737	178.034	122.263	
204	4.38203	2.07485	182.339	131.355	
205	4.52179	2.19728	187.167	141.291	
206	4.69135	2.36561	192.763	152.389	
207	4.78749	2.65209	199.796	165.086	

Data Set Standard Deviation = 0.879679
Numerator = 27253.3
Denominator = 31849.5
W Statistic = 0.855691 = 27253.3 / 31849.5

5% Critical value of 0.976 exceeds 0.855691
Evidence of non-normality at 95% level of significance

1% Critical value of 0.967 exceeds 0.855691
Evidence of non-normality at 99% level of significance

Kruskal-Wallis Non-Parametric Test

Parameter: Barium

Natural Logarithm Transformation
Non-Detects Replaced with 1/2 DL

Kruskal Wallis Ranks

Background Wells

Well ID	Date	Result	Rank
LMW-4	1/16/1998	ND<1.60944	44.5
	3/16/1999	2.99573	159
	9/23/1999	2.07944 J	114
	3/14/2000	ND<1.60944	44.5
	9/23/2003	ND<1.60944	44.5
	3/10/2004	ND<1.60944	44.5
	10/12/2004	ND<1.60944	44.5
	4/1/2005	2.63906	151
	10/26/2005	2.48491	130
	6/19/2006	2.30259	121
	11/18/2006	2.56495	139
	6/2/2007	3.17805	171
	11/15/2007	2.56495	140
	5/20/2008	2.3979	127
	11/20/2008	2.63906	152
	6/11/2009	2.56495	141
	11/14/2009	2.56495	142

Rank Sum = 1909.5
Rank Mean = 112.324

Background Rank Sum = 1909.5
Background Rank Mean = 112.324

Compliance Wells

Well ID	Date	Result	Rank
LMW-9D	11/18/2006	2.56495	143
	6/2/2007	1.60944	99
	11/15/2007	4.78749	207
	5/20/2008	2.30259	122
	11/20/2008	1.09861 J	93
	6/11/2009	1.1314	96
	11/14/2009	1.06471	91

Rank Sum = 851
Rank Mean = 121.571

LMW-3S	11/18/2006	1.60944 J	100
	6/2/2007	2.89037	157
	11/15/2007	2.56495	144
	5/20/2008	2.07944 J	115
	11/20/2008	2.56495	145
	6/11/2009	2.48491	131
	11/14/2009	2.30259	123

Rank Sum = 915
Rank Mean = 130.714

LMW-10	3/14/2000	ND<1.60944	44.5
	9/23/2003	ND<1.60944	44.5
	3/10/2004	ND<1.60944	44.5
	10/12/2004	ND<1.60944	44.5
	4/1/2005	2.56495	146
	10/26/2005	ND<1.60944	44.5
	6/19/2006	2.99573	160
	11/18/2006	2.3979	128
	6/2/2007	3.04452	165
	11/15/2007	ND<1.60944	44.5
	5/20/2008	2.48491	132
	11/20/2008	2.48491	133
	6/11/2009	2.56495	147
	11/14/2009	2.48491	134

Rank Sum = 1412
Rank Mean = 100.857

LMW-9	1/16/1998	ND<1.60944	44.5
	3/16/1999	2.30259	124
	9/23/1999	3.09104	166
	3/14/2000	ND<1.60944	44.5
	9/23/2003	ND<1.60944	44.5
	3/10/2004	ND<1.60944	44.5
	10/12/2004	ND<1.60944	44.5
	4/1/2005	ND<1.60944	44.5
	10/26/2005	ND<1.60944	44.5
	6/19/2006	2.30259	125
	11/18/2006	1.09861 J	94
	6/2/2007	1.79176	106
	11/15/2007	1.09861 J	95
	5/20/2008	0.693147 J	89
	11/20/2008	1.38629 J	98
	6/11/2009	1.1314	97
	11/14/2009	1.06471	92

Rank Sum = 1397.5
Rank Mean = 82.2059

LMW-8	1/16/1998	ND<1.60944	44.5
	3/16/1999	2.30259	126
	9/23/1999	4.69135	206
	3/14/2000	ND<1.60944	44.5
	9/23/2003	ND<1.60944	44.5
	3/10/2004	ND<1.60944	44.5
	10/12/2004	ND<1.60944	44.5
	4/1/2005	3.8712	195
	10/26/2005	3.63759	185
	6/19/2006	3.68888	188
	11/18/2006	3.46574	179
	6/2/2007	3.52636	181
	11/15/2007	3.71357	191
	5/20/2008	3.52636	182
	11/20/2008	3.3673	176
	6/11/2009	3.68888	189
	11/14/2009	3.68888	190

Rank Sum = 2410.5
Rank Mean = 141.794

LMW-6	1/16/1998	ND<1.60944	44.5
	3/16/1999	2.07944 J	116
	9/23/1999	2.89037	158
	3/14/2000	ND<1.60944	44.5
	9/23/2003	ND<1.60944	44.5

	3/10/2004	ND<1.60944		44.5
	10/12/2004	ND<1.60944		44.5
	4/1/2005	2.19722	J	118
	10/26/2005	2.48491		135
	6/19/2006	2.99573		161
	11/18/2006	3.49651		180
	6/2/2007	3.95124		198
	11/15/2007	3.73767		193
	5/20/2008	3.89182		197
	11/20/2008	4.29046		200
	6/11/2009	4.52179		205
	11/14/2009	4.30407		201

Rank Sum = 2284.5
Rank Mean = 134.382

LMW-3	11/19/1996	ND<1.60944		44.5
	3/24/1997	ND<1.60944		44.5
	1/16/1998	ND<1.60944		44.5
	3/16/1999	2.07944	J	117
	9/23/1999	1.94591	J	109
	3/14/2000	ND<1.60944		44.5
	9/23/2003	ND<1.60944		44.5
	3/10/2004	ND<1.60944		44.5
	10/12/2004	ND<1.60944		44.5
	4/1/2005	ND<1.60944		44.5
	10/26/2005	1.94591	J	110
	6/19/2006	1.60944	J	101
	11/18/2006	1.94591	J	111
	6/2/2007	1.60944		102
	11/15/2007	ND<1.60944		44.5
	5/20/2008	1.60944	J	103
	11/20/2008	1.60944	J	104
	6/11/2009	1.97408		113
	11/14/2009	1.8563		108

Rank Sum = 1478.5
Rank Mean = 77.8158

LMW-16	11/18/2006	3.13549		169
	6/2/2007	3.71357		192
	11/15/2007	3.55535		183
	5/20/2008	3.09104		167
	11/20/2008	3.13549		170
	6/11/2009	2.63906		153
	11/14/2009	2.56495		148

Rank Sum = 1182
Rank Mean = 168.857

LMW-9S	11/18/2006	4.34381		203
	6/2/2007	4.38203		204
	11/15/2007	0.693147	J	90
	5/20/2008	4.31749		202
	11/20/2008	4.11087		199
	6/11/2009	3.3322		175
	11/14/2009	3.8712		196

Rank Sum = 1269
Rank Mean = 181.286

LMW-15R	11/18/2006	3.61092		184
	6/2/2007	3.63759		186
	11/15/2007	3.29584		173
	11/15/2007	ND<1.60944		44.5
	5/20/2008	3.17805		172

	5/20/2008	ND<1.60944	44.5
	11/20/2008	ND<1.60944	44.5
	11/20/2008	3.63759	187
	6/11/2009	3.73767	194
	11/14/2009	2.63906	154

Rank Sum = 1383.5
Rank Mean = 138.35

LMW-14R	6/2/2007	2.63906	155
	11/15/2007	2.48491	136
	5/20/2008	2.19722 J	119
	11/20/2008	2.56495	149
	6/11/2009	2.56495	150
	11/14/2009	2.48491	137

Rank Sum = 846
Rank Mean = 141

LMW-7	1/16/1998	ND<1.60944	44.5
	3/16/1999	2.99573	162
	9/23/1999	3.09104	168
	3/14/2000	ND<1.60944	44.5
	9/23/2003	ND<1.60944	44.5
	3/10/2004	ND<1.60944	44.5
	10/12/2004	ND<1.60944	44.5
	4/1/2005	3.43399	178
	10/26/2005	3.4012	177
	6/19/2006	2.99573	163
	11/18/2006	2.3979	129
	6/2/2007	3.29584	174
	11/15/2007	1.79176 J	107
	5/20/2008	1.60944 J	105
	11/20/2008	1.94591 J	112
	6/11/2009	2.48491	138

Rank Sum = 1835.5
Rank Mean = 114.719

LMW-11	3/14/2000	ND<1.60944	44.5
	9/23/2003	ND<1.60944	44.5
	3/10/2004	ND<1.60944	44.5
	10/12/2004	ND<1.60944	44.5
	4/1/2005	ND<1.60944	44.5
	10/26/2005	ND<1.60944	44.5
	6/19/2006	ND<1.60944	44.5
	6/2/2007	ND<1.60944	44.5
	11/15/2007	ND<1.60944	44.5
	5/20/2008	ND<1.60944	44.5
	11/20/2008	ND<1.60944	44.5

Rank Sum = 489.5
Rank Mean = 44.5

LMW-13	3/14/2000	ND<1.60944	44.5
	9/23/2003	ND<1.60944	44.5
	3/10/2004	ND<1.60944	44.5
	10/12/2004	ND<1.60944	44.5
	4/1/2005	ND<1.60944	44.5
	10/26/2005	ND<1.60944	44.5
	6/19/2006	ND<1.60944	44.5
	6/2/2007	ND<1.60944	44.5
	11/15/2007	ND<1.60944	44.5
	5/20/2008	ND<1.60944	44.5
	11/20/2008	ND<1.60944	44.5

Rank Sum = 489.5

Rank Mean = 44.5

MW-5	1/16/1998	ND<1.60944	44.5
	3/16/1999	2.99573	164
	9/23/1999	2.19722 J	120
	3/14/2000	ND<1.60944	44.5
	9/23/2003	ND<1.60944	44.5
	3/10/2004	ND<1.60944	44.5
	10/12/2004	ND<1.60944	44.5
	4/1/2005	ND<1.60944	44.5
	10/26/2005	ND<1.60944	44.5
	6/19/2006	ND<1.60944	44.5
	11/15/2007	2.83321	156
	5/20/2008	ND<1.60944	44.5
	11/20/2008	ND<1.60944	44.5

Rank Sum = 885
Rank Mean = 68.0769

LMW-12	3/14/2000	ND<1.60944	44.5
	9/23/2003	ND<1.60944	44.5
	3/10/2004	ND<1.60944	44.5
	10/12/2004	ND<1.60944	44.5
	4/1/2005	ND<1.60944	44.5
	10/26/2005	ND<1.60944	44.5
	6/19/2006	ND<1.60944	44.5
	6/2/2007	ND<1.60944	44.5
	11/15/2007	ND<1.60944	44.5
	5/20/2008	ND<1.60944	44.5
	11/20/2008	ND<1.60944	44.5

Rank Sum = 489.5
Rank Mean = 44.5

Calculation Results:

Kruskal-Wallis H Statistic = 82.5702
Kruskal-Wallis H Statistic (adjusted for tied non-detects) = 89.4414
95% Confidence comparison value is 26.2962 at 16 degrees of freedom
82.5702 > 26.2962 indicating a significant group difference at 5% significance level
89.4414 > 26.2962 indicating a significant group difference at 5% significance level when adjusted for ties

Individual Well Comparisons at 1% Significance Level per Comparison

1% Z score is 2.32634
Mean background rank is 112.324

Well	Mean Rank	Dif from Bkg	Critical Value
LMW-9D	121.571	9.2479	62.5795
LMW-3S	130.714	18.3908	62.5795
LMW-10	100.857	-11.4664	50.2912
LMW-9	82.2059	-30.1176	47.7959
LMW-8	141.794	29.4706	47.7959
LMW-6	134.382	22.0588	47.7959
LMW-3	77.8158	-34.5077	46.5211
LMW-16	168.857	56.5336	62.5795
LMW-9S	181.286	68.9622	62.5795
LMW-15R	138.35	26.0265	55.5338
LMW-14R	141	28.6765	66.1704
LMW-7	114.719	2.39522	48.5369
LMW-11	44.5	-67.823	53.921
LMW-13	44.5	-67.823	53.921
MW-5	68.0769	-44.246	51.341
LMW-12	44.5	-67.823	53.921

Individual Well Comparisons at Groupwise 5% Significance Level (0.3125% Significance Level per comparison)

0.3125% Z score is 2.74777

Mean background rank is 112.324

Well	Mean Rank	Dif from Bkg	Critical Value
LMW-9D	121.571	9.2479	73.9159
LMW-3S	130.714	18.3908	73.9159
LMW-10	100.857	-11.4664	59.4016
LMW-9	82.2059	-30.1176	56.4542
LMW-8	141.794	29.4706	56.4542
LMW-6	134.382	22.0588	56.4542
LMW-3	77.8158	-34.5077	54.9485
LMW-16	168.857	56.5336	73.9159
LMW-9S	181.286	68.9622	73.9159
LMW-15R	138.35	26.0265	65.5939
LMW-14R	141	28.6765	78.1573
LMW-7	114.719	2.39522	57.3295
LMW-11	44.5	-67.8235	63.6889
LMW-13	44.5	-67.8235	63.6889
MW-5	68.0769	-44.2466	60.6416
LMW-12	44.5	-67.8235	63.6889

Mann-Kendall Trend Analysis

Parameter: Barium

Location: LMW-9S

Natural Logarithm Transformation
Non-Detects Replaced with 1/2 DL

95% Confidence Level

Xj	Xk	Xj - Xk	Positives	Negatives	
4.38203		4.34381	0.0382212	1	0
0.693147 J		4.34381	-3.650661	1	
4.31749		4.34381	-0.0263173	1	2
4.11087		4.34381	-0.232932	1	3
3.3322	4.34381	-1.0116	1	4	
3.8712	4.34381	-0.472604	1	5	
0.693147 J		4.38203	-3.688881	6	
4.31749		4.38203	-0.0645385	1	7
4.11087		4.38203	-0.271153	1	8
3.3322	4.38203	-1.049821	9		
3.8712	4.38203	-0.510826	1	10	
4.31749		0.693147 J	3.62434 2	10	
4.11087		0.693147 J	3.41773 3	10	
3.3322	0.693147 J	2.63906 4	10		
3.8712	0.693147 J	3.17805 5	10		
4.11087		4.31749	-0.206614	5	11
3.3322	4.31749	-0.985284	5	12	
3.8712	4.31749	-0.446287	5	13	
3.3322	4.11087	-0.778669	5	14	
3.8712	4.11087	-0.239673	5	15	
3.8712	3.3322	0.538997	6	15	

S Statistic = 6 - 15 = -9
Comparing at 1.0 - (0.05 / 2) = 97.5% confidence level (two-tailed)
Probability of obtaining S >= |-9| is 0.238
0.238 >= 0.025 indicating no evidence of a trend

Concentrations (ug/L)

Parameter: Beryllium

Natural Logarithm Transformation
Non-Detects Replaced with 1/2 DL
Total Measurements: 197
Total Non-Detect: 190
Percent Non-Detects: 96.4467%
Total Background Measurements: 17
There is 1 background location

Loc.	Meas.	ND	Date	Conc.	Original
LMW-4	17	16 (94.1176%)	1/16/1998	ND<1.60944	ND<10
			3/16/1999	ND<1.60944	ND<10
			9/23/1999	ND<1.60944	ND<10
			3/14/2000	ND<1.60944	ND<10
			9/23/2003	ND<1.60944	ND<10
			3/10/2004	ND<1.60944	ND<10
			10/12/2004	ND<1.60944	ND<10
			4/1/2005	ND<1.60944	ND<10
			10/26/2005	ND<1.60944	ND<10
			6/19/2006	ND<1.60944	ND<10
			11/18/2006	ND<1.60944	ND<10
			6/2/2007	ND<1.60944	ND<10
			11/15/2007	ND<1.60944	ND<10
			5/20/2008	ND<1.60944	ND<10
			11/20/2008	ND<1.60944	ND<10
			6/11/2009	ND<-3.35241 U	ND<0.07 U
			11/14/2009	-2.65926 J	0.07 J

There are 16 compliance locations

Loc.	Meas.	ND	Date	Conc.	Original
LMW-6	17	15 (88.2353%)	1/16/1998	ND<1.60944	ND<10
			3/16/1999	ND<1.60944	ND<10
			9/23/1999	ND<1.60944	ND<10
			3/14/2000	ND<1.60944	ND<10
			9/23/2003	ND<1.60944	ND<10
			3/10/2004	ND<1.60944	ND<10
			10/12/2004	ND<1.60944	ND<10
			4/1/2005	ND<1.60944	ND<10
			10/26/2005	ND<1.60944	ND<10
			6/19/2006	ND<1.60944	ND<10
			11/18/2006	ND<1.60944	ND<10
			6/2/2007	ND<1.60944	ND<10
			11/15/2007	ND<1.60944	ND<10
			5/20/2008	ND<1.60944	ND<10
			11/20/2008	ND<1.60944	ND<10
			6/11/2009	-1.89712 J	0.15 J
			11/14/2009	-1.89712 J	0.15 J
LMW-7	16	15 (93.75%)	1/16/1998	ND<1.60944	ND<10
			3/16/1999	ND<1.60944	ND<10
			9/23/1999	ND<1.60944	ND<10
			3/14/2000	ND<1.60944	ND<10
			9/23/2003	ND<1.60944	ND<10
			3/10/2004	ND<1.60944	ND<10

			10/12/2004	ND<1.60944	ND<10
			4/1/2005	ND<1.60944	ND<10
			10/26/2005	ND<1.60944	ND<10
			6/19/2006	ND<1.60944	ND<10
			11/18/2006	ND<1.60944	ND<10
			6/2/2007	ND<1.60944	ND<10
			11/15/2007	ND<1.60944	ND<10
			5/20/2008	ND<1.60944	ND<10
			11/20/2008	ND<1.60944	ND<10
			6/11/2009	-1.66073 J	0.19 J
LMW-16	6	6 (100%)	11/18/2006	ND<1.60944	ND<10
			6/2/2007	ND<1.60944	ND<10
			11/15/2007	ND<1.60944	ND<10
			5/20/2008	ND<1.60944	ND<10
			11/20/2008	ND<1.60944	ND<10
			6/11/2009	ND<-3.35241 U	ND<0.07 U
LMW-8	16	16 (100%)	1/16/1998	ND<1.60944	ND<10
			3/16/1999	ND<1.60944	ND<10
			9/23/1999	ND<1.60944	ND<10
			3/14/2000	ND<1.60944	ND<10
			9/23/2003	ND<1.60944	ND<10
			3/10/2004	ND<1.60944	ND<10
			10/12/2004	ND<1.60944	ND<10
			4/1/2005	ND<1.60944	ND<10
			10/26/2005	ND<1.60944	ND<10
			6/19/2006	ND<1.60944	ND<10
			11/18/2006	ND<1.60944	ND<10
			6/2/2007	ND<1.60944	ND<10
			11/15/2007	ND<1.60944	ND<10
			5/20/2008	ND<1.60944	ND<10
			11/20/2008	ND<1.60944	ND<10
			6/11/2009	ND<-3.35241 U	ND<0.07 U
LMW-9D	6	6 (100%)	11/18/2006	ND<1.60944	ND<10
			6/2/2007	ND<1.60944	ND<10
			11/15/2007	ND<1.60944	ND<10
			5/20/2008	ND<1.60944	ND<10
			11/20/2008	ND<1.60944	ND<10
			6/11/2009	ND<-3.35241 U	ND<0.07 U
LMW-10	13	13 (100%)	3/14/2000	ND<1.60944	ND<10
			9/23/2003	ND<1.60944	ND<10
			3/10/2004	ND<1.60944	ND<10
			10/12/2004	ND<1.60944	ND<10
			4/1/2005	ND<1.60944	ND<10
			10/26/2005	ND<1.60944	ND<10
			6/19/2006	ND<1.60944	ND<10
			11/18/2006	ND<1.60944	ND<10
			6/2/2007	ND<1.60944	ND<10
			11/15/2007	ND<1.60944	ND<10
			5/20/2008	ND<1.60944	ND<10
			11/20/2008	ND<1.60944	ND<10
			6/11/2009	ND<-3.35241 U	ND<0.07 U
LMW-14R	5	5 (100%)	6/2/2007	ND<1.60944	ND<10
			11/15/2007	ND<1.60944	ND<10
			5/20/2008	ND<1.60944	ND<10
			11/20/2008	ND<1.60944	ND<10
			6/11/2009	ND<-3.35241 U	ND<0.07 U

LMW-3S	6	5 (83.3333%)	11/18/2006	ND<1.60944	ND<10
			6/2/2007	ND<1.60944	ND<10
			11/15/2007	ND<1.60944	ND<10
			5/20/2008	ND<1.60944	ND<10
			11/20/2008	ND<1.60944	ND<10
			6/11/2009	-2.65926 J	0.07 J
LMW-3	18	18 (100%)	11/19/1996	ND<1.60944	ND<10
			3/24/1997	ND<1.60944	ND<10
			1/16/1998	ND<1.60944	ND<10
			3/16/1999	ND<1.60944	ND<10
			9/23/1999	ND<1.60944	ND<10
			3/14/2000	ND<1.60944	ND<10
			9/23/2003	ND<1.60944	ND<10
			3/10/2004	ND<1.60944	ND<10
			10/12/2004	ND<1.60944	ND<10
			4/1/2005	ND<1.60944	ND<10
			10/26/2005	ND<1.60944	ND<10
			6/19/2006	ND<1.60944	ND<10
			11/18/2006	ND<1.60944	ND<10
			6/2/2007	ND<1.60944	ND<10
			11/15/2007	ND<1.60944	ND<10
			5/20/2008	ND<1.60944	ND<10
			11/20/2008	ND<1.60944	ND<10
			6/11/2009	ND<-3.35241 U	ND<0.07 U
LMW-9	16	15 (93.75%)	1/16/1998	ND<1.60944	ND<10
			3/16/1999	ND<1.60944	ND<10
			9/23/1999	ND<1.60944	ND<10
			3/14/2000	ND<1.60944	ND<10
			9/23/2003	ND<1.60944	ND<10
			3/10/2004	ND<1.60944	ND<10
			10/12/2004	ND<1.60944	ND<10
			4/1/2005	ND<1.60944	ND<10
			10/26/2005	ND<1.60944	ND<10
			6/19/2006	ND<1.60944	ND<10
			11/18/2006	ND<1.60944	ND<10
			6/2/2007	ND<1.60944	ND<10
			11/15/2007	ND<1.60944	ND<10
			5/20/2008	ND<1.60944	ND<10
			11/20/2008	ND<1.60944	ND<10
			6/11/2009	-2.52573 J	0.08 J
LMW-15R	9	8 (88.8889%)	11/18/2006	ND<1.60944	ND<10
			6/2/2007	ND<1.60944	ND<10
			11/15/2007	ND<1.60944	ND<10
			11/15/2007	ND<1.60944	ND<10
			5/20/2008	ND<1.60944	ND<10
			5/20/2008	ND<1.60944	ND<10
			11/20/2008	ND<1.60944	ND<10
			11/20/2008	ND<1.60944	ND<10
			6/11/2009	-1.23787	0.29
LMW-9S	6	6 (100%)	11/18/2006	ND<1.60944	ND<10
			6/2/2007	ND<1.60944	ND<10
			11/15/2007	ND<1.60944	ND<10
			5/20/2008	ND<1.60944	ND<10
			11/20/2008	ND<1.60944	ND<10
			6/11/2009	ND<-3.35241 U	ND<0.07 U

LMW-13	11	11 (100%)	3/14/2000	ND<1.60944	ND<10
			9/23/2003	ND<1.60944	ND<10
			3/10/2004	ND<1.60944	ND<10
			10/12/2004	ND<1.60944	ND<10
			4/1/2005	ND<1.60944	ND<10
			10/26/2005	ND<1.60944	ND<10
			6/19/2006	ND<1.60944	ND<10
			6/2/2007	ND<1.60944	ND<10
			11/15/2007	ND<1.60944	ND<10
			5/20/2008	ND<1.60944	ND<10
			11/20/2008	ND<1.60944	ND<10
LMW-12	11	11 (100%)	3/14/2000	ND<1.60944	ND<10
			9/23/2003	ND<1.60944	ND<10
			3/10/2004	ND<1.60944	ND<10
			10/12/2004	ND<1.60944	ND<10
			4/1/2005	ND<1.60944	ND<10
			10/26/2005	ND<1.60944	ND<10
			6/19/2006	ND<1.60944	ND<10
			6/2/2007	ND<1.60944	ND<10
			11/15/2007	ND<1.60944	ND<10
			5/20/2008	ND<1.60944	ND<10
			11/20/2008	ND<1.60944	ND<10
LMW-11	11	11 (100%)	3/14/2000	ND<1.60944	ND<10
			9/23/2003	ND<1.60944	ND<10
			3/10/2004	ND<1.60944	ND<10
			10/12/2004	ND<1.60944	ND<10
			4/1/2005	ND<1.60944	ND<10
			10/26/2005	ND<1.60944	ND<10
			6/19/2006	ND<1.60944	ND<10
			6/2/2007	ND<1.60944	ND<10
			11/15/2007	ND<1.60944	ND<10
			5/20/2008	ND<1.60944	ND<10
			11/20/2008	ND<1.60944	ND<10
MW-5	13	13 (100%)	1/16/1998	ND<1.60944	ND<10
			3/16/1999	ND<1.60944	ND<10
			9/23/1999	ND<1.60944	ND<10
			3/14/2000	ND<1.60944	ND<10
			9/23/2003	ND<1.60944	ND<10
			3/10/2004	ND<1.60944	ND<10
			10/12/2004	ND<1.60944	ND<10
			4/1/2005	ND<1.60944	ND<10
			10/26/2005	ND<1.60944	ND<10
			6/19/2006	ND<1.60944	ND<10
			11/15/2007	ND<1.60944	ND<10
			5/20/2008	ND<1.60944	ND<10
			11/20/2008	ND<1.60944	ND<10

There are 0 unused locations

Loc.	Meas.	ND	Date	Conc.	Original

Shapiro-Francia Test of Normality

Parameter: Beryllium

All Locations

Normality Test of Parameter Concentrations

Original Data (Not Transformed)
Non-Detects Replaced with 1/2 DL
Total Number of Measurements = 197

i	x(i)	m(i)	sum(m^2)	sum(mx)
1	0.035	-2.575836	3.63492	-0.0901542
2	0.035	-2.326341	2.0468	-0.171576
3	0.035	-2.170091	6.7561	-0.247529
4	0.035	-2.053752	0.974	-0.319411
5	0.035	-1.959962	4.8154	-0.388009
6	0.035	-1.880792	8.3528	-0.453837
7	0.035	-1.811913	1.6358	-0.517254
8	0.035	-1.750693	4.7007	-0.578528
9	0.07	-1.6954	37.5751	-0.697206
10	0.07	-1.644854	0.2806	-0.812345
11	0.08	-1.598194	2.8348	-0.940201
12	0.15	-1.554774	5.2522	-1.17342
13	0.15	-1.5141	47.5447	-1.40053
14	0.19	-1.475794	9.7226	-1.68093
15	0.29	-1.439535	1.7949	-2.0984
16	5	-1.405075	3.7691	-9.12377
17	5	-1.3722	55.6521	-15.9848
18	5	-1.340755	7.4497	-22.6886
19	5	-1.310585	9.1673	-29.2415
20	5	-1.275886	0.7952	-35.6208
21	5	-1.248096	2.3529	-41.8613
22	5	-1.221236	3.8443	-47.9674
23	5	-1.195226	5.2728	-53.9435
24	5	-1.17	66.6417	-59.7935
25	5	-1.1455	67.9539	-65.521
26	5	-1.121686	9.2121	-71.1294
27	5	-1.098477	0.4187	-76.6218
28	5	-1.075847	1.5761	-82.001
29	5	-1.053757	2.6865	-87.2697
30	5	-1.032157	3.7519	-92.4305
31	5	-1.011047	4.774	-97.4856
32	5	-0.990356	75.7549	-102.437
33	5	-0.970094	76.6959	-107.288
34	5	-0.950222	77.5989	-112.039
35	5	-0.930718	78.4651	-116.693
36	5	-0.911562	79.296	-121.25
37	5	-0.892733	80.093	-125.714
38	5	-0.874218	80.8573	-130.085
39	5	-0.855996	81.59	-134.365
40	5	-0.834498	82.2864	-138.538
41	5	-0.816874	82.9537	-142.622
42	5	-0.7995	83.5929	-146.619
43	5	-0.782366	84.205	-150.531
44	5	-0.765456	84.7909	-154.359
45	5	-0.748762	85.3515	-158.102
46	5	-0.732275	85.8878	-161.764
47	5	-0.715986	86.4004	-165.344
48	5	-0.699883	86.8902	-168.843
49	5	-0.683968	7.358	-172.263

50	5	-0.668209	87.8045	-175.604
51	5	-0.652622	88.2304	-178.867
52	5	-0.637192	88.6365	-182.053
53	5	-0.621911	89.0232	-185.163
54	5	-0.606775	89.3914	-188.196
55	5	-0.591776	89.7416	-191.155
56	5	-0.576911	90.0744	-194.04
57	5	-0.562179	90.3905	-196.851
58	5	-0.547551	90.6903	-199.589
59	5	-0.533048	90.9744	-202.254
60	5	-0.515791	91.2405	-204.833
61	5	-0.501527	91.492	-207.34
62	5	-0.487364	91.7295	-209.777
63	5	-0.473299	91.9535	-212.144
64	5	-0.459327	92.1645	-214.44
65	5	-0.445443	92.3629	-216.668
66	5	-0.431644	92.5492	-218.826
67	5	-0.417928	92.7239	-220.915
68	5	-0.404299	92.8874	-222.937
69	5	-0.390726	93.04	-224.89
70	5	-0.377233	93.1823	-226.777
71	5	-0.363809	93.3147	-228.596
72	5	-0.350451	93.4375	-230.348
73	5	-0.337155	93.5512	-232.034
74	5	-0.323919	93.6561	-233.653
75	5	-0.310738	93.7527	-235.207
76	5	-0.297612	93.8412	-236.695
77	5	-0.284535	93.9222	-238.118
78	5	-0.271509	93.9959	-239.475
79	5	-0.258527	94.0627	-240.768
80	5	-0.243007	94.1218	-241.983
81	5	-0.230118	94.1748	-243.134
82	5	-0.217267	94.222	-244.22
83	5	-0.204452	94.2638	-245.242
84	5	-0.191671	94.3005	-246.2
85	5	-0.178929	94.3325	-247.095
86	5	-0.166199	94.3601	-247.926
87	5	-0.153505	94.3837	-248.694
88	5	-0.140835	94.4035	-249.398
89	5	-0.128189	94.42	-250.039
90	5	-0.115562	94.4333	-250.617
91	5	-0.102953	94.4439	-251.131
92	5	-0.0903606	94.4521	-251.583
93	5	-0.0777834	94.4581	-251.972
94	5	-0.0652187	94.4624	-252.298
95	5	-0.0526632	94.4652	-252.561
96	5	-0.0401167	94.4668	-252.762
97	5	-0.0275759	94.4675	-252.9
98	5	-0.0150408	94.4678	-252.975
99	5	0	94.4678	-252.975
100	5	0.0150408	94.468	-252.9
101	5	0.0275759	94.4687	-252.762
102	5	0.0401167	94.4703	-252.561
103	5	0.0526632	94.4731	-252.298
104	5	0.0652187	94.4774	-251.972
105	5	0.0777834	94.4834	-251.583
106	5	0.0903606	94.4916	-251.131
107	5	0.102953	94.5022	-250.617
108	5	0.115562	94.5155	-250.039
109	5	0.128189	94.532	-249.398
110	5	0.140835	94.5518	-248.694
111	5	0.153505	94.5754	-247.926

112	5	0.166199	94.603	-247.095
113	5	0.17892	94.635	-246.2
114	5	0.191671	94.6717	-245.242
115	5	0.204452	94.7135	-244.22
116	5	0.217267	94.7608	-243.134
117	5	0.230118	94.8137	-241.983
118	5	0.243007	94.8728	-240.768
119	5	0.258527	94.9396	-239.475
120	5	0.271509	95.0133	-238.118
121	5	0.284535	95.0943	-236.695
122	5	0.297612	95.1828	-235.207
123	5	0.310738	95.2794	-233.653
124	5	0.323919	95.3843	-232.034
125	5	0.337155	95.498	-230.348
126	5	0.350451	95.6208	-228.596
127	5	0.363809	95.7532	-226.777
128	5	0.377233	95.8955	-224.89
129	5	0.390726	96.0481	-222.937
130	5	0.40429	96.2116	-220.915
131	5	0.417928	96.3863	-218.826
132	5	0.431644	96.5726	-216.668
133	5	0.445443	96.771	-214.44
134	5	0.459327	96.982	-212.144
135	5	0.473299	97.206	-209.777
136	5	0.487364	97.4435	-207.34
137	5	0.501527	97.695	-204.833
138	5	0.515791	97.9611	-202.254
139	5	0.533048	98.2452	-199.589
140	5	0.547551	98.545	-196.851
141	5	0.56217	98.8611	-194.04
142	5	0.576911	99.1939	-191.155
143	5	0.591776	99.5441	-188.196
144	5	0.606775	99.9123	-185.163
145	5	0.621911	100.299	-182.053
146	5	0.637192	100.705	-178.867
147	5	0.652622	101.131	-175.604
148	5	0.668209	101.577	-172.263
149	5	0.68396	102.045	-168.843
150	5	0.699883	102.535	-165.344
151	5	0.715986	103.048	-161.764
152	5	0.732275	103.584	-158.102
153	5	0.748762	104.145	-154.359
154	5	0.765456	104.731	-150.531
155	5	0.782366	105.343	-146.619
156	5	0.7995	105.982	-142.622
157	5	0.816874	106.649	-138.538
158	5	0.834498	107.346	-134.365
159	5	0.855996	108.078	-130.085
160	5	0.874218	108.842	-125.714
161	5	0.892733	109.639	-121.25
162	5	0.911562	110.47	-116.693
163	5	0.930718	111.337	-112.039
164	5	0.950222	112.24	-107.288
165	5	0.970094	113.181	-102.437
166	5	0.990356	114.161	-97.4856
167	5	1.01104	115.184	-92.4305
168	5	1.03215	116.249	-87.2697
169	5	1.05375	117.359	-82.001
170	5	1.07584	118.517	-76.6218
171	5	1.09847	119.723	-71.1294
172	5	1.12168	120.982	-65.521
173	5	1.1455	122.294	-59.7935

174	5	1.17	123.663	-53.9435
175	5	1.19522	125.091	-47.9674
176	5	1.22123	126.583	-41.8613
177	5	1.24809	128.14	-35.6208
178	5	1.27588	129.768	-29.2415
179	5	1.31058	131.486	-22.6886
180	5	1.34075	133.283	-15.9848
181	5	1.3722	135.166	-9.12377
182	5	1.40507	137.141	-2.0984
183	5	1.43953	139.213	5.09925
184	5	1.47579	141.391	12.4782
185	5	1.5141	143.683	20.0487
186	5	1.55477	146.101	27.8226
187	5	1.59819	148.655	35.8135
188	5	1.64485	151.36	44.0378
189	5	1.6954	154.235	52.5148
190	5	1.75069	157.3	61.2682
191	5	1.81191	160.583	70.3278
192	5	1.88079	164.12	79.7318
193	5	1.95996	167.962	89.5316
194	5	2.05375	172.179	99.8003
195	5	2.17009	176.889	110.651
196	5	2.32634	182.301	122.282
197	5	2.57583	188.936	135.162

Data Set Standard Deviation = 1.30698
Numerator = 18268.7
Denominator = 63256.4
W Statistic = 0.288803 = 18268.7 / 63256.4

5% Critical value of 0.976 exceeds 0.288803
Evidence of non-normality at 95% level of significance

1% Critical value of 0.967 exceeds 0.288803
Evidence of non-normality at 99% level of significance

Shapiro-Francia Test of Normality

Parameter: Beryllium

All Locations

Normality Test of Parameter Concentrations

Natural Logarithm Transformation
Non-Detects Replaced with 1/2 DL
Total Number of Measurements = 197

i	x(i)	m(i)	sum(m^2)	sum(mx)
1	-3.35241	-2.57583	6.63492	8.63525
2	-3.35241	-2.32634	12.0468	16.4341
3	-3.35241	-2.17009	16.7561	23.7091
4	-3.35241	-2.05375	20.974	30.5941
5	-3.35241	-1.95996	24.8154	37.1647
6	-3.35241	-1.88079	28.3528	43.4699
7	-3.35241	-1.81191	31.6358	49.5442
8	-3.35241	-1.75069	34.7007	55.4132
9	-2.65926	-1.6954	37.5751	59.9217
10	-2.65926	-1.64485	40.2806	64.2958
11	-2.52573	-1.59819	42.8348	68.3324
12	-1.89712	-1.55477	45.2522	71.2819
13	-1.89712	-1.5141	47.5447	74.1544
14	-1.66073	-1.47579	49.7226	76.6053
15	-1.23787	-1.43953	51.7949	78.3872
16	1.60944	-1.40507	53.7691	76.1259
17	1.60944	-1.3722	55.6521	73.9174
18	1.60944	-1.34075	57.4497	71.7595
19	1.60944	-1.31058	59.1673	69.6502
20	1.60944	-1.27588	60.7952	67.5968
21	1.60944	-1.24809	62.3529	65.5881
22	1.60944	-1.22123	63.8443	63.6226
23	1.60944	-1.19522	65.2728	61.6989
24	1.60944	-1.17	66.6417	59.8159
25	1.60944	-1.1455	67.9539	57.9723
26	1.60944	-1.12168	69.2121	56.167
27	1.60944	-1.09847	70.4187	54.3991
28	1.60944	-1.07584	71.5761	52.6676
29	1.60944	-1.05375	72.6865	50.9717
30	1.60944	-1.03215	73.7519	49.3105
31	1.60944	-1.01104	74.774	47.6833
32	1.60944	-0.990356	75.7549	46.0894
33	1.60944	-0.970094	76.6959	44.528
34	1.60944	-0.950222	77.5989	42.9987
35	1.60944	-0.930718	78.4651	41.5008
36	1.60944	-0.911562	79.296	40.0337
37	1.60944	-0.892733	80.093	38.5969
38	1.60944	-0.874218	80.8573	37.1899
39	1.60944	-0.855996	81.59	35.8122
40	1.60944	-0.834498	82.2864	34.4691
41	1.60944	-0.816874	82.9537	33.1544
42	1.60944	-0.7995	83.5929	31.8677
43	1.60944	-0.782366	84.205	30.6085
44	1.60944	-0.765456	84.7909	29.3766
45	1.60944	-0.748762	85.3515	28.1715
46	1.60944	-0.732275	85.8878	26.9929
47	1.60944	-0.715986	86.4004	25.8406
48	1.60944	-0.699883	86.8902	24.7142
49	1.60944	-0.683968	7.358	23.6134

50	1.60944	-0.668209	87.8045	22.5379
51	1.60944	-0.652622	88.2304	21.4876
52	1.60944	-0.637192	88.6365	20.4621
53	1.60944	-0.621911	89.0232	19.4611
54	1.60944	-0.606775	89.3914	18.4846
55	1.60944	-0.591776	89.7416	17.5322
56	1.60944	-0.576911	90.0744	16.6036
57	1.60944	-0.562179	0.3905	15.6989
58	1.60944	-0.547551	90.6903	14.8176
59	1.60944	-0.533048	90.9744	13.9597
60	1.60944	-0.515791	91.2405	13.1296
61	1.60944	-0.501527	91.492	12.3224
62	1.60944	-0.487364	91.7295	11.538
63	1.60944	-0.473299	91.9535	10.7763
64	1.60944	-0.459327	92.1645	10.037
65	1.60944	-0.445443	92.3629	9.3201
66	1.60944	-0.431644	92.5492	8.6254
67	1.60944	-0.417928	92.7239	7.95277
68	1.60944	-0.404299	2.8874	7.30209
69	1.60944	-0.390726	93.04	6.67324
70	1.60944	-0.377233	93.1823	6.06611
71	1.60944	-0.363809	93.3147	5.48058
72	1.60944	-0.350451	93.4375	4.91655
73	1.60944	-0.337155	93.5512	4.37392
74	1.60944	-0.323919	93.6561	3.85259
75	1.60944	-0.310738	93.7527	3.35248
76	1.60944	-0.297612	93.8412	2.87349
77	1.60944	-0.284535	93.9222	2.41555
78	1.60944	-0.271509	93.9959	1.97857
79	1.60944	-0.258527	94.0627	1.56249
80	1.60944	-0.243007	94.1218	1.17139
81	1.60944	-0.230118	94.1748	0.801026
82	1.60944	-0.217267	94.222	0.451348
83	1.60944	-0.204452	94.2638	0.122295
84	1.60944	-0.191671	94.3005	-0.186188
85	1.60944	-0.178929	4.3325	-0.474149
86	1.60944	-0.166199	94.3601	-0.741636
87	1.60944	-0.153505	94.3837	-0.988692
88	1.60944	-0.140835	94.4035	-1.21536
89	1.60944	-0.128189	94.42	-1.42167
90	1.60944	-0.115562	94.4333	-1.60766
91	1.60944	-0.102953	94.4439	-1.77335
92	1.60944	-0.0903606	94.4521	-1.91878
93	1.60944	-0.0777834	94.4581	-2.04397
94	1.60944	-0.0652187	94.4624	-2.14894
95	1.60944	-0.0526632	94.4652	-2.2337
96	1.60944	-0.0401167	94.4668	-2.29826
97	1.60944	-0.0275759	94.4675	-2.34264
98	1.60944	-0.0150408	94.4678	-2.36685
99	1.60944	0	94.4678	-2.36685
100	1.60944	0.0150408	94.468	-2.34264
101	1.60944	0.0275759	94.4687	-2.29826
102	1.60944	0.0401167	94.4703	-2.2337
103	1.60944	0.0526632	94.4731	-2.14894
104	1.60944	0.0652187	94.4774	-2.04397
105	1.60944	0.0777834	94.4834	-1.91878
106	1.60944	0.0903606	94.4916	-1.77335
107	1.60944	0.102953	94.5022	-1.60766
108	1.60944	0.115562	94.5155	-1.42167
109	1.60944	0.128189	94.532	-1.21536
110	1.60944	0.140835	94.5518	-0.988692
111	1.60944	0.153505	94.5754	-0.741636

112	1.60944	0.166199		94.603	-0.474149
113	1.60944	0.17892	94.635	-0.186188	
114	1.60944	0.191671		94.6717	0.122295
115	1.60944	0.204452		94.7135	0.451348
116	1.60944	0.217267		94.7608	0.801026
117	1.60944	0.230118		94.8137	1.17139
118	1.60944	0.243007		94.8728	1.56249
119	1.60944	0.258527		94.9396	1.97857
120	1.60944	0.271509		95.0133	2.41555
121	1.60944	0.284535		95.0943	2.87349
122	1.60944	0.297612		95.1828	3.35248
123	1.60944	0.310738		95.2794	3.85259
124	1.60944	0.323919		95.3843	4.37392
125	1.60944	0.337155		95.498	4.91655
126	1.60944	0.350451		95.6208	5.48058
127	1.60944	0.363809		95.7532	6.06611
128	1.60944	0.377233		95.8955	6.67324
129	1.60944	0.390726		96.0481	7.30209
130	1.60944	0.40429	96.2116	7.95277	
131	1.60944	0.417928		96.3863	8.6254
132	1.60944	0.431644		96.5726	9.3201
133	1.60944	0.445443		96.771	10.037
134	1.60944	0.459327		96.982	10.7763
135	1.60944	0.473299		97.206	11.538
136	1.60944	0.487364		97.4435	12.3224
137	1.60944	0.501527		97.695	13.1296
138	1.60944	0.515791		97.9611	13.9597
139	1.60944	0.533048		98.2452	14.8176
140	1.60944	0.547551		98.545	15.6989
141	1.60944	0.56217	98.8611	16.6036	
142	1.60944	0.576911		99.1939	17.5322
143	1.60944	0.591776		99.5441	18.4846
144	1.60944	0.606775		99.9123	19.4611
145	1.60944	0.621911		100.299	20.4621
146	1.60944	0.637192		100.705	21.4876
147	1.60944	0.652622		101.131	22.5379
148	1.60944	0.668209		101.577	23.6134
149	1.60944	0.68396	102.045	24.7142	
150	1.60944	0.699883		102.535	25.8406
151	1.60944	0.715986		103.048	26.9929
152	1.60944	0.732275		103.584	28.1715
153	1.60944	0.748762		104.145	29.3766
154	1.60944	0.765456		104.731	30.6085
155	1.60944	0.782366		105.343	31.8677
156	1.60944	0.7995	105.982	33.1544	
157	1.60944	0.816874		106.649	34.4691
158	1.60944	0.834498		107.346	35.8122
159	1.60944	0.855996		108.078	37.1899
160	1.60944	0.874218		108.842	38.5969
161	1.60944	0.892733		109.639	40.0337
162	1.60944	0.911562		110.47	41.5008
163	1.60944	0.930718		111.337	42.9987
164	1.60944	0.950222		112.24	44.528
165	1.60944	0.970094		113.181	46.0894
166	1.60944	0.990356		114.161	47.6833
167	1.60944	1.01104	115.184	49.3105	
168	1.60944	1.03215	116.249	50.9717	
169	1.60944	1.05375	117.359	52.6676	
170	1.60944	1.07584	118.517	54.3991	
171	1.60944	1.09847	119.723	56.167	
172	1.60944	1.12168	120.982	57.9723	
173	1.60944	1.1455	122.294	59.8159	

174	1.60944	1.17	123.663	61.6989
175	1.60944	1.19522	125.091	63.6226
176	1.60944	1.22123	126.583	65.5881
177	1.60944	1.24809	128.14	67.5968
178	1.60944	1.27588	129.768	69.6502
179	1.60944	1.31058	131.486	71.7595
180	1.60944	1.34075	133.283	73.9174
181	1.60944	1.3722	135.166	76.1259
182	1.60944	1.40507	137.141	78.3872
183	1.60944	1.43953	139.213	80.7041
184	1.60944	1.47579	141.391	83.0793
185	1.60944	1.5141	143.683	85.5161
186	1.60944	1.55477	146.101	88.0184
187	1.60944	1.59819	148.655	90.5906
188	1.60944	1.64485	151.36	93.2379
189	1.60944	1.6954	154.235	95.9665
190	1.60944	1.75069	157.3	98.7842
191	1.60944	1.81191	160.583	101.7
192	1.60944	1.88079	164.12	104.727
193	1.60944	1.95996	167.962	107.882
194	1.60944	2.05375	172.179	111.187
195	1.60944	2.17009	176.889	114.68
196	1.60944	2.32634	182.301	118.424
197	1.60944	2.57583	188.936	122.57

Data Set Standard Deviation = 1.17829
Numerator = 15023.3
Denominator = 51412.9
W Statistic = 0.292208 = 15023.3 / 51412.9

5% Critical value of 0.976 exceeds 0.292208
Evidence of non-normality at 95% level of significance

1% Critical value of 0.967 exceeds 0.292208
Evidence of non-normality at 99% level of significance

Non-Parametric Prediction Interval

Inter-Well Comparison

Parameter: Beryllium

Natural Logarithm Transformation
Non-Detects Replaced with 1/2 DL

Total Percent Non-Detects = 96.4467%
Number of comparisons = 16
Future Samples (k) = 8
Recent Dates = 1
Background Samples (n) = 17
Maximum Background Concentration = 1.60944
Confidence Level = 68%
False Positive Rate = 32%

Location	Date	Samples	Mean	Significant
LMW-6	11/14/2009	1	-1.89712	FALSE
LMW-7	6/11/2009	1	-1.66073	FALSE
LMW-16	6/11/2009	1	-3.35241	FALSE
LMW-8	6/11/2009	1	-3.35241	FALSE
LMW-9D	6/11/2009	1	-3.35241	FALSE
LMW-10	6/11/2009	1	-3.35241	FALSE
LMW-14R	6/11/2009	1	-3.35241	FALSE
LMW-3S	6/11/2009	1	-2.65926	FALSE
LMW-3	6/11/2009	1	-3.35241	FALSE
LMW-9	6/11/2009	1	-2.52573	FALSE
LMW-15R	6/11/2009	1	-1.23787	FALSE
LMW-9S	6/11/2009	1	-3.35241	FALSE
LMW-13	11/20/2008	1	1.60944	FALSE
LMW-12	11/20/2008	1	1.60944	FALSE
LMW-11	11/20/2008	1	1.60944	FALSE
MW-5	11/20/2008	1	1.60944	FALSE

Concentrations (ug/L)

Parameter: Chloroform

Natural Logarithm Transformation
Non-Detects Replaced with 1/2 DL
Total Measurements: 196
Total Non-Detect: 190
Percent Non-Detects: 96.9388%
Total Background Measurements: 16
There is 1 background location

Loc.	Meas.	ND	Date	Conc.	Original
LMW-4	16	15 (93.75%)	1/16/1998	4.35671	78
			3/16/1999	ND<-0.693147	ND<1
			9/23/1999	ND<-0.693147	ND<1
			3/14/2000	ND<-0.693147	ND<1
			9/23/2003	ND<-0.693147	ND<1
			3/10/2004	ND<-0.693147	ND<1
			10/12/2004	ND<-0.693147	ND<1
			4/1/2005	ND<-0.693147	ND<1
			10/26/2005	ND<-0.693147	ND<1
			6/19/2006	ND<-0.693147	ND<1
			11/18/2006	ND<-0.693147	ND<1
			6/2/2007	ND<-0.693147	ND<1
			11/15/2007	ND<-0.693147	ND<1
			5/20/2008	ND<-0.693147	ND<1
			11/20/2008	ND<-0.693147	ND<1
			6/11/2009	ND<-2.65926 U	ND<0.14 U

There are 16 compliance locations

Loc.	Meas.	ND	Date	Conc.	Original
LMW-3	19	17 (89.4737%)	11/19/1996	ND<-0.693147	ND<1
			3/24/1997	ND<-0.693147	ND<1
			1/16/1998	ND<-0.693147	ND<1
			3/16/1999	ND<-0.693147	ND<1
			9/23/1999	ND<-0.693147	ND<1
			3/14/2000	ND<-0.693147	ND<1
			9/23/2003	ND<-0.693147	ND<1
			3/10/2004	ND<-0.693147	ND<1
			10/12/2004	ND<-0.693147	ND<1
			4/1/2005	ND<-0.693147	ND<1
			10/26/2005	ND<-0.693147	ND<1
			6/19/2006	ND<-0.693147	ND<1
			11/18/2006	ND<-0.693147	ND<1
			6/2/2007	ND<-0.693147	ND<1
			11/15/2007	ND<-0.693147	ND<1
			5/20/2008	ND<0 J	ND<0 J
			11/20/2008	ND<0 J	ND<0 J
			6/11/2009	-1.10866 J	0.33 J
			11/14/2009	-0.693147 J	0.5 J
LMW-15R	9	9 (100%)	11/18/2006	ND<-0.693147	ND<1
			6/2/2007	ND<-0.693147	ND<1
			11/15/2007	ND<-0.693147	ND<1
			11/15/2007	ND<-0.693147	ND<1
			5/20/2008	ND<-0.693147	ND<1

			5/20/2008	ND<-0.693147	ND<1
			11/20/2008	ND<-0.693147	ND<1
			11/20/2008	ND<-0.693147	ND<1
			6/11/2009	ND<-2.65926 U	ND<0.14 U
LMW-14R	5	5 (100%)	6/2/2007	ND<-0.693147	ND<1
			11/15/2007	ND<-0.693147	ND<1
			5/20/2008	ND<-0.693147	ND<1
			11/20/2008	ND<-0.693147	ND<1
			6/11/2009	ND<-2.65926 U	ND<0.14 U
LMW-9	16	15 (93.75%)	1/16/1998	ND<-0.693147	ND<1
			3/16/1999	1.09861	3
			9/23/1999	ND<-0.693147	ND<1
			3/14/2000	ND<-0.693147	ND<1
			9/23/2003	ND<-0.693147	ND<1
			3/10/2004	ND<-0.693147	ND<1
			10/12/2004	ND<-0.693147	ND<1
			4/1/2005	ND<-0.693147	ND<1
			10/26/2005	ND<-0.693147	ND<1
			6/19/2006	ND<-0.693147	ND<1
			11/18/2006	ND<-0.693147	ND<1
			6/2/2007	ND<-0.693147	ND<1
			11/15/2007	ND<-0.693147	ND<1
			5/20/2008	ND<-0.693147	ND<1
			11/20/2008	ND<-0.693147	ND<1
			6/11/2009	ND<-2.65926 U	ND<0.14 U
LMW-16	6	6 (100%)	11/18/2006	ND<-0.693147	ND<1
			6/2/2007	ND<-0.693147	ND<1
			11/15/2007	ND<-0.693147	ND<1
			5/20/2008	ND<-0.693147	ND<1
			11/20/2008	ND<-0.693147	ND<1
			6/11/2009	ND<-2.65926 U	ND<0.14 U
LMW-8	16	16 (100%)	1/16/1998	ND<-0.693147	ND<1
			3/16/1999	ND<-0.693147	ND<1
			9/23/1999	ND<-0.693147	ND<1
			3/14/2000	ND<-0.693147	ND<1
			9/23/2003	ND<-0.693147	ND<1
			3/10/2004	ND<-0.693147	ND<1
			10/12/2004	ND<-0.693147	ND<1
			4/1/2005	ND<-0.693147	ND<1
			10/26/2005	ND<-0.693147	ND<1
			6/19/2006	ND<-0.693147	ND<1
			11/18/2006	ND<-0.693147	ND<1
			6/2/2007	ND<-0.693147	ND<1
			11/15/2007	ND<-0.693147	ND<1
			5/20/2008	ND<-0.693147	ND<1
			11/20/2008	ND<-0.693147	ND<1
			6/11/2009	ND<-2.65926 U	ND<0.14 U
LMW-9D	6	6 (100%)	11/18/2006	ND<-0.693147	ND<1
			6/2/2007	ND<-0.693147	ND<1
			11/15/2007	ND<-0.693147	ND<1
			5/20/2008	ND<-0.693147	ND<1
			11/20/2008	ND<-0.693147	ND<1
			6/11/2009	ND<-2.65926 U	ND<0.14 U
LMW-9S	6	6 (100%)	11/18/2006	ND<-0.693147	ND<1
			6/2/2007	ND<-0.693147	ND<1

			11/15/2007	ND<-0.693147	ND<1	
			5/20/2008	ND<-0.693147	ND<1	
			11/20/2008	ND<-0.693147	ND<1	
			6/11/2009	ND<-2.65926 U	ND<0.14 U	
LMW-10	13	13 (100%)	3/14/2000	ND<-0.693147	ND<1	
			9/23/2003	ND<-0.693147	ND<1	
			3/10/2004	ND<-0.693147	ND<1	
			10/12/2004	ND<-0.693147	ND<1	
			4/1/2005	ND<-0.693147	ND<1	
			10/26/2005	ND<-0.693147	ND<1	
			6/19/2006	ND<-0.693147	ND<1	
			11/18/2006	ND<-0.693147	ND<1	
			6/2/2007	ND<-0.693147	ND<1	
			11/15/2007	ND<-0.693147	ND<1	
			5/20/2008	ND<-0.693147	ND<1	
			11/20/2008	ND<-0.693147	ND<1	
			6/11/2009	ND<-2.65926 U	ND<0.14 U	
LMW-7	16	16 (100%)	1/16/1998	ND<-0.693147	ND<1	
			3/16/1999	ND<-0.693147	ND<1	
			9/23/1999	ND<-0.693147	ND<1	
			3/14/2000	ND<-0.693147	ND<1	
			9/23/2003	ND<-0.693147	ND<1	
			3/10/2004	ND<-0.693147	ND<1	
			10/12/2004	ND<-0.693147	ND<1	
			4/1/2005	ND<-0.693147	ND<1	
			10/26/2005	ND<-0.693147	ND<1	
			6/19/2006	ND<-0.693147	ND<1	
			11/18/2006	ND<-0.693147	ND<1	
			6/2/2007	ND<-0.693147	ND<1	
			11/15/2007	ND<-0.693147	ND<1	
			5/20/2008	ND<-0.693147	ND<1	
			11/20/2008	ND<-0.693147	ND<1	
			6/11/2009	ND<-2.65926 U	ND<0.14 U	
LMW-3S	6	6 (100%)	11/18/2006	ND<-0.693147	ND<1	
			6/2/2007	ND<-0.693147	ND<1	
			11/15/2007	ND<-0.693147	ND<1	
			5/20/2008	ND<-0.693147	ND<1	
			11/20/2008	ND<-0.693147	ND<1	
			6/11/2009	ND<-2.65926 U	ND<0.14 U	
LMW-6	16	15 (93.75%)	1/16/1998	1.79176	6	
			3/16/1999	ND<-0.693147	ND<1	
			9/23/1999	ND<-0.693147	ND<1	
			3/14/2000	ND<-0.693147	ND<1	
			9/23/2003	ND<-0.693147	ND<1	
			3/10/2004	ND<-0.693147	ND<1	
			10/12/2004	ND<-0.693147	ND<1	
			4/1/2005	ND<-0.693147	ND<1	
			10/26/2005	ND<-0.693147	ND<1	
			6/19/2006	ND<-0.693147	ND<1	
			11/18/2006	ND<-0.693147	ND<1	
			6/2/2007	ND<-0.693147	ND<1	
			11/15/2007	ND<-0.693147	ND<1	
			5/20/2008	ND<-0.693147	ND<1	
			11/20/2008	ND<-0.693147	ND<1	
			6/11/2009	ND<-2.65926 U	ND<0.14 U	
LMW-13	11	11 (100%)	3/14/2000	ND<-0.693147	ND<1	
			9/23/2003	ND<-0.693147	ND<1	

			3/10/2004	ND<-0.693147	ND<1	
			10/12/2004	ND<-0.693147	ND<1	
			4/1/2005	ND<-0.693147	ND<1	
			10/26/2005	ND<-0.693147	ND<1	
			6/19/2006	ND<-0.693147	ND<1	
			6/2/2007	ND<-0.693147	ND<1	
			11/15/2007	ND<-0.693147	ND<1	
			5/20/2008	ND<-0.693147	ND<1	
			11/20/2008	ND<-0.693147	ND<1	
MW-5	13	12 (92.3077%)	1/16/1998	2.07944	8	
			3/16/1999	ND<-0.693147	ND<1	
			9/23/1999	ND<-0.693147	ND<1	
			3/14/2000	ND<-0.693147	ND<1	
			9/23/2003	ND<-0.693147	ND<1	
			3/10/2004	ND<-0.693147	ND<1	
			10/12/2004	ND<-0.693147	ND<1	
			4/1/2005	ND<-0.693147	ND<1	
			10/26/2005	ND<-0.693147	ND<1	
			6/19/2006	ND<-0.693147	ND<1	
			11/15/2007	ND<-0.693147	ND<1	
			5/20/2008	ND<-0.693147	ND<1	
			11/20/2008	ND<-0.693147	ND<1	
LMW-11	11	11 (100%)	3/14/2000	ND<-0.693147	ND<1	
			9/23/2003	ND<-0.693147	ND<1	
			3/10/2004	ND<-0.693147	ND<1	
			10/12/2004	ND<-0.693147	ND<1	
			4/1/2005	ND<-0.693147	ND<1	
			10/26/2005	ND<-0.693147	ND<1	
			6/19/2006	ND<-0.693147	ND<1	
			6/2/2007	ND<-0.693147	ND<1	
			11/15/2007	ND<-0.693147	ND<1	
			5/20/2008	ND<-0.693147	ND<1	
			11/20/2008	ND<-0.693147	ND<1	
LMW-12	11	11 (100%)	3/14/2000	ND<-0.693147	ND<1	
			9/23/2003	ND<-0.693147	ND<1	
			3/10/2004	ND<-0.693147	ND<1	
			10/12/2004	ND<-0.693147	ND<1	
			4/1/2005	ND<-0.693147	ND<1	
			10/26/2005	ND<-0.693147	ND<1	
			6/19/2006	ND<-0.693147	ND<1	
			6/2/2007	ND<-0.693147	ND<1	
			11/15/2007	ND<-0.693147	ND<1	
			5/20/2008	ND<-0.693147	ND<1	
			11/20/2008	ND<-0.693147	ND<1	

There are 0 unused locations

Loc.	Meas.	ND	Date	Conc.	Original

Shapiro-Francia Test of Normality

Parameter: Chloroform

All Locations

Normality Test of Parameter Concentrations

Original Data (Not Transformed)
Non-Detects Replaced with 1/2 DL
Total Number of Measurements = 196

i	x(i)	m(i)	sum(m^2)	sum(mx)
1	0	-2.575836	3.63492	0
2	0	-2.326341	2.0468	0
3	0.07	-2.170091	6.7561	-0.151906
4	0.07	-2.053752	0.974	-0.295669
5	0.07	-1.959962	4.8154	-0.432866
6	0.07	-1.880792	8.3528	-0.564521
7	0.07	-1.811913	1.6358	-0.691355
8	0.07	-1.750693	4.7007	-0.813903
9	0.07	-1.6954	37.5751	-0.932581
10	0.07	-1.644854	0.2806	-1.04772
11	0.07	-1.598194	2.8348	-1.15959
12	0.07	-1.554774	5.2522	-1.26843
13	0.07	-1.5141	47.5447	-1.37442
14	0.07	-1.468384	9.7008	-1.4772
15	0.33	-1.4325	51.7529	-1.94993
16	0.5	-1.398385	3.7083	-2.64912
17	0.5	-1.365815	5.5738	-3.33202
18	0.5	-1.334625	7.355	-3.99933
19	0.5	-1.304695	9.0572	-4.65167
20	0.5	-1.275886	0.6851	-5.28961
21	0.5	-1.248096	2.2428	-5.91366
22	0.5	-1.221236	3.7342	-6.52427
23	0.5	-1.195226	5.1627	-7.12188
24	0.5	-1.17	66.5316	-7.70688
25	0.5	-1.1455	67.8438	-8.27963
26	0.5	-1.121686	9.102	-8.84047
27	0.5	-1.0939	70.2986	-9.38742
28	0.5	-1.071387	1.4464	-9.92311
29	0.5	-1.049397	2.5476	-10.4478
30	0.5	-1.027897	3.6042	-10.9617
31	0.5	-1.006877	4.618	-11.4652
32	0.5	-0.986272	75.5907	-11.9583
33	0.5	-0.966088	76.524	-12.4414
34	0.5	-0.946291	77.4195	-12.9145
35	0.5	-0.926859	78.2786	-13.3779
36	0.5	-0.907769	79.1026	-13.8318
37	0.5	-0.889006	79.893	-14.2763
38	0.5	-0.870558	0.6508	-14.7116
39	0.5	-0.852385	81.3774	-15.1378
40	0.5	-0.830953	82.0679	-15.5533
41	0.5	-0.813379	82.7294	-15.96
42	0.5	-0.796056	83.3632	-16.358
43	0.5	-0.778966	83.9699	-16.7475
44	0.5	-0.7621	84.5507	-17.1285
45	0.5	-0.745449	85.1064	-17.5012
46	0.5	-0.729003	85.6379	-17.8657
47	0.5	-0.712751	86.1459	-18.2221
48	0.5	-0.696684	86.6313	-18.5705
49	0.5	-0.680797	87.0947	-18.9109

50	0.5	-0.665079	87.5371	-19.2434
51	0.5	-0.649522	87.959	-19.5682
52	0.5	-0.634124	88.3611	-19.8852
53	0.5	-0.615839	88.7403	-20.1931
54	0.5	-0.6007689.1012	-20.4935	
55	0.5	-0.585815	89.4444	-20.7864
56	0.5	-0.570999	89.7705	-21.0719
57	0.5	-0.556308	90.0799	-21.3501
58	0.5	-0.541736	90.3734	-21.621
59	0.5	-0.5272890.6514	-21.8846	
60	0.5	-0.5129390.9145	-22.1411	
61	0.5	-0.498687	91.1632	-22.3904
62	0.5	-0.484544	91.398	-22.6327
63	0.5	-0.470498	91.6194	-22.8679
64	0.5	-0.456542	91.8278	-23.0962
65	0.5	-0.442676	92.0238	-23.3175
66	0.5	-0.426148	92.2054	-23.5306
67	0.5	-0.412463	92.3755	-23.7368
68	0.5	-0.398855	92.5346	-23.9363
69	0.5	-0.385321	92.683	-24.1289
70	0.5	-0.371856	92.8213	-24.3149
71	0.5	-0.358459	92.9498	-24.4941
72	0.5	-0.345126	93.0689	-24.6666
73	0.5	-0.331854	93.1791	-24.8326
74	0.5	-0.318639	93.2806	-24.9919
75	0.5	-0.305481	93.3739	-25.1446
76	0.5	-0.292375	93.4594	-25.2908
77	0.5	-0.279319	93.5374	-25.4305
78	0.5	-0.266311	93.6083	-25.5636
79	0.5	-0.250759	93.6712	-25.689
80	0.5	-0.237847	93.7278	-25.8079
81	0.5	-0.224974	93.7784	-25.9204
82	0.5	-0.212137	93.8234	-26.0265
83	0.5	-0.199336	93.8631	-26.1262
84	0.5	-0.186567	93.8979	-26.2194
85	0.5	-0.173829	93.9282	-26.3064
86	0.5	-0.161119	93.9541	-26.3869
87	0.5	-0.148434	93.9762	-26.4611
88	0.5	-0.135774	93.9946	-26.529
89	0.5	-0.123135	94.0097	-26.5906
90	0.5	-0.110516	94.022	-26.6458
91	0.5	-0.0979139	94.0315	-26.6948
92	0.5	-0.0828129	94.0384	-26.7362
93	0.5	-0.0702426	94.0433	-26.7713
94	0.5	-0.0576847	94.0467	-26.8002
95	0.5	-0.0451348	94.0487	-26.8227
96	0.5	-0.0325917	94.0498	-26.839
97	0.5	-0.0200544	94.0502	-26.8491
98	0.5	-0.00751925	94.0502	-26.8528
99	0.5	0.00751925	94.0503	-26.8491
100	0.5	0.0200544	94.0507	-26.839
101	0.5	0.0325917	94.0517	-26.8227
102	0.5	0.0451348	94.0538	-26.8002
103	0.5	0.0576847	94.0571	-26.7713
104	0.5	0.0702426	94.062	-26.7362
105	0.5	0.0828129	94.0689	-26.6948
106	0.5	0.0979139	94.0785	-26.6458
107	0.5	0.110516	94.0907	-26.5906
108	0.5	0.123135	94.1059	-26.529
109	0.5	0.135774	94.1243	-26.4611
110	0.5	0.148434	94.1463	-26.3869
111	0.5	0.161119	94.1723	-26.3064

112	0.5	0.173829		94.2025	-26.2194
113	0.5	0.186567		94.2373	-26.1262
114	0.5	0.199336		94.2771	-26.0265
115	0.5	0.212137		94.3221	-25.9204
116	0.5	0.224974		94.3727	-25.8079
117	0.5	0.237847		94.4292	-25.689
118	0.5	0.250759		94.4921	-25.5636
119	0.5	0.266311		94.563	-25.4305
120	0.5	0.279319		94.6411	-25.2908
121	0.5	0.292375		94.7265	-25.1446
122	0.5	0.305481		94.8199	-24.9919
123	0.5	0.318639		94.9214	-24.8326
124	0.5	0.331854		95.0315	-24.6666
125	0.5	0.345126		95.1506	-24.4941
126	0.5	0.358459		95.2791	-24.3149
127	0.5	0.371856		95.4174	-24.1289
128	0.5	0.385321		95.5659	-23.9363
129	0.5	0.398855		95.725	-23.7368
130	0.5	0.412463		95.8951	-23.5306
131	0.5	0.426148		96.0767	-23.3175
132	0.5	0.442676		96.2726	-23.0962
133	0.5	0.456542		96.4811	-22.8679
134	0.5	0.470498		96.7024	-22.6327
135	0.5	0.484544		96.9372	-22.3904
136	0.5	0.498687		97.1859	-22.1411
137	0.5	0.51293	97.449	-21.8846	
138	0.5	0.52728	97.727	-21.621	
139	0.5	0.541736		98.0205	-21.3501
140	0.5	0.556308		98.33	-21.0719
141	0.5	0.570999		98.656	-20.7864
142	0.5	0.585815		98.9992	-20.4935
143	0.5	0.60076	99.3601	-20.1931	
144	0.5	0.615839		99.7394	-19.8852
145	0.5	0.634124		100.141	-19.5682
146	0.5	0.649522		100.563	-19.2434
147	0.5	0.665079		101.006	-18.9109
148	0.5	0.680797		101.469	-18.5705
149	0.5	0.696684		101.955	-18.2221
150	0.5	0.712751		102.463	-17.8657
151	0.5	0.729003		102.994	-17.5012
152	0.5	0.745449		103.55	-17.1285
153	0.5	0.7621	104.131	-16.7475	
154	0.5	0.778966		104.737	-16.358
155	0.5	0.796056		105.371	-15.96
156	0.5	0.813379		106.033	-15.5533
157	0.5	0.830953		106.723	-15.1378
158	0.5	0.852385		107.45	-14.7116
159	0.5	0.87055	108.207	-14.2763	
160	0.5	0.889006		108.998	-13.8318
161	0.5	0.907769		109.822	-13.3779
162	0.5	0.926859		110.681	-12.9145
163	0.5	0.946291		111.576	-12.4414
164	0.5	0.966088		112.51	-11.9583
165	0.5	0.986272		113.482	-11.4652
166	0.5	1.00687	114.496	-10.9617	
167	0.5	1.02789	115.553	-10.4478	
168	0.5	1.04939	116.654	-9.92311	
169	0.5	1.07138	117.802	-9.38742	
170	0.5	1.0939	118.998	-8.84047	
171	0.5	1.12168	120.257	-8.27963	
172	0.5	1.1455	121.569	-7.70688	
173	0.5	1.17	122.938	-7.12188	

174	0.5	1.19522	124.366	-6.52427
175	0.5	1.22123	125.858	-5.91366
176	0.5	1.24809	127.415	-5.28961
177	0.5	1.27588	129.043	-4.65167
178	0.5	1.30469	130.745	-3.99933
179	0.5	1.33462	132.527	-3.33202
180	0.5	1.36581	134.392	-2.64912
181	0.5	1.39838	136.348	-1.94993
182	0.5	1.4325	138.4	-1.23368
183	0.5	1.46838	140.556	-0.499485
184	0.5	1.5141	142.848	0.257567
185	0.5	1.55477	145.266	1.03495
186	0.5	1.59819	147.82	1.83405
187	0.5	1.64485	150.525	2.65648
188	0.5	1.6954	153.4	3.50417
189	0.5	1.75069	156.465	4.37952
190	0.5	1.81191	159.748	5.28547
191	0.5	1.88079	163.285	6.22587
192	0.5	1.95996	167.126	7.20585
193	3	2.05375	171.344	13.3671
194	6	2.17009	176.054	26.3876
195	8	2.32634	181.466	44.9984
196	78	2.57583	188.1	245.913

Data Set Standard Deviation = 5.57624
Numerator = 60473.4
Denominator = 1.14053e+006
W Statistic = 0.0530221 = 60473.4 / 1.14053e+006

5% Critical value of 0.976 exceeds 0.0530221
Evidence of non-normality at 95% level of significance

1% Critical value of 0.967 exceeds 0.0530221
Evidence of non-normality at 99% level of significance

Shapiro-Francia Test of Normality

Parameter: Chloroform

All Locations

Normality Test of Parameter Concentrations

Natural Logarithm Transformation
Non-Detects Replaced with 1/2 DL
Total Number of Measurements = 196

i	x(i)	m(i)	sum(m^2)	sum(mx)	
1	-2.65926	-2.57583	6.63492	6.84981	
2	-2.65926	-2.32634	12.0468	13.0362	
3	-2.65926	-2.17009	16.7561	18.807	
4	-2.65926	-2.05375	20.974	24.2684	
5	-2.65926	-1.95996	24.8154	29.4805	
6	-2.65926	-1.88079	28.3528	34.482	
7	-2.65926	-1.81191	31.6358	39.3004	
8	-2.65926	-1.75069	34.7007	43.9559	
9	-2.65926	-1.6954	37.5751	48.4644	
10	-2.65926	-1.64485	40.2806	52.8385	
11	-2.65926	-1.59819	42.8348	57.0885	
12	-2.65926	-1.55477	45.2522	61.223	
13	-1.10866	-1.5141	47.5447	62.9017	
14	-0.693147	-1.46838	49.7008	63.9195	
15	-0.693147	-1.4325	51.7529	64.9124	
16	-0.693147	-1.39838	53.7083	65.8817	
17	-0.693147	-1.36581	55.5738	66.8284	
18	-0.693147	-1.33462	57.355	67.7535	
19	-0.693147	-1.30469	59.0572	68.6578	
20	-0.693147	-1.27588	60.6851	69.5422	
21	-0.693147	-1.24809	62.2428	70.4073	
22	-0.693147	-1.22123	63.7342	71.2538	
23	-0.693147	-1.19522	65.1627	72.0822	
24	-0.693147	-1.17	66.5316	72.8932	
25	-0.693147	-1.1455	67.8438	73.6872	
26	-0.693147	-1.12168	69.102	74.4647	
27	-0.693147	-1.0939	70.2986	75.223	
28	-0.693147	-1.07138	71.4464	75.9656	
29	-0.693147	-1.04939	72.5476	76.693	
30	-0.693147	-1.02789	73.6042	77.4054	
31	-0.693147	-1.00687	74.618	78.1033	
32	-0.693147	-0.986272		75.5907	78.787
33	-0.693147	-0.966088		76.524	79.4566
34	-0.693147	-0.946291		77.4195	80.1125
35	-0.693147	-0.926859		78.2786	80.755
36	-0.693147	-0.907769		79.1026	81.3842
37	-0.693147	-0.889006		79.893	82.0004
38	-0.693147	-0.870558	80.6508	82.6038	
39	-0.693147	-0.852385		81.3774	83.1947
40	-0.693147	-0.830953		82.0679	83.7706
41	-0.693147	-0.813379		82.7294	84.3344
42	-0.693147	-0.796056		83.3632	84.8862
43	-0.693147	-0.778966		83.9699	85.4261
44	-0.693147	-0.7621	84.5507	85.9544	
45	-0.693147	-0.745449		85.1064	86.4711
46	-0.693147	-0.729003		85.6379	86.9764
47	-0.693147	-0.712751		86.1459	87.4704
48	-0.693147	-0.696684		86.6313	87.9534
49	-0.693147	-0.680797		87.0947	88.4252

50	-0.693147	-0.665079	87.5371	88.8862
51	-0.693147	-0.649522	87.959	89.3365
52	-0.693147	-0.634124	88.3611	89.776
53	-0.693147	-0.615839	88.7403	90.2029
54	-0.693147	-0.6007689.1012	90.6193	
55	-0.693147	-0.585815	89.4444	91.0253
56	-0.693147	-0.570999	89.7705	91.4211
57	-0.693147	-0.556308	90.0799	91.8067
58	-0.693147	-0.541736	90.3734	92.1822
59	-0.693147	-0.5272890.6514	92.5477	
60	-0.693147	-0.5129390.9145	92.9032	
61	-0.693147	-0.498687	91.1632	93.2489
62	-0.693147	-0.484544	91.398	93.5848
63	-0.693147	-0.470498	91.6194	93.9109
64	-0.693147	-0.456542	91.8278	94.2273
65	-0.693147	-0.442676	92.0238	94.5342
66	-0.693147	-0.426148	92.2054	94.8296
67	-0.693147	-0.412463	92.3755	95.1155
68	-0.693147	-0.398855	92.5346	95.3919
69	-0.693147	-0.385321	92.683	95.659
70	-0.693147	-0.371856	92.8213	95.9168
71	-0.693147	-0.358459	92.9498	96.1652
72	-0.693147	-0.345126	93.0689	96.4045
73	-0.693147	-0.331854	93.1791	96.6345
74	-0.693147	-0.318639	93.2806	96.8553
75	-0.693147	-0.305481	93.3739	97.0671
76	-0.693147	-0.292375	93.4594	97.2697
77	-0.693147	-0.279319	93.5374	97.4634
78	-0.693147	-0.266311	93.6083	97.6479
79	-0.693147	-0.250759	93.6712	97.8218
80	-0.693147	-0.237847	93.7278	97.9866
81	-0.693147	-0.224974	93.7784	98.1426
82	-0.693147	-0.212137	93.8234	98.2896
83	-0.693147	-0.199336	93.8631	98.4278
84	-0.693147	-0.186567	93.8979	98.5571
85	-0.693147	-0.173829	93.9282	98.6776
86	-0.693147	-0.161119	93.9541	98.7893
87	-0.693147	-0.148434	93.9762	98.8921
88	-0.693147	-0.135774	93.9946	98.9863
89	-0.693147	-0.123135	94.0097	99.0716
90	-0.693147	-0.110516	94.022	99.1482
91	-0.693147	-0.0979139	94.0315	99.2161
92	-0.693147	-0.0828129	94.0384	99.2735
93	-0.693147	-0.0702426	94.0433	99.3222
94	-0.693147	-0.0576847	94.0467	99.3622
95	-0.693147	-0.0451348	94.0487	99.3934
96	-0.693147	-0.0325917	94.0498	99.416
97	-0.693147	-0.0200544	94.0502	99.4299
98	-0.693147	-0.00751925	94.0502	99.4351
99	-0.693147	0.00751925	94.0503	99.4299
100	-0.693147	0.0200544	94.0507	99.416
101	-0.693147	0.0325917	94.0517	99.3934
102	-0.693147	0.0451348	94.0538	99.3622
103	-0.693147	0.0576847	94.0571	99.3222
104	-0.693147	0.0702426	94.062	99.2735
105	-0.693147	0.0828129	94.0689	99.2161
106	-0.693147	0.0979139	94.0785	99.1482
107	-0.693147	0.110516	94.0907	99.0716
108	-0.693147	0.123135	94.1059	98.9863
109	-0.693147	0.135774	94.1243	98.8921
110	-0.693147	0.148434	94.1463	98.7893
111	-0.693147	0.161119	94.1723	98.6776

112	-0.693147	0.173829		94.2025	98.5571
113	-0.693147	0.186567		94.2373	98.4278
114	-0.693147	0.199336		94.2771	98.2896
115	-0.693147	0.212137		94.3221	98.1426
116	-0.693147	0.224974		94.3727	97.9866
117	-0.693147	0.237847		94.4292	97.8218
118	-0.693147	0.250759		94.4921	97.6479
119	-0.693147	0.266311		94.563	97.4634
120	-0.693147	0.279319		94.6411	97.2697
121	-0.693147	0.292375		94.7265	97.0671
122	-0.693147	0.305481		94.8199	96.8553
123	-0.693147	0.318639		94.9214	96.6345
124	-0.693147	0.331854		95.0315	96.4045
125	-0.693147	0.345126		95.1506	96.1652
126	-0.693147	0.358459		95.2791	95.9168
127	-0.693147	0.371856		95.4174	95.659
128	-0.693147	0.385321		95.5659	95.3919
129	-0.693147	0.398855		95.725	95.1155
130	-0.693147	0.412463		95.8951	94.8296
131	-0.693147	0.426148		96.0767	94.5342
132	-0.693147	0.442676		96.2726	94.2273
133	-0.693147	0.456542		96.4811	93.9109
134	-0.693147	0.470498		96.7024	93.5848
135	-0.693147	0.484544		96.9372	93.2489
136	-0.693147	0.498687		97.1859	92.9032
137	-0.693147	0.51293	97.449	92.5477	
138	-0.693147	0.52728	97.727	92.1822	
139	-0.693147	0.541736		98.0205	91.8067
140	-0.693147	0.556308		98.33	91.4211
141	-0.693147	0.570999		98.656	91.0253
142	-0.693147	0.585815		98.9992	90.6193
143	-0.693147	0.60076	99.3601	90.2029	
144	-0.693147	0.615839		99.7394	89.776
145	-0.693147	0.634124		100.141	89.3365
146	-0.693147	0.649522		100.563	88.8862
147	-0.693147	0.665079		101.006	88.4252
148	-0.693147	0.680797		101.469	87.9534
149	-0.693147	0.696684		101.955	87.4704
150	-0.693147	0.712751		102.463	86.9764
151	-0.693147	0.729003		102.994	86.4711
152	-0.693147	0.745449		103.55	85.9544
153	-0.693147	0.7621	104.131	85.4261	
154	-0.693147	0.778966		104.737	84.8862
155	-0.693147	0.796056		105.371	84.3344
156	-0.693147	0.813379		106.033	83.7706
157	-0.693147	0.830953		106.723	83.1947
158	-0.693147	0.852385		107.45	82.6038
159	-0.693147	0.87055	108.207	82.0004	
160	-0.693147	0.889006		108.998	81.3842
161	-0.693147	0.907769		109.822	80.755
162	-0.693147	0.926859		110.681	80.1125
163	-0.693147	0.946291		111.576	79.4566
164	-0.693147	0.966088		112.51	78.787
165	-0.693147	0.986272		113.482	78.1033
166	-0.693147	1.00687	114.496	77.4054	
167	-0.693147	1.02789	115.553	76.693	
168	-0.693147	1.04939	116.654	75.9656	
169	-0.693147	1.07138	117.802	75.223	
170	-0.693147	1.0939	118.998	74.4647	
171	-0.693147	1.12168	120.257	73.6872	
172	-0.693147	1.1455	121.569	72.8932	
173	-0.693147	1.17	122.938	72.0822	

174	-0.693147	1.19522	124.366	71.2538
175	-0.693147	1.22123	125.858	70.4073
176	-0.693147	1.24809	127.415	69.5422
177	-0.693147	1.27588	129.043	68.6578
178	-0.693147	1.30469	130.745	67.7535
179	-0.693147	1.33462	132.527	66.8284
180	-0.693147	1.36581	134.392	65.8817
181	-0.693147	1.39838	136.348	64.9124
182	-0.693147	1.4325	138.4	63.9195
183	-0.693147	1.46838	140.556	62.9017
184	-0.693147	1.5141	142.848	61.8522
185	-0.693147	1.55477	145.266	60.7745
186	-0.693147	1.59819	147.82	59.6667
187	-0.693147	1.64485	150.525	58.5266
188	-0.693147	1.6954	153.4	57.3514
189	-0.693147	1.75069	156.465	56.1379
190	-0.693147	1.81191	159.748	54.882
191	0	1.88079	163.285	54.882
192	0	1.95996	167.126	54.882
193	1.09861	2.05375	171.344	57.1383
194	1.79176	2.17009	176.054	61.0266
195	2.07944	2.32634	181.466	65.864
196	4.35671	2.57583	188.1	77.0862

Data Set Standard Deviation = 0.677587
Numerator = 5942.28
Denominator = 16840.5
W Statistic = 0.352857 = 5942.28 / 16840.5

5% Critical value of 0.976 exceeds 0.352857
Evidence of non-normality at 95% level of significance

1% Critical value of 0.967 exceeds 0.352857
Evidence of non-normality at 99% level of significance

Non-Parametric Prediction Interval

Inter-Well Comparison

Parameter: Chloroform

Natural Logarithm Transformation
Non-Detects Replaced with 1/2 DL

Total Percent Non-Detects = 96.9388%
Number of comparisons = 16
Future Samples (k) = 8
Recent Dates = 1
Background Samples (n) = 16
Maximum Background Concentration = 4.35671
Confidence Level = 66.7%
False Positive Rate = 33.3%

Location	Date	Samples	Mean	Significant
LMW-3	11/14/2009	1	-0.693147	FALSE
LMW-15R	6/11/2009	1	-2.65926	FALSE
LMW-14R	6/11/2009	1	-2.65926	FALSE
LMW-9	6/11/2009	1	-2.65926	FALSE
LMW-16	6/11/2009	1	-2.65926	FALSE
LMW-8	6/11/2009	1	-2.65926	FALSE
LMW-9D	6/11/2009	1	-2.65926	FALSE
LMW-9S	6/11/2009	1	-2.65926	FALSE
LMW-10	6/11/2009	1	-2.65926	FALSE
LMW-7	6/11/2009	1	-2.65926	FALSE
LMW-3S	6/11/2009	1	-2.65926	FALSE
LMW-6	6/11/2009	1	-2.65926	FALSE
LMW-13	11/20/2008	1	-0.693147	FALSE
MW-5	11/20/2008	1	-0.693147	FALSE
LMW-11	11/20/2008	1	-0.693147	FALSE
LMW-12	11/20/2008	1	-0.693147	FALSE

Concentrations (ug/L)

Parameter: Chromium

Natural Logarithm Transformation
Non-Detects Replaced with 1/2 DL
Total Measurements: 206
Total Non-Detect: 141
Percent Non-Detects: 68.4466%
Total Background Measurements: 17
There is 1 background location

Loc.	Meas.	ND	Date	Conc.	Original
LMW-4	17	10 (58.8235%)	1/16/1998	5.84354	345
			3/16/1999	ND<2.30259	ND<20
			9/23/1999	ND<2.30259	ND<20
			3/14/2000	4.46591	87
			9/23/2003	ND<2.30259	ND<20
			3/10/2004	4.78749	120
			10/12/2004	ND<2.30259	ND<20
			4/1/2005	2.30259 J	10 J
			10/26/2005	ND<2.30259	ND<20
			6/19/2006	ND<2.30259	ND<20
			11/18/2006	ND<2.30259	ND<20
			6/2/2007	3.04452	21
			11/15/2007	ND<2.30259	ND<20
			5/20/2008	ND<2.30259	ND<20
			11/20/2008	ND<2.30259	ND<20
			6/11/2009	-0.174353 J	0.84 J
			11/14/2009	0 J	1 J

There are 16 compliance locations

Loc.	Meas.	ND	Date	Conc.	Original
LMW-15R	10	8 (80%)	11/18/2006	ND<2.30259	ND<20
			6/2/2007	ND<2.30259	ND<20
			11/15/2007	ND<2.30259	ND<20
			11/15/2007	ND<2.30259	ND<20
			5/20/2008	ND<2.30259	ND<20
			5/20/2008	ND<2.30259	ND<20
			11/20/2008	ND<2.30259	ND<20
			11/20/2008	ND<2.30259	ND<20
			6/11/2009	1.70475	5.5
			11/14/2009	-1.83258 J	0.16 J
LMW-14R	6	4 (66.6667%)	6/2/2007	ND<2.30259	ND<20
			11/15/2007	ND<2.30259	ND<20
			5/20/2008	ND<2.30259	ND<20
			11/20/2008	ND<2.30259	ND<20
			6/11/2009	0.470004	1.6
			11/14/2009	-0.634878 J	0.53 J
LMW-16	7	4 (57.1429%)	11/18/2006	ND<2.30259	ND<20
			6/2/2007	2.99573	20
			11/15/2007	ND<2.30259	ND<20
			5/20/2008	ND<2.30259	ND<20
			11/20/2008	ND<2.30259	ND<20
			6/11/2009	-0.18633 J	0.83 J

			11/14/2009	-0.634878 J	0.53 J	
LMW-9S	7	4 (57.1429%)	11/18/2006	ND<2.30259	ND<20	
			6/2/2007	1.60944	5	
			11/15/2007	ND<2.30259	ND<20	
			5/20/2008	ND<2.30259	ND<20	
			11/20/2008	ND<2.30259	ND<20	
			6/11/2009	0	1	
			11/14/2009	-0.820981 J	0.44 J	
LMW-10	14	9 (64.2857%)	3/14/2000	3.3322	28	
			9/23/2003	ND<2.30259	ND<20	
			3/10/2004	3.58352	36	
			10/12/2004	ND<2.30259	ND<20	
			4/1/2005	ND<2.30259	ND<20	
			10/26/2005	ND<2.30259	ND<20	
			6/19/2006	ND<2.30259	ND<20	
			11/18/2006	ND<2.30259	ND<20	
			6/2/2007	0.693147	2	
			11/15/2007	ND<2.30259	ND<20	
			5/20/2008	ND<2.30259	ND<20	
			11/20/2008	ND<2.30259	ND<20	
			6/11/2009	-1.02165 J	0.36 J	
			11/14/2009	-1.34707 J	0.26 J	
LMW-9	17	9 (52.9412%)	1/16/1998	3.13549	23	
			3/16/1999	ND<2.30259	ND<20	
			9/23/1999	3.09104	22	
			3/14/2000	2.83321 J	17 J	
			9/23/2003	ND<2.30259	ND<20	
			3/10/2004	2.94444 J	19 J	
			10/12/2004	ND<2.30259	ND<20	
			4/1/2005	ND<2.30259	ND<20	
			10/26/2005	ND<2.30259	ND<20	
			6/19/2006	2.30259 J	10 J	
			11/18/2006	ND<2.30259	ND<20	
			6/2/2007	1.94591	7	
			11/15/2007	ND<2.30259	ND<20	
			5/20/2008	ND<2.30259	ND<20	
			11/20/2008	ND<2.30259	ND<20	
			6/11/2009	0.182322	1.2	
			11/14/2009	-0.478036 J	0.62 J	
LMW-8	17	12 (70.5882%)	1/16/1998	ND<2.30259	ND<20	
			3/16/1999	1.79176 J	6 J	
			9/23/1999	2.56495 J	13 J	
			3/14/2000	3.04452	21	
			9/23/2003	ND<2.30259	ND<20	
			3/10/2004	ND<2.30259	ND<20	
			10/12/2004	ND<2.30259	ND<20	
			4/1/2005	ND<2.30259	ND<20	
			10/26/2005	ND<2.30259	ND<20	
			6/19/2006	ND<2.30259	ND<20	
			11/18/2006	ND<2.30259	ND<20	
			6/2/2007	ND<2.30259	ND<20	
			11/15/2007	ND<2.30259	ND<20	
			5/20/2008	ND<2.30259	ND<20	
			11/20/2008	ND<2.30259	ND<20	
			6/11/2009	-1.27297 J	0.28 J	
			11/14/2009	-0.371064 J	0.69 J	
LMW-3	19	17 (89.4737%)	11/19/1996	ND<2.30259	ND<20	

			3/24/1997	ND<2.30259	ND<20	
			1/16/1998	ND<2.30259	ND<20	
			3/16/1999	ND<2.30259	ND<20	
			9/23/1999	ND<2.30259	ND<20	
			3/14/2000	ND<2.30259	ND<20	
			9/23/2003	ND<2.30259	ND<20	
			3/10/2004	ND<2.30259	ND<20	
			10/12/2004	ND<2.30259	ND<20	
			4/1/2005	ND<2.30259	ND<20	
			10/26/2005	ND<2.30259	ND<20	
			6/19/2006	ND<2.30259	ND<20	
			11/18/2006	ND<2.30259	ND<20	
			6/2/2007	ND<2.30259	ND<20	
			11/15/2007	ND<2.30259	ND<20	
			5/20/2008	ND<2.30259	ND<20	
			11/20/2008	ND<2.30259	ND<20	
			6/11/2009	-1.13943 J	0.32 J	
			11/14/2009	0.0953102 J	1.1 J	
LMW-3S	7	4 (57.1429%)	11/18/2006	ND<2.30259	ND<20	
			6/2/2007	2.3979	11	
			11/15/2007	ND<2.30259	ND<20	
			5/20/2008	ND<2.30259	ND<20	
			11/20/2008	ND<2.30259	ND<20	
			6/11/2009	0.530628	1.7	
			11/14/2009	-0.616186 J	0.54 J	
LMW-9D	7	3 (42.8571%)	11/18/2006	1.79176 J	6 J	
			6/2/2007	ND<2.30259	ND<20	
			11/15/2007	ND<2.30259	ND<20	
			5/20/2008	1.09861 J	3 J	
			11/20/2008	ND<2.30259	ND<20	
			6/11/2009	0	1	
			11/14/2009	0.0953102	1.1	
LMW-6	16	10 (62.5%)	1/16/1998	2.56495 J	13 J	
			3/16/1999	ND<2.30259	ND<20	
			9/23/1999	1.79176 J	6 J	
			3/14/2000	3.52636	34	
			9/23/2003	ND<2.30259	ND<20	
			3/10/2004	ND<2.30259	ND<20	
			10/12/2004	ND<2.30259	ND<20	
			4/1/2005	ND<2.30259	ND<20	
			10/26/2005	ND<2.30259	ND<20	
			6/19/2006	ND<2.30259	ND<20	
			11/18/2006	ND<2.30259	ND<20	
			6/2/2007	1.38629 J	4 J	
			11/15/2007	ND<2.30259	ND<20	
			5/20/2008	1.94591 J	7 J	
			11/20/2008	ND<2.30259	ND<20	
			6/11/2009	-0.733969 J	0.48 J	
LMW-7	16	7 (43.75%)	1/16/1998	2.30259 J	10 J	
			3/16/1999	ND<2.30259	ND<20	
			9/23/1999	1.60944 J	5 J	
			3/14/2000	3.52636	34	
			9/23/2003	ND<2.30259	ND<20	
			3/10/2004	ND<2.30259	ND<20	
			10/12/2004	ND<2.30259	ND<20	
			4/1/2005	2.94444 J	19 J	
			10/26/2005	3.13549	23	
			6/19/2006	ND<2.30259	ND<20	

			11/18/2006	1.60944 J	5 J
			6/2/2007	3.17805	24
			11/15/2007	ND<2.30259	ND<20
			5/20/2008	1.94591 J	7 J
			11/20/2008	ND<2.30259	ND<20
			6/11/2009	1.75786	5.8
MW-5	13	11 (84.6154%)	1/16/1998	ND<2.30259	ND<20
			3/16/1999	ND<2.30259	ND<20
			9/23/1999	ND<2.30259	ND<20
			3/14/2000	4.36945	79
			9/23/2003	ND<2.30259	ND<20
			3/10/2004	4.43082	84
			10/12/2004	ND<2.30259	ND<20
			4/1/2005	ND<2.30259	ND<20
			10/26/2005	ND<2.30259	ND<20
			6/19/2006	ND<2.30259	ND<20
			11/15/2007	ND<2.30259	ND<20
			5/20/2008	ND<2.30259	ND<20
			11/20/2008	ND<2.30259	ND<20
LMW-13	11	10 (90.9091%)	3/14/2000	3.29584	27
			9/23/2003	ND<2.30259	ND<20
			3/10/2004	ND<2.30259	ND<20
			10/12/2004	ND<2.30259	ND<20
			4/1/2005	ND<2.30259	ND<20
			10/26/2005	ND<2.30259	ND<20
			6/19/2006	ND<2.30259	ND<20
			6/2/2007	ND<2.30259	ND<20
			11/15/2007	ND<2.30259	ND<20
			5/20/2008	ND<2.30259	ND<20
			11/20/2008	ND<2.30259	ND<20
LMW-12	11	10 (90.9091%)	3/14/2000	4.5326	93
			9/23/2003	ND<2.30259	ND<20
			3/10/2004	ND<2.30259	ND<20
			10/12/2004	ND<2.30259	ND<20
			4/1/2005	ND<2.30259	ND<20
			10/26/2005	ND<2.30259	ND<20
			6/19/2006	ND<2.30259	ND<20
			6/2/2007	ND<2.30259	ND<20
			11/15/2007	ND<2.30259	ND<20
			5/20/2008	ND<2.30259	ND<20
			11/20/2008	ND<2.30259	ND<20
LMW-11	11	9 (81.8182%)	3/14/2000	2.99573	20
			9/23/2003	ND<2.30259	ND<20
			3/10/2004	3.68888	40
			10/12/2004	ND<2.30259	ND<20
			4/1/2005	ND<2.30259	ND<20
			10/26/2005	ND<2.30259	ND<20
			6/19/2006	ND<2.30259	ND<20
			6/2/2007	ND<2.30259	ND<20
			11/15/2007	ND<2.30259	ND<20
			5/20/2008	ND<2.30259	ND<20
			11/20/2008	ND<2.30259	ND<20

There are 0 unused locations

Loc.	Meas.	ND	Date	Conc.	Original

Shapiro-Francia Test of Normality

Parameter: Chromium

All Locations

Normality Test of Parameter Concentrations

Original Data (Not Transformed)
Non-Detects Replaced with 1/2 DL
Total Number of Measurements = 206

i	x(i)	m(i)	sum(m^2)	sum(mx)
1	0.16	-2.65209	7.03356	-0.424334
2	0.26	-2.36561	12.6297	-1.03939
3	0.28	-2.19728	17.4578	-1.65463
4	0.32	-2.07485	21.7627	-2.31858
5	0.36	-1.97737	25.6727	-3.03044
6	0.44	-1.91103	29.3248	-3.87129
7	0.48	-1.83843	32.7046	-4.75373
8	0.53	-1.77438	35.853	-5.69416
9	0.53	-1.71688	38.8007	-6.6041
10	0.54	-1.66456	41.5715	-7.50297
11	0.62	-1.61644	44.1843	-8.50516
12	0.69	-1.58047	46.6822	-9.59568
13	0.83	-1.5382	49.0483	-10.8724
14	0.84	-1.49852	51.2938	-12.1311
15	1	-1.46106	53.4285	-13.5922
16	1	-1.42554	55.4607	-15.0177
17	1	-1.39175	57.3976	-16.4095
18	1.1	-1.36581	59.2631	-17.9119
19	1.1	-1.33462	61.0443	-19.38
20	1.2	-1.30469	62.7465	-20.9456
21	1.6	-1.27588	64.3743	-22.987
22	1.7	-1.24809	65.9321	-25.1087
23	2	-1.22123	67.4235	-27.5512
24	3	-1.20036	68.8643	-31.1523
25	4	-1.17499	70.2449	-35.8522
26	5	-1.15035	71.5682	-41.604
27	5	-1.12639	72.837	-47.2359
28	5	-1.10306	74.0537	-52.7512
29	5.5	-1.08032	75.2208	-58.693
30	5.8	-1.06252	76.3498	-64.8556
31	6	-1.04073	77.4329	-71.1
32	6	-1.01943	78.4721	-77.2166
33	6	-0.998575	79.4693	-83.208
34	7	-0.97815	80.4261	-90.0551
35	7	-0.958125	81.3441	-96.7619
36	7	-0.942375	82.2321	-103.359
37	10	-0.923014	83.0841	-112.589
38	10	-0.903992	83.9013	-121.629
39	10	-0.885291	84.685	-130.482
40	10	-0.866894	85.4365	-139.15
41	10	-0.848786	86.157	-147.638
42	10	-0.834498	86.8534	-155.983
43	10	-0.816874	87.5206	-164.152
44	10	-0.7995	88.1598	-172.147
45	10	-0.782366	88.7719	-179.971
46	10	-0.765456	89.3579	-187.625
47	10	-0.748762	89.9185	-195.113
48	10	-0.735557	90.4595	-202.468
49	10	-0.719228	90.9768	-209.661

50	10	-0.703089	91.4712	-216.692
51	10	-0.687131	91.9433	-223.563
52	10	-0.671346	92.394	-230.276
53	10	-0.655726	92.824	-236.834
54	10	-0.643345	93.2379	-243.267
55	10	-0.628006	93.6323	-249.547
56	10	-0.612813	94.0078	-255.675
57	10	-0.597761	94.3651	-261.653
58	10	-0.582841	94.7048	-267.481
59	10	-0.568052	95.0275	-273.162
60	10	-0.556308	95.337	-278.725
61	10	-0.541736	95.6305	-284.142
62	10	-0.527289	95.9085	-289.415
63	10	-0.512939	96.1716	-294.544
64	10	-0.498687	96.4203	-299.531
65	10	-0.484544	96.6551	-304.377
66	10	-0.473299	96.8791	-309.11
67	10	-0.459327	97.0901	-313.703
68	10	-0.445443	97.2885	-318.157
69	10	-0.431644	97.4748	-322.474
70	10	-0.417928	97.6495	-326.653
71	10	-0.407019	97.8151	-330.723
72	10	-0.393433	97.9699	-334.658
73	10	-0.379927	98.1143	-338.457
74	10	-0.366499	98.2486	-342.122
75	10	-0.353118	98.3733	-345.653
76	10	-0.339819	98.4887	-349.051
77	10	-0.329206	98.5971	-352.343
78	10	-0.316004	98.697	-355.503
79	10	-0.302855	98.7887	-358.532
80	10	-0.289769	98.8727	-361.429
81	10	-0.276714	98.9492	-364.196
82	10	-0.263715	99.0188	-366.834
83	10	-0.253347	99.083	-369.367
84	10	-0.240426	99.1408	-371.771
85	10	-0.227545	99.1925	-374.047
86	10	-0.214702	99.2386	-376.194
87	10	-0.201894	99.2794	-378.213
88	10	-0.189118	99.3152	-380.104
89	10	-0.178929	99.3472	-381.893
90	10	-0.166199	99.3748	-383.555
91	10	-0.153505	99.3984	-385.09
92	10	-0.140835	99.4182	-386.498
93	10	-0.128189	99.4346	-387.78
94	10	-0.115562	99.448	-388.936
95	10	-0.105474	99.4591	-389.991
96	10	-0.0928787	99.4677	-390.919
97	10	-0.0802981	99.4742	-391.722
98	10	-0.0677301	99.4788	-392.4
99	10	-0.0551734	99.4818	-392.951
100	10	-0.0426257	99.4836	-393.378
101	10	-0.0325917	99.4847	-393.704
102	10	-0.0200544	99.4851	-393.904
103	10	-0.00751925	99.4852	-393.979
104	10	0.00751925	99.4852	-393.904
105	10	0.0200544	99.4856	-393.704
106	10	0.0325917	99.4867	-393.378
107	10	0.0426257	99.4885	-392.951
108	10	0.0551734	99.4915	-392.4
109	10	0.0677301	99.4961	-391.722
110	10	0.0802981	99.5026	-390.919
111	10	0.0928787	99.5112	-389.991

112	10	0.105474	99.5223	-388.936
113	10	0.115562	99.5357	-387.78
114	10	0.128189	99.5521	-386.498
115	10	0.140835	99.5719	-385.09
116	10	0.153505	99.5955	-383.555
117	10	0.166199	99.6231	-381.893
118	10	0.17892	99.6551	-380.104
119	10	0.189118	99.6909	-378.213
120	10	0.201894	99.7317	-376.194
121	10	0.214702	99.7778	-374.047
122	10	0.227545	99.8295	-371.771
123	10	0.240426	99.8873	-369.367
124	10	0.253347	99.9515	-366.834
125	10	0.263715	100.021	-364.196
126	10	0.276714	100.098	-361.429
127	10	0.28976	100.182	-358.532
128	10	0.302855	100.273	-355.503
129	10	0.316004	100.373	-352.343
130	10	0.329206	100.482	-349.051
131	10	0.33981	100.597	-345.653
132	10	0.353118	100.722	-342.122
133	10	0.36649	100.856	-338.457
134	10	0.379927	101	-334.658
135	10	0.393433	101.155	-330.723
136	10	0.40701	101.321	-326.653
137	10	0.417928	101.495	-322.474
138	10	0.431644	101.682	-318.157
139	10	0.445443	101.88	-313.703
140	10	0.459327	102.091	-309.11
141	10	0.473299	102.315	-304.377
142	10	0.484544	102.55	-299.531
143	10	0.498687	102.799	-294.544
144	10	0.51293	103.062	-289.415
145	10	0.52728	103.34	-284.142
146	10	0.541736	103.633	-278.725
147	10	0.556308	103.943	-273.162
148	10	0.568052	104.265	-267.481
149	10	0.582841	104.605	-261.653
150	10	0.597761	104.962	-255.675
151	10	0.612813	105.338	-249.547
152	10	0.628006	105.732	-243.267
153	10	0.643345	106.146	-236.834
154	10	0.655726	106.576	-230.276
155	10	0.671346	107.027	-223.563
156	10	0.687131	107.499	-216.692
157	10	0.703089	107.993	-209.661
158	10	0.719228	108.511	-202.468
159	10	0.735557	109.052	-195.113
160	10	0.748762	109.612	-187.625
161	10	0.765456	110.198	-179.971
162	10	0.782366	110.81	-172.147
163	10	0.7995	111.45	-164.152
164	10	0.816874	112.117	-155.983
165	10	0.834498	112.813	-147.638
166	10	0.848786	113.534	-139.15
167	10	0.866894	114.285	-130.482
168	10	0.885291	115.069	-121.629
169	10	0.903992	115.886	-112.589
170	10	0.923014	116.738	-103.359
171	10	0.942375	117.626	-93.9348
172	10	0.958125	118.544	-84.3536
173	10	0.97815	119.501	-74.5721

174	10	0.998575	120.498	-64.5863
175	10	1.01943	121.537	-54.392
176	10	1.04073	122.621	-43.9847
177	10	1.06252	123.749	-33.3595
178	10	1.08032	124.917	-22.5563
179	10	1.10306	126.133	-11.5257
180	10	1.12639	127.402	-0.26178
181	11	1.15035	128.725	12.3921
182	13	1.17499	130.106	27.6669
183	13	1.20036	131.547	43.2716
184	17	1.22123	133.038	64.0325
185	19	1.24809	134.596	87.7461
186	19	1.27588	136.224	111.988
187	20	1.30469	137.926	138.081
188	20	1.33462	139.707	164.774
189	21	1.36581	141.573	193.456
190	21	1.39175	143.51	222.683
191	22	1.42554	145.542	254.045
192	23	1.46106	147.676	287.649
193	23	1.49852	149.922	322.115
194	24	1.5382	152.288	359.032
195	27	1.58047	154.786	401.704
196	28	1.61644	157.399	446.964
197	34	1.66456	160.17	503.559
198	34	1.71688	163.117	561.933
199	36	1.77438	166.266	625.811
200	40	1.83843	169.646	699.348
201	79	1.91103	173.298	850.32
202	84	1.97737	177.208	1016.42
203	87	2.07485	181.513	1196.93
204	93	2.19728	186.341	1401.28
205	120	2.36561	191.937	1685.15
206	345	2.65209	198.97	2600.12

Data Set Standard Deviation = 27.1945
Numerator = 6.76063e+006
Denominator = 3.01652e+007
W Statistic = 0.224121 = 6.76063e+006 / 3.01652e+007

5% Critical value of 0.976 exceeds 0.224121
Evidence of non-normality at 95% level of significance

1% Critical value of 0.967 exceeds 0.224121
Evidence of non-normality at 99% level of significance

Shapiro-Francia Test of Normality

Parameter: Chromium

All Locations

Normality Test of Parameter Concentrations

Natural Logarithm Transformation
Non-Detects Replaced with 1/2 DL
Total Number of Measurements = 206

i	x(i)	m(i)	sum(m^2)	sum(mx)
1	-1.83258	-2.65209	7.03356	4.86016
2	-1.34707	-2.36561	12.6297	8.04682
3	-1.27297	-2.19728	17.4578	10.8439
4	-1.13943	-2.07485	21.7627	13.208
5	-1.02165	-1.97737	25.6727	15.2282
6	-0.820981	-1.91103	29.3248	16.7971
7	-0.733969	-1.83843	32.7046	18.1465
8	-0.634878	-1.77438	35.853	19.273
9	-0.634878	-1.71688	38.8007	20.363
10	-0.616186	-1.66456	41.5715	21.3887
11	-0.478036	-1.61644	44.1843	22.1614
12	-0.371064	-1.58047	46.6822	22.7479
13	-0.18633	-1.5382	49.0483	23.0345
14	-0.174353	-1.49852	51.2938	23.2957
15	0	-1.46106	53.4285	23.2957
16	0	-1.42554	55.4607	23.2957
17	0	-1.39175	57.3976	23.2957
18	0.0953102	-1.36581	59.2631	23.1656
19	0.0953102	-1.33462	61.0443	23.0384
20	0.182322	-1.30469	62.7465	22.8005
21	0.470004	-1.27588	64.3743	22.2008
22	0.530628	-1.24809	65.9321	21.5386
23	0.693147	-1.22123	67.4235	20.6921
24	1.09861	-1.20036	68.8643	19.3733
25	1.38629	-1.17499	70.2449	17.7445
26	1.60944	-1.15035	71.5682	15.893
27	1.60944	-1.12639	72.837	14.0802
28	1.60944	-1.10306	74.0537	12.3049
29	1.70475	-1.08032	75.2208	10.4632
30	1.75786	-1.06252	76.3498	8.59545
31	1.79176	-1.04073	77.4329	6.7307
32	1.79176	-1.01943	78.4721	4.90413
33	1.79176	-0.998575	79.4693	3.11493
34	1.94591	-0.97815	80.4261	1.21154
35	1.94591	-0.958125	81.3441	-0.65289
36	1.94591	-0.942375	82.2321	-2.48667
37	2.30259	-0.923014	83.0841	-4.61199
38	2.30259	-0.903992	83.9013	-6.69351
39	2.30259	-0.885291	84.685	-8.73196
40	2.30259	-0.866894	85.4365	-10.7281
41	2.30259	-0.848786	86.157	-12.6825
42	2.30259	-0.834498	86.8534	-14.604
43	2.30259	-0.816874	87.5206	-16.4849
44	2.30259	-0.7995	88.1598	-18.3258
45	2.30259	-0.782366	88.7719	-20.1273
46	2.30259	-0.765456	89.3579	-21.8898
47	2.30259	-0.748762	89.9185	-23.6139
48	2.30259	-0.735557	90.4595	-25.3076
49	2.30259	-0.719228	90.9768	-26.9637

50	2.30259	-0.703089	91.4712	-28.5826
51	2.30259	-0.687131	91.9433	-30.1648
52	2.30259	-0.671346	92.394	-31.7106
53	2.30259	-0.655726	92.824	-33.2204
54	2.30259	-0.643345	93.2379	-34.7018
55	2.30259	-0.628006	93.6323	-36.1478
56	2.30259	-0.612813	94.0078	-37.5589
57	2.30259	-0.597761	94.3651	-38.9353
58	2.30259	-0.582841	94.7048	-40.2773
59	2.30259	-0.568052	95.0275	-41.5853
60	2.30259	-0.556308	95.337	-42.8663
61	2.30259	-0.541736	95.6305	-44.1137
62	2.30259	-0.527289	5.9085	-45.3278
63	2.30259	-0.512939	6.1716	-46.5088
64	2.30259	-0.498687	96.4203	-47.6571
65	2.30259	-0.484544	96.6551	-48.7728
66	2.30259	-0.473299	96.8791	-49.8626
67	2.30259	-0.459327	97.0901	-50.9203
68	2.30259	-0.445443	97.2885	-51.9459
69	2.30259	-0.431644	97.4748	-52.9398
70	2.30259	-0.417928	97.6495	-53.9021
71	2.30259	-0.407019	7.8151	-54.8393
72	2.30259	-0.393433	97.9699	-55.7452
73	2.30259	-0.379927	98.1143	-56.62
74	2.30259	-0.366499	8.2486	-57.4639
75	2.30259	-0.353118	98.3733	-58.277
76	2.30259	-0.339819	8.4887	-59.0594
77	2.30259	-0.329206	98.5971	-59.8175
78	2.30259	-0.316004	98.697	-60.5451
79	2.30259	-0.302855	98.7887	-61.2424
80	2.30259	-0.289769	8.8727	-61.9096
81	2.30259	-0.276714	98.9492	-62.5468
82	2.30259	-0.263715	99.0188	-63.154
83	2.30259	-0.253347	99.083	-63.7374
84	2.30259	-0.240426	99.1408	-64.291
85	2.30259	-0.227545	99.1925	-64.8149
86	2.30259	-0.214702	99.2386	-65.3093
87	2.30259	-0.201894	99.2794	-65.7742
88	2.30259	-0.189118	99.3152	-66.2096
89	2.30259	-0.178929	9.3472	-66.6216
90	2.30259	-0.166199	99.3748	-67.0043
91	2.30259	-0.153505	99.3984	-67.3577
92	2.30259	-0.140835	99.4182	-67.682
93	2.30259	-0.128189	99.4346	-67.9772
94	2.30259	-0.115562	99.448	-68.2433
95	2.30259	-0.105474	99.4591	-68.4862
96	2.30259	-0.0928787	99.4677	-68.7
97	2.30259	-0.0802981	99.4742	-68.8849
98	2.30259	-0.0677301	99.4788	-69.0409
99	2.30259	-0.0551734	99.4818	-69.1679
100	2.30259	-0.0426257	99.4836	-69.266
101	2.30259	-0.0325917	99.4847	-69.3411
102	2.30259	-0.0200544	99.4851	-69.3873
103	2.30259	-0.00751925	99.4852	-69.4046
104	2.30259	0.00751925	99.4852	-69.3873
105	2.30259	0.0200544	99.4856	-69.3411
106	2.30259	0.0325917	99.4867	-69.266
107	2.30259	0.0426257	99.4885	-69.1679
108	2.30259	0.0551734	99.4915	-69.0409
109	2.30259	0.0677301	99.4961	-68.8849
110	2.30259	0.0802981	99.5026	-68.7
111	2.30259	0.0928787	99.5112	-68.4862

112	2.30259	0.105474	99.5223	-68.2433
113	2.30259	0.115562	99.5357	-67.9772
114	2.30259	0.128189	99.5521	-67.682
115	2.30259	0.140835	99.5719	-67.3577
116	2.30259	0.153505	99.5955	-67.0043
117	2.30259	0.166199	99.6231	-66.6216
118	2.30259	0.17892	99.6551	-66.2096
119	2.30259	0.189118	99.6909	-65.7742
120	2.30259	0.201894	99.7317	-65.3093
121	2.30259	0.214702	99.7778	-64.8149
122	2.30259	0.227545	99.8295	-64.291
123	2.30259	0.240426	99.8873	-63.7374
124	2.30259	0.253347	99.9515	-63.154
125	2.30259	0.263715	100.021	-62.5468
126	2.30259	0.276714	100.098	-61.9096
127	2.30259	0.28976	100.182	-61.2424
128	2.30259	0.302855	100.273	-60.5451
129	2.30259	0.316004	100.373	-59.8175
130	2.30259	0.329206	100.482	-59.0594
131	2.30259	0.33981	100.597	-58.277
132	2.30259	0.353118	100.722	-57.4639
133	2.30259	0.36649	100.856	-56.62
134	2.30259	0.379927	101	-55.7452
135	2.30259	0.393433	101.155	-54.8393
136	2.30259	0.40701	101.321	-53.9021
137	2.30259	0.417928	101.495	-52.9398
138	2.30259	0.431644	101.682	-51.9459
139	2.30259	0.445443	101.88	-50.9203
140	2.30259	0.459327	102.091	-49.8626
141	2.30259	0.473299	102.315	-48.7728
142	2.30259	0.484544	102.55	-47.6571
143	2.30259	0.498687	102.799	-46.5088
144	2.30259	0.51293	103.062	-45.3278
145	2.30259	0.52728	103.34	-44.1137
146	2.30259	0.541736	103.633	-42.8663
147	2.30259	0.556308	103.943	-41.5853
148	2.30259	0.568052	104.265	-40.2773
149	2.30259	0.582841	104.605	-38.9353
150	2.30259	0.597761	104.962	-37.5589
151	2.30259	0.612813	105.338	-36.1478
152	2.30259	0.628006	105.732	-34.7018
153	2.30259	0.643345	106.146	-33.2204
154	2.30259	0.655726	106.576	-31.7106
155	2.30259	0.671346	107.027	-30.1648
156	2.30259	0.687131	107.499	-28.5826
157	2.30259	0.703089	107.993	-26.9637
158	2.30259	0.719228	108.511	-25.3076
159	2.30259	0.735557	109.052	-23.6139
160	2.30259	0.748762	109.612	-21.8898
161	2.30259	0.765456	110.198	-20.1273
162	2.30259	0.782366	110.81	-18.3258
163	2.30259	0.7995	111.45	-16.4849
164	2.30259	0.816874	112.117	-14.604
165	2.30259	0.834498	112.813	-12.6825
166	2.30259	0.848786	113.534	-10.7281
167	2.30259	0.866894	114.285	-8.73196
168	2.30259	0.885291	115.069	-6.69351
169	2.30259	0.903992	115.886	-4.61199
170	2.30259	0.923014	116.738	-2.48667
171	2.30259	0.942375	117.626	-0.316769
172	2.30259	0.958125	118.544	1.8894
173	2.30259	0.97815	119.501	4.14167

174	2.30259	0.998575		120.498	6.44097
175	2.30259	1.01943	121.537	8.78829	
176	2.30259	1.04073	122.621	11.1847	
177	2.30259	1.06252	123.749	13.6312	
178	2.30259	1.08032	124.917	16.1187	
179	2.30259	1.10306	126.133	18.6586	
180	2.30259	1.12639	127.402	21.2522	
181	2.3979	1.15035	128.725	24.0107	
182	2.56495	1.17499	130.106	27.0244	
183	2.56495	1.20036	131.547	30.1033	
184	2.83321	1.22123	133.038	33.5633	
185	2.94444	1.24809	134.596	37.2382	
186	2.94444	1.27588	136.224	40.995	
187	2.99573	1.30469	137.926	44.9035	
188	2.99573	1.33462	139.707	48.9016	
189	3.04452	1.36581	141.573	53.0599	
190	3.04452	1.39175	143.51	57.2971	
191	3.09104	1.42554	145.542	61.7035	
192	3.13549	1.46106	147.676	66.2846	
193	3.13549	1.49852	149.922	70.9832	
194	3.17805	1.5382	152.288	75.8717	
195	3.29584	1.58047	154.786	81.0806	
196	3.3322	1.61644	157.399	86.4669	
197	3.52636	1.66456	160.17	92.3368	
198	3.52636	1.71688	163.117	98.3911	
199	3.58352	1.77438	166.266	104.75	
200	3.68888	1.83843	169.646	111.531	
201	4.36945	1.91103	173.298	119.882	
202	4.43082	1.97737	177.208	128.643	
203	4.46591	2.07485	181.513	137.909	
204	4.5326	2.19728	186.341	147.868	
205	4.78749	2.36561	191.937	159.194	
206	5.84354	2.65209	198.97	174.691	

Data Set Standard Deviation = 1.05242
Numerator = 30517.1
Denominator = 45177
W Statistic = 0.6755 = 30517.1 / 45177

5% Critical value of 0.976 exceeds 0.6755
Evidence of non-normality at 95% level of significance

1% Critical value of 0.967 exceeds 0.6755
Evidence of non-normality at 99% level of significance

Kruskal-Wallis Non-Parametric Test

Parameter: Chromium

Natural Logarithm Transformation
Non-Detects Replaced with 1/2 DL

Kruskal Wallis Ranks

Background Wells

Well ID	Date	Result	Rank
LMW-4	1/16/1998	5.84354	206
	3/16/1999	ND<2.30259	71
	9/23/1999	ND<2.30259	71
	3/14/2000	4.46591	203
	9/23/2003	ND<2.30259	71
	3/10/2004	4.78749	205
	10/12/2004	ND<2.30259	71
	4/1/2005	2.30259 J	178
	10/26/2005	ND<2.30259	71
	6/19/2006	ND<2.30259	71
	11/18/2006	ND<2.30259	71
	6/2/2007	3.04452	189
	11/15/2007	ND<2.30259	71
	5/20/2008	ND<2.30259	71
	11/20/2008	ND<2.30259	71
	6/11/2009	-0.174353 J	155
	11/14/2009	0 J	156

Rank Sum = 2002
Rank Mean = 117.765

Background Rank Sum = 2002
Background Rank Mean = 117.765

Compliance Wells

Well ID	Date	Result	Rank
LMW-15R	11/18/2006	ND<2.30259	71
	6/2/2007	ND<2.30259	71
	11/15/2007	ND<2.30259	71
	11/15/2007	ND<2.30259	71
	5/20/2008	ND<2.30259	71
	5/20/2008	ND<2.30259	71
	11/20/2008	ND<2.30259	71
	11/20/2008	ND<2.30259	71
	6/11/2009	1.70475	170
	11/14/2009	-1.83258 J	142

Rank Sum = 880
Rank Mean = 88

LMW-14R	6/2/2007	ND<2.30259	71
	11/15/2007	ND<2.30259	71
	5/20/2008	ND<2.30259	71
	11/20/2008	ND<2.30259	71
	6/11/2009	0.470004	162
	11/14/2009	-0.634878 J	149

Rank Sum = 595

Rank Mean = 99.1667

LMW-16	11/18/2006	ND<2.30259	71
	6/2/2007	2.99573	187
	11/15/2007	ND<2.30259	71
	5/20/2008	ND<2.30259	71
	11/20/2008	ND<2.30259	71
	6/11/2009	-0.18633 J	154
	11/14/2009	-0.634878 J	150

Rank Sum = 775
Rank Mean = 110.714

LMW-9S	11/18/2006	ND<2.30259	71
	6/2/2007	1.60944	167
	11/15/2007	ND<2.30259	71
	5/20/2008	ND<2.30259	71
	11/20/2008	ND<2.30259	71
	6/11/2009	0	157
	11/14/2009	-0.820981 J	147

Rank Sum = 755
Rank Mean = 107.857

LMW-10	3/14/2000	3.3322	196
	9/23/2003	ND<2.30259	71
	3/10/2004	3.58352	199
	10/12/2004	ND<2.30259	71
	4/1/2005	ND<2.30259	71
	10/26/2005	ND<2.30259	71
	6/19/2006	ND<2.30259	71
	11/18/2006	ND<2.30259	71
	6/2/2007	0.693147	164
	11/15/2007	ND<2.30259	71
	5/20/2008	ND<2.30259	71
	11/20/2008	ND<2.30259	71
	6/11/2009	-1.02165 J	146
	11/14/2009	-1.34707 J	143

Rank Sum = 1487
Rank Mean = 106.214

LMW-9	1/16/1998	3.13549	192
	3/16/1999	ND<2.30259	71
	9/23/1999	3.09104	191
	3/14/2000	2.83321 J	184
	9/23/2003	ND<2.30259	71
	3/10/2004	2.94444 J	185
	10/12/2004	ND<2.30259	71
	4/1/2005	ND<2.30259	71
	10/26/2005	ND<2.30259	71
	6/19/2006	2.30259 J	179
	11/18/2006	ND<2.30259	71
	6/2/2007	1.94591	175
	11/15/2007	ND<2.30259	71
	5/20/2008	ND<2.30259	71
	11/20/2008	ND<2.30259	71
	6/11/2009	0.182322	161
	11/14/2009	-0.478036 J	152

Rank Sum = 2058
Rank Mean = 121.059

LMW-8	1/16/1998	ND<2.30259	71
	3/16/1999	1.79176 J	172
	9/23/1999	2.56495 J	182

	3/14/2000	3.04452	190
	9/23/2003	ND<2.30259	71
	3/10/2004	ND<2.30259	71
	10/12/2004	ND<2.30259	71
	4/1/2005	ND<2.30259	71
	10/26/2005	ND<2.30259	71
	6/19/2006	ND<2.30259	71
	11/18/2006	ND<2.30259	71
	6/2/2007	ND<2.30259	71
	11/15/2007	ND<2.30259	71
	5/20/2008	ND<2.30259	71
	11/20/2008	ND<2.30259	71
	6/11/2009	-1.27297 J	144
	11/14/2009	-0.371064 J	153

Rank Sum = 1693
Rank Mean = 99.5882

LMW-3	11/19/1996	ND<2.30259	71
	3/24/1997	ND<2.30259	71
	1/16/1998	ND<2.30259	71
	3/16/1999	ND<2.30259	71
	9/23/1999	ND<2.30259	71
	3/14/2000	ND<2.30259	71
	9/23/2003	ND<2.30259	71
	3/10/2004	ND<2.30259	71
	10/12/2004	ND<2.30259	71
	4/1/2005	ND<2.30259	71
	10/26/2005	ND<2.30259	71
	6/19/2006	ND<2.30259	71
	11/18/2006	ND<2.30259	71
	6/2/2007	ND<2.30259	71
	11/15/2007	ND<2.30259	71
	5/20/2008	ND<2.30259	71
	11/20/2008	ND<2.30259	71
	6/11/2009	-1.13943 J	145
	11/14/2009	0.0953102 J	159

Rank Sum = 1511
Rank Mean = 79.5263

LMW-3S	11/18/2006	ND<2.30259	71
	6/2/2007	2.3979	181
	11/15/2007	ND<2.30259	71
	5/20/2008	ND<2.30259	71
	11/20/2008	ND<2.30259	71
	6/11/2009	0.530628	163
	11/14/2009	-0.616186 J	151

Rank Sum = 779
Rank Mean = 111.286

LMW-9D	11/18/2006	1.79176 J	173
	6/2/2007	ND<2.30259	71
	11/15/2007	ND<2.30259	71
	5/20/2008	1.09861 J	165
	11/20/2008	ND<2.30259	71
	6/11/2009	0	158
	11/14/2009	0.0953102	160

Rank Sum = 869
Rank Mean = 124.143

LMW-6	1/16/1998	2.56495 J	183
	3/16/1999	ND<2.30259	71
	9/23/1999	1.79176 J	174

	3/14/2000	3.52636	197
	9/23/2003	ND<2.30259	71
	3/10/2004	ND<2.30259	71
	10/12/2004	ND<2.30259	71
	4/1/2005	ND<2.30259	71
	10/26/2005	ND<2.30259	71
	6/19/2006	ND<2.30259	71
	11/18/2006	ND<2.30259	71
	6/2/2007	1.38629 J	166
	11/15/2007	ND<2.30259	71
	5/20/2008	1.94591 J	176
	11/20/2008	ND<2.30259	71
	6/11/2009	-0.733969 J	148

Rank Sum = 1754
Rank Mean = 109.625

LMW-7	1/16/1998	2.30259 J	180
	3/16/1999	ND<2.30259	71
	9/23/1999	1.60944 J	168
	3/14/2000	3.52636	198
	9/23/2003	ND<2.30259	71
	3/10/2004	ND<2.30259	71
	10/12/2004	ND<2.30259	71
	4/1/2005	2.94444 J	186
	10/26/2005	3.13549	193
	6/19/2006	ND<2.30259	71
	11/18/2006	1.60944 J	169
	6/2/2007	3.17805	194
	11/15/2007	ND<2.30259	71
	5/20/2008	1.94591 J	177
	11/20/2008	ND<2.30259	71
	6/11/2009	1.75786	171

Rank Sum = 2133
Rank Mean = 133.313

MW-5	1/16/1998	ND<2.30259	71
	3/16/1999	ND<2.30259	71
	9/23/1999	ND<2.30259	71
	3/14/2000	4.36945	201
	9/23/2003	ND<2.30259	71
	3/10/2004	4.43082	202
	10/12/2004	ND<2.30259	71
	4/1/2005	ND<2.30259	71
	10/26/2005	ND<2.30259	71
	6/19/2006	ND<2.30259	71
	11/15/2007	ND<2.30259	71
	5/20/2008	ND<2.30259	71
	11/20/2008	ND<2.30259	71

Rank Sum = 1184
Rank Mean = 91.0769

LMW-13	3/14/2000	3.29584	195
	9/23/2003	ND<2.30259	71
	3/10/2004	ND<2.30259	71
	10/12/2004	ND<2.30259	71
	4/1/2005	ND<2.30259	71
	10/26/2005	ND<2.30259	71
	6/19/2006	ND<2.30259	71
	6/2/2007	ND<2.30259	71
	11/15/2007	ND<2.30259	71
	5/20/2008	ND<2.30259	71
	11/20/2008	ND<2.30259	71

Rank Sum = 905
Rank Mean = 82.2727

LMW-12	3/14/2000	4.5326	204
	9/23/2003	ND<2.30259	71
	3/10/2004	ND<2.30259	71
	10/12/2004	ND<2.30259	71
	4/1/2005	ND<2.30259	71
	10/26/2005	ND<2.30259	71
	6/19/2006	ND<2.30259	71
	6/2/2007	ND<2.30259	71
	11/15/2007	ND<2.30259	71
	5/20/2008	ND<2.30259	71
	11/20/2008	ND<2.30259	71

Rank Sum = 914
Rank Mean = 83.0909

LMW-11	3/14/2000	2.99573	188
	9/23/2003	ND<2.30259	71
	3/10/2004	3.68888	200
	10/12/2004	ND<2.30259	71
	4/1/2005	ND<2.30259	71
	10/26/2005	ND<2.30259	71
	6/19/2006	ND<2.30259	71
	6/2/2007	ND<2.30259	71
	11/15/2007	ND<2.30259	71
	5/20/2008	ND<2.30259	71
	11/20/2008	ND<2.30259	71

Rank Sum = 1027
Rank Mean = 93.3636

Calculation Results:

Kruskal-Wallis H Statistic = 15.1679
Kruskal-Wallis H Statistic (adjusted for tied non-detects) = 22.3274
95% Confidence comparison value is 26.2962 at 16 degrees of freedom
15.1679 < 26.2962 indicating no significant group difference at 5% significance level
22.3274 < 26.2962 indicating no significant group difference at 5% significance level when adjusted for ties

Concentrations (ug/L)

Parameter: Cobalt

Natural Logarithm Transformation
Non-Detects Replaced with 1/2 DL
Total Measurements: 206
Total Non-Detect: 177
Percent Non-Detects: 85.9223%
Total Background Measurements: 17
There is 1 background location

Loc.	Meas.	ND	Date	Conc.	Original
LMW-4	17	15 (88.2353%)	1/16/1998	ND<2.30259	ND<20
			3/16/1999	ND<2.30259	ND<20
			9/23/1999	ND<2.30259	ND<20
			3/14/2000	ND<2.30259	ND<20
			9/23/2003	ND<2.30259	ND<20
			3/10/2004	ND<2.30259	ND<20
			10/12/2004	ND<2.30259	ND<20
			4/1/2005	ND<2.30259	ND<20
			10/26/2005	ND<2.30259	ND<20
			6/19/2006	ND<2.30259	ND<20
			11/18/2006	ND<2.30259	ND<20
			6/2/2007	ND<2.30259	ND<20
			11/15/2007	ND<2.30259	ND<20
			5/20/2008	ND<2.30259	ND<20
			11/20/2008	ND<2.30259	ND<20
			6/11/2009	-1.42712	0.24
			11/14/2009	-1.42712	0.24

There are 16 compliance locations

Loc.	Meas.	ND	Date	Conc.	Original
LMW-9	17	14 (82.3529%)	1/16/1998	ND<2.30259	ND<20
			3/16/1999	ND<2.30259	ND<20
			9/23/1999	ND<2.30259	ND<20
			3/14/2000	ND<2.30259	ND<20
			9/23/2003	ND<2.30259	ND<20
			3/10/2004	ND<2.30259	ND<20
			10/12/2004	ND<2.30259	ND<20
			4/1/2005	ND<2.30259	ND<20
			10/26/2005	ND<2.30259	ND<20
			6/19/2006	2.30259 J	10 J
			11/18/2006	ND<2.30259	ND<20
			6/2/2007	ND<2.30259	ND<20
			11/15/2007	ND<2.30259	ND<20
			5/20/2008	ND<2.30259	ND<20
			11/20/2008	ND<2.30259	ND<20
			6/11/2009	-1.89712 J	0.15 J
			11/14/2009	-2.04022 J	0.13 J
LMW-6	17	14 (82.3529%)	1/16/1998	ND<2.30259	ND<20
			3/16/1999	ND<2.30259	ND<20
			9/23/1999	2.3979 J	11 J
			3/14/2000	ND<2.30259	ND<20
			9/23/2003	ND<2.30259	ND<20
			3/10/2004	ND<2.30259	ND<20

			10/12/2004	ND<2.30259	ND<20
			4/1/2005	ND<2.30259	ND<20
			10/26/2005	ND<2.30259	ND<20
			6/19/2006	ND<2.30259	ND<20
			11/18/2006	ND<0 J	ND<0 J
			6/2/2007	ND<2.30259	ND<20
			11/15/2007	ND<2.30259	ND<20
			5/20/2008	ND<0 J	ND<0 J
			11/20/2008	ND<2.30259	ND<20
			6/11/2009	0.336472	1.4
			11/14/2009	0.182322	1.2
LMW-8	17	15 (88.2353%)	1/16/1998	ND<2.30259	ND<20
			3/16/1999	ND<2.30259	ND<20
			9/23/1999	ND<2.30259	ND<20
			3/14/2000	ND<2.30259	ND<20
			9/23/2003	ND<2.30259	ND<20
			3/10/2004	ND<2.30259	ND<20
			10/12/2004	ND<2.30259	ND<20
			4/1/2005	ND<2.30259	ND<20
			10/26/2005	ND<2.30259	ND<20
			6/19/2006	ND<2.30259	ND<20
			11/18/2006	ND<2.30259	ND<20
			6/2/2007	ND<2.30259	ND<20
			11/15/2007	ND<2.30259	ND<20
			5/20/2008	ND<0 J	ND<0 J
			11/20/2008	ND<2.30259	ND<20
			6/11/2009	-0.755023	0.47
			11/14/2009	-0.34249	0.71
LMW-3	19	17 (89.4737%)	11/19/1996	ND<2.30259	ND<20
			3/24/1997	ND<2.30259	ND<20
			1/16/1998	ND<2.30259	ND<20
			3/16/1999	ND<2.30259	ND<20
			9/23/1999	ND<2.30259	ND<20
			3/14/2000	ND<2.30259	ND<20
			9/23/2003	ND<2.30259	ND<20
			3/10/2004	ND<2.30259	ND<20
			10/12/2004	ND<2.30259	ND<20
			4/1/2005	ND<2.30259	ND<20
			10/26/2005	ND<2.30259	ND<20
			6/19/2006	ND<2.30259	ND<20
			11/18/2006	ND<2.30259	ND<20
			6/2/2007	ND<2.30259	ND<20
			11/15/2007	ND<2.30259	ND<20
			5/20/2008	ND<2.30259	ND<20
			11/20/2008	ND<2.30259	ND<20
			6/11/2009	-1.83258 J	0.16 J
			11/14/2009	-1.83258 J	0.16 J
LMW-10	14	12 (85.7143%)	3/14/2000	ND<2.30259	ND<20
			9/23/2003	ND<2.30259	ND<20
			3/10/2004	ND<2.30259	ND<20
			10/12/2004	ND<2.30259	ND<20
			4/1/2005	ND<2.30259	ND<20
			10/26/2005	ND<2.30259	ND<20
			6/19/2006	ND<2.30259	ND<20
			11/18/2006	ND<2.30259	ND<20
			6/2/2007	ND<2.30259	ND<20
			11/15/2007	ND<2.30259	ND<20
			5/20/2008	ND<2.30259	ND<20
			11/20/2008	ND<2.30259	ND<20

			6/11/2009	-2.04022 J	0.13 J
			11/14/2009	-1.89712 J	0.15 J
LMW-3S	7	5 (71.4286%)	11/18/2006	ND<2.30259	ND<20
			6/2/2007	ND<2.30259	ND<20
			11/15/2007	ND<2.30259	ND<20
			5/20/2008	ND<0 J	ND<0 J
			11/20/2008	ND<2.30259	ND<20
			6/11/2009	-0.867501	0.42
			11/14/2009	-0.867501	0.42
LMW-9S	7	2 (28.5714%)	11/18/2006	0 J	1 J
			6/2/2007	0 J	1 J
			11/15/2007	ND<2.30259	ND<20
			5/20/2008	0 J	1 J
			11/20/2008	ND<2.30259	ND<20
			6/11/2009	-2.04022 J	0.13 J
			11/14/2009	-1.38629	0.25
LMW-16	7	6 (85.7143%)	11/18/2006	ND<2.30259	ND<20
			6/2/2007	ND<2.30259	ND<20
			11/15/2007	ND<2.30259	ND<20
			5/20/2008	ND<2.30259	ND<20
			11/20/2008	ND<2.30259	ND<20
			6/11/2009	ND<-3.35241 U	ND<0.07 U
			11/14/2009	-2.52573 J	0.08 J
LMW-15R	10	8 (80%)	11/18/2006	ND<2.30259	ND<20
			6/2/2007	ND<2.30259	ND<20
			11/15/2007	ND<2.30259	ND<20
			11/15/2007	ND<2.30259	ND<20
			5/20/2008	ND<2.30259	ND<20
			5/20/2008	ND<0 J	ND<0 J
			11/20/2008	ND<2.30259	ND<20
			11/20/2008	ND<2.30259	ND<20
			6/11/2009	-0.18633	0.83
			11/14/2009	-1.34707	0.26
LMW-14R	6	4 (66.6667%)	6/2/2007	ND<2.30259	ND<20
			11/15/2007	ND<2.30259	ND<20
			5/20/2008	ND<0 J	ND<0 J
			11/20/2008	ND<2.30259	ND<20
			6/11/2009	-1.42712	0.24
			11/14/2009	-1.20397	0.3
LMW-7	16	14 (87.5%)	1/16/1998	ND<2.30259	ND<20
			3/16/1999	ND<2.30259	ND<20
			9/23/1999	ND<2.30259	ND<20
			3/14/2000	ND<2.30259	ND<20
			9/23/2003	ND<2.30259	ND<20
			3/10/2004	ND<2.30259	ND<20
			10/12/2004	ND<2.30259	ND<20
			4/1/2005	ND<2.30259	ND<20
			10/26/2005	ND<2.30259	ND<20
			6/19/2006	ND<2.30259	ND<20
			11/18/2006	0 J	1 J
			6/2/2007	ND<2.30259	ND<20
			11/15/2007	ND<2.30259	ND<20
			5/20/2008	ND<2.30259	ND<20
			11/20/2008	ND<2.30259	ND<20
			6/11/2009	-0.462035	0.63

LMW-9D6	5 (83.3333%)	11/18/2006	ND<2.30259	ND<20	
		6/2/2007	ND<2.30259	ND<20	
		11/15/2007	1.09861 J	3 J	
		5/20/2008	ND<2.30259	ND<20	
		11/20/2008	ND<2.30259	ND<20	
		6/11/2009	ND<-3.35241 U	ND<0.07 U	
LMW-11	11	11 (100%)	3/14/2000	ND<2.30259	ND<20
		9/23/2003	ND<2.30259	ND<20	
		3/10/2004	ND<2.30259	ND<20	
		10/12/2004	ND<2.30259	ND<20	
		4/1/2005	ND<2.30259	ND<20	
		10/26/2005	ND<2.30259	ND<20	
		6/19/2006	ND<2.30259	ND<20	
		6/2/2007	ND<2.30259	ND<20	
		11/15/2007	ND<2.30259	ND<20	
		5/20/2008	ND<2.30259	ND<20	
		11/20/2008	ND<2.30259	ND<20	
LMW-12	11	11 (100%)	3/14/2000	ND<2.30259	ND<20
		9/23/2003	ND<2.30259	ND<20	
		3/10/2004	ND<2.30259	ND<20	
		10/12/2004	ND<2.30259	ND<20	
		4/1/2005	ND<2.30259	ND<20	
		10/26/2005	ND<2.30259	ND<20	
		6/19/2006	ND<2.30259	ND<20	
		6/2/2007	ND<2.30259	ND<20	
		11/15/2007	ND<2.30259	ND<20	
		5/20/2008	ND<2.30259	ND<20	
		11/20/2008	ND<2.30259	ND<20	
MW-5	13	13 (100%)	1/16/1998	ND<2.30259	ND<20
		3/16/1999	ND<2.30259	ND<20	
		9/23/1999	ND<2.30259	ND<20	
		3/14/2000	ND<2.30259	ND<20	
		9/23/2003	ND<2.30259	ND<20	
		3/10/2004	ND<2.30259	ND<20	
		10/12/2004	ND<2.30259	ND<20	
		4/1/2005	ND<2.30259	ND<20	
		10/26/2005	ND<2.30259	ND<20	
		6/19/2006	ND<2.30259	ND<20	
		11/15/2007	ND<2.30259	ND<20	
		5/20/2008	ND<2.30259	ND<20	
		11/20/2008	ND<2.30259	ND<20	
LMW-13	11	11 (100%)	3/14/2000	ND<2.30259	ND<20
		9/23/2003	ND<2.30259	ND<20	
		3/10/2004	ND<2.30259	ND<20	
		10/12/2004	ND<2.30259	ND<20	
		4/1/2005	ND<2.30259	ND<20	
		10/26/2005	ND<2.30259	ND<20	
		6/19/2006	ND<2.30259	ND<20	
		6/2/2007	ND<2.30259	ND<20	
		11/15/2007	ND<2.30259	ND<20	
		5/20/2008	ND<2.30259	ND<20	
		11/20/2008	ND<2.30259	ND<20	

There are 0 unused locations

Loc.	Meas.	ND	Date	Conc.	Original

Shapiro-Francia Test of Normality

Parameter: Cobalt

All Locations

Normality Test of Parameter Concentrations

Original Data (Not Transformed)
Non-Detects Replaced with 1/2 DL
Total Number of Measurements = 206

i	x(i)	m(i)	sum(m^2)	sum(mx)
1	0	-2.65209	7.03356	0
2	0	-2.36561	12.6297	0
3	0	-2.19728	17.4578	0
4	0	-2.07485	21.7627	0
5	0	-1.97737	25.6727	0
6	0	-1.91103	29.3248	0
7	0.035	-1.83843	32.7046	-0.0643449
8	0.035	-1.77438	35.853	-0.126448
9	0.08	-1.71688	38.8007	-0.263799
10	0.13	-1.66456	41.5715	-0.480192
11	0.13	-1.61644	44.1843	-0.690329
12	0.13	-1.58047	46.6822	-0.895789
13	0.15	-1.5382	49.0483	-1.12652
14	0.15	-1.49852	51.2938	-1.3513
15	0.16	-1.46106	53.4285	-1.58507
16	0.16	-1.42554	55.4607	-1.81315
17	0.24	-1.39175	57.3976	-2.14717
18	0.24	-1.36581	59.2631	-2.47497
19	0.24	-1.33462	61.0443	-2.79528
20	0.25	-1.30469	62.7465	-3.12145
21	0.26	-1.27588	64.3743	-3.45317
22	0.3	-1.24809	65.9321	-3.8276
23	0.42	-1.22123	67.4235	-4.34052
24	0.42	-1.20036	68.8643	-4.84467
25	0.47	-1.17499	70.2449	-5.39691
26	0.63	-1.15035	71.5682	-6.12163
27	0.71	-1.12639	72.837	-6.92137
28	0.83	-1.10306	74.0537	-7.83691
29	1	-1.08032	75.2208	-8.91723
30	1	-1.06252	76.3498	-9.97975
31	1	-1.04073	77.4329	-11.0205
32	1	-1.01943	78.4721	-12.0399
33	1.2	-0.998575	79.4693	-13.2382
34	1.4	-0.97815	80.4261	-14.6076
35	3	-0.958125	81.3441	-17.482
36	10	-0.942375	82.2321	-26.9057
37	10	-0.923014	83.0841	-36.1359
38	10	-0.903992	83.9013	-45.1758
39	10	-0.885291	84.685	-54.0287
40	10	-0.866894	85.4365	-62.6977
41	10	-0.848786	86.157	-71.1855
42	10	-0.834498	86.8534	-79.5305
43	10	-0.816874	87.5206	-87.6992
44	10	-0.7995	88.1598	-95.6942
45	10	-0.782366	88.7719	-103.518
46	10	-0.765456	89.3579	-111.172
47	10	-0.748762	89.9185	-118.66
48	10	-0.735557	90.4595	-126.016
49	10	-0.719228	90.9768	-133.208

50	10	-0.703089	91.4712	-140.239
51	10	-0.687131	91.9433	-147.11
52	10	-0.671346	92.394	-153.824
53	10	-0.655726	92.824	-160.381
54	10	-0.643345	93.2379	-166.814
55	10	-0.628006	93.6323	-173.094
56	10	-0.612813	94.0078	-179.222
57	10	-0.597761	94.3651	-185.2
58	10	-0.582841	94.7048	-191.029
59	10	-0.568052	95.0275	-196.709
60	10	-0.556308	95.337	-202.272
61	10	-0.541736	95.6305	-207.689
62	10	-0.5272895.9085	-212.962	
63	10	-0.5129396.1716	-218.092	
64	10	-0.498687	96.4203	-223.078
65	10	-0.484544	96.6551	-227.924
66	10	-0.473299	96.8791	-232.657
67	10	-0.459327	97.0901	-237.25
68	10	-0.445443	97.2885	-241.705
69	10	-0.431644	97.4748	-246.021
70	10	-0.417928	97.6495	-250.2
71	10	-0.4070197.8151	-254.27	
72	10	-0.393433	97.9699	-258.205
73	10	-0.379927	98.1143	-262.004
74	10	-0.3664998.2486	-265.669	
75	10	-0.353118	98.3733	-269.2
76	10	-0.3398198.4887	-272.598	
77	10	-0.329206	98.5971	-275.89
78	10	-0.316004	98.697	-279.05
79	10	-0.302855	98.7887	-282.079
80	10	-0.2897698.8727	-284.976	
81	10	-0.276714	98.9492	-287.744
82	10	-0.263715	99.0188	-290.381
83	10	-0.253347	99.083	-292.914
84	10	-0.240426	99.1408	-295.318
85	10	-0.227545	99.1925	-297.594
86	10	-0.214702	99.2386	-299.741
87	10	-0.201894	99.2794	-301.76
88	10	-0.189118	99.3152	-303.651
89	10	-0.1789299.3472	-305.44	
90	10	-0.166199	99.3748	-307.102
91	10	-0.153505	99.3984	-308.637
92	10	-0.140835	99.4182	-310.046
93	10	-0.128189	99.4346	-311.327
94	10	-0.115562	99.448	-312.483
95	10	-0.105474	99.4591	-313.538
96	10	-0.0928787	99.4677	-314.467
97	10	-0.0802981	99.4742	-315.27
98	10	-0.0677301	99.4788	-315.947
99	10	-0.0551734	99.4818	-316.499
100	10	-0.0426257	99.4836	-316.925
101	10	-0.0325917	99.4847	-317.251
102	10	-0.0200544	99.4851	-317.451
103	10	-0.00751925	99.4852	-317.527
104	10	0.00751925	99.4852	-317.451
105	10	0.0200544	99.4856	-317.251
106	10	0.0325917	99.4867	-316.925
107	10	0.0426257	99.4885	-316.499
108	10	0.0551734	99.4915	-315.947
109	10	0.0677301	99.4961	-315.27
110	10	0.0802981	99.5026	-314.467
111	10	0.0928787	99.5112	-313.538

112	10	0.105474	99.5223	-312.483
113	10	0.115562	99.5357	-311.327
114	10	0.128189	99.5521	-310.046
115	10	0.140835	99.5719	-308.637
116	10	0.153505	99.5955	-307.102
117	10	0.166199	99.6231	-305.44
118	10	0.17892	99.6551	-303.651
119	10	0.189118	99.6909	-301.76
120	10	0.201894	99.7317	-299.741
121	10	0.214702	99.7778	-297.594
122	10	0.227545	99.8295	-295.318
123	10	0.240426	99.8873	-292.914
124	10	0.253347	99.9515	-290.381
125	10	0.263715	100.021	-287.744
126	10	0.276714	100.098	-284.976
127	10	0.28976	100.182	-282.079
128	10	0.302855	100.273	-279.05
129	10	0.316004	100.373	-275.89
130	10	0.329206	100.482	-272.598
131	10	0.33981	100.597	-269.2
132	10	0.353118	100.722	-265.669
133	10	0.36649	100.856	-262.004
134	10	0.379927	101	-258.205
135	10	0.393433	101.155	-254.27
136	10	0.40701	101.321	-250.2
137	10	0.417928	101.495	-246.021
138	10	0.431644	101.682	-241.705
139	10	0.445443	101.88	-237.25
140	10	0.459327	102.091	-232.657
141	10	0.473299	102.315	-227.924
142	10	0.484544	102.55	-223.078
143	10	0.498687	102.799	-218.092
144	10	0.51293	103.062	-212.962
145	10	0.52728	103.34	-207.689
146	10	0.541736	103.633	-202.272
147	10	0.556308	103.943	-196.709
148	10	0.568052	104.265	-191.029
149	10	0.582841	104.605	-185.2
150	10	0.597761	104.962	-179.222
151	10	0.612813	105.338	-173.094
152	10	0.628006	105.732	-166.814
153	10	0.643345	106.146	-160.381
154	10	0.655726	106.576	-153.824
155	10	0.671346	107.027	-147.11
156	10	0.687131	107.499	-140.239
157	10	0.703089	107.993	-133.208
158	10	0.719228	108.511	-126.016
159	10	0.735557	109.052	-118.66
160	10	0.748762	109.612	-111.172
161	10	0.765456	110.198	-103.518
162	10	0.782366	110.81	-95.6942
163	10	0.7995	111.45	-87.6992
164	10	0.816874	112.117	-79.5305
165	10	0.834498	112.813	-71.1855
166	10	0.848786	113.534	-62.6977
167	10	0.866894	114.285	-54.0287
168	10	0.885291	115.069	-45.1758
169	10	0.903992	115.886	-36.1359
170	10	0.923014	116.738	-26.9057
171	10	0.942375	117.626	-17.482
172	10	0.958125	118.544	-7.90073
173	10	0.97815	119.501	1.88077

174	10	0.998575		120.498	11.8665
175	10	1.01943	121.537	22.0608	
176	10	1.04073	122.621	32.4681	
177	10	1.06252	123.749	43.0933	
178	10	1.08032	124.917	53.8965	
179	10	1.10306	126.133	64.9271	
180	10	1.12639	127.402	76.1911	
181	10	1.15035	128.725	87.6945	
182	10	1.17499	130.106	99.4444	
183	10	1.20036	131.547	111.448	
184	10	1.22123	133.038	123.66	
185	10	1.24809	134.596	136.141	
186	10	1.27588	136.224	148.9	
187	10	1.30469	137.926	161.947	
188	10	1.33462	139.707	175.293	
189	10	1.36581	141.573	188.951	
190	10	1.39175	143.51	202.869	
191	10	1.42554	145.542	217.124	
192	10	1.46106	147.676	231.735	
193	10	1.49852	149.922	246.72	
194	10	1.5382	152.288	262.102	
195	10	1.58047	154.786	277.906	
196	10	1.61644	157.399	294.071	
197	10	1.66456	160.17	310.716	
198	10	1.71688	163.117	327.885	
199	10	1.77438	166.266	345.629	
200	10	1.83843	169.646	364.013	
201	10	1.91103	173.298	383.124	
202	10	1.97737	177.208	402.897	
203	10	2.07485	181.513	423.646	
204	10	2.19728	186.341	445.619	
205	10	2.36561	191.937	469.275	
206	11	2.65209	198.97	498.448	

Data Set Standard Deviation = 3.60601
Numerator = 248450
Denominator = 530390
W Statistic = 0.468429 = 248450 / 530390

5% Critical value of 0.976 exceeds 0.468429
Evidence of non-normality at 95% level of significance

1% Critical value of 0.967 exceeds 0.468429
Evidence of non-normality at 99% level of significance

Shapiro-Francia Test of Normality

Parameter: Cobalt

All Locations

Normality Test of Parameter Concentrations

Natural Logarithm Transformation
Non-Detects Replaced with 1/2 DL
Total Number of Measurements = 206

i	x(i)	m(i)	sum(m^2)	sum(mx)
1	-3.35241	-2.65209	7.03356	8.89087
2	-3.35241	-2.36561	12.6297	16.8214
3	-2.52573	-2.19728	17.4578	22.3711
4	-2.04022	-2.07485	21.7627	26.6043
5	-2.04022	-1.97737	25.6727	30.6385
6	-2.04022	-1.91103	29.3248	34.5375
7	-1.89712	-1.83843	32.7046	38.0252
8	-1.89712	-1.77438	35.853	41.3914
9	-1.83258	-1.71688	38.8007	44.5377
10	-1.83258	-1.66456	41.5715	47.5882
11	-1.42712	-1.61644	44.1843	49.895
12	-1.42712	-1.58047	46.6822	52.1505
13	-1.42712	-1.5382	49.0483	54.3457
14	-1.38629	-1.49852	51.2938	56.4231
15	-1.34707	-1.46106	53.4285	58.3912
16	-1.20397	-1.42554	55.4607	60.1076
17	-0.867501	-1.39175	57.3976	61.3149
18	-0.867501	-1.36581	59.2631	62.4997
19	-0.755023	-1.33462	61.0443	63.5074
20	-0.462035	-1.30469	62.7465	64.1102
21	-0.34249	-1.27588	64.3743	64.5472
22	-0.18633	-1.24809	65.9321	64.7797
23	0	-1.22123	67.4235	64.7797
24	0	-1.20036	68.8643	64.7797
25	0	-1.17499	70.2449	64.7797
26	0	-1.15035	71.5682	64.7797
27	0	-1.12639	72.837	64.7797
28	0	-1.10306	74.0537	64.7797
29	0	-1.08032	75.2208	64.7797
30	0	-1.06252	76.3498	64.7797
31	0	-1.04073	77.4329	64.7797
32	0	-1.01943	78.4721	64.7797
33	0.182322	-0.998575	79.4693	64.5977
34	0.336472	-0.97815	80.4261	64.2686
35	1.09861	-0.958125	81.3441	63.216
36	2.30259	-0.942375	82.2321	61.0461
37	2.30259	-0.923014	83.0841	58.9207
38	2.30259	-0.903992	83.9013	56.8392
39	2.30259	-0.885291	84.685	54.8008
40	2.30259	-0.866894	85.4365	52.8047
41	2.30259	-0.848786	86.157	50.8503
42	2.30259	-0.834498	86.8534	48.9288
43	2.30259	-0.816874	87.5206	47.0478
44	2.30259	-0.7995	88.1598	45.2069
45	2.30259	-0.782366	88.7719	43.4055
46	2.30259	-0.765456	89.3579	41.6429
47	2.30259	-0.748762	89.9185	39.9188
48	2.30259	-0.735557	90.4595	38.2252
49	2.30259	-0.719228	90.9768	36.5691

50	2.30259	-0.703089	91.4712	34.9502
51	2.30259	-0.687131	91.9433	33.368
52	2.30259	-0.671346	92.394	31.8221
53	2.30259	-0.655726	92.824	30.3123
54	2.30259	-0.643345	93.2379	28.8309
55	2.30259	-0.628006	93.6323	27.3849
56	2.30259	-0.612813	94.0078	25.9738
57	2.30259	-0.597761	94.3651	24.5974
58	2.30259	-0.582841	94.7048	23.2554
59	2.30259	-0.568052	95.0275	21.9474
60	2.30259	-0.556308	95.337	20.6665
61	2.30259	-0.541736	95.6305	19.4191
62	2.30259	-0.5272895.9085	18.205	
63	2.30259	-0.5129396.1716	17.0239	
64	2.30259	-0.498687	96.4203	15.8756
65	2.30259	-0.484544	96.6551	14.7599
66	2.30259	-0.473299	96.8791	13.6701
67	2.30259	-0.459327	97.0901	12.6125
68	2.30259	-0.445443	97.2885	11.5868
69	2.30259	-0.431644	97.4748	10.5929
70	2.30259	-0.417928	97.6495	9.63059
71	2.30259	-0.4070197.8151	8.69341	
72	2.30259	-0.393433	97.9699	7.7875
73	2.30259	-0.379927	98.1143	6.91269
74	2.30259	-0.3664998.2486	6.06881	
75	2.30259	-0.353118	98.3733	5.25573
76	2.30259	-0.3398198.4887	4.47329	
77	2.30259	-0.329206	98.5971	3.71526
78	2.30259	-0.316004	98.697	2.98764
79	2.30259	-0.302855	98.7887	2.29029
80	2.30259	-0.2897698.8727	1.62309	
81	2.30259	-0.276714	98.9492	0.985932
82	2.30259	-0.263715	99.0188	0.378706
83	2.30259	-0.253347	99.083	-0.204646
84	2.30259	-0.240426	99.1408	-0.758247
85	2.30259	-0.227545	99.1925	-1.28219
86	2.30259	-0.214702	99.2386	-1.77656
87	2.30259	-0.201894	99.2794	-2.24144
88	2.30259	-0.189118	99.3152	-2.6769
89	2.30259	-0.1789299.3472	-3.08888	
90	2.30259	-0.166199	99.3748	-3.47156
91	2.30259	-0.153505	99.3984	-3.82502
92	2.30259	-0.140835	99.4182	-4.14931
93	2.30259	-0.128189	99.4346	-4.44447
94	2.30259	-0.115562	99.448	-4.71056
95	2.30259	-0.105474	99.4591	-4.95343
96	2.30259	-0.0928787	99.4677	-5.16729
97	2.30259	-0.0802981	99.4742	-5.35218
98	2.30259	-0.0677301	99.4788	-5.50813
99	2.30259	-0.0551734	99.4818	-5.63518
100	2.30259	-0.0426257	99.4836	-5.73333
101	2.30259	-0.0325917	99.4847	-5.80837
102	2.30259	-0.0200544	99.4851	-5.85455
103	2.30259	-0.00751925	99.4852	-5.87186
104	2.30259	0.00751925	99.4852	-5.85455
105	2.30259	0.0200544	99.4856	-5.80837
106	2.30259	0.0325917	99.4867	-5.73333
107	2.30259	0.0426257	99.4885	-5.63518
108	2.30259	0.0551734	99.4915	-5.50813
109	2.30259	0.0677301	99.4961	-5.35218
110	2.30259	0.0802981	99.5026	-5.16729
111	2.30259	0.0928787	99.5112	-4.95343

112	2.30259	0.105474		99.5223	-4.71056
113	2.30259	0.115562		99.5357	-4.44447
114	2.30259	0.128189		99.5521	-4.14931
115	2.30259	0.140835		99.5719	-3.82502
116	2.30259	0.153505		99.5955	-3.47156
117	2.30259	0.166199		99.6231	-3.08888
118	2.30259	0.17892	99.6551	-2.6769	
119	2.30259	0.189118		99.6909	-2.24144
120	2.30259	0.201894		99.7317	-1.77656
121	2.30259	0.214702		99.7778	-1.28219
122	2.30259	0.227545		99.8295	-0.758247
123	2.30259	0.240426		99.8873	-0.204646
124	2.30259	0.253347		99.9515	0.378706
125	2.30259	0.263715		100.021	0.985932
126	2.30259	0.276714		100.098	1.62309
127	2.30259	0.28976	100.182	2.29029	
128	2.30259	0.302855		100.273	2.98764
129	2.30259	0.316004		100.373	3.71526
130	2.30259	0.329206		100.482	4.47329
131	2.30259	0.33981	100.597	5.25573	
132	2.30259	0.353118		100.722	6.06881
133	2.30259	0.36649	100.856	6.91269	
134	2.30259	0.379927		101	7.7875
135	2.30259	0.393433		101.155	8.69341
136	2.30259	0.40701	101.321	9.63059	
137	2.30259	0.417928		101.495	10.5929
138	2.30259	0.431644		101.682	11.5868
139	2.30259	0.445443		101.88	12.6125
140	2.30259	0.459327		102.091	13.6701
141	2.30259	0.473299		102.315	14.7599
142	2.30259	0.484544		102.55	15.8756
143	2.30259	0.498687		102.799	17.0239
144	2.30259	0.51293	103.062	18.205	
145	2.30259	0.52728	103.34	19.4191	
146	2.30259	0.541736		103.633	20.6665
147	2.30259	0.556308		103.943	21.9474
148	2.30259	0.568052		104.265	23.2554
149	2.30259	0.582841		104.605	24.5974
150	2.30259	0.597761		104.962	25.9738
151	2.30259	0.612813		105.338	27.3849
152	2.30259	0.628006		105.732	28.8309
153	2.30259	0.643345		106.146	30.3123
154	2.30259	0.655726		106.576	31.8221
155	2.30259	0.671346		107.027	33.368
156	2.30259	0.687131		107.499	34.9502
157	2.30259	0.703089		107.993	36.5691
158	2.30259	0.719228		108.511	38.2252
159	2.30259	0.735557		109.052	39.9188
160	2.30259	0.748762		109.612	41.6429
161	2.30259	0.765456		110.198	43.4055
162	2.30259	0.782366		110.81	45.2069
163	2.30259	0.7995	111.45	47.0478	
164	2.30259	0.816874		112.117	48.9288
165	2.30259	0.834498		112.813	50.8503
166	2.30259	0.848786		113.534	52.8047
167	2.30259	0.866894		114.285	54.8008
168	2.30259	0.885291		115.069	56.8392
169	2.30259	0.903992		115.886	58.9207
170	2.30259	0.923014		116.738	61.0461
171	2.30259	0.942375		117.626	63.216
172	2.30259	0.958125		118.544	65.4221
173	2.30259	0.97815	119.501	67.6744	

174	2.30259	0.998575		120.498	69.9737
175	2.30259	1.01943	121.537	72.321	
176	2.30259	1.04073	122.621	74.7174	
177	2.30259	1.06252	123.749	77.1639	
178	2.30259	1.08032	124.917	79.6515	
179	2.30259	1.10306	126.133	82.1914	
180	2.30259	1.12639	127.402	84.785	
181	2.30259	1.15035	128.725	87.4337	
182	2.30259	1.17499	130.106	90.1393	
183	2.30259	1.20036	131.547	92.9032	
184	2.30259	1.22123	133.038	95.7152	
185	2.30259	1.24809	134.596	98.589	
186	2.30259	1.27588	136.224	101.527	
187	2.30259	1.30469	137.926	104.531	
188	2.30259	1.33462	139.707	107.604	
189	2.30259	1.36581	141.573	110.749	
190	2.30259	1.39175	143.51	113.954	
191	2.30259	1.42554	145.542	117.236	
192	2.30259	1.46106	147.676	120.6	
193	2.30259	1.49852	149.922	124.051	
194	2.30259	1.5382	152.288	127.592	
195	2.30259	1.58047	154.786	131.232	
196	2.30259	1.61644	157.399	134.954	
197	2.30259	1.66456	160.17	138.786	
198	2.30259	1.71688	163.117	142.74	
199	2.30259	1.77438	166.266	146.825	
200	2.30259	1.83843	169.646	151.058	
201	2.30259	1.91103	173.298	155.459	
202	2.30259	1.97737	177.208	160.012	
203	2.30259	2.07485	181.513	164.789	
204	2.30259	2.19728	186.341	169.849	
205	2.30259	2.36561	191.937	175.296	
206	2.3979	2.65209	198.97	181.655	

Data Set Standard Deviation = 1.29726
Numerator = 32998.6
Denominator = 68642.7
W Statistic = 0.480731 = 32998.6 / 68642.7

5% Critical value of 0.976 exceeds 0.480731
Evidence of non-normality at 95% level of significance

1% Critical value of 0.967 exceeds 0.480731
Evidence of non-normality at 99% level of significance

Kruskal-Wallis Non-Parametric Test

Parameter: Cobalt

Natural Logarithm Transformation
Non-Detects Replaced with 1/2 DL

Kruskal Wallis Ranks

Background Wells

Well ID	Date	Result	Rank
LMW-4	1/16/1998	ND<2.30259	89
	3/16/1999	ND<2.30259	89
	9/23/1999	ND<2.30259	89
	3/14/2000	ND<2.30259	89
	9/23/2003	ND<2.30259	89
	3/10/2004	ND<2.30259	89
	10/12/2004	ND<2.30259	89
	4/1/2005	ND<2.30259	89
	10/26/2005	ND<2.30259	89
	6/19/2006	ND<2.30259	89
	11/18/2006	ND<2.30259	89
	6/2/2007	ND<2.30259	89
	11/15/2007	ND<2.30259	89
	5/20/2008	ND<2.30259	89
	11/20/2008	ND<2.30259	89
	6/11/2009	-1.42712	186
	11/14/2009	-1.42712	187

Rank Sum = 1708
Rank Mean = 100.471

Background Rank Sum = 1708
Background Rank Mean = 100.471

Compliance Wells

Well ID	Date	Result	Rank
LMW-9	1/16/1998	ND<2.30259	89
	3/16/1999	ND<2.30259	89
	9/23/1999	ND<2.30259	89
	3/14/2000	ND<2.30259	89
	9/23/2003	ND<2.30259	89
	3/10/2004	ND<2.30259	89
	10/12/2004	ND<2.30259	89
	4/1/2005	ND<2.30259	89
	10/26/2005	ND<2.30259	89
	6/19/2006	2.30259 J	205
	11/18/2006	ND<2.30259	89
	6/2/2007	ND<2.30259	89
	11/15/2007	ND<2.30259	89
	5/20/2008	ND<2.30259	89
	11/20/2008	ND<2.30259	89
	6/11/2009	-1.89712 J	182
	11/14/2009	-2.04022 J	179

Rank Sum = 1812
Rank Mean = 106.588

LMW-6	1/16/1998	ND<2.30259	89
	3/16/1999	ND<2.30259	89
	9/23/1999	2.3979 J	206
	3/14/2000	ND<2.30259	89
	9/23/2003	ND<2.30259	89
	3/10/2004	ND<2.30259	89
	10/12/2004	ND<2.30259	89
	4/1/2005	ND<2.30259	89
	10/26/2005	ND<2.30259	89
	6/19/2006	ND<2.30259	89
	11/18/2006	ND<0 J	89
	6/2/2007	ND<2.30259	89
	11/15/2007	ND<2.30259	89
	5/20/2008	ND<0 J	89
	11/20/2008	ND<2.30259	89
	6/11/2009	0.336472	203
	11/14/2009	0.182322	202

Rank Sum = 1857
Rank Mean = 109.235

LMW-8	1/16/1998	ND<2.30259	89
	3/16/1999	ND<2.30259	89
	9/23/1999	ND<2.30259	89
	3/14/2000	ND<2.30259	89
	9/23/2003	ND<2.30259	89
	3/10/2004	ND<2.30259	89
	10/12/2004	ND<2.30259	89
	4/1/2005	ND<2.30259	89
	10/26/2005	ND<2.30259	89
	6/19/2006	ND<2.30259	89
	11/18/2006	ND<2.30259	89
	6/2/2007	ND<2.30259	89
	11/15/2007	ND<2.30259	89
	5/20/2008	ND<0 J	89
	11/20/2008	ND<2.30259	89
	6/11/2009	-0.755023	194
	11/14/2009	-0.34249	196

Rank Sum = 1725
Rank Mean = 101.471

LMW-3	11/19/1996	ND<2.30259	89
	3/24/1997	ND<2.30259	89
	1/16/1998	ND<2.30259	89
	3/16/1999	ND<2.30259	89
	9/23/1999	ND<2.30259	89
	3/14/2000	ND<2.30259	89
	9/23/2003	ND<2.30259	89
	3/10/2004	ND<2.30259	89
	10/12/2004	ND<2.30259	89
	4/1/2005	ND<2.30259	89
	10/26/2005	ND<2.30259	89
	6/19/2006	ND<2.30259	89
	11/18/2006	ND<2.30259	89
	6/2/2007	ND<2.30259	89
	11/15/2007	ND<2.30259	89
	5/20/2008	ND<2.30259	89
	11/20/2008	ND<2.30259	89
	6/11/2009	-1.83258 J	184
	11/14/2009	-1.83258 J	185

Rank Sum = 1882
Rank Mean = 99.0526

LMW-10	3/14/2000	ND<2.30259	89
	9/23/2003	ND<2.30259	89
	3/10/2004	ND<2.30259	89
	10/12/2004	ND<2.30259	89
	4/1/2005	ND<2.30259	89
	10/26/2005	ND<2.30259	89
	6/19/2006	ND<2.30259	89
	11/18/2006	ND<2.30259	89
	6/2/2007	ND<2.30259	89
	11/15/2007	ND<2.30259	89
	5/20/2008	ND<2.30259	89
	11/20/2008	ND<2.30259	89
	6/11/2009	-2.04022 J	180
	11/14/2009	-1.89712 J	183

Rank Sum = 1431
Rank Mean = 102.214

LMW-3S	11/18/2006	ND<2.30259	89
	6/2/2007	ND<2.30259	89
	11/15/2007	ND<2.30259	89
	5/20/2008	ND<0 J	89
	11/20/2008	ND<2.30259	89
	6/11/2009	-0.867501	192
	11/14/2009	-0.867501	193

Rank Sum = 830
Rank Mean = 118.571

LMW-9S	11/18/2006	0 J	198
	6/2/2007	0 J	199
	11/15/2007	ND<2.30259	89
	5/20/2008	0 J	200
	11/20/2008	ND<2.30259	89
	6/11/2009	-2.04022 J	181
	11/14/2009	-1.38629	189

Rank Sum = 1145
Rank Mean = 163.571

LMW-16	11/18/2006	ND<2.30259	89
	6/2/2007	ND<2.30259	89
	11/15/2007	ND<2.30259	89
	5/20/2008	ND<2.30259	89
	11/20/2008	ND<2.30259	89
	6/11/2009	ND<-3.35241 U	89
	11/14/2009	-2.52573 J	178

Rank Sum = 712
Rank Mean = 101.714

LMW-15R	11/18/2006	ND<2.30259	89
	6/2/2007	ND<2.30259	89
	11/15/2007	ND<2.30259	89
	11/15/2007	ND<2.30259	89
	5/20/2008	ND<2.30259	89
	5/20/2008	ND<0 J	89
	11/20/2008	ND<2.30259	89
	11/20/2008	ND<2.30259	89
	6/11/2009	-0.18633	197
	11/14/2009	-1.34707	190

Rank Sum = 1099
Rank Mean = 109.9

LMW-14R	6/2/2007	ND<2.30259	89
	11/15/2007	ND<2.30259	89

	5/20/2008	ND<0 J	89
	11/20/2008	ND<2.30259	89
	6/11/2009	-1.42712	188
	11/14/2009	-1.20397	191

Rank Sum = 735
Rank Mean = 122.5

LMW-7	1/16/1998	ND<2.30259	89
	3/16/1999	ND<2.30259	89
	9/23/1999	ND<2.30259	89
	3/14/2000	ND<2.30259	89
	9/23/2003	ND<2.30259	89
	3/10/2004	ND<2.30259	89
	10/12/2004	ND<2.30259	89
	4/1/2005	ND<2.30259	89
	10/26/2005	ND<2.30259	89
	6/19/2006	ND<2.30259	89
	11/18/2006	0 J	201
	6/2/2007	ND<2.30259	89
	11/15/2007	ND<2.30259	89
	5/20/2008	ND<2.30259	89
	11/20/2008	ND<2.30259	89
	6/11/2009	-0.462035	195

Rank Sum = 1642
Rank Mean = 102.625

LMW-9D	11/18/2006	ND<2.30259	89
	6/2/2007	ND<2.30259	89
	11/15/2007	1.09861 J	204
	5/20/2008	ND<2.30259	89
	11/20/2008	ND<2.30259	89
	6/11/2009	ND<-3.35241 U	89

Rank Sum = 649
Rank Mean = 108.167

LMW-11	3/14/2000	ND<2.30259	89
	9/23/2003	ND<2.30259	89
	3/10/2004	ND<2.30259	89
	10/12/2004	ND<2.30259	89
	4/1/2005	ND<2.30259	89
	10/26/2005	ND<2.30259	89
	6/19/2006	ND<2.30259	89
	6/2/2007	ND<2.30259	89
	11/15/2007	ND<2.30259	89
	5/20/2008	ND<2.30259	89
	11/20/2008	ND<2.30259	89

Rank Sum = 979
Rank Mean = 89

LMW-12	3/14/2000	ND<2.30259	89
	9/23/2003	ND<2.30259	89
	3/10/2004	ND<2.30259	89
	10/12/2004	ND<2.30259	89
	4/1/2005	ND<2.30259	89
	10/26/2005	ND<2.30259	89
	6/19/2006	ND<2.30259	89
	6/2/2007	ND<2.30259	89
	11/15/2007	ND<2.30259	89
	5/20/2008	ND<2.30259	89
	11/20/2008	ND<2.30259	89

Rank Sum = 979
Rank Mean = 89

MW-5	1/16/1998	ND<2.30259	89
	3/16/1999	ND<2.30259	89
	9/23/1999	ND<2.30259	89
	3/14/2000	ND<2.30259	89
	9/23/2003	ND<2.30259	89
	3/10/2004	ND<2.30259	89
	10/12/2004	ND<2.30259	89
	4/1/2005	ND<2.30259	89
	10/26/2005	ND<2.30259	89
	6/19/2006	ND<2.30259	89
	11/15/2007	ND<2.30259	89
	5/20/2008	ND<2.30259	89
	11/20/2008	ND<2.30259	89

Rank Sum = 1157
Rank Mean = 89

LMW-13	3/14/2000	ND<2.30259	89
	9/23/2003	ND<2.30259	89
	3/10/2004	ND<2.30259	89
	10/12/2004	ND<2.30259	89
	4/1/2005	ND<2.30259	89
	10/26/2005	ND<2.30259	89
	6/19/2006	ND<2.30259	89
	6/2/2007	ND<2.30259	89
	11/15/2007	ND<2.30259	89
	5/20/2008	ND<2.30259	89
	11/20/2008	ND<2.30259	89

Rank Sum = 979
Rank Mean = 89

Calculation Results:

Kruskal-Wallis H Statistic = 11.4278
Kruskal-Wallis H Statistic (adjusted for tied non-detects) = 31.2516
95% Confidence comparison value is 26.2962 at 16 degrees of freedom
11.4278 < 26.2962 indicating no significant group difference at 5% significance level
31.2516 > 26.2962 indicating a significant group difference at 5% significance level when adjusted for ties

Individual Well Comparisons at 1% Significance Level per Comparison

1% Z score is 2.32634
Mean background rank is 100.471

Well	Mean Rank	Dif from Bkg	Critical Value
LMW-9	106.588	6.11765	47.5655
LMW-6	109.235	8.76471	47.5655
LMW-8	101.471	1	47.5655
LMW-3	99.0526	-1.4179	46.2969
LMW-10	102.214	1.7437	50.0488
LMW-3S	118.571	18.1008	62.2779
LMW-9S	163.571	63.1008	62.2779
LMW-16	101.714	1.2437	62.2779
LMW-15R	109.9	9.42941	55.2661
LMW-14R	122.5	22.0294	65.8515
LMW-7	102.625	2.15441	48.303
LMW-9D	108.167	7.69608	65.8515
LMW-11	89	-11.470	53.6611
LMW-12	89	-11.470	53.6611
MW-5	89	-11.470	51.0936
LMW-13	89	-11.470	53.6611

Individual Well Comparisons at Groupwise 5% Significance Level (0.3125% Significance Level per comparison)

0.3125% Z score is 2.74777

Mean background rank is 100.471

Well	Mean Rank		Dif from Bkg	Critical Value
LMW-9	106.588	6.11765	56.1821	
LMW-6	109.235	8.76471	56.1821	
LMW-8	101.471	1	56.1821	
LMW-3	99.0526	-1.4179	54.6837	
LMW-10	102.214	1.7437	59.1153	
LMW-3S	118.571	18.1008	73.5597	
LMW-9S	163.571	63.1008	73.5597	
LMW-16	101.714	1.2437	73.5597	
LMW-15R		109.9	9.42941	65.2778
LMW-14R		122.5	22.0294	77.7807
LMW-7	102.625	2.15441	57.0532	
LMW-9D	108.167	7.69608	77.7807	
LMW-11	89	-11.470	63.382	
LMW-12	89	-11.470	63.382	
MW-5	89	-11.470	60.3493	
LMW-13	89	-11.470	63.382	

Mann-Kendall Trend Analysis

Parameter: Cobalt

Location: LMW-9S

Natural Logarithm Transformation
Non-Detects Replaced with 1/2 DL

95% Confidence Level

Xj	Xk	Xj - Xk	Positives	Negatives
0 J	0 J	0	0	0
ND<2.30259	0 J	2.30259	1	0
0 J	0 J	0	1	0
ND<2.30259	0 J	2.30259	2	0
-2.04022 J	0 J	-2.04022	2	1
-1.38629	0 J	-1.38629	2	2
ND<2.30259	0 J	2.30259	3	2
0 J	0 J	0	3	2
ND<2.30259	0 J	2.30259	4	2
-2.04022 J	0 J	-2.04022	4	3
-1.38629	0 J	-1.38629	4	4
0 J	ND<2.30259	-2.30259	4	5
ND<2.30259	ND<2.30259	0	4	5
-2.04022 J	ND<2.30259	-4.34281	4	6
-1.38629	ND<2.30259	-3.68888	4	7
ND<2.30259	0 J	2.30259	5	7
-2.04022 J	0 J	-2.04022	5	8
-1.38629	0 J	-1.38629	5	9
-2.04022 J	ND<2.30259	-4.34281	5	10
-1.38629	ND<2.30259	-3.68888	5	11
-1.38629	-2.04022 J	0.653926	6	11

S Statistic = 6 - 11 = -5
Comparing at 1.0 - (0.05 / 2) = 97.5% confidence level (two-tailed)
Probability of obtaining S >= |-5| is 0.562
0.562 >= 0.025 indicating no evidence of a trend

Concentrations (ug/L)

Parameter: Copper

Natural Logarithm Transformation
Non-Detects Replaced with 1/2 DL
Total Measurements: 206
Total Non-Detect: 142
Percent Non-Detects: 68.932%
Total Background Measurements: 17
There is 1 background location

Loc.	Meas.	ND	Date	Conc.	Original
LMW-4	17	11 (64.7059%)	1/16/1998	4.29046	73
			3/16/1999	ND<2.30259	ND<20
			9/23/1999	ND<2.30259	ND<20
			3/14/2000	ND<2.30259	ND<20
			9/23/2003	ND<2.30259	ND<20
			3/10/2004	ND<2.30259	ND<20
			10/12/2004	ND<2.30259	ND<20
			4/1/2005	ND<2.30259	ND<20
			10/26/2005	ND<2.30259	ND<20
			6/19/2006	ND<2.30259	ND<20
			11/18/2006	ND<2.30259	ND<20
			6/2/2007	2.07944 J	8 J
			11/15/2007	1.60944 J	5 J
			5/20/2008	2.07944 J	8 J
			11/20/2008	ND<2.30259	ND<20
			6/11/2009	-0.301105 J	0.74 J
			11/14/2009	-0.248461 J	0.78 J

There are 16 compliance locations

Loc.	Meas.	ND	Date	Conc.	Original
LMW-3	19	15 (78.9474%)	11/19/1996	ND<2.30259	ND<20
			3/24/1997	ND<2.30259	ND<20
			1/16/1998	1.38629 J	4 J
			3/16/1999	ND<2.30259	ND<20
			9/23/1999	ND<2.30259	ND<20
			3/14/2000	ND<2.30259	ND<20
			9/23/2003	ND<2.30259	ND<20
			3/10/2004	ND<2.30259	ND<20
			10/12/2004	ND<2.30259	ND<20
			4/1/2005	ND<2.30259	ND<20
			10/26/2005	ND<2.30259	ND<20
			6/19/2006	ND<2.30259	ND<20
			11/18/2006	ND<2.30259	ND<20
			6/2/2007	ND<2.30259	ND<20
			11/15/2007	2.19722 J	9 J
			5/20/2008	ND<2.30259	ND<20
			11/20/2008	ND<2.30259	ND<20
			6/11/2009	-0.356675 J	0.7 J
			11/14/2009	0.0953102	1.1
LMW-6	17	12 (70.5882%)	1/16/1998	2.89037 J	18 J
			3/16/1999	ND<2.30259	ND<20
			9/23/1999	ND<2.30259	ND<20
			3/14/2000	ND<2.30259	ND<20

			9/23/2003	ND<2.30259	ND<20	
			3/10/2004	ND<2.30259	ND<20	
			10/12/2004	ND<2.30259	ND<20	
			4/1/2005	ND<2.30259	ND<20	
			10/26/2005	ND<2.30259	ND<20	
			6/19/2006	ND<2.30259	ND<20	
			11/18/2006	ND<2.30259	ND<20	
			6/2/2007	1.94591 J	7 J	
			11/15/2007	1.94591 J	7 J	
			5/20/2008	ND<2.30259	ND<20	
			11/20/2008	ND<2.30259	ND<20	
			6/11/2009	0.530628	1.7	
			11/14/2009	0.182322	1.2	
LMW-8	17	12 (70.5882%)	1/16/1998	0.693147 J	2 J	
			3/16/1999	1.60944 J	5 J	
			9/23/1999	ND<2.30259	ND<20	
			3/14/2000	ND<2.30259	ND<20	
			9/23/2003	ND<2.30259	ND<20	
			3/10/2004	ND<2.30259	ND<20	
			10/12/2004	ND<2.30259	ND<20	
			4/1/2005	ND<2.30259	ND<20	
			10/26/2005	ND<2.30259	ND<20	
			6/19/2006	ND<2.30259	ND<20	
			11/18/2006	ND<2.30259	ND<20	
			6/2/2007	ND<2.30259	ND<20	
			11/15/2007	1.79176 J	6 J	
			5/20/2008	ND<2.30259	ND<20	
			11/20/2008	ND<2.30259	ND<20	
			6/11/2009	-0.287682 J	0.75 J	
			11/14/2009	-0.430783 J	0.65 J	
LMW-9	17	11 (64.7059%)	1/16/1998	2.19722 J	9 J	
			3/16/1999	ND<2.30259	ND<20	
			9/23/1999	2.48491 J	12 J	
			3/14/2000	ND<2.30259	ND<20	
			9/23/2003	ND<2.30259	ND<20	
			3/10/2004	ND<2.30259	ND<20	
			10/12/2004	ND<2.30259	ND<20	
			4/1/2005	ND<2.30259	ND<20	
			10/26/2005	ND<2.30259	ND<20	
			6/19/2006	ND<2.30259	ND<20	
			11/18/2006	ND<2.30259	ND<20	
			6/2/2007	1.60944 J	5 J	
			11/15/2007	1.94591 J	7 J	
			5/20/2008	ND<2.30259	ND<20	
			11/20/2008	ND<2.30259	ND<20	
			6/11/2009	-0.127833 J	0.88 J	
			11/14/2009	-0.527633 J	0.59 J	
LMW-9D7		2 (28.5714%)	11/18/2006	1.79176 J	6 J	
			6/2/2007	ND<2.30259	ND<20	
			11/15/2007	2.19722 J	9 J	
			5/20/2008	0.693147 J	2 J	
			11/20/2008	ND<2.30259	ND<20	
			6/11/2009	-0.371064 J	0.69 J	
			11/14/2009	-0.287682 J	0.75 J	
LMW-15R		10	4 (40%) 11/18/2006	1.09861 J	3 J	
			6/2/2007	1.60944 J	5 J	
			11/15/2007	ND<2.30259	ND<20	
			11/15/2007	1.60944 J	5 J	

			5/20/2008	ND<2.30259	ND<20
			5/20/2008	ND<2.30259	ND<20
			11/20/2008	1.60944 J	5 J
			11/20/2008	ND<2.30259	ND<20
			6/11/2009	1.30833	3.7
			11/14/2009	-0.562119 J	0.57 J
LMW-14R	6	4 (66.6667%)	6/2/2007	ND<2.30259	ND<20
			11/15/2007	ND<2.30259	ND<20
			5/20/2008	ND<2.30259	ND<20
			11/20/2008	ND<2.30259	ND<20
			6/11/2009	-0.210721 J	0.81 J
			11/14/2009	-0.0833816 J	0.92 J
LMW-9S	7	4 (57.1429%)	11/18/2006	ND<2.30259	ND<20
			6/2/2007	ND<2.30259	ND<20
			11/15/2007	1.94591 J	7 J
			5/20/2008	ND<2.30259	ND<20
			11/20/2008	ND<2.30259	ND<20
			6/11/2009	-0.18633 J	0.83 J
			11/14/2009	0.530628	1.7
LMW-3S	7	3 (42.8571%)	11/18/2006	0.693147 J	2 J
			6/2/2007	ND<2.30259	ND<20
			11/15/2007	1.79176 J	6 J
			5/20/2008	ND<2.30259	ND<20
			11/20/2008	ND<2.30259	ND<20
			6/11/2009	0.336472	1.4
			11/14/2009	-0.198451 J	0.82 J
LMW-16	7	2 (28.5714%)	11/18/2006	ND<2.30259	ND<20
			6/2/2007	1.94591 J	7 J
			11/15/2007	1.79176 J	6 J
			5/20/2008	ND<2.30259	ND<20
			11/20/2008	1.60944 J	5 J
			6/11/2009	-1.02165 J	0.36 J
			11/14/2009	-0.527633 J	0.59 J
LMW-7	16	7 (43.75%)	1/16/1998	2.99573	20
			3/16/1999	1.60944 J	5 J
			9/23/1999	1.60944 J	5 J
			3/14/2000	ND<2.30259	ND<20
			9/23/2003	ND<2.30259	ND<20
			3/10/2004	ND<2.30259	ND<20
			10/12/2004	ND<2.30259	ND<20
			4/1/2005	2.30259 J	10 J
			10/26/2005	2.3979 J	11 J
			6/19/2006	2.30259 J	10 J
			11/18/2006	ND<2.30259	ND<20
			6/2/2007	1.79176 J	6 J
			11/15/2007	2.07944 J	8 J
			5/20/2008	ND<2.30259	ND<20
			11/20/2008	ND<2.30259	ND<20
			6/11/2009	1.38629	4
LMW-10	13	11 (84.6154%)	3/14/2000	ND<2.30259	ND<20
			9/23/2003	ND<2.30259	ND<20
			3/10/2004	ND<2.30259	ND<20
			10/12/2004	ND<2.30259	ND<20
			4/1/2005	ND<2.30259	ND<20
			10/26/2005	ND<2.30259	ND<20

			6/19/2006	ND<2.30259	ND<20
			11/18/2006	ND<2.30259	ND<20
			6/2/2007	ND<2.30259	ND<20
			11/15/2007	ND<2.30259	ND<20
			5/20/2008	0.693147 J	2 J
			11/20/2008	ND<2.30259	ND<20
			6/11/2009	-0.673345 J	0.51 J
LMW-11	11	11 (100%)	3/14/2000	ND<2.30259	ND<20
			9/23/2003	ND<2.30259	ND<20
			3/10/2004	ND<2.30259	ND<20
			10/12/2004	ND<2.30259	ND<20
			4/1/2005	ND<2.30259	ND<20
			10/26/2005	ND<2.30259	ND<20
			6/19/2006	ND<2.30259	ND<20
			6/2/2007	ND<2.30259	ND<20
			11/15/2007	ND<2.30259	ND<20
			5/20/2008	ND<2.30259	ND<20
			11/20/2008	ND<2.30259	ND<20
LMW-12	11	11 (100%)	3/14/2000	ND<2.30259	ND<20
			9/23/2003	ND<2.30259	ND<20
			3/10/2004	ND<2.30259	ND<20
			10/12/2004	ND<2.30259	ND<20
			4/1/2005	ND<2.30259	ND<20
			10/26/2005	ND<2.30259	ND<20
			6/19/2006	ND<2.30259	ND<20
			6/2/2007	ND<2.30259	ND<20
			11/15/2007	ND<2.30259	ND<20
			5/20/2008	ND<2.30259	ND<20
			11/20/2008	ND<2.30259	ND<20
LMW-13	11	11 (100%)	3/14/2000	ND<2.30259	ND<20
			9/23/2003	ND<2.30259	ND<20
			3/10/2004	ND<2.30259	ND<20
			10/12/2004	ND<2.30259	ND<20
			4/1/2005	ND<2.30259	ND<20
			10/26/2005	ND<2.30259	ND<20
			6/19/2006	ND<2.30259	ND<20
			6/2/2007	ND<2.30259	ND<20
			11/15/2007	ND<2.30259	ND<20
			5/20/2008	ND<2.30259	ND<20
			11/20/2008	ND<2.30259	ND<20
MW-5	13	11 (84.6154%)	1/16/1998	1.09861 J	3 J
			3/16/1999	ND<2.30259	ND<20
			9/23/1999	ND<2.30259	ND<20
			3/14/2000	ND<2.30259	ND<20
			9/23/2003	ND<2.30259	ND<20
			3/10/2004	ND<2.30259	ND<20
			10/12/2004	ND<2.30259	ND<20
			4/1/2005	ND<2.30259	ND<20
			10/26/2005	ND<2.30259	ND<20
			6/19/2006	ND<2.30259	ND<20
			11/15/2007	1.60944 J	5 J
			5/20/2008	ND<2.30259	ND<20
			11/20/2008	ND<2.30259	ND<20

There are 0 unused locations

Loc.	Meas.	ND	Date	Conc.	Original

Shapiro-Francia Test of Normality

Parameter: Copper

All Locations

Normality Test of Parameter Concentrations

Original Data (Not Transformed)
Non-Detects Replaced with 1/2 DL
Total Number of Measurements = 206

i	x(i)	m(i)	sum(m^2)	sum(mx)
1	0.36	-2.65209	7.03356	-0.954751
2	0.51	-2.36561	12.6297	-2.16121
3	0.57	-2.19728	17.4578	-3.41367
4	0.59	-2.07485	21.7627	-4.63783
5	0.59	-1.97737	25.6727	-5.80447
6	0.65	-1.91103	29.3248	-7.04664
7	0.69	-1.83843	32.7046	-8.31516
8	0.7	-1.77438	35.853	-9.55722
9	0.74	-1.71688	38.8007	-10.8277
10	0.75	-1.66456	41.5715	-12.0761
11	0.75	-1.61644	44.1843	-13.2885
12	0.78	-1.58047	46.6822	-14.5212
13	0.81	-1.5382	49.0483	-15.7672
14	0.82	-1.49852	51.2938	-16.996
15	0.83	-1.46106	53.4285	-18.2086
16	0.88	-1.42554	55.4607	-19.4631
17	0.92	-1.39175	57.3976	-20.7435
18	1.1	-1.36581	59.2631	-22.2459
19	1.2	-1.33462	61.0443	-23.8475
20	1.4	-1.30469	62.7465	-25.674
21	1.7	-1.27588	64.3743	-27.843
22	1.7	-1.24809	65.9321	-29.9647
23	2	-1.22123	67.4235	-32.4072
24	2	-1.20036	68.8643	-34.8079
25	2	-1.17499	70.2449	-37.1579
26	2	-1.15035	71.5682	-39.4586
27	3	-1.12639	72.837	-42.8378
28	3	-1.10306	74.0537	-46.147
29	3.7	-1.08032	75.2208	-50.1441
30	4	-1.06252	76.3498	-54.3942
31	4	-1.04073	77.4329	-58.5572
32	5	-1.01943	78.4721	-63.6543
33	5	-0.998575	79.4693	-68.6472
34	5	-0.97815	80.4261	-73.5379
35	5	-0.958125	81.3441	-78.3285
36	5	-0.942375	82.2321	-83.0404
37	5	-0.923014	83.0841	-87.6555
38	5	-0.903992	83.9013	-92.1755
39	5	-0.885291	84.685	-96.6019
40	5	-0.866894	85.4365	-100.936
41	5	-0.848786	86.157	-105.18
42	6	-0.834498	86.8534	-110.187
43	6	-0.816874	87.5206	-115.089
44	6	-0.7995	88.1598	-119.886
45	6	-0.782366	88.7719	-124.58
46	6	-0.765456	89.3579	-129.172
47	7	-0.748762	89.9185	-134.414
48	7	-0.735557	90.4595	-139.563
49	7	-0.719228	90.9768	-144.597

50	7	-0.703089	91.4712	-149.519
51	7	-0.687131	91.9433	-154.329
52	8	-0.671346	92.394	-159.7
53	8	-0.655726	92.824	-164.945
54	8	-0.643345	93.2379	-170.092
55	9	-0.628006	93.6323	-175.744
56	9	-0.612813	94.0078	-181.26
57	9	-0.597761	94.3651	-186.639
58	10	-0.582841	94.7048	-192.468
59	10	-0.568052	95.0275	-198.148
60	10	-0.556308	95.337	-203.711
61	10	-0.541736	95.6305	-209.129
62	10	-0.5272895.9085	-214.402	
63	10	-0.5129396.1716	-219.531	
64	10	-0.498687	96.4203	-224.518
65	10	-0.484544	96.6551	-229.363
66	10	-0.473299	96.8791	-234.096
67	10	-0.459327	97.0901	-238.689
68	10	-0.445443	97.2885	-243.144
69	10	-0.431644	97.4748	-247.46
70	10	-0.417928	97.6495	-251.64
71	10	-0.4070197.8151	-255.71	
72	10	-0.393433	97.9699	-259.644
73	10	-0.379927	98.1143	-263.443
74	10	-0.3664998.2486	-267.108	
75	10	-0.353118	98.3733	-270.639
76	10	-0.3398198.4887	-274.037	
77	10	-0.329206	98.5971	-277.33
78	10	-0.316004	98.697	-280.49
79	10	-0.302855	98.7887	-283.518
80	10	-0.2897698.8727	-286.416	
81	10	-0.276714	98.9492	-289.183
82	10	-0.263715	99.0188	-291.82
83	10	-0.253347	99.083	-294.353
84	10	-0.240426	99.1408	-296.758
85	10	-0.227545	99.1925	-299.033
86	10	-0.214702	99.2386	-301.18
87	10	-0.201894	99.2794	-303.199
88	10	-0.189118	99.3152	-305.09
89	10	-0.1789299.3472	-306.88	
90	10	-0.166199	99.3748	-308.542
91	10	-0.153505	99.3984	-310.077
92	10	-0.140835	99.4182	-311.485
93	10	-0.128189	99.4346	-312.767
94	10	-0.115562	99.448	-313.922
95	10	-0.105474	99.4591	-314.977
96	10	-0.0928787	99.4677	-315.906
97	10	-0.0802981	99.4742	-316.709
98	10	-0.0677301	99.4788	-317.386
99	10	-0.0551734	99.4818	-317.938
100	10	-0.0426257	99.4836	-318.364
101	10	-0.0325917	99.4847	-318.69
102	10	-0.0200544	99.4851	-318.891
103	10	-0.00751925	99.4852	-318.966
104	10	0.00751925	99.4852	-318.891
105	10	0.0200544	99.4856	-318.69
106	10	0.0325917	99.4867	-318.364
107	10	0.0426257	99.4885	-317.938
108	10	0.0551734	99.4915	-317.386
109	10	0.0677301	99.4961	-316.709
110	10	0.0802981	99.5026	-315.906
111	10	0.0928787	99.5112	-314.977

112	10	0.105474	99.5223	-313.922
113	10	0.115562	99.5357	-312.767
114	10	0.128189	99.5521	-311.485
115	10	0.140835	99.5719	-310.077
116	10	0.153505	99.5955	-308.542
117	10	0.166199	99.6231	-306.88
118	10	0.17892	99.6551	-305.09
119	10	0.189118	99.6909	-303.199
120	10	0.201894	99.7317	-301.18
121	10	0.214702	99.7778	-299.033
122	10	0.227545	99.8295	-296.758
123	10	0.240426	99.8873	-294.353
124	10	0.253347	99.9515	-291.82
125	10	0.263715	100.021	-289.183
126	10	0.276714	100.098	-286.416
127	10	0.28976	100.182	-283.518
128	10	0.302855	100.273	-280.49
129	10	0.316004	100.373	-277.33
130	10	0.329206	100.482	-274.037
131	10	0.33981	100.597	-270.639
132	10	0.353118	100.722	-267.108
133	10	0.36649	100.856	-263.443
134	10	0.379927	101	-259.644
135	10	0.393433	101.155	-255.71
136	10	0.40701	101.321	-251.64
137	10	0.417928	101.495	-247.46
138	10	0.431644	101.682	-243.144
139	10	0.445443	101.88	-238.689
140	10	0.459327	102.091	-234.096
141	10	0.473299	102.315	-229.363
142	10	0.484544	102.55	-224.518
143	10	0.498687	102.799	-219.531
144	10	0.51293	103.062	-214.402
145	10	0.52728	103.34	-209.129
146	10	0.541736	103.633	-203.711
147	10	0.556308	103.943	-198.148
148	10	0.568052	104.265	-192.468
149	10	0.582841	104.605	-186.639
150	10	0.597761	104.962	-180.662
151	10	0.612813	105.338	-174.534
152	10	0.628006	105.732	-168.254
153	10	0.643345	106.146	-161.82
154	10	0.655726	106.576	-155.263
155	10	0.671346	107.027	-148.549
156	10	0.687131	107.499	-141.678
157	10	0.703089	107.993	-134.647
158	10	0.719228	108.511	-127.455
159	10	0.735557	109.052	-120.099
160	10	0.748762	109.612	-112.612
161	10	0.765456	110.198	-104.957
162	10	0.782366	110.81	-97.1335
163	10	0.7995	111.45	-89.1385
164	10	0.816874	112.117	-80.9698
165	10	0.834498	112.813	-72.6248
166	10	0.848786	113.534	-64.137
167	10	0.866894	114.285	-55.468
168	10	0.885291	115.069	-46.6151
169	10	0.903992	115.886	-37.5752
170	10	0.923014	116.738	-28.345
171	10	0.942375	117.626	-18.9213
172	10	0.958125	118.544	-9.34004
173	10	0.97815	119.501	0.441465

174	10	0.998575		120.498	10.4272
175	10	1.01943	121.537	20.6215	
176	10	1.04073	122.621	31.0288	
177	10	1.06252	123.749	41.654	
178	10	1.08032	124.917	52.4572	
179	10	1.10306	126.133	63.4878	
180	10	1.12639	127.402	74.7518	
181	10	1.15035	128.725	86.2552	
182	10	1.17499	130.106	98.0051	
183	10	1.20036	131.547	110.009	
184	10	1.22123	133.038	122.221	
185	10	1.24809	134.596	134.702	
186	10	1.27588	136.224	147.461	
187	10	1.30469	137.926	160.507	
188	10	1.33462	139.707	173.854	
189	10	1.36581	141.573	187.512	
190	10	1.39175	143.51	201.429	
191	10	1.42554	145.542	215.685	
192	10	1.46106	147.676	230.295	
193	10	1.49852	149.922	245.28	
194	10	1.5382	152.288	260.662	
195	10	1.58047	154.786	276.467	
196	10	1.61644	157.399	292.631	
197	10	1.66456	160.17	309.277	
198	10	1.71688	163.117	326.446	
199	10	1.77438	166.266	344.19	
200	10	1.83843	169.646	362.574	
201	10	1.91103	173.298	381.684	
202	11	1.97737	177.208	403.435	
203	12	2.07485	181.513	428.333	
204	18	2.19728	186.341	467.885	
205	20	2.36561	191.937	515.197	
206	73	2.65209	198.97	708.799	

Data Set Standard Deviation = 5.61539
Numerator = 502396
Denominator = 1.28618e+006
W Statistic = 0.39061 = 502396 / 1.28618e+006

5% Critical value of 0.976 exceeds 0.39061
Evidence of non-normality at 95% level of significance

1% Critical value of 0.967 exceeds 0.39061
Evidence of non-normality at 99% level of significance

Shapiro-Francia Test of Normality

Parameter: Copper

All Locations

Normality Test of Parameter Concentrations

Natural Logarithm Transformation
Non-Detects Replaced with 1/2 DL
Total Number of Measurements = 206

i	x(i)	m(i)	sum(m^2)	sum(mx)
1	-1.02165	-2.65209	7.03356	2.70951
2	-0.673345	-2.36561	12.6297	4.30238
3	-0.562119	-2.19728	17.4578	5.53752
4	-0.527633	-2.07485	21.7627	6.63227
5	-0.527633	-1.97737	25.6727	7.6756
6	-0.430783	-1.91103	29.3248	8.49884
7	-0.371064	-1.83843	32.7046	9.18101
8	-0.356675	-1.77438	35.853	9.81389
9	-0.301105	-1.71688	38.8007	10.3308
10	-0.287682	-1.66456	41.5715	10.8097
11	-0.287682	-1.61644	44.1843	11.2747
12	-0.248461	-1.58047	46.6822	11.6674
13	-0.210721	-1.5382	49.0483	11.9915
14	-0.198451	-1.49852	51.2938	12.2889
15	-0.18633	-1.46106	53.4285	12.5612
16	-0.127833	-1.42554	55.4607	12.7434
17	-0.0833816	-1.39175	57.3976	12.8594
18	0.0953102	-1.36581	59.2631	12.7293
19	0.182322	-1.33462	61.0443	12.4859
20	0.336472	-1.30469	62.7465	12.047
21	0.530628	-1.27588	64.3743	11.3699
22	0.530628	-1.24809	65.9321	10.7077
23	0.693147	-1.22123	67.4235	9.86117
24	0.693147	-1.20036	68.8643	9.02915
25	0.693147	-1.17499	70.2449	8.21471
26	0.693147	-1.15035	71.5682	7.41735
27	1.09861	-1.12639	72.837	6.17988
28	1.09861	-1.10306	74.0537	4.96804
29	1.30833	-1.08032	75.2208	3.55462
30	1.38629	-1.06252	76.3498	2.08166
31	1.38629	-1.04073	77.4329	0.638898
32	1.60944	-1.01943	78.4721	-1.00181
33	1.60944	-0.998575	79.4693	-2.60895
34	1.60944	-0.97815	80.4261	-4.18322
35	1.60944	-0.958125	81.3441	-5.72527
36	1.60944	-0.942375	82.2321	-7.24196
37	1.60944	-0.923014	83.0841	-8.7275
38	1.60944	-0.903992	83.9013	-10.1824
39	1.60944	-0.885291	84.685	-11.6072
40	1.60944	-0.866894	85.4365	-13.0024
41	1.60944	-0.848786	86.157	-14.3685
42	1.79176	-0.834498	86.8534	-15.8637
43	1.79176	-0.816874	87.5206	-17.3274
44	1.79176	-0.7995	88.1598	-18.7599
45	1.79176	-0.782366	88.7719	-20.1617
46	1.79176	-0.765456	89.3579	-21.5332
47	1.94591	-0.748762	89.9185	-22.9902
48	1.94591	-0.735557	90.4595	-24.4216
49	1.94591	-0.719228	90.9768	-25.8211

50	1.94591	-0.703089	91.4712	-27.1893
51	1.94591	-0.687131	91.9433	-28.5264
52	2.07944	-0.671346	92.394	-29.9224
53	2.07944	-0.655726	92.824	-31.2859
54	2.07944	-0.643345	93.2379	-32.6237
55	2.19722	-0.628006	93.6323	-34.0036
56	2.19722	-0.612813	94.0078	-35.3501
57	2.19722	-0.597761	94.3651	-36.6635
58	2.30259	-0.582841	94.7048	-38.0055
59	2.30259	-0.568052	95.0275	-39.3135
60	2.30259	-0.556308	95.337	-40.5945
61	2.30259	-0.541736	95.6305	-41.8419
62	2.30259	-0.5272895.9085	-43.056	
63	2.30259	-0.5129396.1716	-44.237	
64	2.30259	-0.498687	96.4203	-45.3853
65	2.30259	-0.484544	96.6551	-46.501
66	2.30259	-0.473299	96.8791	-47.5908
67	2.30259	-0.459327	97.0901	-48.6485
68	2.30259	-0.445443	97.2885	-49.6741
69	2.30259	-0.431644	97.4748	-50.668
70	2.30259	-0.417928	97.6495	-51.6303
71	2.30259	-0.4070197.8151	-52.5675	
72	2.30259	-0.393433	97.9699	-53.4734
73	2.30259	-0.379927	98.1143	-54.3482
74	2.30259	-0.3664998.2486	-55.1921	
75	2.30259	-0.353118	98.3733	-56.0052
76	2.30259	-0.3398198.4887	-56.7876	
77	2.30259	-0.329206	98.5971	-57.5457
78	2.30259	-0.316004	98.697	-58.2733
79	2.30259	-0.302855	98.7887	-58.9706
80	2.30259	-0.2897698.8727	-59.6378	
81	2.30259	-0.276714	98.9492	-60.275
82	2.30259	-0.263715	99.0188	-60.8822
83	2.30259	-0.253347	99.083	-61.4656
84	2.30259	-0.240426	99.1408	-62.0192
85	2.30259	-0.227545	99.1925	-62.5431
86	2.30259	-0.214702	99.2386	-63.0375
87	2.30259	-0.201894	99.2794	-63.5024
88	2.30259	-0.189118	99.3152	-63.9378
89	2.30259	-0.1789299.3472	-64.3498	
90	2.30259	-0.166199	99.3748	-64.7325
91	2.30259	-0.153505	99.3984	-65.086
92	2.30259	-0.140835	99.4182	-65.4102
93	2.30259	-0.128189	99.4346	-65.7054
94	2.30259	-0.115562	99.448	-65.9715
95	2.30259	-0.105474	99.4591	-66.2144
96	2.30259	-0.0928787	99.4677	-66.4282
97	2.30259	-0.0802981	99.4742	-66.6131
98	2.30259	-0.0677301	99.4788	-66.7691
99	2.30259	-0.0551734	99.4818	-66.8961
100	2.30259	-0.0426257	99.4836	-66.9943
101	2.30259	-0.0325917	99.4847	-67.0693
102	2.30259	-0.0200544	99.4851	-67.1155
103	2.30259	-0.00751925	99.4852	-67.1328
104	2.30259	0.00751925	99.4852	-67.1155
105	2.30259	0.0200544	99.4856	-67.0693
106	2.30259	0.0325917	99.4867	-66.9943
107	2.30259	0.0426257	99.4885	-66.8961
108	2.30259	0.0551734	99.4915	-66.7691
109	2.30259	0.0677301	99.4961	-66.6131
110	2.30259	0.0802981	99.5026	-66.4282
111	2.30259	0.0928787	99.5112	-66.2144

112	2.30259	0.105474	99.5223	-65.9715
113	2.30259	0.115562	99.5357	-65.7054
114	2.30259	0.128189	99.5521	-65.4102
115	2.30259	0.140835	99.5719	-65.086
116	2.30259	0.153505	99.5955	-64.7325
117	2.30259	0.166199	99.6231	-64.3498
118	2.30259	0.17892	99.6551	-63.9378
119	2.30259	0.189118	99.6909	-63.5024
120	2.30259	0.201894	99.7317	-63.0375
121	2.30259	0.214702	99.7778	-62.5431
122	2.30259	0.227545	99.8295	-62.0192
123	2.30259	0.240426	99.8873	-61.4656
124	2.30259	0.253347	99.9515	-60.8822
125	2.30259	0.263715	100.021	-60.275
126	2.30259	0.276714	100.098	-59.6378
127	2.30259	0.28976	100.182	-58.9706
128	2.30259	0.302855	100.273	-58.2733
129	2.30259	0.316004	100.373	-57.5457
130	2.30259	0.329206	100.482	-56.7876
131	2.30259	0.33981	100.597	-56.0052
132	2.30259	0.353118	100.722	-55.1921
133	2.30259	0.36649	100.856	-54.3482
134	2.30259	0.379927	101	-53.4734
135	2.30259	0.393433	101.155	-52.5675
136	2.30259	0.40701	101.321	-51.6303
137	2.30259	0.417928	101.495	-50.668
138	2.30259	0.431644	101.682	-49.6741
139	2.30259	0.445443	101.88	-48.6485
140	2.30259	0.459327	102.091	-47.5908
141	2.30259	0.473299	102.315	-46.501
142	2.30259	0.484544	102.55	-45.3853
143	2.30259	0.498687	102.799	-44.237
144	2.30259	0.51293	103.062	-43.056
145	2.30259	0.52728	103.34	-41.8419
146	2.30259	0.541736	103.633	-40.5945
147	2.30259	0.556308	103.943	-39.3135
148	2.30259	0.568052	104.265	-38.0055
149	2.30259	0.582841	104.605	-36.6635
150	2.30259	0.597761	104.962	-35.2871
151	2.30259	0.612813	105.338	-33.8761
152	2.30259	0.628006	105.732	-32.43
153	2.30259	0.643345	106.146	-30.9487
154	2.30259	0.655726	106.576	-29.4388
155	2.30259	0.671346	107.027	-27.893
156	2.30259	0.687131	107.499	-26.3108
157	2.30259	0.703089	107.993	-24.6919
158	2.30259	0.719228	108.511	-23.0358
159	2.30259	0.735557	109.052	-21.3421
160	2.30259	0.748762	109.612	-19.618
161	2.30259	0.765456	110.198	-17.8555
162	2.30259	0.782366	110.81	-16.054
163	2.30259	0.7995	111.45	-14.2131
164	2.30259	0.816874	112.117	-12.3322
165	2.30259	0.834498	112.813	-10.4107
166	2.30259	0.848786	113.534	-8.45627
167	2.30259	0.866894	114.285	-6.46018
168	2.30259	0.885291	115.069	-4.42172
169	2.30259	0.903992	115.886	-2.3402
170	2.30259	0.923014	116.738	-0.21488
171	2.30259	0.942375	117.626	1.95502
172	2.30259	0.958125	118.544	4.16118
173	2.30259	0.97815	119.501	6.41346

174	2.30259	0.998575		120.498	8.71276
175	2.30259	1.01943	121.537	11.0601	
176	2.30259	1.04073	122.621	13.4565	
177	2.30259	1.06252	123.749	15.903	
178	2.30259	1.08032	124.917	18.3905	
179	2.30259	1.10306	126.133	20.9304	
180	2.30259	1.12639	127.402	23.524	
181	2.30259	1.15035	128.725	26.1728	
182	2.30259	1.17499	130.106	28.8783	
183	2.30259	1.20036	131.547	31.6423	
184	2.30259	1.22123	133.038	34.4542	
185	2.30259	1.24809	134.596	37.3281	
186	2.30259	1.27588	136.224	40.2659	
187	2.30259	1.30469	137.926	43.27	
188	2.30259	1.33462	139.707	46.3431	
189	2.30259	1.36581	141.573	49.488	
190	2.30259	1.39175	143.51	52.6926	
191	2.30259	1.42554	145.542	55.975	
192	2.30259	1.46106	147.676	59.3393	
193	2.30259	1.49852	149.922	62.7897	
194	2.30259	1.5382	152.288	66.3315	
195	2.30259	1.58047	154.786	69.9707	
196	2.30259	1.61644	157.399	73.6927	
197	2.30259	1.66456	160.17	77.5255	
198	2.30259	1.71688	163.117	81.4788	
199	2.30259	1.77438	166.266	85.5644	
200	2.30259	1.83843	169.646	89.7975	
201	2.30259	1.91103	173.298	94.1979	
202	2.3979	1.97737	177.208	98.9394	
203	2.48491	2.07485	181.513	104.095	
204	2.89037	2.19728	186.341	110.446	
205	2.99573	2.36561	191.937	117.533	
206	4.29046	2.65209	198.97	128.912	

Data Set Standard Deviation = 0.832922
Numerator = 16618.2
Denominator = 28297.7
W Statistic = 0.587264 = 16618.2 / 28297.7

5% Critical value of 0.976 exceeds 0.587264
Evidence of non-normality at 95% level of significance

1% Critical value of 0.967 exceeds 0.587264
Evidence of non-normality at 99% level of significance

Kruskal-Wallis Non-Parametric Test

Parameter: Copper

Natural Logarithm Transformation
Non-Detects Replaced with 1/2 DL

Kruskal Wallis Ranks

Background Wells

Well ID	Date	Result	Rank
LMW-4	1/16/1998	4.29046	206
	3/16/1999	ND<2.30259	71.5
	9/23/1999	ND<2.30259	71.5
	3/14/2000	ND<2.30259	71.5
	9/23/2003	ND<2.30259	71.5
	3/10/2004	ND<2.30259	71.5
	10/12/2004	ND<2.30259	71.5
	4/1/2005	ND<2.30259	71.5
	10/26/2005	ND<2.30259	71.5
	6/19/2006	ND<2.30259	71.5
	11/18/2006	ND<2.30259	71.5
	6/2/2007	2.07944 J	194
	11/15/2007	1.60944 J	174
	5/20/2008	2.07944 J	195
	11/20/2008	ND<2.30259	71.5
	6/11/2009	-0.301105 J	151
	11/14/2009	-0.248461 J	154

Rank Sum = 1860.5
Rank Mean = 109.441

Background Rank Sum = 1860.5
Background Rank Mean = 109.441

Compliance Wells

Well ID	Date	Result	Rank
LMW-3	11/19/1996	ND<2.30259	71.5
	3/24/1997	ND<2.30259	71.5
	1/16/1998	1.38629 J	172
	3/16/1999	ND<2.30259	71.5
	9/23/1999	ND<2.30259	71.5
	3/14/2000	ND<2.30259	71.5
	9/23/2003	ND<2.30259	71.5
	3/10/2004	ND<2.30259	71.5
	10/12/2004	ND<2.30259	71.5
	4/1/2005	ND<2.30259	71.5
	10/26/2005	ND<2.30259	71.5
	6/19/2006	ND<2.30259	71.5
	11/18/2006	ND<2.30259	71.5
	6/2/2007	ND<2.30259	71.5
	11/15/2007	2.19722 J	197
	5/20/2008	ND<2.30259	71.5
	11/20/2008	ND<2.30259	71.5
	6/11/2009	-0.356675 J	150
	11/14/2009	0.0953102	160

Rank Sum = 1751.5
Rank Mean = 92.1842

LMW-6	1/16/1998	2.89037 J	204
	3/16/1999	ND<2.30259	71.5
	9/23/1999	ND<2.30259	71.5
	3/14/2000	ND<2.30259	71.5
	9/23/2003	ND<2.30259	71.5
	3/10/2004	ND<2.30259	71.5
	10/12/2004	ND<2.30259	71.5
	4/1/2005	ND<2.30259	71.5
	10/26/2005	ND<2.30259	71.5
	6/19/2006	ND<2.30259	71.5
	11/18/2006	ND<2.30259	71.5
	6/2/2007	1.94591 J	189
	11/15/2007	1.94591 J	190
	5/20/2008	ND<2.30259	71.5
	11/20/2008	ND<2.30259	71.5
	6/11/2009	0.530628	163
	11/14/2009	0.182322	161

Rank Sum = 1765
Rank Mean = 103.824

LMW-8	1/16/1998	0.693147 J	165
	3/16/1999	1.60944 J	175
	9/23/1999	ND<2.30259	71.5
	3/14/2000	ND<2.30259	71.5
	9/23/2003	ND<2.30259	71.5
	3/10/2004	ND<2.30259	71.5
	10/12/2004	ND<2.30259	71.5
	4/1/2005	ND<2.30259	71.5
	10/26/2005	ND<2.30259	71.5
	6/19/2006	ND<2.30259	71.5
	11/18/2006	ND<2.30259	71.5
	6/2/2007	ND<2.30259	71.5
	11/15/2007	1.79176 J	184
	5/20/2008	ND<2.30259	71.5
	11/20/2008	ND<2.30259	71.5
	6/11/2009	-0.287682 J	152
	11/14/2009	-0.430783 J	148

Rank Sum = 1682
Rank Mean = 98.9412

LMW-9	1/16/1998	2.19722 J	198
	3/16/1999	ND<2.30259	71.5
	9/23/1999	2.48491 J	203
	3/14/2000	ND<2.30259	71.5
	9/23/2003	ND<2.30259	71.5
	3/10/2004	ND<2.30259	71.5
	10/12/2004	ND<2.30259	71.5
	4/1/2005	ND<2.30259	71.5
	10/26/2005	ND<2.30259	71.5
	6/19/2006	ND<2.30259	71.5
	11/18/2006	ND<2.30259	71.5
	6/2/2007	1.60944 J	176
	11/15/2007	1.94591 J	191
	5/20/2008	ND<2.30259	71.5
	11/20/2008	ND<2.30259	71.5
	6/11/2009	-0.127833 J	158
	11/14/2009	-0.527633 J	146

Rank Sum = 1858.5
Rank Mean = 109.324

LMW-9D	11/18/2006	1.79176 J	185

	6/2/2007	ND<2.30259	71.5
	11/15/2007	2.19722 J	199
	5/20/2008	0.693147 J	166
	11/20/2008	ND<2.30259	71.5
	6/11/2009	-0.371064 J	149
	11/14/2009	-0.287682 J	153

Rank Sum = 995
Rank Mean = 142.143

LMW-15R	11/18/2006	1.09861 J	169
	6/2/2007	1.60944 J	177
	11/15/2007	ND<2.30259	71.5
	11/15/2007	1.60944 J	178
	5/20/2008	ND<2.30259	71.5
	5/20/2008	ND<2.30259	71.5
	11/20/2008	1.60944 J	179
	11/20/2008	ND<2.30259	71.5
	6/11/2009	1.30833	171
	11/14/2009	-0.562119 J	145

Rank Sum = 1305
Rank Mean = 130.5

LMW-14R	6/2/2007	ND<2.30259	71.5
	11/15/2007	ND<2.30259	71.5
	5/20/2008	ND<2.30259	71.5
	11/20/2008	ND<2.30259	71.5
	6/11/2009	-0.210721 J	155
	11/14/2009	-0.0833816 J	159

Rank Sum = 600
Rank Mean = 100

LMW-9S	11/18/2006	ND<2.30259	71.5
	6/2/2007	ND<2.30259	71.5
	11/15/2007	1.94591 J	192
	5/20/2008	ND<2.30259	71.5
	11/20/2008	ND<2.30259	71.5
	6/11/2009	-0.18633 J	157
	11/14/2009	0.530628	164

Rank Sum = 799
Rank Mean = 114.143

LMW-3S	11/18/2006	0.693147 J	167
	6/2/2007	ND<2.30259	71.5
	11/15/2007	1.79176 J	186
	5/20/2008	ND<2.30259	71.5
	11/20/2008	ND<2.30259	71.5
	6/11/2009	0.336472	162
	11/14/2009	-0.198451 J	156

Rank Sum = 885.5
Rank Mean = 126.5

LMW-16	11/18/2006	ND<2.30259	71.5
	6/2/2007	1.94591 J	193
	11/15/2007	1.79176 J	187
	5/20/2008	ND<2.30259	71.5
	11/20/2008	1.60944 J	180
	6/11/2009	-1.02165 J	143
	11/14/2009	-0.527633 J	147

Rank Sum = 993
Rank Mean = 141.857

LMW-7	1/16/1998	2.99573	205
	3/16/1999	1.60944 J	181
	9/23/1999	1.60944 J	182
	3/14/2000	ND<2.30259	71.5
	9/23/2003	ND<2.30259	71.5
	3/10/2004	ND<2.30259	71.5
	10/12/2004	ND<2.30259	71.5
	4/1/2005	2.30259 J	200
	10/26/2005	2.3979 J	202
	6/19/2006	2.30259 J	201
	11/18/2006	ND<2.30259	71.5
	6/2/2007	1.79176 J	188
	11/15/2007	2.07944 J	196
	5/20/2008	ND<2.30259	71.5
	11/20/2008	ND<2.30259	71.5
	6/11/2009	1.38629	173

Rank Sum = 2228.5
Rank Mean = 139.281

LMW-10	3/14/2000	ND<2.30259	71.5
	9/23/2003	ND<2.30259	71.5
	3/10/2004	ND<2.30259	71.5
	10/12/2004	ND<2.30259	71.5
	4/1/2005	ND<2.30259	71.5
	10/26/2005	ND<2.30259	71.5
	6/19/2006	ND<2.30259	71.5
	11/18/2006	ND<2.30259	71.5
	6/2/2007	ND<2.30259	71.5
	11/15/2007	ND<2.30259	71.5
	5/20/2008	0.693147 J	168
	11/20/2008	ND<2.30259	71.5
	6/11/2009	-0.673345 J	144

Rank Sum = 1098.5
Rank Mean = 84.5

LMW-11	3/14/2000	ND<2.30259	71.5
	9/23/2003	ND<2.30259	71.5
	3/10/2004	ND<2.30259	71.5
	10/12/2004	ND<2.30259	71.5
	4/1/2005	ND<2.30259	71.5
	10/26/2005	ND<2.30259	71.5
	6/19/2006	ND<2.30259	71.5
	6/2/2007	ND<2.30259	71.5
	11/15/2007	ND<2.30259	71.5
	5/20/2008	ND<2.30259	71.5
	11/20/2008	ND<2.30259	71.5

Rank Sum = 786.5
Rank Mean = 71.5

LMW-12	3/14/2000	ND<2.30259	71.5
	9/23/2003	ND<2.30259	71.5
	3/10/2004	ND<2.30259	71.5
	10/12/2004	ND<2.30259	71.5
	4/1/2005	ND<2.30259	71.5
	10/26/2005	ND<2.30259	71.5
	6/19/2006	ND<2.30259	71.5
	6/2/2007	ND<2.30259	71.5
	11/15/2007	ND<2.30259	71.5
	5/20/2008	ND<2.30259	71.5
	11/20/2008	ND<2.30259	71.5

Rank Sum = 786.5
Rank Mean = 71.5

LMW-13	3/14/2000	ND<2.30259	71.5
	9/23/2003	ND<2.30259	71.5
	3/10/2004	ND<2.30259	71.5
	10/12/2004	ND<2.30259	71.5
	4/1/2005	ND<2.30259	71.5
	10/26/2005	ND<2.30259	71.5
	6/19/2006	ND<2.30259	71.5
	6/2/2007	ND<2.30259	71.5
	11/15/2007	ND<2.30259	71.5
	5/20/2008	ND<2.30259	71.5
	11/20/2008	ND<2.30259	71.5

Rank Sum = 786.5
Rank Mean = 71.5

MW-5	1/16/1998	1.09861 J	170
	3/16/1999	ND<2.30259	71.5
	9/23/1999	ND<2.30259	71.5
	3/14/2000	ND<2.30259	71.5
	9/23/2003	ND<2.30259	71.5
	3/10/2004	ND<2.30259	71.5
	10/12/2004	ND<2.30259	71.5
	4/1/2005	ND<2.30259	71.5
	10/26/2005	ND<2.30259	71.5
	6/19/2006	ND<2.30259	71.5
	11/15/2007	1.60944 J	183
	5/20/2008	ND<2.30259	71.5
	11/20/2008	ND<2.30259	71.5

Rank Sum = 1139.5
Rank Mean = 87.6538

Calculation Results:

Kruskal-Wallis H Statistic = 27.8063
Kruskal-Wallis H Statistic (adjusted for tied non-detects) = 41.3496
95% Confidence comparison value is 26.2962 at 16 degrees of freedom
27.8063 > 26.2962 indicating a significant group difference at 5% significance level
41.3496 > 26.2962 indicating a significant group difference at 5% significance level when adjusted for ties

Individual Well Comparisons at 1% Significance Level per Comparison

1% Z score is 2.32634
Mean background rank is 109.441

Well	Mean Rank	Dif from Bkg	Critical Value
LMW-3	92.1842	-17.257	46.2969
LMW-6	103.824	-5.6176	47.5655
LMW-8	98.9412	-10.5	47.5655
LMW-9	109.324	-0.117647	47.5655
LMW-9D	142.143	32.7017	62.2779
LMW-15R	130.5	21.0588	55.2661
LMW-14R	100	-9.4411	65.8515
LMW-9S	114.143	4.70168	62.2779
LMW-3S	126.5	17.0588	62.2779
LMW-16	141.857	32.416	62.2779
LMW-7	139.281	29.8401	48.303
LMW-10	84.5	-24.9412	51.0936
LMW-11	71.5	-37.9412	53.6611
LMW-12	71.5	-37.9412	53.6611
LMW-13	71.5	-37.9412	53.6611
MW-5	87.6538	-21.7873	51.0936

Individual Well Comparisons at Groupwise 5% Significance Level (0.3125% Significance Level per comparison)

0.3125% Z score is 2.74777

Mean background rank is 109.441

Well	Mean Rank	Dif from Bkg	Critical Value
LMW-3	92.1842	-17.257	54.6837
LMW-6	103.824	-5.6176	56.1821
LMW-8	98.9412	-10.5	56.1821
LMW-9	109.324	-0.117647	56.1821
LMW-9D	142.143	32.7017	73.5597
LMW-15R	130.5	21.0588	65.2778
LMW-14R	100	-9.4411	77.7807
LMW-9S	114.143	4.70168	73.5597
LMW-3S	126.5	17.0588	73.5597
LMW-16	141.857	32.416	73.5597
LMW-7	139.281	29.8401	57.0532
LMW-10	84.5	-24.941	60.3493
LMW-11	71.5	-37.941	63.382
LMW-12	71.5	-37.941	63.382
LMW-13	71.5	-37.941	63.382
MW-5	87.6538	-21.787	60.3493

Non-Parametric Prediction Interval

Inter-Well Comparison

Parameter: Copper

Natural Logarithm Transformation
Non-Detects Replaced with 1/2 DL

Total Percent Non-Detects = 68.932%
Number of comparisons = 16
Future Samples (k) = 8
Recent Dates = 1
Background Samples (n) = 17
Maximum Background Concentration = 4.29046
Confidence Level = 68%
False Positive Rate = 32%

Location	Date	Samples	Mean	Significant
LMW-3	11/14/2009	1	0.0953102	FALSE
LMW-6	11/14/2009	1	0.182322	FALSE
LMW-8	11/14/2009	1	-0.430783	FALSE
LMW-9	11/14/2009	1	-0.527633	FALSE
LMW-9D	11/14/2009	1	-0.287682	FALSE
LMW-15R	11/14/2009	1	-0.562119	FALSE
LMW-14R	11/14/2009	1	-0.0833816	FALSE
LMW-9S	11/14/2009	1	0.530628	FALSE
LMW-3S	11/14/2009	1	-0.198451	FALSE
LMW-16	11/14/2009	1	-0.527633	FALSE
LMW-7	6/11/2009	1	1.38629	FALSE
LMW-10	6/11/2009	1	-0.673345	FALSE
LMW-11	11/20/2008	1	2.30259	FALSE
LMW-12	11/20/2008	1	2.30259	FALSE
LMW-13	11/20/2008	1	2.30259	FALSE
MW-5	11/20/2008	1	2.30259	FALSE

Concentrations (ug/L)

Parameter: Dichlorodifluoromethane

Natural Logarithm Transformation
Non-Detects Replaced with 1/2 DL
Total Measurements: 184
Total Non-Detect: 171
Percent Non-Detects: 92.9348%
Total Background Measurements: 16
There is 1 background location

Loc.	Meas.	ND	Date	Conc.	Original
LMW-4	16	14 (87.5%)	1/16/1998	ND<-0.693147	ND<1
			3/16/1999	ND<-0.693147	ND<1
			9/23/1999	ND<-0.693147	ND<1
			3/14/2000	ND<-0.693147	ND<1
			9/23/2003	ND<-0.693147	ND<1
			3/10/2004	ND<-0.693147	ND<1
			10/12/2004	ND<-0.693147	ND<1
			4/1/2005	ND<-0.693147	ND<1
			10/26/2005	ND<-0.693147	ND<1
			6/19/2006	ND<0 J	ND<0 J
			11/18/2006	ND<0 J	ND<0 J
			6/2/2007	ND<-0.693147	ND<1
			11/15/2007	ND<-0.693147	ND<1
			5/20/2008	ND<0 J	ND<0 J
			11/20/2008	0	1
			11/14/2009	0.0953102	1.1

There are 16 compliance locations

Loc.	Meas.	ND	Date	Conc.	Original
LMW-3	18	17 (94.4444%)	11/19/1996	ND<-0.693147	ND<1
			3/24/1997	ND<-0.693147	ND<1
			1/16/1998	ND<-0.693147	ND<1
			3/16/1999	ND<-0.693147	ND<1
			9/23/1999	ND<-0.693147	ND<1
			3/14/2000	ND<-0.693147	ND<1
			9/23/2003	ND<-0.693147	ND<1
			3/10/2004	ND<-0.693147	ND<1
			10/12/2004	ND<-0.693147	ND<1
			4/1/2005	ND<-0.693147	ND<1
			10/26/2005	ND<-0.693147	ND<1
			6/19/2006	ND<-0.693147	ND<1
			11/18/2006	ND<-0.693147	ND<1
			6/2/2007	ND<-0.693147	ND<1
			11/15/2007	ND<-0.693147	ND<1
			5/20/2008	ND<0 J	ND<0 J
			11/20/2008	ND<0 J	ND<0 J
			11/14/2009	-0.891598 J	0.41 J
LMW-9D5		5 (100%)	11/18/2006	ND<-0.693147	ND<1
			6/2/2007	ND<-0.693147	ND<1
			11/15/2007	ND<-0.693147	ND<1
			5/20/2008	ND<-0.693147	ND<1
			11/20/2008	ND<-0.693147	ND<1

LMW-10	12	7 (58.3333%)	3/14/2000	ND<-0.693147	ND<1
			9/23/2003	ND<-0.693147	ND<1
			3/10/2004	ND<-0.693147	ND<1
			10/12/2004	ND<-0.693147	ND<1
			4/1/2005	ND<-0.693147	ND<1
			10/26/2005	ND<-0.693147	ND<1
			6/19/2006	0.693147	2
			11/18/2006	2.19722	9
			6/2/2007	0.693147	2
			11/15/2007	ND<-0.693147	ND<1
			5/20/2008	1.38629	4
			11/20/2008	0.693147	2
LMW-6	15	14 (93.3333%)	1/16/1998	ND<-0.693147	ND<1
			3/16/1999	ND<-0.693147	ND<1
			9/23/1999	ND<-0.693147	ND<1
			3/14/2000	ND<-0.693147	ND<1
			9/23/2003	ND<-0.693147	ND<1
			3/10/2004	ND<-0.693147	ND<1
			10/12/2004	ND<-0.693147	ND<1
			4/1/2005	ND<-0.693147	ND<1
			10/26/2005	ND<-0.693147	ND<1
			6/19/2006	ND<0 J	ND<0 J
			11/18/2006	0.693147	2
			6/2/2007	ND<-0.693147	ND<1
			11/15/2007	ND<-0.693147	ND<1
			5/20/2008	ND<0 J	ND<0 J
			11/20/2008	ND<0 J	ND<0 J
LMW-3S	5	2 (40%)	11/18/2006	2.48491	12
			6/2/2007	ND<-0.693147	ND<1
			11/15/2007	0.693147	2
			5/20/2008	ND<0 J	ND<0 J
			11/20/2008	0.693147	2
LMW-7	15	15 (100%)	1/16/1998	ND<-0.693147	ND<1
			3/16/1999	ND<-0.693147	ND<1
			9/23/1999	ND<-0.693147	ND<1
			3/14/2000	ND<-0.693147	ND<1
			9/23/2003	ND<-0.693147	ND<1
			3/10/2004	ND<-0.693147	ND<1
			10/12/2004	ND<-0.693147	ND<1
			4/1/2005	ND<-0.693147	ND<1
			10/26/2005	ND<-0.693147	ND<1
			6/19/2006	ND<-0.693147	ND<1
			11/18/2006	ND<-0.693147	ND<1
			6/2/2007	ND<-0.693147	ND<1
			11/15/2007	ND<-0.693147	ND<1
			5/20/2008	ND<-0.693147	ND<1
			11/20/2008	ND<-0.693147	ND<1
LMW-9	15	15 (100%)	1/16/1998	ND<-0.693147	ND<1
			3/16/1999	ND<-0.693147	ND<1
			9/23/1999	ND<-0.693147	ND<1
			3/14/2000	ND<-0.693147	ND<1
			9/23/2003	ND<-0.693147	ND<1
			3/10/2004	ND<-0.693147	ND<1
			10/12/2004	ND<-0.693147	ND<1
			4/1/2005	ND<-0.693147	ND<1
			10/26/2005	ND<-0.693147	ND<1
			6/19/2006	ND<-0.693147	ND<1
			11/18/2006	ND<-0.693147	ND<1

			6/2/2007	ND<-0.693147	ND<1	
			11/15/2007	ND<-0.693147	ND<1	
			5/20/2008	ND<-0.693147	ND<1	
			11/20/2008	ND<-0.693147	ND<1	
LMW-9S	5	5 (100%)	11/18/2006	ND<-0.693147	ND<1	
			6/2/2007	ND<-0.693147	ND<1	
			11/15/2007	ND<-0.693147	ND<1	
			5/20/2008	ND<-0.693147	ND<1	
			11/20/2008	ND<-0.693147	ND<1	
MW-5	13	12 (92.3077%)	1/16/1998	ND<-0.693147	ND<1	
			3/16/1999	ND<-0.693147	ND<1	
			9/23/1999	ND<-0.693147	ND<1	
			3/14/2000	ND<-0.693147	ND<1	
			9/23/2003	ND<-0.693147	ND<1	
			3/10/2004	ND<-0.693147	ND<1	
			10/12/2004	ND<-0.693147	ND<1	
			4/1/2005	ND<-0.693147	ND<1	
			10/26/2005	ND<-0.693147	ND<1	
			6/19/2006	ND<-0.693147	ND<1	
			11/15/2007	1.09861	3	
			5/20/2008	ND<-0.693147	ND<1	
			11/20/2008	ND<-0.693147	ND<1	
LMW-14R	4	4 (100%)	6/2/2007	ND<-0.693147	ND<1	
			11/15/2007	ND<-0.693147	ND<1	
			5/20/2008	ND<-0.693147	ND<1	
			11/20/2008	ND<-0.693147	ND<1	
LMW-12	11	11 (100%)	3/14/2000	ND<-0.693147	ND<1	
			9/23/2003	ND<-0.693147	ND<1	
			3/10/2004	ND<-0.693147	ND<1	
			10/12/2004	ND<-0.693147	ND<1	
			4/1/2005	ND<-0.693147	ND<1	
			10/26/2005	ND<-0.693147	ND<1	
			6/19/2006	ND<-0.693147	ND<1	
			6/2/2007	ND<-0.693147	ND<1	
			11/15/2007	ND<-0.693147	ND<1	
			5/20/2008	ND<-0.693147	ND<1	
			11/20/2008	ND<-0.693147	ND<1	
LMW-8	15	15 (100%)	1/16/1998	ND<-0.693147	ND<1	
			3/16/1999	ND<-0.693147	ND<1	
			9/23/1999	ND<-0.693147	ND<1	
			3/14/2000	ND<-0.693147	ND<1	
			9/23/2003	ND<-0.693147	ND<1	
			3/10/2004	ND<-0.693147	ND<1	
			10/12/2004	ND<-0.693147	ND<1	
			4/1/2005	ND<-0.693147	ND<1	
			10/26/2005	ND<-0.693147	ND<1	
			6/19/2006	ND<-0.693147	ND<1	
			11/18/2006	ND<-0.693147	ND<1	
			6/2/2007	ND<-0.693147	ND<1	
			11/15/2007	ND<-0.693147	ND<1	
			5/20/2008	ND<-0.693147	ND<1	
			11/20/2008	ND<-0.693147	ND<1	
LMW-13	11	11 (100%)	3/14/2000	ND<-0.693147	ND<1	
			9/23/2003	ND<-0.693147	ND<1	
			3/10/2004	ND<-0.693147	ND<1	

			10/12/2004	ND<-0.693147	ND<1	
			4/1/2005	ND<-0.693147	ND<1	
			10/26/2005	ND<-0.693147	ND<1	
			6/19/2006	ND<-0.693147	ND<1	
			6/2/2007	ND<-0.693147	ND<1	
			11/15/2007	ND<-0.693147	ND<1	
			5/20/2008	ND<-0.693147	ND<1	
			11/20/2008	ND<-0.693147	ND<1	
LMW-11	11	11 (100%)	3/14/2000	ND<-0.693147	ND<1	
			9/23/2003	ND<-0.693147	ND<1	
			3/10/2004	ND<-0.693147	ND<1	
			10/12/2004	ND<-0.693147	ND<1	
			4/1/2005	ND<-0.693147	ND<1	
			10/26/2005	ND<-0.693147	ND<1	
			6/19/2006	ND<-0.693147	ND<1	
			6/2/2007	ND<-0.693147	ND<1	
			11/15/2007	ND<-0.693147	ND<1	
			5/20/2008	ND<-0.693147	ND<1	
			11/20/2008	ND<-0.693147	ND<1	
LMW-15R	8	8 (100%)	11/18/2006	ND<-0.693147	ND<1	
			6/2/2007	ND<-0.693147	ND<1	
			11/15/2007	ND<-0.693147	ND<1	
			11/15/2007	ND<-0.693147	ND<1	
			5/20/2008	ND<-0.693147	ND<1	
			5/20/2008	ND<-0.693147	ND<1	
			11/20/2008	ND<-0.693147	ND<1	
			11/20/2008	ND<-0.693147	ND<1	
LMW-16	5	5 (100%)	11/18/2006	ND<-0.693147	ND<1	
			6/2/2007	ND<-0.693147	ND<1	
			11/15/2007	ND<-0.693147	ND<1	
			5/20/2008	ND<-0.693147	ND<1	
			11/20/2008	ND<-0.693147	ND<1	

There are 0 unused locations

Loc.	Meas.	ND	Date	Conc.	Original

Shapiro-Francia Test of Normality

Parameter: Dichlorodifluoromethane

All Locations

Normality Test of Parameter Concentrations

Original Data (Not Transformed)
Non-Detects Replaced with 1/2 DL
Total Number of Measurements = 184

i	x(i)	m(i)	sum(m^2)	sum(mx)
1	0	-2.575836.63492	0	
2	0	-2.3263412.0468	0	
3	0	-2.1444116.6453	0	
4	0	-2.0335220.7805	0	
5	0	-1.9268424.4932	0	
6	0	-1.8521827.9237	0	
7	0	-1.7866131.1157	0	
8	0	-1.7168834.0634	0	
9	0	-1.6645636.8342	0	
10	0.41	-1.6072539.4174	-0.658972	
11	0.5	-1.5632241.8611	-1.44058	
12	0.5	-1.5220344.1777	-2.2016	
13	0.5	-1.4757946.3556	-2.9395	
14	0.5	-1.4395348.4279	-3.65926	
15	0.5	-1.3983850.3833	-4.35845	
16	0.5	-1.3658152.2488	-5.04135	
17	0.5	-1.3346254.03	-5.70866	
18	0.5	-1.2988455.717	-6.35808	
19	0.5	-1.2702457.3305	-6.9932	
20	0.5	-1.2372458.8612	-7.61182	
21	0.5	-1.2107360.3271	-8.21718	
22	0.5	-1.1850461.7314	-8.8097	
23	0.5	-1.1552263.066	-9.38732	
24	0.5	-1.1311364.3454	-9.95288	
25	0.5	-1.1030665.5622	-10.5044	
26	0.5	-1.0803266.7292	-11.0446	
27	0.5	-1.0581267.8489	-11.5736	
28	0.5	-1.0321568.9142	-12.0897	
29	0.5	-1.0110469.9364	-12.5952	
30	0.5	-0.986272	70.9091	-13.0884
31	0.5	-0.966088	71.8425	-13.5714
32	0.5	-0.946291	72.7379	-14.0446
33	0.5	-0.923014	73.5899	-14.5061
34	0.5	-0.903992	74.4071	-14.9581
35	0.5	-0.881587	75.1843	-15.3989
36	0.5	-0.863249	75.9295	-15.8305
37	0.5	-0.841621	76.6378	-16.2513
38	0.5	-0.823893	77.3166	-16.6632
39	0.5	-0.806422	77.9669	-17.0664
40	0.5	-0.785774	78.5844	-17.4593
41	0.5	-0.768821	79.1755	-17.8437
42	0.5	-0.748762	79.7361	-18.2181
43	0.5	-0.732275	80.2723	-18.5843
44	0.5	-0.715986	80.785	-18.9423
45	0.5	-0.696684	81.2703	-19.2906
46	0.5	-0.680797	81.7338	-19.631
47	0.5	-0.661955	82.172	-19.962
48	0.5	-0.646431	82.5899	-20.2852
49	0.5	-0.631062	82.9881	-20.6007

50	0.5	-0.612813	83.3636	-20.9071
51	0.5	-0.597761	83.721	-21.206
52	0.5	-0.579873	84.0572	-21.4959
53	0.5	-0.565108	84.3766	-21.7785
54	0.5	-0.550465	84.6796	-22.0537
55	0.5	-0.533048	84.9637	-22.3203
56	0.5	-0.518658	85.2327	-22.5796
57	0.5	-0.501527	85.4843	-22.8303
58	0.5	-0.487364	85.7218	-23.074
59	0.5	-0.473299	85.9458	-23.3107
60	0.5	-0.456542	86.1542	-23.5389
61	0.5	-0.442676	86.3502	-23.7603
62	0.5	-0.426148	86.5318	-23.9734
63	0.5	-0.412463	86.7019	-24.1796
64	0.5	-0.398855	86.861	-24.379
65	0.5	-0.382622	87.0074	-24.5703
66	0.5	-0.369171	87.1437	-24.7549
67	0.5	-0.353118	87.2684	-24.9315
68	0.5	-0.3398187.3838	-25.1014	
69	0.5	-0.326561	87.4905	-25.2647
70	0.5	-0.310738	87.587	-25.42
71	0.5	-0.297612	87.6756	-25.5688
72	0.5	-0.281926	87.7551	-25.7098
73	0.5	-0.268908	87.8274	-25.8443
74	0.5	-0.253347	87.8916	-25.9709
75	0.5	-0.240426	87.9494	-26.0911
76	0.5	-0.227545	88.0012	-26.2049
77	0.5	-0.212137	88.0462	-26.311
78	0.5	-0.199336	88.0859	-26.4106
79	0.5	-0.184017	88.1198	-26.5027
80	0.5	-0.171285	88.1491	-26.5883
81	0.5	-0.158579	88.1743	-26.6676
82	0.5	-0.143367	88.1948	-26.7393
83	0.5	-0.130716	88.2119	-26.8046
84	0.5	-0.115562	88.2253	-26.8624
85	0.5	-0.102953	88.2359	-26.9139
86	0.5	-0.0903606	88.244	-26.9591
87	0.5	-0.0752698	88.2497	-26.9967
88	0.5	-0.0627062	88.2536	-27.0281
89	0.5	-0.0476439	88.2559	-27.0519
90	0.5	-0.0350997	88.2571	-27.0694
91	0.5	-0.0225612	88.2576	-27.0807
92	0.5	-0.00751925	88.2577	-27.0845
93	0.5	0.00751925	88.2577	-27.0807
94	0.5	0.0225612	88.2583	-27.0694
95	0.5	0.0350997	88.2595	-27.0519
96	0.5	0.0476439	88.2618	-27.0281
97	0.5	0.0627062	88.2657	-26.9967
98	0.5	0.0752698	88.2714	-26.9591
99	0.5	0.0903606	88.2795	-26.9139
100	0.5	0.102953	88.2901	-26.8624
101	0.5	0.115562	88.3035	-26.8046
102	0.5	0.130716	88.3206	-26.7393
103	0.5	0.143367	88.3411	-26.6676
104	0.5	0.158579	88.3663	-26.5883
105	0.5	0.171285	88.3956	-26.5027
106	0.5	0.184017	88.4295	-26.4106
107	0.5	0.199336	88.4692	-26.311
108	0.5	0.212137	88.5142	-26.2049
109	0.5	0.227545	88.566	-26.0911
110	0.5	0.240426	88.6238	-25.9709
111	0.5	0.253347	88.688	-25.8443

112	0.5	0.268908	88.7603	-25.7098
113	0.5	0.281926	88.8398	-25.5688
114	0.5	0.297612	88.9283	-25.42
115	0.5	0.310738	89.0249	-25.2647
116	0.5	0.326561	89.1315	-25.1014
117	0.5	0.33981	89.247	-24.9315
118	0.5	0.353118	89.3717	-24.7549
119	0.5	0.369171	89.508	-24.5703
120	0.5	0.382622	89.6544	-24.379
121	0.5	0.398855	89.8135	-24.1796
122	0.5	0.412463	89.9836	-23.9734
123	0.5	0.426148	90.1652	-23.7603
124	0.5	0.442676	90.3612	-23.5389
125	0.5	0.456542	90.5696	-23.3107
126	0.5	0.473299	90.7936	-23.074
127	0.5	0.487364	91.0311	-22.8303
128	0.5	0.501527	91.2827	-22.5796
129	0.5	0.518658	91.5517	-22.3203
130	0.5	0.533048	91.8358	-22.0537
131	0.5	0.550465	92.1388	-21.7785
132	0.5	0.565108	92.4582	-21.4959
133	0.5	0.579873	92.7944	-21.206
134	0.5	0.597761	93.1517	-20.9071
135	0.5	0.612813	93.5273	-20.6007
136	0.5	0.631062	93.9255	-20.2852
137	0.5	0.646431	94.3434	-19.962
138	0.5	0.661955	94.7816	-19.631
139	0.5	0.680797	95.245	-19.2906
140	0.5	0.696684	95.7304	-18.9423
141	0.5	0.715986	96.2431	-18.5843
142	0.5	0.732275	96.7793	-18.2181
143	0.5	0.748762	97.3399	-17.8437
144	0.5	0.768821	97.931	-17.4593
145	0.5	0.785774	98.5485	-17.0664
146	0.5	0.806422	99.1988	-16.6632
147	0.5	0.823893	99.8776	-16.2513
148	0.5	0.841621	100.586	-15.8305
149	0.5	0.863249	101.331	-15.3989
150	0.5	0.881587	102.108	-14.9581
151	0.5	0.903992	102.925	-14.5061
152	0.5	0.923014	103.777	-14.0446
153	0.5	0.946291	104.673	-13.5714
154	0.5	0.966088	105.606	-13.0884
155	0.5	0.986272	106.579	-12.5952
156	0.5	1.01104	107.601	-12.0897
157	0.5	1.03215	108.667	-11.5736
158	0.5	1.05812	109.786	-11.0446
159	0.5	1.08032	110.953	-10.5044
160	0.5	1.10306	112.17	-9.95288
161	0.5	1.13113	113.449	-9.38732
162	0.5	1.15522	114.784	-8.8097
163	0.5	1.18504	116.188	-8.21718
164	0.5	1.21073	117.654	-7.61182
165	0.5	1.23724	119.185	-6.9932
166	0.5	1.27024	120.798	-6.35808
167	0.5	1.29884	122.485	-5.70866
168	0.5	1.33462	124.267	-5.04135
169	0.5	1.36581	126.132	-4.35845
170	0.5	1.39838	128.087	-3.65926
171	0.5	1.43953	130.16	-2.9395
172	0.5	1.47579	132.338	-2.2016
173	1	1.52203	134.654	-0.679566

174	1.1	1.56322	137.098	1.03998
175	2	1.60725	139.681	4.25448
176	2	1.66456	142.452	7.5836
177	2	1.71688	145.4	11.0174
178	2	1.78661	148.592	14.5906
179	2	1.85218	152.022	18.2949
180	2	1.92684	155.735	22.1486
181	3	2.03352	159.87	28.2492
182	4	2.14441	164.469	36.8268
183	9	2.32634	169.88	57.7639
184	12	2.57583	176.515	88.6739

Data Set Standard Deviation = 1.13072
Numerator = 7863.06
Denominator = 41299.7
W Statistic = 0.19039 = 7863.06 / 41299.7

5% Critical value of 0.976 exceeds 0.19039
Evidence of non-normality at 95% level of significance

1% Critical value of 0.967 exceeds 0.19039
Evidence of non-normality at 99% level of significance

Shapiro-Francia Test of Normality

Parameter: Dichlorodifluoromethane

All Locations

Normality Test of Parameter Concentrations

Natural Logarithm Transformation
Non-Detects Replaced with 1/2 DL
Total Number of Measurements = 184

i	x(i)	m(i)	sum(m^2)	sum(mx)
1	-0.891598	-2.575836	3.63492	2.29661
2	-0.693147	-2.326341	2.0468	3.90911
3	-0.693147	-2.144411	6.6453	5.3955
4	-0.693147	-2.033522	0.7805	6.80503
5	-0.693147	-1.926842	4.4932	8.14061
6	-0.693147	-1.852182	7.9237	9.42444
7	-0.693147	-1.786613	1.1157	10.6628
8	-0.693147	-1.716883	4.0634	11.8529
9	-0.693147	-1.664563	6.8342	13.0067
10	-0.693147	-1.607253	9.4174	14.1207
11	-0.693147	-1.563224	1.8611	15.2043
12	-0.693147	-1.522034	4.1777	16.2593
13	-0.693147	-1.475794	6.3556	17.2822
14	-0.693147	-1.439534	8.4279	18.28
15	-0.693147	-1.398385	0.3833	19.2493
16	-0.693147	-1.365815	2.2488	20.196
17	-0.693147	-1.334625	4.03	21.1211
18	-0.693147	-1.298845	5.717	22.0214
19	-0.693147	-1.270245	7.3305	22.9018
20	-0.693147	-1.237245	8.8612	23.7594
21	-0.693147	-1.210736	0.3271	24.5986
22	-0.693147	-1.185046	1.7314	25.42
23	-0.693147	-1.155226	3.066	26.2208
24	-0.693147	-1.131136	4.3454	27.0048
25	-0.693147	-1.103066	5.5622	27.7694
26	-0.693147	-1.080326	6.7292	28.5182
27	-0.693147	-1.058126	7.8489	29.2517
28	-0.693147	-1.032156	8.9142	29.9671
29	-0.693147	-1.011046	9.9364	30.6679
30	-0.693147	-0.986272		70.9091 31.3515
31	-0.693147	-0.966088		71.8425 32.0212
32	-0.693147	-0.946291		72.7379 32.6771
33	-0.693147	-0.923014		73.5899 33.3169
34	-0.693147	-0.903992		74.4071 33.9435
35	-0.693147	-0.881587		75.1843 34.5545
36	-0.693147	-0.863249		75.9295 35.1529
37	-0.693147	-0.841621		76.6378 35.7363
38	-0.693147	-0.823893		77.3166 36.3073
39	-0.693147	-0.806422		77.9669 36.8663
40	-0.693147	-0.785774		78.5844 37.411
41	-0.693147	-0.768821		79.1755 37.9439
42	-0.693147	-0.748762		79.7361 38.4629
43	-0.693147	-0.732275		80.2723 38.9704
44	-0.693147	-0.715986		80.785 39.4667
45	-0.693147	-0.696684		81.2703 39.9496
46	-0.693147	-0.680797		81.7338 40.4215
47	-0.693147	-0.661955		82.172 40.8804
48	-0.693147	-0.646431		82.5899 41.3284
49	-0.693147	-0.631062		82.9881 41.7659

50	-0.693147	-0.612813	83.3636	42.1906
51	-0.693147	-0.597761	83.721	42.605
52	-0.693147	-0.579873	84.0572	43.0069
53	-0.693147	-0.565108	84.3766	43.3986
54	-0.693147	-0.550465	84.6796	43.7802
55	-0.693147	-0.533048	84.9637	44.1496
56	-0.693147	-0.518658	85.2327	44.5091
57	-0.693147	-0.501527	85.4843	44.8568
58	-0.693147	-0.487364	85.7218	45.1946
59	-0.693147	-0.473299	85.9458	45.5227
60	-0.693147	-0.456542	86.1542	45.8391
61	-0.693147	-0.442676	86.3502	46.1459
62	-0.693147	-0.426148	86.5318	46.4413
63	-0.693147	-0.412463	86.7019	46.7272
64	-0.693147	-0.398855	86.861	47.0037
65	-0.693147	-0.382622	87.0074	47.2689
66	-0.693147	-0.369171	87.1437	47.5248
67	-0.693147	-0.353118	87.2684	47.7696
68	-0.693147	-0.3398187.3838	48.0051	
69	-0.693147	-0.326561	87.4905	48.2314
70	-0.693147	-0.310738	87.587	48.4468
71	-0.693147	-0.297612	87.6756	48.6531
72	-0.693147	-0.281926	87.7551	48.8485
73	-0.693147	-0.268908	87.8274	49.0349
74	-0.693147	-0.253347	87.8916	49.2105
75	-0.693147	-0.240426	87.9494	49.3772
76	-0.693147	-0.227545	88.0012	49.5349
77	-0.693147	-0.212137	88.0462	49.682
78	-0.693147	-0.199336	88.0859	49.8201
79	-0.693147	-0.184017	88.1198	49.9477
80	-0.693147	-0.171285	88.1491	50.0664
81	-0.693147	-0.158579	88.1743	50.1763
82	-0.693147	-0.143367	88.1948	50.2757
83	-0.693147	-0.130716	88.2119	50.3663
84	-0.693147	-0.115562	88.2253	50.4464
85	-0.693147	-0.102953	88.2359	50.5178
86	-0.693147	-0.0903606	88.244	50.5804
87	-0.693147	-0.0752698	88.2497	50.6326
88	-0.693147	-0.0627062	88.2536	50.676
89	-0.693147	-0.0476439	88.2559	50.7091
90	-0.693147	-0.0350997	88.2571	50.7334
91	-0.693147	-0.0225612	88.2576	50.749
92	-0.693147	-0.00751925	88.2577	50.7542
93	-0.693147	0.00751925	88.2577	50.749
94	-0.693147	0.0225612	88.2583	50.7334
95	-0.693147	0.0350997	88.2595	50.7091
96	-0.693147	0.0476439	88.2618	50.676
97	-0.693147	0.0627062	88.2657	50.6326
98	-0.693147	0.0752698	88.2714	50.5804
99	-0.693147	0.0903606	88.2795	50.5178
100	-0.693147	0.102953	88.2901	50.4464
101	-0.693147	0.115562	88.3035	50.3663
102	-0.693147	0.130716	88.3206	50.2757
103	-0.693147	0.143367	88.3411	50.1763
104	-0.693147	0.158579	88.3663	50.0664
105	-0.693147	0.171285	88.3956	49.9477
106	-0.693147	0.184017	88.4295	49.8201
107	-0.693147	0.199336	88.4692	49.682
108	-0.693147	0.212137	88.5142	49.5349
109	-0.693147	0.227545	88.566	49.3772
110	-0.693147	0.240426	88.6238	49.2105
111	-0.693147	0.253347	88.688	49.0349

112	-0.693147		0.268908	88.7603	48.8485
113	-0.693147		0.281926	88.8398	48.6531
114	-0.693147		0.297612	88.9283	48.4468
115	-0.693147		0.310738	89.0249	48.2314
116	-0.693147		0.326561	89.1315	48.0051
117	-0.693147		0.33981	89.247	47.7696
118	-0.693147		0.353118	89.3717	47.5248
119	-0.693147		0.369171	89.508	47.2689
120	-0.693147		0.382622	89.6544	47.0037
121	-0.693147		0.398855	89.8135	46.7272
122	-0.693147		0.412463	89.9836	46.4413
123	-0.693147		0.426148	90.1652	46.1459
124	-0.693147		0.442676	90.3612	45.8391
125	-0.693147		0.456542	90.5696	45.5227
126	-0.693147		0.473299	90.7936	45.1946
127	-0.693147		0.487364	91.0311	44.8568
128	-0.693147		0.501527	91.2827	44.5091
129	-0.693147		0.518658	91.5517	44.1496
130	-0.693147		0.533048	91.8358	43.7802
131	-0.693147		0.550465	92.1388	43.3986
132	-0.693147		0.565108	92.4582	43.0069
133	-0.693147		0.579873	92.7944	42.605
134	-0.693147		0.597761	93.1517	42.1906
135	-0.693147		0.612813	93.5273	41.7659
136	-0.693147		0.631062	93.9255	41.3284
137	-0.693147		0.646431	94.3434	40.8804
138	-0.693147		0.661955	94.7816	40.4215
139	-0.693147		0.680797	95.245	39.9496
140	-0.693147		0.696684	95.7304	39.4667
141	-0.693147		0.715986	96.2431	38.9704
142	-0.693147		0.732275	96.7793	38.4629
143	-0.693147		0.748762	97.3399	37.9439
144	-0.693147		0.768821	97.931	37.411
145	-0.693147		0.785774	98.5485	36.8663
146	-0.693147		0.806422	99.1988	36.3073
147	-0.693147		0.823893	99.8776	35.7363
148	-0.693147		0.841621	100.586	35.1529
149	-0.693147		0.863249	101.331	34.5545
150	-0.693147		0.881587	102.108	33.9435
151	-0.693147		0.903992	102.925	33.3169
152	-0.693147		0.923014	103.777	32.6771
153	-0.693147		0.946291	104.673	32.0212
154	-0.693147		0.966088	105.606	31.3515
155	-0.693147		0.986272	106.579	30.6679
156	-0.693147		1.01104	107.601	29.9671
157	-0.693147		1.03215	108.667	29.2517
158	-0.693147		1.05812	109.786	28.5182
159	-0.693147		1.08032	110.953	27.7694
160	-0.693147		1.10306	112.17	27.0048
161	-0.693147		1.13113	113.449	26.2208
162	-0.693147		1.15522	114.784	25.42
163	-0.693147		1.18504	116.188	24.5986
164	0	1.21073	117.654	24.5986	
165	0	1.23724	119.185	24.5986	
166	0	1.27024	120.798	24.5986	
167	0	1.29884	122.485	24.5986	
168	0	1.33462	124.267	24.5986	
169	0	1.36581	126.132	24.5986	
170	0	1.39838	128.087	24.5986	
171	0	1.43953	130.16	24.5986	
172	0	1.47579	132.338	24.5986	
173	0	1.52203	134.654	24.5986	

174	0.0953102		1.56322	137.098	24.7476
175	0.693147		1.60725	139.681	25.8617
176	0.693147		1.66456	142.452	27.0155
177	0.693147		1.71688	145.4	28.2055
178	0.693147		1.78661	148.592	29.4439
179	0.693147		1.85218	152.022	30.7277
180	0.693147		1.92684	155.735	32.0633
181	1.09861	2.03352	159.87	34.2974	
182	1.38629	2.14441	164.469	37.2701	
183	2.19722	2.32634	169.88	42.3816	
184	2.48491	2.57583	176.515	48.7824	

Data Set Standard Deviation = 0.463849
Numerator = 2379.72
Denominator = 6950.03
W Statistic = 0.342404 = 2379.72 / 6950.03

5% Critical value of 0.976 exceeds 0.342404
Evidence of non-normality at 95% level of significance

1% Critical value of 0.967 exceeds 0.342404
Evidence of non-normality at 99% level of significance

Non-Parametric Prediction Interval

Inter-Well Comparison

Parameter: Dichlorodifluoromethane

Natural Logarithm Transformation
Non-Detects Replaced with 1/2 DL

Total Percent Non-Detects = 92.9348%
Number of comparisons = 16
Future Samples (k) = 8
Recent Dates = 1
Background Samples (n) = 16
Maximum Background Concentration = 0.0953102
Confidence Level = 66.7%
False Positive Rate = 33.3%

Location	Date	Samples	Mean	Significant
LMW-3	11/14/2009	1	-0.891598	FALSE
LMW-9D	11/20/2008	1	-0.693147	FALSE
LMW-10	11/20/2008	1	0.693147	TRUE
LMW-6	11/20/2008	1	0	FALSE
LMW-3S	11/20/2008	1	0.693147	TRUE
LMW-7	11/20/2008	1	-0.693147	FALSE
LMW-9	11/20/2008	1	-0.693147	FALSE
LMW-9S	11/20/2008	1	-0.693147	FALSE
MW-5	11/20/2008	1	-0.693147	FALSE
LMW-14R	11/20/2008	1	-0.693147	FALSE
LMW-12	11/20/2008	1	-0.693147	FALSE
LMW-8	11/20/2008	1	-0.693147	FALSE
LMW-13	11/20/2008	1	-0.693147	FALSE
LMW-11	11/20/2008	1	-0.693147	FALSE
LMW-15R	11/20/2008	2	-0.693147	FALSE
LMW-16	11/20/2008	1	-0.693147	FALSE

Mann-Kendall Trend Analysis

Parameter: Dichlorodifluoromethane

Location: LMW-10

Natural Logarithm Transformation
Non-Detects Replaced with 1/2 DL

95% Confidence Level

Xj	Xk	Xj - Xk	Positives		Negatives
ND<-0.693147		ND<-0.693147	0	0	0
ND<-0.693147		ND<-0.693147	0	0	0
ND<-0.693147		ND<-0.693147	0	0	0
ND<-0.693147		ND<-0.693147	0	0	0
ND<-0.693147		ND<-0.693147	0	0	0
0.693147		ND<-0.693147	1.38629	1	0
2.19722		ND<-0.693147	2.89037	2	0
0.693147		ND<-0.693147	1.38629	3	0
ND<-0.693147		ND<-0.693147	0	3	0
1.38629		ND<-0.693147	2.07944	4	0
0.693147		ND<-0.693147	1.38629	5	0
ND<-0.693147		ND<-0.693147	0	5	0
ND<-0.693147		ND<-0.693147	0	5	0
ND<-0.693147		ND<-0.693147	0	5	0
ND<-0.693147		ND<-0.693147	0	5	0
0.693147		ND<-0.693147	1.38629	6	0
2.19722		ND<-0.693147	2.89037	7	0
0.693147		ND<-0.693147	1.38629	8	0
ND<-0.693147		ND<-0.693147	0	8	0
1.38629		ND<-0.693147	2.07944	9	0
0.693147		ND<-0.693147	1.38629	10	0
ND<-0.693147		ND<-0.693147	0	10	0
ND<-0.693147		ND<-0.693147	0	10	0
ND<-0.693147		ND<-0.693147	0	10	0
0.693147		ND<-0.693147	1.38629	11	0
2.19722		ND<-0.693147	2.89037	12	0
0.693147		ND<-0.693147	1.38629	13	0
ND<-0.693147		ND<-0.693147	0	13	0
1.38629		ND<-0.693147	2.07944	14	0
0.693147		ND<-0.693147	1.38629	15	0
ND<-0.693147		ND<-0.693147	0	15	0
ND<-0.693147		ND<-0.693147	0	15	0
0.693147		ND<-0.693147	1.38629	16	0
2.19722		ND<-0.693147	2.89037	17	0
0.693147		ND<-0.693147	1.38629	18	0
ND<-0.693147		ND<-0.693147	0	18	0
1.38629		ND<-0.693147	2.07944	19	0
0.693147		ND<-0.693147	1.38629	20	0
ND<-0.693147		ND<-0.693147	0	20	0
0.693147		ND<-0.693147	1.38629	21	0
2.19722		ND<-0.693147	2.89037	22	0
0.693147		ND<-0.693147	1.38629	23	0
ND<-0.693147		ND<-0.693147	0	23	0
1.38629		ND<-0.693147	2.07944	24	0

0.693147	ND<-0.693147	1.38629	25	0	
0.693147	ND<-0.693147	1.38629	26	0	
2.19722	ND<-0.693147	2.89037	27	0	
0.693147	ND<-0.693147	1.38629	28	0	
ND<-0.693147	ND<-0.693147	0	28	0	
1.38629	ND<-0.693147	2.07944	29	0	
0.693147	ND<-0.693147	1.38629	30	0	
2.19722	0.693147	1.50408	31	0	
0.693147	0.693147	0	31	0	
ND<-0.693147	0.693147	-1.3862	931	1	
1.38629	0.693147	0.693147		32	1
0.693147	0.693147	0	32	1	
0.693147	2.19722	-1.5040	832	2	
ND<-0.693147	2.19722	-2.8903	732	3	
1.38629	2.19722	-0.8109	332	4	
0.693147	2.19722	-1.5040	832	5	
ND<-0.693147	0.693147	-1.3862	932	6	
1.38629	0.693147	0.693147		33	6
0.693147	0.693147	0	33	6	
1.38629	ND<-0.693147	2.07944	34	6	
0.693147	ND<-0.693147	1.38629	35	6	
0.693147	1.38629	-0.693147		35	7

S Statistic = 35 - 7 = 28

Tied Group	Value	Members
1	-0.693147	7
2	0.693147	3

Time Period		Observations
3/14/2000		1
9/23/2003		1
3/10/2004		1
10/12/2004		1
4/1/2005	1	
10/26/2005		1
6/19/2006		1
11/18/2006		1
6/2/2007	1	
11/15/2007		1
5/20/2008		1
11/20/2008		1

There are 0 time periods with multiple data

A = 864
B = 0
C = 216
D = 0
E = 48
F = 0
a = 3828
b = 11880
c = 264

Group Variance = 164.667
Z-Score = 2.10407
Comparison Level at 1.0 - (0.05 / 2) = 97.5% confidence level = 1.97737 (two-tailed)
|2.10407| > 1.97737 indicating a trend

Mann-Kendall Trend Analysis

Parameter: Dichlorodifluoromethane

Location: LMW-3S

Natural Logarithm Transformation
Non-Detects Replaced with 1/2 DL

95% Confidence Level

Xj	Xk	Xj - Xk	Positives	Negatives
ND<-0.693147	2.48491	-3.178050	1	
0.693147	2.48491	-1.791760	2	
ND<0 J	2.48491	-2.484910	3	
0.693147	2.48491	-1.791760	4	
0.693147	ND<-0.693147	1.38629	1	4
ND<0 J	ND<-0.693147	0.693147	2	4
0.693147	ND<-0.693147	1.38629	3	4
ND<0 J	0.693147	-0.693147	3	5
0.693147	0.693147	0	3	5
0.693147	ND<0 J	0.693147	4	5

S Statistic = 4 - 5 = -1
Comparing at 1.0 - (0.05 / 2) = 97.5% confidence level (two-tailed)
Failed to calculate probability for S = -1
Table out of range

Concentrations (ug/L)

Parameter: Lead

Natural Logarithm Transformation
Non-Detects Replaced with 1/2 DL
Total Measurements: 201
Total Non-Detect: 144
Percent Non-Detects: 71.6418%
Total Background Measurements: 17
There is 1 background location

Loc.	Meas.	ND	Date	Conc.	Original
LMW-4	17	11 (64.7059%)	1/16/1998	2.83321	17
			3/16/1999	ND<-0.693147	ND<1
			9/23/1999	2.19722	9
			3/14/2000	ND<-0.693147	ND<1
			9/23/2003	ND<-0.693147	ND<1
			3/10/2004	3.21888	25
			10/12/2004	ND<-0.693147	ND<1
			4/1/2005	ND<-0.693147	ND<1
			10/26/2005	ND<-0.693147	ND<1
			6/19/2006	ND<-0.693147	ND<1
			11/18/2006	ND<0 J	ND<0 J
			6/2/2007	1.09861	3
			11/15/2007	ND<-0.693147	ND<1
			5/20/2008	ND<-0.693147	ND<1
			11/20/2008	ND<-0.693147	ND<1
			6/11/2009	-2.04022 J	0.13 J
			11/14/2009	-1.20397 J	0.3 J

There are 16 compliance locations

Loc.	Meas.	ND	Date	Conc.	Original
LMW-3	19	15 (78.9474%)	11/19/1996	ND<-0.693147	ND<1
			3/24/1997	2.3979	11
			1/16/1998	ND<-0.693147	ND<1
			3/16/1999	ND<-0.693147	ND<1
			9/23/1999	2.07944	8
			3/14/2000	ND<-0.693147	ND<1
			9/23/2003	ND<-0.693147	ND<1
			3/10/2004	ND<-0.693147	ND<1
			10/12/2004	ND<-0.693147	ND<1
			4/1/2005	ND<-0.693147	ND<1
			10/26/2005	ND<-0.693147	ND<1
			6/19/2006	ND<-0.693147	ND<1
			11/18/2006	ND<-0.693147	ND<1
			6/2/2007	ND<-0.693147	ND<1
			11/15/2007	0	1
			5/20/2008	ND<-0.693147	ND<1
			11/20/2008	ND<-0.693147	ND<1
			6/11/2009	ND<-3.21888 U	ND<0.08 U
			11/14/2009	-0.994252	0.37
LMW-9D7	2	(28.5714%)	11/18/2006	1.09861	3
			6/2/2007	1.09861	3
			11/15/2007	ND<0 J	ND<0 J
			5/20/2008	1.09861	3

			11/20/2008	ND<-0.693147	ND<1
			6/11/2009	-0.34249	0.71
			11/14/2009	-1.17118	0.31
LMW-9S	7	4 (57.1429%)	11/18/2006	ND<-0.693147	ND<1
			6/2/2007	0.693147	2
			11/15/2007	0	1
			5/20/2008	ND<-0.693147	ND<1
			11/20/2008	ND<0 J	ND<0 J
			6/11/2009	ND<-3.21888 U	ND<0.08 U
			11/14/2009	-1.56065 J	0.21 J
LMW-16	7	4 (57.1429%)	11/18/2006	ND<0 J	ND<0 J
			6/2/2007	1.60944	5
			11/15/2007	0.693147	2
			5/20/2008	ND<-0.693147	ND<1
			11/20/2008	ND<-0.693147	ND<1
			6/11/2009	ND<-3.21888 U	ND<0.08 U
			11/14/2009	-2.40795 J	0.09 J
LMW-14R	6	3 (50%)	6/2/2007	1.38629	4
			11/15/2007	ND<-0.693147	ND<1
			5/20/2008	ND<-0.693147	ND<1
			11/20/2008	ND<-0.693147	ND<1
			6/11/2009	-1.51413 J	0.22 J
			11/14/2009	-1.96611 J	0.14 J
LMW-6	16	14 (87.5%)	1/16/1998	ND<-0.693147	ND<1
			3/16/1999	ND<-0.693147	ND<1
			9/23/1999	2.77259	16
			3/14/2000	ND<-0.693147	ND<1
			9/23/2003	ND<-0.693147	ND<1
			3/10/2004	ND<-0.693147	ND<1
			10/12/2004	ND<-0.693147	ND<1
			4/1/2005	ND<-0.693147	ND<1
			10/26/2005	ND<-0.693147	ND<1
			6/19/2006	ND<-0.693147	ND<1
			11/18/2006	ND<-0.693147	ND<1
			6/2/2007	ND<0 J	ND<0 J
			11/15/2007	ND<-0.693147	ND<1
			5/20/2008	ND<-0.693147	ND<1
			11/20/2008	ND<-0.693147	ND<1
			6/11/2009	-2.52573 J	0.08 J
LMW-8	16	15 (93.75%)	1/16/1998	ND<-0.693147	ND<1
			3/16/1999	ND<-0.693147	ND<1
			9/23/1999	3.04452	21
			3/14/2000	ND<-0.693147	ND<1
			9/23/2003	ND<-0.693147	ND<1
			3/10/2004	ND<-0.693147	ND<1
			10/12/2004	ND<-0.693147	ND<1
			4/1/2005	ND<-0.693147	ND<1
			10/26/2005	ND<-0.693147	ND<1
			6/19/2006	ND<-0.693147	ND<1
			11/18/2006	ND<-0.693147	ND<1
			6/2/2007	ND<-0.693147	ND<1
			11/15/2007	ND<-0.693147	ND<1
			5/20/2008	ND<-0.693147	ND<1
			11/20/2008	ND<-0.693147	ND<1
			6/11/2009	ND<-3.21888 U	ND<0.08 U

LMW-10	13	10 (76.9231%)	3/14/2000	3.91202	50	
			9/23/2003	ND<-0.693147	ND<1	
			3/10/2004	4.86753	130	
			10/12/2004	ND<-0.693147	ND<1	
			4/1/2005	ND<-0.693147	ND<1	
			10/26/2005	ND<-0.693147	ND<1	
			6/19/2006	ND<0 J	ND<0 J	
			11/18/2006	ND<-0.693147	ND<1	
			6/2/2007	1.38629	4	
			11/15/2007	ND<-0.693147	ND<1	
			5/20/2008	ND<-0.693147	ND<1	
			11/20/2008	ND<0 J	ND<0 J	
			6/11/2009	ND<-3.21888 U	ND<0.08 U	
LMW-7	16	8 (50%)	1/16/1998	ND<-0.693147	ND<1	
			3/16/1999	ND<-0.693147	ND<1	
			9/23/1999	2.89037	18	
			3/14/2000	2.77259	16	
			9/23/2003	ND<-0.693147	ND<1	
			3/10/2004	ND<-0.693147	ND<1	
			10/12/2004	ND<-0.693147	ND<1	
			4/1/2005	1.09861	3	
			10/26/2005	1.09861	3	
			6/19/2006	1.09861	3	
			11/18/2006	0	1	
			6/2/2007	1.09861	3	
			11/15/2007	ND<-0.693147	ND<1	
			5/20/2008	ND<-0.693147	ND<1	
			11/20/2008	ND<-0.693147	ND<1	
			6/11/2009	-0.127833	0.88	
LMW-9	16	11 (68.75%)	1/16/1998	ND<-0.693147	ND<1	
			3/16/1999	ND<-0.693147	ND<1	
			9/23/1999	3.29584	27	
			3/14/2000	ND<-0.693147	ND<1	
			9/23/2003	ND<-0.693147	ND<1	
			3/10/2004	2.56495	13	
			10/12/2004	ND<-0.693147	ND<1	
			4/1/2005	ND<0 J	ND<0 J	
			10/26/2005	ND<-0.693147	ND<1	
			6/19/2006	ND<0 J	ND<0 J	
			11/18/2006	ND<0 J	ND<0 J	
			6/2/2007	0	1	
			11/15/2007	ND<-0.693147	ND<1	
			5/20/2008	0	1	
			11/20/2008	ND<-0.693147	ND<1	
			6/11/2009	-1.77196 J	0.17 J	
LMW-15R		9	7 (77.7778%)	11/18/2006	ND<0 J	ND<0 J
			6/2/2007	ND<-0.693147	ND<1	
			11/15/2007	ND<-0.693147	ND<1	
			11/15/2007	ND<-0.693147	ND<1	
			5/20/2008	ND<-0.693147	ND<1	
			5/20/2008	ND<-0.693147	ND<1	
			11/20/2008	ND<-0.693147	ND<1	
			11/20/2008	0	1	
			6/11/2009	-0.116534	0.89	
LMW-3S	6	3 (50%)	11/18/2006	ND<-0.693147	ND<1	
			6/2/2007	1.09861	3	
			11/15/2007	0	1	
			5/20/2008	ND<-0.693147	ND<1	

			11/20/2008	ND<-0.693147	ND<1	
			6/11/2009	-0.544727	0.58	
LMW-11	11	9 (81.8182%)	3/14/2000	2.94444		19
			9/23/2003	ND<-0.693147	ND<1	
			3/10/2004	3.82864	46	
			10/12/2004	ND<-0.693147	ND<1	
			4/1/2005	ND<-0.693147	ND<1	
			10/26/2005	ND<-0.693147	ND<1	
			6/19/2006	ND<-0.693147	ND<1	
			6/2/2007	ND<-0.693147	ND<1	
			11/15/2007	ND<-0.693147	ND<1	
			5/20/2008	ND<-0.693147	ND<1	
			11/20/2008	ND<-0.693147	ND<1	
LMW-12	11	9 (81.8182%)	3/14/2000	3.89182		49
			9/23/2003	ND<-0.693147	ND<1	
			3/10/2004	2.89037	18	
			10/12/2004	ND<-0.693147	ND<1	
			4/1/2005	ND<-0.693147	ND<1	
			10/26/2005	ND<-0.693147	ND<1	
			6/19/2006	ND<-0.693147	ND<1	
			6/2/2007	ND<-0.693147	ND<1	
			11/15/2007	ND<-0.693147	ND<1	
			5/20/2008	ND<-0.693147	ND<1	
			11/20/2008	ND<-0.693147	ND<1	
LMW-13	11	9 (81.8182%)	3/14/2000	3.78419		44
			9/23/2003	ND<-0.693147	ND<1	
			3/10/2004	3.55535	35	
			10/12/2004	ND<-0.693147	ND<1	
			4/1/2005	ND<-0.693147	ND<1	
			10/26/2005	ND<-0.693147	ND<1	
			6/19/2006	ND<-0.693147	ND<1	
			6/2/2007	ND<-0.693147	ND<1	
			11/15/2007	ND<-0.693147	ND<1	
			5/20/2008	ND<-0.693147	ND<1	
			11/20/2008	ND<-0.693147	ND<1	
MW-5	13	10 (76.9231%)	1/16/1998	ND<-0.693147	ND<1	
			3/16/1999	ND<-0.693147	ND<1	
			9/23/1999	2.63906	14	
			3/14/2000	3.09104	22	
			9/23/2003	ND<-0.693147	ND<1	
			3/10/2004	3.95124	52	
			10/12/2004	ND<-0.693147	ND<1	
			4/1/2005	ND<-0.693147	ND<1	
			10/26/2005	ND<-0.693147	ND<1	
			6/19/2006	ND<-0.693147	ND<1	
			11/15/2007	ND<-0.693147	ND<1	
			5/20/2008	ND<-0.693147	ND<1	
			11/20/2008	ND<-0.693147	ND<1	

There are 0 unused locations

Loc.	Meas.	ND	Date	Conc.	Original

Shapiro-Francia Test of Normality

Parameter: Lead

All Locations

Normality Test of Parameter Concentrations

Original Data (Not Transformed)
Non-Detects Replaced with 1/2 DL
Total Number of Measurements = 201

i	x(i)	m(i)	sum(m^2)	sum(mx)
1	0	-2.65209	7.03356	0
2	0	-2.36561	12.6297	0
3	0	-2.19728	17.4578	0
4	0	-2.07485	21.7627	0
5	0	-1.97737	25.6727	0
6	0	-1.8957	29.2664	0
7	0	-1.82501	32.597	0
8	0	-1.76241	35.7031	0
9	0	-1.70604	38.6137	0
10	0	-1.65463	41.3515	0
11	0	-1.60725	43.9348	0
12	0.04	-1.56322	46.3784	-0.0625289
13	0.04	-1.52203	48.695	-0.12341
14	0.04	-1.48328	50.8951	-0.182741
15	0.04	-1.44663	52.9879	-0.240607
16	0.04	-1.41183	54.9811	-0.29708
17	0.08	-1.37866	56.8818	-0.407373
18	0.09	-1.34694	58.6961	-0.528597
19	0.13	-1.31652	60.4293	-0.699745
20	0.14	-1.28727	62.0864	-0.879963
21	0.17	-1.26464	63.6857	-1.09495
22	0.21	-1.23724	65.2165	-1.35477
23	0.22	-1.21073	66.6823	-1.62113
24	0.3	-1.18504	68.0866	-1.97664
25	0.31	-1.16012	69.4325	-2.33628
26	0.37	-1.1359	70.7228	-2.75656
27	0.5	-1.11232	71.96	-3.31272
28	0.5	-1.08935	73.1467	-3.8574
29	0.5	-1.06694	74.2851	-4.39087
30	0.5	-1.04505	75.3772	-4.91339
31	0.5	-1.02365	76.4251	-5.42522
32	0.5	-1.00271	77.4305	-5.92657
33	0.5	-0.982202	78.3952	-6.41768
34	0.5	-0.9621	79.3209	-6.89872
35	0.5	-0.942375	80.2089	-7.36991
36	0.5	-0.923014	81.0609	-7.83142
37	0.5	-0.903992	81.8781	-8.28342
38	0.5	-0.885291	82.6618	-8.72606
39	0.5	-0.866894	83.4133	-9.15951
40	0.5	-0.848786	84.1338	-9.5839
41	0.5	-0.834498	84.8302	-10.0012
42	0.5	-0.816874	85.4974	-10.4096
43	0.5	-0.7995	86.1366	-10.8093
44	0.5	-0.782366	86.7487	-11.2005
45	0.5	-0.765456	87.3347	-11.5832
46	0.5	-0.748762	87.8953	-11.9576
47	0.5	-0.732275	88.4315	-12.3238
48	0.5	-0.715986	88.9442	-12.6818
49	0.5	-0.699883	89.434	-13.0317

50	0.5	-0.683968	9.9018	-13.3737
51	0.5	-0.668209	90.3483	-13.7078
52	0.5	-0.652622	90.7742	-14.0341
53	0.5	-0.637192	91.1802	-14.3527
54	0.5	-0.621911	91.567	-14.6636
55	0.5	-0.606775	91.9352	-14.967
56	0.5	-0.591776	92.2854	-15.2629
57	0.5	-0.576911	92.6182	-15.5514
58	0.5	-0.562179	2.9342	-15.8325
59	0.5	-0.547551	93.2341	-16.1062
60	0.5	-0.533048	93.5182	-16.3728
61	0.5	-0.521527	93.7902	-16.6335
62	0.5	-0.507221	94.0475	-16.8871
63	0.5	-0.493018	94.2905	-17.1336
64	0.5	-0.478914	94.5199	-17.3731
65	0.5	-0.464904	94.736	-17.6056
66	0.5	-0.450985	94.9394	-17.831
67	0.5	-0.437153	95.1305	-18.0496
68	0.5	-0.423405	95.3098	-18.2613
69	0.5	-0.409735	95.4777	-18.4662
70	0.5	-0.396142	95.6346	-18.6643
71	0.5	-0.382622	95.781	-18.8556
72	0.5	-0.369171	95.9173	-19.0402
73	0.5	-0.355788	96.0439	-19.2181
74	0.5	-0.342466	96.1611	-19.3893
75	0.5	-0.329206	96.2695	-19.5539
76	0.5	-0.316004	96.3694	-19.7119
77	0.5	-0.302855	96.4611	-19.8633
78	0.5	-0.289769	6.5451	-20.0082
79	0.5	-0.276714	96.6216	-20.1466
80	0.5	-0.263715	96.6912	-20.2784
81	0.5	-0.253347	96.7554	-20.4051
82	0.5	-0.240426	96.8132	-20.5253
83	0.5	-0.227545	96.8649	-20.6391
84	0.5	-0.214702	96.911	-20.7464
85	0.5	-0.201894	96.9518	-20.8474
86	0.5	-0.189118	96.9876	-20.9419
87	0.5	-0.176374	97.0187	-21.0301
88	0.5	-0.163659	97.0455	-21.1119
89	0.5	-0.150969	97.0683	-21.1874
90	0.5	-0.138305	97.0874	-21.2566
91	0.5	-0.125661	97.1032	-21.3194
92	0.5	-0.113039	97.116	-21.3759
93	0.5	-0.100433	97.126	-21.4262
94	0.5	-0.0878447	97.1338	-21.4701
95	0.5	-0.0752698	97.1394	-21.5077
96	0.5	-0.0627062	97.1434	-21.5391
97	0.5	-0.0501541	97.1459	-21.5641
98	0.5	-0.0376076	97.1473	-21.5829
99	0.5	-0.0250691	97.1479	-21.5955
100	0.5	-0.0125328	97.1481	-21.6017
101	0.5	0	97.1481	-21.6017
102	0.5	0.0125328	97.1482	-21.5955
103	0.5	0.0250691	97.1489	-21.5829
104	0.5	0.0376076	97.1503	-21.5641
105	0.5	0.0501541	97.1528	-21.5391
106	0.5	0.0627062	97.1567	-21.5077
107	0.5	0.0752698	97.1624	-21.4701
108	0.5	0.0878447	97.1701	-21.4262
109	0.5	0.100433	97.1802	-21.3759
110	0.5	0.113039	97.193	-21.3194
111	0.5	0.125661	97.2088	-21.2566

112	0.5	0.138305		97.2279	-21.1874
113	0.5	0.150969		97.2507	-21.1119
114	0.5	0.163659		97.2775	-21.0301
115	0.5	0.176374		97.3086	-20.9419
116	0.5	0.189118		97.3443	-20.8474
117	0.5	0.201894		97.3851	-20.7464
118	0.5	0.214702		97.4312	-20.6391
119	0.5	0.227545		97.483	-20.5253
120	0.5	0.240426		97.5408	-20.4051
121	0.5	0.253347		97.605	-20.2784
122	0.5	0.263715		97.6745	-20.1466
123	0.5	0.276714		97.7511	-20.0082
124	0.5	0.28976	97.835	-19.8633	
125	0.5	0.302855		97.9268	-19.7119
126	0.5	0.316004		98.0266	-19.5539
127	0.5	0.329206		98.135	-19.3893
128	0.5	0.342466		98.2523	-19.2181
129	0.5	0.355788		98.3789	-19.0402
130	0.5	0.369171		98.5151	-18.8556
131	0.5	0.382622		98.6615	-18.6643
132	0.5	0.396142		98.8185	-18.4662
133	0.5	0.409735		98.9864	-18.2613
134	0.5	0.423405		99.1656	-18.0496
135	0.5	0.437153		99.3567	-17.831
136	0.5	0.450985		99.5601	-17.6056
137	0.5	0.464904		99.7763	-17.3731
138	0.5	0.478914		100.006	-17.1336
139	0.5	0.493018		100.249	-16.8871
140	0.5	0.507221		100.506	-16.6335
141	0.5	0.521527		100.778	-16.3728
142	0.5	0.533048		101.062	-16.1062
143	0.5	0.547551		101.362	-15.8325
144	0.5	0.56217	101.678	-15.5514	
145	0.5	0.576911		102.011	-15.2629
146	0.5	0.591776		102.361	-14.967
147	0.5	0.606775		102.729	-14.6636
148	0.5	0.621911		103.116	-14.3527
149	0.5	0.637192		103.522	-14.0341
150	0.5	0.652622		103.948	-13.7078
151	0.5	0.668209		104.394	-13.3737
152	0.5	0.68396	104.862	-13.0317	
153	0.5	0.699883		105.352	-12.6818
154	0.5	0.715986		105.865	-12.3238
155	0.58	0.732275		106.401	-11.899
156	0.71	0.748762		106.961	-11.3674
157	0.88	0.765456		107.547	-10.6938
158	0.89	0.782366		108.16	-9.99752
159	1	0.7995	108.799	-9.19802	
160	1	0.816874		109.466	-8.38115
161	1	0.834498		110.162	-7.54665
162	1	0.848786		110.883	-6.69786
163	1	0.866894		111.634	-5.83097
164	1	0.885291		112.418	-4.94568
165	1	0.903992		113.235	-4.04168
166	2	0.923014		114.087	-2.19566
167	2	0.942375		114.975	-0.310905
168	3	0.9621	115.901	2.57539	
169	3	0.982202		116.866	5.522
170	3	1.00271	117.871	8.53013	
171	3	1.02365	118.919	11.6011	
172	3	1.04505	120.011	14.7362	
173	3	1.06694	121.149	17.9371	

174	3	1.08935	122.336	21.2051
175	3	1.11232	123.573	24.5421
176	3	1.1359	124.864	27.9498
177	4	1.16012	126.209	32.5902
178	4	1.18504	127.614	37.3304
179	5	1.21073	129.08	43.384
180	8	1.23724	130.61	53.2819
181	9	1.26464	132.21	64.6637
182	11	1.28727	133.867	78.8237
183	13	1.31652	135.6	95.9385
184	14	1.34694	137.414	114.796
185	16	1.37866	139.315	136.854
186	16	1.41183	141.308	159.443
187	17	1.44663	143.401	184.036
188	18	1.48328	145.601	210.735
189	18	1.52203	147.918	238.132
190	19	1.56322	150.361	267.833
191	21	1.60725	152.945	301.585
192	22	1.65463	155.682	337.987
193	25	1.70604	158.593	380.638
194	27	1.76241	161.699	428.223
195	35	1.82501	165.03	492.098
196	44	1.8957	168.623	575.509
197	46	1.97737	172.533	666.468
198	49	2.07485	176.838	768.136
199	50	2.19728	181.666	878
200	52	2.36561	187.263	1001.01
201	130	2.65209	194.296	1345.78

Data Set Standard Deviation = 12.5819
Numerator = 1.81113e+006
Denominator = 6.15159e+006
W Statistic = 0.294417 = 1.81113e+006 / 6.15159e+006

5% Critical value of 0.976 exceeds 0.294417
Evidence of non-normality at 95% level of significance

1% Critical value of 0.967 exceeds 0.294417
Evidence of non-normality at 99% level of significance

Shapiro-Francia Test of Normality

Parameter: Lead

All Locations

Normality Test of Parameter Concentrations

Natural Logarithm Transformation
Non-Detects Replaced with 1/2 DL
Total Number of Measurements = 201

i	x(i)	m(i)	sum(m^2)	sum(mx)	
1	-3.21888	-2.65209	7.03356	8.53674	
2	-3.21888	-2.36561	12.6297	16.1514	
3	-3.21888	-2.19728	17.4578	23.2241	
4	-3.21888	-2.07485	21.7627	29.9028	
5	-3.21888	-1.97737	25.6727	36.2677	
6	-2.52573	-1.8957	29.2664	41.0557	
7	-2.40795	-1.82501	32.597	45.4503	
8	-2.04022	-1.76241	35.7031	49.046	
9	-1.96611	-1.70604	38.6137	52.4002	
10	-1.77196	-1.65463	41.3515	55.3322	
11	-1.56065	-1.60725	43.9348	57.8405	
12	-1.51413	-1.56322	46.3784	60.2074	
13	-1.20397	-1.52203	48.695	62.0399	
14	-1.17118	-1.48328	50.8951	63.7771	
15	-0.994252	-1.44663	52.9879	65.2154	
16	-0.693147	-1.41183	54.9811	66.194	
17	-0.693147	-1.37866	56.8818	67.1496	
18	-0.693147	-1.34694	58.6961	68.0833	
19	-0.693147	-1.31652	60.4293	68.9958	
20	-0.693147	-1.28727	62.0864	69.8881	
21	-0.693147	-1.26464	63.6857	70.7647	
22	-0.693147	-1.23724	65.2165	71.6223	
23	-0.693147	-1.21073	66.6823	72.4615	
24	-0.693147	-1.18504	68.0866	73.2829	
25	-0.693147	-1.16012	69.4325	74.087	
26	-0.693147	-1.1359	70.7228	74.8744	
27	-0.693147	-1.11232	71.96	75.6454	
28	-0.693147	-1.08935	73.1467	76.4004	
29	-0.693147	-1.06694	74.2851	77.14	
30	-0.693147	-1.04505	75.3772	77.8644	
31	-0.693147	-1.02365	76.4251	78.5739	
32	-0.693147	-1.00271	77.4305	79.2689	
33	-0.693147	-0.982202		78.3952	79.9497
34	-0.693147	-0.9621	79.3209	80.6166	
35	-0.693147	-0.942375		80.2089	81.2698
36	-0.693147	-0.923014		81.0609	81.9096
37	-0.693147	-0.903992		81.8781	82.5362
38	-0.693147	-0.885291		82.6618	83.1498
39	-0.693147	-0.866894		83.4133	83.7507
40	-0.693147	-0.848786		84.1338	84.3391
41	-0.693147	-0.834498		84.8302	84.9175
42	-0.693147	-0.816874		85.4974	85.4837
43	-0.693147	-0.7995	86.1366	86.0379	
44	-0.693147	-0.782366		86.7487	86.5802
45	-0.693147	-0.765456		87.3347	87.1107
46	-0.693147	-0.748762		87.8953	87.6297
47	-0.693147	-0.732275		88.4315	88.1373
48	-0.693147	-0.715986		88.9442	88.6336
49	-0.693147	-0.699883		89.434	89.1187

50	-0.693147	-0.6839689.9018	89.5928	
51	-0.693147	-0.668209	90.3483	90.056
52	-0.693147	-0.652622	90.7742	90.5083
53	-0.693147	-0.637192	91.1802	90.95
54	-0.693147	-0.621911	91.567	91.3811
55	-0.693147	-0.606775	91.9352	91.8017
56	-0.693147	-0.591776	92.2854	92.2119
57	-0.693147	-0.576911	92.6182	92.6117
58	-0.693147	-0.5621792.9342	93.0014	
59	-0.693147	-0.547551	93.2341	93.3809
60	-0.693147	-0.533048	93.5182	93.7504
61	-0.693147	-0.521527	93.7902	94.1119
62	-0.693147	-0.507221	94.0475	94.4635
63	-0.693147	-0.493018	94.2905	94.8052
64	-0.693147	-0.478914	94.5199	95.1372
65	-0.693147	-0.464904	94.736	95.4594
66	-0.693147	-0.450985	94.9394	95.772
67	-0.693147	-0.437153	95.1305	96.075
68	-0.693147	-0.423405	95.3098	96.3685
69	-0.693147	-0.409735	95.4777	96.6525
70	-0.693147	-0.396142	95.6346	96.9271
71	-0.693147	-0.382622	95.781	97.1923
72	-0.693147	-0.369171	95.9173	97.4482
73	-0.693147	-0.355788	96.0439	97.6948
74	-0.693147	-0.342466	96.1611	97.9322
75	-0.693147	-0.329206	96.2695	98.1604
76	-0.693147	-0.316004	96.3694	98.3794
77	-0.693147	-0.302855	96.4611	98.5894
78	-0.693147	-0.2897696.5451	98.7902	
79	-0.693147	-0.276714	96.6216	98.982
80	-0.693147	-0.263715	96.6912	99.1648
81	-0.693147	-0.253347	96.7554	99.3404
82	-0.693147	-0.240426	96.8132	99.5071
83	-0.693147	-0.227545	96.8649	99.6648
84	-0.693147	-0.214702	96.911	99.8136
85	-0.693147	-0.201894	96.9518	99.9535
86	-0.693147	-0.189118	96.9876	100.085
87	-0.693147	-0.176374	97.0187	100.207
88	-0.693147	-0.163659	97.0455	100.32
89	-0.693147	-0.150969	97.0683	100.425
90	-0.693147	-0.138305	97.0874	100.521
91	-0.693147	-0.125661	97.1032	100.608
92	-0.693147	-0.113039	97.116	100.686
93	-0.693147	-0.100433	97.126	100.756
94	-0.693147	-0.0878447	97.1338	100.817
95	-0.693147	-0.0752698	97.1394	100.869
96	-0.693147	-0.0627062	97.1434	100.912
97	-0.693147	-0.0501541	97.1459	100.947
98	-0.693147	-0.0376076	97.1473	100.973
99	-0.693147	-0.0250691	97.1479	100.991
100	-0.693147	-0.0125328	97.1481	100.999
101	-0.693147	0 97.1481	100.999	
102	-0.693147	0.0125328	97.1482	100.991
103	-0.693147	0.0250691	97.1489	100.973
104	-0.693147	0.0376076	97.1503	100.947
105	-0.693147	0.0501541	97.1528	100.912
106	-0.693147	0.0627062	97.1567	100.869
107	-0.693147	0.0752698	97.1624	100.817
108	-0.693147	0.0878447	97.1701	100.756
109	-0.693147	0.100433	97.1802	100.686
110	-0.693147	0.113039	97.193	100.608
111	-0.693147	0.125661	97.2088	100.521

112	-0.693147	0.138305	97.2279	100.425
113	-0.693147	0.150969	97.2507	100.32
114	-0.693147	0.163659	97.2775	100.207
115	-0.693147	0.176374	97.3086	100.085
116	-0.693147	0.189118	97.3443	99.9535
117	-0.693147	0.201894	97.3851	99.8136
118	-0.693147	0.214702	97.4312	99.6648
119	-0.693147	0.227545	97.483	99.5071
120	-0.693147	0.240426	97.5408	99.3404
121	-0.693147	0.253347	97.605	99.1648
122	-0.693147	0.263715	97.6745	98.982
123	-0.693147	0.276714	97.7511	98.7902
124	-0.693147	0.28976	97.835	98.5894
125	-0.693147	0.302855	97.9268	98.3794
126	-0.693147	0.316004	98.0266	98.1604
127	-0.693147	0.329206	98.135	97.9322
128	-0.693147	0.342466	98.2523	97.6948
129	-0.693147	0.355788	98.3789	97.4482
130	-0.693147	0.369171	98.5151	97.1923
131	-0.693147	0.382622	98.6615	96.9271
132	-0.693147	0.396142	98.8185	96.6525
133	-0.693147	0.409735	98.9864	96.3685
134	-0.693147	0.423405	99.1656	96.075
135	-0.693147	0.437153	99.3567	95.772
136	-0.693147	0.450985	99.5601	95.4594
137	-0.693147	0.464904	99.7763	95.1372
138	-0.693147	0.478914	100.006	94.8052
139	-0.693147	0.493018	100.249	94.4635
140	-0.693147	0.507221	100.506	94.1119
141	-0.693147	0.521527	100.778	93.7504
142	-0.693147	0.533048	101.062	93.3809
143	-0.693147	0.547551	101.362	93.0014
144	-0.544727	0.56217	101.678	92.6952
145	-0.342490	0.576911	102.011	92.4976
146	-0.127833	0.591776	102.361	92.4219
147	-0.116534	0.606775	102.729	92.3512
148	0	0.621911	103.116	92.3512
149	0	0.637192	103.522	92.3512
150	0	0.652622	103.948	92.3512
151	0	0.668209	104.394	92.3512
152	0	0.68396	104.862	92.3512
153	0	0.699883	105.352	92.3512
154	0	0.715986	105.865	92.3512
155	0	0.732275	106.401	92.3512
156	0	0.748762	106.961	92.3512
157	0	0.765456	107.547	92.3512
158	0	0.782366	108.16	92.3512
159	0	0.7995	108.799	92.3512
160	0	0.816874	109.466	92.3512
161	0	0.834498	110.162	92.3512
162	0	0.848786	110.883	92.3512
163	0	0.866894	111.634	92.3512
164	0	0.885291	112.418	92.3512
165	0	0.903992	113.235	92.3512
166	0.693147	0.923014	114.087	92.991
167	0.693147	0.942375	114.975	93.6442
168	1.09861	0.9621	115.901	94.7012
169	1.09861	0.982202	116.866	95.7803
170	1.09861	1.00271	117.871	96.8818
171	1.09861	1.02365	118.919	98.0064
172	1.09861	1.04505	120.011	99.1545
173	1.09861	1.06694	121.149	100.327

174	1.09861	1.08935	122.336	101.523
175	1.09861	1.11232	123.573	102.745
176	1.09861	1.1359	124.864	103.993
177	1.38629	1.16012	126.209	105.602
178	1.38629	1.18504	127.614	107.244
179	1.60944	1.21073	129.08	109.193
180	2.07944	1.23724	130.61	111.766
181	2.19722	1.26464	132.21	114.545
182	2.3979	1.28727	133.867	117.631
183	2.56495	1.31652	135.6	121.008
184	2.63906	1.34694	137.414	124.563
185	2.77259	1.37866	139.315	128.385
186	2.77259	1.41183	141.308	132.3
187	2.83321	1.44663	143.401	136.398
188	2.89037	1.48328	145.601	140.685
189	2.89037	1.52203	147.918	145.085
190	2.94444	1.56322	150.361	149.688
191	3.04452	1.60725	152.945	154.581
192	3.09104	1.65463	155.682	159.695
193	3.21888	1.70604	158.593	165.187
194	3.29584	1.76241	161.699	170.995
195	3.55535	1.82501	165.03	177.484
196	3.78419	1.8957	168.623	184.658
197	3.82864	1.97737	172.533	192.228
198	3.89182	2.07485	176.838	200.303
199	3.91202	2.19728	181.666	208.899
200	3.95124	2.36561	187.263	218.246
201	4.86753	2.65209	194.296	231.155

Data Set Standard Deviation = 1.38806
Numerator = 53432.8
Denominator = 74870.4
W Statistic = 0.71367 = 53432.8 / 74870.4

5% Critical value of 0.976 exceeds 0.71367
Evidence of non-normality at 95% level of significance

1% Critical value of 0.967 exceeds 0.71367
Evidence of non-normality at 99% level of significance

Kruskal-Wallis Non-Parametric Test

Parameter: Lead

Natural Logarithm Transformation
Non-Detects Replaced with 1/2 DL

Kruskal Wallis Ranks

Background Wells

Well ID	Date	Result	Rank
LMW-4	1/16/1998	2.83321	187
	3/16/1999	ND<-0.693147	72.5
	9/23/1999	2.19722	181
	3/14/2000	ND<-0.693147	72.5
	9/23/2003	ND<-0.693147	72.5
	3/10/2004	3.21888	193
	10/12/2004	ND<-0.693147	72.5
	4/1/2005	ND<-0.693147	72.5
	10/26/2005	ND<-0.693147	72.5
	6/19/2006	ND<-0.693147	72.5
	11/18/2006	ND<0 J	72.5
	6/2/2007	1.09861	168
	11/15/2007	ND<-0.693147	72.5
	5/20/2008	ND<-0.693147	72.5
	11/20/2008	ND<-0.693147	72.5
	6/11/2009	-2.04022 J	147
	11/14/2009	-1.20397 J	152

Rank Sum = 1825.5
Rank Mean = 107.382

Background Rank Sum = 1825.5
Background Rank Mean = 107.382

Compliance Wells

Well ID	Date	Result	Rank
LMW-3	11/19/1996	ND<-0.693147	72.5
	3/24/1997	2.3979	182
	1/16/1998	ND<-0.693147	72.5
	3/16/1999	ND<-0.693147	72.5
	9/23/1999	2.07944	180
	3/14/2000	ND<-0.693147	72.5
	9/23/2003	ND<-0.693147	72.5
	3/10/2004	ND<-0.693147	72.5
	10/12/2004	ND<-0.693147	72.5
	4/1/2005	ND<-0.693147	72.5
	10/26/2005	ND<-0.693147	72.5
	6/19/2006	ND<-0.693147	72.5
	11/18/2006	ND<-0.693147	72.5
	6/2/2007	ND<-0.693147	72.5
	11/15/2007	0	159
	5/20/2008	ND<-0.693147	72.5
	11/20/2008	ND<-0.693147	72.5
	6/11/2009	ND<-3.21888 U	72.5
	11/14/2009	-0.994252	154

Rank Sum = 1762.5
Rank Mean = 92.7632

LMW-9D	11/18/2006	1.09861	169
	6/2/2007	1.09861	170
	11/15/2007	ND<0 J	72.5
	5/20/2008	1.09861	171
	11/20/2008	ND<-0.693147	72.5
	6/11/2009	-0.34249	156
	11/14/2009	-1.17118	153

Rank Sum = 964
Rank Mean = 137.714

LMW-9S	11/18/2006	ND<-0.693147	72.5
	6/2/2007	0.693147	166
	11/15/2007	0	160
	5/20/2008	ND<-0.693147	72.5
	11/20/2008	ND<0 J	72.5
	6/11/2009	ND<-3.21888 U	72.5
	11/14/2009	-1.56065 J	150

Rank Sum = 766
Rank Mean = 109.429

LMW-16	11/18/2006	ND<0 J	72.5
	6/2/2007	1.60944	179
	11/15/2007	0.693147	167
	5/20/2008	ND<-0.693147	72.5
	11/20/2008	ND<-0.693147	72.5
	6/11/2009	ND<-3.21888 U	72.5
	11/14/2009	-2.40795 J	146

Rank Sum = 782
Rank Mean = 111.714

LMW-14R	6/2/2007	1.38629	177
	11/15/2007	ND<-0.693147	72.5
	5/20/2008	ND<-0.693147	72.5
	11/20/2008	ND<-0.693147	72.5
	6/11/2009	-1.51413 J	151
	11/14/2009	-1.96611 J	148

Rank Sum = 693.5
Rank Mean = 115.583

LMW-6	1/16/1998	ND<-0.693147	72.5
	3/16/1999	ND<-0.693147	72.5
	9/23/1999	2.77259	185
	3/14/2000	ND<-0.693147	72.5
	9/23/2003	ND<-0.693147	72.5
	3/10/2004	ND<-0.693147	72.5
	10/12/2004	ND<-0.693147	72.5
	4/1/2005	ND<-0.693147	72.5
	10/26/2005	ND<-0.693147	72.5
	6/19/2006	ND<-0.693147	72.5
	11/18/2006	ND<-0.693147	72.5
	6/2/2007	ND<0 J	72.5
	11/15/2007	ND<-0.693147	72.5
	5/20/2008	ND<-0.693147	72.5
	11/20/2008	ND<-0.693147	72.5
	6/11/2009	-2.52573 J	145

Rank Sum = 1345
Rank Mean = 84.0625

LMW-8	1/16/1998	ND<-0.693147	72.5
	3/16/1999	ND<-0.693147	72.5

	9/23/1999	3.04452	191
	3/14/2000	ND<-0.693147	72.5
	9/23/2003	ND<-0.693147	72.5
	3/10/2004	ND<-0.693147	72.5
	10/12/2004	ND<-0.693147	72.5
	4/1/2005	ND<-0.693147	72.5
	10/26/2005	ND<-0.693147	72.5
	6/19/2006	ND<-0.693147	72.5
	11/18/2006	ND<-0.693147	72.5
	6/2/2007	ND<-0.693147	72.5
	11/15/2007	ND<-0.693147	72.5
	5/20/2008	ND<-0.693147	72.5
	11/20/2008	ND<-0.693147	72.5
	6/11/2009	ND<-3.21888 U	72.5

Rank Sum = 1278.5
Rank Mean = 79.9063

LMW-10	3/14/2000	3.91202	199
	9/23/2003	ND<-0.693147	72.5
	3/10/2004	4.86753	201
	10/12/2004	ND<-0.693147	72.5
	4/1/2005	ND<-0.693147	72.5
	10/26/2005	ND<-0.693147	72.5
	6/19/2006	ND<0 J	72.5
	11/18/2006	ND<-0.693147	72.5
	6/2/2007	1.38629	178
	11/15/2007	ND<-0.693147	72.5
	5/20/2008	ND<-0.693147	72.5
	11/20/2008	ND<0 J	72.5
	6/11/2009	ND<-3.21888 U	72.5

Rank Sum = 1303
Rank Mean = 100.231

LMW-7	1/16/1998	ND<-0.693147	72.5
	3/16/1999	ND<-0.693147	72.5
	9/23/1999	2.89037	188
	3/14/2000	2.77259	186
	9/23/2003	ND<-0.693147	72.5
	3/10/2004	ND<-0.693147	72.5
	10/12/2004	ND<-0.693147	72.5
	4/1/2005	1.09861	172
	10/26/2005	1.09861	173
	6/19/2006	1.09861	174
	11/18/2006	0	161
	6/2/2007	1.09861	175
	11/15/2007	ND<-0.693147	72.5
	5/20/2008	ND<-0.693147	72.5
	11/20/2008	ND<-0.693147	72.5
	6/11/2009	-0.127833	157

Rank Sum = 1966
Rank Mean = 122.875

LMW-9	1/16/1998	ND<-0.693147	72.5
	3/16/1999	ND<-0.693147	72.5
	9/23/1999	3.29584	194
	3/14/2000	ND<-0.693147	72.5
	9/23/2003	ND<-0.693147	72.5
	3/10/2004	2.56495	183
	10/12/2004	ND<-0.693147	72.5
	4/1/2005	ND<0 J	72.5
	10/26/2005	ND<-0.693147	72.5
	6/19/2006	ND<0 J	72.5

	11/18/2006	ND<0 J	72.5
	6/2/2007	0	162
	11/15/2007	ND<-0.693147	72.5
	5/20/2008	0	163
	11/20/2008	ND<-0.693147	72.5
	6/11/2009	-1.77196 J	149

Rank Sum = 1648.5
Rank Mean = 103.031

LMW-15R	11/18/2006	ND<0 J	72.5
	6/2/2007	ND<-0.693147	72.5
	11/15/2007	ND<-0.693147	72.5
	11/15/2007	ND<-0.693147	72.5
	5/20/2008	ND<-0.693147	72.5
	5/20/2008	ND<-0.693147	72.5
	11/20/2008	ND<-0.693147	72.5
	11/20/2008	0	164
	6/11/2009	-0.116534	158

Rank Sum = 829.5
Rank Mean = 92.1667

LMW-3S	11/18/2006	ND<-0.693147	72.5
	6/2/2007	1.09861	176
	11/15/2007	0	165
	5/20/2008	ND<-0.693147	72.5
	11/20/2008	ND<-0.693147	72.5
	6/11/2009	-0.544727	155

Rank Sum = 713.5
Rank Mean = 118.917

LMW-11	3/14/2000	2.94444	190
	9/23/2003	ND<-0.693147	72.5
	3/10/2004	3.82864	197
	10/12/2004	ND<-0.693147	72.5
	4/1/2005	ND<-0.693147	72.5
	10/26/2005	ND<-0.693147	72.5
	6/19/2006	ND<-0.693147	72.5
	6/2/2007	ND<-0.693147	72.5
	11/15/2007	ND<-0.693147	72.5
	5/20/2008	ND<-0.693147	72.5
	11/20/2008	ND<-0.693147	72.5

Rank Sum = 1039.5
Rank Mean = 94.5

LMW-12	3/14/2000	3.89182	198
	9/23/2003	ND<-0.693147	72.5
	3/10/2004	2.89037	189
	10/12/2004	ND<-0.693147	72.5
	4/1/2005	ND<-0.693147	72.5
	10/26/2005	ND<-0.693147	72.5
	6/19/2006	ND<-0.693147	72.5
	6/2/2007	ND<-0.693147	72.5
	11/15/2007	ND<-0.693147	72.5
	5/20/2008	ND<-0.693147	72.5
	11/20/2008	ND<-0.693147	72.5

Rank Sum = 1039.5
Rank Mean = 94.5

LMW-13	3/14/2000	3.78419	196
	9/23/2003	ND<-0.693147	72.5
	3/10/2004	3.55535	195
	10/12/2004	ND<-0.693147	72.5

	4/1/2005	ND<-0.693147	72.5
	10/26/2005	ND<-0.693147	72.5
	6/19/2006	ND<-0.693147	72.5
	6/2/2007	ND<-0.693147	72.5
	11/15/2007	ND<-0.693147	72.5
	5/20/2008	ND<-0.693147	72.5
	11/20/2008	ND<-0.693147	72.5

Rank Sum = 1043.5
Rank Mean = 94.8636

MW-5	1/16/1998	ND<-0.693147	72.5
	3/16/1999	ND<-0.693147	72.5
	9/23/1999	2.63906	184
	3/14/2000	3.09104	192
	9/23/2003	ND<-0.693147	72.5
	3/10/2004	3.95124	200
	10/12/2004	ND<-0.693147	72.5
	4/1/2005	ND<-0.693147	72.5
	10/26/2005	ND<-0.693147	72.5
	6/19/2006	ND<-0.693147	72.5
	11/15/2007	ND<-0.693147	72.5
	5/20/2008	ND<-0.693147	72.5
	11/20/2008	ND<-0.693147	72.5

Rank Sum = 1301
Rank Mean = 100.077

Calculation Results:

Kruskal-Wallis H Statistic = 11.0584
Kruskal-Wallis H Statistic (adjusted for tied non-detects) = 17.4891
95% Confidence comparison value is 26.2962 at 16 degrees of freedom
11.0584 < 26.2962 indicating no significant group difference at 5% significance level
17.4891 < 26.2962 indicating no significant group difference at 5% significance level when adjusted for ties

Concentrations (ug/L)

Parameter: Nickel

Natural Logarithm Transformation
Non-Detects Replaced with 1/2 DL
Total Measurements: 207
Total Non-Detect: 145
Percent Non-Detects: 70.0483%
Total Background Measurements: 17
There is 1 background location

Loc.	Meas.	ND	Date	Conc.	Original
LMW-4	17	11 (64.7059%)	1/16/1998	ND<2.70805	ND<30
			3/16/1999	ND<2.70805	ND<30
			9/23/1999	ND<2.70805	ND<30
			3/14/2000	ND<2.70805	ND<30
			9/23/2003	ND<2.70805	ND<30
			3/10/2004	ND<2.70805	ND<30
			10/12/2004	ND<2.70805	ND<30
			4/1/2005	ND<2.70805	ND<30
			10/26/2005	ND<2.70805	ND<30
			6/19/2006	ND<2.70805	ND<30
			11/18/2006	0 J	1 J
			6/2/2007	1.79176	6
			11/15/2007	1.09861 J	3 J
			5/20/2008	1.60944 J	5 J
			11/20/2008	ND<2.70805	ND<30
			6/11/2009	-0.235722	0.79
			11/14/2009	0.182322	1.2

There are 16 compliance locations

Loc.	Meas.	ND	Date	Conc.	Original
LMW-3	19	16 (84.2105%)	11/19/1996	ND<2.70805	ND<30
			3/24/1997	ND<2.70805	ND<30
			1/16/1998	ND<2.70805	ND<30
			3/16/1999	ND<2.70805	ND<30
			9/23/1999	ND<2.70805	ND<30
			3/14/2000	ND<2.70805	ND<30
			9/23/2003	ND<2.70805	ND<30
			3/10/2004	ND<2.70805	ND<30
			10/12/2004	ND<2.70805	ND<30
			4/1/2005	ND<2.70805	ND<30
			10/26/2005	ND<2.70805	ND<30
			6/19/2006	ND<2.70805	ND<30
			11/18/2006	ND<2.70805	ND<30
			6/2/2007	ND<2.70805	ND<30
			11/15/2007	ND<2.70805	ND<30
			5/20/2008	0 J	1 J
			11/20/2008	ND<2.70805	ND<30
			6/11/2009	-0.616186 J	0.54 J
			11/14/2009	0.0953102	1.1
LMW-14R	6	2 (33.3333%)	6/2/2007	ND<2.70805	ND<30
			11/15/2007	ND<2.70805	ND<30
			5/20/2008	0.693147 J	2 J
			11/20/2008	1.09861 J	3 J

			6/11/2009	0.788457	2.2	
			11/14/2009	0.470004 J	1.6 J	
LMW-9	17	11 (64.7059%)	1/16/1998	ND<2.70805	ND<30	
			3/16/1999	1.79176 J	6 J	
			9/23/1999	ND<2.70805	ND<30	
			3/14/2000	ND<2.70805	ND<30	
			9/23/2003	ND<2.70805	ND<30	
			3/10/2004	ND<2.70805	ND<30	
			10/12/2004	ND<2.70805	ND<30	
			4/1/2005	ND<2.70805	ND<30	
			10/26/2005	ND<2.70805	ND<30	
			6/19/2006	ND<2.70805	ND<30	
			11/18/2006	ND<2.70805	ND<30	
			6/2/2007	1.09861 J	3 J	
			11/15/2007	ND<2.70805	ND<30	
			5/20/2008	0 J	1 J	
			11/20/2008	2.19722 J	9 J	
			6/11/2009	-1.10866 J	0.33 J	
			11/14/2009	-0.776529 J	0.46 J	
LMW-15R		10	6 (60%)	11/18/2006	0 J	1 J
			6/2/2007	ND<2.70805	ND<30	
			11/15/2007	ND<2.70805	ND<30	
			11/15/2007	ND<2.70805	ND<30	
			5/20/2008	ND<2.70805	ND<30	
			5/20/2008	0 J	1 J	
			11/20/2008	ND<2.70805	ND<30	
			11/20/2008	ND<2.70805	ND<30	
			6/11/2009	1.09861	3	
			11/14/2009	-0.223144 J	0.8 J	
LMW-16	7	4 (57.1429%)	11/18/2006	0 J	1 J	
			6/2/2007	ND<2.70805	ND<30	
			11/15/2007	ND<2.70805	ND<30	
			5/20/2008	ND<2.70805	ND<30	
			11/20/2008	ND<2.70805	ND<30	
			6/11/2009	-0.328504	0.72	
			11/14/2009	-0.415515	0.66	
LMW-9D	7	3 (42.8571%)	11/18/2006	0.693147 J	2 J	
			6/2/2007	ND<2.70805	ND<30	
			11/15/2007	ND<2.70805	ND<30	
			5/20/2008	0 J	1 J	
			11/20/2008	ND<2.70805	ND<30	
			6/11/2009	-0.597837 J	0.55 J	
			11/14/2009	-0.371064	0.69	
LMW-3S	7	0 (0%)	11/18/2006	0.693147 J	2 J	
			6/2/2007	1.38629 J	4 J	
			11/15/2007	1.60944 J	5 J	
			5/20/2008	1.09861 J	3 J	
			11/20/2008	1.09861 J	3 J	
			6/11/2009	0.955511	2.6	
			11/14/2009	1.02962	2.8	
LMW-9S	7	3 (42.8571%)	11/18/2006	0 J	1 J	
			6/2/2007	ND<2.70805	ND<30	
			11/15/2007	ND<2.70805	ND<30	
			5/20/2008	0 J	1 J	
			11/20/2008	ND<2.70805	ND<30	

			6/11/2009	0.182322	1.2	
			11/14/2009	-0.0304592 J	0.97 J	
LMW-10	14	12 (85.7143%)	3/14/2000	ND<2.70805	ND<30	
			9/23/2003	ND<2.70805	ND<30	
			3/10/2004	ND<2.70805	ND<30	
			10/12/2004	ND<2.70805	ND<30	
			4/1/2005	ND<2.70805	ND<30	
			10/26/2005	ND<2.70805	ND<30	
			6/19/2006	ND<2.70805	ND<30	
			11/18/2006	ND<2.70805	ND<30	
			6/2/2007	ND<2.70805	ND<30	
			11/15/2007	ND<2.70805	ND<30	
			5/20/2008	0 J	1 J	
			11/20/2008	ND<2.70805	ND<30	
			6/11/2009	-0.967584 J	0.38 J	
			11/14/2009	ND<0 J	ND<0 J	
LMW-8	17	12 (70.5882%)	1/16/1998	ND<2.70805	ND<30	
			3/16/1999	1.79176 J	6 J	
			9/23/1999	ND<2.70805	ND<30	
			3/14/2000	ND<2.70805	ND<30	
			9/23/2003	ND<2.70805	ND<30	
			3/10/2004	ND<2.70805	ND<30	
			10/12/2004	ND<2.70805	ND<30	
			4/1/2005	ND<2.70805	ND<30	
			10/26/2005	ND<2.70805	ND<30	
			6/19/2006	ND<2.70805	ND<30	
			11/18/2006	0 J	1 J	
			6/2/2007	ND<2.70805	ND<30	
			11/15/2007	ND<2.70805	ND<30	
			5/20/2008	0 J	1 J	
			11/20/2008	ND<2.70805	ND<30	
			6/11/2009	-0.494296	0.61	
			11/14/2009	-0.446287	0.64	
LMW-6	17	12 (70.5882%)	1/16/1998	ND<2.70805	ND<30	
			3/16/1999	ND<2.70805	ND<30	
			9/23/1999	ND<2.70805	ND<30	
			3/14/2000	ND<2.70805	ND<30	
			9/23/2003	ND<2.70805	ND<30	
			3/10/2004	ND<2.70805	ND<30	
			10/12/2004	ND<2.70805	ND<30	
			4/1/2005	ND<2.70805	ND<30	
			10/26/2005	ND<2.70805	ND<30	
			6/19/2006	ND<2.70805	ND<30	
			11/18/2006	0 J	1 J	
			6/2/2007	1.60944	5	
			11/15/2007	ND<2.70805	ND<30	
			5/20/2008	0.693147 J	2 J	
			11/20/2008	ND<2.70805	ND<30	
			6/11/2009	0.788457	2.2	
			11/14/2009	0.587787 J	1.8 J	
LMW-7	16	9 (56.25%)	1/16/1998	ND<2.70805	ND<30	
			3/16/1999	ND<2.70805	ND<30	
			9/23/1999	ND<2.70805	ND<30	
			3/14/2000	ND<2.70805	ND<30	
			9/23/2003	ND<2.70805	ND<30	
			3/10/2004	ND<2.70805	ND<30	
			10/12/2004	ND<2.70805	ND<30	
			4/1/2005	2.89037 J	18 J	

			10/26/2005	ND<2.70805	ND<30
			6/19/2006	ND<2.70805	ND<30
			11/18/2006	1.38629 J	4 J
			6/2/2007	1.94591	7
			11/15/2007	1.60944 J	5 J
			5/20/2008	0.693147 J	2 J
			11/20/2008	1.09861 J	3 J
			6/11/2009	1.70475	5.5
MW-5	13	11 (84.6154%)	1/16/1998	ND<2.70805	ND<30
			3/16/1999	1.79176 J	6 J
			9/23/1999	ND<2.70805	ND<30
			3/14/2000	ND<2.70805	ND<30
			9/23/2003	ND<2.70805	ND<30
			3/10/2004	ND<2.70805	ND<30
			10/12/2004	ND<2.70805	ND<30
			4/1/2005	ND<2.70805	ND<30
			10/26/2005	ND<2.70805	ND<30
			6/19/2006	ND<2.70805	ND<30
			11/15/2007	1.09861 J	3 J
			5/20/2008	ND<2.70805	ND<30
			11/20/2008	ND<2.70805	ND<30
LMW-13	11	11 (100%)	3/14/2000	ND<2.70805	ND<30
			9/23/2003	ND<2.70805	ND<30
			3/10/2004	ND<2.70805	ND<30
			10/12/2004	ND<2.70805	ND<30
			4/1/2005	ND<2.70805	ND<30
			10/26/2005	ND<2.70805	ND<30
			6/19/2006	ND<2.70805	ND<30
			6/2/2007	ND<2.70805	ND<30
			11/15/2007	ND<2.70805	ND<30
			5/20/2008	ND<2.70805	ND<30
			11/20/2008	ND<2.70805	ND<30
LMW-12	11	11 (100%)	3/14/2000	ND<2.70805	ND<30
			9/23/2003	ND<2.70805	ND<30
			3/10/2004	ND<2.70805	ND<30
			10/12/2004	ND<2.70805	ND<30
			4/1/2005	ND<2.70805	ND<30
			10/26/2005	ND<2.70805	ND<30
			6/19/2006	ND<2.70805	ND<30
			6/2/2007	ND<2.70805	ND<30
			11/15/2007	ND<2.70805	ND<30
			5/20/2008	ND<2.70805	ND<30
			11/20/2008	ND<2.70805	ND<30
LMW-11	11	11 (100%)	3/14/2000	ND<2.70805	ND<30
			9/23/2003	ND<2.70805	ND<30
			3/10/2004	ND<2.70805	ND<30
			10/12/2004	ND<2.70805	ND<30
			4/1/2005	ND<2.70805	ND<30
			10/26/2005	ND<2.70805	ND<30
			6/19/2006	ND<2.70805	ND<30
			6/2/2007	ND<2.70805	ND<30
			11/15/2007	ND<2.70805	ND<30
			5/20/2008	ND<2.70805	ND<30
			11/20/2008	ND<2.70805	ND<30

There are 0 unused locations

Loc.	Meas. ND	Date	Conc. Original

Shapiro-Francia Test of Normality

Parameter: Nickel

All Locations

Normality Test of Parameter Concentrations

Original Data (Not Transformed)
Non-Detects Replaced with 1/2 DL
Total Number of Measurements = 207

i	x(i)	m(i)	sum(m^2)	sum(mx)
1	0	-2.65209	7.03356	0
2	0.33	-2.36561	12.6297	-0.780653
3	0.38	-2.19728	17.4578	-1.61562
4	0.46	-2.07485	21.7627	-2.57005
5	0.54	-1.97737	25.6727	-3.63783
6	0.55	-1.91103	29.3248	-4.6889
7	0.61	-1.83843	32.7046	-5.81034
8	0.64	-1.77438	35.853	-6.94594
9	0.66	-1.71688	38.8007	-8.07908
10	0.69	-1.66456	41.5715	-9.22763
11	0.72	-1.62576	44.2146	-10.3982
12	0.79	-1.58047	46.7124	-11.6467
13	0.8	-1.5382	49.0785	-12.8773
14	0.97	-1.49852	51.324	-14.3309
15	1	-1.46106	53.4587	-15.7919
16	1	-1.4325	55.5108	-17.2244
17	1	-1.39838	57.4663	-18.6228
18	1	-1.36581	59.3317	-19.9886
19	1	-1.33462	61.1129	-21.3232
20	1	-1.30469	62.8151	-22.6279
21	1	-1.28155	64.4575	-23.9095
22	1	-1.25357	66.0289	-25.163
23	1	-1.22653	67.5333	-26.3896
24	1	-1.20036	68.9741	-27.5899
25	1	-1.17499	70.3547	-28.7649
26	1	-1.15035	71.678	-29.9153
27	1	-1.13113	72.9575	-31.0464
28	1.1	-1.10768	74.1845	-32.2648
29	1.2	-1.08482	75.3613	-33.5666
30	1.2	-1.06252	76.4903	-34.8417
31	1.6	-1.04073	77.5734	-36.5068
32	1.8	-1.02365	78.6212	-38.3494
33	2	-1.00271	79.6267	-40.3548
34	2	-0.982202	80.5914	-42.3192
35	2	-0.9621	81.517	-44.2434
36	2	-0.942375	82.4051	-46.1282
37	2	-0.926859	83.2642	-47.9819
38	2.2	-0.907769	84.0882	-49.979
39	2.2	-0.889006	84.8785	-51.9348
40	2.6	-0.87055	85.6364	-54.1982
41	2.8	-0.852385	86.363	-56.5849
42	3	-0.838054	87.0653	-59.0991
43	3	-0.820379	87.7383	-61.5602
44	3	-0.802956	88.3831	-63.9691
45	3	-0.785774	89.0005	-66.3264
46	3	-0.768821	89.5916	-68.6329
47	3	-0.755415	90.1622	-70.8991
48	3	-0.738846	90.7081	-73.1156
49	3	-0.722479	91.2301	-75.2831

50	4	-0.706302	91.729	-78.1083
51	4	-0.690309	92.2055	-80.8695
52	5	-0.6744992.6604	-84.242	
53	5	-0.661955	93.0986	-87.5518
54	5	-0.646431	93.5165	-90.7839
55	5	-0.631062	93.9147	-93.9392
56	5.5	-0.615839	94.294	-97.3263
57	6	-0.6007694.6549	-100.931	
58	6	-0.588793	95.0016	-104.464
59	6	-0.573953	95.331	-107.907
60	6	-0.559237	95.6437	-111.263
61	7	-0.544642	95.9404	-115.075
62	9	-0.530162	96.2214	-119.847
63	15	-0.518658	96.4905	-127.627
64	15	-0.504372	96.7448	-135.192
65	15	-0.490189	96.9851	-142.545
66	15	-0.476105	97.2118	-149.687
67	15	-0.462114	97.4254	-156.618
68	15	-0.450985	97.6287	-163.383
69	15	-0.437153	97.8198	-169.94
70	15	-0.423405	97.9991	-176.291
71	15	-0.409735	98.167	-182.437
72	15	-0.396142	98.3239	-188.38
73	15	-0.385321	98.4724	-194.159
74	15	-0.371856	98.6107	-199.737
75	15	-0.358459	98.7392	-205.114
76	15	-0.345126	98.8583	-210.291
77	15	-0.331854	98.9684	-215.269
78	15	-0.318639	99.0699	-220.048
79	15	-0.308108	99.1649	-224.67
80	15	-0.294992	99.2519	-229.095
81	15	-0.281926	99.3314	-233.324
82	15	-0.268908	99.4037	-237.357
83	15	-0.255936	99.4692	-241.197
84	15	-0.2455999.5295	-244.88	
85	15	-0.232693	99.5836	-248.371
86	15	-0.219834	99.632	-251.668
87	15	-0.207012	99.6748	-254.773
88	15	-0.194225	99.7126	-257.687
89	15	-0.184017	99.7464	-260.447
90	15	-0.171285	99.7758	-263.016
91	15	-0.158579	99.8009	-265.395
92	15	-0.1459 99.8222	-267.584	
93	15	-0.133244	99.8399	-269.582
94	15	-0.123135	99.8551	-271.429
95	15	-0.110516	99.8673	-273.087
96	15	-0.0979139	99.8769	-274.556
97	15	-0.0853288	99.8842	-275.836
98	15	-0.0727562	99.8895	-276.927
99	15	-0.0627062	99.8934	-277.868
100	15	-0.0501541	99.8959	-278.62
101	15	-0.0376076	99.8973	-279.184
102	15	-0.0250691	99.898	-279.56
103	15	-0.0125328	99.8981	-279.748
104	15	0 99.8981	-279.748	
105	15	0.0125328	99.8983	-279.56
106	15	0.0250691	99.8989	-279.184
107	15	0.0376076	99.9003	-278.62
108	15	0.0501541	99.9028	-277.868
109	15	0.0627062	99.9068	-276.927
110	15	0.0727562	99.9121	-275.836
111	15	0.0853288	99.9193	-274.556

112	15	0.0979139	99.9289	-273.087
113	15	0.110516	99.9411	-271.429
114	15	0.123135	99.9563	-269.582
115	15	0.133244	99.9741	-267.584
116	15	0.1459	99.9954	-265.395
117	15	0.158579	100.02	-263.016
118	15	0.171285	100.05	-260.447
119	15	0.184017	100.084	-257.687
120	15	0.194225	100.121	-254.773
121	15	0.207012	100.164	-251.668
122	15	0.219834	100.213	-248.371
123	15	0.232693	100.267	-244.88
124	15	0.24559	100.327	-241.197
125	15	0.255936	100.393	-237.357
126	15	0.268908	100.465	-233.324
127	15	0.281926	100.544	-229.095
128	15	0.294992	100.631	-224.67
129	15	0.308108	100.726	-220.048
130	15	0.318639	100.828	-215.269
131	15	0.331854	100.938	-210.291
132	15	0.345126	101.057	-205.114
133	15	0.358459	101.186	-199.737
134	15	0.371856	101.324	-194.159
135	15	0.385321	101.472	-188.38
136	15	0.396142	101.629	-182.437
137	15	0.409735	101.797	-176.291
138	15	0.423405	101.976	-169.94
139	15	0.437153	102.168	-163.383
140	15	0.450985	102.371	-156.618
141	15	0.462114	102.584	-149.687
142	15	0.476105	102.811	-142.545
143	15	0.490189	103.051	-135.192
144	15	0.504372	103.306	-127.627
145	15	0.518658	103.575	-119.847
146	15	0.530162	103.856	-111.894
147	15	0.544642	104.153	-103.725
148	15	0.559237	104.465	-95.3361
149	15	0.573953	104.795	-86.7268
150	15	0.588793	105.141	-77.8949
151	15	0.60076	105.502	-68.8835
152	15	0.615839	105.882	-59.646
153	15	0.631062	106.28	-50.18
154	15	0.646431	106.698	-40.4836
155	15	0.661955	107.136	-30.5542
156	15	0.67449	107.591	-20.4369
157	15	0.690309	108.067	-10.0822
158	15	0.706302	108.566	0.512289
159	15	0.722479	109.088	11.3495
160	15	0.738846	109.634	22.4322
161	15	0.755415	110.205	33.7634
162	15	0.768821	110.796	45.2957
163	15	0.785774	111.413	57.0823
164	15	0.802956	112.058	69.1267
165	15	0.820379	112.731	81.4323
166	15	0.838054	113.433	94.0031
167	15	0.852385	114.16	106.789
168	15	0.87055	114.918	119.847
169	15	0.889006	115.708	133.182
170	15	0.907769	116.532	146.799
171	15	0.926859	117.391	160.702
172	15	0.942375	118.279	174.837
173	15	0.9621	119.205	189.269

174	15	0.982202		120.17	204.002
175	15	1.00271	121.175	219.043	
176	15	1.02365	122.223	234.397	
177	15	1.04073	123.306	250.008	
178	15	1.06252	124.435	265.946	
179	15	1.08482	125.612	282.218	
180	15	1.10768	126.839	298.834	
181	15	1.13113	128.118	315.801	
182	15	1.15035	129.442	333.056	
183	15	1.17499	130.822	350.681	
184	15	1.20036	132.263	368.686	
185	15	1.22653	133.767	387.084	
186	15	1.25357	135.339	405.887	
187	15	1.28155	136.981	425.111	
188	15	1.30469	138.683	444.681	
189	15	1.33462	140.465	464.7	
190	15	1.36581	142.33	485.187	
191	15	1.39838	144.285	506.163	
192	15	1.4325	146.338	527.651	
193	15	1.46106	148.472	549.567	
194	15	1.49852	150.718	572.044	
195	15	1.5382	153.084	595.117	
196	15	1.58047	155.582	618.824	
197	15	1.62576	158.225	643.211	
198	15	1.66456	160.996	668.179	
199	15	1.71688	163.943	693.932	
200	15	1.77438	167.092	720.548	
201	15	1.83843	170.471	748.124	
202	15	1.91103	174.124	776.79	
203	15	1.97737	178.034	806.45	
204	15	2.07485	182.339	837.573	
205	15	2.19728	187.167	870.532	
206	15	2.36561	192.763	906.017	
207	18	2.65209	199.796	953.754	

Data Set Standard Deviation = 5.92348
Numerator = 909647
Denominator = 1.44414e+006
W Statistic = 0.62989 = 909647 / 1.44414e+006

5% Critical value of 0.976 exceeds 0.62989
Evidence of non-normality at 95% level of significance

1% Critical value of 0.967 exceeds 0.62989
Evidence of non-normality at 99% level of significance

Shapiro-Francia Test of Normality

Parameter: Nickel

All Locations

Normality Test of Parameter Concentrations

Natural Logarithm Transformation
Non-Detects Replaced with 1/2 DL
Total Number of Measurements = 207

i	x(i)	m(i)	sum(m^2)	sum(mx)	
1	-1.10866	-2.65209	7.03356	2.94027	
2	-0.967584	-2.36561	12.6297	5.2292	
3	-0.776529	-2.19728	17.4578	6.93545	
4	-0.616186	-2.07485	21.7627	8.21395	
5	-0.597837	-1.97737	25.6727	9.39609	
6	-0.494296	-1.91103	29.3248	10.3407	
7	-0.446287	-1.83843	32.7046	11.1612	
8	-0.415515	-1.77438	35.853	11.8985	
9	-0.371064	-1.71688	38.8007	12.5355	
10	-0.328504	-1.66456	41.5715	13.0823	
11	-0.235722	-1.62576	44.2146	13.4656	
12	-0.223144	-1.58047	46.7124	13.8182	
13	-0.0304592	-1.5382	49.0785	13.8651	
14	0	-1.49852	51.324	13.8651	
15	0	-1.46106	53.4587	13.8651	
16	0	-1.4325	55.5108	13.8651	
17	0	-1.39838	57.4663	13.8651	
18	0	-1.36581	59.3317	13.8651	
19	0	-1.33462	61.1129	13.8651	
20	0	-1.30469	62.8151	13.8651	
21	0	-1.28156	64.4575	13.8651	
22	0	-1.25357	66.0289	13.8651	
23	0	-1.22653	67.5333	13.8651	
24	0	-1.20036	68.9741	13.8651	
25	0	-1.17499	70.3547	13.8651	
26	0	-1.15035	71.678	13.8651	
27	0	-1.13113	72.9575	13.8651	
28	0.0953102	-1.10768	74.1845	13.7595	
29	0.182322	-1.08482	75.3613	13.5617	
30	0.182322	-1.06252	76.4903	13.368	
31	0.470004	-1.04073	77.5734	12.8789	
32	0.587787	-1.02365	78.6212	12.2772	
33	0.693147	-1.00271	79.6267	11.5822	
34	0.693147	-0.982202		80.5914	10.9013
35	0.693147	-0.9621	81.517	10.2345	
36	0.693147	-0.942375		82.4051	9.58126
37	0.693147	-0.926859		83.2642	8.93881
38	0.788457	-0.907769		84.0882	8.22307
39	0.788457	-0.889006		84.8785	7.52213
40	0.955511	-0.87055	85.6364	6.69031	
41	1.02962	-0.852385	86.363	5.81268	
42	1.09861	-0.838054	87.0653	4.89198	
43	1.09861	-0.820379	87.7383	3.9907	
44	1.09861	-0.802956	88.3831	3.10856	
45	1.09861	-0.785774	89.0005	2.2453	
46	1.09861	-0.768821	89.5916	1.40067	
47	1.09861	-0.755415	90.1622	0.570758	
48	1.09861	-0.738846	90.7081	-0.240948	
49	1.09861	-0.722479	91.2301	-1.03467	

50	1.38629	-0.706302	91.729	-2.01381
51	1.38629	-0.690309	92.2055	-2.97079
52	1.60944	-0.6744992.6604	-4.05634	
53	1.60944	-0.661955	93.0986	-5.12171
54	1.60944	-0.646431	93.5165	-6.1621
55	1.60944	-0.631062	93.9147	-7.17776
56	1.70475	-0.615839	94.294	-8.22761
57	1.79176	-0.6007694.6549	-9.30403	
58	1.79176	-0.588793	95.0016	-10.359
59	1.79176	-0.573953	95.331	-11.3874
60	1.79176	-0.559237	95.6437	-12.3894
61	1.94591	-0.544642	95.9404	-13.4492
62	2.19722	-0.530162	96.2214	-14.6141
63	2.70805	-0.518658	96.4905	-16.0187
64	2.70805	-0.504372	96.7448	-17.3845
65	2.70805	-0.490189	96.9851	-18.712
66	2.70805	-0.476105	97.2118	-20.0013
67	2.70805	-0.462114	97.4254	-21.2527
68	2.70805	-0.450985	97.6287	-22.474
69	2.70805	-0.437153	97.8198	-23.6579
70	2.70805	-0.423405	97.9991	-24.8045
71	2.70805	-0.409735	98.167	-25.914
72	2.70805	-0.396142	98.3239	-26.9868
73	2.70805	-0.385321	98.4724	-28.0303
74	2.70805	-0.371856	98.6107	-29.0373
75	2.70805	-0.358459	98.7392	-30.008
76	2.70805	-0.345126	98.8583	-30.9426
77	2.70805	-0.331854	98.9684	-31.8413
78	2.70805	-0.318639	99.0699	-32.7042
79	2.70805	-0.308108	99.1649	-33.5386
80	2.70805	-0.294992	99.2519	-34.3374
81	2.70805	-0.281926	99.3314	-35.1009
82	2.70805	-0.268908	99.4037	-35.8291
83	2.70805	-0.255936	99.4692	-36.5222
84	2.70805	-0.2455999.5295	-37.1873	
85	2.70805	-0.232693	99.5836	-37.8174
86	2.70805	-0.219834	99.632	-38.4127
87	2.70805	-0.207012	99.6748	-38.9733
88	2.70805	-0.194225	99.7126	-39.4993
89	2.70805	-0.184017	99.7464	-39.9976
90	2.70805	-0.171285	99.7758	-40.4615
91	2.70805	-0.158579	99.8009	-40.8909
92	2.70805	-0.1459 99.8222	-41.286	
93	2.70805	-0.133244	99.8399	-41.6469
94	2.70805	-0.123135	99.8551	-41.9803
95	2.70805	-0.110516	99.8673	-42.2796
96	2.70805	-0.0979139	99.8769	-42.5448
97	2.70805	-0.0853288	99.8842	-42.7758
98	2.70805	-0.0727562	99.8895	-42.9729
99	2.70805	-0.0627062	99.8934	-43.1427
100	2.70805	-0.0501541	99.8959	-43.2785
101	2.70805	-0.0376076	99.8973	-43.3803
102	2.70805	-0.0250691	99.898	-43.4482
103	2.70805	-0.0125328	99.8981	-43.4822
104	2.70805	0 99.8981	-43.4822	
105	2.70805	0.0125328	99.8983	-43.4482
106	2.70805	0.0250691	99.8989	-43.3803
107	2.70805	0.0376076	99.9003	-43.2785
108	2.70805	0.0501541	99.9028	-43.1427
109	2.70805	0.0627062	99.9068	-42.9729
110	2.70805	0.0727562	99.9121	-42.7758
111	2.70805	0.0853288	99.9193	-42.5448

112	2.70805	0.0979139	99.9289	-42.2796
113	2.70805	0.110516	99.9411	-41.9803
114	2.70805	0.123135	99.9563	-41.6469
115	2.70805	0.133244	99.9741	-41.286
116	2.70805	0.1459	99.9954	-40.8909
117	2.70805	0.158579	100.02	-40.4615
118	2.70805	0.171285	100.05	-39.9976
119	2.70805	0.184017	100.084	-39.4993
120	2.70805	0.194225	100.121	-38.9733
121	2.70805	0.207012	100.164	-38.4127
122	2.70805	0.219834	100.213	-37.8174
123	2.70805	0.232693	100.267	-37.1873
124	2.70805	0.24559	100.327	-36.5222
125	2.70805	0.255936	100.393	-35.8291
126	2.70805	0.268908	100.465	-35.1009
127	2.70805	0.281926	100.544	-34.3374
128	2.70805	0.294992	100.631	-33.5386
129	2.70805	0.308108	100.726	-32.7042
130	2.70805	0.318639	100.828	-31.8413
131	2.70805	0.331854	100.938	-30.9426
132	2.70805	0.345126	101.057	-30.008
133	2.70805	0.358459	101.186	-29.0373
134	2.70805	0.371856	101.324	-28.0303
135	2.70805	0.385321	101.472	-26.9868
136	2.70805	0.396142	101.629	-25.914
137	2.70805	0.409735	101.797	-24.8045
138	2.70805	0.423405	101.976	-23.6579
139	2.70805	0.437153	102.168	-22.474
140	2.70805	0.450985	102.371	-21.2527
141	2.70805	0.462114	102.584	-20.0013
142	2.70805	0.476105	102.811	-18.712
143	2.70805	0.490189	103.051	-17.3845
144	2.70805	0.504372	103.306	-16.0187
145	2.70805	0.518658	103.575	-14.6141
146	2.70805	0.530162	103.856	-13.1784
147	2.70805	0.544642	104.153	-11.7035
148	2.70805	0.559237	104.465	-10.189
149	2.70805	0.573953	104.795	-8.63476
150	2.70805	0.588793	105.141	-7.04028
151	2.70805	0.60076	105.502	-5.41339
152	2.70805	0.615839	105.882	-3.74566
153	2.70805	0.631062	106.28	-2.03672
154	2.70805	0.646431	106.698	-0.286148
155	2.70805	0.661955	107.136	1.50646
156	2.70805	0.67449	107.591	3.33301
157	2.70805	0.690309	108.067	5.2024
158	2.70805	0.706302	108.566	7.11511
159	2.70805	0.722479	109.088	9.07161
160	2.70805	0.738846	109.634	11.0724
161	2.70805	0.755415	110.205	13.1181
162	2.70805	0.768821	110.796	15.2002
163	2.70805	0.785774	111.413	17.3281
164	2.70805	0.802956	112.058	19.5025
165	2.70805	0.820379	112.731	21.7241
166	2.70805	0.838054	113.433	23.9936
167	2.70805	0.852385	114.16	26.3019
168	2.70805	0.87055	114.918	28.6594
169	2.70805	0.889006	115.708	31.0669
170	2.70805	0.907769	116.532	33.5252
171	2.70805	0.926859	117.391	36.0352
172	2.70805	0.942375	118.279	38.5872
173	2.70805	0.9621	119.205	41.1926

174	2.70805	0.982202		120.17	43.8524
175	2.70805	1.00271	121.175	46.5678	
176	2.70805	1.02365	122.223	49.3399	
177	2.70805	1.04073	123.306	52.1583	
178	2.70805	1.06252	124.435	55.0356	
179	2.70805	1.08482	125.612	57.9734	
180	2.70805	1.10768	126.839	60.973	
181	2.70805	1.13113	128.118	64.0362	
182	2.70805	1.15035	129.442	67.1514	
183	2.70805	1.17499	130.822	70.3333	
184	2.70805	1.20036	132.263	73.584	
185	2.70805	1.22653	133.767	76.9055	
186	2.70805	1.25357	135.339	80.3002	
187	2.70805	1.28155	136.981	83.7707	
188	2.70805	1.30469	138.683	87.3039	
189	2.70805	1.33462	140.465	90.9181	
190	2.70805	1.36581	142.33	94.6168	
191	2.70805	1.39838	144.285	98.4036	
192	2.70805	1.4325	146.338	102.283	
193	2.70805	1.46106	148.472	106.24	
194	2.70805	1.49852	150.718	110.298	
195	2.70805	1.5382	153.084	114.463	
196	2.70805	1.58047	155.582	118.743	
197	2.70805	1.62576	158.225	123.146	
198	2.70805	1.66456	160.996	127.653	
199	2.70805	1.71688	163.943	132.303	
200	2.70805	1.77438	167.092	137.108	
201	2.70805	1.83843	170.471	142.087	
202	2.70805	1.91103	174.124	147.262	
203	2.70805	1.97737	178.034	152.617	
204	2.70805	2.07485	182.339	158.235	
205	2.70805	2.19728	187.167	164.186	
206	2.70805	2.36561	192.763	170.592	
207	2.89037	2.65209	199.796	178.257	

Data Set Standard Deviation = 1.09606
Numerator = 31775.7
Denominator = 49445.1
W Statistic = 0.642646 = 31775.7 / 49445.1

5% Critical value of 0.976 exceeds 0.642646
Evidence of non-normality at 95% level of significance

1% Critical value of 0.967 exceeds 0.642646
Evidence of non-normality at 99% level of significance

Kruskal-Wallis Non-Parametric Test

Parameter: Nickel

Natural Logarithm Transformation
Non-Detects Replaced with 1/2 DL

Kruskal Wallis Ranks

Background Wells

Well ID	Date	Result	Rank
LMW-4	1/16/1998	ND<2.70805	73
	3/16/1999	ND<2.70805	73
	9/23/1999	ND<2.70805	73
	3/14/2000	ND<2.70805	73
	9/23/2003	ND<2.70805	73
	3/10/2004	ND<2.70805	73
	10/12/2004	ND<2.70805	73
	4/1/2005	ND<2.70805	73
	10/26/2005	ND<2.70805	73
	6/19/2006	ND<2.70805	73
	11/18/2006	0 J	159
	6/2/2007	1.79176	201
	11/15/2007	1.09861 J	186
	5/20/2008	1.60944 J	196
	11/20/2008	ND<2.70805	73
	6/11/2009	-0.235722	156
	11/14/2009	0.182322	173

Rank Sum = 1874
Rank Mean = 110.235

Background Rank Sum = 1874
Background Rank Mean = 110.235

Compliance Wells

Well ID	Date	Result	Rank
LMW-3	11/19/1996	ND<2.70805	73
	3/24/1997	ND<2.70805	73
	1/16/1998	ND<2.70805	73
	3/16/1999	ND<2.70805	73
	9/23/1999	ND<2.70805	73
	3/14/2000	ND<2.70805	73
	9/23/2003	ND<2.70805	73
	3/10/2004	ND<2.70805	73
	10/12/2004	ND<2.70805	73
	4/1/2005	ND<2.70805	73
	10/26/2005	ND<2.70805	73
	6/19/2006	ND<2.70805	73
	11/18/2006	ND<2.70805	73
	6/2/2007	ND<2.70805	73
	11/15/2007	ND<2.70805	73
	5/20/2008	0 J	160
	11/20/2008	ND<2.70805	73
	6/11/2009	-0.616186 J	149
	11/14/2009	0.0953102	172

Rank Sum = 1649
Rank Mean = 86.7895

LMW-14R	6/2/2007	ND<2.70805	73
	11/15/2007	ND<2.70805	73
	5/20/2008	0.693147 J	177
	11/20/2008	1.09861 J	187
	6/11/2009	0.788457	182
	11/14/2009	0.470004 J	175

Rank Sum = 867
Rank Mean = 144.5

LMW-9	1/16/1998	ND<2.70805	73
	3/16/1999	1.79176 J	202
	9/23/1999	ND<2.70805	73
	3/14/2000	ND<2.70805	73
	9/23/2003	ND<2.70805	73
	3/10/2004	ND<2.70805	73
	10/12/2004	ND<2.70805	73
	4/1/2005	ND<2.70805	73
	10/26/2005	ND<2.70805	73
	6/19/2006	ND<2.70805	73
	11/18/2006	ND<2.70805	73
	6/2/2007	1.09861 J	188
	11/15/2007	ND<2.70805	73
	5/20/2008	0 J	161
	11/20/2008	2.19722 J	206
	6/11/2009	-1.10866 J	146
	11/14/2009	-0.776529 J	148

Rank Sum = 1854
Rank Mean = 109.059

LMW-15R	11/18/2006	0 J	162
	6/2/2007	ND<2.70805	73
	11/15/2007	ND<2.70805	73
	11/15/2007	ND<2.70805	73
	5/20/2008	ND<2.70805	73
	5/20/2008	0 J	163
	11/20/2008	ND<2.70805	73
	11/20/2008	ND<2.70805	73
	6/11/2009	1.09861	189
	11/14/2009	-0.223144 J	157

Rank Sum = 1109
Rank Mean = 110.9

LMW-16	11/18/2006	0 J	164
	6/2/2007	ND<2.70805	73
	11/15/2007	ND<2.70805	73
	5/20/2008	ND<2.70805	73
	11/20/2008	ND<2.70805	73
	6/11/2009	-0.328504	155
	11/14/2009	-0.415515	153

Rank Sum = 764
Rank Mean = 109.143

LMW-9D	11/18/2006	0.693147 J	178
	6/2/2007	ND<2.70805	73
	11/15/2007	ND<2.70805	73
	5/20/2008	0 J	165
	11/20/2008	ND<2.70805	73
	6/11/2009	-0.597837 J	150
	11/14/2009	-0.371064	154

Rank Sum = 866
Rank Mean = 123.714

LMW-3S	11/18/2006	0.693147 J	179
	6/2/2007	1.38629 J	194
	11/15/2007	1.60944 J	197
	5/20/2008	1.09861 J	190
	11/20/2008	1.09861 J	191
	6/11/2009	0.955511	184
	11/14/2009	1.02962	185

Rank Sum = 1320
Rank Mean = 188.571

LMW-9S	11/18/2006	0 J	166
	6/2/2007	ND<2.70805	73
	11/15/2007	ND<2.70805	73
	5/20/2008	0 J	167
	11/20/2008	ND<2.70805	73
	6/11/2009	0.182322	174
	11/14/2009	-0.0304592 J	158

Rank Sum = 884
Rank Mean = 126.286

LMW-10	3/14/2000	ND<2.70805	73
	9/23/2003	ND<2.70805	73
	3/10/2004	ND<2.70805	73
	10/12/2004	ND<2.70805	73
	4/1/2005	ND<2.70805	73
	10/26/2005	ND<2.70805	73
	6/19/2006	ND<2.70805	73
	11/18/2006	ND<2.70805	73
	6/2/2007	ND<2.70805	73
	11/15/2007	ND<2.70805	73
	5/20/2008	0 J	168
	11/20/2008	ND<2.70805	73
	6/11/2009	-0.967584 J	147
	11/14/2009	ND<0 J	73

Rank Sum = 1191
Rank Mean = 85.0714

LMW-8	1/16/1998	ND<2.70805	73
	3/16/1999	1.79176 J	203
	9/23/1999	ND<2.70805	73
	3/14/2000	ND<2.70805	73
	9/23/2003	ND<2.70805	73
	3/10/2004	ND<2.70805	73
	10/12/2004	ND<2.70805	73
	4/1/2005	ND<2.70805	73
	10/26/2005	ND<2.70805	73
	6/19/2006	ND<2.70805	73
	11/18/2006	0 J	169
	6/2/2007	ND<2.70805	73
	11/15/2007	ND<2.70805	73
	5/20/2008	0 J	170
	11/20/2008	ND<2.70805	73
	6/11/2009	-0.494296	151
	11/14/2009	-0.446287	152

Rank Sum = 1721
Rank Mean = 101.235

LMW-6	1/16/1998	ND<2.70805	73
	3/16/1999	ND<2.70805	73
	9/23/1999	ND<2.70805	73
	3/14/2000	ND<2.70805	73

	9/23/2003	ND<2.70805	73
	3/10/2004	ND<2.70805	73
	10/12/2004	ND<2.70805	73
	4/1/2005	ND<2.70805	73
	10/26/2005	ND<2.70805	73
	6/19/2006	ND<2.70805	73
	11/18/2006	0 J	171
	6/2/2007	1.60944	198
	11/15/2007	ND<2.70805	73
	5/20/2008	0.693147 J	180
	11/20/2008	ND<2.70805	73
	6/11/2009	0.788457	183
	11/14/2009	0.587787 J	176

Rank Sum = 1784
Rank Mean = 104.941

LMW-7	1/16/1998	ND<2.70805	73
	3/16/1999	ND<2.70805	73
	9/23/1999	ND<2.70805	73
	3/14/2000	ND<2.70805	73
	9/23/2003	ND<2.70805	73
	3/10/2004	ND<2.70805	73
	10/12/2004	ND<2.70805	73
	4/1/2005	2.89037 J	207
	10/26/2005	ND<2.70805	73
	6/19/2006	ND<2.70805	73
	11/18/2006	1.38629 J	195
	6/2/2007	1.94591	205
	11/15/2007	1.60944 J	199
	5/20/2008	0.693147 J	181
	11/20/2008	1.09861 J	192
	6/11/2009	1.70475	200

Rank Sum = 2036
Rank Mean = 127.25

MW-5	1/16/1998	ND<2.70805	73
	3/16/1999	1.79176 J	204
	9/23/1999	ND<2.70805	73
	3/14/2000	ND<2.70805	73
	9/23/2003	ND<2.70805	73
	3/10/2004	ND<2.70805	73
	10/12/2004	ND<2.70805	73
	4/1/2005	ND<2.70805	73
	10/26/2005	ND<2.70805	73
	6/19/2006	ND<2.70805	73
	11/15/2007	1.09861 J	193
	5/20/2008	ND<2.70805	73
	11/20/2008	ND<2.70805	73

Rank Sum = 1200
Rank Mean = 92.3077

LMW-13	3/14/2000	ND<2.70805	73
	9/23/2003	ND<2.70805	73
	3/10/2004	ND<2.70805	73
	10/12/2004	ND<2.70805	73
	4/1/2005	ND<2.70805	73
	10/26/2005	ND<2.70805	73
	6/19/2006	ND<2.70805	73
	6/2/2007	ND<2.70805	73
	11/15/2007	ND<2.70805	73
	5/20/2008	ND<2.70805	73
	11/20/2008	ND<2.70805	73

Rank Sum = 803
Rank Mean = 73

LMW-12	3/14/2000	ND<2.70805	73
	9/23/2003	ND<2.70805	73
	3/10/2004	ND<2.70805	73
	10/12/2004	ND<2.70805	73
	4/1/2005	ND<2.70805	73
	10/26/2005	ND<2.70805	73
	6/19/2006	ND<2.70805	73
	6/2/2007	ND<2.70805	73
	11/15/2007	ND<2.70805	73
	5/20/2008	ND<2.70805	73
	11/20/2008	ND<2.70805	73

Rank Sum = 803
Rank Mean = 73

LMW-11	3/14/2000	ND<2.70805	73
	9/23/2003	ND<2.70805	73
	3/10/2004	ND<2.70805	73
	10/12/2004	ND<2.70805	73
	4/1/2005	ND<2.70805	73
	10/26/2005	ND<2.70805	73
	6/19/2006	ND<2.70805	73
	6/2/2007	ND<2.70805	73
	11/15/2007	ND<2.70805	73
	5/20/2008	ND<2.70805	73
	11/20/2008	ND<2.70805	73

Rank Sum = 803
Rank Mean = 73

Calculation Results:

Kruskal-Wallis H Statistic = 33.6651
Kruskal-Wallis H Statistic (adjusted for tied non-detects) = 51.2954
95% Confidence comparison value is 26.2962 at 16 degrees of freedom
33.6651 > 26.2962 indicating a significant group difference at 5% significance level
51.2954 > 26.2962 indicating a significant group difference at 5% significance level when adjusted for ties

Individual Well Comparisons at 1% Significance Level per Comparison

1% Z score is 2.32634
Mean background rank is 110.235

Well	Mean Rank	Dif from Bkg	Critical Value
LMW-3	86.7895	-23.4458	46.5211
LMW-14R	144.5	34.2647	66.1704
LMW-9	109.059	-1.17647	47.7959
LMW-15R	110.9	0.664706	55.5338
LMW-16	109.143	-1.09244	62.5795
LMW-9D	123.714	13.479	62.5795
LMW-3S	188.571	78.3361	62.5795
LMW-9S	126.286	16.0504	62.5795
LMW-10	85.0714	-25.1639	50.2912
LMW-8	101.235	-9	47.7959
LMW-6	104.941	-5.29412	47.7959
LMW-7	127.25	17.0147	48.5369
MW-5	92.3077	-17.9276	51.341
LMW-13	73	-37.2353	53.921
LMW-12	73	-37.2353	53.921
LMW-11	73	-37.2353	53.921

Individual Well Comparisons at Groupwise 5% Significance Level (0.3125% Significance Level per comparison)

0.3125% Z score is 2.74777

Mean background rank is 110.235

Well	Mean Rank	Dif from Bkg	Critical Value
LMW-3	86.7895	-23.4458	54.9485
LMW-14R	144.5	34.2647	78.1573
LMW-9	109.059	-1.17647	56.4542
LMW-15R	110.9	0.664706	65.5939
LMW-16	109.143	-1.09244	73.9159
LMW-9D	123.714	13.479	73.9159
LMW-3S	188.571	78.3361	73.9159
LMW-9S	126.286	16.0504	73.9159
LMW-10	85.0714	-25.1639	59.4016
LMW-8	101.235	-9	56.4542
LMW-6	104.941	-5.29412	56.4542
LMW-7	127.25	17.0147	57.3295
MW-5	92.3077	-17.9276	60.6416
LMW-13	73	-37.2353	63.6889
LMW-12	73	-37.2353	63.6889
LMW-11	73	-37.2353	63.6889

Mann-Kendall Trend Analysis

Parameter: Nickel

Location: LMW-3S

Natural Logarithm Transformation
Non-Detects Replaced with 1/2 DL

95% Confidence Level

Xj	Xk	Xj - Xk	Positives	Negatives	
1.38629	J	0.693147 J	0.693147	1	0
1.60944	J	0.693147 J	0.916291	2	0
1.09861	J	0.693147 J	0.405465	3	0
1.09861	J	0.693147 J	0.405465	4	0
0.955511		0.693147 J	0.262364	5	0
1.02962		0.693147 J	0.336472	6	0
1.60944	J	1.38629 J	0.223144	7	0
1.09861	J	1.38629 J	-0.287682	7	1
1.09861	J	1.38629 J	-0.287682	7	2
0.955511		1.38629 J	-0.430783	7	3
1.02962		1.38629 J	-0.356675	7	4
1.09861	J	1.60944 J	-0.510826	7	5
1.09861	J	1.60944 J	-0.510826	7	6
0.955511		1.60944 J	-0.653926	7	7
1.02962		1.60944 J	-0.579818	7	8
1.09861	J	1.09861 J	0 7	8	
0.955511		1.09861 J	-0.143101	7	9
1.02962		1.09861 J	-0.0689929	7	10
0.955511		1.09861 J	-0.143101	7	11
1.02962		1.09861 J	-0.0689929	7	12
1.02962		0.955511	0.074108	8	12

S Statistic = 8 - 12 = -4
Comparing at 1.0 - (0.05 / 2) = 97.5% confidence level (two-tailed)
Failed to calculate probability for S = -4
Table out of range

Concentrations (ug/L)

Parameter: Nitrate

Natural Logarithm Transformation
Non-Detects Replaced with 1/2 DL
Total Measurements: 92
Total Non-Detect: 48
Percent Non-Detects: 52.1739%
Total Background Measurements: 6
There is 1 background location

Loc.	Meas.	ND	Date	Conc.	Original
LMW-4	6	2 (33.3333%)	11/18/2006	3.91202	50
			6/2/2007	13.3739	643000
			11/15/2007	ND<1.60944	ND<10
			5/20/2008	5.9108	369
			11/20/2008	ND<1.60944	ND<10
			11/14/2009	3.68888	40

There are 16 compliance locations

Loc.	Meas.	ND	Date	Conc.	Original
LMW-9S	6	3 (50%)	11/18/2006	4.69135	109
			6/2/2007	6.90776	1000
			11/15/2007	ND<1.60944	ND<10
			5/20/2008	ND<1.60944	ND<10
			11/20/2008	ND<1.60944	ND<10
			11/14/2009	6.64639 J	770 J
LMW-3	6	2 (33.3333%)	11/18/2006	5.80814	333
			6/2/2007	5.34233	209
			11/15/2007	ND<1.60944	ND<10
			5/20/2008	6.24417	515
			11/20/2008	ND<1.60944	ND<10
			11/14/2009	6.76849 J	870 J
LMW-6	6	3 (50%)	11/18/2006	7.04752	1150
			6/2/2007	ND<1.60944	ND<10
			11/15/2007	ND<1.60944	ND<10
			5/20/2008	7.25134	1410
			11/20/2008	ND<1.60944	ND<10
			11/14/2009	8.51719	5000
LMW-8	6	2 (33.3333%)	11/18/2006	5.37528	216
			6/2/2007	5.98645	398
			11/15/2007	ND<1.60944	ND<10
			5/20/2008	6.34564	570
			11/20/2008	ND<1.60944	ND<10
			11/14/2009	6.60665 J	740 J
LMW-9	6	2 (33.3333%)	11/18/2006	4.59512	99
			6/2/2007	9.75266	17200
			11/15/2007	ND<1.60944	ND<10
			5/20/2008	6.1203	455
			11/20/2008	ND<1.60944	ND<10
			11/14/2009	6.10925 J	450 J

LMW-10	6	2 (33.3333%)	11/18/2006	6.31173		551
			6/2/2007	6.92756	1020	
			11/15/2007	ND<1.60944	ND<10	
			5/20/2008	6.00635	406	
			11/20/2008	ND<1.60944	ND<10	
			11/14/2009	7.78322	2400	
LMW-9D	6	3 (50%)	11/18/2006	4.67283	107	
			6/2/2007	6.1334	461	
			11/15/2007	ND<1.60944	ND<10	
			5/20/2008	ND<1.60944	ND<10	
			11/20/2008	ND<1.60944	ND<10	
			11/14/2009	6.06379 J	430 J	
LMW-15R	9	6 (66.6667%)	11/18/2006	8.4722	4780	
			6/2/2007	7.24423	1400	
			11/15/2007	ND<1.60944	ND<10	
			11/15/2007	ND<1.60944	ND<10	
			5/20/2008	ND<1.60944	ND<10	
			5/20/2008	ND<1.60944	ND<10	
			11/20/2008	ND<1.60944	ND<10	
			11/20/2008	ND<1.60944	ND<10	
			11/14/2009	8.89563	7300	
LMW-3S	6	2 (33.3333%)	11/18/2006	5.77144		321
			6/2/2007	5.27811	196	
			11/15/2007	ND<1.60944	ND<10	
			5/20/2008	6.30262	546	
			11/20/2008	ND<1.60944	ND<10	
			11/14/2009	6.56526 J	710 J	
MW-5	3	3 (100%)	11/15/2007	ND<1.60944	ND<10	
			5/20/2008	ND<1.60944	ND<10	
			11/20/2008	ND<1.60944	ND<10	
LMW-14R		4	2 (50%)	6/2/2007	5.7869	326
			11/15/2007	ND<1.60944	ND<10	
			5/20/2008	5.9162	371	
			11/20/2008	ND<1.60944	ND<10	
LMW-13	4	4 (100%)	6/2/2007	ND<1.60944	ND<10	
			11/15/2007	ND<1.60944	ND<10	
			5/20/2008	ND<1.60944	ND<10	
			11/20/2008	ND<1.60944	ND<10	
LMW-12	4	4 (100%)	6/2/2007	ND<1.60944	ND<10	
			11/15/2007	ND<1.60944	ND<10	
			5/20/2008	ND<1.60944	ND<10	
			11/20/2008	ND<1.60944	ND<10	
LMW-11	4	4 (100%)	6/2/2007	ND<1.60944	ND<10	
			11/15/2007	ND<1.60944	ND<10	
			5/20/2008	ND<1.60944	ND<10	
			11/20/2008	ND<1.60944	ND<10	
LMW-7	5	2 (40%)	11/18/2006	4.77912	119	
			6/2/2007	5.68698	295	
			11/15/2007	ND<1.60944	ND<10	
			5/20/2008	4.85203	128	
			11/20/2008	ND<1.60944	ND<10	

LMW-16	5	2 (40%)	11/18/2006	3.95124	52
			6/2/2007	5.11199	166
			11/15/2007	ND<1.60944	ND<10
			5/20/2008	5.93225	377
			11/20/2008	ND<1.60944	ND<10

There are 0 unused locations

Loc.	Meas.	ND	Date	Conc.	Original

Shapiro-Francia Test of Normality

Parameter: Nitrate

All Locations

Normality Test of Parameter Concentrations

Original Data (Not Transformed)
Non-Detects Replaced with 1/2 DL
Total Number of Measurements = 92

i	x(i)	m(i)	sum(m^2)	sum(mx)
1	5	-2.326345.41187	-11.6317	
2	5	-2.033529.54707	-21.7993	
3	5	-1.8521812.9776	-31.0602	
4	5	-1.7168815.9253	-39.6446	
5	5	-1.6164418.5382	-47.7268	
6	5	-1.5220320.8548	-55.337	
7	5	-1.4395322.927	-62.5346	
8	5	-1.3658124.7925	-69.3637	
9	5	-1.3046926.4947	-75.8871	
10	5	-1.2426428.0388	-82.1003	
11	5	-1.1850429.4432	-88.0255	
12	5	-1.1311330.7226	-93.6812	
13	5	-1.0848231.8995	-99.1053	
14	5	-1.0364332.9736	-104.287	
15	5	-0.990356	33.9544	-109.239
16	5	-0.946291	34.8499	-113.971
17	5	-0.907769	35.674	-118.51
18	5	-0.866894	36.4255	-122.844
19	5	-0.827417	37.1101	-126.981
20	5	-0.789191	37.7329	-130.927
21	5	-0.755415	38.3036	-134.704
22	5	-0.719228	38.8208	-138.3
23	5	-0.6839639.2886	-141.72	
24	5	-0.649522	39.7105	-144.968
25	5	-0.618872	40.0935	-148.062
26	5	-0.585815	40.4367	-150.991
27	5	-0.553384	40.7429	-153.758
28	5	-0.521527	41.0149	-156.366
29	5	-0.493018	41.258	-158.831
30	5	-0.462114	41.4716	-161.141
31	5	-0.431644	41.6579	-163.3
32	5	-0.401571	41.8191	-165.307
33	5	-0.374544	41.9594	-167.18
34	5	-0.345126	42.0785	-168.906
35	5	-0.316004	42.1784	-170.486
36	5	-0.287147	42.2608	-171.922
37	5	-0.2611242.329	-173.227	
38	5	-0.232693	42.3832	-174.391
39	5	-0.204452	42.425	-175.413
40	5	-0.176374	42.4561	-176.295
41	5	-0.150969	42.4789	-177.05
42	5	-0.123135	42.494	-177.665
43	5	-0.0953969	42.5031	-178.142
44	5	-0.0677301	42.5077	-178.481
45	5	-0.0426257	42.5095	-178.694
46	5	-0.0150408	42.5098	-178.769
47	5	0.0150408	42.51	-178.694
48	5	0.0426257	42.5118	-178.481
49	40	0.0677301	42.5164	-175.772

50	50	0.0953969	42.5255	-171.002
51	52	0.123135	42.5407	-164.599
52	99	0.150969	42.5634	-149.653
53	107	0.176374	42.5946	-130.781
54	109	0.204452	42.6364	-108.496
55	119	0.232693	42.6905	-80.8051
56	128	0.26112	42.7587	-47.3816
57	166	0.287147	42.8411	0.284723
58	196	0.316004	42.941	62.2215
59	209	0.345126	43.0601	134.353
60	216	0.374544	43.2004	215.254
61	295	0.401571	43.3616	333.718
62	321	0.431644	43.548	472.276
63	326	0.462114	43.7615	622.925
64	333	0.493018	44.0046	787.1
65	369	0.521527	44.2766	979.543
66	371	0.553384	44.5828	1184.85
67	377	0.585815	44.926	1405.7
68	398	0.618872	45.309	1652.01
69	406	0.649522	45.7309	1915.72
70	430	0.68396	46.1987	2209.82
71	450	0.719228	46.716	2533.47
72	455	0.755415	47.2866	2877.19
73	461	0.789191	47.9094	3241
74	515	0.827417	48.5941	3667.12
75	546	0.866894	49.3456	4140.45
76	551	0.907769	50.1696	4640.63
77	570	0.946291	51.0651	5180.02
78	710	0.990356	52.0459	5883.17
79	740	1.03643	53.1201	6650.13
80	770	1.08482	54.2969	7485.44
81	870	1.13113	55.5764	8469.53
82	1000	1.18504	56.9807	9654.57
83	1020	1.24264	58.5249	10922.1
84	1150	1.30469	60.2271	12422.5
85	1400	1.36581	62.0925	14334.6
86	1410	1.43953	64.1647	16364.3
87	2400	1.52203	66.4813	20017.2
88	4780	1.61644	69.0942	27743.8
89	5000	1.71688	72.0419	36328.2
90	7300	1.85218	75.4724	49849.1
91	17200	2.03352	79.6076	84825.6
92	643000	2.32634	85.0195	1.58066e+006

Data Set Standard Deviation = 67006.2
Numerator = 2.4985e+012
Denominator = 3.47368e+013
W Statistic = 0.0719265 = 2.4985e+012 / 3.47368e+013

5% Critical value of 0.973 exceeds 0.0719265
Evidence of non-normality at 95% level of significance

1% Critical value of 0.963 exceeds 0.0719265
Evidence of non-normality at 99% level of significance

Shapiro-Francia Test of Normality

Parameter: Nitrate

All Locations

Normality Test of Parameter Concentrations

Natural Logarithm Transformation
Non-Detects Replaced with 1/2 DL
Total Number of Measurements = 92

i	x(i)	m(i)	sum(m^2)	sum(mx)
1	1.60944	-2.326345.41187	-3.7441	
2	1.60944	-2.033529.54707	-7.01693	
3	1.60944	-1.8521812.9776	-9.99789	
4	1.60944	-1.7168815.9253	-12.7611	
5	1.60944	-1.6164418.5382	-15.3627	
6	1.60944	-1.5220320.8548	-17.8123	
7	1.60944	-1.4395322.927	-20.1291	
8	1.60944	-1.3658124.7925	-22.3273	
9	1.60944	-1.3046926.4947	-24.4271	
10	1.60944	-1.2426428.0388	-26.4271	
11	1.60944	-1.1850429.4432	-28.3343	
12	1.60944	-1.1311330.7226	-30.1548	
13	1.60944	-1.0848231.8995	-31.9008	
14	1.60944	-1.0364332.9736	-33.5688	
15	1.60944	-0.990356	33.9544	-35.1628
16	1.60944	-0.946291	34.8499	-36.6858
17	1.60944	-0.907769	35.674	-38.1467
18	1.60944	-0.866894	36.4255	-39.542
19	1.60944	-0.827417	37.1101	-40.8736
20	1.60944	-0.789191	37.7329	-42.1438
21	1.60944	-0.755415	38.3036	-43.3596
22	1.60944	-0.719228	38.8208	-44.5171
23	1.60944	-0.6839639.2886	-45.6179	
24	1.60944	-0.649522	39.7105	-46.6633
25	1.60944	-0.618872	40.0935	-47.6593
26	1.60944	-0.585815	40.4367	-48.6022
27	1.60944	-0.553384	40.7429	-49.4928
28	1.60944	-0.521527	41.0149	-50.3322
29	1.60944	-0.493018	41.258	-51.1256
30	1.60944	-0.462114	41.4716	-51.8694
31	1.60944	-0.431644	41.6579	-52.5641
32	1.60944	-0.401571	41.8191	-53.2104
33	1.60944	-0.374544	41.9594	-53.8132
34	1.60944	-0.345126	42.0785	-54.3687
35	1.60944	-0.316004	42.1784	-54.8773
36	1.60944	-0.287147	42.2608	-55.3394
37	1.60944	-0.2611242.329	-55.7597	
38	1.60944	-0.232693	42.3832	-56.1342
39	1.60944	-0.204452	42.425	-56.4632
40	1.60944	-0.176374	42.4561	-56.7471
41	1.60944	-0.150969	42.4789	-56.9901
42	1.60944	-0.123135	42.494	-57.1882
43	1.60944	-0.0953969	42.5031	-57.3418
44	1.60944	-0.0677301	42.5077	-57.4508
45	1.60944	-0.0426257	42.5095	-57.5194
46	1.60944	-0.0150408	42.5098	-57.5436
47	1.60944	0.0150408	42.51	-57.5194
48	1.60944	0.0426257	42.5118	-57.4508
49	3.68888	0.0677301	42.5164	-57.2009

50	3.91202	0.0953969		42.5255	-56.8277
51	3.95124	0.123135		42.5407	-56.3412
52	4.59512	0.150969		42.5634	-55.6475
53	4.67283	0.176374		42.5946	-54.8233
54	4.69135	0.204452		42.6364	-53.8642
55	4.77912	0.232693		42.6905	-52.7521
56	4.85203	0.26112	42.7587	-51.4851	
57	5.11199	0.287147		42.8411	-50.0172
58	5.27811	0.316004		42.941	-48.3493
59	5.34233	0.345126		43.0601	-46.5055
60	5.37528	0.374544		43.2004	-44.4923
61	5.68698	0.401571		43.3616	-42.2085
62	5.77144	0.431644		43.548	-39.7173
63	5.7869	0.462114		43.7615	-37.0431
64	5.80814	0.493018		44.0046	-34.1796
65	5.9108	0.521527		44.2766	-31.097
66	5.9162	0.553384		44.5828	-27.823
67	5.93225	0.585815		44.926	-24.3478
68	5.98645	0.618872		45.309	-20.643
69	6.00635	0.649522		45.7309	-16.7417
70	6.06379	0.68396	46.1987	-12.5943	
71	6.10925	0.719228		46.716	-8.20039
72	6.1203	0.755415		47.2866	-3.57703
73	6.1334	0.789191		47.9094	1.2634
74	6.24417	0.827417		48.5941	6.42993
75	6.30262	0.866894		49.3456	11.8936
76	6.31173	0.907769		50.1696	17.6232
77	6.34564	0.946291		51.0651	23.628
78	6.56526	0.990356		52.0459	30.13
79	6.60665	1.03643	53.1201	36.9773	
80	6.64639	1.08482	54.2969	44.1875	
81	6.76849	1.13113	55.5764	51.8436	
82	6.90776	1.18504	56.9807	60.0295	
83	6.92756	1.24264	58.5249	68.638	
84	7.04752	1.30469	60.2271	77.8328	
85	7.24423	1.36581	62.0925	87.727	
86	7.25134	1.43953	64.1647	98.1656	
87	7.78322	1.52203	66.4813	110.012	
88	8.4722	1.61644	69.0942	123.707	
89	8.51719	1.71688	72.0419	138.33	
90	8.89563	1.85218	75.4724	154.806	
91	9.75266	2.03352	79.6076	174.638	
92	13.3739	2.32634	85.0195	205.75	

Data Set Standard Deviation = 2.6253
Numerator = 42333.3
Denominator = 53323.4
W Statistic = 0.793897 = 42333.3 / 53323.4

5% Critical value of 0.973 exceeds 0.793897
Evidence of non-normality at 95% level of significance

1% Critical value of 0.963 exceeds 0.793897
Evidence of non-normality at 99% level of significance

Kruskal-Wallis Non-Parametric Test

Parameter: Nitrate

Natural Logarithm Transformation
Non-Detects Replaced with 1/2 DL

Kruskal Wallis Ranks

Background Wells

Well ID	Date	Result	Rank
LMW-4	11/18/2006	3.91202	50
	6/2/2007	13.3739	92
	11/15/2007	ND<1.60944	24.5
	5/20/2008	5.9108	65
	11/20/2008	ND<1.60944	24.5
	11/14/2009	3.68888	49

Rank Sum = 305
Rank Mean = 50.8333

Background Rank Sum = 305
Background Rank Mean = 50.8333

Compliance Wells

Well ID	Date	Result	Rank
LMW-9S	11/18/2006	4.69135	54
	6/2/2007	6.90776	82
	11/15/2007	ND<1.60944	24.5
	5/20/2008	ND<1.60944	24.5
	11/20/2008	ND<1.60944	24.5
	11/14/2009	6.64639 J	80

Rank Sum = 289.5
Rank Mean = 48.25

LMW-3	11/18/2006	5.80814	64
	6/2/2007	5.34233	59
	11/15/2007	ND<1.60944	24.5
	5/20/2008	6.24417	74
	11/20/2008	ND<1.60944	24.5
	11/14/2009	6.76849 J	81

Rank Sum = 327
Rank Mean = 54.5

LMW-6	11/18/2006	7.04752	84
	6/2/2007	ND<1.60944	24.5
	11/15/2007	ND<1.60944	24.5
	5/20/2008	7.25134	86
	11/20/2008	ND<1.60944	24.5
	11/14/2009	8.51719	89

Rank Sum = 332.5
Rank Mean = 55.4167

LMW-8	11/18/2006	5.37528	60
	6/2/2007	5.98645	68
	11/15/2007	ND<1.60944	24.5
	5/20/2008	6.34564	77

	11/20/2008	ND<1.60944		24.5
	11/14/2009	6.60665	J	79

Rank Sum = 333
Rank Mean = 55.5

LMW-9	11/18/2006	4.59512		52
	6/2/2007	9.75266		91
	11/15/2007	ND<1.60944		24.5
	5/20/2008	6.1203		72
	11/20/2008	ND<1.60944		24.5
	11/14/2009	6.10925	J	71

Rank Sum = 335
Rank Mean = 55.8333

LMW-10	11/18/2006	6.31173		76
	6/2/2007	6.92756		83
	11/15/2007	ND<1.60944		24.5
	5/20/2008	6.00635		69
	11/20/2008	ND<1.60944		24.5
	11/14/2009	7.78322		87

Rank Sum = 364
Rank Mean = 60.6667

LMW-9D	11/18/2006	4.67283		53
	6/2/2007	6.1334		73
	11/15/2007	ND<1.60944		24.5
	5/20/2008	ND<1.60944		24.5
	11/20/2008	ND<1.60944		24.5
	11/14/2009	6.06379	J	70

Rank Sum = 269.5
Rank Mean = 44.9167

LMW-15R	11/18/2006	8.4722		88
	6/2/2007	7.24423		85
	11/15/2007	ND<1.60944		24.5
	11/15/2007	ND<1.60944		24.5
	5/20/2008	ND<1.60944		24.5
	5/20/2008	ND<1.60944		24.5
	11/20/2008	ND<1.60944		24.5
	11/20/2008	ND<1.60944		24.5
	11/14/2009	8.89563		90

Rank Sum = 410
Rank Mean = 45.5556

LMW-3S	11/18/2006	5.77144		62
	6/2/2007	5.27811		58
	11/15/2007	ND<1.60944		24.5
	5/20/2008	6.30262		75
	11/20/2008	ND<1.60944		24.5
	11/14/2009	6.56526	J	78

Rank Sum = 322
Rank Mean = 53.6667

MW-5	11/15/2007	ND<1.60944		24.5
	5/20/2008	ND<1.60944		24.5
	11/20/2008	ND<1.60944		24.5

Rank Sum = 73.5
Rank Mean = 24.5

LMW-14R	6/2/2007	5.7869		63
	11/15/2007	ND<1.60944		24.5

	5/20/2008	5.9162	66
	11/20/2008	ND<1.60944	24.5

Rank Sum = 178
Rank Mean = 44.5

LMW-13	6/2/2007	ND<1.60944	24.5
	11/15/2007	ND<1.60944	24.5
	5/20/2008	ND<1.60944	24.5
	11/20/2008	ND<1.60944	24.5

Rank Sum = 98
Rank Mean = 24.5

LMW-12	6/2/2007	ND<1.60944	24.5
	11/15/2007	ND<1.60944	24.5
	5/20/2008	ND<1.60944	24.5
	11/20/2008	ND<1.60944	24.5

Rank Sum = 98
Rank Mean = 24.5

LMW-11	6/2/2007	ND<1.60944	24.5
	11/15/2007	ND<1.60944	24.5
	5/20/2008	ND<1.60944	24.5
	11/20/2008	ND<1.60944	24.5

Rank Sum = 98
Rank Mean = 24.5

LMW-7	11/18/2006	4.77912	55
	6/2/2007	5.68698	61
	11/15/2007	ND<1.60944	24.5
	5/20/2008	4.85203	56
	11/20/2008	ND<1.60944	24.5

Rank Sum = 221
Rank Mean = 44.2

LMW-16	11/18/2006	3.95124	51
	6/2/2007	5.11199	57
	11/15/2007	ND<1.60944	24.5
	5/20/2008	5.93225	67
	11/20/2008	ND<1.60944	24.5

Rank Sum = 224
Rank Mean = 44.8

Calculation Results:

Kruskal-Wallis H Statistic = 15.2217
Kruskal-Wallis H Statistic (adjusted for tied non-detects) = 17.7404
95% Confidence comparison value is 26.2962 at 16 degrees of freedom
15.2217 < 26.2962 indicating no significant group difference at 5% significance level
17.7404 < 26.2962 indicating no significant group difference at 5% significance level when adjusted for ties

Concentrations (ug/L)

Parameter: Selenium

Natural Logarithm Transformation
Non-Detects Replaced with 1/2 DL
Total Measurements: 197
Total Non-Detect: 174
Percent Non-Detects: 88.3249%
Total Background Measurements: 16
There is 1 background location

Loc.	Meas.	ND	Date	Conc.	Original
LMW-4	16	16 (100%)	1/16/1998	ND<0	ND<2
			3/16/1999	ND<0	ND<2
			9/23/1999	ND<0	ND<2
			3/14/2000	ND<0	ND<2
			9/23/2003	ND<0	ND<2
			3/10/2004	ND<0	ND<2
			10/12/2004	ND<0	ND<2
			4/1/2005	ND<0	ND<2
			10/26/2005	ND<0	ND<2
			6/19/2006	ND<0	ND<2
			11/18/2006	ND<0	ND<2
			6/2/2007	ND<0	ND<2
			11/15/2007	ND<0	ND<2
			5/20/2008	ND<0	ND<2
			11/20/2008	ND<0	ND<2
			6/11/2009	ND<-2.25379 U	ND<0.21 U

There are 16 compliance locations

Loc.	Meas.	ND	Date	Conc.	Original
LMW-8	17	9 (52.9412%)	1/16/1998	ND<0	ND<2
			3/16/1999	ND<0	ND<2
			9/23/1999	ND<0	ND<2
			3/14/2000	ND<0	ND<2
			9/23/2003	ND<0	ND<2
			3/10/2004	ND<0	ND<2
			10/12/2004	ND<0	ND<2
			4/1/2005	1.09861	3
			10/26/2005	0 J	1 J
			6/19/2006	0 J	1 J
			11/18/2006	0 J	1 J
			6/2/2007	0 J	1 J
			11/15/2007	1.09861	3
			5/20/2008	ND<0	ND<2
			11/20/2008	ND<0	ND<2
			6/11/2009	-0.446287	0.64
			11/14/2009	-0.527633	0.59
LMW-6	17	8 (47.0588%)	1/16/1998	ND<0	ND<2
			3/16/1999	ND<0	ND<2
			9/23/1999	ND<0	ND<2
			3/14/2000	ND<0	ND<2
			9/23/2003	ND<0	ND<2
			3/10/2004	ND<0	ND<2
			10/12/2004	ND<0	ND<2

			4/1/2005	ND<0	ND<2	
			10/26/2005	0 J	1 J	
			6/19/2006	0.693147		2
			11/18/2006	0.693147		2
			6/2/2007	0.693147	2	
			11/15/2007	1.38629		4
			5/20/2008	0.693147		2
			11/20/2008	0.693147		2
			6/11/2009	1.16315		3.2
			11/14/2009	0.955511		2.6
LMW-9	16	15 (93.75%)	1/16/1998	ND<0	ND<2	
			3/16/1999	ND<0	ND<2	
			9/23/1999	ND<0	ND<2	
			3/14/2000	ND<0	ND<2	
			9/23/2003	ND<0	ND<2	
			3/10/2004	ND<0	ND<2	
			10/12/2004	ND<0	ND<2	
			4/1/2005	ND<0	ND<2	
			10/26/2005	ND<0	ND<2	
			6/19/2006	ND<0	ND<2	
			11/18/2006	ND<0	ND<2	
			6/2/2007	ND<0	ND<2	
			11/15/2007	ND<0	ND<2	
			5/20/2008	ND<0	ND<2	
			11/20/2008	ND<0	ND<2	
			6/11/2009	-1.27297 J		0.28 J
LMW-16	6	5 (83.3333%)	11/18/2006	ND<0	ND<2	
			6/2/2007	ND<0	ND<2	
			11/15/2007	0.693147		2
			5/20/2008	ND<0	ND<2	
			11/20/2008	ND<0	ND<2	
			6/11/2009	ND<-2.25379 U		ND<0.21 U
LMW-9S	6	4 (66.6667%)	11/18/2006	1.38629		4
			6/2/2007	1.38629	4	
			11/15/2007	ND<0	ND<2	
			5/20/2008	ND<0	ND<2	
			11/20/2008	ND<0	ND<2	
			6/11/2009	ND<-2.25379 U		ND<0.21 U
LMW-10	13	13 (100%)	3/14/2000	ND<0	ND<2	
			9/23/2003	ND<0	ND<2	
			3/10/2004	ND<0	ND<2	
			10/12/2004	ND<0	ND<2	
			4/1/2005	ND<0	ND<2	
			10/26/2005	ND<0	ND<2	
			6/19/2006	ND<0	ND<2	
			11/18/2006	ND<0	ND<2	
			6/2/2007	ND<0	ND<2	
			11/15/2007	ND<0	ND<2	
			5/20/2008	ND<0	ND<2	
			11/20/2008	ND<0	ND<2	
			6/11/2009	ND<-2.25379 U		ND<0.21 U
LMW-7	16	16 (100%)	1/16/1998	ND<0	ND<2	
			3/16/1999	ND<0	ND<2	
			9/23/1999	ND<0	ND<2	
			3/14/2000	ND<0	ND<2	
			9/23/2003	ND<0	ND<2	
			3/10/2004	ND<0	ND<2	

			10/12/2004	ND<0	ND<2	
			4/1/2005	ND<0	ND<2	
			10/26/2005	ND<0	ND<2	
			6/19/2006	ND<0	ND<2	
			11/18/2006	ND<0	ND<2	
			6/2/2007	ND<0	ND<2	
			11/15/2007	ND<0	ND<2	
			5/20/2008	ND<0	ND<2	
			11/20/2008	ND<0	ND<2	
			6/11/2009	ND<-2.25379 U	ND<0.21 U	
LMW-3S	6	6 (100%)	11/18/2006	ND<0	ND<2	
			6/2/2007	ND<0	ND<2	
			11/15/2007	ND<0	ND<2	
			5/20/2008	ND<0	ND<2	
			11/20/2008	ND<0	ND<2	
			6/11/2009	ND<-2.25379 U	ND<0.21 U	
LMW-15R	9	8 (88.8889%)	11/18/2006	ND<0	ND<2	
			6/2/2007	ND<0	ND<2	
			11/15/2007	ND<0	ND<2	
			11/15/2007	ND<0	ND<2	
			5/20/2008	ND<0	ND<2	
			5/20/2008	ND<0	ND<2	
			11/20/2008	ND<0	ND<2	
			11/20/2008	ND<0	ND<2	
			6/11/2009	-1.42712 J	0.24 J	
LMW-14R	5	5 (100%)	6/2/2007	ND<0	ND<2	
			11/15/2007	ND<0	ND<2	
			5/20/2008	ND<0	ND<2	
			11/20/2008	ND<0	ND<2	
			6/11/2009	ND<-2.25379 U	ND<0.21 U	
LMW-9D	6	5 (83.3333%)	11/18/2006	ND<0	ND<2	
			6/2/2007	ND<0	ND<2	
			11/15/2007	1.38629	4	
			5/20/2008	ND<0	ND<2	
			11/20/2008	ND<0	ND<2	
			6/11/2009	ND<-2.25379 U	ND<0.21 U	
LMW-3	18	18 (100%)	11/19/1996	ND<0	ND<2	
			3/24/1997	ND<0	ND<2	
			1/16/1998	ND<0	ND<2	
			3/16/1999	ND<0	ND<2	
			9/23/1999	ND<0	ND<2	
			3/14/2000	ND<0	ND<2	
			9/23/2003	ND<0	ND<2	
			3/10/2004	ND<0	ND<2	
			10/12/2004	ND<0	ND<2	
			4/1/2005	ND<0	ND<2	
			10/26/2005	ND<0	ND<2	
			6/19/2006	ND<0	ND<2	
			11/18/2006	ND<0	ND<2	
			6/2/2007	ND<0	ND<2	
			11/15/2007	ND<0	ND<2	
			5/20/2008	ND<0	ND<2	
			11/20/2008	ND<0	ND<2	
			6/11/2009	ND<-2.25379 U	ND<0.21 U	
LMW-11	11	11 (100%)	3/14/2000	ND<0	ND<2	

			9/23/2003	ND<0	ND<2	
			3/10/2004	ND<0	ND<2	
			10/12/2004	ND<0	ND<2	
			4/1/2005	ND<0	ND<2	
			10/26/2005	ND<0	ND<2	
			6/19/2006	ND<0	ND<2	
			6/2/2007	ND<0	ND<2	
			11/15/2007	ND<0	ND<2	
			5/20/2008	ND<0	ND<2	
			11/20/2008	ND<0	ND<2	
LMW-12	11	11 (100%)	3/14/2000	ND<0	ND<2	
			9/23/2003	ND<0	ND<2	
			3/10/2004	ND<0	ND<2	
			10/12/2004	ND<0	ND<2	
			4/1/2005	ND<0	ND<2	
			10/26/2005	ND<0	ND<2	
			6/19/2006	ND<0	ND<2	
			6/2/2007	ND<0	ND<2	
			11/15/2007	ND<0	ND<2	
			5/20/2008	ND<0	ND<2	
			11/20/2008	ND<0	ND<2	
LMW-13	11	11 (100%)	3/14/2000	ND<0	ND<2	
			9/23/2003	ND<0	ND<2	
			3/10/2004	ND<0	ND<2	
			10/12/2004	ND<0	ND<2	
			4/1/2005	ND<0	ND<2	
			10/26/2005	ND<0	ND<2	
			6/19/2006	ND<0	ND<2	
			6/2/2007	ND<0	ND<2	
			11/15/2007	ND<0	ND<2	
			5/20/2008	ND<0	ND<2	
			11/20/2008	ND<0	ND<2	
MW-5	13	13 (100%)	1/16/1998	ND<0	ND<2	
			3/16/1999	ND<0	ND<2	
			9/23/1999	ND<0	ND<2	
			3/14/2000	ND<0	ND<2	
			9/23/2003	ND<0	ND<2	
			3/10/2004	ND<0	ND<2	
			10/12/2004	ND<0	ND<2	
			4/1/2005	ND<0	ND<2	
			10/26/2005	ND<0	ND<2	
			6/19/2006	ND<0	ND<2	
			11/15/2007	ND<0	ND<2	
			5/20/2008	ND<0	ND<2	
			11/20/2008	ND<0	ND<2	

There are 0 unused locations

Loc.	Meas.	ND	Date	Conc.	Original

Shapiro-Francia Test of Normality

Parameter: Selenium

All Locations

Normality Test of Parameter Concentrations

Original Data (Not Transformed)
Non-Detects Replaced with 1/2 DL
Total Number of Measurements = 197

i	x(i)	m(i)	sum(m^2)	sum(mx)
1	0.105	-2.575836	3.63492	-0.270463
2	0.105	-2.326341	2.0468	-0.514729
3	0.105	-2.170091	6.7561	-0.742588
4	0.105	-2.053752	0.974	-0.958232
5	0.105	-1.959962	4.8154	-1.16403
6	0.105	-1.880792	8.3528	-1.36151
7	0.105	-1.811913	1.6358	-1.55176
8	0.105	-1.750693	4.7007	-1.73558
9	0.105	-1.6954	37.5751	-1.9136
10	0.24	-1.644854	0.2806	-2.30836
11	0.28	-1.598194	2.8348	-2.75586
12	0.59	-1.554774	5.2522	-3.67317
13	0.64	-1.5141	47.5447	-4.6422
14	1	-1.475794	9.7226	-6.11799
15	1	-1.439535	1.7949	-7.55752
16	1	-1.405075	3.7691	-8.9626
17	1	-1.3722	55.6521	-10.3348
18	1	-1.340755	7.4497	-11.6756
19	1	-1.310585	9.1673	-12.9861
20	1	-1.275886	0.7952	-14.262
21	1	-1.248096	2.3529	-15.5101
22	1	-1.221236	3.8443	-16.7313
23	1	-1.195226	5.2728	-17.9265
24	1	-1.17	66.6417	-19.0965
25	1	-1.1455	67.9539	-20.2421
26	1	-1.121686	9.2121	-21.3637
27	1	-1.098477	0.4187	-22.4622
28	1	-1.075847	1.5761	-23.538
29	1	-1.053757	2.6865	-24.5918
30	1	-1.032157	3.7519	-25.6239
31	1	-1.011047	4.774	-26.635
32	1	-0.990356	75.7549	-27.6253
33	1	-0.970094	76.6959	-28.5954
34	1	-0.950222	77.5989	-29.5456
35	1	-0.930718	78.4651	-30.4764
36	1	-0.911562	79.296	-31.3879
37	1	-0.892733	80.093	-32.2807
38	1	-0.874218	80.8573	-33.1549
39	1	-0.855996	81.59	-34.0109
40	1	-0.834498	82.2864	-34.8454
41	1	-0.816874	82.9537	-35.6622
42	1	-0.7995	83.5929	-36.4617
43	1	-0.782366	84.205	-37.2441
44	1	-0.765456	84.7909	-38.0096
45	1	-0.748762	85.3515	-38.7583
46	1	-0.732275	85.8878	-39.4906
47	1	-0.715986	86.4004	-40.2066
48	1	-0.699883	86.8902	-40.9065
49	1	-0.683968	7.358	-41.5904

50	1	-0.668209	87.8045	-42.2586
51	1	-0.652622	88.2304	-42.9113
52	1	-0.637192	88.6365	-43.5485
53	1	-0.621911	89.0232	-44.1704
54	1	-0.606775	89.3914	-44.7771
55	1	-0.591776	89.7416	-45.3689
56	1	-0.576911	90.0744	-45.9458
57	1	-0.562179	0.3905	-46.508
58	1	-0.547551	90.6903	-47.0555
59	1	-0.533048	90.9744	-47.5886
60	1	-0.515791	91.2405	-48.1044
61	1	-0.501527	91.492	-48.6059
62	1	-0.487364	91.7295	-49.0933
63	1	-0.473299	91.9535	-49.5666
64	1	-0.459327	92.1645	-50.0259
65	1	-0.445443	92.3629	-50.4713
66	1	-0.431644	92.5492	-50.903
67	1	-0.417928	92.7239	-51.3209
68	1	-0.404299	2.8874	-51.7252
69	1	-0.390726	93.04	-52.1159
70	1	-0.377233	93.1823	-52.4932
71	1	-0.363809	93.3147	-52.857
72	1	-0.350451	93.4375	-53.2074
73	1	-0.337155	93.5512	-53.5446
74	1	-0.323919	93.6561	-53.8685
75	1	-0.310738	93.7527	-54.1792
76	1	-0.297612	93.8412	-54.4768
77	1	-0.284535	93.9222	-54.7614
78	1	-0.271509	93.9959	-55.0329
79	1	-0.258527	94.0627	-55.2914
80	1	-0.243007	94.1218	-55.5344
81	1	-0.230118	94.1748	-55.7645
82	1	-0.217267	94.222	-55.9818
83	1	-0.204452	94.2638	-56.1863
84	1	-0.191671	94.3005	-56.3779
85	1	-0.178929	4.3325	-56.5569
86	1	-0.166199	94.3601	-56.7231
87	1	-0.153505	94.3837	-56.8766
88	1	-0.140835	94.4035	-57.0174
89	1	-0.128189	94.42	-57.1456
90	1	-0.115562	94.4333	-57.2611
91	1	-0.102953	94.4439	-57.3641
92	1	-0.0903606	94.4521	-57.4545
93	1	-0.0777834	94.4581	-57.5322
94	1	-0.0652187	94.4624	-57.5975
95	1	-0.0526632	94.4652	-57.6501
96	1	-0.0401167	94.4668	-57.6902
97	1	-0.0275759	94.4675	-57.7178
98	1	-0.0150408	94.4678	-57.7329
99	1	0	94.4678	-57.7329
100	1	0.0150408	94.468	-57.7178
101	1	0.0275759	94.4687	-57.6902
102	1	0.0401167	94.4703	-57.6501
103	1	0.0526632	94.4731	-57.5975
104	1	0.0652187	94.4774	-57.5322
105	1	0.0777834	94.4834	-57.4545
106	1	0.0903606	94.4916	-57.3641
107	1	0.102953	94.5022	-57.2611
108	1	0.115562	94.5155	-57.1456
109	1	0.128189	94.532	-57.0174
110	1	0.140835	94.5518	-56.8766
111	1	0.153505	94.5754	-56.7231

112	1	0.166199	94.603	-56.5569
113	1	0.17892	94.635	-56.3779
114	1	0.191671	94.6717	-56.1863
115	1	0.204452	94.7135	-55.9818
116	1	0.217267	94.7608	-55.7645
117	1	0.230118	94.8137	-55.5344
118	1	0.243007	94.8728	-55.2914
119	1	0.258527	94.9396	-55.0329
120	1	0.271509	95.0133	-54.7614
121	1	0.284535	95.0943	-54.4768
122	1	0.297612	95.1828	-54.1792
123	1	0.310738	95.2794	-53.8685
124	1	0.323919	95.3843	-53.5446
125	1	0.337155	95.498	-53.2074
126	1	0.350451	95.6208	-52.857
127	1	0.363809	95.7532	-52.4932
128	1	0.377233	95.8955	-52.1159
129	1	0.390726	96.0481	-51.7252
130	1	0.40429	96.2116	-51.3209
131	1	0.417928	96.3863	-50.903
132	1	0.431644	96.5726	-50.4713
133	1	0.445443	96.771	-50.0259
134	1	0.459327	96.982	-49.5666
135	1	0.473299	97.206	-49.0933
136	1	0.487364	97.4435	-48.6059
137	1	0.501527	97.695	-48.1044
138	1	0.515791	97.9611	-47.5886
139	1	0.533048	98.2452	-47.0555
140	1	0.547551	98.545	-46.508
141	1	0.56217	98.8611	-45.9458
142	1	0.576911	99.1939	-45.3689
143	1	0.591776	99.5441	-44.7771
144	1	0.606775	99.9123	-44.1704
145	1	0.621911	100.299	-43.5485
146	1	0.637192	100.705	-42.9113
147	1	0.652622	101.131	-42.2586
148	1	0.668209	101.577	-41.5904
149	1	0.68396	102.045	-40.9065
150	1	0.699883	102.535	-40.2066
151	1	0.715986	103.048	-39.4906
152	1	0.732275	103.584	-38.7583
153	1	0.748762	104.145	-38.0096
154	1	0.765456	104.731	-37.2441
155	1	0.782366	105.343	-36.4617
156	1	0.7995	105.982	-35.6622
157	1	0.816874	106.649	-34.8454
158	1	0.834498	107.346	-34.0109
159	1	0.855996	108.078	-33.1549
160	1	0.874218	108.842	-32.2807
161	1	0.892733	109.639	-31.3879
162	1	0.911562	110.47	-30.4764
163	1	0.930718	111.337	-29.5456
164	1	0.950222	112.24	-28.5954
165	1	0.970094	113.181	-27.6253
166	1	0.990356	114.161	-26.635
167	1	1.01104	115.184	-25.6239
168	1	1.03215	116.249	-24.5918
169	1	1.05375	117.359	-23.538
170	1	1.07584	118.517	-22.4622
171	1	1.09847	119.723	-21.3637
172	1	1.12168	120.982	-20.2421
173	1	1.1455	122.294	-19.0965

174	1	1.17	123.663	-17.9265
175	1	1.19522	125.091	-16.7313
176	1	1.22123	126.583	-15.5101
177	1	1.24809	128.14	-14.262
178	1	1.27588	129.768	-12.9861
179	1	1.31058	131.486	-11.6756
180	1	1.34075	133.283	-10.3348
181	1	1.3722	135.166	-8.9626
182	1	1.40507	137.141	-7.55752
183	1	1.43953	139.213	-6.11799
184	2	1.47579	141.391	-3.16641
185	2	1.5141	143.683	-0.138201
186	2	1.55477	146.101	2.97134
187	2	1.59819	148.655	6.16773
188	2	1.64485	151.36	9.45743
189	2	1.6954	154.235	12.8482
190	2.6	1.75069	157.3	17.4
191	3	1.81191	160.583	22.8358
192	3	1.88079	164.12	28.4781
193	3.2	1.95996	167.962	34.75
194	4	2.05375	172.179	42.965
195	4	2.17009	176.889	51.6454
196	4	2.32634	182.301	60.9507
197	4	2.57583	188.936	71.2541

Data Set Standard Deviation = 0.574919
Numerator = 5077.14
Denominator = 12240
W Statistic = 0.414798 = 5077.14 / 12240

5% Critical value of 0.976 exceeds 0.414798
Evidence of non-normality at 95% level of significance

1% Critical value of 0.967 exceeds 0.414798
Evidence of non-normality at 99% level of significance

Shapiro-Francia Test of Normality

Parameter: Selenium

All Locations

Normality Test of Parameter Concentrations

Natural Logarithm Transformation
Non-Detects Replaced with 1/2 DL
Total Number of Measurements = 197

i	x(i)	m(i)	sum(m^2)	sum(mx)
1	-2.25379	-2.57583	6.63492	5.8054
2	-2.25379	-2.32634	12.0468	11.0485
3	-2.25379	-2.17009	16.7561	15.9394
4	-2.25379	-2.05375	20.974	20.5682
5	-2.25379	-1.95996	24.8154	24.9855
6	-2.25379	-1.88079	28.3528	29.2244
7	-2.25379	-1.81191	31.6358	33.3081
8	-2.25379	-1.75069	34.7007	37.2538
9	-2.25379	-1.6954	37.5751	41.0749
10	-1.42712	-1.64485	40.2806	43.4223
11	-1.27297	-1.59819	42.8348	45.4567
12	-0.527633	-1.55477	45.2522	46.2771
13	-0.446287	-1.5141	47.5447	46.9528
14	0	-1.47579	49.7226	46.9528
15	0	-1.43953	51.7949	46.9528
16	0	-1.40507	53.7691	46.9528
17	0	-1.3722	55.6521	46.9528
18	0	-1.34075	57.4497	46.9528
19	0	-1.31058	59.1673	46.9528
20	0	-1.27588	60.7952	46.9528
21	0	-1.24809	62.3529	46.9528
22	0	-1.22123	63.8443	46.9528
23	0	-1.19522	65.2728	46.9528
24	0	-1.17	66.6417	46.9528
25	0	-1.1455	67.9539	46.9528
26	0	-1.12168	69.2121	46.9528
27	0	-1.09847	70.4187	46.9528
28	0	-1.07584	71.5761	46.9528
29	0	-1.05375	72.6865	46.9528
30	0	-1.03215	73.7519	46.9528
31	0	-1.01104	74.774	46.9528
32	0	-0.990356	75.7549	46.9528
33	0	-0.970094	76.6959	46.9528
34	0	-0.950222	77.5989	46.9528
35	0	-0.930718	78.4651	46.9528
36	0	-0.911562	79.296	46.9528
37	0	-0.892733	80.093	46.9528
38	0	-0.874218	80.8573	46.9528
39	0	-0.855996	81.59	46.9528
40	0	-0.834498	82.2864	46.9528
41	0	-0.816874	82.9537	46.9528
42	0	-0.7995	83.5929	46.9528
43	0	-0.782366	84.205	46.9528
44	0	-0.765456	84.7909	46.9528
45	0	-0.748762	85.3515	46.9528
46	0	-0.732275	85.8878	46.9528
47	0	-0.715986	86.4004	46.9528
48	0	-0.699883	86.8902	46.9528
49	0	-0.683968	7.358	46.9528

50	0	-0.668209	87.8045	46.9528
51	0	-0.652622	88.2304	46.9528
52	0	-0.637192	88.6365	46.9528
53	0	-0.621911	89.0232	46.9528
54	0	-0.606775	89.3914	46.9528
55	0	-0.591776	89.7416	46.9528
56	0	-0.576911	90.0744	46.9528
57	0	-0.562179	0.3905	46.9528
58	0	-0.547551	90.6903	46.9528
59	0	-0.533048	90.9744	46.9528
60	0	-0.515791	91.2405	46.9528
61	0	-0.501527	91.492	46.9528
62	0	-0.487364	91.7295	46.9528
63	0	-0.473299	91.9535	46.9528
64	0	-0.459327	92.1645	46.9528
65	0	-0.445443	92.3629	46.9528
66	0	-0.431644	92.5492	46.9528
67	0	-0.417928	92.7239	46.9528
68	0	-0.404299	2.8874	46.9528
69	0	-0.390726	93.04	46.9528
70	0	-0.377233	93.1823	46.9528
71	0	-0.363809	93.3147	46.9528
72	0	-0.350451	93.4375	46.9528
73	0	-0.337155	93.5512	46.9528
74	0	-0.323919	93.6561	46.9528
75	0	-0.310738	93.7527	46.9528
76	0	-0.297612	93.8412	46.9528
77	0	-0.284535	93.9222	46.9528
78	0	-0.271509	93.9959	46.9528
79	0	-0.258527	94.0627	46.9528
80	0	-0.243007	94.1218	46.9528
81	0	-0.230118	94.1748	46.9528
82	0	-0.217267	94.222	46.9528
83	0	-0.204452	94.2638	46.9528
84	0	-0.191671	94.3005	46.9528
85	0	-0.178929	4.3325	46.9528
86	0	-0.166199	94.3601	46.9528
87	0	-0.153505	94.3837	46.9528
88	0	-0.140835	94.4035	46.9528
89	0	-0.128189	94.42	46.9528
90	0	-0.115562	94.4333	46.9528
91	0	-0.102953	94.4439	46.9528
92	0	-0.0903606	94.4521	46.9528
93	0	-0.0777834	94.4581	46.9528
94	0	-0.0652187	94.4624	46.9528
95	0	-0.0526632	94.4652	46.9528
96	0	-0.0401167	94.4668	46.9528
97	0	-0.0275759	94.4675	46.9528
98	0	-0.0150408	94.4678	46.9528
99	0	0	94.4678	46.9528
100	0	0.0150408	94.468	46.9528
101	0	0.0275759	94.4687	46.9528
102	0	0.0401167	94.4703	46.9528
103	0	0.0526632	94.4731	46.9528
104	0	0.0652187	94.4774	46.9528
105	0	0.0777834	94.4834	46.9528
106	0	0.0903606	94.4916	46.9528
107	0	0.102953	94.5022	46.9528
108	0	0.115562	94.5155	46.9528
109	0	0.128189	94.532	46.9528
110	0	0.140835	94.5518	46.9528
111	0	0.153505	94.5754	46.9528

112	0	0.166199	94.603	46.9528
113	0	0.17892	94.635	46.9528
114	0	0.191671	94.6717	46.9528
115	0	0.204452	94.7135	46.9528
116	0	0.217267	94.7608	46.9528
117	0	0.230118	94.8137	46.9528
118	0	0.243007	94.8728	46.9528
119	0	0.258527	94.9396	46.9528
120	0	0.271509	95.0133	46.9528
121	0	0.284535	95.0943	46.9528
122	0	0.297612	95.1828	46.9528
123	0	0.310738	95.2794	46.9528
124	0	0.323919	95.3843	46.9528
125	0	0.337155	95.498	46.9528
126	0	0.350451	95.6208	46.9528
127	0	0.363809	95.7532	46.9528
128	0	0.377233	95.8955	46.9528
129	0	0.390726	96.0481	46.9528
130	0	0.40429	96.2116	46.9528
131	0	0.417928	96.3863	46.9528
132	0	0.431644	96.5726	46.9528
133	0	0.445443	96.771	46.9528
134	0	0.459327	96.982	46.9528
135	0	0.473299	97.206	46.9528
136	0	0.487364	97.4435	46.9528
137	0	0.501527	97.695	46.9528
138	0	0.515791	97.9611	46.9528
139	0	0.533048	98.2452	46.9528
140	0	0.547551	98.545	46.9528
141	0	0.56217	98.8611	46.9528
142	0	0.576911	99.1939	46.9528
143	0	0.591776	99.5441	46.9528
144	0	0.606775	99.9123	46.9528
145	0	0.621911	100.299	46.9528
146	0	0.637192	100.705	46.9528
147	0	0.652622	101.131	46.9528
148	0	0.668209	101.577	46.9528
149	0	0.68396	102.045	46.9528
150	0	0.699883	102.535	46.9528
151	0	0.715986	103.048	46.9528
152	0	0.732275	103.584	46.9528
153	0	0.748762	104.145	46.9528
154	0	0.765456	104.731	46.9528
155	0	0.782366	105.343	46.9528
156	0	0.7995	105.982	46.9528
157	0	0.816874	106.649	46.9528
158	0	0.834498	107.346	46.9528
159	0	0.855996	108.078	46.9528
160	0	0.874218	108.842	46.9528
161	0	0.892733	109.639	46.9528
162	0	0.911562	110.47	46.9528
163	0	0.930718	111.337	46.9528
164	0	0.950222	112.24	46.9528
165	0	0.970094	113.181	46.9528
166	0	0.990356	114.161	46.9528
167	0	1.01104	115.184	46.9528
168	0	1.03215	116.249	46.9528
169	0	1.05375	117.359	46.9528
170	0	1.07584	118.517	46.9528
171	0	1.09847	119.723	46.9528
172	0	1.12168	120.982	46.9528
173	0	1.1455	122.294	46.9528

174	0	1.17	123.663	46.9528	
175	0	1.19522	125.091	46.9528	
176	0	1.22123	126.583	46.9528	
177	0	1.24809	128.14	46.9528	
178	0	1.27588	129.768	46.9528	
179	0	1.31058	131.486	46.9528	
180	0	1.34075	133.283	46.9528	
181	0	1.3722	135.166	46.9528	
182	0	1.40507	137.141	46.9528	
183	0	1.43953	139.213	46.9528	
184	0.693147		1.47579	141.391	47.9757
185	0.693147		1.5141	143.683	49.0252
186	0.693147		1.55477	146.101	50.1029
187	0.693147		1.59819	148.655	51.2107
188	0.693147		1.64485	151.36	52.3508
189	0.693147		1.6954	154.235	53.526
190	0.955511		1.75069	157.3	55.1988
191	1.09861	1.81191	160.583	57.1894	
192	1.09861	1.88079	164.12	59.2556	
193	1.16315	1.95996	167.962	61.5354	
194	1.38629	2.05375	172.179	64.3825	
195	1.38629	2.17009	176.889	67.3908	
196	1.38629	2.32634	182.301	70.6158	
197	1.38629	2.57583	188.936	74.1867	

Data Set Standard Deviation = 0.574098
Numerator = 5503.67
Denominator = 12205.1
W Statistic = 0.450931 = 5503.67 / 12205.1

5% Critical value of 0.976 exceeds 0.450931
Evidence of non-normality at 95% level of significance

1% Critical value of 0.967 exceeds 0.450931
Evidence of non-normality at 99% level of significance

Kruskal-Wallis Non-Parametric Test

Parameter: Selenium

Natural Logarithm Transformation
Non-Detects Replaced with 1/2 DL

Kruskal Wallis Ranks

Background Wells

Well ID	Date	Result		Rank
LMW-4	1/16/1998	ND<0	87.5	
	3/16/1999	ND<0	87.5	
	9/23/1999	ND<0	87.5	
	3/14/2000	ND<0	87.5	
	9/23/2003	ND<0	87.5	
	3/10/2004	ND<0	87.5	
	10/12/2004	ND<0	87.5	
	4/1/2005	ND<0	87.5	
	10/26/2005	ND<0	87.5	
	6/19/2006	ND<0	87.5	
	11/18/2006	ND<0	87.5	
	6/2/2007	ND<0	87.5	
	11/15/2007	ND<0	87.5	
	5/20/2008	ND<0	87.5	
	11/20/2008	ND<0	87.5	
	6/11/2009	ND<-2.25379 U		87.5

Rank Sum = 1400
Rank Mean = 87.5

Background Rank Sum = 1400
Background Rank Mean = 87.5

Compliance Wells

Well ID	Date	Result		Rank
LMW-8	1/16/1998	ND<0	87.5	
	3/16/1999	ND<0	87.5	
	9/23/1999	ND<0	87.5	
	3/14/2000	ND<0	87.5	
	9/23/2003	ND<0	87.5	
	3/10/2004	ND<0	87.5	
	10/12/2004	ND<0	87.5	
	4/1/2005	1.09861	191	
	10/26/2005	0 J	179	
	6/19/2006	0 J	180	
	11/18/2006	0 J	181	
	6/2/2007	0 J	182	
	11/15/2007	1.09861		192
	5/20/2008	ND<0	87.5	
	11/20/2008	ND<0	87.5	
	6/11/2009	-0.446287		178
	11/14/2009	-0.527633		177

Rank Sum = 2247.5
Rank Mean = 132.206

LMW-6	1/16/1998	ND<0	87.5

	3/16/1999	ND<0	87.5	
	9/23/1999	ND<0	87.5	
	3/14/2000	ND<0	87.5	
	9/23/2003	ND<0	87.5	
	3/10/2004	ND<0	87.5	
	10/12/2004	ND<0	87.5	
	4/1/2005	ND<0	87.5	
	10/26/2005	0 J	183	
	6/19/2006	0.693147		184
	11/18/2006	0.693147		185
	6/2/2007	0.693147	186	
	11/15/2007	1.38629		194
	5/20/2008	0.693147		187
	11/20/2008	0.693147		188
	6/11/2009	1.16315		193
	11/14/2009	0.955511		190

Rank Sum = 2390
Rank Mean = 140.588

LMW-9	1/16/1998	ND<0	87.5	
	3/16/1999	ND<0	87.5	
	9/23/1999	ND<0	87.5	
	3/14/2000	ND<0	87.5	
	9/23/2003	ND<0	87.5	
	3/10/2004	ND<0	87.5	
	10/12/2004	ND<0	87.5	
	4/1/2005	ND<0	87.5	
	10/26/2005	ND<0	87.5	
	6/19/2006	ND<0	87.5	
	11/18/2006	ND<0	87.5	
	6/2/2007	ND<0	87.5	
	11/15/2007	ND<0	87.5	
	5/20/2008	ND<0	87.5	
	11/20/2008	ND<0	87.5	
	6/11/2009	-1.27297 J		176

Rank Sum = 1488.5
Rank Mean = 93.0313

LMW-16	11/18/2006	ND<0	87.5	
	6/2/2007	ND<0	87.5	
	11/15/2007	0.693147		189
	5/20/2008	ND<0	87.5	
	11/20/2008	ND<0	87.5	
	6/11/2009	ND<-2.25379 U		87.5

Rank Sum = 626.5
Rank Mean = 104.417

LMW-9S	11/18/2006	1.38629		195
	6/2/2007	1.38629	196	
	11/15/2007	ND<0	87.5	
	5/20/2008	ND<0	87.5	
	11/20/2008	ND<0	87.5	
	6/11/2009	ND<-2.25379 U		87.5

Rank Sum = 741
Rank Mean = 123.5

LMW-10	3/14/2000	ND<0	87.5	
	9/23/2003	ND<0	87.5	
	3/10/2004	ND<0	87.5	
	10/12/2004	ND<0	87.5	
	4/1/2005	ND<0	87.5	
	10/26/2005	ND<0	87.5	

	6/19/2006	ND<0	87.5	
	11/18/2006	ND<0	87.5	
	6/2/2007	ND<0	87.5	
	11/15/2007	ND<0	87.5	
	5/20/2008	ND<0	87.5	
	11/20/2008	ND<0	87.5	
	6/11/2009	ND<-2.25379 U	87.5	

Rank Sum = 1137.5
Rank Mean = 87.5

LMW-7	1/16/1998	ND<0	87.5	
	3/16/1999	ND<0	87.5	
	9/23/1999	ND<0	87.5	
	3/14/2000	ND<0	87.5	
	9/23/2003	ND<0	87.5	
	3/10/2004	ND<0	87.5	
	10/12/2004	ND<0	87.5	
	4/1/2005	ND<0	87.5	
	10/26/2005	ND<0	87.5	
	6/19/2006	ND<0	87.5	
	11/18/2006	ND<0	87.5	
	6/2/2007	ND<0	87.5	
	11/15/2007	ND<0	87.5	
	5/20/2008	ND<0	87.5	
	11/20/2008	ND<0	87.5	
	6/11/2009	ND<-2.25379 U	87.5	

Rank Sum = 1400
Rank Mean = 87.5

LMW-3S	11/18/2006	ND<0	87.5	
	6/2/2007	ND<0	87.5	
	11/15/2007	ND<0	87.5	
	5/20/2008	ND<0	87.5	
	11/20/2008	ND<0	87.5	
	6/11/2009	ND<-2.25379 U	87.5	

Rank Sum = 525
Rank Mean = 87.5

LMW-15R	11/18/2006	ND<0	87.5	
	6/2/2007	ND<0	87.5	
	11/15/2007	ND<0	87.5	
	11/15/2007	ND<0	87.5	
	5/20/2008	ND<0	87.5	
	5/20/2008	ND<0	87.5	
	11/20/2008	ND<0	87.5	
	11/20/2008	ND<0	87.5	
	6/11/2009	-1.42712 J	175	

Rank Sum = 875
Rank Mean = 97.2222

LMW-14R	6/2/2007	ND<0	87.5	
	11/15/2007	ND<0	87.5	
	5/20/2008	ND<0	87.5	
	11/20/2008	ND<0	87.5	
	6/11/2009	ND<-2.25379 U	87.5	

Rank Sum = 437.5
Rank Mean = 87.5

LMW-9D	11/18/2006	ND<0	87.5	
	6/2/2007	ND<0	87.5	
	11/15/2007	1.38629	197	
	5/20/2008	ND<0	87.5	

	11/20/2008	ND<0	87.5	
	6/11/2009	ND<-2.25379	U	87.5

Rank Sum = 634.5
Rank Mean = 105.75

LMW-3	11/19/1996	ND<0	87.5	
	3/24/1997	ND<0	87.5	
	1/16/1998	ND<0	87.5	
	3/16/1999	ND<0	87.5	
	9/23/1999	ND<0	87.5	
	3/14/2000	ND<0	87.5	
	9/23/2003	ND<0	87.5	
	3/10/2004	ND<0	87.5	
	10/12/2004	ND<0	87.5	
	4/1/2005	ND<0	87.5	
	10/26/2005	ND<0	87.5	
	6/19/2006	ND<0	87.5	
	11/18/2006	ND<0	87.5	
	6/2/2007	ND<0	87.5	
	11/15/2007	ND<0	87.5	
	5/20/2008	ND<0	87.5	
	11/20/2008	ND<0	87.5	
	6/11/2009	ND<-2.25379	U	87.5

Rank Sum = 1575
Rank Mean = 87.5

LMW-11	3/14/2000	ND<0	87.5
	9/23/2003	ND<0	87.5
	3/10/2004	ND<0	87.5
	10/12/2004	ND<0	87.5
	4/1/2005	ND<0	87.5
	10/26/2005	ND<0	87.5
	6/19/2006	ND<0	87.5
	6/2/2007	ND<0	87.5
	11/15/2007	ND<0	87.5
	5/20/2008	ND<0	87.5
	11/20/2008	ND<0	87.5

Rank Sum = 962.5
Rank Mean = 87.5

LMW-12	3/14/2000	ND<0	87.5
	9/23/2003	ND<0	87.5
	3/10/2004	ND<0	87.5
	10/12/2004	ND<0	87.5
	4/1/2005	ND<0	87.5
	10/26/2005	ND<0	87.5
	6/19/2006	ND<0	87.5
	6/2/2007	ND<0	87.5
	11/15/2007	ND<0	87.5
	5/20/2008	ND<0	87.5
	11/20/2008	ND<0	87.5

Rank Sum = 962.5
Rank Mean = 87.5

LMW-13	3/14/2000	ND<0	87.5
	9/23/2003	ND<0	87.5
	3/10/2004	ND<0	87.5
	10/12/2004	ND<0	87.5
	4/1/2005	ND<0	87.5
	10/26/2005	ND<0	87.5
	6/19/2006	ND<0	87.5
	6/2/2007	ND<0	87.5

	11/15/2007	ND<0	87.5
	5/20/2008	ND<0	87.5
	11/20/2008	ND<0	87.5

Rank Sum = 962.5
Rank Mean = 87.5

MW-5	1/16/1998	ND<0	87.5
	3/16/1999	ND<0	87.5
	9/23/1999	ND<0	87.5
	3/14/2000	ND<0	87.5
	9/23/2003	ND<0	87.5
	3/10/2004	ND<0	87.5
	10/12/2004	ND<0	87.5
	4/1/2005	ND<0	87.5
	10/26/2005	ND<0	87.5
	6/19/2006	ND<0	87.5
	11/15/2007	ND<0	87.5
	5/20/2008	ND<0	87.5
	11/20/2008	ND<0	87.5

Rank Sum = 1137.5
Rank Mean = 87.5

Calculation Results:

Kruskal-Wallis H Statistic = 21.1251
Kruskal-Wallis H Statistic (adjusted for tied non-detects) = 67.9355
95% Confidence comparison value is 26.2962 at 16 degrees of freedom
21.1251 < 26.2962 indicating no significant group difference at 5% significance level
67.9355 > 26.2962 indicating a significant group difference at 5% significance level when adjusted for ties

Individual Well Comparisons at 1% Significance Level per Comparison

1% Z score is 2.32634
Mean background rank is 87.5

Well	Mean Rank		Dif from Bkg	Critical Value
LMW-8	132.206	44.7059	46.1978	
LMW-6	140.588	53.0882	46.1978	
LMW-9	93.0313	5.53125	46.8925	
LMW-16	104.417	16.9167	63.4928	
LMW-9S	123.5	36	63.4928	
LMW-10	87.5	0	49.524	
LMW-7	87.5	0	46.8925	
LMW-3S	87.5	0	63.4928	
LMW-15R		97.2222	9.72222	55.2634
LMW-14R		87.5	0	67.9537
LMW-9D	105.75	18.25	63.4928	
LMW-3	87.5	0	45.5713	
LMW-11	87.5	0	51.9486	
LMW-12	87.5	0	51.9486	
LMW-13	87.5	0	51.9486	
MW-5	87.5	0	49.524	

Individual Well Comparisons at Groupwise 5% Significance Level (0.3125% Significance Level per comparison)

0.3125% Z score is 2.74777
Mean background rank is 87.5

Well	Mean Rank		Dif from Bkg	Critical Value
LMW-8	132.206	44.7059	54.5666	
LMW-6	140.588	53.0882	54.5666	
LMW-9	93.0313	5.53125	55.3872	

LMW-16	104.417	16.9167	74.9947	
LMW-9S	123.5	36	74.9947	
LMW-10	87.5	0	58.4954	
LMW-7	87.5	0	55.3872	
LMW-3S	87.5	0	74.9947	
LMW-15R		97.2222	9.72222	65.2745
LMW-14R		87.5	0	80.2637
LMW-9D	105.75	18.25	74.9947	
LMW-3	87.5	0	53.8267	
LMW-11	87.5	0	61.3593	
LMW-12	87.5	0	61.3593	
LMW-13	87.5	0	61.3593	
MW-5	87.5	0	58.4954	

Mann-Kendall Trend Analysis

Parameter: Selenium

Location: LMW-6

Natural Logarithm Transformation
Non-Detects Replaced with 1/2 DL

95% Confidence Level

Xj	Xk	Xj - Xk		Positives	Negatives
ND<0	ND<0	0	0	0	
ND<0	ND<0	0	0	0	
ND<0	ND<0	0	0	0	
ND<0	ND<0	0	0	0	
ND<0	ND<0	0	0	0	
ND<0	ND<0	0	0	0	
ND<0	ND<0	0	0	0	
0 J	ND<0	0	0	0	
0.693147		ND<0	0.693147	1	0
0.693147		ND<0	0.693147	2	0
0.693147		ND<0	0.693147	3	0
1.38629		ND<0	1.38629	4	0
0.693147		ND<0	0.693147	5	0
0.693147		ND<0	0.693147	6	0
1.16315		ND<0	1.16315	7	0
0.955511		ND<0	0.955511	8	0
ND<0	ND<0	0	8	0	
ND<0	ND<0	0	8	0	
ND<0	ND<0	0	8	0	
ND<0	ND<0	0	8	0	
ND<0	ND<0	0	8	0	
ND<0	ND<0	0	8	0	
0 J	ND<0	0	8	0	
0.693147		ND<0	0.693147	9	0
0.693147		ND<0	0.693147	10	0
0.693147		ND<0	0.693147	11	0
1.38629		ND<0	1.38629	12	0
0.693147		ND<0	0.693147	13	0
0.693147		ND<0	0.693147	14	0
1.16315		ND<0	1.16315	15	0
0.955511		ND<0	0.955511	16	0
ND<0	ND<0	0	16	0	
ND<0	ND<0	0	16	0	
ND<0	ND<0	0	16	0	
ND<0	ND<0	0	16	0	
ND<0	ND<0	0	16	0	
0 J	ND<0	0	16	0	
0.693147		ND<0	0.693147	17	0
0.693147		ND<0	0.693147	18	0
0.693147		ND<0	0.693147	19	0
1.38629		ND<0	1.38629	20	0
0.693147		ND<0	0.693147	21	0
0.693147		ND<0	0.693147	22	0
1.16315		ND<0	1.16315	23	0
0.955511		ND<0	0.955511	24	0

ND<0	ND<0	0	24	0		
ND<0	ND<0	0	24	0		
ND<0	ND<0	0	24	0		
ND<0	ND<0	0	24	0		
0 J	ND<0	0	24	0		
0.693147		ND<0	0.693147		25	0
0.693147		ND<0	0.693147		26	0
0.693147		ND<0	0.693147		27	0
1.38629		ND<0	1.38629	28	0	
0.693147		ND<0	0.693147		29	0
0.693147		ND<0	0.693147		30	0
1.16315		ND<0	1.16315	31	0	
0.955511		ND<0	0.955511		32	0
ND<0	ND<0	0	32	0		
ND<0	ND<0	0	32	0		
ND<0	ND<0	0	32	0		
0 J	ND<0	0	32	0		
0.693147		ND<0	0.693147		33	0
0.693147		ND<0	0.693147		34	0
0.693147		ND<0	0.693147		35	0
1.38629		ND<0	1.38629	36	0	
0.693147		ND<0	0.693147		37	0
0.693147		ND<0	0.693147		38	0
1.16315		ND<0	1.16315	39	0	
0.955511		ND<0	0.955511		40	0
ND<0	ND<0	0	40	0		
ND<0	ND<0	0	40	0		
0 J	ND<0	0	40	0		
0.693147		ND<0	0.693147		41	0
0.693147		ND<0	0.693147		42	0
0.693147		ND<0	0.693147		43	0
1.38629		ND<0	1.38629	44	0	
0.693147		ND<0	0.693147		45	0
0.693147		ND<0	0.693147		46	0
1.16315		ND<0	1.16315	47	0	
0.955511		ND<0	0.955511		48	0
ND<0	ND<0	0	48	0		
0 J	ND<0	0	48	0		
0.693147		ND<0	0.693147		49	0
0.693147		ND<0	0.693147		50	0
0.693147		ND<0	0.693147		51	0
1.38629		ND<0	1.38629	52	0	
0.693147		ND<0	0.693147		53	0
0.693147		ND<0	0.693147		54	0
1.16315		ND<0	1.16315	55	0	
0.955511		ND<0	0.955511		56	0
0 J	ND<0	0	56	0		
0.693147		ND<0	0.693147		57	0
0.693147		ND<0	0.693147		58	0
0.693147		ND<0	0.693147		59	0
1.38629		ND<0	1.38629	60	0	
0.693147		ND<0	0.693147		61	0
0.693147		ND<0	0.693147		62	0
1.16315		ND<0	1.16315	63	0	
0.955511		ND<0	0.955511		64	0
0.693147		0 J	0.693147		65	0
0.693147		0 J	0.693147		66	0

0.693147	0 J	0.693147	67	0
1.38629	0 J	1.38629 68	0	
0.693147	0 J	0.693147	69	0
0.693147	0 J	0.693147	70	0
1.16315	0 J	1.16315 71	0	
0.955511	0 J	0.955511	72	0

0.693147	0.693147	0	72	0
0.693147	0.693147	0	72	0
1.38629	0.693147	0.693147	73	0
0.693147	0.693147	0	73	0
0.693147	0.693147	0	73	0
1.16315	0.693147	0.470004	74	0
0.955511	0.693147	0.262364	75	0

0.693147	0.693147	0	75	0
1.38629	0.693147	0.693147	76	0
0.693147	0.693147	0	76	0
0.693147	0.693147	0	76	0
1.16315	0.693147	0.470004	77	0
0.955511	0.693147	0.262364	78	0

1.38629	0.693147	0.693147	79	0
0.693147	0.693147	0	79	0
0.693147	0.693147	0	79	0
1.16315	0.693147	0.470004	80	0
0.955511	0.693147	0.262364	81	0

0.693147	1.38629	-0.693147	81	1
0.693147	1.38629	-0.693147	81	2
1.16315	1.38629	-0.223144	81	3
0.955511	1.38629	-0.430783	81	4

0.693147	0.693147	0	81	4
1.16315	0.693147	0.470004	82	4
0.955511	0.693147	0.262364	83	4

1.16315	0.693147	0.470004	84	4
0.955511	0.693147	0.262364	85	4

0.955511	1.16315	-0.207639	85	5

S Statistic = 85 - 5 = 80

Tied Group	Value	Members
1	0	9
2	0.693147	5

Time Period	Observations
1/16/1998	1
3/16/1999	1
9/23/1999	1
3/14/2000	1
9/23/2003	1
3/10/2004	1
10/12/2004	1
4/1/2005	1
10/26/2005	1
6/19/2006	1

11/18/2006		1
6/2/2007	1	
11/15/2007		1
5/20/2008		1
11/20/2008		1
6/11/2009		1
11/14/2009		1

There are 0 time periods with multiple data

A = 1956
B = 0
C = 564
D = 0
E = 92
F = 0
a = 10608
b = 36720
c = 544
Group Variance = 480.667
Z-Score = 3.60334
Comparison Level at 1.0 - (0.05 / 2) = 97.5% confidence level = 1.97737 (two-tailed)
|3.60334| > 1.97737 indicating a trend

Concentrations (ug/L)

Parameter: Tetrachloroethylene

Natural Logarithm Transformation
Non-Detects Replaced with 1/2 DL
Total Measurements: 197
Total Non-Detect: 194
Percent Non-Detects: 98.4772%
Total Background Measurements: 16
There is 1 background location

Loc.	Meas.	ND	Date	Conc.	Original
LMW-4	16	16 (100%)	1/16/1998	ND<-0.693147	ND<1
			3/16/1999	ND<-0.693147	ND<1
			9/23/1999	ND<-0.693147	ND<1
			3/14/2000	ND<-0.693147	ND<1
			9/23/2003	ND<-0.693147	ND<1
			3/10/2004	ND<-0.693147	ND<1
			10/12/2004	ND<-0.693147	ND<1
			4/1/2005	ND<-0.693147	ND<1
			10/26/2005	ND<-0.693147	ND<1
			6/19/2006	ND<-0.693147	ND<1
			11/18/2006	ND<-0.693147	ND<1
			6/2/2007	ND<-0.693147	ND<1
			11/15/2007	ND<-0.693147	ND<1
			5/20/2008	ND<-0.693147	ND<1
			11/20/2008	ND<-0.693147	ND<1
			6/11/2009	ND<-2.59027 U	ND<0.15 U

There are 16 compliance locations

Loc.	Meas.	ND	Date	Conc.	Original
LMW-8	17	15 (88.2353%)	1/16/1998	ND<-0.693147	ND<1
			3/16/1999	ND<-0.693147	ND<1
			9/23/1999	ND<-0.693147	ND<1
			3/14/2000	ND<-0.693147	ND<1
			9/23/2003	ND<-0.693147	ND<1
			3/10/2004	ND<-0.693147	ND<1
			10/12/2004	ND<-0.693147	ND<1
			4/1/2005	ND<-0.693147	ND<1
			10/26/2005	ND<0 J	ND<0 J
			6/19/2006	ND<-0.693147	ND<1
			11/18/2006	ND<0 J	ND<0 J
			6/2/2007	ND<-0.693147	ND<1
			11/15/2007	ND<0 J	ND<0 J
			5/20/2008	ND<-0.693147	ND<1
			11/20/2008	ND<0 J	ND<0 J
			6/11/2009	-1.17118 J	0.31 J
			11/14/2009	-1.34707 J	0.26 J
LMW-10	14	13 (92.8571%)	3/14/2000	ND<-0.693147	ND<1
			9/23/2003	ND<-0.693147	ND<1
			3/10/2004	ND<-0.693147	ND<1
			10/12/2004	ND<-0.693147	ND<1
			4/1/2005	ND<-0.693147	ND<1
			10/26/2005	ND<-0.693147	ND<1
			6/19/2006	ND<-0.693147	ND<1

			11/18/2006	ND<-0.693147	ND<1
			6/2/2007	ND<-0.693147	ND<1
			11/15/2007	ND<-0.693147	ND<1
			5/20/2008	ND<-0.693147	ND<1
			11/20/2008	ND<-0.693147	ND<1
			6/11/2009	ND<-2.59027 U	ND<0.15 U
			11/14/2009	-1.42712 J	0.24 J
LMW-9	16	16 (100%)	1/16/1998	ND<-0.693147	ND<1
			3/16/1999	ND<-0.693147	ND<1
			9/23/1999	ND<-0.693147	ND<1
			3/14/2000	ND<-0.693147	ND<1
			9/23/2003	ND<-0.693147	ND<1
			3/10/2004	ND<-0.693147	ND<1
			10/12/2004	ND<-0.693147	ND<1
			4/1/2005	ND<-0.693147	ND<1
			10/26/2005	ND<-0.693147	ND<1
			6/19/2006	ND<-0.693147	ND<1
			11/18/2006	ND<-0.693147	ND<1
			6/2/2007	ND<-0.693147	ND<1
			11/15/2007	ND<-0.693147	ND<1
			5/20/2008	ND<-0.693147	ND<1
			11/20/2008	ND<-0.693147	ND<1
			6/11/2009	ND<-2.59027 U	ND<0.15 U
LMW-14R	5	5 (100%)	6/2/2007	ND<-0.693147	ND<1
			11/15/2007	ND<-0.693147	ND<1
			5/20/2008	ND<-0.693147	ND<1
			11/20/2008	ND<-0.693147	ND<1
			6/11/2009	ND<-2.59027 U	ND<0.15 U
LMW-15R	9	9 (100%)	11/18/2006	ND<-0.693147	ND<1
			6/2/2007	ND<-0.693147	ND<1
			11/15/2007	ND<-0.693147	ND<1
			11/15/2007	ND<-0.693147	ND<1
			5/20/2008	ND<-0.693147	ND<1
			5/20/2008	ND<-0.693147	ND<1
			11/20/2008	ND<-0.693147	ND<1
			11/20/2008	ND<-0.693147	ND<1
			6/11/2009	ND<-2.59027 U	ND<0.15 U
LMW-16	6	6 (100%)	11/18/2006	ND<-0.693147	ND<1
			6/2/2007	ND<-0.693147	ND<1
			11/15/2007	ND<-0.693147	ND<1
			5/20/2008	ND<-0.693147	ND<1
			11/20/2008	ND<-0.693147	ND<1
			6/11/2009	ND<-2.59027 U	ND<0.15 U
LMW-9D	6	6 (100%)	11/18/2006	ND<-0.693147	ND<1
			6/2/2007	ND<-0.693147	ND<1
			11/15/2007	ND<-0.693147	ND<1
			5/20/2008	ND<-0.693147	ND<1
			11/20/2008	ND<-0.693147	ND<1
			6/11/2009	ND<-2.59027 U	ND<0.15 U
LMW-9S	6	6 (100%)	11/18/2006	ND<-0.693147	ND<1
			6/2/2007	ND<-0.693147	ND<1
			11/15/2007	ND<-0.693147	ND<1
			5/20/2008	ND<-0.693147	ND<1
			11/20/2008	ND<-0.693147	ND<1
			6/11/2009	ND<-2.59027 U	ND<0.15 U

LMW-6	16	16 (100%)	1/16/1998	ND<-0.693147	ND<1
			3/16/1999	ND<-0.693147	ND<1
			9/23/1999	ND<-0.693147	ND<1
			3/14/2000	ND<-0.693147	ND<1
			9/23/2003	ND<-0.693147	ND<1
			3/10/2004	ND<-0.693147	ND<1
			10/12/2004	ND<-0.693147	ND<1
			4/1/2005	ND<-0.693147	ND<1
			10/26/2005	ND<-0.693147	ND<1
			6/19/2006	ND<-0.693147	ND<1
			11/18/2006	ND<-0.693147	ND<1
			6/2/2007	ND<-0.693147	ND<1
			11/15/2007	ND<-0.693147	ND<1
			5/20/2008	ND<-0.693147	ND<1
			11/20/2008	ND<-0.693147	ND<1
			6/11/2009	ND<-2.59027 U	ND<0.15 U
LMW-3	18	18 (100%)	11/19/1996	ND<-0.693147	ND<1
			3/24/1997	ND<-0.693147	ND<1
			1/16/1998	ND<-0.693147	ND<1
			3/16/1999	ND<-0.693147	ND<1
			9/23/1999	ND<-0.693147	ND<1
			3/14/2000	ND<-0.693147	ND<1
			9/23/2003	ND<-0.693147	ND<1
			3/10/2004	ND<-0.693147	ND<1
			10/12/2004	ND<-0.693147	ND<1
			4/1/2005	ND<-0.693147	ND<1
			10/26/2005	ND<-0.693147	ND<1
			6/19/2006	ND<-0.693147	ND<1
			11/18/2006	ND<-0.693147	ND<1
			6/2/2007	ND<-0.693147	ND<1
			11/15/2007	ND<-0.693147	ND<1
			5/20/2008	ND<-0.693147	ND<1
			11/20/2008	ND<-0.693147	ND<1
			6/11/2009	ND<-2.59027 U	ND<0.15 U
LMW-3S	6	6 (100%)	11/18/2006	ND<-0.693147	ND<1
			6/2/2007	ND<-0.693147	ND<1
			11/15/2007	ND<-0.693147	ND<1
			5/20/2008	ND<-0.693147	ND<1
			11/20/2008	ND<-0.693147	ND<1
			6/11/2009	ND<-2.59027 U	ND<0.15 U
LMW-7	16	16 (100%)	1/16/1998	ND<-0.693147	ND<1
			3/16/1999	ND<-0.693147	ND<1
			9/23/1999	ND<-0.693147	ND<1
			3/14/2000	ND<-0.693147	ND<1
			9/23/2003	ND<-0.693147	ND<1
			3/10/2004	ND<-0.693147	ND<1
			10/12/2004	ND<-0.693147	ND<1
			4/1/2005	ND<-0.693147	ND<1
			10/26/2005	ND<-0.693147	ND<1
			6/19/2006	ND<-0.693147	ND<1
			11/18/2006	ND<-0.693147	ND<1
			6/2/2007	ND<-0.693147	ND<1
			11/15/2007	ND<-0.693147	ND<1
			5/20/2008	ND<-0.693147	ND<1
			11/20/2008	ND<-0.693147	ND<1
			6/11/2009	ND<-2.59027 U	ND<0.15 U
LMW-11	11	11 (100%)	3/14/2000	ND<-0.693147	ND<1

			9/23/2003	ND<-0.693147	ND<1	
			3/10/2004	ND<-0.693147	ND<1	
			10/12/2004	ND<-0.693147	ND<1	
			4/1/2005	ND<-0.693147	ND<1	
			10/26/2005	ND<-0.693147	ND<1	
			6/19/2006	ND<-0.693147	ND<1	
			6/2/2007	ND<-0.693147	ND<1	
			11/15/2007	ND<-0.693147	ND<1	
			5/20/2008	ND<-0.693147	ND<1	
			11/20/2008	ND<-0.693147	ND<1	
LMW-12	11	11 (100%)	3/14/2000	ND<-0.693147	ND<1	
			9/23/2003	ND<-0.693147	ND<1	
			3/10/2004	ND<-0.693147	ND<1	
			10/12/2004	ND<-0.693147	ND<1	
			4/1/2005	ND<-0.693147	ND<1	
			10/26/2005	ND<-0.693147	ND<1	
			6/19/2006	ND<-0.693147	ND<1	
			6/2/2007	ND<-0.693147	ND<1	
			11/15/2007	ND<-0.693147	ND<1	
			5/20/2008	ND<-0.693147	ND<1	
			11/20/2008	ND<-0.693147	ND<1	
MW-5	13	13 (100%)	1/16/1998	ND<-0.693147	ND<1	
			3/16/1999	ND<-0.693147	ND<1	
			9/23/1999	ND<-0.693147	ND<1	
			3/14/2000	ND<-0.693147	ND<1	
			9/23/2003	ND<-0.693147	ND<1	
			3/10/2004	ND<-0.693147	ND<1	
			10/12/2004	ND<-0.693147	ND<1	
			4/1/2005	ND<-0.693147	ND<1	
			10/26/2005	ND<-0.693147	ND<1	
			6/19/2006	ND<-0.693147	ND<1	
			11/15/2007	ND<-0.693147	ND<1	
			5/20/2008	ND<-0.693147	ND<1	
			11/20/2008	ND<-0.693147	ND<1	
LMW-13	11	11 (100%)	3/14/2000	ND<-0.693147	ND<1	
			9/23/2003	ND<-0.693147	ND<1	
			3/10/2004	ND<-0.693147	ND<1	
			10/12/2004	ND<-0.693147	ND<1	
			4/1/2005	ND<-0.693147	ND<1	
			10/26/2005	ND<-0.693147	ND<1	
			6/19/2006	ND<-0.693147	ND<1	
			6/2/2007	ND<-0.693147	ND<1	
			11/15/2007	ND<-0.693147	ND<1	
			5/20/2008	ND<-0.693147	ND<1	
			11/20/2008	ND<-0.693147	ND<1	

There are 0 unused locations

Loc.	Meas.	ND	Date	Conc.	Original

Shapiro-Francia Test of Normality

Parameter: Tetrachloroethylene

All Locations

Normality Test of Parameter Concentrations

Original Data (Not Transformed)
Non-Detects Replaced with 1/2 DL
Total Number of Measurements = 197

i	x(i)	m(i)	sum(m^2)	sum(mx)
1	0	-2.57583	6.63492	0
2	0	-2.32634	12.0468	0
3	0	-2.17009	16.7561	0
4	0	-2.05375	20.974	0
5	0.075	-1.95996	24.8154	-0.146997
6	0.075	-1.88079	28.3528	-0.288056
7	0.075	-1.81191	31.6358	-0.42395
8	0.075	-1.75069	34.7007	-0.555251
9	0.075	-1.6954	37.5751	-0.682406
10	0.075	-1.64485	40.2806	-0.80577
11	0.075	-1.59819	42.8348	-0.925634
12	0.075	-1.55477	45.2522	-1.04224
13	0.075	-1.5141	47.5447	-1.1558
14	0.075	-1.47579	49.7226	-1.26648
15	0.075	-1.43953	51.7949	-1.37445
16	0.075	-1.40507	53.7691	-1.47983
17	0.24	-1.3722	55.6521	-1.80916
18	0.26	-1.34075	57.4497	-2.15776
19	0.31	-1.31058	59.1673	-2.56403
20	0.5	-1.27588	60.7952	-3.20197
21	0.5	-1.24809	62.3529	-3.82602
22	0.5	-1.22123	63.8443	-4.43663
23	0.5	-1.19522	65.2728	-5.03424
24	0.5	-1.17	66.6417	-5.61924
25	0.5	-1.1455	67.9539	-6.19199
26	0.5	-1.12168	69.2121	-6.75283
27	0.5	-1.09847	70.4187	-7.30207
28	0.5	-1.07584	71.5761	-7.83999
29	0.5	-1.05375	72.6865	-8.36686
30	0.5	-1.03215	73.7519	-8.88293
31	0.5	-1.01104	74.774	-9.38845
32	0.5	-0.990356	75.7549	-9.88363
33	0.5	-0.970094	76.6959	-10.3687
34	0.5	-0.950222	77.5989	-10.8438
35	0.5	-0.930718	78.4651	-11.3091
36	0.5	-0.911562	79.296	-11.7649
37	0.5	-0.892733	80.093	-12.2113
38	0.5	-0.874218	80.8573	-12.6484
39	0.5	-0.855996	81.59	-13.0764
40	0.5	-0.834498	82.2864	-13.4936
41	0.5	-0.816874	82.9537	-13.9021
42	0.5	-0.7995	83.5929	-14.3018
43	0.5	-0.782366	84.205	-14.693
44	0.5	-0.765456	84.7909	-15.0757
45	0.5	-0.748762	85.3515	-15.4501
46	0.5	-0.732275	85.8878	-15.8163
47	0.5	-0.715986	86.4004	-16.1743
48	0.5	-0.699883	86.8902	-16.5242
49	0.5	-0.683968	87.358	-16.8662

50	0.5	-0.668209	87.8045	-17.2003
51	0.5	-0.652622	88.2304	-17.5266
52	0.5	-0.637192	88.6365	-17.8452
53	0.5	-0.621911	89.0232	-18.1561
54	0.5	-0.606775	89.3914	-18.4595
55	0.5	-0.591776	89.7416	-18.7554
56	0.5	-0.576911	90.0744	-19.0439
57	0.5	-0.562179	90.3905	-19.325
58	0.5	-0.547551	90.6903	-19.5987
59	0.5	-0.533048	90.9744	-19.8653
60	0.5	-0.515791	91.2405	-20.1232
61	0.5	-0.501527	91.492	-20.3739
62	0.5	-0.487364	91.7295	-20.6176
63	0.5	-0.473299	91.9535	-20.8543
64	0.5	-0.459327	92.1645	-21.0839
65	0.5	-0.445443	92.3629	-21.3066
66	0.5	-0.431644	92.5492	-21.5225
67	0.5	-0.417928	92.7239	-21.7314
68	0.5	-0.404299	92.8874	-21.9336
69	0.5	-0.390726	93.04	-22.1289
70	0.5	-0.377233	93.1823	-22.3175
71	0.5	-0.363809	93.3147	-22.4995
72	0.5	-0.350451	93.4375	-22.6747
73	0.5	-0.337155	93.5512	-22.8433
74	0.5	-0.323919	93.6561	-23.0052
75	0.5	-0.310738	93.7527	-23.1606
76	0.5	-0.297612	93.8412	-23.3094
77	0.5	-0.284535	93.9222	-23.4517
78	0.5	-0.271509	93.9959	-23.5874
79	0.5	-0.258527	94.0627	-23.7167
80	0.5	-0.243007	94.1218	-23.8382
81	0.5	-0.230118	94.1748	-23.9532
82	0.5	-0.217267	94.222	-24.0619
83	0.5	-0.204452	94.2638	-24.1641
84	0.5	-0.191671	94.3005	-24.2599
85	0.5	-0.178929	94.3325	-24.3494
86	0.5	-0.166199	94.3601	-24.4325
87	0.5	-0.153505	94.3837	-24.5092
88	0.5	-0.140835	94.4035	-24.5797
89	0.5	-0.128189	94.42	-24.6438
90	0.5	-0.115562	94.4333	-24.7015
91	0.5	-0.102953	94.4439	-24.753
92	0.5	-0.0903606	94.4521	-24.7982
93	0.5	-0.0777834	94.4581	-24.8371
94	0.5	-0.0652187	94.4624	-24.8697
95	0.5	-0.0526632	94.4652	-24.896
96	0.5	-0.0401167	94.4668	-24.9161
97	0.5	-0.0275759	94.4675	-24.9299
98	0.5	-0.0150408	94.4678	-24.9374
99	0.5	0	94.4678	-24.9374
100	0.5	0.0150408	94.468	-24.9299
101	0.5	0.0275759	94.4687	-24.9161
102	0.5	0.0401167	94.4703	-24.896
103	0.5	0.0526632	94.4731	-24.8697
104	0.5	0.0652187	94.4774	-24.8371
105	0.5	0.0777834	94.4834	-24.7982
106	0.5	0.0903606	94.4916	-24.753
107	0.5	0.102953	94.5022	-24.7015
108	0.5	0.115562	94.5155	-24.6438
109	0.5	0.128189	94.532	-24.5797
110	0.5	0.140835	94.5518	-24.5092
111	0.5	0.153505	94.5754	-24.4325

112	0.5	0.166199	94.603	-24.3494
113	0.5	0.17892	94.635	-24.2599
114	0.5	0.191671	94.6717	-24.1641
115	0.5	0.204452	94.7135	-24.0619
116	0.5	0.217267	94.7608	-23.9532
117	0.5	0.230118	94.8137	-23.8382
118	0.5	0.243007	94.8728	-23.7167
119	0.5	0.258527	94.9396	-23.5874
120	0.5	0.271509	95.0133	-23.4517
121	0.5	0.284535	95.0943	-23.3094
122	0.5	0.297612	95.1828	-23.1606
123	0.5	0.310738	95.2794	-23.0052
124	0.5	0.323919	95.3843	-22.8433
125	0.5	0.337155	95.498	-22.6747
126	0.5	0.350451	95.6208	-22.4995
127	0.5	0.363809	95.7532	-22.3175
128	0.5	0.377233	95.8955	-22.1289
129	0.5	0.390726	96.0481	-21.9336
130	0.5	0.40429	96.2116	-21.7314
131	0.5	0.417928	96.3863	-21.5225
132	0.5	0.431644	96.5726	-21.3066
133	0.5	0.445443	96.771	-21.0839
134	0.5	0.459327	96.982	-20.8543
135	0.5	0.473299	97.206	-20.6176
136	0.5	0.487364	97.4435	-20.3739
137	0.5	0.501527	97.695	-20.1232
138	0.5	0.515791	97.9611	-19.8653
139	0.5	0.533048	98.2452	-19.5987
140	0.5	0.547551	98.545	-19.325
141	0.5	0.56217	98.8611	-19.0439
142	0.5	0.576911	99.1939	-18.7554
143	0.5	0.591776	99.5441	-18.4595
144	0.5	0.606775	99.9123	-18.1561
145	0.5	0.621911	100.299	-17.8452
146	0.5	0.637192	100.705	-17.5266
147	0.5	0.652622	101.131	-17.2003
148	0.5	0.668209	101.577	-16.8662
149	0.5	0.68396	102.045	-16.5242
150	0.5	0.699883	102.535	-16.1743
151	0.5	0.715986	103.048	-15.8163
152	0.5	0.732275	103.584	-15.4501
153	0.5	0.748762	104.145	-15.0757
154	0.5	0.765456	104.731	-14.693
155	0.5	0.782366	105.343	-14.3018
156	0.5	0.7995	105.982	-13.9021
157	0.5	0.816874	106.649	-13.4936
158	0.5	0.834498	107.346	-13.0764
159	0.5	0.855996	108.078	-12.6484
160	0.5	0.874218	108.842	-12.2113
161	0.5	0.892733	109.639	-11.7649
162	0.5	0.911562	110.47	-11.3091
163	0.5	0.930718	111.337	-10.8438
164	0.5	0.950222	112.24	-10.3687
165	0.5	0.970094	113.181	-9.88363
166	0.5	0.990356	114.161	-9.38845
167	0.5	1.01104	115.184	-8.88293
168	0.5	1.03215	116.249	-8.36686
169	0.5	1.05375	117.359	-7.83999
170	0.5	1.07584	118.517	-7.30207
171	0.5	1.09847	119.723	-6.75283
172	0.5	1.12168	120.982	-6.19199
173	0.5	1.1455	122.294	-5.61924

174	0.5	1.17	123.663	-5.03424
175	0.5	1.19522	125.091	-4.43663
176	0.5	1.22123	126.583	-3.82602
177	0.5	1.24809	128.14	-3.20197
178	0.5	1.27588	129.768	-2.56403
179	0.5	1.31058	131.486	-1.90874
180	0.5	1.34075	133.283	-1.23837
181	0.5	1.3722	135.166	-0.552265
182	0.5	1.40507	137.141	0.150271
183	0.5	1.43953	139.213	0.870036
184	0.5	1.47579	141.391	1.60793
185	0.5	1.5141	143.683	2.36498
186	0.5	1.55477	146.101	3.14237
187	0.5	1.59819	148.655	3.94147
188	0.5	1.64485	151.36	4.76389
189	0.5	1.6954	154.235	5.61159
190	0.5	1.75069	157.3	6.48693
191	0.5	1.81191	160.583	7.39289
192	0.5	1.88079	164.12	8.33329
193	0.5	1.95996	167.962	9.31327
194	0.5	2.05375	172.179	10.3401
195	0.5	2.17009	176.889	11.4252
196	0.5	2.32634	182.301	12.5884
197	0.5	2.57583	188.936	13.8763

Data Set Standard Deviation = 0.124145
Numerator = 192.551
Denominator = 570.729
W Statistic = 0.337378 = 192.551 / 570.729

5% Critical value of 0.976 exceeds 0.337378
Evidence of non-normality at 95% level of significance

1% Critical value of 0.967 exceeds 0.337378
Evidence of non-normality at 99% level of significance

Shapiro-Francia Test of Normality

Parameter: Tetrachloroethylene

All Locations

Normality Test of Parameter Concentrations

Natural Logarithm Transformation
Non-Detects Replaced with 1/2 DL
Total Number of Measurements = 197

i	x(i)	m(i)	sum(m^2)	sum(mx)	
1	-2.59027	-2.57583	6.63492	6.6721	
2	-2.59027	-2.32634	12.0468	12.6979	
3	-2.59027	-2.17009	16.7561	18.3191	
4	-2.59027	-2.05375	20.974	23.6388	
5	-2.59027	-1.95996	24.8154	28.7156	
6	-2.59027	-1.88079	28.3528	33.5874	
7	-2.59027	-1.81191	31.6358	38.2807	
8	-2.59027	-1.75069	34.7007	42.8155	
9	-2.59027	-1.6954	37.5751	47.207	
10	-2.59027	-1.64485	40.2806	51.4676	
11	-2.59027	-1.59819	42.8348	55.6074	
12	-2.59027	-1.55477	45.2522	59.6346	
13	-1.42712	-1.5141	47.5447	61.7954	
14	-1.34707	-1.47579	49.7226	63.7834	
15	-1.17118	-1.43953	51.7949	65.4694	
16	-0.693147	-1.40507	53.7691	66.4433	
17	-0.693147	-1.3722	55.6521	67.3945	
18	-0.693147	-1.34075	57.4497	68.3238	
19	-0.693147	-1.31058	59.1673	69.2322	
20	-0.693147	-1.27588	60.7952	70.1166	
21	-0.693147	-1.24809	62.3529	70.9817	
22	-0.693147	-1.22123	63.8443	71.8282	
23	-0.693147	-1.19522	65.2728	72.6566	
24	-0.693147	-1.17	66.6417	73.4676	
25	-0.693147	-1.1455	67.9539	74.2616	
26	-0.693147	-1.12168	69.2121	75.0391	
27	-0.693147	-1.09847	70.4187	75.8005	
28	-0.693147	-1.07584	71.5761	76.5462	
29	-0.693147	-1.05375	72.6865	77.2766	
30	-0.693147	-1.03215	73.7519	77.9921	
31	-0.693147	-1.01104	74.774	78.6929	
32	-0.693147	-0.990356		75.7549	79.3793
33	-0.693147	-0.970094		76.6959	80.0517
34	-0.693147	-0.950222		77.5989	80.7104
35	-0.693147	-0.930718		78.4651	81.3555
36	-0.693147	-0.911562		79.296	81.9874
37	-0.693147	-0.892733		80.093	82.6062
38	-0.693147	-0.874218		80.8573	83.2121
39	-0.693147	-0.855996		81.59	83.8055
40	-0.693147	-0.834498		82.2864	84.3839
41	-0.693147	-0.816874		82.9537	84.9501
42	-0.693147	-0.7995	83.5929	85.5043	
43	-0.693147	-0.782366		84.205	86.0466
44	-0.693147	-0.765456		84.7909	86.5771
45	-0.693147	-0.748762		85.3515	87.0961
46	-0.693147	-0.732275		85.8878	87.6037
47	-0.693147	-0.715986		86.4004	88.1
48	-0.693147	-0.699883		86.8902	88.5851
49	-0.693147	-0.683968	7.358	89.0592	

50	-0.693147	-0.668209	87.8045	89.5224
51	-0.693147	-0.652622	88.2304	89.9747
52	-0.693147	-0.637192	88.6365	90.4164
53	-0.693147	-0.621911	89.0232	90.8475
54	-0.693147	-0.606775	89.3914	91.2681
55	-0.693147	-0.591776	89.7416	91.6782
56	-0.693147	-0.576911	90.0744	92.0781
57	-0.693147	-0.562179	0.3905	92.4678
58	-0.693147	-0.547551	90.6903	92.8473
59	-0.693147	-0.533048	90.9744	93.2168
60	-0.693147	-0.515791	91.2405	93.5743
61	-0.693147	-0.501527	91.492	93.922
62	-0.693147	-0.487364	91.7295	94.2598
63	-0.693147	-0.473299	91.9535	94.5878
64	-0.693147	-0.459327	92.1645	94.9062
65	-0.693147	-0.445443	92.3629	95.215
66	-0.693147	-0.431644	92.5492	95.5142
67	-0.693147	-0.417928	92.7239	95.8039
68	-0.693147	-0.404299	2.8874	96.0841
69	-0.693147	-0.390726	93.04	96.3549
70	-0.693147	-0.377233	93.1823	96.6164
71	-0.693147	-0.363809	93.3147	96.8686
72	-0.693147	-0.350451	93.4375	97.1115
73	-0.693147	-0.337155	93.5512	97.3452
74	-0.693147	-0.323919	93.6561	97.5697
75	-0.693147	-0.310738	93.7527	97.7851
76	-0.693147	-0.297612	93.8412	97.9914
77	-0.693147	-0.284535	93.9222	98.1886
78	-0.693147	-0.271509	93.9959	98.3768
79	-0.693147	-0.258527	94.0627	98.556
80	-0.693147	-0.243007	94.1218	98.7244
81	-0.693147	-0.230118	94.1748	98.884
82	-0.693147	-0.217267	94.222	99.0346
83	-0.693147	-0.204452	94.2638	99.1763
84	-0.693147	-0.191671	94.3005	99.3091
85	-0.693147	-0.178929	4.3325	99.4331
86	-0.693147	-0.166199	94.3601	99.5483
87	-0.693147	-0.153505	94.3837	99.6547
88	-0.693147	-0.140835	94.4035	99.7524
89	-0.693147	-0.128189	94.42	99.8412
90	-0.693147	-0.115562	94.4333	99.9213
91	-0.693147	-0.102953	94.4439	99.9927
92	-0.693147	-0.0903606	94.4521	100.055
93	-0.693147	-0.0777834	94.4581	100.109
94	-0.693147	-0.0652187	94.4624	100.154
95	-0.693147	-0.0526632	94.4652	100.191
96	-0.693147	-0.0401167	94.4668	100.219
97	-0.693147	-0.0275759	94.4675	100.238
98	-0.693147	-0.0150408	94.4678	100.248
99	-0.693147	0	94.4678	100.248
100	-0.693147	0.0150408	94.468	100.238
101	-0.693147	0.0275759	94.4687	100.219
102	-0.693147	0.0401167	94.4703	100.191
103	-0.693147	0.0526632	94.4731	100.154
104	-0.693147	0.0652187	94.4774	100.109
105	-0.693147	0.0777834	94.4834	100.055
106	-0.693147	0.0903606	94.4916	99.9927
107	-0.693147	0.102953	94.5022	99.9213
108	-0.693147	0.115562	94.5155	99.8412
109	-0.693147	0.128189	94.532	99.7524
110	-0.693147	0.140835	94.5518	99.6547
111	-0.693147	0.153505	94.5754	99.5483

112	-0.693147	0.166199		94.603	99.4331
113	-0.693147	0.17892	94.635	99.3091	
114	-0.693147	0.191671		94.6717	99.1763
115	-0.693147	0.204452		94.7135	99.0346
116	-0.693147	0.217267		94.7608	98.884
117	-0.693147	0.230118		94.8137	98.7244
118	-0.693147	0.243007		94.8728	98.556
119	-0.693147	0.258527		94.9396	98.3768
120	-0.693147	0.271509		95.0133	98.1886
121	-0.693147	0.284535		95.0943	97.9914
122	-0.693147	0.297612		95.1828	97.7851
123	-0.693147	0.310738		95.2794	97.5697
124	-0.693147	0.323919		95.3843	97.3452
125	-0.693147	0.337155		95.498	97.1115
126	-0.693147	0.350451		95.6208	96.8686
127	-0.693147	0.363809		95.7532	96.6164
128	-0.693147	0.377233		95.8955	96.3549
129	-0.693147	0.390726		96.0481	96.0841
130	-0.693147	0.40429	96.2116	95.8039	
131	-0.693147	0.417928		96.3863	95.5142
132	-0.693147	0.431644		96.5726	95.215
133	-0.693147	0.445443		96.771	94.9062
134	-0.693147	0.459327		96.982	94.5878
135	-0.693147	0.473299		97.206	94.2598
136	-0.693147	0.487364		97.4435	93.922
137	-0.693147	0.501527		97.695	93.5743
138	-0.693147	0.515791		97.9611	93.2168
139	-0.693147	0.533048		98.2452	92.8473
140	-0.693147	0.547551		98.545	92.4678
141	-0.693147	0.56217	98.8611	92.0781	
142	-0.693147	0.576911		99.1939	91.6782
143	-0.693147	0.591776		99.5441	91.2681
144	-0.693147	0.606775		99.9123	90.8475
145	-0.693147	0.621911		100.299	90.4164
146	-0.693147	0.637192		100.705	89.9747
147	-0.693147	0.652622		101.131	89.5224
148	-0.693147	0.668209		101.577	89.0592
149	-0.693147	0.68396	102.045	88.5851	
150	-0.693147	0.699883		102.535	88.1
151	-0.693147	0.715986		103.048	87.6037
152	-0.693147	0.732275		103.584	87.0961
153	-0.693147	0.748762		104.145	86.5771
154	-0.693147	0.765456		104.731	86.0466
155	-0.693147	0.782366		105.343	85.5043
156	-0.693147	0.7995	105.982	84.9501	
157	-0.693147	0.816874		106.649	84.3839
158	-0.693147	0.834498		107.346	83.8055
159	-0.693147	0.855996		108.078	83.2121
160	-0.693147	0.874218		108.842	82.6062
161	-0.693147	0.892733		109.639	81.9874
162	-0.693147	0.911562		110.47	81.3555
163	-0.693147	0.930718		111.337	80.7104
164	-0.693147	0.950222		112.24	80.0517
165	-0.693147	0.970094		113.181	79.3793
166	-0.693147	0.990356		114.161	78.6929
167	-0.693147	1.01104	115.184	77.9921	
168	-0.693147	1.03215	116.249	77.2766	
169	-0.693147	1.05375	117.359	76.5462	
170	-0.693147	1.07584	118.517	75.8005	
171	-0.693147	1.09847	119.723	75.0391	
172	-0.693147	1.12168	120.982	74.2616	
173	-0.693147	1.1455	122.294	73.4676	

174	-0.693147	1.17	123.663	72.6566
175	-0.693147	1.19522	125.091	71.8282
176	-0.693147	1.22123	126.583	70.9817
177	-0.693147	1.24809	128.14	70.1166
178	-0.693147	1.27588	129.768	69.2322
179	-0.693147	1.31058	131.486	68.3238
180	-0.693147	1.34075	133.283	67.3945
181	-0.693147	1.3722	135.166	66.4433
182	-0.693147	1.40507	137.141	65.4694
183	-0.693147	1.43953	139.213	64.4716
184	-0.693147	1.47579	141.391	63.4486
185	-0.693147	1.5141	143.683	62.3991
186	-0.693147	1.55477	146.101	61.3215
187	-0.693147	1.59819	148.655	60.2137
188	-0.693147	1.64485	151.36	59.0736
189	-0.693147	1.6954	154.235	57.8984
190	-0.693147	1.75069	157.3	56.6849
191	-0.693147	1.81191	160.583	55.429
192	-0.693147	1.88079	164.12	54.1253
193	-0.693147	1.95996	167.962	52.7668
194	0	2.05375	172.179	52.7668
195	0	2.17009	176.889	52.7668
196	0	2.32634	182.301	52.7668
197	0	2.57583	188.936	52.7668

Data Set Standard Deviation = 0.473157
Numerator = 2784.33
Denominator = 8290.49
W Statistic = 0.335846 = 2784.33 / 8290.49

5% Critical value of 0.976 exceeds 0.335846
Evidence of non-normality at 95% level of significance

1% Critical value of 0.967 exceeds 0.335846
Evidence of non-normality at 99% level of significance

Non-Parametric Prediction Interval

Inter-Well Comparison

Parameter: Tetrachloroethylene

Natural Logarithm Transformation
Non-Detects Replaced with 1/2 DL

Total Percent Non-Detects = 98.4772%
Number of comparisons = 16
Future Samples (k) = 8
Recent Dates = 1
Background Samples (n) = 16
Maximum Background Concentration = 0
Confidence Level = 66.7%
False Positive Rate = 33.3%

Location	Date	Samples	Mean	Significant
LMW-8	11/14/2009	1	-1.34707	FALSE
LMW-10	11/14/2009	1	-1.42712	FALSE
LMW-9	6/11/2009	1	-2.59027	FALSE
LMW-14R	6/11/2009	1	-2.59027	FALSE
LMW-15R	6/11/2009	1	-2.59027	FALSE
LMW-16	6/11/2009	1	-2.59027	FALSE
LMW-9D	6/11/2009	1	-2.59027	FALSE
LMW-9S	6/11/2009	1	-2.59027	FALSE
LMW-6	6/11/2009	1	-2.59027	FALSE
LMW-3	6/11/2009	1	-2.59027	FALSE
LMW-3S	6/11/2009	1	-2.59027	FALSE
LMW-7	6/11/2009	1	-2.59027	FALSE
LMW-11	11/20/2008	1	-0.693147	FALSE
LMW-12	11/20/2008	1	-0.693147	FALSE
MW-5	11/20/2008	1	-0.693147	FALSE
LMW-13	11/20/2008	1	-0.693147	FALSE

Concentrations (ug/L)

Parameter: Thallium

Natural Logarithm Transformation
Non-Detects Replaced with 1/2 DL
Total Measurements: 196
Total Non-Detect: 194
Percent Non-Detects: 98.9796%
Total Background Measurements: 16
There is 1 background location

Loc.	Meas.	ND	Date	Conc.	Original
LMW-4	16	16 (100%)	1/16/1998	ND<-0.693147	ND<1
			3/16/1999	ND<-0.693147	ND<1
			9/23/1999	ND<-0.693147	ND<1
			3/14/2000	ND<-0.693147	ND<1
			9/23/2003	ND<-0.693147	ND<1
			3/10/2004	ND<-0.693147	ND<1
			10/12/2004	ND<-0.693147	ND<1
			4/1/2005	ND<-0.693147	ND<1
			10/26/2005	ND<-0.693147	ND<1
			6/19/2006	ND<-0.693147	ND<1
			11/18/2006	ND<-0.693147	ND<1
			6/2/2007	ND<-0.693147	ND<1
			11/15/2007	ND<-0.693147	ND<1
			5/20/2008	ND<-0.693147	ND<1
			11/20/2008	ND<-0.693147	ND<1
			6/11/2009	ND<-2.99573 U	ND<0.1 U

There are 16 compliance locations

Loc.	Meas.	ND	Date	Conc.	Original
LMW-14R	6	5 (83.3333%)	6/2/2007	ND<-0.693147	ND<1
			11/15/2007	ND<-0.693147	ND<1
			5/20/2008	ND<-0.693147	ND<1
			11/20/2008	ND<-0.693147	ND<1
			6/11/2009	ND<-2.99573 U	ND<0.1 U
			11/14/2009	-1.77196 J	0.17 J
LMW-3	18	18 (100%)	11/19/1996	ND<-0.693147	ND<1
			3/24/1997	ND<-0.693147	ND<1
			1/16/1998	ND<-0.693147	ND<1
			3/16/1999	ND<-0.693147	ND<1
			9/23/1999	ND<-0.693147	ND<1
			3/14/2000	ND<-0.693147	ND<1
			9/23/2003	ND<-0.693147	ND<1
			3/10/2004	ND<-0.693147	ND<1
			10/12/2004	ND<-0.693147	ND<1
			4/1/2005	ND<-0.693147	ND<1
			10/26/2005	ND<-0.693147	ND<1
			6/19/2006	ND<-0.693147	ND<1
			11/18/2006	ND<-0.693147	ND<1
			6/2/2007	ND<-0.693147	ND<1
			11/15/2007	ND<-0.693147	ND<1
			5/20/2008	ND<-0.693147	ND<1
			11/20/2008	ND<-0.693147	ND<1
			6/11/2009	ND<-2.99573 U	ND<0.1 U

LMW-6	16	16 (100%)	1/16/1998	ND<-0.693147	ND<1
			3/16/1999	ND<-0.693147	ND<1
			9/23/1999	ND<-0.693147	ND<1
			3/14/2000	ND<-0.693147	ND<1
			9/23/2003	ND<-0.693147	ND<1
			3/10/2004	ND<-0.693147	ND<1
			10/12/2004	ND<-0.693147	ND<1
			4/1/2005	ND<-0.693147	ND<1
			10/26/2005	ND<-0.693147	ND<1
			6/19/2006	ND<-0.693147	ND<1
			11/18/2006	ND<-0.693147	ND<1
			6/2/2007	ND<-0.693147	ND<1
			11/15/2007	ND<-0.693147	ND<1
			5/20/2008	ND<-0.693147	ND<1
			11/20/2008	ND<-0.693147	ND<1
			6/11/2009	ND<-2.99573 U	ND<0.1 U
LMW-15R	9	9 (100%)	11/18/2006	ND<-0.693147	ND<1
			6/2/2007	ND<-0.693147	ND<1
			11/15/2007	ND<-0.693147	ND<1
			11/15/2007	ND<-0.693147	ND<1
			5/20/2008	ND<-0.693147	ND<1
			5/20/2008	ND<-0.693147	ND<1
			11/20/2008	ND<-0.693147	ND<1
			11/20/2008	ND<-0.693147	ND<1
			6/11/2009	ND<-2.99573 U	ND<0.1 U
LMW-3S	6	6 (100%)	11/18/2006	ND<-0.693147	ND<1
			6/2/2007	ND<-0.693147	ND<1
			11/15/2007	ND<-0.693147	ND<1
			5/20/2008	ND<-0.693147	ND<1
			11/20/2008	ND<-0.693147	ND<1
			6/11/2009	ND<-2.99573 U	ND<0.1 U
LMW-7	16	16 (100%)	1/16/1998	ND<-0.693147	ND<1
			3/16/1999	ND<-0.693147	ND<1
			9/23/1999	ND<-0.693147	ND<1
			3/14/2000	ND<-0.693147	ND<1
			9/23/2003	ND<-0.693147	ND<1
			3/10/2004	ND<-0.693147	ND<1
			10/12/2004	ND<-0.693147	ND<1
			4/1/2005	ND<-0.693147	ND<1
			10/26/2005	ND<-0.693147	ND<1
			6/19/2006	ND<-0.693147	ND<1
			11/18/2006	ND<-0.693147	ND<1
			6/2/2007	ND<-0.693147	ND<1
			11/15/2007	ND<-0.693147	ND<1
			5/20/2008	ND<-0.693147	ND<1
			11/20/2008	ND<-0.693147	ND<1
			6/11/2009	ND<-2.99573 U	ND<0.1 U
LMW-10	13	13 (100%)	3/14/2000	ND<-0.693147	ND<1
			9/23/2003	ND<-0.693147	ND<1
			3/10/2004	ND<-0.693147	ND<1
			10/12/2004	ND<-0.693147	ND<1
			4/1/2005	ND<-0.693147	ND<1
			10/26/2005	ND<-0.693147	ND<1
			6/19/2006	ND<-0.693147	ND<1
			11/18/2006	ND<-0.693147	ND<1
			6/2/2007	ND<-0.693147	ND<1
			11/15/2007	ND<-0.693147	ND<1

			5/20/2008	ND<-0.693147	ND<1
			11/20/2008	ND<-0.693147	ND<1
			6/11/2009	ND<-2.99573 U	ND<0.1 U
LMW-9S	6	6 (100%)	11/18/2006	ND<-0.693147	ND<1
			6/2/2007	ND<-0.693147	ND<1
			11/15/2007	ND<-0.693147	ND<1
			5/20/2008	ND<-0.693147	ND<1
			11/20/2008	ND<-0.693147	ND<1
			6/11/2009	ND<-2.99573 U	ND<0.1 U
LMW-9D	6	6 (100%)	11/18/2006	ND<-0.693147	ND<1
			6/2/2007	ND<-0.693147	ND<1
			11/15/2007	ND<-0.693147	ND<1
			5/20/2008	ND<-0.693147	ND<1
			11/20/2008	ND<-0.693147	ND<1
			6/11/2009	ND<-2.99573 U	ND<0.1 U
LMW-8	16	16 (100%)	1/16/1998	ND<-0.693147	ND<1
			3/16/1999	ND<-0.693147	ND<1
			9/23/1999	ND<-0.693147	ND<1
			3/14/2000	ND<-0.693147	ND<1
			9/23/2003	ND<-0.693147	ND<1
			3/10/2004	ND<-0.693147	ND<1
			10/12/2004	ND<-0.693147	ND<1
			4/1/2005	ND<-0.693147	ND<1
			10/26/2005	ND<-0.693147	ND<1
			6/19/2006	ND<-0.693147	ND<1
			11/18/2006	ND<-0.693147	ND<1
			6/2/2007	ND<-0.693147	ND<1
			11/15/2007	ND<-0.693147	ND<1
			5/20/2008	ND<-0.693147	ND<1
			11/20/2008	ND<-0.693147	ND<1
			6/11/2009	ND<-2.99573 U	ND<0.1 U
LMW-16	6	6 (100%)	11/18/2006	ND<-0.693147	ND<1
			6/2/2007	ND<-0.693147	ND<1
			11/15/2007	ND<-0.693147	ND<1
			5/20/2008	ND<-0.693147	ND<1
			11/20/2008	ND<-0.693147	ND<1
			6/11/2009	ND<-2.99573 U	ND<0.1 U
LMW-9	16	15 (93.75%)	1/16/1998	ND<-0.693147	ND<1
			3/16/1999	ND<-0.693147	ND<1
			9/23/1999	ND<-0.693147	ND<1
			3/14/2000	ND<-0.693147	ND<1
			9/23/2003	ND<-0.693147	ND<1
			3/10/2004	ND<-0.693147	ND<1
			10/12/2004	ND<-0.693147	ND<1
			4/1/2005	ND<-0.693147	ND<1
			10/26/2005	ND<-0.693147	ND<1
			6/19/2006	ND<-0.693147	ND<1
			11/18/2006	ND<-0.693147	ND<1
			6/2/2007	ND<-0.693147	ND<1
			11/15/2007	ND<-0.693147	ND<1
			5/20/2008	ND<-0.693147	ND<1
			11/20/2008	ND<-0.693147	ND<1
			6/11/2009	-2.04022 J	0.13 J
MW-5	13	13 (100%)	1/16/1998	ND<-0.693147	ND<1
			3/16/1999	ND<-0.693147	ND<1

			9/23/1999	ND<-0.693147	ND<1
			3/14/2000	ND<-0.693147	ND<1
			9/23/2003	ND<-0.693147	ND<1
			3/10/2004	ND<-0.693147	ND<1
			10/12/2004	ND<-0.693147	ND<1
			4/1/2005	ND<-0.693147	ND<1
			10/26/2005	ND<-0.693147	ND<1
			6/19/2006	ND<-0.693147	ND<1
			11/15/2007	ND<-0.693147	ND<1
			5/20/2008	ND<-0.693147	ND<1
			11/20/2008	ND<-0.693147	ND<1
LMW-13	11	11 (100%)	3/14/2000	ND<-0.693147	ND<1
			9/23/2003	ND<-0.693147	ND<1
			3/10/2004	ND<-0.693147	ND<1
			10/12/2004	ND<-0.693147	ND<1
			4/1/2005	ND<-0.693147	ND<1
			10/26/2005	ND<-0.693147	ND<1
			6/19/2006	ND<-0.693147	ND<1
			6/2/2007	ND<-0.693147	ND<1
			11/15/2007	ND<-0.693147	ND<1
			5/20/2008	ND<-0.693147	ND<1
			11/20/2008	ND<-0.693147	ND<1
LMW-12	11	11 (100%)	3/14/2000	ND<-0.693147	ND<1
			9/23/2003	ND<-0.693147	ND<1
			3/10/2004	ND<-0.693147	ND<1
			10/12/2004	ND<-0.693147	ND<1
			4/1/2005	ND<-0.693147	ND<1
			10/26/2005	ND<-0.693147	ND<1
			6/19/2006	ND<-0.693147	ND<1
			6/2/2007	ND<-0.693147	ND<1
			11/15/2007	ND<-0.693147	ND<1
			5/20/2008	ND<-0.693147	ND<1
			11/20/2008	ND<-0.693147	ND<1
LMW-11	11	11 (100%)	3/14/2000	ND<-0.693147	ND<1
			9/23/2003	ND<-0.693147	ND<1
			3/10/2004	ND<-0.693147	ND<1
			10/12/2004	ND<-0.693147	ND<1
			4/1/2005	ND<-0.693147	ND<1
			10/26/2005	ND<-0.693147	ND<1
			6/19/2006	ND<-0.693147	ND<1
			6/2/2007	ND<-0.693147	ND<1
			11/15/2007	ND<-0.693147	ND<1
			5/20/2008	ND<-0.693147	ND<1
			11/20/2008	ND<-0.693147	ND<1

There are 0 unused locations

Loc.	Meas.	ND	Date	Conc.	Original

Shapiro-Francia Test of Normality

Parameter: Thallium

All Locations

Normality Test of Parameter Concentrations

Original Data (Not Transformed)
Non-Detects Replaced with 1/2 DL
Total Number of Measurements = 196

i	x(i)	m(i)	sum(m^2)	sum(mx)
1	0.05	-2.575836	3.63492	-0.128792
2	0.05	-2.326341	2.0468	-0.245109
3	0.05	-2.170091	6.7561	-0.353613
4	0.05	-2.053752	0.974	-0.456301
5	0.05	-1.959962	4.8154	-0.554299
6	0.05	-1.880792	8.3528	-0.648338
7	0.05	-1.811913	1.6358	-0.738934
8	0.05	-1.750693	4.7007	-0.826468
9	0.05	-1.6954	37.5751	-0.911238
10	0.05	-1.644854	0.2806	-0.993481
11	0.05	-1.598194	2.8348	-1.07339
12	0.05	-1.554774	5.2522	-1.15113
13	0.13	-1.5141	47.5447	-1.34796
14	0.17	-1.468384	9.7008	-1.59759
15	0.5	-1.4325	51.7529	-2.31384
16	0.5	-1.398385	3.7083	-3.01303
17	0.5	-1.365815	5.5738	-3.69593
18	0.5	-1.334625	7.355	-4.36324
19	0.5	-1.304695	9.0572	-5.01559
20	0.5	-1.275886	0.6851	-5.65352
21	0.5	-1.248096	2.2428	-6.27757
22	0.5	-1.221236	3.7342	-6.88818
23	0.5	-1.195226	5.1627	-7.48579
24	0.5	-1.17	66.5316	-8.07079
25	0.5	-1.1455	67.8438	-8.64354
26	0.5	-1.121686	9.102	-9.20438
27	0.5	-1.0939	70.2986	-9.75133
28	0.5	-1.071387	1.4464	-10.287
29	0.5	-1.049397	2.5476	-10.8117
30	0.5	-1.027897	3.6042	-11.3257
31	0.5	-1.006877	4.618	-11.8291
32	0.5	-0.986272	75.5907	-12.3222
33	0.5	-0.966088	76.524	-12.8053
34	0.5	-0.946291	77.4195	-13.2784
35	0.5	-0.926859	78.2786	-13.7418
36	0.5	-0.907769	79.1026	-14.1957
37	0.5	-0.889006	79.893	-14.6402
38	0.5	-0.870558	0.6508	-15.0755
39	0.5	-0.852385	81.3774	-15.5017
40	0.5	-0.830953	82.0679	-15.9172
41	0.5	-0.813379	82.7294	-16.3239
42	0.5	-0.796056	83.3632	-16.7219
43	0.5	-0.778966	83.9699	-17.1114
44	0.5	-0.7621	84.5507	-17.4924
45	0.5	-0.745449	85.1064	-17.8652
46	0.5	-0.729003	85.6379	-18.2297
47	0.5	-0.712751	86.1459	-18.586
48	0.5	-0.696684	86.6313	-18.9344
49	0.5	-0.680797	87.0947	-19.2748

50	0.5	-0.665079	87.5371	-19.6073
51	0.5	-0.649522	87.959	-19.9321
52	0.5	-0.634124	88.3611	-20.2491
53	0.5	-0.615839	88.7403	-20.5571
54	0.5	-0.6007689.1012	-20.8574	
55	0.5	-0.585815	89.4444	-21.1503
56	0.5	-0.570999	89.7705	-21.4358
57	0.5	-0.556308	90.0799	-21.714
58	0.5	-0.541736	90.3734	-21.9849
59	0.5	-0.5272890.6514	-22.2485	
60	0.5	-0.5129390.9145	-22.505	
61	0.5	-0.498687	91.1632	-22.7543
62	0.5	-0.484544	91.398	-22.9966
63	0.5	-0.470498	91.6194	-23.2318
64	0.5	-0.456542	91.8278	-23.4601
65	0.5	-0.442676	92.0238	-23.6814
66	0.5	-0.426148	92.2054	-23.8945
67	0.5	-0.412463	92.3755	-24.1007
68	0.5	-0.398855	92.5346	-24.3002
69	0.5	-0.385321	92.683	-24.4928
70	0.5	-0.371856	92.8213	-24.6788
71	0.5	-0.358459	92.9498	-24.858
72	0.5	-0.345126	93.0689	-25.0306
73	0.5	-0.331854	93.1791	-25.1965
74	0.5	-0.318639	93.2806	-25.3558
75	0.5	-0.305481	93.3739	-25.5085
76	0.5	-0.292375	93.4594	-25.6547
77	0.5	-0.279319	93.5374	-25.7944
78	0.5	-0.266311	93.6083	-25.9275
79	0.5	-0.250759	93.6712	-26.0529
80	0.5	-0.237847	93.7278	-26.1718
81	0.5	-0.224974	93.7784	-26.2843
82	0.5	-0.212137	93.8234	-26.3904
83	0.5	-0.199336	93.8631	-26.4901
84	0.5	-0.186567	93.8979	-26.5834
85	0.5	-0.173829	93.9282	-26.6703
86	0.5	-0.161119	93.9541	-26.7508
87	0.5	-0.148434	93.9762	-26.825
88	0.5	-0.135774	93.9946	-26.8929
89	0.5	-0.123135	94.0097	-26.9545
90	0.5	-0.110516	94.022	-27.0098
91	0.5	-0.0979139	94.0315	-27.0587
92	0.5	-0.0828129	94.0384	-27.1001
93	0.5	-0.0702426	94.0433	-27.1352
94	0.5	-0.0576847	94.0467	-27.1641
95	0.5	-0.0451348	94.0487	-27.1867
96	0.5	-0.0325917	94.0498	-27.203
97	0.5	-0.0200544	94.0502	-27.213
98	0.5	-0.00751925	94.0502	-27.2167
99	0.5	0.00751925	94.0503	-27.213
100	0.5	0.0200544	94.0507	-27.203
101	0.5	0.0325917	94.0517	-27.1867
102	0.5	0.0451348	94.0538	-27.1641
103	0.5	0.0576847	94.0571	-27.1352
104	0.5	0.0702426	94.062	-27.1001
105	0.5	0.0828129	94.0689	-27.0587
106	0.5	0.0979139	94.0785	-27.0098
107	0.5	0.110516	94.0907	-26.9545
108	0.5	0.123135	94.1059	-26.8929
109	0.5	0.135774	94.1243	-26.825
110	0.5	0.148434	94.1463	-26.7508
111	0.5	0.161119	94.1723	-26.6703

112	0.5	0.173829	94.2025	-26.5834
113	0.5	0.186567	94.2373	-26.4901
114	0.5	0.199336	94.2771	-26.3904
115	0.5	0.212137	94.3221	-26.2843
116	0.5	0.224974	94.3727	-26.1718
117	0.5	0.237847	94.4292	-26.0529
118	0.5	0.250759	94.4921	-25.9275
119	0.5	0.266311	94.563	-25.7944
120	0.5	0.279319	94.6411	-25.6547
121	0.5	0.292375	94.7265	-25.5085
122	0.5	0.305481	94.8199	-25.3558
123	0.5	0.318639	94.9214	-25.1965
124	0.5	0.331854	95.0315	-25.0306
125	0.5	0.345126	95.1506	-24.858
126	0.5	0.358459	95.2791	-24.6788
127	0.5	0.371856	95.4174	-24.4928
128	0.5	0.385321	95.5659	-24.3002
129	0.5	0.398855	95.725	-24.1007
130	0.5	0.412463	95.8951	-23.8945
131	0.5	0.426148	96.0767	-23.6814
132	0.5	0.442676	96.2726	-23.4601
133	0.5	0.456542	96.4811	-23.2318
134	0.5	0.470498	96.7024	-22.9966
135	0.5	0.484544	96.9372	-22.7543
136	0.5	0.498687	97.1859	-22.505
137	0.5	0.51293	97.449	-22.2485
138	0.5	0.52728	97.727	-21.9849
139	0.5	0.541736	98.0205	-21.714
140	0.5	0.556308	98.33	-21.4358
141	0.5	0.570999	98.656	-21.1503
142	0.5	0.585815	98.9992	-20.8574
143	0.5	0.60076	99.3601	-20.5571
144	0.5	0.615839	99.7394	-20.2491
145	0.5	0.634124	100.141	-19.9321
146	0.5	0.649522	100.563	-19.6073
147	0.5	0.665079	101.006	-19.2748
148	0.5	0.680797	101.469	-18.9344
149	0.5	0.696684	101.955	-18.586
150	0.5	0.712751	102.463	-18.2297
151	0.5	0.729003	102.994	-17.8652
152	0.5	0.745449	103.55	-17.4924
153	0.5	0.7621	104.131	-17.1114
154	0.5	0.778966	104.737	-16.7219
155	0.5	0.796056	105.371	-16.3239
156	0.5	0.813379	106.033	-15.9172
157	0.5	0.830953	106.723	-15.5017
158	0.5	0.852385	107.45	-15.0755
159	0.5	0.87055	108.207	-14.6402
160	0.5	0.889006	108.998	-14.1957
161	0.5	0.907769	109.822	-13.7418
162	0.5	0.926859	110.681	-13.2784
163	0.5	0.946291	111.576	-12.8053
164	0.5	0.966088	112.51	-12.3222
165	0.5	0.986272	113.482	-11.8291
166	0.5	1.00687	114.496	-11.3257
167	0.5	1.02789	115.553	-10.8117
168	0.5	1.04939	116.654	-10.287
169	0.5	1.07138	117.802	-9.75133
170	0.5	1.0939	118.998	-9.20438
171	0.5	1.12168	120.257	-8.64354
172	0.5	1.1455	121.569	-8.07079
173	0.5	1.17	122.938	-7.48579

174	0.5	1.19522	124.366	-6.88818
175	0.5	1.22123	125.858	-6.27757
176	0.5	1.24809	127.415	-5.65352
177	0.5	1.27588	129.043	-5.01559
178	0.5	1.30469	130.745	-4.36324
179	0.5	1.33462	132.527	-3.69593
180	0.5	1.36581	134.392	-3.01303
181	0.5	1.39838	136.348	-2.31384
182	0.5	1.4325	138.4	-1.59759
183	0.5	1.46838	140.556	-0.863396
184	0.5	1.5141	142.848	-0.106344
185	0.5	1.55477	145.266	0.671042
186	0.5	1.59819	147.82	1.47014
187	0.5	1.64485	150.525	2.29256
188	0.5	1.6954	153.4	3.14026
189	0.5	1.75069	156.465	4.01561
190	0.5	1.81191	159.748	4.92156
191	0.5	1.88079	163.285	5.86196
192	0.5	1.95996	167.126	6.84194
193	0.5	2.05375	171.344	7.86881
194	0.5	2.17009	176.054	8.95386
195	0.5	2.32634	181.466	10.117
196	0.5	2.57583	188.1	11.4049

Data Set Standard Deviation = 0.112909
Numerator = 130.073
Denominator = 467.609
W Statistic = 0.278166 = 130.073 / 467.609

5% Critical value of 0.976 exceeds 0.278166
Evidence of non-normality at 95% level of significance

1% Critical value of 0.967 exceeds 0.278166
Evidence of non-normality at 99% level of significance

Shapiro-Francia Test of Normality

Parameter: Thallium

All Locations

Normality Test of Parameter Concentrations

Natural Logarithm Transformation
Non-Detects Replaced with 1/2 DL
Total Number of Measurements = 196

i	x(i)	m(i)	sum(m^2)	sum(mx)	
1	-2.99573	-2.57583	6.63492	7.71651	
2	-2.99573	-2.32634	12.0468	14.6856	
3	-2.99573	-2.17009	16.7561	21.1866	
4	-2.99573	-2.05375	20.974	27.3391	
5	-2.99573	-1.95996	24.8154	33.2106	
6	-2.99573	-1.88079	28.3528	38.845	
7	-2.99573	-1.81191	31.6358	44.273	
8	-2.99573	-1.75069	34.7007	49.5176	
9	-2.99573	-1.6954	37.5751	54.5965	
10	-2.99573	-1.64485	40.2806	59.5241	
11	-2.99573	-1.59819	42.8348	64.3118	
12	-2.99573	-1.55477	45.2522	68.9695	
13	-2.04022	-1.5141	47.5447	72.0586	
14	-1.77196	-1.46838	49.7008	74.6605	
15	-0.693147	-1.4325	51.7529	75.6534	
16	-0.693147	-1.39838	53.7083	76.6227	
17	-0.693147	-1.36581	55.5738	77.5694	
18	-0.693147	-1.33462	57.355	78.4945	
19	-0.693147	-1.30469	59.0572	79.3989	
20	-0.693147	-1.27588	60.6851	80.2832	
21	-0.693147	-1.24809	62.2428	81.1483	
22	-0.693147	-1.22123	63.7342	81.9948	
23	-0.693147	-1.19522	65.1627	82.8233	
24	-0.693147	-1.17	66.5316	83.6343	
25	-0.693147	-1.1455	67.8438	84.4283	
26	-0.693147	-1.12168	69.102	85.2058	
27	-0.693147	-1.0939	70.2986	85.964	
28	-0.693147	-1.07138	71.4464	86.7066	
29	-0.693147	-1.04939	72.5476	87.434	
30	-0.693147	-1.02789	73.6042	88.1465	
31	-0.693147	-1.00687	74.618	88.8444	
32	-0.693147	-0.986272		75.5907	89.528
33	-0.693147	-0.966088		76.524	90.1977
34	-0.693147	-0.946291		77.4195	90.8536
35	-0.693147	-0.926859		78.2786	91.496
36	-0.693147	-0.907769		79.1026	92.1252
37	-0.693147	-0.889006		79.893	92.7415
38	-0.693147	-0.870558	80.6508	93.3449	
39	-0.693147	-0.852385		81.3774	93.9357
40	-0.693147	-0.830953		82.0679	94.5117
41	-0.693147	-0.813379		82.7294	95.0755
42	-0.693147	-0.796056		83.3632	95.6273
43	-0.693147	-0.778966		83.9699	96.1672
44	-0.693147	-0.7621	84.5507	96.6954	
45	-0.693147	-0.745449		85.1064	97.2121
46	-0.693147	-0.729003		85.6379	97.7174
47	-0.693147	-0.712751		86.1459	98.2115
48	-0.693147	-0.696684		86.6313	98.6944
49	-0.693147	-0.680797		87.0947	99.1663

50	-0.693147	-0.665079	87.5371	99.6273
51	-0.693147	-0.649522	87.959	100.077
52	-0.693147	-0.634124	88.3611	100.517
53	-0.693147	-0.615839	88.7403	100.944
54	-0.693147	-0.6007689.1012	101.36	
55	-0.693147	-0.585815	89.4444	101.766
56	-0.693147	-0.570999	89.7705	102.162
57	-0.693147	-0.556308	90.0799	102.548
58	-0.693147	-0.541736	90.3734	102.923
59	-0.693147	-0.5272890.6514	103.289	
60	-0.693147	-0.5129390.9145	103.644	
61	-0.693147	-0.498687	91.1632	103.99
62	-0.693147	-0.484544	91.398	104.326
63	-0.693147	-0.470498	91.6194	104.652
64	-0.693147	-0.456542	91.8278	104.968
65	-0.693147	-0.442676	92.0238	105.275
66	-0.693147	-0.426148	92.2054	105.571
67	-0.693147	-0.412463	92.3755	105.857
68	-0.693147	-0.398855	92.5346	106.133
69	-0.693147	-0.385321	92.683	106.4
70	-0.693147	-0.371856	92.8213	106.658
71	-0.693147	-0.358459	92.9498	106.906
72	-0.693147	-0.345126	93.0689	107.145
73	-0.693147	-0.331854	93.1791	107.376
74	-0.693147	-0.318639	93.2806	107.596
75	-0.693147	-0.305481	93.3739	107.808
76	-0.693147	-0.292375	93.4594	108.011
77	-0.693147	-0.279319	93.5374	108.204
78	-0.693147	-0.266311	93.6083	108.389
79	-0.693147	-0.250759	93.6712	108.563
80	-0.693147	-0.237847	93.7278	108.728
81	-0.693147	-0.224974	93.7784	108.884
82	-0.693147	-0.212137	93.8234	109.031
83	-0.693147	-0.199336	93.8631	109.169
84	-0.693147	-0.186567	93.8979	109.298
85	-0.693147	-0.173829	93.9282	109.419
86	-0.693147	-0.161119	93.9541	109.53
87	-0.693147	-0.148434	93.9762	109.633
88	-0.693147	-0.135774	93.9946	109.727
89	-0.693147	-0.123135	94.0097	109.813
90	-0.693147	-0.110516	94.022	109.889
91	-0.693147	-0.0979139	94.0315	109.957
92	-0.693147	-0.0828129	94.0384	110.015
93	-0.693147	-0.0702426	94.0433	110.063
94	-0.693147	-0.0576847	94.0467	110.103
95	-0.693147	-0.0451348	94.0487	110.134
96	-0.693147	-0.0325917	94.0498	110.157
97	-0.693147	-0.0200544	94.0502	110.171
98	-0.693147	-0.00751925	94.0502	110.176
99	-0.693147	0.00751925	94.0503	110.171
100	-0.693147	0.0200544	94.0507	110.157
101	-0.693147	0.0325917	94.0517	110.134
102	-0.693147	0.0451348	94.0538	110.103
103	-0.693147	0.0576847	94.0571	110.063
104	-0.693147	0.0702426	94.062	110.015
105	-0.693147	0.0828129	94.0689	109.957
106	-0.693147	0.0979139	94.0785	109.889
107	-0.693147	0.110516	94.0907	109.813
108	-0.693147	0.123135	94.1059	109.727
109	-0.693147	0.135774	94.1243	109.633
110	-0.693147	0.148434	94.1463	109.53
111	-0.693147	0.161119	94.1723	109.419

112	-0.693147	0.173829		94.2025	109.298
113	-0.693147	0.186567		94.2373	109.169
114	-0.693147	0.199336		94.2771	109.031
115	-0.693147	0.212137		94.3221	108.884
116	-0.693147	0.224974		94.3727	108.728
117	-0.693147	0.237847		94.4292	108.563
118	-0.693147	0.250759		94.4921	108.389
119	-0.693147	0.266311		94.563	108.204
120	-0.693147	0.279319		94.6411	108.011
121	-0.693147	0.292375		94.7265	107.808
122	-0.693147	0.305481		94.8199	107.596
123	-0.693147	0.318639		94.9214	107.376
124	-0.693147	0.331854		95.0315	107.145
125	-0.693147	0.345126		95.1506	106.906
126	-0.693147	0.358459		95.2791	106.658
127	-0.693147	0.371856		95.4174	106.4
128	-0.693147	0.385321		95.5659	106.133
129	-0.693147	0.398855		95.725	105.857
130	-0.693147	0.412463		95.8951	105.571
131	-0.693147	0.426148		96.0767	105.275
132	-0.693147	0.442676		96.2726	104.968
133	-0.693147	0.456542		96.4811	104.652
134	-0.693147	0.470498		96.7024	104.326
135	-0.693147	0.484544		96.9372	103.99
136	-0.693147	0.498687		97.1859	103.644
137	-0.693147	0.51293	97.449	103.289	
138	-0.693147	0.52728	97.727	102.923	
139	-0.693147	0.541736		98.0205	102.548
140	-0.693147	0.556308		98.33	102.162
141	-0.693147	0.570999		98.656	101.766
142	-0.693147	0.585815		98.9992	101.36
143	-0.693147	0.60076	99.3601	100.944	
144	-0.693147	0.615839		99.7394	100.517
145	-0.693147	0.634124		100.141	100.077
146	-0.693147	0.649522		100.563	99.6273
147	-0.693147	0.665079		101.006	99.1663
148	-0.693147	0.680797		101.469	98.6944
149	-0.693147	0.696684		101.955	98.2115
150	-0.693147	0.712751		102.463	97.7174
151	-0.693147	0.729003		102.994	97.2121
152	-0.693147	0.745449		103.55	96.6954
153	-0.693147	0.7621	104.131	96.1672	
154	-0.693147	0.778966		104.737	95.6273
155	-0.693147	0.796056		105.371	95.0755
156	-0.693147	0.813379		106.033	94.5117
157	-0.693147	0.830953		106.723	93.9357
158	-0.693147	0.852385		107.45	93.3449
159	-0.693147	0.87055	108.207	92.7415	
160	-0.693147	0.889006		108.998	92.1252
161	-0.693147	0.907769		109.822	91.496
162	-0.693147	0.926859		110.681	90.8536
163	-0.693147	0.946291		111.576	90.1977
164	-0.693147	0.966088		112.51	89.528
165	-0.693147	0.986272		113.482	88.8444
166	-0.693147	1.00687	114.496	88.1465	
167	-0.693147	1.02789	115.553	87.434	
168	-0.693147	1.04939	116.654	86.7066	
169	-0.693147	1.07138	117.802	85.964	
170	-0.693147	1.0939	118.998	85.2058	
171	-0.693147	1.12168	120.257	84.4283	
172	-0.693147	1.1455	121.569	83.6343	
173	-0.693147	1.17	122.938	82.8233	

174	-0.693147	1.19522	124.366	81.9948
175	-0.693147	1.22123	125.858	81.1483
176	-0.693147	1.24809	127.415	80.2832
177	-0.693147	1.27588	129.043	79.3989
178	-0.693147	1.30469	130.745	78.4945
179	-0.693147	1.33462	132.527	77.5694
180	-0.693147	1.36581	134.392	76.6227
181	-0.693147	1.39838	136.348	75.6534
182	-0.693147	1.4325	138.4	74.6605
183	-0.693147	1.46838	140.556	73.6427
184	-0.693147	1.5141	142.848	72.5932
185	-0.693147	1.55477	145.266	71.5155
186	-0.693147	1.59819	147.82	70.4077
187	-0.693147	1.64485	150.525	69.2676
188	-0.693147	1.6954	153.4	68.0925
189	-0.693147	1.75069	156.465	66.879
190	-0.693147	1.81191	159.748	65.623
191	-0.693147	1.88079	163.285	64.3194
192	-0.693147	1.95996	167.126	62.9608
193	-0.693147	2.05375	171.344	61.5373
194	-0.693147	2.17009	176.054	60.0331
195	-0.693147	2.32634	181.466	58.4206
196	-0.693147	2.57583	188.1	56.6352

Data Set Standard Deviation = 0.563833
Numerator = 3207.54
Denominator = 11660.7
W Statistic = 0.275073 = 3207.54 / 11660.7

5% Critical value of 0.976 exceeds 0.275073
Evidence of non-normality at 95% level of significance

1% Critical value of 0.967 exceeds 0.275073
Evidence of non-normality at 99% level of significance

Non-Parametric Prediction Interval

Inter-Well Comparison

Parameter: Thallium

Natural Logarithm Transformation
Non-Detects Replaced with 1/2 DL

Total Percent Non-Detects = 98.9796%
Number of comparisons = 16
Future Samples (k) = 8
Recent Dates = 1
Background Samples (n) = 16
Maximum Background Concentration = 0
Confidence Level = 66.7%
False Positive Rate = 33.3%

Location	Date	Samples	Mean	Significant
LMW-14R	11/14/2009	1	-1.77196	FALSE
LMW-3	6/11/2009	1	-2.99573	FALSE
LMW-6	6/11/2009	1	-2.99573	FALSE
LMW-15R	6/11/2009	1	-2.99573	FALSE
LMW-3S	6/11/2009	1	-2.99573	FALSE
LMW-7	6/11/2009	1	-2.99573	FALSE
LMW-10	6/11/2009	1	-2.99573	FALSE
LMW-9S	6/11/2009	1	-2.99573	FALSE
LMW-9D	6/11/2009	1	-2.99573	FALSE
LMW-8	6/11/2009	1	-2.99573	FALSE
LMW-16	6/11/2009	1	-2.99573	FALSE
LMW-9	6/11/2009	1	-2.04022	FALSE
MW-5	11/20/2008	1	-0.693147	FALSE
LMW-13	11/20/2008	1	-0.693147	FALSE
LMW-12	11/20/2008	1	-0.693147	FALSE
LMW-11	11/20/2008	1	-0.693147	FALSE

Concentrations (ug/L)

Parameter: Toluene

Natural Logarithm Transformation
Non-Detects Replaced with 1/2 DL
Total Measurements: 196
Total Non-Detect: 191
Percent Non-Detects: 97.449%
Total Background Measurements: 16
There is 1 background location

Loc.	Meas.	ND	Date	Conc.	Original
LMW-4	16	15 (93.75%)	1/16/1998	ND<-0.693147	ND<1
			3/16/1999	ND<-0.693147	ND<1
			9/23/1999	ND<-0.693147	ND<1
			3/14/2000	ND<-0.693147	ND<1
			9/23/2003	ND<-0.693147	ND<1
			3/10/2004	ND<-0.693147	ND<1
			10/12/2004	ND<-0.693147	ND<1
			4/1/2005	ND<0 J	ND<0 J
			10/26/2005	ND<-0.693147	ND<1
			6/19/2006	ND<-0.693147	ND<1
			11/18/2006	ND<0 J	ND<0 J
			6/2/2007	ND<-0.693147	ND<1
			11/15/2007	ND<-0.693147	ND<1
			5/20/2008	ND<-0.693147	ND<1
			11/20/2008	ND<0 J	ND<0 J
			6/11/2009	-0.579818 J	0.56 J

There are 16 compliance locations

Loc.	Meas.	ND	Date	Conc.	Original
LMW-9	17	16 (94.1176%)	1/16/1998	ND<-0.693147	ND<1
			3/16/1999	ND<-0.693147	ND<1
			9/23/1999	ND<-0.693147	ND<1
			3/14/2000	ND<-0.693147	ND<1
			9/23/2003	ND<-0.693147	ND<1
			3/10/2004	ND<-0.693147	ND<1
			10/12/2004	ND<-0.693147	ND<1
			4/1/2005	ND<-0.693147	ND<1
			10/26/2005	ND<-0.693147	ND<1
			6/19/2006	ND<-0.693147	ND<1
			11/18/2006	ND<-0.693147	ND<1
			6/2/2007	ND<-0.693147	ND<1
			11/15/2007	ND<-0.693147	ND<1
			5/20/2008	ND<-0.693147	ND<1
			11/20/2008	ND<0 J	ND<0 J
			6/11/2009	ND<-1.80181 U	ND<0.33 U
			11/14/2009	-0.891598 J	0.41 J
LMW-15R	9	9 (100%)	11/18/2006	ND<-0.693147	ND<1
			6/2/2007	ND<-0.693147	ND<1
			11/15/2007	ND<-0.693147	ND<1
			11/15/2007	ND<-0.693147	ND<1
			5/20/2008	ND<-0.693147	ND<1
			5/20/2008	ND<-0.693147	ND<1
			11/20/2008	ND<-0.693147	ND<1

			11/20/2008	ND<0 J	ND<0 J
			6/11/2009	ND<-1.80181 U	ND<0.33 U
LMW-14R	5	5 (100%)	6/2/2007	ND<-0.693147	ND<1
			11/15/2007	ND<-0.693147	ND<1
			5/20/2008	ND<-0.693147	ND<1
			11/20/2008	ND<-0.693147	ND<1
			6/11/2009	ND<-1.80181 U	ND<0.33 U
LMW-16	6	6 (100%)	11/18/2006	ND<0 J	ND<0 J
			6/2/2007	ND<-0.693147	ND<1
			11/15/2007	ND<-0.693147	ND<1
			5/20/2008	ND<-0.693147	ND<1
			11/20/2008	ND<-0.693147	ND<1
			6/11/2009	ND<-1.80181 U	ND<0.33 U
LMW-8	16	16 (100%)	1/16/1998	ND<-0.693147	ND<1
			3/16/1999	ND<-0.693147	ND<1
			9/23/1999	ND<-0.693147	ND<1
			3/14/2000	ND<-0.693147	ND<1
			9/23/2003	ND<-0.693147	ND<1
			3/10/2004	ND<-0.693147	ND<1
			10/12/2004	ND<-0.693147	ND<1
			4/1/2005	ND<-0.693147	ND<1
			10/26/2005	ND<-0.693147	ND<1
			6/19/2006	ND<-0.693147	ND<1
			11/18/2006	ND<-0.693147	ND<1
			6/2/2007	ND<-0.693147	ND<1
			11/15/2007	ND<-0.693147	ND<1
			5/20/2008	ND<-0.693147	ND<1
			11/20/2008	ND<0 J	ND<0 J
			6/11/2009	ND<-1.80181 U	ND<0.33 U
LMW-9D	6	6 (100%)	11/18/2006	ND<-0.693147	ND<1
			6/2/2007	ND<-0.693147	ND<1
			11/15/2007	ND<-0.693147	ND<1
			5/20/2008	ND<-0.693147	ND<1
			11/20/2008	ND<0 J	ND<0 J
			6/11/2009	ND<-1.80181 U	ND<0.33 U
LMW-9S	6	6 (100%)	11/18/2006	ND<-0.693147	ND<1
			6/2/2007	ND<-0.693147	ND<1
			11/15/2007	ND<-0.693147	ND<1
			5/20/2008	ND<-0.693147	ND<1
			11/20/2008	ND<0 J	ND<0 J
			6/11/2009	ND<-1.80181 U	ND<0.33 U
LMW-10	13	13 (100%)	3/14/2000	ND<-0.693147	ND<1
			9/23/2003	ND<-0.693147	ND<1
			3/10/2004	ND<-0.693147	ND<1
			10/12/2004	ND<-0.693147	ND<1
			4/1/2005	ND<0 J	ND<0 J
			10/26/2005	ND<-0.693147	ND<1
			6/19/2006	ND<-0.693147	ND<1
			11/18/2006	ND<-0.693147	ND<1
			6/2/2007	ND<-0.693147	ND<1
			11/15/2007	ND<-0.693147	ND<1
			5/20/2008	ND<-0.693147	ND<1
			11/20/2008	ND<0 J	ND<0 J
			6/11/2009	ND<-1.80181 U	ND<0.33 U

LMW-7	16	14 (87.5%)	1/16/1998	ND<-0.693147	ND<1
			3/16/1999	ND<-0.693147	ND<1
			9/23/1999	ND<-0.693147	ND<1
			3/14/2000	ND<-0.693147	ND<1
			9/23/2003	ND<-0.693147	ND<1
			3/10/2004	ND<-0.693147	ND<1
			10/12/2004	ND<-0.693147	ND<1
			4/1/2005	0	1
			10/26/2005	ND<-0.693147	ND<1
			6/19/2006	ND<-0.693147	ND<1
			11/18/2006	ND<0 J	ND<0 J
			6/2/2007	ND<-0.693147	ND<1
			11/15/2007	ND<-0.693147	ND<1
			5/20/2008	ND<-0.693147	ND<1
			11/20/2008	ND<-0.693147	ND<1
			6/11/2009	-0.693147 J	0.5 J
LMW-3S	6	5 (83.3333%)	11/18/2006	ND<-0.693147	ND<1
			6/2/2007	0	1
			11/15/2007	ND<-0.693147	ND<1
			5/20/2008	ND<-0.693147	ND<1
			11/20/2008	ND<0 J	ND<0 J
			6/11/2009	ND<-1.80181 U	ND<0.33 U
LMW-3	18	18 (100%)	11/19/1996	ND<-0.693147	ND<1
			3/24/1997	ND<-0.693147	ND<1
			1/16/1998	ND<-0.693147	ND<1
			3/16/1999	ND<-0.693147	ND<1
			9/23/1999	ND<-0.693147	ND<1
			3/14/2000	ND<-0.693147	ND<1
			9/23/2003	ND<-0.693147	ND<1
			3/10/2004	ND<-0.693147	ND<1
			10/12/2004	ND<-0.693147	ND<1
			4/1/2005	ND<-0.693147	ND<1
			10/26/2005	ND<-0.693147	ND<1
			6/19/2006	ND<-0.693147	ND<1
			11/18/2006	ND<-0.693147	ND<1
			6/2/2007	ND<-0.693147	ND<1
			11/15/2007	ND<-0.693147	ND<1
			5/20/2008	ND<-0.693147	ND<1
			11/20/2008	ND<0 J	ND<0 J
			6/11/2009	ND<-1.80181 U	ND<0.33 U
LMW-6	16	16 (100%)	1/16/1998	ND<-0.693147	ND<1
			3/16/1999	ND<-0.693147	ND<1
			9/23/1999	ND<-0.693147	ND<1
			3/14/2000	ND<-0.693147	ND<1
			9/23/2003	ND<-0.693147	ND<1
			3/10/2004	ND<-0.693147	ND<1
			10/12/2004	ND<-0.693147	ND<1
			4/1/2005	ND<-0.693147	ND<1
			10/26/2005	ND<-0.693147	ND<1
			6/19/2006	ND<-0.693147	ND<1
			11/18/2006	ND<-0.693147	ND<1
			6/2/2007	ND<-0.693147	ND<1
			11/15/2007	ND<-0.693147	ND<1
			5/20/2008	ND<-0.693147	ND<1
			11/20/2008	ND<0 J	ND<0 J
			6/11/2009	ND<-1.80181 U	ND<0.33 U
LMW-12	11	11 (100%)	3/14/2000	ND<-0.693147	ND<1
			9/23/2003	ND<-0.693147	ND<1

			3/10/2004	ND<-0.693147	ND<1	
			10/12/2004	ND<-0.693147	ND<1	
			4/1/2005	ND<-0.693147	ND<1	
			10/26/2005	ND<-0.693147	ND<1	
			6/19/2006	ND<-0.693147	ND<1	
			6/2/2007	ND<-0.693147	ND<1	
			11/15/2007	ND<-0.693147	ND<1	
			5/20/2008	ND<-0.693147	ND<1	
			11/20/2008	ND<-0.693147	ND<1	
LMW-11	11	11 (100%)	3/14/2000	ND<-0.693147	ND<1	
			9/23/2003	ND<-0.693147	ND<1	
			3/10/2004	ND<-0.693147	ND<1	
			10/12/2004	ND<-0.693147	ND<1	
			4/1/2005	ND<-0.693147	ND<1	
			10/26/2005	ND<-0.693147	ND<1	
			6/19/2006	ND<-0.693147	ND<1	
			6/2/2007	ND<-0.693147	ND<1	
			11/15/2007	ND<-0.693147	ND<1	
			5/20/2008	ND<-0.693147	ND<1	
			11/20/2008	ND<-0.693147	ND<1	
LMW-13	11	11 (100%)	3/14/2000	ND<-0.693147	ND<1	
			9/23/2003	ND<-0.693147	ND<1	
			3/10/2004	ND<-0.693147	ND<1	
			10/12/2004	ND<-0.693147	ND<1	
			4/1/2005	ND<-0.693147	ND<1	
			10/26/2005	ND<-0.693147	ND<1	
			6/19/2006	ND<-0.693147	ND<1	
			6/2/2007	ND<-0.693147	ND<1	
			11/15/2007	ND<-0.693147	ND<1	
			5/20/2008	ND<-0.693147	ND<1	
			11/20/2008	ND<-0.693147	ND<1	
MW-5	13	13 (100%)	1/16/1998	ND<-0.693147	ND<1	
			3/16/1999	ND<-0.693147	ND<1	
			9/23/1999	ND<-0.693147	ND<1	
			3/14/2000	ND<-0.693147	ND<1	
			9/23/2003	ND<-0.693147	ND<1	
			3/10/2004	ND<-0.693147	ND<1	
			10/12/2004	ND<-0.693147	ND<1	
			4/1/2005	ND<-0.693147	ND<1	
			10/26/2005	ND<-0.693147	ND<1	
			6/19/2006	ND<-0.693147	ND<1	
			11/15/2007	ND<-0.693147	ND<1	
			5/20/2008	ND<-0.693147	ND<1	
			11/20/2008	ND<-0.693147	ND<1	

There are 0 unused locations

Loc.	Meas.	ND	Date	Conc.	Original

Shapiro-Francia Test of Normality

Parameter: Toluene

All Locations

Normality Test of Parameter Concentrations

Original Data (Not Transformed)
Non-Detects Replaced with 1/2 DL
Total Number of Measurements = 196

i	x(i)	m(i)	sum(m^2)	sum(mx)
1	0	-2.57583	6.63492	0
2	0	-2.32634	12.0468	0
3	0	-2.17009	16.7561	0
4	0	-2.05375	20.974	0
5	0	-1.95996	24.8154	0
6	0	-1.88079	28.3528	0
7	0	-1.81191	31.6358	0
8	0	-1.75069	34.7007	0
9	0	-1.6954	37.5751	0
10	0	-1.64485	40.2806	0
11	0	-1.59819	42.8348	0
12	0	-1.55477	45.2522	0
13	0	-1.5141	47.5447	0
14	0	-1.46838	49.7008	0
15	0	-1.4325	51.7529	0
16	0.165	-1.39838	53.7083	-0.230732
17	0.165	-1.36581	55.5738	-0.45609
18	0.165	-1.33462	57.355	-0.676303
19	0.165	-1.30469	59.0572	-0.891576
20	0.165	-1.27588	60.6851	-1.1021
21	0.165	-1.24809	62.2428	-1.30803
22	0.165	-1.22123	63.7342	-1.50953
23	0.165	-1.19522	65.1627	-1.70674
24	0.165	-1.17	66.5316	-1.89979
25	0.165	-1.1455	67.8438	-2.0888
26	0.165	-1.12168	69.102	-2.27388
27	0.41	-1.0939	70.2986	-2.72238
28	0.5	-1.07138	71.4464	-3.25807
29	0.5	-1.04939	72.5476	-3.78276
30	0.5	-1.02789	73.6042	-4.29671
31	0.5	-1.00687	74.618	-4.80014
32	0.5	-0.986272	75.5907	-5.29327
33	0.5	-0.966088	76.524	-5.77632
34	0.5	-0.946291	77.4195	-6.24946
35	0.5	-0.926859	78.2786	-6.71289
36	0.5	-0.907769	79.1026	-7.16678
37	0.5	-0.889006	79.893	-7.61128
38	0.5	-0.87055	80.6508	-8.04656
39	0.5	-0.852385	81.3774	-8.47275
40	0.5	-0.830953	82.0679	-8.88822
41	0.5	-0.813379	82.7294	-9.29491
42	0.5	-0.796056	83.3632	-9.69294
43	0.5	-0.778966	83.9699	-10.0824
44	0.5	-0.7621	84.5507	-10.4635
45	0.5	-0.745449	85.1064	-10.8362
46	0.5	-0.729003	85.6379	-11.2007
47	0.5	-0.712751	86.1459	-11.5571
48	0.5	-0.696684	86.6313	-11.9054
49	0.5	-0.680797	87.0947	-12.2458

50	0.5	-0.665079	87.5371	-12.5784
51	0.5	-0.649522	87.959	-12.9031
52	0.5	-0.634124	88.3611	-13.2202
53	0.5	-0.615839	88.7403	-13.5281
54	0.5	-0.6007689.1012	-13.8285	
55	0.5	-0.585815	89.4444	-14.1214
56	0.5	-0.570999	89.7705	-14.4069
57	0.5	-0.556308	90.0799	-14.685
58	0.5	-0.541736	90.3734	-14.9559
59	0.5	-0.5272890.6514	-15.2195	
60	0.5	-0.5129390.9145	-15.476	
61	0.5	-0.498687	91.1632	-15.7254
62	0.5	-0.484544	91.398	-15.9676
63	0.5	-0.470498	91.6194	-16.2029
64	0.5	-0.456542	91.8278	-16.4311
65	0.5	-0.442676	92.0238	-16.6525
66	0.5	-0.426148	92.2054	-16.8656
67	0.5	-0.412463	92.3755	-17.0718
68	0.5	-0.398855	92.5346	-17.2712
69	0.5	-0.385321	92.683	-17.4639
70	0.5	-0.371856	92.8213	-17.6498
71	0.5	-0.358459	92.9498	-17.829
72	0.5	-0.345126	93.0689	-18.0016
73	0.5	-0.331854	93.1791	-18.1675
74	0.5	-0.318639	93.2806	-18.3268
75	0.5	-0.305481	93.3739	-18.4796
76	0.5	-0.292375	93.4594	-18.6258
77	0.5	-0.279319	93.5374	-18.7654
78	0.5	-0.266311	93.6083	-18.8986
79	0.5	-0.250759	93.6712	-19.024
80	0.5	-0.237847	93.7278	-19.1429
81	0.5	-0.224974	93.7784	-19.2554
82	0.5	-0.212137	93.8234	-19.3614
83	0.5	-0.199336	93.8631	-19.4611
84	0.5	-0.186567	93.8979	-19.5544
85	0.5	-0.173829	93.9282	-19.6413
86	0.5	-0.161119	93.9541	-19.7219
87	0.5	-0.148434	93.9762	-19.7961
88	0.5	-0.135774	93.9946	-19.864
89	0.5	-0.123135	94.0097	-19.9255
90	0.5	-0.110516	94.022	-19.9808
91	0.5	-0.0979139	94.0315	-20.0298
92	0.5	-0.0828129	94.0384	-20.0712
93	0.5	-0.0702426	94.0433	-20.1063
94	0.5	-0.0576847	94.0467	-20.1351
95	0.5	-0.0451348	94.0487	-20.1577
96	0.5	-0.0325917	94.0498	-20.174
97	0.5	-0.0200544	94.0502	-20.184
98	0.5	-0.00751925	94.0502	-20.1878
99	0.5	0.00751925	94.0503	-20.184
100	0.5	0.0200544	94.0507	-20.174
101	0.5	0.0325917	94.0517	-20.1577
102	0.5	0.0451348	94.0538	-20.1351
103	0.5	0.0576847	94.0571	-20.1063
104	0.5	0.0702426	94.062	-20.0712
105	0.5	0.0828129	94.0689	-20.0298
106	0.5	0.0979139	94.0785	-19.9808
107	0.5	0.110516	94.0907	-19.9255
108	0.5	0.123135	94.1059	-19.864
109	0.5	0.135774	94.1243	-19.7961
110	0.5	0.148434	94.1463	-19.7219
111	0.5	0.161119	94.1723	-19.6413

112	0.5	0.173829	94.2025	-19.5544
113	0.5	0.186567	94.2373	-19.4611
114	0.5	0.199336	94.2771	-19.3614
115	0.5	0.212137	94.3221	-19.2554
116	0.5	0.224974	94.3727	-19.1429
117	0.5	0.237847	94.4292	-19.024
118	0.5	0.250759	94.4921	-18.8986
119	0.5	0.266311	94.563	-18.7654
120	0.5	0.279319	94.6411	-18.6258
121	0.5	0.292375	94.7265	-18.4796
122	0.5	0.305481	94.8199	-18.3268
123	0.5	0.318639	94.9214	-18.1675
124	0.5	0.331854	95.0315	-18.0016
125	0.5	0.345126	95.1506	-17.829
126	0.5	0.358459	95.2791	-17.6498
127	0.5	0.371856	95.4174	-17.4639
128	0.5	0.385321	95.5659	-17.2712
129	0.5	0.398855	95.725	-17.0718
130	0.5	0.412463	95.8951	-16.8656
131	0.5	0.426148	96.0767	-16.6525
132	0.5	0.442676	96.2726	-16.4311
133	0.5	0.456542	96.4811	-16.2029
134	0.5	0.470498	96.7024	-15.9676
135	0.5	0.484544	96.9372	-15.7254
136	0.5	0.498687	97.1859	-15.476
137	0.5	0.51293	97.449	-15.2195
138	0.5	0.52728	97.727	-14.9559
139	0.5	0.541736	98.0205	-14.685
140	0.5	0.556308	98.33	-14.4069
141	0.5	0.570999	98.656	-14.1214
142	0.5	0.585815	98.9992	-13.8285
143	0.5	0.60076	99.3601	-13.5281
144	0.5	0.615839	99.7394	-13.2202
145	0.5	0.634124	100.141	-12.9031
146	0.5	0.649522	100.563	-12.5784
147	0.5	0.665079	101.006	-12.2458
148	0.5	0.680797	101.469	-11.9054
149	0.5	0.696684	101.955	-11.5571
150	0.5	0.712751	102.463	-11.2007
151	0.5	0.729003	102.994	-10.8362
152	0.5	0.745449	103.55	-10.4635
153	0.5	0.7621	104.131	-10.0824
154	0.5	0.778966	104.737	-9.69294
155	0.5	0.796056	105.371	-9.29491
156	0.5	0.813379	106.033	-8.88822
157	0.5	0.830953	106.723	-8.47275
158	0.5	0.852385	107.45	-8.04656
159	0.5	0.87055	108.207	-7.61128
160	0.5	0.889006	108.998	-7.16678
161	0.5	0.907769	109.822	-6.71289
162	0.5	0.926859	110.681	-6.24946
163	0.5	0.946291	111.576	-5.77632
164	0.5	0.966088	112.51	-5.29327
165	0.5	0.986272	113.482	-4.80014
166	0.5	1.00687	114.496	-4.29671
167	0.5	1.02789	115.553	-3.78276
168	0.5	1.04939	116.654	-3.25807
169	0.5	1.07138	117.802	-2.72238
170	0.5	1.0939	118.998	-2.17543
171	0.5	1.12168	120.257	-1.61459
172	0.5	1.1455	121.569	-1.04184
173	0.5	1.17	122.938	-0.456837

174	0.5	1.19522	124.366	0.140774
175	0.5	1.22123	125.858	0.751388
176	0.5	1.24809	127.415	1.37543
177	0.5	1.27588	129.043	2.01337
178	0.5	1.30469	130.745	2.66571
179	0.5	1.33462	132.527	3.33302
180	0.5	1.36581	134.392	4.01593
181	0.5	1.39838	136.348	4.71511
182	0.5	1.4325	138.4	5.43137
183	0.5	1.46838	140.556	6.16556
184	0.5	1.5141	142.848	6.92261
185	0.5	1.55477	145.266	7.7
186	0.5	1.59819	147.82	8.49909
187	0.5	1.64485	150.525	9.32152
188	0.5	1.6954	153.4	10.1692
189	0.5	1.75069	156.465	11.0446
190	0.5	1.81191	159.748	11.9505
191	0.5	1.88079	163.285	12.8909
192	0.5	1.95996	167.126	13.8709
193	0.5	2.05375	171.344	14.8978
194	0.56	2.17009	176.054	16.113
195	1	2.32634	181.466	18.4394
196	1	2.57583	188.1	21.0152

Data Set Standard Deviation = 0.159547
Numerator = 441.638
Denominator = 933.692
W Statistic = 0.473002 = 441.638 / 933.692

5% Critical value of 0.976 exceeds 0.473002
Evidence of non-normality at 95% level of significance

1% Critical value of 0.967 exceeds 0.473002
Evidence of non-normality at 99% level of significance

Shapiro-Francia Test of Normality

Parameter: Toluene

All Locations

Normality Test of Parameter Concentrations

Natural Logarithm Transformation
Non-Detects Replaced with 1/2 DL
Total Number of Measurements = 196

i	x(i)	m(i)	sum(m^2)	sum(mx)
1	-1.80181	-2.57583	6.63492	4.64116
2	-1.80181	-2.32634	12.0468	8.83279
3	-1.80181	-2.17009	16.7561	12.7429
4	-1.80181	-2.05375	20.974	16.4433
5	-1.80181	-1.95996	24.8154	19.9748
6	-1.80181	-1.88079	28.3528	23.3636
7	-1.80181	-1.81191	31.6358	26.6284
8	-1.80181	-1.75069	34.7007	29.7828
9	-1.80181	-1.6954	37.5751	32.8376
10	-1.80181	-1.64485	40.2806	35.8013
11	-1.80181	-1.59819	42.8348	38.6809
12	-0.891598	-1.55477	45.2522	40.0671
13	-0.693147	-1.5141	47.5447	41.1166
14	-0.693147	-1.46838	49.7008	42.1344
15	-0.693147	-1.4325	51.7529	43.1274
16	-0.693147	-1.39838	53.7083	44.0967
17	-0.693147	-1.36581	55.5738	45.0434
18	-0.693147	-1.33462	57.355	45.9685
19	-0.693147	-1.30469	59.0572	46.8728
20	-0.693147	-1.27588	60.6851	47.7572
21	-0.693147	-1.24809	62.2428	48.6223
22	-0.693147	-1.22123	63.7342	49.4688
23	-0.693147	-1.19522	65.1627	50.2972
24	-0.693147	-1.17	66.5316	51.1082
25	-0.693147	-1.1455	67.8438	51.9022
26	-0.693147	-1.12168	69.102	52.6797
27	-0.693147	-1.0939	70.2986	53.4379
28	-0.693147	-1.07138	71.4464	54.1806
29	-0.693147	-1.04939	72.5476	54.9079
30	-0.693147	-1.02789	73.6042	55.6204
31	-0.693147	-1.00687	74.618	56.3183
32	-0.693147	-0.986272		75.5907 57.002
33	-0.693147	-0.966088		76.524 57.6716
34	-0.693147	-0.946291		77.4195 58.3275
35	-0.693147	-0.926859		78.2786 58.97
36	-0.693147	-0.907769		79.1026 59.5992
37	-0.693147	-0.889006		79.893 60.2154
38	-0.693147	-0.870558	0.6508	60.8188
39	-0.693147	-0.852385		81.3774 61.4096
40	-0.693147	-0.830953		82.0679 61.9856
41	-0.693147	-0.813379		82.7294 62.5494
42	-0.693147	-0.796056		83.3632 63.1012
43	-0.693147	-0.778966		83.9699 63.6411
44	-0.693147	-0.7621	84.5507	64.1694
45	-0.693147	-0.745449		85.1064 64.6861
46	-0.693147	-0.729003		85.6379 65.1914
47	-0.693147	-0.712751		86.1459 65.6854
48	-0.693147	-0.696684		86.6313 66.1683
49	-0.693147	-0.680797		87.0947 66.6402

50	-0.693147	-0.665079	87.5371	67.1012
51	-0.693147	-0.649522	87.959	67.5514
52	-0.693147	-0.634124	88.3611	67.991
53	-0.693147	-0.615839	88.7403	68.4178
54	-0.693147	-0.6007689.1012	68.8343	
55	-0.693147	-0.585815	89.4444	69.2403
56	-0.693147	-0.570999	89.7705	69.6361
57	-0.693147	-0.556308	90.0799	70.0217
58	-0.693147	-0.541736	90.3734	70.3972
59	-0.693147	-0.5272890.6514	70.7627	
60	-0.693147	-0.5129390.9145	71.1182	
61	-0.693147	-0.498687	91.1632	71.4639
62	-0.693147	-0.484544	91.398	71.7997
63	-0.693147	-0.470498	91.6194	72.1259
64	-0.693147	-0.456542	91.8278	72.4423
65	-0.693147	-0.442676	92.0238	72.7492
66	-0.693147	-0.426148	92.2054	73.0445
67	-0.693147	-0.412463	92.3755	73.3304
68	-0.693147	-0.398855	92.5346	73.6069
69	-0.693147	-0.385321	92.683	73.874
70	-0.693147	-0.371856	92.8213	74.1317
71	-0.693147	-0.358459	92.9498	74.3802
72	-0.693147	-0.345126	93.0689	74.6194
73	-0.693147	-0.331854	93.1791	74.8495
74	-0.693147	-0.318639	93.2806	75.0703
75	-0.693147	-0.305481	93.3739	75.2821
76	-0.693147	-0.292375	93.4594	75.4847
77	-0.693147	-0.279319	93.5374	75.6783
78	-0.693147	-0.266311	93.6083	75.8629
79	-0.693147	-0.250759	93.6712	76.0367
80	-0.693147	-0.237847	93.7278	76.2016
81	-0.693147	-0.224974	93.7784	76.3575
82	-0.693147	-0.212137	93.8234	76.5046
83	-0.693147	-0.199336	93.8631	76.6428
84	-0.693147	-0.186567	93.8979	76.7721
85	-0.693147	-0.173829	93.9282	76.8926
86	-0.693147	-0.161119	93.9541	77.0042
87	-0.693147	-0.148434	93.9762	77.1071
88	-0.693147	-0.135774	93.9946	77.2012
89	-0.693147	-0.123135	94.0097	77.2866
90	-0.693147	-0.110516	94.022	77.3632
91	-0.693147	-0.0979139	94.0315	77.4311
92	-0.693147	-0.0828129	94.0384	77.4885
93	-0.693147	-0.0702426	94.0433	77.5372
94	-0.693147	-0.0576847	94.0467	77.5771
95	-0.693147	-0.0451348	94.0487	77.6084
96	-0.693147	-0.0325917	94.0498	77.631
97	-0.693147	-0.0200544	94.0502	77.6449
98	-0.693147	-0.00751925	94.0502	77.6501
99	-0.693147	0.00751925	94.0503	77.6449
100	-0.693147	0.0200544	94.0507	77.631
101	-0.693147	0.0325917	94.0517	77.6084
102	-0.693147	0.0451348	94.0538	77.5771
103	-0.693147	0.0576847	94.0571	77.5372
104	-0.693147	0.0702426	94.062	77.4885
105	-0.693147	0.0828129	94.0689	77.4311
106	-0.693147	0.0979139	94.0785	77.3632
107	-0.693147	0.110516	94.0907	77.2866
108	-0.693147	0.123135	94.1059	77.2012
109	-0.693147	0.135774	94.1243	77.1071
110	-0.693147	0.148434	94.1463	77.0042
111	-0.693147	0.161119	94.1723	76.8926

112	-0.693147	0.173829		94.2025	76.7721
113	-0.693147	0.186567		94.2373	76.6428
114	-0.693147	0.199336		94.2771	76.5046
115	-0.693147	0.212137		94.3221	76.3575
116	-0.693147	0.224974		94.3727	76.2016
117	-0.693147	0.237847		94.4292	76.0367
118	-0.693147	0.250759		94.4921	75.8629
119	-0.693147	0.266311		94.563	75.6783
120	-0.693147	0.279319		94.6411	75.4847
121	-0.693147	0.292375		94.7265	75.2821
122	-0.693147	0.305481		94.8199	75.0703
123	-0.693147	0.318639		94.9214	74.8495
124	-0.693147	0.331854		95.0315	74.6194
125	-0.693147	0.345126		95.1506	74.3802
126	-0.693147	0.358459		95.2791	74.1317
127	-0.693147	0.371856		95.4174	73.874
128	-0.693147	0.385321		95.5659	73.6069
129	-0.693147	0.398855		95.725	73.3304
130	-0.693147	0.412463		95.8951	73.0445
131	-0.693147	0.426148		96.0767	72.7492
132	-0.693147	0.442676		96.2726	72.4423
133	-0.693147	0.456542		96.4811	72.1259
134	-0.693147	0.470498		96.7024	71.7997
135	-0.693147	0.484544		96.9372	71.4639
136	-0.693147	0.498687		97.1859	71.1182
137	-0.693147	0.51293	97.449	70.7627	
138	-0.693147	0.52728	97.727	70.3972	
139	-0.693147	0.541736		98.0205	70.0217
140	-0.693147	0.556308		98.33	69.6361
141	-0.693147	0.570999		98.656	69.2403
142	-0.693147	0.585815		98.9992	68.8343
143	-0.693147	0.60076	99.3601	68.4178	
144	-0.693147	0.615839		99.7394	67.991
145	-0.693147	0.634124		100.141	67.5514
146	-0.693147	0.649522		100.563	67.1012
147	-0.693147	0.665079		101.006	66.6402
148	-0.693147	0.680797		101.469	66.1683
149	-0.693147	0.696684		101.955	65.6854
150	-0.693147	0.712751		102.463	65.1914
151	-0.693147	0.729003		102.994	64.6861
152	-0.693147	0.745449		103.55	64.1694
153	-0.693147	0.7621	104.131	63.6411	
154	-0.693147	0.778966		104.737	63.1012
155	-0.693147	0.796056		105.371	62.5494
156	-0.693147	0.813379		106.033	61.9856
157	-0.693147	0.830953		106.723	61.4096
158	-0.693147	0.852385		107.45	60.8188
159	-0.693147	0.87055	108.207	60.2154	
160	-0.693147	0.889006		108.998	59.5992
161	-0.693147	0.907769		109.822	58.97
162	-0.693147	0.926859		110.681	58.3275
163	-0.693147	0.946291		111.576	57.6716
164	-0.693147	0.966088		112.51	57.002
165	-0.693147	0.986272		113.482	56.3183
166	-0.693147	1.00687	114.496	55.6204	
167	-0.693147	1.02789	115.553	54.9079	
168	-0.693147	1.04939	116.654	54.1806	
169	-0.693147	1.07138	117.802	53.4379	
170	-0.693147	1.0939	118.998	52.6797	
171	-0.693147	1.12168	120.257	51.9022	
172	-0.693147	1.1455	121.569	51.1082	
173	-0.693147	1.17	122.938	50.2972	

174	-0.693147	1.19522	124.366	49.4688
175	-0.693147	1.22123	125.858	48.6223
176	-0.693147	1.24809	127.415	47.7572
177	-0.693147	1.27588	129.043	46.8728
178	-0.693147	1.30469	130.745	45.9685
179	-0.579818	1.33462	132.527	45.1946
180	0	1.36581	134.392	45.1946
181	0	1.39838	136.348	45.1946
182	0	1.4325	138.4	45.1946
183	0	1.46838	140.556	45.1946
184	0	1.5141	142.848	45.1946
185	0	1.55477	145.266	45.1946
186	0	1.59819	147.82	45.1946
187	0	1.64485	150.525	45.1946
188	0	1.6954	153.4	45.1946
189	0	1.75069	156.465	45.1946
190	0	1.81191	159.748	45.1946
191	0	1.88079	163.285	45.1946
192	0	1.95996	167.126	45.1946
193	0	2.05375	171.344	45.1946
194	0	2.17009	176.054	45.1946
195	0	2.32634	181.466	45.1946
196	0	2.57583	188.1	45.1946

Data Set Standard Deviation = 0.33389
Numerator = 2042.55
Denominator = 4089.14
W Statistic = 0.499507 = 2042.55 / 4089.14

5% Critical value of 0.976 exceeds 0.499507
Evidence of non-normality at 95% level of significance

1% Critical value of 0.967 exceeds 0.499507
Evidence of non-normality at 99% level of significance

Non-Parametric Prediction Interval

Inter-Well Comparison

Parameter: Toluene

Natural Logarithm Transformation
Non-Detects Replaced with 1/2 DL

Total Percent Non-Detects = 97.449%
Number of comparisons = 16
Future Samples (k) = 8
Recent Dates = 1
Background Samples (n) = 16
Maximum Background Concentration = 0
Confidence Level = 66.7%
False Positive Rate = 33.3%

Location	Date	Samples	Mean	Significant
LMW-9	11/14/2009	1	-0.891598	FALSE
LMW-15R	6/11/2009	1	-1.80181	FALSE
LMW-14R	6/11/2009	1	-1.80181	FALSE
LMW-16	6/11/2009	1	-1.80181	FALSE
LMW-8	6/11/2009	1	-1.80181	FALSE
LMW-9D	6/11/2009	1	-1.80181	FALSE
LMW-9S	6/11/2009	1	-1.80181	FALSE
LMW-10	6/11/2009	1	-1.80181	FALSE
LMW-7	6/11/2009	1	-0.693147	FALSE
LMW-3S	6/11/2009	1	-1.80181	FALSE
LMW-3	6/11/2009	1	-1.80181	FALSE
LMW-6	6/11/2009	1	-1.80181	FALSE
LMW-12	11/20/2008	1	-0.693147	FALSE
LMW-11	11/20/2008	1	-0.693147	FALSE
LMW-13	11/20/2008	1	-0.693147	FALSE
MW-5	11/20/2008	1	-0.693147	FALSE

Concentrations (ug/L)

Parameter: Trichloroethylene

Natural Logarithm Transformation
Non-Detects Replaced with 1/2 DL
Total Measurements: 197
Total Non-Detect: 193
Percent Non-Detects: 97.9695%
Total Background Measurements: 16
There is 1 background location

Loc.	Meas.	ND	Date	Conc.	Original
LMW-4	16	16 (100%)	1/16/1998	ND<-0.693147	ND<1
			3/16/1999	ND<-0.693147	ND<1
			9/23/1999	ND<-0.693147	ND<1
			3/14/2000	ND<-0.693147	ND<1
			9/23/2003	ND<-0.693147	ND<1
			3/10/2004	ND<-0.693147	ND<1
			10/12/2004	ND<-0.693147	ND<1
			4/1/2005	ND<-0.693147	ND<1
			10/26/2005	ND<-0.693147	ND<1
			6/19/2006	ND<-0.693147	ND<1
			11/18/2006	ND<-0.693147	ND<1
			6/2/2007	ND<-0.693147	ND<1
			11/15/2007	ND<-0.693147	ND<1
			5/20/2008	ND<-0.693147	ND<1
			11/20/2008	ND<-0.693147	ND<1
			6/11/2009	ND<-2.73337 U	ND<0.13 U

There are 16 compliance locations

Loc.	Meas.	ND	Date	Conc.	Original
LMW-8	17	15 (88.2353%)	1/16/1998	ND<-0.693147	ND<1
			3/16/1999	ND<-0.693147	ND<1
			9/23/1999	ND<-0.693147	ND<1
			3/14/2000	ND<-0.693147	ND<1
			9/23/2003	ND<-0.693147	ND<1
			3/10/2004	ND<-0.693147	ND<1
			10/12/2004	ND<-0.693147	ND<1
			4/1/2005	ND<-0.693147	ND<1
			10/26/2005	ND<0 J	ND<0 J
			6/19/2006	ND<0 J	ND<0 J
			11/18/2006	ND<-0.693147	ND<1
			6/2/2007	ND<-0.693147	ND<1
			11/15/2007	ND<-0.693147	ND<1
			5/20/2008	ND<-0.693147	ND<1
			11/20/2008	ND<-0.693147	ND<1
			6/11/2009	-0.891598 J	0.41 J
			11/14/2009	-1.66073 J	0.19 J
LMW-10	14	12 (85.7143%)	3/14/2000	ND<-0.693147	ND<1
			9/23/2003	ND<-0.693147	ND<1
			3/10/2004	ND<-0.693147	ND<1
			10/12/2004	ND<-0.693147	ND<1
			4/1/2005	ND<0 J	ND<0 J
			10/26/2005	ND<0 J	ND<0 J
			6/19/2006	ND<0 J	ND<0 J

			11/18/2006	ND<0 J	ND<0 J
			6/2/2007	ND<-0.693147	ND<1
			11/15/2007	ND<-0.693147	ND<1
			5/20/2008	ND<-0.693147	ND<1
			11/20/2008	ND<0 J	ND<0 J
			6/11/2009	-0.127833 J	0.88 J
			11/14/2009	0.530628	1.7
LMW-9S	6	6 (100%)	11/18/2006	ND<-0.693147	ND<1
			6/2/2007	ND<-0.693147	ND<1
			11/15/2007	ND<-0.693147	ND<1
			5/20/2008	ND<-0.693147	ND<1
			11/20/2008	ND<-0.693147	ND<1
			6/11/2009	ND<-2.73337 U	ND<0.13 U
LMW-9	16	16 (100%)	1/16/1998	ND<-0.693147	ND<1
			3/16/1999	ND<-0.693147	ND<1
			9/23/1999	ND<-0.693147	ND<1
			3/14/2000	ND<-0.693147	ND<1
			9/23/2003	ND<-0.693147	ND<1
			3/10/2004	ND<-0.693147	ND<1
			10/12/2004	ND<-0.693147	ND<1
			4/1/2005	ND<-0.693147	ND<1
			10/26/2005	ND<-0.693147	ND<1
			6/19/2006	ND<-0.693147	ND<1
			11/18/2006	ND<-0.693147	ND<1
			6/2/2007	ND<-0.693147	ND<1
			11/15/2007	ND<-0.693147	ND<1
			5/20/2008	ND<-0.693147	ND<1
			11/20/2008	ND<-0.693147	ND<1
			6/11/2009	ND<-2.73337 U	ND<0.13 U
LMW-15R	9	9 (100%)	11/18/2006	ND<-0.693147	ND<1
			6/2/2007	ND<-0.693147	ND<1
			11/15/2007	ND<-0.693147	ND<1
			11/15/2007	ND<-0.693147	ND<1
			5/20/2008	ND<-0.693147	ND<1
			5/20/2008	ND<-0.693147	ND<1
			11/20/2008	ND<-0.693147	ND<1
			11/20/2008	ND<-0.693147	ND<1
			6/11/2009	ND<-2.73337 U	ND<0.13 U
LMW-16	6	6 (100%)	11/18/2006	ND<-0.693147	ND<1
			6/2/2007	ND<-0.693147	ND<1
			11/15/2007	ND<-0.693147	ND<1
			5/20/2008	ND<-0.693147	ND<1
			11/20/2008	ND<-0.693147	ND<1
			6/11/2009	ND<-2.73337 U	ND<0.13 U
LMW-9D	6	6 (100%)	11/18/2006	ND<-0.693147	ND<1
			6/2/2007	ND<-0.693147	ND<1
			11/15/2007	ND<-0.693147	ND<1
			5/20/2008	ND<-0.693147	ND<1
			11/20/2008	ND<-0.693147	ND<1
			6/11/2009	ND<-2.73337 U	ND<0.13 U
LMW-6	16	16 (100%)	1/16/1998	ND<-0.693147	ND<1
			3/16/1999	ND<-0.693147	ND<1
			9/23/1999	ND<-0.693147	ND<1
			3/14/2000	ND<-0.693147	ND<1
			9/23/2003	ND<-0.693147	ND<1

			3/10/2004	ND<-0.693147	ND<1
			10/12/2004	ND<-0.693147	ND<1
			4/1/2005	ND<-0.693147	ND<1
			10/26/2005	ND<-0.693147	ND<1
			6/19/2006	ND<-0.693147	ND<1
			11/18/2006	ND<-0.693147	ND<1
			6/2/2007	ND<-0.693147	ND<1
			11/15/2007	ND<-0.693147	ND<1
			5/20/2008	ND<-0.693147	ND<1
			11/20/2008	ND<-0.693147	ND<1
			6/11/2009	ND<-2.73337 U	ND<0.13 U
LMW-3	18	18 (100%)	11/19/1996	ND<-0.693147	ND<1
			3/24/1997	ND<-0.693147	ND<1
			1/16/1998	ND<-0.693147	ND<1
			3/16/1999	ND<-0.693147	ND<1
			9/23/1999	ND<-0.693147	ND<1
			3/14/2000	ND<-0.693147	ND<1
			9/23/2003	ND<-0.693147	ND<1
			3/10/2004	ND<-0.693147	ND<1
			10/12/2004	ND<-0.693147	ND<1
			4/1/2005	ND<-0.693147	ND<1
			10/26/2005	ND<-0.693147	ND<1
			6/19/2006	ND<-0.693147	ND<1
			11/18/2006	ND<-0.693147	ND<1
			6/2/2007	ND<-0.693147	ND<1
			11/15/2007	ND<-0.693147	ND<1
			5/20/2008	ND<-0.693147	ND<1
			11/20/2008	ND<-0.693147	ND<1
			6/11/2009	ND<-2.73337 U	ND<0.13 U
LMW-3S	6	6 (100%)	11/18/2006	ND<-0.693147	ND<1
			6/2/2007	ND<-0.693147	ND<1
			11/15/2007	ND<-0.693147	ND<1
			5/20/2008	ND<-0.693147	ND<1
			11/20/2008	ND<-0.693147	ND<1
			6/11/2009	ND<-2.73337 U	ND<0.13 U
LMW-7	16	16 (100%)	1/16/1998	ND<-0.693147	ND<1
			3/16/1999	ND<-0.693147	ND<1
			9/23/1999	ND<-0.693147	ND<1
			3/14/2000	ND<-0.693147	ND<1
			9/23/2003	ND<-0.693147	ND<1
			3/10/2004	ND<-0.693147	ND<1
			10/12/2004	ND<-0.693147	ND<1
			4/1/2005	ND<-0.693147	ND<1
			10/26/2005	ND<-0.693147	ND<1
			6/19/2006	ND<-0.693147	ND<1
			11/18/2006	ND<-0.693147	ND<1
			6/2/2007	ND<-0.693147	ND<1
			11/15/2007	ND<-0.693147	ND<1
			5/20/2008	ND<-0.693147	ND<1
			11/20/2008	ND<-0.693147	ND<1
			6/11/2009	ND<-2.73337 U	ND<0.13 U
LMW-14R	5	5 (100%)	6/2/2007	ND<-0.693147	ND<1
			11/15/2007	ND<-0.693147	ND<1
			5/20/2008	ND<-0.693147	ND<1
			11/20/2008	ND<-0.693147	ND<1
			6/11/2009	ND<-2.73337 U	ND<0.13 U
LMW-13	11	11 (100%)	3/14/2000	ND<-0.693147	ND<1

			9/23/2003	ND<-0.693147	ND<1	
			3/10/2004	ND<-0.693147	ND<1	
			10/12/2004	ND<-0.693147	ND<1	
			4/1/2005	ND<-0.693147	ND<1	
			10/26/2005	ND<-0.693147	ND<1	
			6/19/2006	ND<-0.693147	ND<1	
			6/2/2007	ND<-0.693147	ND<1	
			11/15/2007	ND<-0.693147	ND<1	
			5/20/2008	ND<-0.693147	ND<1	
			11/20/2008	ND<-0.693147	ND<1	
LMW-12	11	11 (100%)	3/14/2000	ND<-0.693147	ND<1	
			9/23/2003	ND<-0.693147	ND<1	
			3/10/2004	ND<-0.693147	ND<1	
			10/12/2004	ND<-0.693147	ND<1	
			4/1/2005	ND<-0.693147	ND<1	
			10/26/2005	ND<-0.693147	ND<1	
			6/19/2006	ND<-0.693147	ND<1	
			6/2/2007	ND<-0.693147	ND<1	
			11/15/2007	ND<-0.693147	ND<1	
			5/20/2008	ND<-0.693147	ND<1	
			11/20/2008	ND<-0.693147	ND<1	
LMW-11	11	11 (100%)	3/14/2000	ND<-0.693147	ND<1	
			9/23/2003	ND<-0.693147	ND<1	
			3/10/2004	ND<-0.693147	ND<1	
			10/12/2004	ND<-0.693147	ND<1	
			4/1/2005	ND<-0.693147	ND<1	
			10/26/2005	ND<-0.693147	ND<1	
			6/19/2006	ND<-0.693147	ND<1	
			6/2/2007	ND<-0.693147	ND<1	
			11/15/2007	ND<-0.693147	ND<1	
			5/20/2008	ND<-0.693147	ND<1	
			11/20/2008	ND<-0.693147	ND<1	
MW-5	13	13 (100%)	1/16/1998	ND<-0.693147	ND<1	
			3/16/1999	ND<-0.693147	ND<1	
			9/23/1999	ND<-0.693147	ND<1	
			3/14/2000	ND<-0.693147	ND<1	
			9/23/2003	ND<-0.693147	ND<1	
			3/10/2004	ND<-0.693147	ND<1	
			10/12/2004	ND<-0.693147	ND<1	
			4/1/2005	ND<-0.693147	ND<1	
			10/26/2005	ND<-0.693147	ND<1	
			6/19/2006	ND<-0.693147	ND<1	
			11/15/2007	ND<0 J	ND<0 J	
			5/20/2008	ND<-0.693147	ND<1	
			11/20/2008	ND<-0.693147	ND<1	

There are 0 unused locations

Loc.	Meas.	ND	Date	Conc.	Original

Shapiro-Francia Test of Normality

Parameter: Trichloroethylene

All Locations

Normality Test of Parameter Concentrations

Original Data (Not Transformed)
Non-Detects Replaced with 1/2 DL
Total Number of Measurements = 197

i	x(i)	m(i)	sum(m^2)	sum(mx)
1	0	-2.575836	3.63492	0
2	0	-2.326341	2.0468	0
3	0	-2.170091	6.7561	0
4	0	-2.053752	0.974	0
5	0	-1.959962	4.8154	0
6	0	-1.880792	8.3528	0
7	0	-1.811913	1.6358	0
8	0	-1.750693	4.7007	0
9	0.065	-1.6954	37.5751	-0.110201
10	0.065	-1.644854	0.2806	-0.217116
11	0.065	-1.598194	2.8348	-0.320999
12	0.065	-1.554774	5.2522	-0.422059
13	0.065	-1.5141	47.5447	-0.520476
14	0.065	-1.475794	9.7226	-0.616402
15	0.065	-1.439535	1.7949	-0.709972
16	0.065	-1.405075	3.7691	-0.801301
17	0.065	-1.3722	55.6521	-0.890495
18	0.065	-1.340755	7.4497	-0.977644
19	0.065	-1.310585	9.1673	-1.06283
20	0.19	-1.275886	0.7952	-1.30525
21	0.41	-1.248096	2.3529	-1.81696
22	0.5	-1.221236	3.8443	-2.42758
23	0.5	-1.195226	5.2728	-3.02519
24	0.5	-1.17	66.6417	-3.61019
25	0.5	-1.1455	67.9539	-4.18294
26	0.5	-1.121686	9.2121	-4.74378
27	0.5	-1.098477	0.4187	-5.29301
28	0.5	-1.075847	1.5761	-5.83093
29	0.5	-1.053757	2.6865	-6.35781
30	0.5	-1.032157	3.7519	-6.87388
31	0.5	-1.011047	4.774	-7.3794
32	0.5	-0.990356	75.7549	-7.87458
33	0.5	-0.970094	76.6959	-8.35962
34	0.5	-0.950222	77.5989	-8.83474
35	0.5	-0.930718	78.4651	-9.30009
36	0.5	-0.911562	79.296	-9.75588
37	0.5	-0.892733	80.093	-10.2022
38	0.5	-0.874218	80.8573	-10.6394
39	0.5	-0.855996	81.59	-11.0673
40	0.5	-0.834498	82.2864	-11.4846
41	0.5	-0.816874	82.9537	-11.893
42	0.5	-0.7995	83.5929	-12.2928
43	0.5	-0.782366	84.205	-12.684
44	0.5	-0.765456	84.7909	-13.0667
45	0.5	-0.748762	85.3515	-13.4411
46	0.5	-0.732275	85.8878	-13.8072
47	0.5	-0.715986	86.4004	-14.1652
48	0.5	-0.699883	86.8902	-14.5151
49	0.5	-0.683968	7.358	-14.8571

50	0.5	-0.668209	87.8045	-15.1912
51	0.5	-0.652622	88.2304	-15.5175
52	0.5	-0.637192	88.6365	-15.8361
53	0.5	-0.621911	89.0232	-16.1471
54	0.5	-0.606775	89.3914	-16.4505
55	0.5	-0.591776	89.7416	-16.7464
56	0.5	-0.576911	90.0744	-17.0348
57	0.5	-0.562179	0.3905	-17.3159
58	0.5	-0.547551	90.6903	-17.5897
59	0.5	-0.533048	90.9744	-17.8562
60	0.5	-0.515791	91.2405	-18.1141
61	0.5	-0.501527	91.492	-18.3649
62	0.5	-0.487364	91.7295	-18.6086
63	0.5	-0.473299	91.9535	-18.8452
64	0.5	-0.459327	92.1645	-19.0749
65	0.5	-0.445443	92.3629	-19.2976
66	0.5	-0.431644	92.5492	-19.5134
67	0.5	-0.417928	92.7239	-19.7224
68	0.5	-0.404299	2.8874	-19.9245
69	0.5	-0.390726	93.04	-20.1199
70	0.5	-0.377233	93.1823	-20.3085
71	0.5	-0.363809	93.3147	-20.4904
72	0.5	-0.350451	93.4375	-20.6656
73	0.5	-0.337155	93.5512	-20.8342
74	0.5	-0.323919	93.6561	-20.9962
75	0.5	-0.310738	93.7527	-21.1515
76	0.5	-0.297612	93.8412	-21.3003
77	0.5	-0.284535	93.9222	-21.4426
78	0.5	-0.271509	93.9959	-21.5784
79	0.5	-0.258527	94.0627	-21.7076
80	0.5	-0.243007	94.1218	-21.8291
81	0.5	-0.230118	94.1748	-21.9442
82	0.5	-0.217267	94.222	-22.0528
83	0.5	-0.204452	94.2638	-22.155
84	0.5	-0.191671	94.3005	-22.2509
85	0.5	-0.178929	4.3325	-22.3403
86	0.5	-0.166199	94.3601	-22.4234
87	0.5	-0.153505	94.3837	-22.5002
88	0.5	-0.140835	94.4035	-22.5706
89	0.5	-0.128189	94.42	-22.6347
90	0.5	-0.115562	94.4333	-22.6925
91	0.5	-0.102953	94.4439	-22.744
92	0.5	-0.0903606	94.4521	-22.7891
93	0.5	-0.0777834	94.4581	-22.828
94	0.5	-0.0652187	94.4624	-22.8606
95	0.5	-0.0526632	94.4652	-22.887
96	0.5	-0.0401167	94.4668	-22.907
97	0.5	-0.0275759	94.4675	-22.9208
98	0.5	-0.0150408	94.4678	-22.9283
99	0.5	0	94.4678	-22.9283
100	0.5	0.0150408	94.468	-22.9208
101	0.5	0.0275759	94.4687	-22.907
102	0.5	0.0401167	94.4703	-22.887
103	0.5	0.0526632	94.4731	-22.8606
104	0.5	0.0652187	94.4774	-22.828
105	0.5	0.0777834	94.4834	-22.7891
106	0.5	0.0903606	94.4916	-22.744
107	0.5	0.102953	94.5022	-22.6925
108	0.5	0.115562	94.5155	-22.6347
109	0.5	0.128189	94.532	-22.5706
110	0.5	0.140835	94.5518	-22.5002
111	0.5	0.153505	94.5754	-22.4234

112	0.5	0.166199	94.603	-22.3403
113	0.5	0.17892	94.635	-22.2509
114	0.5	0.191671	94.6717	-22.155
115	0.5	0.204452	94.7135	-22.0528
116	0.5	0.217267	94.7608	-21.9442
117	0.5	0.230118	94.8137	-21.8291
118	0.5	0.243007	94.8728	-21.7076
119	0.5	0.258527	94.9396	-21.5784
120	0.5	0.271509	95.0133	-21.4426
121	0.5	0.284535	95.0943	-21.3003
122	0.5	0.297612	95.1828	-21.1515
123	0.5	0.310738	95.2794	-20.9962
124	0.5	0.323919	95.3843	-20.8342
125	0.5	0.337155	95.498	-20.6656
126	0.5	0.350451	95.6208	-20.4904
127	0.5	0.363809	95.7532	-20.3085
128	0.5	0.377233	95.8955	-20.1199
129	0.5	0.390726	96.0481	-19.9245
130	0.5	0.40429	96.2116	-19.7224
131	0.5	0.417928	96.3863	-19.5134
132	0.5	0.431644	96.5726	-19.2976
133	0.5	0.445443	96.771	-19.0749
134	0.5	0.459327	96.982	-18.8452
135	0.5	0.473299	97.206	-18.6086
136	0.5	0.487364	97.4435	-18.3649
137	0.5	0.501527	97.695	-18.1141
138	0.5	0.515791	97.9611	-17.8562
139	0.5	0.533048	98.2452	-17.5897
140	0.5	0.547551	98.545	-17.3159
141	0.5	0.56217	98.8611	-17.0348
142	0.5	0.576911	99.1939	-16.7464
143	0.5	0.591776	99.5441	-16.4505
144	0.5	0.606775	99.9123	-16.1471
145	0.5	0.621911	100.299	-15.8361
146	0.5	0.637192	100.705	-15.5175
147	0.5	0.652622	101.131	-15.1912
148	0.5	0.668209	101.577	-14.8571
149	0.5	0.68396	102.045	-14.5151
150	0.5	0.699883	102.535	-14.1652
151	0.5	0.715986	103.048	-13.8072
152	0.5	0.732275	103.584	-13.4411
153	0.5	0.748762	104.145	-13.0667
154	0.5	0.765456	104.731	-12.684
155	0.5	0.782366	105.343	-12.2928
156	0.5	0.7995	105.982	-11.893
157	0.5	0.816874	106.649	-11.4846
158	0.5	0.834498	107.346	-11.0673
159	0.5	0.855996	108.078	-10.6394
160	0.5	0.874218	108.842	-10.2022
161	0.5	0.892733	109.639	-9.75588
162	0.5	0.911562	110.47	-9.30009
163	0.5	0.930718	111.337	-8.83474
164	0.5	0.950222	112.24	-8.35962
165	0.5	0.970094	113.181	-7.87458
166	0.5	0.990356	114.161	-7.3794
167	0.5	1.01104	115.184	-6.87388
168	0.5	1.03215	116.249	-6.35781
169	0.5	1.05375	117.359	-5.83093
170	0.5	1.07584	118.517	-5.29301
171	0.5	1.09847	119.723	-4.74378
172	0.5	1.12168	120.982	-4.18294
173	0.5	1.1455	122.294	-3.61019

174	0.5	1.17	123.663	-3.02519
175	0.5	1.19522	125.091	-2.42758
176	0.5	1.22123	126.583	-1.81696
177	0.5	1.24809	128.14	-1.19292
178	0.5	1.27588	129.768	-0.554982
179	0.5	1.31058	131.486	0.100308
180	0.5	1.34075	133.283	0.770685
181	0.5	1.3722	135.166	1.45679
182	0.5	1.40507	137.141	2.15932
183	0.5	1.43953	139.213	2.87909
184	0.5	1.47579	141.391	3.61698
185	0.5	1.5141	143.683	4.37404
186	0.5	1.55477	146.101	5.15142
187	0.5	1.59819	148.655	5.95052
188	0.5	1.64485	151.36	6.77295
189	0.5	1.6954	154.235	7.62064
190	0.5	1.75069	157.3	8.49599
191	0.5	1.81191	160.583	9.40194
192	0.5	1.88079	164.12	10.3423
193	0.5	1.95996	167.962	11.3223
194	0.5	2.05375	172.179	12.3492
195	0.5	2.17009	176.889	13.4342
196	0.88	2.32634	182.301	15.4814
197	1.7	2.57583	188.936	19.8603

Data Set Standard Deviation = 0.167156
Numerator = 394.433
Denominator = 1034.7
W Statistic = 0.381204 = 394.433 / 1034.7

5% Critical value of 0.976 exceeds 0.381204
Evidence of non-normality at 95% level of significance

1% Critical value of 0.967 exceeds 0.381204
Evidence of non-normality at 99% level of significance

Shapiro-Francia Test of Normality

Parameter: Trichloroethylene

All Locations

Normality Test of Parameter Concentrations

Natural Logarithm Transformation
Non-Detects Replaced with 1/2 DL
Total Number of Measurements = 197

i	x(i)	m(i)	sum(m^2)	sum(mx)	
1	-2.73337	-2.57583	6.63492	7.0407	
2	-2.73337	-2.32634	12.0468	13.3995	
3	-2.73337	-2.17009	16.7561	19.3311	
4	-2.73337	-2.05375	20.974	24.9448	
5	-2.73337	-1.95996	24.8154	30.3021	
6	-2.73337	-1.88079	28.3528	35.4429	
7	-2.73337	-1.81191	31.6358	40.3956	
8	-2.73337	-1.75069	34.7007	45.1808	
9	-2.73337	-1.6954	37.5751	49.815	
10	-2.73337	-1.64485	40.2806	54.311	
11	-2.73337	-1.59819	42.8348	58.6794	
12	-1.66073	-1.55477	45.2522	61.2615	
13	-0.891598	-1.5141	47.5447	62.6115	
14	-0.693147	-1.47579	49.7226	63.6344	
15	-0.693147	-1.43953	51.7949	64.6322	
16	-0.693147	-1.40507	53.7691	65.6061	
17	-0.693147	-1.3722	55.6521	66.5573	
18	-0.693147	-1.34075	57.4497	67.4866	
19	-0.693147	-1.31058	59.1673	68.395	
20	-0.693147	-1.27588	60.7952	69.2794	
21	-0.693147	-1.24809	62.3529	70.1445	
22	-0.693147	-1.22123	63.8443	70.991	
23	-0.693147	-1.19522	65.2728	71.8195	
24	-0.693147	-1.17	66.6417	72.6304	
25	-0.693147	-1.1455	67.9539	73.4244	
26	-0.693147	-1.12168	69.2121	74.2019	
27	-0.693147	-1.09847	70.4187	74.9633	
28	-0.693147	-1.07584	71.5761	75.709	
29	-0.693147	-1.05375	72.6865	76.4394	
30	-0.693147	-1.03215	73.7519	77.1549	
31	-0.693147	-1.01104	74.774	77.8557	
32	-0.693147	-0.990356		75.7549	78.5421
33	-0.693147	-0.970094		76.6959	79.2146
34	-0.693147	-0.950222		77.5989	79.8732
35	-0.693147	-0.930718		78.4651	80.5183
36	-0.693147	-0.911562		79.296	81.1502
37	-0.693147	-0.892733		80.093	81.769
38	-0.693147	-0.874218		80.8573	82.3749
39	-0.693147	-0.855996		81.59	82.9683
40	-0.693147	-0.834498		82.2864	83.5467
41	-0.693147	-0.816874		82.9537	84.1129
42	-0.693147	-0.7995	83.5929	84.6671	
43	-0.693147	-0.782366		84.205	85.2094
44	-0.693147	-0.765456		84.7909	85.7399
45	-0.693147	-0.748762		85.3515	86.2589
46	-0.693147	-0.732275		85.8878	86.7665
47	-0.693147	-0.715986		86.4004	87.2628
48	-0.693147	-0.699883		86.8902	87.7479
49	-0.693147	-0.683968	7.358	88.222	

50	-0.693147	-0.668209	87.8045	88.6852
51	-0.693147	-0.652622	88.2304	89.1375
52	-0.693147	-0.637192	88.6365	89.5792
53	-0.693147	-0.621911	89.0232	90.0103
54	-0.693147	-0.606775	89.3914	90.4309
55	-0.693147	-0.591776	89.7416	90.8411
56	-0.693147	-0.576911	90.0744	91.2409
57	-0.693147	-0.562179	0.3905	91.6306
58	-0.693147	-0.547551	90.6903	92.0101
59	-0.693147	-0.533048	90.9744	92.3796
60	-0.693147	-0.515791	91.2405	92.7371
61	-0.693147	-0.501527	91.492	93.0848
62	-0.693147	-0.487364	91.7295	93.4226
63	-0.693147	-0.473299	91.9535	93.7507
64	-0.693147	-0.459327	92.1645	94.069
65	-0.693147	-0.445443	92.3629	94.3778
66	-0.693147	-0.431644	92.5492	94.677
67	-0.693147	-0.417928	92.7239	94.9667
68	-0.693147	-0.404299	2.8874	95.2469
69	-0.693147	-0.390726	93.04	95.5177
70	-0.693147	-0.377233	93.1823	95.7792
71	-0.693147	-0.363809	93.3147	96.0314
72	-0.693147	-0.350451	93.4375	96.2743
73	-0.693147	-0.337155	93.5512	96.508
74	-0.693147	-0.323919	93.6561	96.7325
75	-0.693147	-0.310738	93.7527	96.9479
76	-0.693147	-0.297612	93.8412	97.1542
77	-0.693147	-0.284535	93.9222	97.3514
78	-0.693147	-0.271509	93.9959	97.5396
79	-0.693147	-0.258527	94.0627	97.7188
80	-0.693147	-0.243007	94.1218	97.8873
81	-0.693147	-0.230118	94.1748	98.0468
82	-0.693147	-0.217267	94.222	98.1974
83	-0.693147	-0.204452	94.2638	98.3391
84	-0.693147	-0.191671	94.3005	98.4719
85	-0.693147	-0.178929	4.3325	98.5959
86	-0.693147	-0.166199	94.3601	98.7111
87	-0.693147	-0.153505	94.3837	98.8176
88	-0.693147	-0.140835	94.4035	98.9152
89	-0.693147	-0.128189	94.42	99.004
90	-0.693147	-0.115562	94.4333	99.0841
91	-0.693147	-0.102953	94.4439	99.1555
92	-0.693147	-0.0903606	94.4521	99.2181
93	-0.693147	-0.0777834	94.4581	99.272
94	-0.693147	-0.0652187	94.4624	99.3172
95	-0.693147	-0.0526632	94.4652	99.3537
96	-0.693147	-0.0401167	94.4668	99.3816
97	-0.693147	-0.0275759	94.4675	99.4007
98	-0.693147	-0.0150408	94.4678	99.4111
99	-0.693147	0	94.4678	99.4111
100	-0.693147	0.0150408	94.468	99.4007
101	-0.693147	0.0275759	94.4687	99.3816
102	-0.693147	0.0401167	94.4703	99.3537
103	-0.693147	0.0526632	94.4731	99.3172
104	-0.693147	0.0652187	94.4774	99.272
105	-0.693147	0.0777834	94.4834	99.2181
106	-0.693147	0.0903606	94.4916	99.1555
107	-0.693147	0.102953	94.5022	99.0841
108	-0.693147	0.115562	94.5155	99.004
109	-0.693147	0.128189	94.532	98.9152
110	-0.693147	0.140835	94.5518	98.8176
111	-0.693147	0.153505	94.5754	98.7111

112	-0.693147	0.166199		94.603	98.5959
113	-0.693147	0.17892	94.635	98.4719	
114	-0.693147	0.191671		94.6717	98.3391
115	-0.693147	0.204452		94.7135	98.1974
116	-0.693147	0.217267		94.7608	98.0468
117	-0.693147	0.230118		94.8137	97.8873
118	-0.693147	0.243007		94.8728	97.7188
119	-0.693147	0.258527		94.9396	97.5396
120	-0.693147	0.271509		95.0133	97.3514
121	-0.693147	0.284535		95.0943	97.1542
122	-0.693147	0.297612		95.1828	96.9479
123	-0.693147	0.310738		95.2794	96.7325
124	-0.693147	0.323919		95.3843	96.508
125	-0.693147	0.337155		95.498	96.2743
126	-0.693147	0.350451		95.6208	96.0314
127	-0.693147	0.363809		95.7532	95.7792
128	-0.693147	0.377233		95.8955	95.5177
129	-0.693147	0.390726		96.0481	95.2469
130	-0.693147	0.40429	96.2116	94.9667	
131	-0.693147	0.417928		96.3863	94.677
132	-0.693147	0.431644		96.5726	94.3778
133	-0.693147	0.445443		96.771	94.069
134	-0.693147	0.459327		96.982	93.7507
135	-0.693147	0.473299		97.206	93.4226
136	-0.693147	0.487364		97.4435	93.0848
137	-0.693147	0.501527		97.695	92.7371
138	-0.693147	0.515791		97.9611	92.3796
139	-0.693147	0.533048		98.2452	92.0101
140	-0.693147	0.547551		98.545	91.6306
141	-0.693147	0.56217	98.8611	91.2409	
142	-0.693147	0.576911		99.1939	90.8411
143	-0.693147	0.591776		99.5441	90.4309
144	-0.693147	0.606775		99.9123	90.0103
145	-0.693147	0.621911		100.299	89.5792
146	-0.693147	0.637192		100.705	89.1375
147	-0.693147	0.652622		101.131	88.6852
148	-0.693147	0.668209		101.577	88.222
149	-0.693147	0.68396	102.045	87.7479	
150	-0.693147	0.699883		102.535	87.2628
151	-0.693147	0.715986		103.048	86.7665
152	-0.693147	0.732275		103.584	86.2589
153	-0.693147	0.748762		104.145	85.7399
154	-0.693147	0.765456		104.731	85.2094
155	-0.693147	0.782366		105.343	84.6671
156	-0.693147	0.7995	105.982	84.1129	
157	-0.693147	0.816874		106.649	83.5467
158	-0.693147	0.834498		107.346	82.9683
159	-0.693147	0.855996		108.078	82.3749
160	-0.693147	0.874218		108.842	81.769
161	-0.693147	0.892733		109.639	81.1502
162	-0.693147	0.911562		110.47	80.5183
163	-0.693147	0.930718		111.337	79.8732
164	-0.693147	0.950222		112.24	79.2146
165	-0.693147	0.970094		113.181	78.5421
166	-0.693147	0.990356		114.161	77.8557
167	-0.693147	1.01104	115.184	77.1549	
168	-0.693147	1.03215	116.249	76.4394	
169	-0.693147	1.05375	117.359	75.709	
170	-0.693147	1.07584	118.517	74.9633	
171	-0.693147	1.09847	119.723	74.2019	
172	-0.693147	1.12168	120.982	73.4244	
173	-0.693147	1.1455	122.294	72.6304	

174	-0.693147		1.17	123.663	71.8195
175	-0.693147		1.19522	125.091	70.991
176	-0.693147		1.22123	126.583	70.1445
177	-0.693147		1.24809	128.14	69.2794
178	-0.693147		1.27588	129.768	68.395
179	-0.693147		1.31058	131.486	67.4866
180	-0.693147		1.34075	133.283	66.5573
181	-0.693147		1.3722	135.166	65.6061
182	-0.693147		1.40507	137.141	64.6322
183	-0.693147		1.43953	139.213	63.6344
184	-0.693147		1.47579	141.391	62.6115
185	-0.693147		1.5141	143.683	61.562
186	-0.693147		1.55477	146.101	60.4843
187	-0.693147		1.59819	148.655	59.3765
188	-0.127833		1.64485	151.36	59.1662
189	0	1.6954	154.235	59.1662	
190	0	1.75069	157.3	59.1662	
191	0	1.81191	160.583	59.1662	
192	0	1.88079	164.12	59.1662	
193	0	1.95996	167.962	59.1662	
194	0	2.05375	172.179	59.1662	
195	0	2.17009	176.889	59.1662	
196	0	2.32634	182.301	59.1662	
197	0.530628		2.57583	188.936	60.533

Data Set Standard Deviation = 0.5105
Numerator = 3664.25
Denominator = 9650.74
W Statistic = 0.379686 = 3664.25 / 9650.74

5% Critical value of 0.976 exceeds 0.379686
Evidence of non-normality at 95% level of significance

1% Critical value of 0.967 exceeds 0.379686
Evidence of non-normality at 99% level of significance

Non-Parametric Prediction Interval

Inter-Well Comparison

Parameter: Trichloroethylene

Natural Logarithm Transformation
Non-Detects Replaced with 1/2 DL

Total Percent Non-Detects = 97.9695%
Number of comparisons = 16
Future Samples (k) = 8
Recent Dates = 1
Background Samples (n) = 16
Maximum Background Concentration = 0
Confidence Level = 66.7%
False Positive Rate = 33.3%

Location	Date	Samples	Mean	Significant
LMW-8	11/14/2009	1	-1.66073	FALSE
LMW-10	11/14/2009	1	0.530628	TRUE
LMW-9S	6/11/2009	1	-2.73337	FALSE
LMW-9	6/11/2009	1	-2.73337	FALSE
LMW-15R	6/11/2009	1	-2.73337	FALSE
LMW-16	6/11/2009	1	-2.73337	FALSE
LMW-9D	6/11/2009	1	-2.73337	FALSE
LMW-6	6/11/2009	1	-2.73337	FALSE
LMW-3	6/11/2009	1	-2.73337	FALSE
LMW-3S	6/11/2009	1	-2.73337	FALSE
LMW-7	6/11/2009	1	-2.73337	FALSE
LMW-14R	6/11/2009	1	-2.73337	FALSE
LMW-13	11/20/2008	1	-0.693147	FALSE
LMW-12	11/20/2008	1	-0.693147	FALSE
LMW-11	11/20/2008	1	-0.693147	FALSE
MW-5	11/20/2008	1	-0.693147	FALSE

Mann-Kendall Trend Analysis

Parameter: Trichloroethylene

Location: LMW-10

Natural Logarithm Transformation
Non-Detects Replaced with 1/2 DL

95% Confidence Level

Xj	Xk	Xj - Xk	Positives	Negatives
ND<-0.693147	ND<-0.693147	0	0	0
ND<-0.693147	ND<-0.693147	0	0	0
ND<-0.693147	ND<-0.693147	0	0	0
ND<0 J	ND<-0.693147	0.693147	1	0
ND<0 J	ND<-0.693147	0.693147	2	0
ND<0 J	ND<-0.693147	0.693147	3	0
ND<0 J	ND<-0.693147	0.693147	4	0
ND<-0.693147	ND<-0.693147	0	4	0
ND<-0.693147	ND<-0.693147	0	4	0
ND<-0.693147	ND<-0.693147	0	4	0
ND<0 J	ND<-0.693147	0.693147	5	0
-0.127833 J	ND<-0.693147	0.565314	6	0
0.530628	ND<-0.693147	1.22378	7	0
ND<-0.693147	ND<-0.693147	0	7	0
ND<-0.693147	ND<-0.693147	0	7	0
ND<0 J	ND<-0.693147	0.693147	8	0
ND<0 J	ND<-0.693147	0.693147	9	0
ND<0 J	ND<-0.693147	0.693147	10	0
ND<0 J	ND<-0.693147	0.693147	11	0
ND<-0.693147	ND<-0.693147	0	11	0
ND<-0.693147	ND<-0.693147	0	11	0
ND<-0.693147	ND<-0.693147	0	11	0
ND<0 J	ND<-0.693147	0.693147	12	0
-0.127833 J	ND<-0.693147	0.565314	13	0
0.530628	ND<-0.693147	1.22378	14	0
ND<-0.693147	ND<-0.693147	0	14	0
ND<0 J	ND<-0.693147	0.693147	15	0
ND<0 J	ND<-0.693147	0.693147	16	0
ND<0 J	ND<-0.693147	0.693147	17	0
ND<0 J	ND<-0.693147	0.693147	18	0
ND<-0.693147	ND<-0.693147	0	18	0
ND<-0.693147	ND<-0.693147	0	18	0
ND<-0.693147	ND<-0.693147	0	18	0
ND<0 J	ND<-0.693147	0.693147	19	0
-0.127833 J	ND<-0.693147	0.565314	20	0
0.530628	ND<-0.693147	1.22378	21	0
ND<0 J	ND<-0.693147	0.693147	22	0
ND<0 J	ND<-0.693147	0.693147	23	0
ND<0 J	ND<-0.693147	0.693147	24	0
ND<0 J	ND<-0.693147	0.693147	25	0
ND<-0.693147	ND<-0.693147	0	25	0
ND<-0.693147	ND<-0.693147	0	25	0
ND<-0.693147	ND<-0.693147	0	25	0
ND<0 J	ND<-0.693147	0.693147	26	0
-0.127833 J	ND<-0.693147	0.565314	27	0

0.530628	ND<-0.693147	1.22378	28	0	
ND<0 J	ND<0 J	0	28	0	
ND<0 J	ND<0 J	0	28	0	
ND<0 J	ND<0 J	0	28	0	
ND<-0.693147	ND<0 J	-0.693147	28	1	
ND<-0.693147	ND<0 J	-0.693147	28	2	
ND<-0.693147	ND<0 J	-0.693147	28	3	
ND<0 J	ND<0 J	0	28	3	
-0.127833 J	ND<0 J	-0.127833	28	4	
0.530628	ND<0 J	0.530628	29	4	
ND<0 J	ND<0 J	0	29	4	
ND<0 J	ND<0 J	0	29	4	
ND<-0.693147	ND<0 J	-0.693147	29	5	
ND<-0.693147	ND<0 J	-0.693147	29	6	
ND<-0.693147	ND<0 J	-0.693147	29	7	
ND<0 J	ND<0 J	0	29	7	
-0.127833 J	ND<0 J	-0.127833	29	8	
0.530628	ND<0 J	0.530628	30	8	
ND<0 J	ND<0 J	0	30	8	
ND<-0.693147	ND<0 J	-0.693147	30	9	
ND<-0.693147	ND<0 J	-0.693147	30	10	
ND<-0.693147	ND<0 J	-0.693147	30	11	
ND<0 J	ND<0 J	0	30	11	
-0.127833 J	ND<0 J	-0.127833	30	12	
0.530628	ND<0 J	0.530628	31	12	
ND<-0.693147	ND<0 J	-0.693147	31	13	
ND<-0.693147	ND<0 J	-0.693147	31	14	
ND<-0.693147	ND<0 J	-0.693147	31	15	
ND<0 J	ND<0 J	0	31	15	
-0.127833 J	ND<0 J	-0.127833	31	16	
0.530628	ND<0 J	0.530628	32	16	
ND<-0.693147	ND<-0.693147	0	32	16	
ND<-0.693147	ND<-0.693147	0	32	16	
ND<0 J	ND<-0.693147	0.693147	33	16	
-0.127833 J	ND<-0.693147	0.565314	34	16	
0.530628	ND<-0.693147	1.22378	35	16	
ND<-0.693147	ND<-0.693147	0	35	16	
ND<0 J	ND<-0.693147	0.693147	36	16	
-0.127833 J	ND<-0.693147	0.565314	37	16	
0.530628	ND<-0.693147	1.22378	38	16	
ND<0 J	ND<-0.693147	0.693147	39	16	
-0.127833 J	ND<-0.693147	0.565314	40	16	
0.530628	ND<-0.693147	1.22378	41	16	
-0.127833 J	ND<0 J	-0.127833	41	17	
0.530628	ND<0 J	0.530628	42	17	
0.530628	-0.127833 J	0.658462	43	17	

S Statistic = 43 - 17 = 26

Tied Group Value Members

1	-0.693147	7
2	0	5

Time Period	Observations
3/14/2000	1
9/23/2003	1
3/10/2004	1
10/12/2004	1
4/1/2005	1
10/26/2005	1
6/19/2006	1
11/18/2006	1
6/2/2007	1
11/15/2007	1
5/20/2008	1
11/20/2008	1
6/11/2009	1
11/14/2009	1

There are 0 time periods with multiple data

A = 1098
B = 0
C = 270
D = 0
E = 62
F = 0
a = 6006
b = 19656
c = 364
Group Variance = 272.667
Z-Score = 1.51399
Comparison Level at 1.0 - (0.05 / 2) = 97.5% confidence level = 1.97737 (two-tailed)
|1.51399| <= 1.97737 indicating no evidence of a trend

Concentrations (ug/L)

Parameter: Trichlorofluoromethane

Natural Logarithm Transformation
Non-Detects Replaced with 1/2 DL
Total Measurements: 200
Total Non-Detect: 172
Percent Non-Detects: 86%
Total Background Measurements: 17
There is 1 background location

Loc.	Meas.	ND	Date	Conc.	Original
LMW-4	17	9 (52.9412%)	1/16/1998	ND<-0.693147	ND<1
			3/16/1999	ND<-0.693147	ND<1
			9/23/1999	ND<-0.693147	ND<1
			3/14/2000	ND<-0.693147	ND<1
			9/23/2003	ND<-0.693147	ND<1
			3/10/2004	ND<-0.693147	ND<1
			10/12/2004	ND<-0.693147	ND<1
			4/1/2005	0.693147	2
			10/26/2005	ND<0 J	ND<0 J
			6/19/2006	0.693147	2
			11/18/2006	0.693147	2
			6/2/2007	1.09861	3
			11/15/2007	ND<-0.693147	ND<1
			5/20/2008	1.09861	3
			11/20/2008	0.693147	2
			6/11/2009	-0.198451 J	0.82 J
			11/14/2009	0.875469	2.4

There are 16 compliance locations

Loc.	Meas.	ND	Date	Conc.	Original
LMW-10	14	7 (50%)	3/14/2000	ND<-0.693147	ND<1
			9/23/2003	ND<-0.693147	ND<1
			3/10/2004	ND<-0.693147	ND<1
			10/12/2004	ND<-0.693147	ND<1
			4/1/2005	ND<-0.693147	ND<1
			10/26/2005	ND<0 J	ND<0 J
			6/19/2006	0.693147	2
			11/18/2006	1.94591	7
			6/2/2007	1.09861	3
			11/15/2007	ND<-0.693147	ND<1
			5/20/2008	2.30259	10
			11/20/2008	1.09861	3
			6/11/2009	1.88707	6.6
			11/14/2009	2.56495	13
LMW-3S	7	4 (57.1429%)	11/18/2006	ND<-0.693147	ND<1
			6/2/2007	ND<-0.693147	ND<1
			11/15/2007	0	1
			5/20/2008	ND<0 J	ND<0 J
			11/20/2008	ND<0 J	ND<0 J
			6/11/2009	0.0953102	1.1
			11/14/2009	-0.0304592 J	0.97 J
LMW-6	17	12 (70.5882%)	1/16/1998	ND<-0.693147	ND<1

			3/16/1999	ND<-0.693147	ND<1
			9/23/1999	ND<-0.693147	ND<1
			3/14/2000	ND<-0.693147	ND<1
			9/23/2003	ND<-0.693147	ND<1
			3/10/2004	ND<-0.693147	ND<1
			10/12/2004	ND<-0.693147	ND<1
			4/1/2005	ND<0 J	ND<0 J
			10/26/2005	0	1
			6/19/2006	0	1
			11/18/2006	ND<-0.693147	ND<1
			6/2/2007	ND<-0.693147	ND<1
			11/15/2007	ND<0 J	ND<0 J
			5/20/2008	0	1
			11/20/2008	ND<0 J	ND<0 J
			6/11/2009	-0.0512933 J	0.95 J
			11/14/2009	0.0953102	1.1
LMW-3	19	17 (89.4737%)	11/19/1996	ND<-0.693147	ND<1
			3/24/1997	ND<-0.693147	ND<1
			1/16/1998	ND<-0.693147	ND<1
			3/16/1999	ND<-0.693147	ND<1
			9/23/1999	ND<-0.693147	ND<1
			3/14/2000	ND<-0.693147	ND<1
			9/23/2003	ND<-0.693147	ND<1
			3/10/2004	ND<-0.693147	ND<1
			10/12/2004	ND<-0.693147	ND<1
			4/1/2005	ND<0 J	ND<0 J
			10/26/2005	ND<0 J	ND<0 J
			6/19/2006	ND<0 J	ND<0 J
			11/18/2006	ND<-0.693147	ND<1
			6/2/2007	ND<-0.693147	ND<1
			11/15/2007	ND<0 J	ND<0 J
			5/20/2008	ND<0 J	ND<0 J
			11/20/2008	ND<0 J	ND<0 J
			6/11/2009	-0.174353 J	0.84 J
			11/14/2009	-0.385662 J	0.68 J
LMW-9D	6	6 (100%)	11/18/2006	ND<-0.693147	ND<1
			6/2/2007	ND<-0.693147	ND<1
			11/15/2007	ND<-0.693147	ND<1
			5/20/2008	ND<-0.693147	ND<1
			11/20/2008	ND<-0.693147	ND<1
			6/11/2009	ND<-2.07944 U	ND<0.25 U
LMW-9S	6	6 (100%)	11/18/2006	ND<-0.693147	ND<1
			6/2/2007	ND<-0.693147	ND<1
			11/15/2007	ND<-0.693147	ND<1
			5/20/2008	ND<-0.693147	ND<1
			11/20/2008	ND<-0.693147	ND<1
			6/11/2009	ND<-2.07944 U	ND<0.25 U
LMW-8	16	16 (100%)	1/16/1998	ND<-0.693147	ND<1
			3/16/1999	ND<-0.693147	ND<1
			9/23/1999	ND<-0.693147	ND<1
			3/14/2000	ND<-0.693147	ND<1
			9/23/2003	ND<-0.693147	ND<1
			3/10/2004	ND<-0.693147	ND<1
			10/12/2004	ND<-0.693147	ND<1
			4/1/2005	ND<-0.693147	ND<1
			10/26/2005	ND<-0.693147	ND<1
			6/19/2006	ND<-0.693147	ND<1
			11/18/2006	ND<-0.693147	ND<1

			6/2/2007	ND<-0.693147	ND<1
			11/15/2007	ND<-0.693147	ND<1
			5/20/2008	ND<-0.693147	ND<1
			11/20/2008	ND<-0.693147	ND<1
			6/11/2009	ND<-2.07944 U	ND<0.25 U
LMW-16	6	6 (100%)	11/18/2006	ND<-0.693147	ND<1
			6/2/2007	ND<-0.693147	ND<1
			11/15/2007	ND<-0.693147	ND<1
			5/20/2008	ND<-0.693147	ND<1
			11/20/2008	ND<-0.693147	ND<1
			6/11/2009	ND<-2.07944 U	ND<0.25 U
LMW-15R	9	9 (100%)	11/18/2006	ND<-0.693147	ND<1
			6/2/2007	ND<-0.693147	ND<1
			11/15/2007	ND<-0.693147	ND<1
			11/15/2007	ND<-0.693147	ND<1
			5/20/2008	ND<-0.693147	ND<1
			5/20/2008	ND<-0.693147	ND<1
			11/20/2008	ND<-0.693147	ND<1
			11/20/2008	ND<-0.693147	ND<1
			6/11/2009	ND<-2.07944 U	ND<0.25 U
LMW-7	16	14 (87.5%)	1/16/1998	ND<-0.693147	ND<1
			3/16/1999	ND<-0.693147	ND<1
			9/23/1999	ND<-0.693147	ND<1
			3/14/2000	ND<-0.693147	ND<1
			9/23/2003	ND<-0.693147	ND<1
			3/10/2004	ND<-0.693147	ND<1
			10/12/2004	ND<-0.693147	ND<1
			4/1/2005	ND<-0.693147	ND<1
			10/26/2005	ND<-0.693147	ND<1
			6/19/2006	ND<-0.693147	ND<1
			11/18/2006	ND<-0.693147	ND<1
			6/2/2007	0.693147	2
			11/15/2007	1.38629	4
			5/20/2008	ND<-0.693147	ND<1
			11/20/2008	ND<-0.693147	ND<1
			6/11/2009	ND<-2.07944 U	ND<0.25 U
LMW-9	16	16 (100%)	1/16/1998	ND<-0.693147	ND<1
			3/16/1999	ND<-0.693147	ND<1
			9/23/1999	ND<-0.693147	ND<1
			3/14/2000	ND<-0.693147	ND<1
			9/23/2003	ND<-0.693147	ND<1
			3/10/2004	ND<-0.693147	ND<1
			10/12/2004	ND<-0.693147	ND<1
			4/1/2005	ND<-0.693147	ND<1
			10/26/2005	ND<-0.693147	ND<1
			6/19/2006	ND<-0.693147	ND<1
			11/18/2006	ND<-0.693147	ND<1
			6/2/2007	ND<-0.693147	ND<1
			11/15/2007	ND<-0.693147	ND<1
			5/20/2008	ND<-0.693147	ND<1
			11/20/2008	ND<-0.693147	ND<1
			6/11/2009	ND<-2.07944 U	ND<0.25 U
LMW-14R	5	5 (100%)	6/2/2007	ND<-0.693147	ND<1
			11/15/2007	ND<-0.693147	ND<1
			5/20/2008	ND<-0.693147	ND<1
			11/20/2008	ND<-0.693147	ND<1
			6/11/2009	ND<-2.07944 U	ND<0.25 U

LMW-11	11	11 (100%)	3/14/2000	ND<-0.693147	ND<1
			9/23/2003	ND<-0.693147	ND<1
			3/10/2004	ND<-0.693147	ND<1
			10/12/2004	ND<-0.693147	ND<1
			4/1/2005	ND<-0.693147	ND<1
			10/26/2005	ND<-0.693147	ND<1
			6/19/2006	ND<-0.693147	ND<1
			6/2/2007	ND<-0.693147	ND<1
			11/15/2007	ND<-0.693147	ND<1
			5/20/2008	ND<-0.693147	ND<1
			11/20/2008	ND<-0.693147	ND<1
LMW-12	11	11 (100%)	3/14/2000	ND<-0.693147	ND<1
			9/23/2003	ND<-0.693147	ND<1
			3/10/2004	ND<-0.693147	ND<1
			10/12/2004	ND<-0.693147	ND<1
			4/1/2005	ND<-0.693147	ND<1
			10/26/2005	ND<-0.693147	ND<1
			6/19/2006	ND<-0.693147	ND<1
			6/2/2007	ND<-0.693147	ND<1
			11/15/2007	ND<-0.693147	ND<1
			5/20/2008	ND<-0.693147	ND<1
			11/20/2008	ND<-0.693147	ND<1
LMW-13	11	11 (100%)	3/14/2000	ND<-0.693147	ND<1
			9/23/2003	ND<-0.693147	ND<1
			3/10/2004	ND<-0.693147	ND<1
			10/12/2004	ND<-0.693147	ND<1
			4/1/2005	ND<-0.693147	ND<1
			10/26/2005	ND<-0.693147	ND<1
			6/19/2006	ND<-0.693147	ND<1
			6/2/2007	ND<-0.693147	ND<1
			11/15/2007	ND<-0.693147	ND<1
			5/20/2008	ND<-0.693147	ND<1
			11/20/2008	ND<-0.693147	ND<1
MW-5	13	12 (92.3077%)	1/16/1998	ND<-0.693147	ND<1
			3/16/1999	ND<-0.693147	ND<1
			9/23/1999	ND<-0.693147	ND<1
			3/14/2000	ND<-0.693147	ND<1
			9/23/2003	ND<-0.693147	ND<1
			3/10/2004	ND<-0.693147	ND<1
			10/12/2004	ND<-0.693147	ND<1
			4/1/2005	ND<-0.693147	ND<1
			10/26/2005	ND<-0.693147	ND<1
			6/19/2006	ND<-0.693147	ND<1
			11/15/2007	1.94591	7
			5/20/2008	ND<-0.693147	ND<1
			11/20/2008	ND<-0.693147	ND<1

There are 0 unused locations

Loc.	Meas.	ND	Date	Conc.	Original

Shapiro-Francia Test of Normality

Parameter: Trichlorofluoromethane

All Locations

Normality Test of Parameter Concentrations

Original Data (Not Transformed)
Non-Detects Replaced with 1/2 DL
Total Number of Measurements = 200

i	x(i)	m(i)	sum(m^2)	sum(mx)
1	0	-2.65209	7.03356	0
2	0	-2.36561	12.6297	0
3	0	-2.19728	17.4578	0
4	0	-2.07485	21.7627	0
5	0	-1.97737	25.6727	0
6	0	-1.8957	29.2664	0
7	0	-1.82501	32.597	0
8	0	-1.76241	35.7031	0
9	0	-1.70604	38.6137	0
10	0	-1.65463	41.3515	0
11	0	-1.60725	43.9348	0
12	0	-1.56322	46.3784	0
13	0	-1.52203	48.695	0
14	0.125	-1.48328	50.8951	-0.18541
15	0.125	-1.44663	52.9879	-0.366239
16	0.125	-1.41183	54.9811	-0.542718
17	0.125	-1.37866	56.8818	-0.71505
18	0.125	-1.34694	58.6961	-0.883418
19	0.125	-1.31652	60.4293	-1.04798
20	0.125	-1.28727	62.0864	-1.20889
21	0.125	-1.25908	63.6717	-1.36628
22	0.5	-1.23187	65.1892	-1.98221
23	0.5	-1.20553	66.6425	-2.58497
24	0.5	-1.18	68.0349	-3.17497
25	0.5	-1.15522	69.3694	-3.75258
26	0.5	-1.13113	70.6489	-4.31815
27	0.5	-1.10768	71.8758	-4.87199
28	0.5	-1.08482	73.0527	-5.4144
29	0.5	-1.06252	74.1816	-5.94566
30	0.5	-1.04073	75.2647	-6.46603
31	0.5	-1.01943	76.304	-6.97574
32	0.5	-0.998575	77.3011	-7.47503
33	0.5	-0.97815	78.2579	-7.9641
34	0.5	-0.958125	79.1759	-8.44317
35	0.5	-0.938476	80.0566	-8.9124
36	0.5	-0.919183	80.9015	-9.372
37	0.5	-0.900227	81.7119	-9.82211
38	0.5	-0.881587	82.4891	-10.2629
39	0.5	-0.863249	83.2343	-10.6945
40	0.5	-0.845198	83.9487	-11.1171
41	0.5	-0.830953	84.6392	-11.5326
42	0.5	-0.813379	85.3008	-11.9393
43	0.5	-0.796056	85.9345	-12.3373
44	0.5	-0.778966	86.5413	-12.7268
45	0.5	-0.7621	87.122	-13.1079
46	0.5	-0.745449	87.6777	-13.4806
47	0.5	-0.729003	88.2092	-13.8451
48	0.5	-0.712751	88.7172	-14.2015
49	0.5	-0.696684	89.2026	-14.5498

50	0.5	-0.680797	89.6661	-14.8902
51	0.5	-0.665079	90.1084	-15.2227
52	0.5	-0.649522	90.5303	-15.5475
53	0.5	-0.634124	90.9324	-15.8646
54	0.5	-0.618872	91.3154	-16.174
55	0.5	-0.603765	91.6799	-16.4759
56	0.5	-0.588793	92.0266	-16.7703
57	0.5	-0.573953	92.356	-17.0572
58	0.5	-0.559237	92.6688	-17.3369
59	0.5	-0.544642	92.9654	-17.6092
60	0.5	-0.530162	93.2465	-17.8743
61	0.5	-0.515791	93.5125	-18.1322
62	0.5	-0.501527	93.764	-18.3829
63	0.5	-0.487364	94.0016	-18.6266
64	0.5	-0.473299	94.2256	-18.8633
65	0.5	-0.459327	94.4366	-19.0929
66	0.5	-0.445443	94.635	-19.3156
67	0.5	-0.431644	94.8213	-19.5315
68	0.5	-0.417928	94.996	-19.7404
69	0.5	-0.404299	95.1594	-19.9426
70	0.5	-0.390726	95.3121	-20.1379
71	0.5	-0.377233	95.4544	-20.3266
72	0.5	-0.363809	95.5867	-20.5085
73	0.5	-0.350451	95.7095	-20.6837
74	0.5	-0.337155	95.8232	-20.8523
75	0.5	-0.323919	95.9281	-21.0142
76	0.5	-0.310738	96.0247	-21.1696
77	0.5	-0.297612	96.1133	-21.3184
78	0.5	-0.284535	96.1942	-21.4607
79	0.5	-0.271509	96.268	-21.5964
80	0.5	-0.258527	96.3348	-21.7257
81	0.5	-0.248174	96.3964	-21.8498
82	0.5	-0.235269	96.4517	-21.9674
83	0.5	-0.222403	96.5012	-22.0786
84	0.5	-0.209575	96.5451	-22.1834
85	0.5	-0.196779	96.5838	-22.2818
86	0.5	-0.184017	96.6177	-22.3738
87	0.5	-0.171285	96.647	-22.4594
88	0.5	-0.158579	96.6722	-22.5387
89	0.5	-0.1459	96.6935	-22.6117
90	0.5	-0.133244	96.7112	-22.6783
91	0.5	-0.120619	96.7258	-22.7386
92	0.5	-0.107995	96.7374	-22.7926
93	0.5	-0.0953969	96.7465	-22.8403
94	0.5	-0.0828129	96.7534	-22.8817
95	0.5	-0.0702426	96.7583	-22.9168
96	0.5	-0.0576847	96.7617	-22.9457
97	0.5	-0.0451348	96.7637	-22.9682
98	0.5	-0.0325917	96.7648	-22.9845
99	0.5	-0.0200544	96.7652	-22.9946
100	0.5	-0.00751925	96.7652	-22.9983
101	0.5	0.00751925	96.7653	-22.9946
102	0.5	0.0200544	96.7657	-22.9845
103	0.5	0.0325917	96.7667	-22.9682
104	0.5	0.0451348	96.7688	-22.9457
105	0.5	0.0576847	96.7721	-22.9168
106	0.5	0.0702426	96.777	-22.8817
107	0.5	0.0828129	96.7839	-22.8403
108	0.5	0.0953969	96.793	-22.7926
109	0.5	0.107995	96.8047	-22.7386
110	0.5	0.12061	96.8192	-22.6783
111	0.5	0.133244	96.837	-22.6117

112	0.5	0.1459	96.8582	-22.5387
113	0.5	0.158579	96.8834	-22.4594
114	0.5	0.171285	96.9127	-22.3738
115	0.5	0.184017	96.9466	-22.2818
116	0.5	0.196779	96.9853	-22.1834
117	0.5	0.209575	97.0292	-22.0786
118	0.5	0.222403	97.0787	-21.9674
119	0.5	0.235269	97.134	-21.8498
120	0.5	0.248174	97.1956	-21.7257
121	0.5	0.258527	97.2625	-21.5964
122	0.5	0.271509	97.3362	-21.4607
123	0.5	0.284535	97.4172	-21.3184
124	0.5	0.297612	97.5057	-21.1696
125	0.5	0.310738	97.6023	-21.0142
126	0.5	0.323919	97.7072	-20.8523
127	0.5	0.337155	97.8209	-20.6837
128	0.5	0.350451	97.9437	-20.5085
129	0.5	0.363809	98.0761	-20.3266
130	0.5	0.377233	98.2184	-20.1379
131	0.5	0.390726	98.371	-19.9426
132	0.5	0.40429	98.5345	-19.7404
133	0.5	0.417928	98.7091	-19.5315
134	0.5	0.431644	98.8955	-19.3156
135	0.5	0.445443	99.0939	-19.0929
136	0.5	0.459327	99.3049	-18.8633
137	0.5	0.473299	99.5289	-18.6266
138	0.5	0.487364	99.7664	-18.3829
139	0.5	0.501527	100.018	-18.1322
140	0.5	0.515791	100.284	-17.8743
141	0.5	0.530162	100.565	-17.6092
142	0.5	0.544642	100.862	-17.3369
143	0.5	0.559237	101.174	-17.0572
144	0.5	0.573953	101.504	-16.7703
145	0.5	0.588793	101.851	-16.4759
146	0.5	0.603765	102.215	-16.174
147	0.5	0.618872	102.598	-15.8646
148	0.5	0.634124	103	-15.5475
149	0.5	0.649522	103.422	-15.2227
150	0.5	0.665079	103.864	-14.8902
151	0.5	0.680797	104.328	-14.5498
152	0.5	0.696684	104.813	-14.2015
153	0.5	0.712751	105.321	-13.8451
154	0.5	0.729003	105.853	-13.4806
155	0.5	0.745449	106.408	-13.1079
156	0.5	0.7621	106.989	-12.7268
157	0.5	0.778966	107.596	-12.3373
158	0.5	0.796056	108.23	-11.9393
159	0.5	0.813379	108.891	-11.5326
160	0.5	0.830953	109.582	-11.1171
161	0.5	0.845198	110.296	-10.6945
162	0.5	0.863249	111.041	-10.2629
163	0.5	0.881587	111.818	-9.82211
164	0.5	0.900227	112.629	-9.372
165	0.5	0.919183	113.474	-8.9124
166	0.5	0.938476	114.355	-8.44317
167	0.5	0.958125	115.273	-7.9641
168	0.5	0.97815	116.229	-7.47503
169	0.5	0.998575	117.226	-6.97574
170	0.5	1.01943	118.266	-6.46603
171	0.5	1.04073	119.349	-5.94566
172	0.5	1.06252	120.478	-5.4144
173	0.68	1.08482	121.655	-4.67672

174	0.82	1.10768	122.882	-3.76842
175	0.84	1.13113	124.161	-2.81827
176	0.95	1.15522	125.496	-1.72081
177	0.97	1.18	126.888	-0.576212
178	1	1.20553	128.341	0.629314
179	1	1.23187	129.859	1.86118
180	1	1.25908	131.444	3.12026
181	1	1.28727	133.101	4.40753
182	1.1	1.31652	134.834	5.85571
183	1.1	1.34694	136.649	7.33734
184	2	1.37866	138.549	10.0947
185	2	1.41183	140.543	12.9183
186	2	1.44663	142.635	15.8116
187	2	1.48328	144.835	18.7781
188	2	1.52203	147.152	21.8222
189	2	1.56322	149.596	24.9487
190	2.4	1.60725	152.179	28.8061
191	3	1.65463	154.917	33.7699
192	3	1.70604	157.827	38.8881
193	3	1.76241	160.933	44.1753
194	3	1.82501	164.264	49.6503
195	4	1.8957	167.858	57.2331
196	6.6	1.97737	171.768	70.2837
197	7	2.07485	176.073	84.8077
198	7	2.19728	180.901	100.189
199	10	2.36561	186.497	123.845
200	13	2.65209	193.53	158.322

Data Set Standard Deviation = 1.4367
Numerator = 25065.8
Denominator = 79494.2
W Statistic = 0.315316 = 25065.8 / 79494.2

5% Critical value of 0.976 exceeds 0.315316
Evidence of non-normality at 95% level of significance

1% Critical value of 0.967 exceeds 0.315316
Evidence of non-normality at 99% level of significance

Shapiro-Francia Test of Normality

Parameter: Trichlorofluoromethane

All Locations

Normality Test of Parameter Concentrations

Natural Logarithm Transformation
Non-Detects Replaced with 1/2 DL
Total Number of Measurements = 200

i	x(i)	m(i)	sum(m^2)	sum(mx)	
1	-2.07944	-2.65209	7.03356	5.51486	
2	-2.07944	-2.36561	12.6297	10.434	
3	-2.07944	-2.19728	17.4578	15.0031	
4	-2.07944	-2.07485	21.7627	19.3177	
5	-2.07944	-1.97737	25.6727	23.4295	
6	-2.07944	-1.8957	29.2664	27.3715	
7	-2.07944	-1.82501	32.597	31.1665	
8	-2.07944	-1.76241	35.7031	34.8313	
9	-0.693147	-1.70604	38.6137	36.0138	
10	-0.693147	-1.65463	41.3515	37.1607	
11	-0.693147	-1.60725	43.9348	38.2748	
12	-0.693147	-1.56322	46.3784	39.3583	
13	-0.693147	-1.52203	48.695	40.4133	
14	-0.693147	-1.48328	50.8951	41.4415	
15	-0.693147	-1.44663	52.9879	42.4442	
16	-0.693147	-1.41183	54.9811	43.4228	
17	-0.693147	-1.37866	56.8818	44.3784	
18	-0.693147	-1.34694	58.6961	45.312	
19	-0.693147	-1.31652	60.4293	46.2246	
20	-0.693147	-1.28727	62.0864	47.1169	
21	-0.693147	-1.25908	63.6717	47.9896	
22	-0.693147	-1.23187	65.1892	48.8434	
23	-0.693147	-1.20553	66.6425	49.6791	
24	-0.693147	-1.18	68.0349	50.497	
25	-0.693147	-1.15522	69.3694	51.2977	
26	-0.693147	-1.13113	70.6489	52.0817	
27	-0.693147	-1.10768	71.8758	52.8495	
28	-0.693147	-1.08482	73.0527	53.6015	
29	-0.693147	-1.06252	74.1816	54.338	
30	-0.693147	-1.04073	75.2647	55.0593	
31	-0.693147	-1.01943	76.304	55.766	
32	-0.693147	-0.998575		77.3011	56.4581
33	-0.693147	-0.97815	78.2579	57.1361	
34	-0.693147	-0.958125		79.1759	57.8002
35	-0.693147	-0.938476		80.0566	58.4507
36	-0.693147	-0.919183		80.9015	59.0879
37	-0.693147	-0.900227		81.7119	59.7119
38	-0.693147	-0.881587		82.4891	60.3229
39	-0.693147	-0.863249		83.2343	60.9213
40	-0.693147	-0.845198		83.9487	61.5071
41	-0.693147	-0.830953		84.6392	62.0831
42	-0.693147	-0.813379		85.3008	62.6469
43	-0.693147	-0.796056		85.9345	63.1987
44	-0.693147	-0.778966		86.5413	63.7386
45	-0.693147	-0.7621	87.122	64.2669	
46	-0.693147	-0.745449		87.6777	64.7836
47	-0.693147	-0.729003		88.2092	65.2889
48	-0.693147	-0.712751		88.7172	65.7829
49	-0.693147	-0.696684		89.2026	66.2658

50	-0.693147	-0.680797	89.6661	66.7377
51	-0.693147	-0.665079	90.1084	67.1987
52	-0.693147	-0.649522	90.5303	67.6489
53	-0.693147	-0.634124	90.9324	68.0885
54	-0.693147	-0.618872	91.3154	68.5174
55	-0.693147	-0.603765	91.6799	68.9359
56	-0.693147	-0.588793	92.0266	69.3441
57	-0.693147	-0.573953	92.356	69.7419
58	-0.693147	-0.559237	92.6688	70.1295
59	-0.693147	-0.544642	92.9654	70.507
60	-0.693147	-0.530162	93.2465	70.8745
61	-0.693147	-0.515791	93.5125	71.232
62	-0.693147	-0.501527	93.764	71.5797
63	-0.693147	-0.487364	94.0016	71.9175
64	-0.693147	-0.473299	94.2256	72.2456
65	-0.693147	-0.459327	94.4366	72.5639
66	-0.693147	-0.445443	94.635	72.8727
67	-0.693147	-0.431644	94.8213	73.1719
68	-0.693147	-0.417928	94.996	73.4616
69	-0.693147	-0.4042995.1594	73.7418	
70	-0.693147	-0.390726	95.3121	74.0126
71	-0.693147	-0.377233	95.4544	74.2741
72	-0.693147	-0.363809	95.5867	74.5263
73	-0.693147	-0.350451	95.7095	74.7692
74	-0.693147	-0.337155	95.8232	75.0029
75	-0.693147	-0.323919	95.9281	75.2274
76	-0.693147	-0.310738	96.0247	75.4428
77	-0.693147	-0.297612	96.1133	75.6491
78	-0.693147	-0.284535	96.1942	75.8463
79	-0.693147	-0.271509	96.268	76.0345
80	-0.693147	-0.258527	96.3348	76.2137
81	-0.693147	-0.248174	96.3964	76.3857
82	-0.693147	-0.235269	96.4517	76.5488
83	-0.693147	-0.222403	96.5012	76.703
84	-0.693147	-0.209575	96.5451	76.8482
85	-0.693147	-0.196779	96.5838	76.9846
86	-0.693147	-0.184017	96.6177	77.1122
87	-0.693147	-0.171285	96.647	77.2309
88	-0.693147	-0.158579	96.6722	77.3408
89	-0.693147	-0.1459 96.6935	77.442	
90	-0.693147	-0.133244	96.7112	77.5343
91	-0.693147	-0.1206196.7258	77.6179	
92	-0.693147	-0.107995	96.7374	77.6928
93	-0.693147	-0.0953969	96.7465	77.7589
94	-0.693147	-0.0828129	96.7534	77.8163
95	-0.693147	-0.0702426	96.7583	77.865
96	-0.693147	-0.0576847	96.7617	77.905
97	-0.693147	-0.0451348	96.7637	77.9363
98	-0.693147	-0.0325917	96.7648	77.9588
99	-0.693147	-0.0200544	96.7652	77.9727
100	-0.693147	-0.00751925	96.7652	77.978
101	-0.693147	0.00751925	96.7653	77.9727
102	-0.693147	0.0200544	96.7657	77.9588
103	-0.693147	0.0325917	96.7667	77.9363
104	-0.693147	0.0451348	96.7688	77.905
105	-0.693147	0.0576847	96.7721	77.865
106	-0.693147	0.0702426	96.777	77.8163
107	-0.693147	0.0828129	96.7839	77.7589
108	-0.693147	0.0953969	96.793	77.6928
109	-0.693147	0.107995	96.8047	77.6179
110	-0.693147	0.12061 96.8192	77.5343	
111	-0.693147	0.133244	96.837	77.442

112	-0.693147	0.1459	96.8582	77.3408	
113	-0.693147	0.158579		96.8834	77.2309
114	-0.693147	0.171285		96.9127	77.1122
115	-0.693147	0.184017		96.9466	76.9846
116	-0.693147	0.196779		96.9853	76.8482
117	-0.693147	0.209575		97.0292	76.703
118	-0.693147	0.222403		97.0787	76.5488
119	-0.693147	0.235269		97.134	76.3857
120	-0.693147	0.248174		97.1956	76.2137
121	-0.693147	0.258527		97.2625	76.0345
122	-0.693147	0.271509		97.3362	75.8463
123	-0.693147	0.284535		97.4172	75.6491
124	-0.693147	0.297612		97.5057	75.4428
125	-0.693147	0.310738		97.6023	75.2274
126	-0.693147	0.323919		97.7072	75.0029
127	-0.693147	0.337155		97.8209	74.7692
128	-0.693147	0.350451		97.9437	74.5263
129	-0.693147	0.363809		98.0761	74.2741
130	-0.693147	0.377233		98.2184	74.0126
131	-0.693147	0.390726		98.371	73.7418
132	-0.693147	0.40429	98.5345	73.4616	
133	-0.693147	0.417928		98.7091	73.1719
134	-0.693147	0.431644		98.8955	72.8727
135	-0.693147	0.445443		99.0939	72.5639
136	-0.693147	0.459327		99.3049	72.2456
137	-0.693147	0.473299		99.5289	71.9175
138	-0.693147	0.487364		99.7664	71.5797
139	-0.693147	0.501527		100.018	71.232
140	-0.693147	0.515791		100.284	70.8745
141	-0.693147	0.530162		100.565	70.507
142	-0.693147	0.544642		100.862	70.1295
143	-0.693147	0.559237		101.174	69.7419
144	-0.693147	0.573953		101.504	69.3441
145	-0.693147	0.588793		101.851	68.9359
146	-0.693147	0.603765		102.215	68.5174
147	-0.693147	0.618872		102.598	68.0885
148	-0.693147	0.634124		103	67.6489
149	-0.693147	0.649522		103.422	67.1987
150	-0.693147	0.665079		103.864	66.7377
151	-0.693147	0.680797		104.328	66.2658
152	-0.693147	0.696684		104.813	65.7829
153	-0.693147	0.712751		105.321	65.2889
154	-0.693147	0.729003		105.853	64.7836
155	-0.693147	0.745449		106.408	64.2669
156	-0.693147	0.7621	106.989	63.7386	
157	-0.693147	0.778966		107.596	63.1987
158	-0.693147	0.796056		108.23	62.6469
159	-0.693147	0.813379		108.891	62.0831
160	-0.385662	0.830953		109.582	61.7626
161	-0.198451	0.845198		110.296	61.5949
162	-0.174353	0.863249		111.041	61.4444
163	-0.0512933	0.881587		111.818	61.3992
164	-0.0304592	0.900227		112.629	61.3718
165	0	0.919183	113.474	61.3718	
166	0	0.938476	114.355	61.3718	
167	0	0.958125	115.273	61.3718	
168	0	0.97815	116.229	61.3718	
169	0	0.998575	117.226	61.3718	
170	0	1.01943	118.266	61.3718	
171	0	1.04073	119.349	61.3718	
172	0	1.06252	120.478	61.3718	
173	0	1.08482	121.655	61.3718	

174	0	1.10768	122.882	61.3718	
175	0	1.13113	124.161	61.3718	
176	0	1.15522	125.496	61.3718	
177	0	1.18	126.888	61.3718	
178	0	1.20553	128.341	61.3718	
179	0	1.23187	129.859	61.3718	
180	0	1.25908	131.444	61.3718	
181	0	1.28727	133.101	61.3718	
182	0.0953102		1.31652	134.834	61.4972
183	0.0953102		1.34694	136.649	61.6256
184	0.693147		1.37866	138.549	62.5812
185	0.693147		1.41183	140.543	63.5598
186	0.693147		1.44663	142.635	64.5626
187	0.693147		1.48328	144.835	65.5907
188	0.693147		1.52203	147.152	66.6457
189	0.693147		1.56322	149.596	67.7292
190	0.875469		1.60725	152.179	69.1363
191	1.09861	1.65463	154.917	70.9541	
192	1.09861	1.70604	157.827	72.8284	
193	1.09861	1.76241	160.933	74.7646	
194	1.09861	1.82501	164.264	76.7696	
195	1.38629	1.8957	167.858	79.3976	
196	1.88707	1.97737	171.768	83.129	
197	1.94591	2.07485	176.073	87.1665	
198	1.94591	2.19728	180.901	91.4422	
199	2.30259	2.36561	186.497	96.8892	
200	2.56495	2.65209	193.53	103.692	

Data Set Standard Deviation = 0.673642
Numerator = 10752
Denominator = 17476.8
W Statistic = 0.615215 = 10752 / 17476.8

5% Critical value of 0.976 exceeds 0.615215
Evidence of non-normality at 95% level of significance

1% Critical value of 0.967 exceeds 0.615215
Evidence of non-normality at 99% level of significance

Kruskal-Wallis Non-Parametric Test

Parameter: Trichlorofluoromethane

Natural Logarithm Transformation
Non-Detects Replaced with 1/2 DL

Kruskal Wallis Ranks

Background Wells

Well ID	Date	Result	Rank
LMW-4	1/16/1998	ND<-0.693147	86.5
	3/16/1999	ND<-0.693147	86.5
	9/23/1999	ND<-0.693147	86.5
	3/14/2000	ND<-0.693147	86.5
	9/23/2003	ND<-0.693147	86.5
	3/10/2004	ND<-0.693147	86.5
	10/12/2004	ND<-0.693147	86.5
	4/1/2005	0.693147	184
	10/26/2005	ND<0 J	86.5
	6/19/2006	0.693147	185
	11/18/2006	0.693147	186
	6/2/2007	1.09861	191
	11/15/2007	ND<-0.693147	86.5
	5/20/2008	1.09861	192
	11/20/2008	0.693147	187
	6/11/2009	-0.198451 J	174
	11/14/2009	0.875469	190

Rank Sum = 2267.5
Rank Mean = 133.382

Background Rank Sum = 2267.5
Background Rank Mean = 133.382

Compliance Wells

Well ID	Date	Result	Rank
LMW-10	3/14/2000	ND<-0.693147	86.5
	9/23/2003	ND<-0.693147	86.5
	3/10/2004	ND<-0.693147	86.5
	10/12/2004	ND<-0.693147	86.5
	4/1/2005	ND<-0.693147	86.5
	10/26/2005	ND<0 J	86.5
	6/19/2006	0.693147	188
	11/18/2006	1.94591	197
	6/2/2007	1.09861	193
	11/15/2007	ND<-0.693147	86.5
	5/20/2008	2.30259	199
	11/20/2008	1.09861	194
	6/11/2009	1.88707	196
	11/14/2009	2.56495	200

Rank Sum = 1972.5
Rank Mean = 140.893

LMW-3S	11/18/2006	ND<-0.693147	86.5
	6/2/2007	ND<-0.693147	86.5
	11/15/2007	0	178

	5/20/2008	ND<0 J	86.5
	11/20/2008	ND<0 J	86.5
	6/11/2009	0.0953102	182
	11/14/2009	-0.0304592 J	177

Rank Sum = 883
Rank Mean = 126.143

LMW-6	1/16/1998	ND<-0.693147	86.5
	3/16/1999	ND<-0.693147	86.5
	9/23/1999	ND<-0.693147	86.5
	3/14/2000	ND<-0.693147	86.5
	9/23/2003	ND<-0.693147	86.5
	3/10/2004	ND<-0.693147	86.5
	10/12/2004	ND<-0.693147	86.5
	4/1/2005	ND<0 J	86.5
	10/26/2005	0	179
	6/19/2006	0	180
	11/18/2006	ND<-0.693147	86.5
	6/2/2007	ND<-0.693147	86.5
	11/15/2007	ND<0 J	86.5
	5/20/2008	0	181
	11/20/2008	ND<0 J	86.5
	6/11/2009	-0.0512933 J	176
	11/14/2009	0.0953102	183

Rank Sum = 1937
Rank Mean = 113.941

LMW-3	11/19/1996	ND<-0.693147	86.5
	3/24/1997	ND<-0.693147	86.5
	1/16/1998	ND<-0.693147	86.5
	3/16/1999	ND<-0.693147	86.5
	9/23/1999	ND<-0.693147	86.5
	3/14/2000	ND<-0.693147	86.5
	9/23/2003	ND<-0.693147	86.5
	3/10/2004	ND<-0.693147	86.5
	10/12/2004	ND<-0.693147	86.5
	4/1/2005	ND<0 J	86.5
	10/26/2005	ND<0 J	86.5
	6/19/2006	ND<0 J	86.5
	11/18/2006	ND<-0.693147	86.5
	6/2/2007	ND<-0.693147	86.5
	11/15/2007	ND<0 J	86.5
	5/20/2008	ND<0 J	86.5
	11/20/2008	ND<0 J	86.5
	6/11/2009	-0.174353 J	175
	11/14/2009	-0.385662 J	173

Rank Sum = 1818.5
Rank Mean = 95.7105

LMW-9D	11/18/2006	ND<-0.693147	86.5
	6/2/2007	ND<-0.693147	86.5
	11/15/2007	ND<-0.693147	86.5
	5/20/2008	ND<-0.693147	86.5
	11/20/2008	ND<-0.693147	86.5
	6/11/2009	ND<-2.07944 U	86.5

Rank Sum = 519
Rank Mean = 86.5

LMW-9S	11/18/2006	ND<-0.693147	86.5
	6/2/2007	ND<-0.693147	86.5
	11/15/2007	ND<-0.693147	86.5
	5/20/2008	ND<-0.693147	86.5

	11/20/2008	ND<-0.693147	86.5
	6/11/2009	ND<-2.07944 U	86.5

Rank Sum = 519
Rank Mean = 86.5

LMW-8	1/16/1998	ND<-0.693147	86.5
	3/16/1999	ND<-0.693147	86.5
	9/23/1999	ND<-0.693147	86.5
	3/14/2000	ND<-0.693147	86.5
	9/23/2003	ND<-0.693147	86.5
	3/10/2004	ND<-0.693147	86.5
	10/12/2004	ND<-0.693147	86.5
	4/1/2005	ND<-0.693147	86.5
	10/26/2005	ND<-0.693147	86.5
	6/19/2006	ND<-0.693147	86.5
	11/18/2006	ND<-0.693147	86.5
	6/2/2007	ND<-0.693147	86.5
	11/15/2007	ND<-0.693147	86.5
	5/20/2008	ND<-0.693147	86.5
	11/20/2008	ND<-0.693147	86.5
	6/11/2009	ND<-2.07944 U	86.5

Rank Sum = 1384
Rank Mean = 86.5

LMW-16	11/18/2006	ND<-0.693147	86.5
	6/2/2007	ND<-0.693147	86.5
	11/15/2007	ND<-0.693147	86.5
	5/20/2008	ND<-0.693147	86.5
	11/20/2008	ND<-0.693147	86.5
	6/11/2009	ND<-2.07944 U	86.5

Rank Sum = 519
Rank Mean = 86.5

LMW-15R	11/18/2006	ND<-0.693147	86.5
	6/2/2007	ND<-0.693147	86.5
	11/15/2007	ND<-0.693147	86.5
	11/15/2007	ND<-0.693147	86.5
	5/20/2008	ND<-0.693147	86.5
	5/20/2008	ND<-0.693147	86.5
	11/20/2008	ND<-0.693147	86.5
	11/20/2008	ND<-0.693147	86.5
	6/11/2009	ND<-2.07944 U	86.5

Rank Sum = 778.5
Rank Mean = 86.5

LMW-7	1/16/1998	ND<-0.693147	86.5
	3/16/1999	ND<-0.693147	86.5
	9/23/1999	ND<-0.693147	86.5
	3/14/2000	ND<-0.693147	86.5
	9/23/2003	ND<-0.693147	86.5
	3/10/2004	ND<-0.693147	86.5
	10/12/2004	ND<-0.693147	86.5
	4/1/2005	ND<-0.693147	86.5
	10/26/2005	ND<-0.693147	86.5
	6/19/2006	ND<-0.693147	86.5
	11/18/2006	ND<-0.693147	86.5
	6/2/2007	0.693147	189
	11/15/2007	1.38629	195
	5/20/2008	ND<-0.693147	86.5
	11/20/2008	ND<-0.693147	86.5
	6/11/2009	ND<-2.07944 U	86.5

Rank Sum = 1595

Rank Mean = 99.6875

LMW-9	1/16/1998	ND<-0.693147	86.5
	3/16/1999	ND<-0.693147	86.5
	9/23/1999	ND<-0.693147	86.5
	3/14/2000	ND<-0.693147	86.5
	9/23/2003	ND<-0.693147	86.5
	3/10/2004	ND<-0.693147	86.5
	10/12/2004	ND<-0.693147	86.5
	4/1/2005	ND<-0.693147	86.5
	10/26/2005	ND<-0.693147	86.5
	6/19/2006	ND<-0.693147	86.5
	11/18/2006	ND<-0.693147	86.5
	6/2/2007	ND<-0.693147	86.5
	11/15/2007	ND<-0.693147	86.5
	5/20/2008	ND<-0.693147	86.5
	11/20/2008	ND<-0.693147	86.5
	6/11/2009	ND<-2.07944 U	86.5

Rank Sum = 1384
Rank Mean = 86.5

LMW-14R	6/2/2007	ND<-0.693147	86.5
	11/15/2007	ND<-0.693147	86.5
	5/20/2008	ND<-0.693147	86.5
	11/20/2008	ND<-0.693147	86.5
	6/11/2009	ND<-2.07944 U	86.5

Rank Sum = 432.5
Rank Mean = 86.5

LMW-11	3/14/2000	ND<-0.693147	86.5
	9/23/2003	ND<-0.693147	86.5
	3/10/2004	ND<-0.693147	86.5
	10/12/2004	ND<-0.693147	86.5
	4/1/2005	ND<-0.693147	86.5
	10/26/2005	ND<-0.693147	86.5
	6/19/2006	ND<-0.693147	86.5
	6/2/2007	ND<-0.693147	86.5
	11/15/2007	ND<-0.693147	86.5
	5/20/2008	ND<-0.693147	86.5
	11/20/2008	ND<-0.693147	86.5

Rank Sum = 951.5
Rank Mean = 86.5

LMW-12	3/14/2000	ND<-0.693147	86.5
	9/23/2003	ND<-0.693147	86.5
	3/10/2004	ND<-0.693147	86.5
	10/12/2004	ND<-0.693147	86.5
	4/1/2005	ND<-0.693147	86.5
	10/26/2005	ND<-0.693147	86.5
	6/19/2006	ND<-0.693147	86.5
	6/2/2007	ND<-0.693147	86.5
	11/15/2007	ND<-0.693147	86.5
	5/20/2008	ND<-0.693147	86.5
	11/20/2008	ND<-0.693147	86.5

Rank Sum = 951.5
Rank Mean = 86.5

LMW-13	3/14/2000	ND<-0.693147	86.5
	9/23/2003	ND<-0.693147	86.5
	3/10/2004	ND<-0.693147	86.5
	10/12/2004	ND<-0.693147	86.5
	4/1/2005	ND<-0.693147	86.5

	10/26/2005	ND<-0.693147	86.5
	6/19/2006	ND<-0.693147	86.5
	6/2/2007	ND<-0.693147	86.5
	11/15/2007	ND<-0.693147	86.5
	5/20/2008	ND<-0.693147	86.5
	11/20/2008	ND<-0.693147	86.5

Rank Sum = 951.5
Rank Mean = 86.5

MW-5	1/16/1998	ND<-0.693147	86.5
	3/16/1999	ND<-0.693147	86.5
	9/23/1999	ND<-0.693147	86.5
	3/14/2000	ND<-0.693147	86.5
	9/23/2003	ND<-0.693147	86.5
	3/10/2004	ND<-0.693147	86.5
	10/12/2004	ND<-0.693147	86.5
	4/1/2005	ND<-0.693147	86.5
	10/26/2005	ND<-0.693147	86.5
	6/19/2006	ND<-0.693147	86.5
	11/15/2007	1.94591	198
	5/20/2008	ND<-0.693147	86.5
	11/20/2008	ND<-0.693147	86.5

Rank Sum = 1236
Rank Mean = 95.0769

Calculation Results:

Kruskal-Wallis H Statistic = 20.5189
Kruskal-Wallis H Statistic (adjusted for tied non-detects) = 56.3784
95% Confidence comparison value is 26.2962 at 16 degrees of freedom
20.5189 < 26.2962 indicating no significant group difference at 5% significance level
56.3784 > 26.2962 indicating a significant group difference at 5% significance level when adjusted for ties

Individual Well Comparisons at 1% Significance Level per Comparison

1% Z score is 2.32634
Mean background rank is 133.382

Well	Mean Rank	Dif from Bkg	Critical Value
LMW-10	140.893	7.5105	48.5946
LMW-3S	126.143	-7.2395	60.4683
LMW-6	113.941	-19.4412	46.1835
LMW-3	95.7105	-37.6718	44.9517
LMW-9D	86.5	-46.8824	63.9381
LMW-9S	86.5	-46.8824	63.9381
LMW-8	86.5	-46.8824	46.8995
LMW-16	86.5	-46.8824	63.9381
LMW-15R	86.5	-46.8824	55.5056
LMW-7	99.6875	-33.6949	46.8995
LMW-9	86.5	-46.8824	46.8995
LMW-14R	86.5	-46.8824	68.5011
LMW-11	86.5	-46.8824	52.102
LMW-12	86.5	-46.8824	52.102
LMW-13	86.5	-46.8824	52.102
MW-5	95.0769	-38.3054	49.609

Individual Well Comparisons at Groupwise 5% Significance Level (0.3125% Significance Level per comparison)

0.3125% Z score is 2.74777
Mean background rank is 133.382

Well	Mean Rank	Dif from Bkg	Critical Value

LMW-10	140.893	7.5105	57.3977
LMW-3S	126.143	-7.2395	71.4224
LMW-6	113.941	-19.4412	54.5497
LMW-3	95.7105	-37.6718	53.0948
LMW-9D	86.5	-46.8824	75.5207
LMW-9S	86.5	-46.8824	75.5207
LMW-8	86.5	-46.8824	55.3955
LMW-16	86.5	-46.8824	75.5207
LMW-15R	86.5	-46.8824	65.5606
LMW-7	99.6875	-33.6949	55.3955
LMW-9	86.5	-46.8824	55.3955
LMW-14R	86.5	-46.8824	80.9103
LMW-11	86.5	-46.8824	61.5404
LMW-12	86.5	-46.8824	61.5404
LMW-13	86.5	-46.8824	61.5404
MW-5	95.0769	-38.3054	58.5958

Non-Parametric Prediction Interval

Inter-Well Comparison

Parameter: Trichlorofluoromethane

Natural Logarithm Transformation
Non-Detects Replaced with 1/2 DL

Total Percent Non-Detects = 86%
Number of comparisons = 16
Future Samples (k) = 8
Recent Dates = 1
Background Samples (n) = 17
Maximum Background Concentration = 1.09861
Confidence Level = 68%
False Positive Rate = 32%

Location	Date	Samples	Mean	Significant
LMW-10	11/14/2009	1	2.56495	TRUE
LMW-3S	11/14/2009	1	-0.0304592	FALSE
LMW-6	11/14/2009	1	0.0953102	FALSE
LMW-3	11/14/2009	1	-0.385662	FALSE
LMW-9D	6/11/2009	1	-2.07944	FALSE
LMW-9S	6/11/2009	1	-2.07944	FALSE
LMW-8	6/11/2009	1	-2.07944	FALSE
LMW-16	6/11/2009	1	-2.07944	FALSE
LMW-15R	6/11/2009	1	-2.07944	FALSE
LMW-7	6/11/2009	1	-2.07944	FALSE
LMW-9	6/11/2009	1	-2.07944	FALSE
LMW-14R	6/11/2009	1	-2.07944	FALSE
LMW-11	11/20/2008	1	-0.693147	FALSE
LMW-12	11/20/2008	1	-0.693147	FALSE
LMW-13	11/20/2008	1	-0.693147	FALSE
MW-5	11/20/2008	1	-0.693147	FALSE

Mann-Kendall Trend Analysis

Parameter: Trichlorofluoromethane

Location: LMW-10

Natural Logarithm Transformation
Non-Detects Replaced with 1/2 DL

95% Confidence Level

Xj	Xk	Xj - Xk	Positives	Negatives
ND<-0.693147	ND<-0.693147	0	0	0
ND<-0.693147	ND<-0.693147	0	0	0
ND<-0.693147	ND<-0.693147	0	0	0
ND<-0.693147	ND<-0.693147	0	0	0
ND<0 J	ND<-0.693147	0.693147	1	0
0.693147	ND<-0.693147	1.38629	2	0
1.94591	ND<-0.693147	2.63906	3	0
1.09861	ND<-0.693147	1.79176	4	0
ND<-0.693147	ND<-0.693147	0	4	0
2.30259	ND<-0.693147	2.99573	5	0
1.09861	ND<-0.693147	1.79176	6	0
1.88707	ND<-0.693147	2.58022	7	0
2.56495	ND<-0.693147	3.2581	8	0
ND<-0.693147	ND<-0.693147	0	8	0
ND<-0.693147	ND<-0.693147	0	8	0
ND<-0.693147	ND<-0.693147	0	8	0
ND<0 J	ND<-0.693147	0.693147	9	0
0.693147	ND<-0.693147	1.38629	10	0
1.94591	ND<-0.693147	2.63906	11	0
1.09861	ND<-0.693147	1.79176	12	0
ND<-0.693147	ND<-0.693147	0	12	0
2.30259	ND<-0.693147	2.99573	13	0
1.09861	ND<-0.693147	1.79176	14	0
1.88707	ND<-0.693147	2.58022	15	0
2.56495	ND<-0.693147	3.2581	16	0
ND<-0.693147	ND<-0.693147	0	16	0
ND<-0.693147	ND<-0.693147	0	16	0
ND<0 J	ND<-0.693147	0.693147	17	0
0.693147	ND<-0.693147	1.38629	18	0
1.94591	ND<-0.693147	2.63906	19	0
1.09861	ND<-0.693147	1.79176	20	0
ND<-0.693147	ND<-0.693147	0	20	0
2.30259	ND<-0.693147	2.99573	21	0
1.09861	ND<-0.693147	1.79176	22	0
1.88707	ND<-0.693147	2.58022	23	0
2.56495	ND<-0.693147	3.2581	24	0
ND<-0.693147	ND<-0.693147	0	24	0
ND<0 J	ND<-0.693147	0.693147	25	0
0.693147	ND<-0.693147	1.38629	26	0
1.94591	ND<-0.693147	2.63906	27	0
1.09861	ND<-0.693147	1.79176	28	0
ND<-0.693147	ND<-0.693147	0	28	0
2.30259	ND<-0.693147	2.99573	29	0
1.09861	ND<-0.693147	1.79176	30	0
1.88707	ND<-0.693147	2.58022	31	0

2.56495	ND<-0.693147	3.2581	32	0	
ND<0 J	ND<-0.693147	0.693147	33	0	
0.693147	ND<-0.693147	1.38629	34	0	
1.94591	ND<-0.693147	2.63906	35	0	
1.09861	ND<-0.693147	1.79176	36	0	
ND<-0.693147	ND<-0.693147	0	36	0	
2.30259	ND<-0.693147	2.99573	37	0	
1.09861	ND<-0.693147	1.79176	38	0	
1.88707	ND<-0.693147	2.58022	39	0	
2.56495	ND<-0.693147	3.2581	40	0	
0.693147	ND<0 J	0.693147	41	0	
1.94591	ND<0 J	1.94591	42	0	
1.09861	ND<0 J	1.09861	43	0	
ND<-0.693147	ND<0 J	-0.693147	43	1	
2.30259	ND<0 J	2.30259	44	1	
1.09861	ND<0 J	1.09861	45	1	
1.88707	ND<0 J	1.88707	46	1	
2.56495	ND<0 J	2.56495	47	1	
1.94591	0.693147	1.25276	48	1	
1.09861	0.693147	0.405465	49	1	
ND<-0.693147	0.693147	-1.386	2949	2	
2.30259	0.693147	1.60944	50	2	
1.09861	0.693147	0.405465	51	2	
1.88707	0.693147	1.19392	52	2	
2.56495	0.693147	1.8718	53	2	
1.09861	1.94591	-0.847298	53	3	
ND<-0.693147	1.94591	-2.639	0653	4	
2.30259	1.94591	0.356675	54	4	
1.09861	1.94591	-0.847298	54	5	
1.88707	1.94591	-0.0588	405	54	6
2.56495	1.94591	0.619039	55	6	
ND<-0.693147	1.09861	-1.791	7655	7	
2.30259	1.09861	1.20397	56	7	
1.09861	1.09861	0	56	7	
1.88707	1.09861	0.788457	57	7	
2.56495	1.09861	1.46634	58	7	
2.30259	ND<-0.693147	2.99573	59	7	
1.09861	ND<-0.693147	1.79176	60	7	
1.88707	ND<-0.693147	2.58022	61	7	
2.56495	ND<-0.693147	3.2581	62	7	
1.09861	2.30259	-1.203	9762	8	
1.88707	2.30259	-0.415515	62	9	
2.56495	2.30259	0.262364	63	9	
1.88707	1.09861	0.788457	64	9	
2.56495	1.09861	1.46634	65	9	
2.56495	1.88707	0.67788	66	9	

S Statistic = 66 - 9 = 57

Tied Group Value Members

1	-0.693147	6
2	1.09861	2

Time Period	Observations
3/14/2000	1
9/23/2003	1
3/10/2004	1
10/12/2004	1
4/1/2005	1
10/26/2005	1
6/19/2006	1
11/18/2006	1
6/2/2007	1
11/15/2007	1
5/20/2008	1
11/20/2008	1
6/11/2009	1
11/14/2009	1

There are 0 time periods with multiple data

A = 528
B = 0
C = 120
D = 0
E = 32
F = 0
a = 6006
b = 19656
c = 364
Group Variance = 304.333
Z-Score = 3.21006
Comparison Level at 1.0 - (0.05 / 2) = 97.5% confidence level = 1.97737 (two-tailed)
|3.21006| > 1.97737 indicating a trend

Concentrations (ug/L)

Parameter: Vanadium

Natural Logarithm Transformation
Non-Detects Replaced with 1/2 DL
Total Measurements: 196
Total Non-Detect: 165
Percent Non-Detects: 84.1837%
Total Background Measurements: 16
There is 1 background location

Loc.	Meas.	ND	Date	Conc.	Original
LMW-4	16	15 (93.75%)	1/16/1998	ND<2.30259	ND<20
			3/16/1999	ND<2.30259	ND<20
			9/23/1999	ND<2.30259	ND<20
			3/14/2000	ND<2.30259	ND<20
			9/23/2003	ND<2.30259	ND<20
			3/10/2004	ND<2.30259	ND<20
			10/12/2004	ND<2.30259	ND<20
			4/1/2005	ND<2.30259	ND<20
			10/26/2005	ND<2.30259	ND<20
			6/19/2006	ND<2.30259	ND<20
			11/18/2006	ND<2.30259	ND<20
			6/2/2007	2.70805	15
			11/15/2007	ND<2.30259	ND<20
			5/20/2008	ND<2.30259	ND<20
			11/20/2008	ND<2.30259	ND<20
			6/11/2009	ND<-0.356675 U	ND<1.4 U

There are 16 compliance locations

Loc.	Meas.	ND	Date	Conc.	Original
LMW-9D7		1 (14.2857%)	11/18/2006	2.30259 J	10 J
			6/2/2007	1.60944	5
			11/15/2007	ND<2.30259	ND<20
			5/20/2008	1.60944 J	5 J
			11/20/2008	1.60944 J	5 J
			6/11/2009	0.916291 J	2.5 J
			11/14/2009	0.832909 J	2.3 J
LMW-8	16	15 (93.75%)	1/16/1998	ND<2.30259	ND<20
			3/16/1999	ND<2.30259	ND<20
			9/23/1999	1.94591 J	7 J
			3/14/2000	ND<2.30259	ND<20
			9/23/2003	ND<2.30259	ND<20
			3/10/2004	ND<2.30259	ND<20
			10/12/2004	ND<2.30259	ND<20
			4/1/2005	ND<2.30259	ND<20
			10/26/2005	ND<2.30259	ND<20
			6/19/2006	ND<2.30259	ND<20
			11/18/2006	ND<2.30259	ND<20
			6/2/2007	ND<2.30259	ND<20
			11/15/2007	ND<2.30259	ND<20
			5/20/2008	ND<2.30259	ND<20
			11/20/2008	ND<2.30259	ND<20
			6/11/2009	ND<-0.356675 U	ND<1.4 U

LMW-9	16	10 (62.5%)	1/16/1998	ND<2.30259	ND<20	
			3/16/1999	ND<2.30259	ND<20	
			9/23/1999	ND<2.30259	ND<20	
			3/14/2000	ND<2.30259	ND<20	
			9/23/2003	ND<2.30259	ND<20	
			3/10/2004	ND<2.30259	ND<20	
			10/12/2004	ND<2.30259	ND<20	
			4/1/2005	2.07944 J	8 J	
			10/26/2005	2.3979 J	11 J	
			6/19/2006	3.4012	30	
			11/18/2006	ND<2.30259	ND<20	
			6/2/2007	1.94591	7	
			11/15/2007	ND<2.30259	ND<20	
			5/20/2008	0.693147 J	2 J	
			11/20/2008	ND<2.30259	ND<20	
			6/11/2009	0.955511 J	2.6 J	
LMW-16	6	5 (83.3333%)	11/18/2006	ND<2.30259	ND<20	
			6/2/2007	3.71357	41	
			11/15/2007	ND<2.30259	ND<20	
			5/20/2008	ND<2.30259	ND<20	
			11/20/2008	ND<2.30259	ND<20	
			6/11/2009	ND<-0.356675 U	ND<1.4 U	
LMW-9S	6	5 (83.3333%)	11/18/2006	ND<2.30259	ND<20	
			6/2/2007	1.60944	5	
			11/15/2007	ND<2.30259	ND<20	
			5/20/2008	ND<2.30259	ND<20	
			11/20/2008	ND<2.30259	ND<20	
			6/11/2009	ND<-0.356675 U	ND<1.4 U	
LMW-14R	5	4 (80%)	6/2/2007	0.693147 J	2 J	
			11/15/2007	ND<2.30259	ND<20	
			5/20/2008	ND<2.30259	ND<20	
			11/20/2008	ND<2.30259	ND<20	
			6/11/2009	ND<-0.356675 U	ND<1.4 U	
LMW-15R	9	8 (88.8889%)	11/18/2006	ND<2.30259	ND<20	
			6/2/2007	ND<2.30259	ND<20	
			11/15/2007	ND<2.30259	ND<20	
			11/15/2007	ND<2.30259	ND<20	
			5/20/2008	ND<2.30259	ND<20	
			5/20/2008	ND<2.30259	ND<20	
			11/20/2008	ND<2.30259	ND<20	
			11/20/2008	ND<2.30259	ND<20	
			6/11/2009	2.0149	7.5	
LMW-6	16	15 (93.75%)	1/16/1998	ND<2.30259	ND<20	
			3/16/1999	ND<2.30259	ND<20	
			9/23/1999	ND<2.30259	ND<20	
			3/14/2000	ND<2.30259	ND<20	
			9/23/2003	ND<2.30259	ND<20	
			3/10/2004	ND<2.30259	ND<20	
			10/12/2004	ND<2.30259	ND<20	
			4/1/2005	ND<2.30259	ND<20	
			10/26/2005	ND<2.30259	ND<20	
			6/19/2006	ND<2.30259	ND<20	
			11/18/2006	ND<2.30259	ND<20	
			6/2/2007	1.09861	3	
			11/15/2007	ND<2.30259	ND<20	
			5/20/2008	ND<2.30259	ND<20	
			11/20/2008	ND<2.30259	ND<20	

			6/11/2009	ND<-0.356675 U	ND<1.4 U
LMW-3	18	18 (100%)	11/19/1996	ND<2.30259	ND<20
			3/24/1997	ND<2.30259	ND<20
			1/16/1998	ND<2.30259	ND<20
			3/16/1999	ND<2.30259	ND<20
			9/23/1999	ND<2.30259	ND<20
			3/14/2000	ND<2.30259	ND<20
			9/23/2003	ND<2.30259	ND<20
			3/10/2004	ND<2.30259	ND<20
			10/12/2004	ND<2.30259	ND<20
			4/1/2005	ND<2.30259	ND<20
			10/26/2005	ND<2.30259	ND<20
			6/19/2006	ND<2.30259	ND<20
			11/18/2006	ND<2.30259	ND<20
			6/2/2007	ND<2.30259	ND<20
			11/15/2007	ND<2.30259	ND<20
			5/20/2008	ND<2.30259	ND<20
			11/20/2008	ND<2.30259	ND<20
			6/11/2009	ND<-0.356675 U	ND<1.4 U
LMW-7	16	8 (50%)	1/16/1998	ND<2.30259	ND<20
			3/16/1999	1.94591 J	7 J
			9/23/1999	3.89182	49
			3/14/2000	ND<2.30259	ND<20
			9/23/2003	ND<2.30259	ND<20
			3/10/2004	ND<2.30259	ND<20
			10/12/2004	ND<2.30259	ND<20
			4/1/2005	2.48491 J	12 J
			10/26/2005	2.89037 J	18 J
			6/19/2006	2.07944 J	8 J
			11/18/2006	1.09861 J	3 J
			6/2/2007	2.63906	14
			11/15/2007	ND<2.30259	ND<20
			5/20/2008	ND<2.30259	ND<20
			11/20/2008	ND<2.30259	ND<20
			6/11/2009	1.06471 J	2.9 J
LMW-10	13	11 (84.6154%)	3/14/2000	ND<2.30259	ND<20
			9/23/2003	ND<2.30259	ND<20
			3/10/2004	ND<2.30259	ND<20
			10/12/2004	ND<2.30259	ND<20
			4/1/2005	ND<2.30259	ND<20
			10/26/2005	ND<2.30259	ND<20
			6/19/2006	2.07944 J	8 J
			11/18/2006	ND<2.30259	ND<20
			6/2/2007	1.09861 J	3 J
			11/15/2007	ND<2.30259	ND<20
			5/20/2008	ND<2.30259	ND<20
			11/20/2008	ND<2.30259	ND<20
			6/11/2009	ND<-0.356675 U	ND<1.4 U
LMW-3S	6	4 (66.6667%)	11/18/2006	ND<2.30259	ND<20
			6/2/2007	2.19722	9
			11/15/2007	ND<2.30259	ND<20
			5/20/2008	ND<2.30259	ND<20
			11/20/2008	ND<2.30259	ND<20
			6/11/2009	0.741937 J	2.1 J
LMW-12	11	11 (100%)	3/14/2000	ND<2.30259	ND<20
			9/23/2003	ND<2.30259	ND<20
			3/10/2004	ND<2.30259	ND<20

			10/12/2004	ND<2.30259	ND<20
			4/1/2005	ND<2.30259	ND<20
			10/26/2005	ND<2.30259	ND<20
			6/19/2006	ND<2.30259	ND<20
			6/2/2007	ND<2.30259	ND<20
			11/15/2007	ND<2.30259	ND<20
			5/20/2008	ND<2.30259	ND<20
			11/20/2008	ND<2.30259	ND<20
LMW-13	11	11 (100%)	3/14/2000	ND<2.30259	ND<20
			9/23/2003	ND<2.30259	ND<20
			3/10/2004	ND<2.30259	ND<20
			10/12/2004	ND<2.30259	ND<20
			4/1/2005	ND<2.30259	ND<20
			10/26/2005	ND<2.30259	ND<20
			6/19/2006	ND<2.30259	ND<20
			6/2/2007	ND<2.30259	ND<20
			11/15/2007	ND<2.30259	ND<20
			5/20/2008	ND<2.30259	ND<20
			11/20/2008	ND<2.30259	ND<20
MW-5	13	13 (100%)	1/16/1998	ND<2.30259	ND<20
			3/16/1999	ND<2.30259	ND<20
			9/23/1999	ND<2.30259	ND<20
			3/14/2000	ND<2.30259	ND<20
			9/23/2003	ND<2.30259	ND<20
			3/10/2004	ND<2.30259	ND<20
			10/12/2004	ND<2.30259	ND<20
			4/1/2005	ND<2.30259	ND<20
			10/26/2005	ND<2.30259	ND<20
			6/19/2006	ND<2.30259	ND<20
			11/15/2007	ND<2.30259	ND<20
			5/20/2008	ND<2.30259	ND<20
			11/20/2008	ND<2.30259	ND<20
LMW-11	11	11 (100%)	3/14/2000	ND<2.30259	ND<20
			9/23/2003	ND<2.30259	ND<20
			3/10/2004	ND<2.30259	ND<20
			10/12/2004	ND<2.30259	ND<20
			4/1/2005	ND<2.30259	ND<20
			10/26/2005	ND<2.30259	ND<20
			6/19/2006	ND<2.30259	ND<20
			6/2/2007	ND<2.30259	ND<20
			11/15/2007	ND<2.30259	ND<20
			5/20/2008	ND<2.30259	ND<20
			11/20/2008	ND<2.30259	ND<20

There are 0 unused locations

Loc.	Meas.	ND	Date	Conc.	Original

Shapiro-Francia Test of Normality

Parameter: Vanadium

All Locations

Normality Test of Parameter Concentrations

Original Data (Not Transformed)
Non-Detects Replaced with 1/2 DL
Total Number of Measurements = 196

i	x(i)	m(i)	sum(m^2)	sum(mx)
1	0.7	-2.57583	6.63492	-1.80308
2	0.7	-2.32634	12.0468	-3.43152
3	0.7	-2.17009	16.7561	-4.95059
4	0.7	-2.05375	20.974	-6.38821
5	0.7	-1.95996	24.8154	-7.76018
6	0.7	-1.88079	28.3528	-9.07674
7	0.7	-1.81191	31.6358	-10.3451
8	0.7	-1.75069	34.7007	-11.5706
9	2	-1.6954	37.5751	-14.9614
10	2	-1.64485	40.2806	-18.2511
11	2.1	-1.59819	42.8348	-21.6073
12	2.3	-1.55477	45.2522	-25.1832
13	2.5	-1.5141	47.5447	-28.9685
14	2.6	-1.46838	49.7008	-32.7863
15	2.9	-1.4325	51.7529	-36.9406
16	3	-1.39838	53.7083	-41.1357
17	3	-1.36581	55.5738	-45.2331
18	3	-1.33462	57.355	-49.237
19	5	-1.30469	59.0572	-55.7604
20	5	-1.27588	60.6851	-62.1398
21	5	-1.24809	62.2428	-68.3802
22	5	-1.22123	63.7342	-74.4864
23	7	-1.19522	65.1627	-82.8529
24	7	-1.17	66.5316	-91.0429
25	7	-1.1455	67.8438	-99.0614
26	7.5	-1.12168	69.102	-107.474
27	8	-1.0939	70.2986	-116.225
28	8	-1.07138	71.4464	-124.796
29	8	-1.04939	72.5476	-133.191
30	9	-1.02789	73.6042	-142.442
31	10	-1.00687	74.618	-152.511
32	10	-0.986272	75.5907	-162.374
33	10	-0.966088	76.524	-172.035
34	10	-0.946291	77.4195	-181.498
35	10	-0.926859	78.2786	-190.766
36	10	-0.907769	79.1026	-199.844
37	10	-0.889006	79.893	-208.734
38	10	-0.87055	80.6508	-217.439
39	10	-0.852385	81.3774	-225.963
40	10	-0.830953	82.0679	-234.273
41	10	-0.813379	82.7294	-242.407
42	10	-0.796056	83.3632	-250.367
43	10	-0.778966	83.9699	-258.157
44	10	-0.7621	84.5507	-265.778
45	10	-0.745449	85.1064	-273.232
46	10	-0.729003	85.6379	-280.522
47	10	-0.712751	86.1459	-287.65
48	10	-0.696684	86.6313	-294.617
49	10	-0.680797	87.0947	-301.425

50	10	-0.665079	87.5371	-308.075
51	10	-0.649522	87.959	-314.571
52	10	-0.634124	88.3611	-320.912
53	10	-0.615839	88.7403	-327.07
54	10	-0.6007689.1012	-333.078	
55	10	-0.585815	89.4444	-338.936
56	10	-0.570999	89.7705	-344.646
57	10	-0.556308	90.0799	-350.209
58	10	-0.541736	90.3734	-355.626
59	10	-0.5272890.6514	-360.899	
60	10	-0.5129390.9145	-366.029	
61	10	-0.498687	91.1632	-371.015
62	10	-0.484544	91.398	-375.861
63	10	-0.470498	91.6194	-380.566
64	10	-0.456542	91.8278	-385.131
65	10	-0.442676	92.0238	-389.558
66	10	-0.426148	92.2054	-393.819
67	10	-0.412463	92.3755	-397.944
68	10	-0.398855	92.5346	-401.933
69	10	-0.385321	92.683	-405.786
70	10	-0.371856	92.8213	-409.504
71	10	-0.358459	92.9498	-413.089
72	10	-0.345126	93.0689	-416.54
73	10	-0.331854	93.1791	-419.859
74	10	-0.318639	93.2806	-423.045
75	10	-0.305481	93.3739	-426.1
76	10	-0.292375	93.4594	-429.024
77	10	-0.279319	93.5374	-431.817
78	10	-0.266311	93.6083	-434.48
79	10	-0.250759	93.6712	-436.988
80	10	-0.237847	93.7278	-439.366
81	10	-0.224974	93.7784	-441.616
82	10	-0.212137	93.8234	-443.737
83	10	-0.199336	93.8631	-445.731
84	10	-0.186567	93.8979	-447.596
85	10	-0.173829	93.9282	-449.335
86	10	-0.161119	93.9541	-450.946
87	10	-0.148434	93.9762	-452.43
88	10	-0.135774	93.9946	-453.788
89	10	-0.123135	94.0097	-455.019
90	10	-0.110516	94.022	-456.124
91	10	-0.0979139	94.0315	-457.103
92	10	-0.0828129	94.0384	-457.932
93	10	-0.0702426	94.0433	-458.634
94	10	-0.0576847	94.0467	-459.211
95	10	-0.0451348	94.0487	-459.662
96	10	-0.0325917	94.0498	-459.988
97	10	-0.0200544	94.0502	-460.189
98	10	-0.00751925	94.0502	-460.264
99	10	0.00751925	94.0503	-460.189
100	10	0.0200544	94.0507	-459.988
101	10	0.0325917	94.0517	-459.662
102	10	0.0451348	94.0538	-459.211
103	10	0.0576847	94.0571	-458.634
104	10	0.0702426	94.062	-457.932
105	10	0.0828129	94.0689	-457.103
106	10	0.0979139	94.0785	-456.124
107	10	0.110516	94.0907	-455.019
108	10	0.123135	94.1059	-453.788
109	10	0.135774	94.1243	-452.43
110	10	0.148434	94.1463	-450.946
111	10	0.161119	94.1723	-449.335

112	10	0.173829		94.2025	-447.596
113	10	0.186567		94.2373	-445.731
114	10	0.199336		94.2771	-443.737
115	10	0.212137		94.3221	-441.616
116	10	0.224974		94.3727	-439.366
117	10	0.237847		94.4292	-436.988
118	10	0.250759		94.4921	-434.48
119	10	0.266311		94.563	-431.817
120	10	0.279319		94.6411	-429.024
121	10	0.292375		94.7265	-426.1
122	10	0.305481		94.8199	-423.045
123	10	0.318639		94.9214	-419.859
124	10	0.331854		95.0315	-416.54
125	10	0.345126		95.1506	-413.089
126	10	0.358459		95.2791	-409.504
127	10	0.371856		95.4174	-405.786
128	10	0.385321		95.5659	-401.933
129	10	0.398855		95.725	-397.944
130	10	0.412463		95.8951	-393.819
131	10	0.426148		96.0767	-389.558
132	10	0.442676		96.2726	-385.131
133	10	0.456542		96.4811	-380.566
134	10	0.470498		96.7024	-375.861
135	10	0.484544		96.9372	-371.015
136	10	0.498687		97.1859	-366.029
137	10	0.51293	97.449	-360.899	
138	10	0.52728	97.727	-355.626	
139	10	0.541736		98.0205	-350.209
140	10	0.556308		98.33	-344.646
141	10	0.570999		98.656	-338.936
142	10	0.585815		98.9992	-333.078
143	10	0.60076	99.3601	-327.07	
144	10	0.615839		99.7394	-320.912
145	10	0.634124		100.141	-314.571
146	10	0.649522		100.563	-308.075
147	10	0.665079		101.006	-301.425
148	10	0.680797		101.469	-294.617
149	10	0.696684		101.955	-287.65
150	10	0.712751		102.463	-280.522
151	10	0.729003		102.994	-273.232
152	10	0.745449		103.55	-265.778
153	10	0.7621	104.131	-258.157	
154	10	0.778966		104.737	-250.367
155	10	0.796056		105.371	-242.407
156	10	0.813379		106.033	-234.273
157	10	0.830953		106.723	-225.963
158	10	0.852385		107.45	-217.439
159	10	0.87055	108.207	-208.734	
160	10	0.889006		108.998	-199.844
161	10	0.907769		109.822	-190.766
162	10	0.926859		110.681	-181.498
163	10	0.946291		111.576	-172.035
164	10	0.966088		112.51	-162.374
165	10	0.986272		113.482	-152.511
166	10	1.00687	114.496	-142.442	
167	10	1.02789	115.553	-132.163	
168	10	1.04939	116.654	-121.67	
169	10	1.07138	117.802	-110.956	
170	10	1.0939	118.998	-100.017	
171	10	1.12168	120.257	-88.8	
172	10	1.1455	121.569	-77.345	
173	10	1.17	122.938	-65.645	

174	10	1.19522	124.366	-53.6928
175	10	1.22123	125.858	-41.4805
176	10	1.24809	127.415	-28.9996
177	10	1.27588	129.043	-16.2409
178	10	1.30469	130.745	-3.194
179	10	1.33462	132.527	10.1522
180	10	1.36581	134.392	23.8103
181	10	1.39838	136.348	37.7941
182	10	1.4325	138.4	52.1191
183	10	1.46838	140.556	66.8029
184	10	1.5141	142.848	81.944
185	10	1.55477	145.266	97.4917
186	10	1.59819	147.82	113.474
187	10	1.64485	150.525	129.922
188	10	1.6954	153.4	146.876
189	11	1.75069	156.465	166.134
190	12	1.81191	159.748	187.877
191	14	1.88079	163.285	214.208
192	15	1.95996	167.126	243.607
193	18	2.05375	171.344	280.575
194	30	2.17009	176.054	345.677
195	41	2.32634	181.466	441.057
196	49	2.57583	188.1	567.273

Data Set Standard Deviation = 4.72725
Numerator = 321799
Denominator = 819675
W Statistic = 0.392593 = 321799 / 819675

5% Critical value of 0.976 exceeds 0.392593
Evidence of non-normality at 95% level of significance

1% Critical value of 0.967 exceeds 0.392593
Evidence of non-normality at 99% level of significance

Shapiro-Francia Test of Normality

Parameter: Vanadium

All Locations

Normality Test of Parameter Concentrations

Natural Logarithm Transformation
Non-Detects Replaced with 1/2 DL
Total Number of Measurements = 196

i	x(i)	m(i)	sum(m^2)	sum(mx)
1	-0.356675	-2.57583	6.63492	0.918736
2	-0.356675	-2.32634	12.0468	1.74848
3	-0.356675	-2.17009	16.7561	2.5225
4	-0.356675	-2.05375	20.974	3.25502
5	-0.356675	-1.95996	24.8154	3.95409
6	-0.356675	-1.88079	28.3528	4.62492
7	-0.356675	-1.81191	31.6358	5.27118
8	-0.356675	-1.75069	34.7007	5.89561
9	0.693147	-1.6954	37.5751	4.72045
10	0.693147	-1.64485	40.2806	3.58032
11	0.741937	-1.59819	42.8348	2.39457
12	0.832909	-1.55477	45.2522	1.09958
13	0.916291	-1.5141	47.5447	-0.287776
14	0.955511	-1.46838	49.7008	-1.69083
15	1.06471	-1.4325	51.7529	-3.21604
16	1.09861	-1.39838	53.7083	-4.75231
17	1.09861	-1.36581	55.5738	-6.2528
18	1.09861	-1.33462	57.355	-7.71904
19	1.60944	-1.30469	59.0572	-9.81885
20	1.60944	-1.27588	60.6851	-11.8723
21	1.60944	-1.24809	62.2428	-13.881
22	1.60944	-1.22123	63.7342	-15.8465
23	1.94591	-1.19522	65.1627	-18.1723
24	1.94591	-1.17	66.5316	-20.449
25	1.94591	-1.1455	67.8438	-22.6781
26	2.0149	-1.12168	69.102	-24.9381
27	2.07944	-1.0939	70.2986	-27.2128
28	2.07944	-1.07138	71.4464	-29.4407
29	2.07944	-1.04939	72.5476	-31.6228
30	2.19722	-1.02789	73.6042	-33.8813
31	2.30259	-1.00687	74.618	-36.1997
32	2.30259	-0.986272	75.5907	-38.4707
33	2.30259	-0.966088	76.524	-40.6952
34	2.30259	-0.946291	77.4195	-42.8741
35	2.30259	-0.926859	78.2786	-45.0083
36	2.30259	-0.907769	79.1026	-47.0985
37	2.30259	-0.889006	79.893	-49.1455
38	2.30259	-0.87055	80.6508	-51.15
39	2.30259	-0.852385	81.3774	-53.1127
40	2.30259	-0.830953	82.0679	-55.0261
41	2.30259	-0.813379	82.7294	-56.8989
42	2.30259	-0.796056	83.3632	-58.7319
43	2.30259	-0.778966	83.9699	-60.5256
44	2.30259	-0.7621	84.5507	-62.2804
45	2.30259	-0.745449	85.1064	-63.9968
46	2.30259	-0.729003	85.6379	-65.6754
47	2.30259	-0.712751	86.1459	-67.3166
48	2.30259	-0.696684	86.6313	-68.9208
49	2.30259	-0.680797	87.0947	-70.4884

50	2.30259	-0.665079	87.5371	-72.0198
51	2.30259	-0.649522	87.959	-73.5153
52	2.30259	-0.634124	88.3611	-74.9755
53	2.30259	-0.615839	88.7403	-76.3935
54	2.30259	-0.6007689.1012	-77.7768	
55	2.30259	-0.585815	89.4444	-79.1257
56	2.30259	-0.570999	89.7705	-80.4404
57	2.30259	-0.556308	90.0799	-81.7214
58	2.30259	-0.541736	90.3734	-82.9688
59	2.30259	-0.5272890.6514	-84.1829	
60	2.30259	-0.5129390.9145	-85.364	
61	2.30259	-0.498687	91.1632	-86.5122
62	2.30259	-0.484544	91.398	-87.6279
63	2.30259	-0.470498	91.6194	-88.7113
64	2.30259	-0.456542	91.8278	-89.7625
65	2.30259	-0.442676	92.0238	-90.7818
66	2.30259	-0.426148	92.2054	-91.7631
67	2.30259	-0.412463	92.3755	-92.7128
68	2.30259	-0.398855	92.5346	-93.6312
69	2.30259	-0.385321	92.683	-94.5184
70	2.30259	-0.371856	92.8213	-95.3747
71	2.30259	-0.358459	92.9498	-96.2
72	2.30259	-0.345126	93.0689	-96.9947
73	2.30259	-0.331854	93.1791	-97.7588
74	2.30259	-0.318639	93.2806	-98.4925
75	2.30259	-0.305481	93.3739	-99.1959
76	2.30259	-0.292375	93.4594	-99.8691
77	2.30259	-0.279319	93.5374	-100.512
78	2.30259	-0.266311	93.6083	-101.126
79	2.30259	-0.250759	93.6712	-101.703
80	2.30259	-0.237847	93.7278	-102.251
81	2.30259	-0.224974	93.7784	-102.769
82	2.30259	-0.212137	93.8234	-103.257
83	2.30259	-0.199336	93.8631	-103.716
84	2.30259	-0.186567	93.8979	-104.146
85	2.30259	-0.173829	93.9282	-104.546
86	2.30259	-0.161119	93.9541	-104.917
87	2.30259	-0.148434	93.9762	-105.259
88	2.30259	-0.135774	93.9946	-105.571
89	2.30259	-0.123135	94.0097	-105.855
90	2.30259	-0.110516	94.022	-106.109
91	2.30259	-0.0979139	94.0315	-106.335
92	2.30259	-0.0828129	94.0384	-106.525
93	2.30259	-0.0702426	94.0433	-106.687
94	2.30259	-0.0576847	94.0467	-106.82
95	2.30259	-0.0451348	94.0487	-106.924
96	2.30259	-0.0325917	94.0498	-106.999
97	2.30259	-0.0200544	94.0502	-107.045
98	2.30259	-0.00751925	94.0502	-107.062
99	2.30259	0.00751925	94.0503	-107.045
100	2.30259	0.0200544	94.0507	-106.999
101	2.30259	0.0325917	94.0517	-106.924
102	2.30259	0.0451348	94.0538	-106.82
103	2.30259	0.0576847	94.0571	-106.687
104	2.30259	0.0702426	94.062	-106.525
105	2.30259	0.0828129	94.0689	-106.335
106	2.30259	0.0979139	94.0785	-106.109
107	2.30259	0.110516	94.0907	-105.855
108	2.30259	0.123135	94.1059	-105.571
109	2.30259	0.135774	94.1243	-105.259
110	2.30259	0.148434	94.1463	-104.917
111	2.30259	0.161119	94.1723	-104.546

112	2.30259	0.173829		94.2025	-104.146
113	2.30259	0.186567		94.2373	-103.716
114	2.30259	0.199336		94.2771	-103.257
115	2.30259	0.212137		94.3221	-102.769
116	2.30259	0.224974		94.3727	-102.251
117	2.30259	0.237847		94.4292	-101.703
118	2.30259	0.250759		94.4921	-101.126
119	2.30259	0.266311		94.563	-100.512
120	2.30259	0.279319		94.6411	-99.8691
121	2.30259	0.292375		94.7265	-99.1959
122	2.30259	0.305481		94.8199	-98.4925
123	2.30259	0.318639		94.9214	-97.7588
124	2.30259	0.331854		95.0315	-96.9947
125	2.30259	0.345126		95.1506	-96.2
126	2.30259	0.358459		95.2791	-95.3747
127	2.30259	0.371856		95.4174	-94.5184
128	2.30259	0.385321		95.5659	-93.6312
129	2.30259	0.398855		95.725	-92.7128
130	2.30259	0.412463		95.8951	-91.7631
131	2.30259	0.426148		96.0767	-90.7818
132	2.30259	0.442676		96.2726	-89.7625
133	2.30259	0.456542		96.4811	-88.7113
134	2.30259	0.470498		96.7024	-87.6279
135	2.30259	0.484544		96.9372	-86.5122
136	2.30259	0.498687		97.1859	-85.364
137	2.30259	0.51293	97.449	-84.1829	
138	2.30259	0.52728	97.727	-82.9688	
139	2.30259	0.541736		98.0205	-81.7214
140	2.30259	0.556308		98.33	-80.4404
141	2.30259	0.570999		98.656	-79.1257
142	2.30259	0.585815		98.9992	-77.7768
143	2.30259	0.60076	99.3601	-76.3935	
144	2.30259	0.615839		99.7394	-74.9755
145	2.30259	0.634124		100.141	-73.5153
146	2.30259	0.649522		100.563	-72.0198
147	2.30259	0.665079		101.006	-70.4884
148	2.30259	0.680797		101.469	-68.9208
149	2.30259	0.696684		101.955	-67.3166
150	2.30259	0.712751		102.463	-65.6754
151	2.30259	0.729003		102.994	-63.9968
152	2.30259	0.745449		103.55	-62.2804
153	2.30259	0.7621	104.131	-60.5256	
154	2.30259	0.778966		104.737	-58.7319
155	2.30259	0.796056		105.371	-56.8989
156	2.30259	0.813379		106.033	-55.0261
157	2.30259	0.830953		106.723	-53.1127
158	2.30259	0.852385		107.45	-51.15
159	2.30259	0.87055	108.207	-49.1455	
160	2.30259	0.889006		108.998	-47.0985
161	2.30259	0.907769		109.822	-45.0083
162	2.30259	0.926859		110.681	-42.8741
163	2.30259	0.946291		111.576	-40.6952
164	2.30259	0.966088		112.51	-38.4707
165	2.30259	0.986272		113.482	-36.1997
166	2.30259	1.00687	114.496	-33.8813	
167	2.30259	1.02789	115.553	-31.5145	
168	2.30259	1.04939	116.654	-29.0982	
169	2.30259	1.07138	117.802	-26.6313	
170	2.30259	1.0939	118.998	-24.1125	
171	2.30259	1.12168	120.257	-21.5297	
172	2.30259	1.1455	121.569	-18.8921	
173	2.30259	1.17	122.938	-16.1981	

174	2.30259	1.19522	124.366	-13.446
175	2.30259	1.22123	125.858	-10.634
176	2.30259	1.24809	127.415	-7.76019
177	2.30259	1.27588	129.043	-4.82237
178	2.30259	1.30469	130.745	-1.81822
179	2.30259	1.33462	132.527	1.25486
180	2.30259	1.36581	134.392	4.39975
181	2.30259	1.39838	136.348	7.61963
182	2.30259	1.4325	138.4	10.9181
183	2.30259	1.46838	140.556	14.2992
184	2.30259	1.5141	142.848	17.7855
185	2.30259	1.55477	145.266	21.3655
186	2.30259	1.59819	147.82	25.0455
187	2.30259	1.64485	150.525	28.8329
188	2.30259	1.6954	153.4	32.7367
189	2.3979	1.75069	156.465	36.9347
190	2.48491	1.81191	159.748	41.4371
191	2.63906	1.88079	163.285	46.4006
192	2.70805	1.95996	167.126	51.7083
193	2.89037	2.05375	171.344	57.6444
194	3.4012	2.17009	176.054	65.0253
195	3.71357	2.32634	181.466	73.6643
196	3.89182	2.57583	188.1	83.689

Data Set Standard Deviation = 0.636086
Numerator = 7003.85
Denominator = 14840.8
W Statistic = 0.471933 = 7003.85 / 14840.8

5% Critical value of 0.976 exceeds 0.471933
Evidence of non-normality at 95% level of significance

1% Critical value of 0.967 exceeds 0.471933
Evidence of non-normality at 99% level of significance

Kruskal-Wallis Non-Parametric Test

Parameter: Vanadium

Natural Logarithm Transformation
Non-Detects Replaced with 1/2 DL

Kruskal Wallis Ranks

Background Wells

Well ID	Date	Result	Rank
LMW-4	1/16/1998	ND<2.30259	83
	3/16/1999	ND<2.30259	83
	9/23/1999	ND<2.30259	83
	3/14/2000	ND<2.30259	83
	9/23/2003	ND<2.30259	83
	3/10/2004	ND<2.30259	83
	10/12/2004	ND<2.30259	83
	4/1/2005	ND<2.30259	83
	10/26/2005	ND<2.30259	83
	6/19/2006	ND<2.30259	83
	11/18/2006	ND<2.30259	83
	6/2/2007	2.70805	192
	11/15/2007	ND<2.30259	83
	5/20/2008	ND<2.30259	83
	11/20/2008	ND<2.30259	83
	6/11/2009	ND<-0.356675 U	83

Rank Sum = 1437
Rank Mean = 89.8125

Background Rank Sum = 1437
Background Rank Mean = 89.8125

Compliance Wells

Well ID	Date	Result	Rank
LMW-9D	11/18/2006	2.30259 J	188
	6/2/2007	1.60944	176
	11/15/2007	ND<2.30259	83
	5/20/2008	1.60944 J	177
	11/20/2008	1.60944 J	178
	6/11/2009	0.916291 J	170
	11/14/2009	0.832909 J	169

Rank Sum = 1141
Rank Mean = 163

LMW-8	1/16/1998	ND<2.30259	83
	3/16/1999	ND<2.30259	83
	9/23/1999	1.94591 J	180
	3/14/2000	ND<2.30259	83
	9/23/2003	ND<2.30259	83
	3/10/2004	ND<2.30259	83
	10/12/2004	ND<2.30259	83
	4/1/2005	ND<2.30259	83
	10/26/2005	ND<2.30259	83
	6/19/2006	ND<2.30259	83
	11/18/2006	ND<2.30259	83

	6/2/2007	ND<2.30259	83
	11/15/2007	ND<2.30259	83
	5/20/2008	ND<2.30259	83
	11/20/2008	ND<2.30259	83
	6/11/2009	ND<-0.356675 U	83

Rank Sum = 1425
Rank Mean = 89.0625

LMW-9	1/16/1998	ND<2.30259	83
	3/16/1999	ND<2.30259	83
	9/23/1999	ND<2.30259	83
	3/14/2000	ND<2.30259	83
	9/23/2003	ND<2.30259	83
	3/10/2004	ND<2.30259	83
	10/12/2004	ND<2.30259	83
	4/1/2005	2.07944 J	184
	10/26/2005	2.3979 J	189
	6/19/2006	3.4012	194
	11/18/2006	ND<2.30259	83
	6/2/2007	1.94591	181
	11/15/2007	ND<2.30259	83
	5/20/2008	0.693147 J	166
	11/20/2008	ND<2.30259	83
	6/11/2009	0.955511 J	171

Rank Sum = 1915
Rank Mean = 119.688

LMW-16	11/18/2006	ND<2.30259	83
	6/2/2007	3.71357	195
	11/15/2007	ND<2.30259	83
	5/20/2008	ND<2.30259	83
	11/20/2008	ND<2.30259	83
	6/11/2009	ND<-0.356675 U	83

Rank Sum = 610
Rank Mean = 101.667

LMW-9S	11/18/2006	ND<2.30259	83
	6/2/2007	1.60944	179
	11/15/2007	ND<2.30259	83
	5/20/2008	ND<2.30259	83
	11/20/2008	ND<2.30259	83
	6/11/2009	ND<-0.356675 U	83

Rank Sum = 594
Rank Mean = 99

LMW-14R	6/2/2007	0.693147 J	167
	11/15/2007	ND<2.30259	83
	5/20/2008	ND<2.30259	83
	11/20/2008	ND<2.30259	83
	6/11/2009	ND<-0.356675 U	83

Rank Sum = 499
Rank Mean = 99.8

LMW-15R	11/18/2006	ND<2.30259	83
	6/2/2007	ND<2.30259	83
	11/15/2007	ND<2.30259	83
	11/15/2007	ND<2.30259	83
	5/20/2008	ND<2.30259	83
	5/20/2008	ND<2.30259	83
	11/20/2008	ND<2.30259	83
	11/20/2008	ND<2.30259	83
	6/11/2009	2.0149	183

Rank Sum = 847
Rank Mean = 94.1111

LMW-6	1/16/1998	ND<2.30259	83
	3/16/1999	ND<2.30259	83
	9/23/1999	ND<2.30259	83
	3/14/2000	ND<2.30259	83
	9/23/2003	ND<2.30259	83
	3/10/2004	ND<2.30259	83
	10/12/2004	ND<2.30259	83
	4/1/2005	ND<2.30259	83
	10/26/2005	ND<2.30259	83
	6/19/2006	ND<2.30259	83
	11/18/2006	ND<2.30259	83
	6/2/2007	1.09861	173
	11/15/2007	ND<2.30259	83
	5/20/2008	ND<2.30259	83
	11/20/2008	ND<2.30259	83
	6/11/2009	ND<-0.356675 U	83

Rank Sum = 1418
Rank Mean = 88.625

LMW-3	11/19/1996	ND<2.30259	83
	3/24/1997	ND<2.30259	83
	1/16/1998	ND<2.30259	83
	3/16/1999	ND<2.30259	83
	9/23/1999	ND<2.30259	83
	3/14/2000	ND<2.30259	83
	9/23/2003	ND<2.30259	83
	3/10/2004	ND<2.30259	83
	10/12/2004	ND<2.30259	83
	4/1/2005	ND<2.30259	83
	10/26/2005	ND<2.30259	83
	6/19/2006	ND<2.30259	83
	11/18/2006	ND<2.30259	83
	6/2/2007	ND<2.30259	83
	11/15/2007	ND<2.30259	83
	5/20/2008	ND<2.30259	83
	11/20/2008	ND<2.30259	83
	6/11/2009	ND<-0.356675 U	83

Rank Sum = 1494
Rank Mean = 83

LMW-7	1/16/1998	ND<2.30259	83
	3/16/1999	1.94591 J	182
	9/23/1999	3.89182	196
	3/14/2000	ND<2.30259	83
	9/23/2003	ND<2.30259	83
	3/10/2004	ND<2.30259	83
	10/12/2004	ND<2.30259	83
	4/1/2005	2.48491 J	190
	10/26/2005	2.89037 J	193
	6/19/2006	2.07944 J	185
	11/18/2006	1.09861 J	174
	6/2/2007	2.63906	191
	11/15/2007	ND<2.30259	83
	5/20/2008	ND<2.30259	83
	11/20/2008	ND<2.30259	83
	6/11/2009	1.06471 J	172

Rank Sum = 2147
Rank Mean = 134.188

LMW-10	3/14/2000	ND<2.30259	83
	9/23/2003	ND<2.30259	83
	3/10/2004	ND<2.30259	83
	10/12/2004	ND<2.30259	83
	4/1/2005	ND<2.30259	83
	10/26/2005	ND<2.30259	83
	6/19/2006	2.07944 J	186
	11/18/2006	ND<2.30259	83
	6/2/2007	1.09861 J	175
	11/15/2007	ND<2.30259	83
	5/20/2008	ND<2.30259	83
	11/20/2008	ND<2.30259	83
	6/11/2009	ND<-0.356675 U	83

Rank Sum = 1274
Rank Mean = 98

LMW-3S	11/18/2006	ND<2.30259	83
	6/2/2007	2.19722	187
	11/15/2007	ND<2.30259	83
	5/20/2008	ND<2.30259	83
	11/20/2008	ND<2.30259	83
	6/11/2009	0.741937 J	168

Rank Sum = 687
Rank Mean = 114.5

LMW-12	3/14/2000	ND<2.30259	83
	9/23/2003	ND<2.30259	83
	3/10/2004	ND<2.30259	83
	10/12/2004	ND<2.30259	83
	4/1/2005	ND<2.30259	83
	10/26/2005	ND<2.30259	83
	6/19/2006	ND<2.30259	83
	6/2/2007	ND<2.30259	83
	11/15/2007	ND<2.30259	83
	5/20/2008	ND<2.30259	83
	11/20/2008	ND<2.30259	83

Rank Sum = 913
Rank Mean = 83

LMW-13	3/14/2000	ND<2.30259	83
	9/23/2003	ND<2.30259	83
	3/10/2004	ND<2.30259	83
	10/12/2004	ND<2.30259	83
	4/1/2005	ND<2.30259	83
	10/26/2005	ND<2.30259	83
	6/19/2006	ND<2.30259	83
	6/2/2007	ND<2.30259	83
	11/15/2007	ND<2.30259	83
	5/20/2008	ND<2.30259	83
	11/20/2008	ND<2.30259	83

Rank Sum = 913
Rank Mean = 83

MW-5	1/16/1998	ND<2.30259	83
	3/16/1999	ND<2.30259	83
	9/23/1999	ND<2.30259	83
	3/14/2000	ND<2.30259	83
	9/23/2003	ND<2.30259	83
	3/10/2004	ND<2.30259	83
	10/12/2004	ND<2.30259	83
	4/1/2005	ND<2.30259	83
	10/26/2005	ND<2.30259	83

	6/19/2006	ND<2.30259	83
	11/15/2007	ND<2.30259	83
	5/20/2008	ND<2.30259	83
	11/20/2008	ND<2.30259	83

Rank Sum = 1079
Rank Mean = 83

LMW-11	3/14/2000	ND<2.30259	83
	9/23/2003	ND<2.30259	83
	3/10/2004	ND<2.30259	83
	10/12/2004	ND<2.30259	83
	4/1/2005	ND<2.30259	83
	10/26/2005	ND<2.30259	83
	6/19/2006	ND<2.30259	83
	6/2/2007	ND<2.30259	83
	11/15/2007	ND<2.30259	83
	5/20/2008	ND<2.30259	83
	11/20/2008	ND<2.30259	83

Rank Sum = 913
Rank Mean = 83

Calculation Results:

Kruskal-Wallis H Statistic = 24.2516
Kruskal-Wallis H Statistic (adjusted for tied non-detects) = 60.1171
95% Confidence comparison value is 26.2962 at 16 degrees of freedom
24.2516 < 26.2962 indicating no significant group difference at 5% significance level
60.1171 > 26.2962 indicating a significant group difference at 5% significance level when adjusted for ties

Individual Well Comparisons at 1% Significance Level per Comparison

1% Z score is 2.32634
Mean background rank is 89.8125

Well	Mean Rank	Dif from Bkg	Critical Value
LMW-9D	163	73.1875	59.7997
LMW-8	89.0625	-0.75	46.6551
LMW-9	119.688	29.875	46.6551
LMW-16	101.667	11.8542	63.1713
LMW-9S	99	9.1875	63.1713
LMW-14R	99.8	9.9875	67.6097
LMW-15R	94.1111	4.29861	54.9836
LMW-6	88.625	-1.1875	46.6551
LMW-3	83	-6.8125	45.3406
LMW-7	134.188	44.375	46.6551
LMW-10	98	8.1875	49.2733
LMW-3S	114.5	24.6875	63.1713
LMW-12	83	-6.8125	51.6856
LMW-13	83	-6.8125	51.6856
MW-5	83	-6.8125	49.2733
LMW-11	83	-6.8125	51.6856

Individual Well Comparisons at Groupwise 5% Significance Level (0.3125% Significance Level per comparison)

0.3125% Z score is 2.74777
Mean background rank is 89.8125

Well	Mean Rank	Dif from Bkg	Critical Value
LMW-9D	163	73.1875	70.6326
LMW-8	89.0625	-0.75	55.1068
LMW-9	119.688	29.875	55.1068
LMW-16	101.667	11.8542	74.615

LMW-9S	99	9.1875	74.615	
LMW-14R		99.8	9.9875	79.8573
LMW-15R		94.1111	4.29861	64.944
LMW-6	88.625	-1.1875	55.1068	
LMW-3	83	-6.8125	53.5542	
LMW-7	134.188	44.375	55.1068	
LMW-10	98	8.1875	58.1993	
LMW-3S	114.5	24.6875	74.615	
LMW-12	83	-6.8125	61.0486	
LMW-13	83	-6.8125	61.0486	
MW-5	83	-6.8125	58.1993	
LMW-11	83	-6.8125	61.0486	

Mann-Kendall Trend Analysis

Parameter: Vanadium

Location: LMW-9D

Natural Logarithm Transformation
Non-Detects Replaced with 1/2 DL

95% Confidence Level

Xj	Xk	Xj - Xk	Positives	Negatives	
1.60944		2.30259 J	-0.693147	0	1
ND<2.30259		2.30259 J	0 0	1	
1.60944 J		2.30259 J	-0.693147	0	2
1.60944 J		2.30259 J	-0.693147	0	3
0.916291 J		2.30259 J	-1.386290	4	
0.832909 J		2.30259 J	-1.469680	5	
ND<2.30259		1.60944	0.693147	1	5
1.60944 J		1.60944	0 1	5	
1.60944 J		1.60944	0 1	5	
0.916291 J		1.60944	-0.693147	1	6
0.832909 J		1.60944	-0.776529	1	7
1.60944 J		ND<2.30259	-0.693147	1	8
1.60944 J		ND<2.30259	-0.693147	1	9
0.916291 J		ND<2.30259	-1.386291	10	
0.832909 J		ND<2.30259	-1.469681	11	
1.60944 J		1.60944 J	0 1	11	
0.916291 J		1.60944 J	-0.693147	1	12
0.832909 J		1.60944 J	-0.776529	1	13
0.916291 J		1.60944 J	-0.693147	1	14
0.832909 J		1.60944 J	-0.776529	1	15
0.832909 J		0.916291 J	-0.0833816	1	16

S Statistic = 1 - 16 = -15
Comparing at 1.0 - (0.05 / 2) = 97.5% confidence level (two-tailed)
Probability of obtaining S >= |-15| is 0.03
0.03 >= 0.025 indicating no evidence of a trend

Concentrations (ug/L)

Parameter: Xylenes, Total

Natural Logarithm Transformation
Non-Detects Replaced with 1/2 DL
Total Measurements: 196
Total Non-Detect: 195
Percent Non-Detects: 99.4898%
Total Background Measurements: 16
There is 1 background location

Loc.	Meas.	ND	Date	Conc.	Original
LMW-4	16	16 (100%)	1/16/1998	ND<-0.693147	ND<1
			3/16/1999	ND<-0.693147	ND<1
			9/23/1999	ND<-0.693147	ND<1
			3/14/2000	ND<-0.693147	ND<1
			9/23/2003	ND<-0.693147	ND<1
			3/10/2004	ND<-0.693147	ND<1
			10/12/2004	ND<-0.693147	ND<1
			4/1/2005	ND<-0.693147	ND<1
			10/26/2005	ND<0 J	ND<0 J
			6/19/2006	ND<-0.693147	ND<1
			11/18/2006	ND<0 J	ND<0 J
			6/2/2007	ND<-0.693147	ND<1
			11/15/2007	ND<-0.693147	ND<1
			5/20/2008	ND<-0.693147	ND<1
			11/20/2008	ND<-0.693147	ND<1
			6/11/2009	ND<-2.30259 U	ND<0.2 U

There are 16 compliance locations

Loc.	Meas.	ND	Date	Conc.	Original
LMW-3	19	18 (94.7368%)	11/19/1996	ND<-0.693147	ND<1
			3/24/1997	ND<-0.693147	ND<1
			1/16/1998	ND<-0.693147	ND<1
			3/16/1999	ND<-0.693147	ND<1
			9/23/1999	ND<-0.693147	ND<1
			3/14/2000	ND<-0.693147	ND<1
			9/23/2003	ND<-0.693147	ND<1
			3/10/2004	ND<-0.693147	ND<1
			10/12/2004	ND<-0.693147	ND<1
			4/1/2005	ND<-0.693147	ND<1
			10/26/2005	ND<-0.693147	ND<1
			6/19/2006	ND<-0.693147	ND<1
			11/18/2006	ND<-0.693147	ND<1
			6/2/2007	ND<-0.693147	ND<1
			11/15/2007	ND<-0.693147	ND<1
			5/20/2008	ND<-0.693147	ND<1
			11/20/2008	ND<0 J	ND<0 J
			6/11/2009	ND<-2.30259 U	ND<0.2 U
			11/14/2009	-1.13943 J	0.32 J
LMW-15R	9	9 (100%)	11/18/2006	ND<-0.693147	ND<1
			6/2/2007	ND<-0.693147	ND<1
			11/15/2007	ND<-0.693147	ND<1
			11/15/2007	ND<-0.693147	ND<1
			5/20/2008	ND<-0.693147	ND<1

			5/20/2008	ND<-0.693147	ND<1
			11/20/2008	ND<-0.693147	ND<1
			11/20/2008	ND<0 J	ND<0 J
			6/11/2009	ND<-2.30259 U	ND<0.2 U
LMW-6	16	16 (100%)	1/16/1998	ND<-0.693147	ND<1
			3/16/1999	ND<-0.693147	ND<1
			9/23/1999	ND<-0.693147	ND<1
			3/14/2000	ND<-0.693147	ND<1
			9/23/2003	ND<-0.693147	ND<1
			3/10/2004	ND<-0.693147	ND<1
			10/12/2004	ND<-0.693147	ND<1
			4/1/2005	ND<-0.693147	ND<1
			10/26/2005	ND<-0.693147	ND<1
			6/19/2006	ND<-0.693147	ND<1
			11/18/2006	ND<-0.693147	ND<1
			6/2/2007	ND<-0.693147	ND<1
			11/15/2007	ND<-0.693147	ND<1
			5/20/2008	ND<-0.693147	ND<1
			11/20/2008	ND<-0.693147	ND<1
			6/11/2009	ND<-2.30259 U	ND<0.2 U
LMW-3S	6	6 (100%)	11/18/2006	ND<-0.693147	ND<1
			6/2/2007	ND<-0.693147	ND<1
			11/15/2007	ND<-0.693147	ND<1
			5/20/2008	ND<-0.693147	ND<1
			11/20/2008	ND<-0.693147	ND<1
			6/11/2009	ND<-2.30259 U	ND<0.2 U
LMW-7	16	16 (100%)	1/16/1998	ND<-0.693147	ND<1
			3/16/1999	ND<-0.693147	ND<1
			9/23/1999	ND<-0.693147	ND<1
			3/14/2000	ND<-0.693147	ND<1
			9/23/2003	ND<-0.693147	ND<1
			3/10/2004	ND<-0.693147	ND<1
			10/12/2004	ND<-0.693147	ND<1
			4/1/2005	ND<-0.693147	ND<1
			10/26/2005	ND<-0.693147	ND<1
			6/19/2006	ND<-0.693147	ND<1
			11/18/2006	ND<0 J	ND<0 J
			6/2/2007	ND<-0.693147	ND<1
			11/15/2007	ND<-0.693147	ND<1
			5/20/2008	ND<-0.693147	ND<1
			11/20/2008	ND<-0.693147	ND<1
			6/11/2009	ND<-2.30259 U	ND<0.2 U
LMW-10	13	13 (100%)	3/14/2000	ND<-0.693147	ND<1
			9/23/2003	ND<-0.693147	ND<1
			3/10/2004	ND<-0.693147	ND<1
			10/12/2004	ND<-0.693147	ND<1
			4/1/2005	ND<-0.693147	ND<1
			10/26/2005	ND<-0.693147	ND<1
			6/19/2006	ND<-0.693147	ND<1
			11/18/2006	ND<-0.693147	ND<1
			6/2/2007	ND<-0.693147	ND<1
			11/15/2007	ND<-0.693147	ND<1
			5/20/2008	ND<-0.693147	ND<1
			11/20/2008	ND<-0.693147	ND<1
			6/11/2009	ND<-2.30259 U	ND<0.2 U
LMW-9S	6	6 (100%)	11/18/2006	ND<-0.693147	ND<1
			6/2/2007	ND<-0.693147	ND<1

			11/15/2007	ND<-0.693147	ND<1
			5/20/2008	ND<-0.693147	ND<1
			11/20/2008	ND<-0.693147	ND<1
			6/11/2009	ND<-2.30259 U	ND<0.2 U
LMW-9D6	6	6 (100%)	11/18/2006	ND<-0.693147	ND<1
			6/2/2007	ND<-0.693147	ND<1
			11/15/2007	ND<-0.693147	ND<1
			5/20/2008	ND<-0.693147	ND<1
			11/20/2008	ND<-0.693147	ND<1
			6/11/2009	ND<-2.30259 U	ND<0.2 U
LMW-9	16	16 (100%)	1/16/1998	ND<-0.693147	ND<1
			3/16/1999	ND<-0.693147	ND<1
			9/23/1999	ND<-0.693147	ND<1
			3/14/2000	ND<-0.693147	ND<1
			9/23/2003	ND<-0.693147	ND<1
			3/10/2004	ND<-0.693147	ND<1
			10/12/2004	ND<-0.693147	ND<1
			4/1/2005	ND<-0.693147	ND<1
			10/26/2005	ND<-0.693147	ND<1
			6/19/2006	ND<-0.693147	ND<1
			11/18/2006	ND<-0.693147	ND<1
			6/2/2007	ND<-0.693147	ND<1
			11/15/2007	ND<-0.693147	ND<1
			5/20/2008	ND<-0.693147	ND<1
			11/20/2008	ND<0 J	ND<0 J
			6/11/2009	ND<-2.30259 U	ND<0.2 U
LMW-16	6	6 (100%)	11/18/2006	ND<-0.693147	ND<1
			6/2/2007	ND<-0.693147	ND<1
			11/15/2007	ND<-0.693147	ND<1
			5/20/2008	ND<-0.693147	ND<1
			11/20/2008	ND<-0.693147	ND<1
			6/11/2009	ND<-2.30259 U	ND<0.2 U
LMW-14R	5	5 (100%)	6/2/2007	ND<-0.693147	ND<1
			11/15/2007	ND<-0.693147	ND<1
			5/20/2008	ND<-0.693147	ND<1
			11/20/2008	ND<-0.693147	ND<1
			6/11/2009	ND<-2.30259 U	ND<0.2 U
LMW-8	16	16 (100%)	1/16/1998	ND<-0.693147	ND<1
			3/16/1999	ND<-0.693147	ND<1
			9/23/1999	ND<-0.693147	ND<1
			3/14/2000	ND<-0.693147	ND<1
			9/23/2003	ND<-0.693147	ND<1
			3/10/2004	ND<-0.693147	ND<1
			10/12/2004	ND<-0.693147	ND<1
			4/1/2005	ND<-0.693147	ND<1
			10/26/2005	ND<-0.693147	ND<1
			6/19/2006	ND<-0.693147	ND<1
			11/18/2006	ND<-0.693147	ND<1
			6/2/2007	ND<-0.693147	ND<1
			11/15/2007	ND<-0.693147	ND<1
			5/20/2008	ND<-0.693147	ND<1
			11/20/2008	ND<-0.693147	ND<1
			6/11/2009	ND<-2.30259 U	ND<0.2 U
LMW-11	11	11 (100%)	3/14/2000	ND<-0.693147	ND<1
			9/23/2003	ND<-0.693147	ND<1

			3/10/2004	ND<-0.693147	ND<1	
			10/12/2004	ND<-0.693147	ND<1	
			4/1/2005	ND<-0.693147	ND<1	
			10/26/2005	ND<-0.693147	ND<1	
			6/19/2006	ND<-0.693147	ND<1	
			6/2/2007	ND<-0.693147	ND<1	
			11/15/2007	ND<-0.693147	ND<1	
			5/20/2008	ND<-0.693147	ND<1	
			11/20/2008	ND<-0.693147	ND<1	
LMW-12	11	11 (100%)	3/14/2000	ND<-0.693147	ND<1	
			9/23/2003	ND<-0.693147	ND<1	
			3/10/2004	ND<-0.693147	ND<1	
			10/12/2004	ND<-0.693147	ND<1	
			4/1/2005	ND<-0.693147	ND<1	
			10/26/2005	ND<-0.693147	ND<1	
			6/19/2006	ND<-0.693147	ND<1	
			6/2/2007	ND<-0.693147	ND<1	
			11/15/2007	ND<-0.693147	ND<1	
			5/20/2008	ND<-0.693147	ND<1	
			11/20/2008	ND<-0.693147	ND<1	
LMW-13	11	11 (100%)	3/14/2000	ND<-0.693147	ND<1	
			9/23/2003	ND<-0.693147	ND<1	
			3/10/2004	ND<-0.693147	ND<1	
			10/12/2004	ND<-0.693147	ND<1	
			4/1/2005	ND<-0.693147	ND<1	
			10/26/2005	ND<-0.693147	ND<1	
			6/19/2006	ND<-0.693147	ND<1	
			6/2/2007	ND<-0.693147	ND<1	
			11/15/2007	ND<-0.693147	ND<1	
			5/20/2008	ND<-0.693147	ND<1	
			11/20/2008	ND<-0.693147	ND<1	
MW-5	13	13 (100%)	1/16/1998	ND<-0.693147	ND<1	
			3/16/1999	ND<-0.693147	ND<1	
			9/23/1999	ND<-0.693147	ND<1	
			3/14/2000	ND<-0.693147	ND<1	
			9/23/2003	ND<-0.693147	ND<1	
			3/10/2004	ND<-0.693147	ND<1	
			10/12/2004	ND<-0.693147	ND<1	
			4/1/2005	ND<-0.693147	ND<1	
			10/26/2005	ND<-0.693147	ND<1	
			6/19/2006	ND<-0.693147	ND<1	
			11/15/2007	ND<-0.693147	ND<1	
			5/20/2008	ND<-0.693147	ND<1	
			11/20/2008	ND<-0.693147	ND<1	

There are 0 unused locations

Loc.	Meas.	ND	Date	Conc.	Original

Shapiro-Francia Test of Normality

Parameter: Xylenes, Total

All Locations

Normality Test of Parameter Concentrations

Original Data (Not Transformed)
Non-Detects Replaced with 1/2 DL
Total Number of Measurements = 196

i	x(i)	m(i)	sum(m^2)	sum(mx)
1	0	-2.575836	3.63492	0
2	0	-2.326341	2.0468	0
3	0	-2.170091	6.7561	0
4	0	-2.053752	0.974	0
5	0	-1.959962	4.8154	0
6	0	-1.880792	8.3528	0
7	0.1	-1.811913	1.6358	-0.181191
8	0.1	-1.750693	4.7007	-0.35626
9	0.1	-1.6954	37.5751	-0.5258
10	0.1	-1.644854	0.2806	-0.690285
11	0.1	-1.598194	2.8348	-0.850104
12	0.1	-1.554774	5.2522	-1.00558
13	0.1	-1.5141	47.5447	-1.15699
14	0.1	-1.468384	9.7008	-1.30383
15	0.1	-1.4325	51.7529	-1.44708
16	0.1	-1.398385	3.7083	-1.58692
17	0.1	-1.365815	5.5738	-1.7235
18	0.1	-1.334625	7.355	-1.85696
19	0.1	-1.304695	9.0572	-1.98743
20	0.32	-1.275886	0.6851	-2.39571
21	0.5	-1.248096	2.2428	-3.01975
22	0.5	-1.221236	3.7342	-3.63037
23	0.5	-1.195226	5.1627	-4.22798
24	0.5	-1.17	66.5316	-4.81298
25	0.5	-1.1455	67.8438	-5.38573
26	0.5	-1.121686	9.102	-5.94657
27	0.5	-1.0939	70.2986	-6.49352
28	0.5	-1.071387	1.4464	-7.02921
29	0.5	-1.049397	2.5476	-7.5539
30	0.5	-1.027897	3.6042	-8.06785
31	0.5	-1.006877	4.618	-8.57128
32	0.5	-0.986272	75.5907	-9.06442
33	0.5	-0.966088	76.524	-9.54746
34	0.5	-0.946291	77.4195	-10.0206
35	0.5	-0.926859	78.2786	-10.484
36	0.5	-0.907769	79.1026	-10.9379
37	0.5	-0.889006	79.893	-11.3824
38	0.5	-0.870558	0.6508	-11.8177
39	0.5	-0.852385	81.3774	-12.2439
40	0.5	-0.830953	82.0679	-12.6594
41	0.5	-0.813379	82.7294	-13.0661
42	0.5	-0.796056	83.3632	-13.4641
43	0.5	-0.778966	83.9699	-13.8536
44	0.5	-0.7621	84.5507	-14.2346
45	0.5	-0.745449	85.1064	-14.6073
46	0.5	-0.729003	85.6379	-14.9718
47	0.5	-0.712751	86.1459	-15.3282
48	0.5	-0.696684	86.6313	-15.6766
49	0.5	-0.680797	87.0947	-16.017

50	0.5	-0.665079	87.5371	-16.3495
51	0.5	-0.649522	87.959	-16.6743
52	0.5	-0.634124	88.3611	-16.9913
53	0.5	-0.615839	88.7403	-17.2992
54	0.5	-0.6007689.1012	-17.5996	
55	0.5	-0.585815	89.4444	-17.8925
56	0.5	-0.570999	89.7705	-18.178
57	0.5	-0.556308	90.0799	-18.4562
58	0.5	-0.541736	90.3734	-18.727
59	0.5	-0.5272890.6514	-18.9907	
60	0.5	-0.5129390.9145	-19.2472	
61	0.5	-0.498687	91.1632	-19.4965
62	0.5	-0.484544	91.398	-19.7388
63	0.5	-0.470498	91.6194	-19.974
64	0.5	-0.456542	91.8278	-20.2023
65	0.5	-0.442676	92.0238	-20.4236
66	0.5	-0.426148	92.2054	-20.6367
67	0.5	-0.412463	92.3755	-20.8429
68	0.5	-0.398855	92.5346	-21.0424
69	0.5	-0.385321	92.683	-21.235
70	0.5	-0.371856	92.8213	-21.4209
71	0.5	-0.358459	92.9498	-21.6002
72	0.5	-0.345126	93.0689	-21.7727
73	0.5	-0.331854	93.1791	-21.9387
74	0.5	-0.318639	93.2806	-22.098
75	0.5	-0.305481	93.3739	-22.2507
76	0.5	-0.292375	93.4594	-22.3969
77	0.5	-0.279319	93.5374	-22.5366
78	0.5	-0.266311	93.6083	-22.6697
79	0.5	-0.250759	93.6712	-22.7951
80	0.5	-0.237847	93.7278	-22.914
81	0.5	-0.224974	93.7784	-23.0265
82	0.5	-0.212137	93.8234	-23.1326
83	0.5	-0.199336	93.8631	-23.2323
84	0.5	-0.186567	93.8979	-23.3255
85	0.5	-0.173829	93.9282	-23.4125
86	0.5	-0.161119	93.9541	-23.493
87	0.5	-0.148434	93.9762	-23.5672
88	0.5	-0.135774	93.9946	-23.6351
89	0.5	-0.123135	94.0097	-23.6967
90	0.5	-0.110516	94.022	-23.7519
91	0.5	-0.0979139	94.0315	-23.8009
92	0.5	-0.0828129	94.0384	-23.8423
93	0.5	-0.0702426	94.0433	-23.8774
94	0.5	-0.0576847	94.0467	-23.9063
95	0.5	-0.0451348	94.0487	-23.9288
96	0.5	-0.0325917	94.0498	-23.9451
97	0.5	-0.0200544	94.0502	-23.9552
98	0.5	-0.00751925	94.0502	-23.9589
99	0.5	0.00751925	94.0503	-23.9552
100	0.5	0.0200544	94.0507	-23.9451
101	0.5	0.0325917	94.0517	-23.9288
102	0.5	0.0451348	94.0538	-23.9063
103	0.5	0.0576847	94.0571	-23.8774
104	0.5	0.0702426	94.062	-23.8423
105	0.5	0.0828129	94.0689	-23.8009
106	0.5	0.0979139	94.0785	-23.7519
107	0.5	0.110516	94.0907	-23.6967
108	0.5	0.123135	94.1059	-23.6351
109	0.5	0.135774	94.1243	-23.5672
110	0.5	0.148434	94.1463	-23.493
111	0.5	0.161119	94.1723	-23.4125

112	0.5	0.173829		94.2025	-23.3255
113	0.5	0.186567		94.2373	-23.2323
114	0.5	0.199336		94.2771	-23.1326
115	0.5	0.212137		94.3221	-23.0265
116	0.5	0.224974		94.3727	-22.914
117	0.5	0.237847		94.4292	-22.7951
118	0.5	0.250759		94.4921	-22.6697
119	0.5	0.266311		94.563	-22.5366
120	0.5	0.279319		94.6411	-22.3969
121	0.5	0.292375		94.7265	-22.2507
122	0.5	0.305481		94.8199	-22.098
123	0.5	0.318639		94.9214	-21.9387
124	0.5	0.331854		95.0315	-21.7727
125	0.5	0.345126		95.1506	-21.6002
126	0.5	0.358459		95.2791	-21.4209
127	0.5	0.371856		95.4174	-21.235
128	0.5	0.385321		95.5659	-21.0424
129	0.5	0.398855		95.725	-20.8429
130	0.5	0.412463		95.8951	-20.6367
131	0.5	0.426148		96.0767	-20.4236
132	0.5	0.442676		96.2726	-20.2023
133	0.5	0.456542		96.4811	-19.974
134	0.5	0.470498		96.7024	-19.7388
135	0.5	0.484544		96.9372	-19.4965
136	0.5	0.498687		97.1859	-19.2472
137	0.5	0.51293	97.449	-18.9907	
138	0.5	0.52728	97.727	-18.727	
139	0.5	0.541736		98.0205	-18.4562
140	0.5	0.556308		98.33	-18.178
141	0.5	0.570999		98.656	-17.8925
142	0.5	0.585815		98.9992	-17.5996
143	0.5	0.60076	99.3601	-17.2992	
144	0.5	0.615839		99.7394	-16.9913
145	0.5	0.634124		100.141	-16.6743
146	0.5	0.649522		100.563	-16.3495
147	0.5	0.665079		101.006	-16.017
148	0.5	0.680797		101.469	-15.6766
149	0.5	0.696684		101.955	-15.3282
150	0.5	0.712751		102.463	-14.9718
151	0.5	0.729003		102.994	-14.6073
152	0.5	0.745449		103.55	-14.2346
153	0.5	0.7621	104.131	-13.8536	
154	0.5	0.778966		104.737	-13.4641
155	0.5	0.796056		105.371	-13.0661
156	0.5	0.813379		106.033	-12.6594
157	0.5	0.830953		106.723	-12.2439
158	0.5	0.852385		107.45	-11.8177
159	0.5	0.87055	108.207	-11.3824	
160	0.5	0.889006		108.998	-10.9379
161	0.5	0.907769		109.822	-10.484
162	0.5	0.926859		110.681	-10.0206
163	0.5	0.946291		111.576	-9.54746
164	0.5	0.966088		112.51	-9.06442
165	0.5	0.986272		113.482	-8.57128
166	0.5	1.00687	114.496	-8.06785	
167	0.5	1.02789	115.553	-7.5539	
168	0.5	1.04939	116.654	-7.02921	
169	0.5	1.07138	117.802	-6.49352	
170	0.5	1.0939	118.998	-5.94657	
171	0.5	1.12168	120.257	-5.38573	
172	0.5	1.1455	121.569	-4.81298	
173	0.5	1.17	122.938	-4.22798	

174	0.5	1.19522	124.366	-3.63037
175	0.5	1.22123	125.858	-3.01975
176	0.5	1.24809	127.415	-2.39571
177	0.5	1.27588	129.043	-1.75777
178	0.5	1.30469	130.745	-1.10543
179	0.5	1.33462	132.527	-0.438117
180	0.5	1.36581	134.392	0.244786
181	0.5	1.39838	136.348	0.943974
182	0.5	1.4325	138.4	1.66023
183	0.5	1.46838	140.556	2.39442
184	0.5	1.5141	142.848	3.15147
185	0.5	1.55477	145.266	3.92886
186	0.5	1.59819	147.82	4.72795
187	0.5	1.64485	150.525	5.55038
188	0.5	1.6954	153.4	6.39808
189	0.5	1.75069	156.465	7.27342
190	0.5	1.81191	159.748	8.17938
191	0.5	1.88079	163.285	9.11977
192	0.5	1.95996	167.126	10.0998
193	0.5	2.05375	171.344	11.1266
194	0.5	2.17009	176.054	12.2117
195	0.5	2.32634	181.466	13.3748
196	0.5	2.57583	188.1	14.6628

Data Set Standard Deviation = 0.129181
Numerator = 214.997
Denominator = 612.1
W Statistic = 0.351244 = 214.997 / 612.1

5% Critical value of 0.976 exceeds 0.351244
Evidence of non-normality at 95% level of significance

1% Critical value of 0.967 exceeds 0.351244
Evidence of non-normality at 99% level of significance

Shapiro-Francia Test of Normality

Parameter: Xylenes, Total

All Locations

Normality Test of Parameter Concentrations

Natural Logarithm Transformation
Non-Detects Replaced with 1/2 DL
Total Number of Measurements = 196

i	x(i)	m(i)	sum(m^2)	sum(mx)	
1	-2.30259	-2.57583	6.63492	5.93108	
2	-2.30259	-2.32634	12.0468	11.2877	
3	-2.30259	-2.17009	16.7561	16.2845	
4	-2.30259	-2.05375	20.974	21.0134	
5	-2.30259	-1.95996	24.8154	25.5264	
6	-2.30259	-1.88079	28.3528	29.8571	
7	-2.30259	-1.81191	31.6358	34.0292	
8	-2.30259	-1.75069	34.7007	38.0603	
9	-2.30259	-1.6954	37.5751	41.9641	
10	-2.30259	-1.64485	40.2806	45.7515	
11	-2.30259	-1.59819	42.8348	49.4315	
12	-2.30259	-1.55477	45.2522	53.0115	
13	-2.30259	-1.5141	47.5447	56.4978	
14	-1.13943	-1.46838	49.7008	58.1709	
15	-0.693147	-1.4325	51.7529	59.1639	
16	-0.693147	-1.39838	53.7083	60.1331	
17	-0.693147	-1.36581	55.5738	61.0799	
18	-0.693147	-1.33462	57.355	62.0049	
19	-0.693147	-1.30469	59.0572	62.9093	
20	-0.693147	-1.27588	60.6851	63.7937	
21	-0.693147	-1.24809	62.2428	64.6588	
22	-0.693147	-1.22123	63.7342	65.5053	
23	-0.693147	-1.19522	65.1627	66.3337	
24	-0.693147	-1.17	66.5316	67.1447	
25	-0.693147	-1.1455	67.8438	67.9387	
26	-0.693147	-1.12168	69.102	68.7162	
27	-0.693147	-1.0939	70.2986	69.4744	
28	-0.693147	-1.07138	71.4464	70.217	
29	-0.693147	-1.04939	72.5476	70.9444	
30	-0.693147	-1.02789	73.6042	71.6569	
31	-0.693147	-1.00687	74.618	72.3548	
32	-0.693147	-0.986272		75.5907	73.0384
33	-0.693147	-0.966088		76.524	73.7081
34	-0.693147	-0.946291		77.4195	74.364
35	-0.693147	-0.926859		78.2786	75.0064
36	-0.693147	-0.907769		79.1026	75.6357
37	-0.693147	-0.889006		79.893	76.2519
38	-0.693147	-0.870558	80.6508	76.8553	
39	-0.693147	-0.852385		81.3774	77.4461
40	-0.693147	-0.830953		82.0679	78.0221
41	-0.693147	-0.813379		82.7294	78.5859
42	-0.693147	-0.796056		83.3632	79.1377
43	-0.693147	-0.778966		83.9699	79.6776
44	-0.693147	-0.7621	84.5507	80.2059	
45	-0.693147	-0.745449		85.1064	80.7226
46	-0.693147	-0.729003		85.6379	81.2279
47	-0.693147	-0.712751		86.1459	81.7219
48	-0.693147	-0.696684		86.6313	82.2048
49	-0.693147	-0.680797		87.0947	82.6767

50	-0.693147	-0.665079	87.5371	83.1377
51	-0.693147	-0.649522	87.959	83.5879
52	-0.693147	-0.634124	88.3611	84.0275
53	-0.693147	-0.615839	88.7403	84.4543
54	-0.693147	-0.6007689.1012	84.8707	
55	-0.693147	-0.585815	89.4444	85.2768
56	-0.693147	-0.570999	89.7705	85.6726
57	-0.693147	-0.556308	90.0799	86.0582
58	-0.693147	-0.541736	90.3734	86.4337
59	-0.693147	-0.5272890.6514	86.7992	
60	-0.693147	-0.5129390.9145	87.1547	
61	-0.693147	-0.498687	91.1632	87.5004
62	-0.693147	-0.484544	91.398	87.8362
63	-0.693147	-0.470498	91.6194	88.1624
64	-0.693147	-0.456542	91.8278	88.4788
65	-0.693147	-0.442676	92.0238	88.7857
66	-0.693147	-0.426148	92.2054	89.081
67	-0.693147	-0.412463	92.3755	89.3669
68	-0.693147	-0.398855	92.5346	89.6434
69	-0.693147	-0.385321	92.683	89.9105
70	-0.693147	-0.371856	92.8213	90.1682
71	-0.693147	-0.358459	92.9498	90.4167
72	-0.693147	-0.345126	93.0689	90.6559
73	-0.693147	-0.331854	93.1791	90.8859
74	-0.693147	-0.318639	93.2806	91.1068
75	-0.693147	-0.305481	93.3739	91.3186
76	-0.693147	-0.292375	93.4594	91.5212
77	-0.693147	-0.279319	93.5374	91.7148
78	-0.693147	-0.266311	93.6083	91.8994
79	-0.693147	-0.250759	93.6712	92.0732
80	-0.693147	-0.237847	93.7278	92.2381
81	-0.693147	-0.224974	93.7784	92.394
82	-0.693147	-0.212137	93.8234	92.5411
83	-0.693147	-0.199336	93.8631	92.6792
84	-0.693147	-0.186567	93.8979	92.8086
85	-0.693147	-0.173829	93.9282	92.929
86	-0.693147	-0.161119	93.9541	93.0407
87	-0.693147	-0.148434	93.9762	93.1436
88	-0.693147	-0.135774	93.9946	93.2377
89	-0.693147	-0.123135	94.0097	93.3231
90	-0.693147	-0.110516	94.022	93.3997
91	-0.693147	-0.0979139	94.0315	93.4676
92	-0.693147	-0.0828129	94.0384	93.525
93	-0.693147	-0.0702426	94.0433	93.5736
94	-0.693147	-0.0576847	94.0467	93.6136
95	-0.693147	-0.0451348	94.0487	93.6449
96	-0.693147	-0.0325917	94.0498	93.6675
97	-0.693147	-0.0200544	94.0502	93.6814
98	-0.693147	-0.00751925	94.0502	93.6866
99	-0.693147	0.00751925	94.0503	93.6814
100	-0.693147	0.0200544	94.0507	93.6675
101	-0.693147	0.0325917	94.0517	93.6449
102	-0.693147	0.0451348	94.0538	93.6136
103	-0.693147	0.0576847	94.0571	93.5736
104	-0.693147	0.0702426	94.062	93.525
105	-0.693147	0.0828129	94.0689	93.4676
106	-0.693147	0.0979139	94.0785	93.3997
107	-0.693147	0.110516	94.0907	93.3231
108	-0.693147	0.123135	94.1059	93.2377
109	-0.693147	0.135774	94.1243	93.1436
110	-0.693147	0.148434	94.1463	93.0407
111	-0.693147	0.161119	94.1723	92.929

112	-0.693147	0.173829		94.2025	92.8086
113	-0.693147	0.186567		94.2373	92.6792
114	-0.693147	0.199336		94.2771	92.5411
115	-0.693147	0.212137		94.3221	92.394
116	-0.693147	0.224974		94.3727	92.2381
117	-0.693147	0.237847		94.4292	92.0732
118	-0.693147	0.250759		94.4921	91.8994
119	-0.693147	0.266311		94.563	91.7148
120	-0.693147	0.279319		94.6411	91.5212
121	-0.693147	0.292375		94.7265	91.3186
122	-0.693147	0.305481		94.8199	91.1068
123	-0.693147	0.318639		94.9214	90.8859
124	-0.693147	0.331854		95.0315	90.6559
125	-0.693147	0.345126		95.1506	90.4167
126	-0.693147	0.358459		95.2791	90.1682
127	-0.693147	0.371856		95.4174	89.9105
128	-0.693147	0.385321		95.5659	89.6434
129	-0.693147	0.398855		95.725	89.3669
130	-0.693147	0.412463		95.8951	89.081
131	-0.693147	0.426148		96.0767	88.7857
132	-0.693147	0.442676		96.2726	88.4788
133	-0.693147	0.456542		96.4811	88.1624
134	-0.693147	0.470498		96.7024	87.8362
135	-0.693147	0.484544		96.9372	87.5004
136	-0.693147	0.498687		97.1859	87.1547
137	-0.693147	0.51293	97.449	86.7992	
138	-0.693147	0.52728	97.727	86.4337	
139	-0.693147	0.541736		98.0205	86.0582
140	-0.693147	0.556308		98.33	85.6726
141	-0.693147	0.570999		98.656	85.2768
142	-0.693147	0.585815		98.9992	84.8707
143	-0.693147	0.60076	99.3601	84.4543	
144	-0.693147	0.615839		99.7394	84.0275
145	-0.693147	0.634124		100.141	83.5879
146	-0.693147	0.649522		100.563	83.1377
147	-0.693147	0.665079		101.006	82.6767
148	-0.693147	0.680797		101.469	82.2048
149	-0.693147	0.696684		101.955	81.7219
150	-0.693147	0.712751		102.463	81.2279
151	-0.693147	0.729003		102.994	80.7226
152	-0.693147	0.745449		103.55	80.2059
153	-0.693147	0.7621	104.131	79.6776	
154	-0.693147	0.778966		104.737	79.1377
155	-0.693147	0.796056		105.371	78.5859
156	-0.693147	0.813379		106.033	78.0221
157	-0.693147	0.830953		106.723	77.4461
158	-0.693147	0.852385		107.45	76.8553
159	-0.693147	0.87055	108.207	76.2519	
160	-0.693147	0.889006		108.998	75.6357
161	-0.693147	0.907769		109.822	75.0064
162	-0.693147	0.926859		110.681	74.364
163	-0.693147	0.946291		111.576	73.7081
164	-0.693147	0.966088		112.51	73.0384
165	-0.693147	0.986272		113.482	72.3548
166	-0.693147	1.00687	114.496	71.6569	
167	-0.693147	1.02789	115.553	70.9444	
168	-0.693147	1.04939	116.654	70.217	
169	-0.693147	1.07138	117.802	69.4744	
170	-0.693147	1.0939	118.998	68.7162	
171	-0.693147	1.12168	120.257	67.9387	
172	-0.693147	1.1455	121.569	67.1447	
173	-0.693147	1.17	122.938	66.3337	

174	-0.693147	1.19522	124.366	65.5053
175	-0.693147	1.22123	125.858	64.6588
176	-0.693147	1.24809	127.415	63.7937
177	-0.693147	1.27588	129.043	62.9093
178	-0.693147	1.30469	130.745	62.0049
179	-0.693147	1.33462	132.527	61.0799
180	-0.693147	1.36581	134.392	60.1331
181	-0.693147	1.39838	136.348	59.1639
182	-0.693147	1.4325	138.4	58.1709
183	-0.693147	1.46838	140.556	57.1531
184	-0.693147	1.5141	142.848	56.1036
185	-0.693147	1.55477	145.266	55.0259
186	-0.693147	1.59819	147.82	53.9182
187	-0.693147	1.64485	150.525	52.778
188	-0.693147	1.6954	153.4	51.6029
189	-0.693147	1.75069	156.465	50.3894
190	-0.693147	1.81191	159.748	49.1335
191	0	1.88079	163.285	49.1335
192	0	1.95996	167.126	49.1335
193	0	2.05375	171.344	49.1335
194	0	2.17009	176.054	49.1335
195	0	2.32634	181.466	49.1335
196	0	2.57583	188.1	49.1335

Data Set Standard Deviation = 0.425137
Numerator = 2414.1
Denominator = 6629.51
W Statistic = 0.364144 = 2414.1 / 6629.51

5% Critical value of 0.976 exceeds 0.364144
Evidence of non-normality at 95% level of significance

1% Critical value of 0.967 exceeds 0.364144
Evidence of non-normality at 99% level of significance

Non-Parametric Prediction Interval

Inter-Well Comparison

Parameter: Xylenes, Total

Natural Logarithm Transformation
Non-Detects Replaced with 1/2 DL

Total Percent Non-Detects = 99.4898%
Number of comparisons = 16
Future Samples (k) = 8
Recent Dates = 1
Background Samples (n) = 16
Maximum Background Concentration = 0
Confidence Level = 66.7%
False Positive Rate = 33.3%

Location	Date	Samples	Mean	Significant
LMW-3	11/14/2009	1	-1.13943	FALSE
LMW-15R	6/11/2009	1	-2.30259	FALSE
LMW-6	6/11/2009	1	-2.30259	FALSE
LMW-3S	6/11/2009	1	-2.30259	FALSE
LMW-7	6/11/2009	1	-2.30259	FALSE
LMW-10	6/11/2009	1	-2.30259	FALSE
LMW-9S	6/11/2009	1	-2.30259	FALSE
LMW-9D	6/11/2009	1	-2.30259	FALSE
LMW-9	6/11/2009	1	-2.30259	FALSE
LMW-16	6/11/2009	1	-2.30259	FALSE
LMW-14R	6/11/2009	1	-2.30259	FALSE
LMW-8	6/11/2009	1	-2.30259	FALSE
LMW-11	11/20/2008	1	-0.693147	FALSE
LMW-12	11/20/2008	1	-0.693147	FALSE
LMW-13	11/20/2008	1	-0.693147	FALSE
MW-5	11/20/2008	1	-0.693147	FALSE

Concentrations (ug/L)

Parameter: Zinc

Natural Logarithm Transformation
Non-Detects Replaced with 1/2 DL
Total Measurements: 207
Total Non-Detect: 139
Percent Non-Detects: 67.1498%
Total Background Measurements: 17
There is 1 background location

Loc.	Meas.	ND	Date	Conc.	Original
LMW-4	17	11 (64.7059%)	1/16/1998	ND<3.4012	ND<60
			3/16/1999	3.91202 J	50 J
			9/23/1999	ND<3.4012	ND<60
			3/14/2000	ND<3.4012	ND<60
			9/23/2003	ND<3.4012	ND<60
			3/10/2004	ND<3.4012	ND<60
			10/12/2004	ND<3.4012	ND<60
			4/1/2005	ND<3.4012	ND<60
			10/26/2005	ND<3.4012	ND<60
			6/19/2006	ND<3.4012	ND<60
			11/18/2006	2.3979 J	11 J
			6/2/2007	3.85015	47
			11/15/2007	ND<3.4012	ND<60
			5/20/2008	2.70805 J	15 J
			11/20/2008	ND<3.4012	ND<60
			6/11/2009	1.90211 J	6.7 J
			11/14/2009	2.77259 J	16 J

There are 16 compliance locations

Loc.	Meas.	ND	Date	Conc.	Original
LMW-6	17	8 (47.0588%)	1/16/1998	ND<3.4012	ND<60
			3/16/1999	3.4012 J	30 J
			9/23/1999	3.97029 J	53 J
			3/14/2000	ND<3.4012	ND<60
			9/23/2003	ND<3.4012	ND<60
			3/10/2004	ND<3.4012	ND<60
			10/12/2004	ND<3.4012	ND<60
			4/1/2005	ND<3.4012	ND<60
			10/26/2005	ND<3.4012	ND<60
			6/19/2006	2.99573 J	20 J
			11/18/2006	1.94591 J	7 J
			6/2/2007	2.83321 J	17 J
			11/15/2007	3.29584 J	27 J
			5/20/2008	2.30259 J	10 J
			11/20/2008	ND<3.4012	ND<60
			6/11/2009	2.10413 J B	8.2 J B
			11/14/2009	3.71357	41
LMW-10	14	12 (85.7143%)	3/14/2000	ND<3.4012	ND<60
			9/23/2003	ND<3.4012	ND<60
			3/10/2004	ND<3.4012	ND<60
			10/12/2004	ND<3.4012	ND<60
			4/1/2005	ND<3.4012	ND<60
			10/26/2005	ND<3.4012	ND<60

			6/19/2006	ND<3.4012	ND<60	
			11/18/2006	ND<3.4012	ND<60	
			6/2/2007	ND<3.4012	ND<60	
			11/15/2007	ND<3.4012	ND<60	
			5/20/2008	3.68888 J	40 J	
			11/20/2008	ND<3.4012	ND<60	
			6/11/2009	ND<0.262364 U	ND<2.6 U	
			11/14/2009	3.04452	21	
LMW-8	17	13 (76.4706%)	1/16/1998	ND<3.4012	ND<60	
			3/16/1999	4.49981	90	
			9/23/1999	ND<3.4012	ND<60	
			3/14/2000	ND<3.4012	ND<60	
			9/23/2003	ND<3.4012	ND<60	
			3/10/2004	ND<3.4012	ND<60	
			10/12/2004	ND<3.4012	ND<60	
			4/1/2005	ND<3.4012	ND<60	
			10/26/2005	ND<3.4012	ND<60	
			6/19/2006	ND<3.4012	ND<60	
			11/18/2006	ND<3.4012	ND<60	
			6/2/2007	ND<3.4012	ND<60	
			11/15/2007	ND<3.4012	ND<60	
			5/20/2008	1.60944 J	5 J	
			11/20/2008	ND<3.4012	ND<60	
			6/11/2009	2.10413 J	8.2 J	
			11/14/2009	2.94444	19	
LMW-3	19	13 (68.4211%)	11/19/1996	ND<3.4012	ND<60	
			3/24/1997	ND<3.4012	ND<60	
			1/16/1998	ND<3.4012	ND<60	
			3/16/1999	2.99573 J	20 J	
			9/23/1999	ND<3.4012	ND<60	
			3/14/2000	ND<3.4012	ND<60	
			9/23/2003	ND<3.4012	ND<60	
			3/10/2004	ND<3.4012	ND<60	
			10/12/2004	ND<3.4012	ND<60	
			4/1/2005	ND<3.4012	ND<60	
			10/26/2005	ND<3.4012	ND<60	
			6/19/2006	ND<3.4012	ND<60	
			11/18/2006	1.79176 J	6 J	
			6/2/2007	ND<3.4012	ND<60	
			11/15/2007	4.18965	66	
			5/20/2008	2.48491 J	12 J	
			11/20/2008	ND<3.4012	ND<60	
			6/11/2009	1.98787 J B	7.3 J B	
			11/14/2009	3.46574 J	32 J	
LMW-15R	10	6 (60%)	11/18/2006	2.63906 J	14 J	
			6/2/2007	ND<3.4012	ND<60	
			11/15/2007	ND<3.4012	ND<60	
			11/15/2007	ND<3.4012	ND<60	
			5/20/2008	ND<3.4012	ND<60	
			5/20/2008	3.66356 J	39 J	
			11/20/2008	ND<3.4012	ND<60	
			11/20/2008	ND<3.4012	ND<60	
			6/11/2009	1.8718 J	6.5 J	
			11/14/2009	2.20827 J	9.1 J	
LMW-14R	6	2 (33.3333%)	6/2/2007	2.70805 J	15 J	
			11/15/2007	ND<3.4012	ND<60	
			5/20/2008	2.89037 J	18 J	
			11/20/2008	ND<3.4012	ND<60	

			6/11/2009	1.84055 J	6.3 J	
			11/14/2009	3.2581 J	26 J	
LMW-16	7	3 (42.8571%)	11/18/2006	ND<3.4012		ND<60
			6/2/2007	2.77259 J	16 J	
			11/15/2007	4.23411	69	
			5/20/2008	2.70805 J	15 J	
			11/20/2008	ND<3.4012	ND<60	
			6/11/2009	ND<0.262364 U	ND<2.6 U	
			11/14/2009	2.23001 J	9.3 J	
LMW-3S	7	1 (14.2857%)	11/18/2006	2.30259 J		10 J
			6/2/2007	2.77259 J	16 J	
			11/15/2007	3.8712 J	48 J	
			5/20/2008	2.70805 J	15 J	
			11/20/2008	ND<3.4012	ND<60	
			6/11/2009	2.89037 B	18 B	
			11/14/2009	2.56495	13	
LMW-9D	7	3 (42.8571%)	11/18/2006	1.94591 J		7 J
			6/2/2007	ND<3.4012	ND<60	
			11/15/2007	ND<3.4012	ND<60	
			5/20/2008	2.89037 J	18 J	
			11/20/2008	ND<3.4012	ND<60	
			6/11/2009	1.25276 J	3.5 J	
			11/14/2009	3.21888	25	
LMW-9	17	12 (70.5882%)	1/16/1998	ND<3.4012		ND<60
			3/16/1999	4.49981	90	
			9/23/1999	ND<3.4012	ND<60	
			3/14/2000	ND<3.4012	ND<60	
			9/23/2003	ND<3.4012	ND<60	
			3/10/2004	ND<3.4012	ND<60	
			10/12/2004	ND<3.4012	ND<60	
			4/1/2005	ND<3.4012	ND<60	
			10/26/2005	ND<3.4012	ND<60	
			6/19/2006	2.99573 J	20 J	
			11/18/2006	ND<3.4012	ND<60	
			6/2/2007	2.83321 J	17 J	
			11/15/2007	ND<3.4012	ND<60	
			5/20/2008	1.94591 J	7 J	
			11/20/2008	ND<3.4012	ND<60	
			6/11/2009	ND<0.262364 U	ND<2.6 U	
			11/14/2009	1.94591 J	7 J	
LMW-9S	7	4 (57.1429%)	11/18/2006	ND<3.4012		ND<60
			6/2/2007	ND<3.4012	ND<60	
			11/15/2007	ND<3.4012	ND<60	
			5/20/2008	3.46574 J	32 J	
			11/20/2008	ND<3.4012	ND<60	
			6/11/2009	1.64866 J	5.2 J	
			11/14/2009	2.70805 J	15 J	
LMW-7	16	7 (43.75%)	1/16/1998	ND<3.4012		ND<60
			3/16/1999	2.99573 J	20 J	
			9/23/1999	3.68888 J	40 J	
			3/14/2000	ND<3.4012	ND<60	
			9/23/2003	ND<3.4012	ND<60	
			3/10/2004	ND<3.4012	ND<60	
			10/12/2004	ND<3.4012	ND<60	
			4/1/2005	3.29584 J	27 J	

			10/26/2005	3.43399 J	31 J	
			6/19/2006	3.68888 J	40 J	
			11/18/2006	3.04452 J	21 J	
			6/2/2007	3.93183	51	
			11/15/2007	ND<3.4012	ND<60	
			5/20/2008	2.30259 J	10 J	
			11/20/2008	ND<3.4012	ND<60	
			6/11/2009	3.3673 B	29 B	
LMW-13	11	11 (100%)	3/14/2000	ND<3.4012	ND<60	
			9/23/2003	ND<3.4012	ND<60	
			3/10/2004	ND<3.4012	ND<60	
			10/12/2004	ND<3.4012	ND<60	
			4/1/2005	ND<3.4012	ND<60	
			10/26/2005	ND<3.4012	ND<60	
			6/19/2006	ND<3.4012	ND<60	
			6/2/2007	ND<3.4012	ND<60	
			11/15/2007	ND<3.4012	ND<60	
			5/20/2008	ND<3.4012	ND<60	
			11/20/2008	ND<3.4012	ND<60	
MW-5	13	11 (84.6154%)	1/16/1998	ND<3.4012	ND<60	
			3/16/1999	3.68888 J	40 J	
			9/23/1999	3.58352 J	36 J	
			3/14/2000	ND<3.4012	ND<60	
			9/23/2003	ND<3.4012	ND<60	
			3/10/2004	ND<3.4012	ND<60	
			10/12/2004	ND<3.4012	ND<60	
			4/1/2005	ND<3.4012	ND<60	
			10/26/2005	ND<3.4012	ND<60	
			6/19/2006	ND<3.4012	ND<60	
			11/15/2007	ND<3.4012	ND<60	
			5/20/2008	ND<3.4012	ND<60	
			11/20/2008	ND<3.4012	ND<60	
LMW-11	11	11 (100%)	3/14/2000	ND<3.4012	ND<60	
			9/23/2003	ND<3.4012	ND<60	
			3/10/2004	ND<3.4012	ND<60	
			10/12/2004	ND<3.4012	ND<60	
			4/1/2005	ND<3.4012	ND<60	
			10/26/2005	ND<3.4012	ND<60	
			6/19/2006	ND<3.4012	ND<60	
			6/2/2007	ND<3.4012	ND<60	
			11/15/2007	ND<3.4012	ND<60	
			5/20/2008	ND<3.4012	ND<60	
			11/20/2008	ND<3.4012	ND<60	
LMW-12	11	11 (100%)	3/14/2000	ND<3.4012	ND<60	
			9/23/2003	ND<3.4012	ND<60	
			3/10/2004	ND<3.4012	ND<60	
			10/12/2004	ND<3.4012	ND<60	
			4/1/2005	ND<3.4012	ND<60	
			10/26/2005	ND<3.4012	ND<60	
			6/19/2006	ND<3.4012	ND<60	
			6/2/2007	ND<3.4012	ND<60	
			11/15/2007	ND<3.4012	ND<60	
			5/20/2008	ND<3.4012	ND<60	
			11/20/2008	ND<3.4012	ND<60	

There are 0 unused locations

Loc.	Meas. ND	Date	Conc. Original

Shapiro-Francia Test of Normality

Parameter: Zinc

All Locations

Normality Test of Parameter Concentrations

Original Data (Not Transformed)
Non-Detects Replaced with 1/2 DL
Total Number of Measurements = 207

i	x(i)	m(i)	sum(m^2)	sum(mx)
1	1.3	-2.65209	7.03356	-3.44771
2	1.3	-2.36561	12.6297	-6.52301
3	1.3	-2.19728	17.4578	-9.37948
4	3.5	-2.07485	21.7627	-16.6415
5	5	-1.97737	25.6727	-26.5283
6	5.2	-1.91103	29.3248	-36.4657
7	6	-1.83843	32.7046	-47.4962
8	6.3	-1.77438	35.853	-58.6748
9	6.5	-1.71688	38.8007	-69.8345
10	6.7	-1.66456	41.5715	-80.9871
11	7	-1.62576	44.2146	-92.3674
12	7	-1.58047	46.7124	-103.431
13	7	-1.5382	49.0785	-114.198
14	7	-1.49852	51.324	-124.688
15	7.3	-1.46106	53.4587	-135.353
16	8.2	-1.4325	55.5108	-147.1
17	8.2	-1.39838	57.4663	-158.567
18	9.1	-1.36581	59.3317	-170.995
19	9.3	-1.33462	61.1129	-183.407
20	10	-1.30469	62.8151	-196.454
21	10	-1.28155	64.4575	-209.27
22	10	-1.25357	66.0289	-221.806
23	11	-1.22653	67.5333	-235.297
24	12	-1.20036	68.9741	-249.702
25	13	-1.17499	70.3547	-264.976
26	14	-1.15035	71.678	-281.081
27	15	-1.13113	72.9575	-298.048
28	15	-1.10768	74.1845	-314.664
29	15	-1.08482	75.3613	-330.936
30	15	-1.06252	76.4903	-346.874
31	15	-1.04073	77.5734	-362.485
32	16	-1.02365	78.6212	-378.863
33	16	-1.00271	79.6267	-394.906
34	16	-0.982202	80.5914	-410.622
35	17	-0.9621	81.517	-426.977
36	17	-0.942375	82.4051	-442.998
37	18	-0.926859	83.2642	-459.681
38	18	-0.907769	84.0882	-476.021
39	18	-0.889006	84.8785	-492.023
40	19	-0.87055	85.6364	-508.564
41	20	-0.852385	86.363	-525.611
42	20	-0.838054	87.0653	-542.372
43	20	-0.820379	87.7383	-558.78
44	20	-0.802956	88.3831	-574.839
45	21	-0.785774	89.0005	-591.34
46	21	-0.768821	89.5916	-607.486
47	25	-0.755415	90.1622	-626.371
48	26	-0.738846	90.7081	-645.581
49	27	-0.722479	91.2301	-665.088

50	27	-0.706302	91.729	-684.158
51	29	-0.690309	92.2055	-704.177
52	30	-0.6744992.6604	-724.412	
53	30	-0.661955	93.0986	-744.27
54	30	-0.646431	93.5165	-763.663
55	30	-0.631062	93.9147	-782.595
56	30	-0.615839	94.294	-801.07
57	30	-0.6007694.6549	-819.093	
58	30	-0.588793	95.0016	-836.757
59	30	-0.573953	95.331	-853.976
60	30	-0.559237	95.6437	-870.753
61	30	-0.544642	95.9404	-887.092
62	30	-0.530162	96.2214	-902.997
63	30	-0.518658	96.4905	-918.557
64	30	-0.504372	96.7448	-933.688
65	30	-0.490189	96.9851	-948.393
66	30	-0.476105	97.2118	-962.676
67	30	-0.462114	97.4254	-976.54
68	30	-0.450985	97.6287	-990.069
69	30	-0.437153	97.8198	-1003.18
70	30	-0.423405	97.9991	-1015.89
71	30	-0.409735	98.167	-1028.18
72	30	-0.396142	98.3239	-1040.06
73	30	-0.385321	98.4724	-1051.62
74	30	-0.371856	98.6107	-1062.78
75	30	-0.358459	98.7392	-1073.53
76	30	-0.345126	98.8583	-1083.89
77	30	-0.331854	98.9684	-1093.84
78	30	-0.318639	99.0699	-1103.4
79	30	-0.308108	99.1649	-1112.64
80	30	-0.294992	99.2519	-1121.49
81	30	-0.281926	99.3314	-1129.95
82	30	-0.268908	99.4037	-1138.02
83	30	-0.255936	99.4692	-1145.7
84	30	-0.2455999.5295	-1153.06	
85	30	-0.232693	99.5836	-1160.04
86	30	-0.219834	99.632	-1166.64
87	30	-0.207012	99.6748	-1172.85
88	30	-0.194225	99.7126	-1178.68
89	30	-0.184017	99.7464	-1184.2
90	30	-0.171285	99.7758	-1189.34
91	30	-0.158579	99.8009	-1194.09
92	30	-0.1459 99.8222	-1198.47	
93	30	-0.133244	99.8399	-1202.47
94	30	-0.123135	99.8551	-1206.16
95	30	-0.110516	99.8673	-1209.48
96	30	-0.0979139	99.8769	-1212.41
97	30	-0.0853288	99.8842	-1214.97
98	30	-0.0727562	99.8895	-1217.16
99	30	-0.0627062	99.8934	-1219.04
100	30	-0.0501541	99.8959	-1220.54
101	30	-0.0376076	99.8973	-1221.67
102	30	-0.0250691	99.898	-1222.42
103	30	-0.0125328	99.8981	-1222.8
104	30	0 99.8981	-1222.8	
105	30	0.0125328	99.8983	-1222.42
106	30	0.0250691	99.8989	-1221.67
107	30	0.0376076	99.9003	-1220.54
108	30	0.0501541	99.9028	-1219.04
109	30	0.0627062	99.9068	-1217.16
110	30	0.0727562	99.9121	-1214.97
111	30	0.0853288	99.9193	-1212.41

112	30	0.0979139	99.9289	-1209.48
113	30	0.110516	99.9411	-1206.16
114	30	0.123135	99.9563	-1202.47
115	30	0.133244	99.9741	-1198.47
116	30	0.1459	99.9954	-1194.09
117	30	0.158579	100.02	-1189.34
118	30	0.171285	100.05	-1184.2
119	30	0.184017	100.084	-1178.68
120	30	0.194225	100.121	-1172.85
121	30	0.207012	100.164	-1166.64
122	30	0.219834	100.213	-1160.04
123	30	0.232693	100.267	-1153.06
124	30	0.24559	100.327	-1145.7
125	30	0.255936	100.393	-1138.02
126	30	0.268908	100.465	-1129.95
127	30	0.281926	100.544	-1121.49
128	30	0.294992	100.631	-1112.64
129	30	0.308108	100.726	-1103.4
130	30	0.318639	100.828	-1093.84
131	30	0.331854	100.938	-1083.89
132	30	0.345126	101.057	-1073.53
133	30	0.358459	101.186	-1062.78
134	30	0.371856	101.324	-1051.62
135	30	0.385321	101.472	-1040.06
136	30	0.396142	101.629	-1028.18
137	30	0.409735	101.797	-1015.89
138	30	0.423405	101.976	-1003.18
139	30	0.437153	102.168	-990.069
140	30	0.450985	102.371	-976.54
141	30	0.462114	102.584	-962.676
142	30	0.476105	102.811	-948.393
143	30	0.490189	103.051	-933.688
144	30	0.504372	103.306	-918.557
145	30	0.518658	103.575	-902.997
146	30	0.530162	103.856	-887.092
147	30	0.544642	104.153	-870.753
148	30	0.559237	104.465	-853.976
149	30	0.573953	104.795	-836.757
150	30	0.588793	105.141	-819.093
151	30	0.60076	105.502	-801.07
152	30	0.615839	105.882	-782.595
153	30	0.631062	106.28	-763.663
154	30	0.646431	106.698	-744.27
155	30	0.661955	107.136	-724.412
156	30	0.67449	107.591	-704.177
157	30	0.690309	108.067	-683.468
158	30	0.706302	108.566	-662.279
159	30	0.722479	109.088	-640.604
160	30	0.738846	109.634	-618.439
161	30	0.755415	110.205	-595.777
162	30	0.768821	110.796	-572.712
163	30	0.785774	111.413	-549.139
164	30	0.802956	112.058	-525.05
165	30	0.820379	112.731	-500.439
166	30	0.838054	113.433	-475.297
167	30	0.852385	114.16	-449.725
168	30	0.87055	114.918	-423.609
169	30	0.889006	115.708	-396.939
170	30	0.907769	116.532	-369.706
171	30	0.926859	117.391	-341.9
172	30	0.942375	118.279	-313.629
173	30	0.9621	119.205	-284.766

174	30	0.982202	120.17	-255.3
175	30	1.00271	121.175	-225.218
176	30	1.02365	122.223	-194.509
177	30	1.04073	123.306	-163.287
178	30	1.06252	124.435	-131.411
179	30	1.08482	125.612	-98.8665
180	30	1.10768	126.839	-65.6361
181	30	1.13113	128.118	-31.7021
182	30	1.15035	129.442	2.80836
183	30	1.17499	130.822	38.058
184	30	1.20036	132.263	74.0688
185	30	1.22653	133.767	110.865
186	30	1.25357	135.339	148.472
187	30	1.28155	136.981	186.918
188	30	1.30469	138.683	226.059
189	31	1.33462	140.465	267.432
190	32	1.36581	142.33	311.138
191	32	1.39838	144.285	355.886
192	36	1.4325	146.338	407.456
193	39	1.46106	148.472	464.437
194	40	1.49852	150.718	524.378
195	40	1.5382	153.084	585.906
196	40	1.58047	155.582	649.125
197	40	1.62576	158.225	714.155
198	41	1.66456	160.996	782.402
199	47	1.71688	163.943	863.096
200	48	1.77438	167.092	948.266
201	50	1.83843	170.471	1040.19
202	51	1.91103	174.124	1137.65
203	53	1.97737	178.034	1242.45
204	66	2.07485	182.339	1379.39
205	69	2.19728	187.167	1531
206	90	2.36561	192.763	1743.91
207	90	2.65209	199.796	1982.6

Data Set Standard Deviation = 11.7118
Numerator = 3.93069e+006
Denominator = 5.64547e+006
W Statistic = 0.696254 = 3.93069e+006 / 5.64547e+006

5% Critical value of 0.976 exceeds 0.696254
Evidence of non-normality at 95% level of significance

1% Critical value of 0.967 exceeds 0.696254
Evidence of non-normality at 99% level of significance

Shapiro-Francia Test of Normality

Parameter: Zinc

All Locations

Normality Test of Parameter Concentrations

Natural Logarithm Transformation
Non-Detects Replaced with 1/2 DL
Total Number of Measurements = 207

i	x(i)	m(i)	sum(m^2)	sum(mx)
1	0.262364	-2.65209	7.03356	-0.695813
2	0.262364	-2.36561	12.6297	-1.31647
3	0.262364	-2.19728	17.4578	-1.89295
4	1.25276	-2.07485	21.7627	-4.49225
5	1.60944	-1.97737	25.6727	-7.6747
6	1.64866	-1.91103	29.3248	-10.8253
7	1.79176	-1.83843	32.7046	-14.1194
8	1.84055	-1.77438	35.853	-17.3852
9	1.8718	-1.71688	38.8007	-20.5989
10	1.90211	-1.66456	41.5715	-23.765
11	1.94591	-1.62576	44.2146	-26.9286
12	1.94591	-1.58047	46.7124	-30.0041
13	1.94591	-1.5382	49.0785	-32.9973
14	1.94591	-1.49852	51.324	-35.9132
15	1.98787	-1.46106	53.4587	-38.8176
16	2.10413	-1.4325	55.5108	-41.8318
17	2.10413	-1.39838	57.4663	-44.7742
18	2.20827	-1.36581	59.3317	-47.7903
19	2.23001	-1.33462	61.1129	-50.7665
20	2.30259	-1.30469	62.8151	-53.7706
21	2.30259	-1.28155	64.4575	-56.7215
22	2.30259	-1.25357	66.0289	-59.608
23	2.3979	-1.22653	67.5333	-62.5491
24	2.48491	-1.20036	68.9741	-65.5318
25	2.56495	-1.17499	70.3547	-68.5456
26	2.63906	-1.15035	71.678	-71.5815
27	2.70805	-1.13113	72.9575	-74.6446
28	2.70805	-1.10768	74.1845	-77.6443
29	2.70805	-1.08482	75.3613	-80.582
30	2.70805	-1.06252	76.4903	-83.4594
31	2.70805	-1.04073	77.5734	-86.2777
32	2.77259	-1.02365	78.6212	-89.1159
33	2.77259	-1.00271	79.6267	-91.896
34	2.77259	-0.982202	80.5914	-94.6193
35	2.83321	-0.9621	81.517	-97.3451
36	2.83321	-0.942375	82.4051	-100.015
37	2.89037	-0.926859	83.2642	-102.694
38	2.89037	-0.907769	84.0882	-105.318
39	2.89037	-0.889006	84.8785	-107.887
40	2.94444	-0.870558	85.6364	-110.451
41	2.99573	-0.852385	86.363	-113.004
42	2.99573	-0.838054	87.0653	-115.515
43	2.99573	-0.820379	87.7383	-117.972
44	2.99573	-0.802956	88.3831	-120.378
45	3.04452	-0.785774	89.0005	-122.77
46	3.04452	-0.768821	89.5916	-125.111
47	3.21888	-0.755415	90.1622	-127.542
48	3.2581	-0.738846	90.7081	-129.95
49	3.29584	-0.722479	91.2301	-132.331

50	3.29584	-0.706302	91.729	-134.659
51	3.3673	-0.690309	92.2055	-136.983
52	3.4012	-0.6744992.6604	-139.277	
53	3.4012	-0.661955	93.0986	-141.529
54	3.4012	-0.646431	93.5165	-143.727
55	3.4012	-0.631062	93.9147	-145.874
56	3.4012	-0.615839	94.294	-147.968
57	3.4012	-0.6007694.6549	-150.012	
58	3.4012	-0.588793	95.0016	-152.014
59	3.4012	-0.573953	95.331	-153.966
60	3.4012	-0.559237	95.6437	-155.868
61	3.4012	-0.544642	95.9404	-157.721
62	3.4012	-0.530162	96.2214	-159.524
63	3.4012	-0.518658	96.4905	-161.288
64	3.4012	-0.504372	96.7448	-163.003
65	3.4012	-0.490189	96.9851	-164.671
66	3.4012	-0.476105	97.2118	-166.29
67	3.4012	-0.462114	97.4254	-167.862
68	3.4012	-0.450985	97.6287	-169.396
69	3.4012	-0.437153	97.8198	-170.883
70	3.4012	-0.423405	97.9991	-172.323
71	3.4012	-0.409735	98.167	-173.716
72	3.4012	-0.396142	98.3239	-175.064
73	3.4012	-0.385321	98.4724	-176.374
74	3.4012	-0.371856	98.6107	-177.639
75	3.4012	-0.358459	98.7392	-178.858
76	3.4012	-0.345126	98.8583	-180.032
77	3.4012	-0.331854	98.9684	-181.161
78	3.4012	-0.318639	99.0699	-182.244
79	3.4012	-0.308108	99.1649	-183.292
80	3.4012	-0.294992	99.2519	-184.296
81	3.4012	-0.281926	99.3314	-185.255
82	3.4012	-0.268908	99.4037	-186.169
83	3.4012	-0.255936	99.4692	-187.04
84	3.4012	-0.2455999.5295	-187.875	
85	3.4012	-0.232693	99.5836	-188.666
86	3.4012	-0.219834	99.632	-189.414
87	3.4012	-0.207012	99.6748	-190.118
88	3.4012	-0.194225	99.7126	-190.779
89	3.4012	-0.184017	99.7464	-191.405
90	3.4012	-0.171285	99.7758	-191.987
91	3.4012	-0.158579	99.8009	-192.527
92	3.4012	-0.1459 99.8222	-193.023	
93	3.4012	-0.133244	99.8399	-193.476
94	3.4012	-0.123135	99.8551	-193.895
95	3.4012	-0.110516	99.8673	-194.271
96	3.4012	-0.0979139	99.8769	-194.604
97	3.4012	-0.0853288	99.8842	-194.894
98	3.4012	-0.0727562	99.8895	-195.141
99	3.4012	-0.0627062	99.8934	-195.355
100	3.4012	-0.0501541	99.8959	-195.525
101	3.4012	-0.0376076	99.8973	-195.653
102	3.4012	-0.0250691	99.898	-195.738
103	3.4012	-0.0125328	99.8981	-195.781
104	3.4012	0 99.8981	-195.781	
105	3.4012	0.0125328	99.8983	-195.738
106	3.4012	0.0250691	99.8989	-195.653
107	3.4012	0.0376076	99.9003	-195.525
108	3.4012	0.0501541	99.9028	-195.355
109	3.4012	0.0627062	99.9068	-195.141
110	3.4012	0.0727562	99.9121	-194.894
111	3.4012	0.0853288	99.9193	-194.604

112	3.4012	0.0979139	99.9289	-194.271
113	3.4012	0.110516	99.9411	-193.895
114	3.4012	0.123135	99.9563	-193.476
115	3.4012	0.133244	99.9741	-193.023
116	3.4012	0.1459	99.9954	-192.527
117	3.4012	0.158579	100.02	-191.987
118	3.4012	0.171285	100.05	-191.405
119	3.4012	0.184017	100.084	-190.779
120	3.4012	0.194225	100.121	-190.118
121	3.4012	0.207012	100.164	-189.414
122	3.4012	0.219834	100.213	-188.666
123	3.4012	0.232693	100.267	-187.875
124	3.4012	0.24559	100.327	-187.04
125	3.4012	0.255936	100.393	-186.169
126	3.4012	0.268908	100.465	-185.255
127	3.4012	0.281926	100.544	-184.296
128	3.4012	0.294992	100.631	-183.292
129	3.4012	0.308108	100.726	-182.244
130	3.4012	0.318639	100.828	-181.161
131	3.4012	0.331854	100.938	-180.032
132	3.4012	0.345126	101.057	-178.858
133	3.4012	0.358459	101.186	-177.639
134	3.4012	0.371856	101.324	-176.374
135	3.4012	0.385321	101.472	-175.064
136	3.4012	0.396142	101.629	-173.716
137	3.4012	0.409735	101.797	-172.323
138	3.4012	0.423405	101.976	-170.883
139	3.4012	0.437153	102.168	-169.396
140	3.4012	0.450985	102.371	-167.862
141	3.4012	0.462114	102.584	-166.29
142	3.4012	0.476105	102.811	-164.671
143	3.4012	0.490189	103.051	-163.003
144	3.4012	0.504372	103.306	-161.288
145	3.4012	0.518658	103.575	-159.524
146	3.4012	0.530162	103.856	-157.721
147	3.4012	0.544642	104.153	-155.868
148	3.4012	0.559237	104.465	-153.966
149	3.4012	0.573953	104.795	-152.014
150	3.4012	0.588793	105.141	-150.012
151	3.4012	0.60076	105.502	-147.968
152	3.4012	0.615839	105.882	-145.874
153	3.4012	0.631062	106.28	-143.727
154	3.4012	0.646431	106.698	-141.529
155	3.4012	0.661955	107.136	-139.277
156	3.4012	0.67449	107.591	-136.983
157	3.4012	0.690309	108.067	-134.635
158	3.4012	0.706302	108.566	-132.233
159	3.4012	0.722479	109.088	-129.776
160	3.4012	0.738846	109.634	-127.263
161	3.4012	0.755415	110.205	-124.693
162	3.4012	0.768821	110.796	-122.079
163	3.4012	0.785774	111.413	-119.406
164	3.4012	0.802956	112.058	-116.675
165	3.4012	0.820379	112.731	-113.885
166	3.4012	0.838054	113.433	-111.034
167	3.4012	0.852385	114.16	-108.135
168	3.4012	0.87055	114.918	-105.174
169	3.4012	0.889006	115.708	-102.151
170	3.4012	0.907769	116.532	-99.063
171	3.4012	0.926859	117.391	-95.9106
172	3.4012	0.942375	118.279	-92.7054
173	3.4012	0.9621	119.205	-89.4331

174	3.4012	0.982202		120.17	-86.0924
175	3.4012	1.00271	121.175	-82.682	
176	3.4012	1.02365	122.223	-79.2004	
177	3.4012	1.04073	123.306	-75.6606	
178	3.4012	1.06252	124.435	-72.0468	
179	3.4012	1.08482	125.612	-68.3571	
180	3.4012	1.10768	126.839	-64.5897	
181	3.4012	1.13113	128.118	-60.7425	
182	3.4012	1.15035	129.442	-56.8299	
183	3.4012	1.17499	130.822	-52.8335	
184	3.4012	1.20036	132.263	-48.7509	
185	3.4012	1.22653	133.767	-44.5792	
186	3.4012	1.25357	135.339	-40.3156	
187	3.4012	1.28155	136.981	-35.9568	
188	3.4012	1.30469	138.683	-31.5193	
189	3.43399	1.33462	140.465	-26.9362	
190	3.46574	1.36581	142.33	-22.2027	
191	3.46574	1.39838	144.285	-17.3563	
192	3.58352	1.4325	146.338	-12.2229	
193	3.66356	1.46106	148.472	-6.8702	
194	3.68888	1.49852	150.718	-1.34236	
195	3.68888	1.5382	153.084	4.33188	
196	3.68888	1.58047	155.582	10.162	
197	3.68888	1.62576	158.225	16.1593	
198	3.71357	1.66456	160.996	22.3407	
199	3.85015	1.71688	163.943	28.951	
200	3.8712	1.77438	167.092	35.82	
201	3.91202	1.83843	170.471	43.0119	
202	3.93183	1.91103	174.124	50.5258	
203	3.97029	1.97737	178.034	58.3765	
204	4.18965	2.07485	182.339	67.0694	
205	4.23411	2.19728	187.167	76.3729	
206	4.49981	2.36561	192.763	87.0178	
207	4.49981	2.65209	199.796	98.9516	

Data Set Standard Deviation = 0.608059
Numerator = 9791.43
Denominator = 15217.6
W Statistic = 0.643429 = 9791.43 / 15217.6

5% Critical value of 0.976 exceeds 0.643429
Evidence of non-normality at 95% level of significance

1% Critical value of 0.967 exceeds 0.643429
Evidence of non-normality at 99% level of significance

Kruskal-Wallis Non-Parametric Test

Parameter: Zinc

Natural Logarithm Transformation
Non-Detects Replaced with 1/2 DL

Kruskal Wallis Ranks

Background Wells

Well ID	Date	Result	Rank
LMW-4	1/16/1998	ND<3.4012	70
	3/16/1999	3.91202 J	201
	9/23/1999	ND<3.4012	70
	3/14/2000	ND<3.4012	70
	9/23/2003	ND<3.4012	70
	3/10/2004	ND<3.4012	70
	10/12/2004	ND<3.4012	70
	4/1/2005	ND<3.4012	70
	10/26/2005	ND<3.4012	70
	6/19/2006	ND<3.4012	70
	11/18/2006	2.3979 J	159
	6/2/2007	3.85015	199
	11/15/2007	ND<3.4012	70
	5/20/2008	2.70805 J	163
	11/20/2008	ND<3.4012	70
	6/11/2009	1.90211 J	146
	11/14/2009	2.77259 J	168

Rank Sum = 1806
Rank Mean = 106.235

Background Rank Sum = 1806
Background Rank Mean = 106.235

Compliance Wells

Well ID	Date	Result	Rank
LMW-6	1/16/1998	ND<3.4012	70
	3/16/1999	3.4012 J	188
	9/23/1999	3.97029 J	203
	3/14/2000	ND<3.4012	70
	9/23/2003	ND<3.4012	70
	3/10/2004	ND<3.4012	70
	10/12/2004	ND<3.4012	70
	4/1/2005	ND<3.4012	70
	10/26/2005	ND<3.4012	70
	6/19/2006	2.99573 J	177
	11/18/2006	1.94591 J	147
	6/2/2007	2.83321 J	171
	11/15/2007	3.29584 J	185
	5/20/2008	2.30259 J	156
	11/20/2008	ND<3.4012	70
	6/11/2009	2.10413 J B	152
	11/14/2009	3.71357	198

Rank Sum = 2137
Rank Mean = 125.706

LMW-10	3/14/2000	ND<3.4012	70
	9/23/2003	ND<3.4012	70
	3/10/2004	ND<3.4012	70
	10/12/2004	ND<3.4012	70
	4/1/2005	ND<3.4012	70
	10/26/2005	ND<3.4012	70
	6/19/2006	ND<3.4012	70
	11/18/2006	ND<3.4012	70
	6/2/2007	ND<3.4012	70
	11/15/2007	ND<3.4012	70
	5/20/2008	3.68888 J	194
	11/20/2008	ND<3.4012	70
	6/11/2009	ND<0.262364 U	70
	11/14/2009	3.04452	181

Rank Sum = 1215
Rank Mean = 86.7857

LMW-8	1/16/1998	ND<3.4012	70
	3/16/1999	4.49981	206
	9/23/1999	ND<3.4012	70
	3/14/2000	ND<3.4012	70
	9/23/2003	ND<3.4012	70
	3/10/2004	ND<3.4012	70
	10/12/2004	ND<3.4012	70
	4/1/2005	ND<3.4012	70
	10/26/2005	ND<3.4012	70
	6/19/2006	ND<3.4012	70
	11/18/2006	ND<3.4012	70
	6/2/2007	ND<3.4012	70
	11/15/2007	ND<3.4012	70
	5/20/2008	1.60944 J	141
	11/20/2008	ND<3.4012	70
	6/11/2009	2.10413 J	153
	11/14/2009	2.94444	176

Rank Sum = 1586
Rank Mean = 93.2941

LMW-3	11/19/1996	ND<3.4012	70
	3/24/1997	ND<3.4012	70
	1/16/1998	ND<3.4012	70
	3/16/1999	2.99573 J	178
	9/23/1999	ND<3.4012	70
	3/14/2000	ND<3.4012	70
	9/23/2003	ND<3.4012	70
	3/10/2004	ND<3.4012	70
	10/12/2004	ND<3.4012	70
	4/1/2005	ND<3.4012	70
	10/26/2005	ND<3.4012	70
	6/19/2006	ND<3.4012	70
	11/18/2006	1.79176 J	143
	6/2/2007	ND<3.4012	70
	11/15/2007	4.18965	204
	5/20/2008	2.48491 J	160
	11/20/2008	ND<3.4012	70
	6/11/2009	1.98787 J B	151
	11/14/2009	3.46574 J	190

Rank Sum = 1936
Rank Mean = 101.895

LMW-15R	11/18/2006	2.63906 J	162
	6/2/2007	ND<3.4012	70
	11/15/2007	ND<3.4012	70

	11/15/2007	ND<3.4012	70
	5/20/2008	ND<3.4012	70
	5/20/2008	3.66356 J	193
	11/20/2008	ND<3.4012	70
	11/20/2008	ND<3.4012	70
	6/11/2009	1.8718 J	145
	11/14/2009	2.20827 J	154

Rank Sum = 1074
Rank Mean = 107.4

LMW-14R	6/2/2007	2.70805 J	164
	11/15/2007	ND<3.4012	70
	5/20/2008	2.89037 J	173
	11/20/2008	ND<3.4012	70
	6/11/2009	1.84055 J	144
	11/14/2009	3.2581 J	184

Rank Sum = 805
Rank Mean = 134.167

LMW-16	11/18/2006	ND<3.4012	70
	6/2/2007	2.77259 J	169
	11/15/2007	4.23411	205
	5/20/2008	2.70805 J	165
	11/20/2008	ND<3.4012	70
	6/11/2009	ND<0.262364 U	70
	11/14/2009	2.23001 J	155

Rank Sum = 904
Rank Mean = 129.143

LMW-3S	11/18/2006	2.30259 J	157
	6/2/2007	2.77259 J	170
	11/15/2007	3.8712 J	200
	5/20/2008	2.70805 J	166
	11/20/2008	ND<3.4012	70
	6/11/2009	2.89037 B	174
	11/14/2009	2.56495	161

Rank Sum = 1098
Rank Mean = 156.857

LMW-9D	11/18/2006	1.94591 J	148
	6/2/2007	ND<3.4012	70
	11/15/2007	ND<3.4012	70
	5/20/2008	2.89037 J	175
	11/20/2008	ND<3.4012	70
	6/11/2009	1.25276 J	140
	11/14/2009	3.21888	183

Rank Sum = 856
Rank Mean = 122.286

LMW-9	1/16/1998	ND<3.4012	70
	3/16/1999	4.49981	207
	9/23/1999	ND<3.4012	70
	3/14/2000	ND<3.4012	70
	9/23/2003	ND<3.4012	70
	3/10/2004	ND<3.4012	70
	10/12/2004	ND<3.4012	70
	4/1/2005	ND<3.4012	70
	10/26/2005	ND<3.4012	70
	6/19/2006	2.99573 J	179
	11/18/2006	ND<3.4012	70
	6/2/2007	2.83321 J	172
	11/15/2007	ND<3.4012	70

	5/20/2008	1.94591 J	149
	11/20/2008	ND<3.4012	70
	6/11/2009	ND<0.262364 U	70
	11/14/2009	1.94591 J	150

Rank Sum = 1697
Rank Mean = 99.8235

LMW-9S	11/18/2006	ND<3.4012	70
	6/2/2007	ND<3.4012	70
	11/15/2007	ND<3.4012	70
	5/20/2008	3.46574 J	191
	11/20/2008	ND<3.4012	70
	6/11/2009	1.64866 J	142
	11/14/2009	2.70805 J	167

Rank Sum = 780
Rank Mean = 111.429

LMW-7	1/16/1998	ND<3.4012	70
	3/16/1999	2.99573 J	180
	9/23/1999	3.68888 J	195
	3/14/2000	ND<3.4012	70
	9/23/2003	ND<3.4012	70
	3/10/2004	ND<3.4012	70
	10/12/2004	ND<3.4012	70
	4/1/2005	3.29584 J	186
	10/26/2005	3.43399 J	189
	6/19/2006	3.68888 J	196
	11/18/2006	3.04452 J	182
	6/2/2007	3.93183	202
	11/15/2007	ND<3.4012	70
	5/20/2008	2.30259 J	158
	11/20/2008	ND<3.4012	70
	6/11/2009	3.3673 B	187

Rank Sum = 2165
Rank Mean = 135.313

LMW-13	3/14/2000	ND<3.4012	70
	9/23/2003	ND<3.4012	70
	3/10/2004	ND<3.4012	70
	10/12/2004	ND<3.4012	70
	4/1/2005	ND<3.4012	70
	10/26/2005	ND<3.4012	70
	6/19/2006	ND<3.4012	70
	6/2/2007	ND<3.4012	70
	11/15/2007	ND<3.4012	70
	5/20/2008	ND<3.4012	70
	11/20/2008	ND<3.4012	70

Rank Sum = 770
Rank Mean = 70

MW-5	1/16/1998	ND<3.4012	70
	3/16/1999	3.68888 J	197
	9/23/1999	3.58352 J	192
	3/14/2000	ND<3.4012	70
	9/23/2003	ND<3.4012	70
	3/10/2004	ND<3.4012	70
	10/12/2004	ND<3.4012	70
	4/1/2005	ND<3.4012	70
	10/26/2005	ND<3.4012	70
	6/19/2006	ND<3.4012	70
	11/15/2007	ND<3.4012	70
	5/20/2008	ND<3.4012	70

	11/20/2008	ND<3.4012	70

Rank Sum = 1159
Rank Mean = 89.1538

LMW-11	3/14/2000	ND<3.4012	70
	9/23/2003	ND<3.4012	70
	3/10/2004	ND<3.4012	70
	10/12/2004	ND<3.4012	70
	4/1/2005	ND<3.4012	70
	10/26/2005	ND<3.4012	70
	6/19/2006	ND<3.4012	70
	6/2/2007	ND<3.4012	70
	11/15/2007	ND<3.4012	70
	5/20/2008	ND<3.4012	70
	11/20/2008	ND<3.4012	70

Rank Sum = 770
Rank Mean = 70

LMW-12	3/14/2000	ND<3.4012	70
	9/23/2003	ND<3.4012	70
	3/10/2004	ND<3.4012	70
	10/12/2004	ND<3.4012	70
	4/1/2005	ND<3.4012	70
	10/26/2005	ND<3.4012	70
	6/19/2006	ND<3.4012	70
	6/2/2007	ND<3.4012	70
	11/15/2007	ND<3.4012	70
	5/20/2008	ND<3.4012	70
	11/20/2008	ND<3.4012	70

Rank Sum = 770
Rank Mean = 70

Calculation Results:

Kruskal-Wallis H Statistic = 28.8623
Kruskal-Wallis H Statistic (adjusted for tied non-detects) = 41.396
95% Confidence comparison value is 26.2962 at 16 degrees of freedom
28.8623 > 26.2962 indicating a significant group difference at 5% significance level
41.396 > 26.2962 indicating a significant group difference at 5% significance level when adjusted for ties

Individual Well Comparisons at 1% Significance Level per Comparison

1% Z score is 2.32634
Mean background rank is 106.235

Well	Mean Rank	Dif from Bkg	Critical Value
LMW-6	125.706	19.4706	47.7959
LMW-10	86.7857	-19.4496	50.2912
LMW-8	93.2941	-12.9412	47.7959
LMW-3	101.895	-4.34056	46.5211
LMW-15R	107.4	1.16471	55.5338
LMW-14R	134.167	27.9314	66.1704
LMW-16	129.143	22.9076	62.5795
LMW-3S	156.857	50.6218	62.5795
LMW-9D	122.286	16.0504	62.5795
LMW-9	99.8235	-6.41176	47.7959
LMW-9S	111.429	5.19328	62.5795
LMW-7	135.313	29.0772	48.5369
LMW-13	70	-36.2353	53.921
MW-5	89.1538	-17.0814	51.341
LMW-11	70	-36.2353	53.921
LMW-12	70	-36.2353	53.921

Individual Well Comparisons at Groupwise 5% Significance Level (0.3125% Significance Level per comparison)

0.3125% Z score is 2.74777

Mean background rank is 106.235

Well	Mean Rank	Dif from Bkg	Critical Value
LMW-6	125.706	19.4706	56.4542
LMW-10	86.7857	-19.4496	59.4016
LMW-8	93.2941	-12.9412	56.4542
LMW-3	101.895	-4.34056	54.9485
LMW-15R	107.4	1.16471	65.5939
LMW-14R	134.167	27.9314	78.1573
LMW-16	129.143	22.9076	73.9159
LMW-3S	156.857	50.6218	73.9159
LMW-9D	122.286	16.0504	73.9159
LMW-9	99.8235	-6.41176	56.4542
LMW-9S	111.429	5.19328	73.9159
LMW-7	135.313	29.0772	57.3295
LMW-13	70	-36.2353	63.6889
MW-5	89.1538	-17.0814	60.6416
LMW-11	70	-36.2353	63.6889
LMW-12	70	-36.2353	63.6889

Non-Parametric Prediction Interval

Inter-Well Comparison

Parameter: Zinc

Natural Logarithm Transformation
Non-Detects Replaced with 1/2 DL

Total Percent Non-Detects = 67.1498%
Number of comparisons = 16
Future Samples (k) = 8
Recent Dates = 1
Background Samples (n) = 17
Maximum Background Concentration = 3.91202
Confidence Level = 68%
False Positive Rate = 32%

Location	Date	Samples	Mean	Significant
LMW-6	11/14/2009	1	3.71357	FALSE
LMW-10	11/14/2009	1	3.04452	FALSE
LMW-8	11/14/2009	1	2.94444	FALSE
LMW-3	11/14/2009	1	3.46574	FALSE
LMW-15R	11/14/2009	1	2.20827	FALSE
LMW-14R	11/14/2009	1	3.2581	FALSE
LMW-16	11/14/2009	1	2.23001	FALSE
LMW-3S	11/14/2009	1	2.56495	FALSE
LMW-9D	11/14/2009	1	3.21888	FALSE
LMW-9	11/14/2009	1	1.94591	FALSE
LMW-9S	11/14/2009	1	2.70805	FALSE
LMW-7	6/11/2009	1	3.3673	FALSE
LMW-13	11/20/2008	1	3.4012	FALSE
MW-5	11/20/2008	1	3.4012	FALSE
LMW-11	11/20/2008	1	3.4012	FALSE
LMW-12	11/20/2008	1	3.4012	FALSE