Snohomish County

Public Works
Solid Waste Management
Operations

Robert J. Drewel
County Executive

8915 Cathcart Way
Snohomish, WA 98296
(360) 668-7862
FAX (360) 668-8133

February 11, 2003

Snohomish Health District
Attn. Gary Hanada
3020 Rucker Avenue, Suite 102
Everett, WA 98201-3971

RE: Lake Goodwin Groundwater Report, 4th Quarter 2002

Dear Gary,

The Lake Goodwin Landfill (Figure 1) groundwater samples for 4th quarter 2002 were collected and analyzed per the Environmental Monitoring Manual (EMM). Attached to this report is electronic laboratory data in tabular form (DUMPStat format). This data was also statistically analyzed for significant trends, prediction intervals, and nonparametric limits (see attached). Please note that definitions are included for important terms (Appendix A).

All samples were collected by Snohomish County employees without incident following the procedures listed in the Snohomish County EMM. After measuring water levels, the wells were purged, field tested, and sampled using properly calibrated and decontaminated equipment. All wells were purged three pore volumes or dry before being sampled. Samples were properly preserved, placed on ice, and shipped maintaining proper chain of command procedures.

HYDROLOGY

Water depths (Table 1) were converted to mean sea level (MSL) and plotted by hand on the site map. The Advanced Outwash aquifer indicates a northeasterly flow (Figure 2). Please note the apparent trough that flows from southwest towards the northeast under the landfill.

Linear horizontal groundwater velocity and direction were also calculated by computer. Groundwater elevations and coordinates were fed into a program designed by In-Situ Inc. (WATER-VEL Version 2.21). The following assumptions were made for the modeling program:

- The aquifer was assumed to have an average isotopic horizontal hydraulic conductivity of 83.30 ft/d (Converse Hydrogeologic Study, July 1991).
- The aquifer was assumed to have an effective porosity of 20.0% (Converse Hydrogeologic Study, July 1991).

The aquifer results (Table 2) of 638 ft/yr at 149.68° roughly matches the hand-drawn maps.

GROUNDWATER CHEMICAL DATA QUALITY

Groundwater data was compared to MCL's (Maximum Contaminant Levels). Please refer to attached table for a summary of MCL failures (Table 3). It is apparent that the landfill is releasing minor concentrations of contaminants into the Advanced Outwash Aquifer. Please note there were no VOC hits this quarter.

STATISTICAL CALCULATIONS

Snohomish County is required to perform statistical analyses of groundwater data. All groundwater chemistry data was statistically analyzed using a scientific program called DUMPStat (Downgradient Upgradient Monitoring Program Statistics). This proprietary program is capable of storing, analyzing, and reporting large amounts of data in an efficient, accurate manner. The program has few user adjustable parameters to reduce the likelihood of possible errors introduced by the data analysis. The following is a brief description of the program.

DUMPStat is an artificial intelligent computer program that, with minimal input regarding the monitoring well network and required monitoring constituents, can provide a complete statistical analysis of all existing site data automatically. The primary advantages to the DUMPStat algorithm are: 1) the user need not configure calculations to provide a statistically rigorous analysis of routine monitoring data; 2) both site-wide false positive and false negative rates are optimally balanced at minimal levels; and 3) site-wide false positive and false negative rates can be directly computed via simulation of 10,000 monitoring events from that facility based on existing site-specific conditions. Most importantly, statistical methods provided in DUMPStat are permitted under the Subtitle D regulation (i.e., prediction limits and control charts) and are specifically referenced in the U.S. EPA guidance.

POWER CURVE

Each time the DUMPStat program calculates statistics on groundwater data it is also capable of performing a statistical power curve. This power curves represents two tests that: 1) determine the site-wide false positive rate (i.e., the percentage of failures when the background versus current true mean difference equals zero); and 2) determine the false negative rates for effect sizes ranging from 1 to 5 standard deviation units. A power curve will be provided for each quarterly testing period (Figure 3). The vertical scale (Y-

axis) represents two different percentage ranges depending upon the value of the standard deviation (S.D.) unit. When the S.D. is equal to zero, the Y-axis represents the site wide false positive rate. If the S.D. is greater than zero, then the Y-axis represents the false negative rate. This chart provides a graphical representation of the statistical power provided by the chosen statistical methods.

All general chemistry data was statistically analyzed using DUMPStat after careful QA/QC procedures. The program performed the following subroutines during analysis:

- Screened data for outliers
- Computed detection frequency
- Detected historical trends
- Selected optimal form of prediction limit

The program reports statistical results via two outputs: 1) tables that summarize the population (N), mean, standard deviation (SD), factor, and intra-well prediction limit; and 2) graphs that summarize data and statistical results. A table summarizing statistical calculations is included in this report (Appendix B). Graphs that contain statistical warnings or failures are also included (Appendix B).

Graphs that indicate a failure (i.e., have a stamp marked failure) can be caused by several conditions. Any type of failure is cause for concern, but these are especially important because they are statistically significant.

- Verified Hit in Results: This type of failure indicates that two consecutive samples were over a prediction limit (when a one of one re-sampling protocol is being used).
- Significant Trend in Background Data: This type of failure indicates that a statistically significant long-term upward trend is indicated. It is considered a failure even if the data is below a prediction limit.
- Nonparametric Limit: This type of failure indicates that a nonparametric prediction limit was exceeded by a sample. This type of failure does not require verification to be considered a failure.

WATER CHEMISTRY SUMMARY

The water chemistry results for Lake Goodwin indicate some of the monitored constituents exceeded Maximum Contaminant Levels (MCL's). Following is a summary of statistical failures, MCL failures, and VOC hits:

DEEP WELLS

LG-1 - All parameters in this deep downgradient well were within acceptable statistical limits except specific conductance and total sulfate. Both compounds demonstrated a significant trend over background data, but note they are both still under the WAC limit. These parameters are common leachate compounds and are probably originating as a non-point source from the refuse. There were no MCL exceedances or VOC hits this quarter.

LG-2 - All parameters in this deep upgradient well were within acceptable statistical limits except nitrate-n. Nitrate-n demonstrated a significant trend over background data, but it is well under its MCL limit. The nitrate-n trend is probably representative of upgradient conditions. There were no MCL exceedances or VOC hits this quarter.

LG-3 - All parameters in this deep downgradient well were within acceptable statistical limits. There only MCL exceedance was pH. There were no VOC hits this quarter.

LG-4 - All parameters in this deep downgradient well were within acceptable statistical limits except nitrate-n. Nitrate-n demonstrated a significant trend over background data, but it is well under its MCL limit. The nitrate-n trend could be from upgradient sources or landfill contamination. The only MCL exceedance was pH. There were no VOC hits this quarter.

LG-5 - All parameters in this deep downgradient well were within acceptable statistical limits except dissolved barium, chemical oxygen demand, dissolved copper, dissolved manganese, nitrate-n, specific conductance and total organic carbon. All parameters are demonstrating significant trends in background data. These parameters are common leachate compounds and are probably originating as non-point sources from the refuse. The only MCL failures were nitrate-n and specific conductance. There were no VOC hits in this well.

CONCLUSIONS

Background conditions indicate an upgradient nitrate-n source is polluting the aquifer. The landfill is producing dilute leachate that is being carried in a northeasterly direction at a moderate rate. Please note no VOC's were detected this quarter. The only constituents that exceeded secondary MCL's were nitrate and specific conductance. Since most problematic contaminants are well below their respective MCL limits, it is unlikely this site poses a health risk to nearby residents.

RECOMMENDATIONS

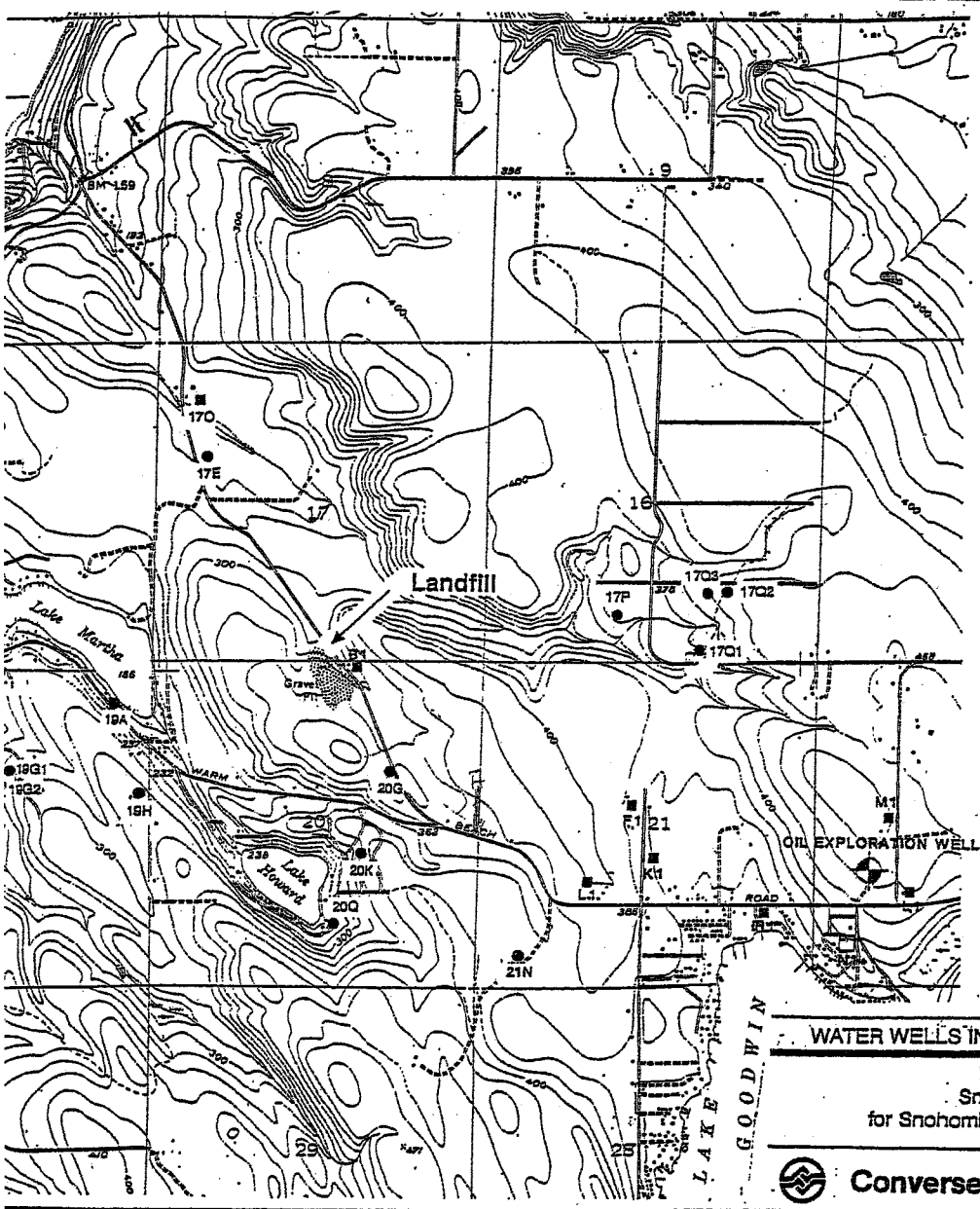
Snohomish County proposes no changes to the current groundwater monitoring program based on the findings in this report. Please let me know if you have any questions or comments regarding this report. I can be reached at (360) 668-5971 or faxed at (360) 668-3944.

Sincerely,

David Schonhard

David Schonhard
Environmental Monitoring Supervisor

FIGURES



LEGEND

- APPROXIMATE WASTE FILL AREA
- 24 — APPROXIMATE LOCATION OF DRILLED WELL WITH DRILLER LOG
- L1 — APPROXIMATE LOCATION OF HAND DUG WELL (NEWCOMB 1952)
- M2 — APPROXIMATE LOCATION OF DRILLED WELL (NEWCOMB 1952)

REFERENCE: Base map compiled from portion of USGS 7 1/2' STANWOOD, WASHINGTON QUADRANGLE

1 2000 FEET
SCALE

WATER WELLS IN VICINITY OF LAKE GOODWIN LANDFILL

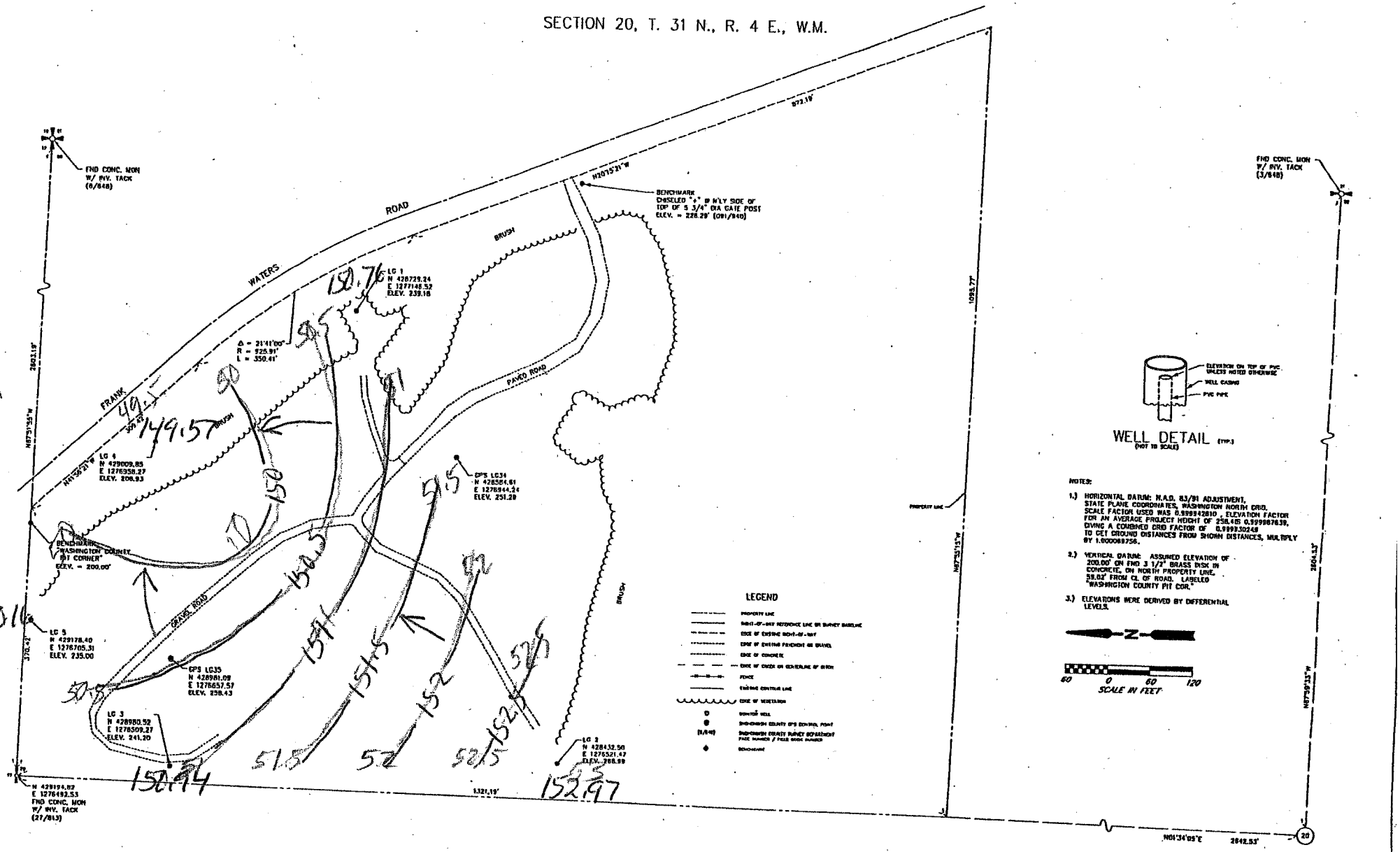
LAKE GOODWIN LANDFILL
Snohomish County, Washington
for Snohomish County Department of Public Works

Project No. 89-35228-

Figure No. 1

Converse Consultants NW Geotechnical Engineering and Applied Earth Sciences

Figure 1



SNOHOMISH COUNTY DEPARTMENT OF PUBLIC WORKS	LAKE GOODWIN LANDFILL MONITORING WELLS	2/21/03 3069-03.DWG SURVEY NO. 3069
BASE MAP BY: J. CSISEK	FIELD BOOK(S): 648,809,811,940	PROJECT NO. 89-431	SHEET 1 OF 1 SHEETS

False Positive and False Negative Rates for Current Intra-Well Prediction Limits Monitoring Program

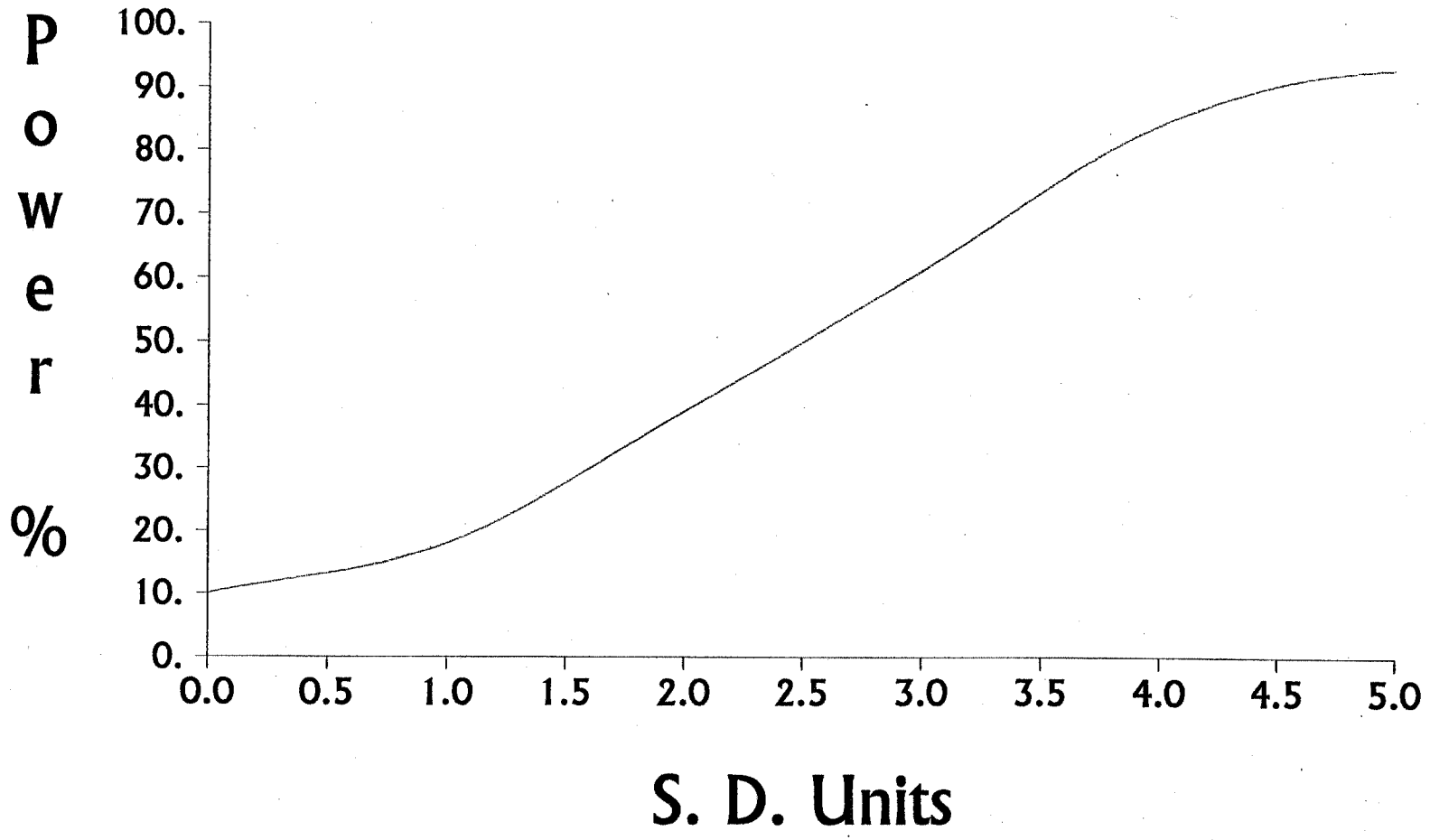


Figure 3

TABLES

Snohomish County Solid Waste
Environmental Services Section
8915 Cathcart Way
Snohomish, WA 98296
Tel: (360) 668-6595

GROUND WATER ELEVATIONS

Lk Goodwin

Location	Aquifer	Date	MSL Water Elev (Ft)
LG-01	D	10/9/2002	150.76
LG-02	D	10/9/2002	152.97
LG-03	D	10/9/2002	150.94
LG-04	D	10/9/2002	149.57
LG-05	D	10/9/2002	150.16

In-Situ Inc. Groundwater Velocity Program (V2.21)

Lake Goodwin Deep Wells

Output file is : lgdeep.prn
Input file is : h:\ess\modeling\watervel\lgdeep.txt

Isotropic hydraulic cond. = 83.30 ft/d
Effective porosity = 20.00 %

Least squares match to groundwater table:

N	X(ft)	Y(ft)	Meas. head (ft)	Calc. head (ft)
1	646.57	299.26	150.76	150.57
2	21.47	2.50	152.97	152.98
3	9.27	550.56	150.94	151.01
4	458.30	579.89	149.57	149.96
5	205.32	748.45	150.16	149.88

Calc. Head (ft) = -2.120E-03*X - 3.625E-03*Y + 1.530E+02

Natural groundwater flow = 1.75E+00 ft/day (6.38E+02 ft/yr)
at 59.68 deg to the positive X-axis

WATER-VEL COMPLETED.

Table 2

Snohomish County Solid Waste
Environmental Services Section
8915 Cathcart Way
Snohomish, WA 98296 Tel: (360) 668-6595

WAC Cleanup Level

Lk Goodwin

11-Feb-03

Constituent	Location	Date	WAC Cleanup Level	Result	Units
NITRATE-N (NO3)	LG-05	10/9/2002	10	14	mg-N/L
pH	LG-03	10/9/2002	< 6.5 OR > 8.5	6.42	std units
	LG-04	10/9/2002	< 6.5 OR > 8.5	6.3	std units
SPECIFIC CONDUCTANCE	LG-05	10/9/2002	700	1000	umhos/cm

Table 3

APPENDIX A

DEFINITIONS

Definitions:

Aquifer - a permeable geologic unit that can transmit and store significant quantities of water

Aquitard - a less permeable geologic unit that stores but does not readily transmit water

Background - the set of data used to determine statistical limits

Confined Aquifer - a permeable geologic unit located beneath a saturated, less permeable unit such as an aquitard

Detect - an identified contaminant with a measurable concentration above the PQL

Detection Limit - the minimum contaminant concentration that can be accurately measured for the given analysis method

Downgradient - wells located within a flownet that is hydraulically downstream from the landfill footprint

Elevation Head - the midpoint elevation of the screened interval

Heterogeneity - a hydrogeologic unit with a mixture of dissimilar hydraulic properties

Hit - a sample result that exceeds an intra-well prediction limit

Homogeneous Aquifer- a hydrogeologic unit with equal hydraulic properties at every location

Hydraulic Conductivity - a measure of the ability of a fluid to move through the interconnected void spaces in the soil or rock

Hydraulic Head - the mechanical energy per unit weight of the fluid

Intra-well Prediction Limit - there are two types of intra-well prediction limits: 1) parametric limit calculated when the detection frequency is greater than 25%; 2) nonparametric limit calculated when the detection frequency is less than 25%

MCL - maximum contaminant level: as stated in Washington Administrative Code

ND - non-detect: a constituent that was not detected during analysis

Outlier - a sample result within the background data set that is calculated to be statistically improbable and is ignored during calculations of statistical limits

Perched Zones - a zone of limited areal extent, located above the main water table, that occurs when infiltrating water is impeded by a low permeability layer, creating saturated conditions above the impeding layer

Permeability - the ability of a fluid to penetrate a media

PQL - procedural quantitative limit: for the specific test protocol

Pressure Head - the difference between the hydraulic head and the elevation head

Significant Trend in Background - historical statistical increase in contaminant level

Transmissivity - the product of hydraulic conductivity and the layer thickness

Unconfined Aquifer - a permeable geologic unit with the water table forming its upper boundary

Upgradient - wells located hydraulically upstream from the landfill footprint

Verified Hit in Results - a sample result that has been verified to exceed an intra-well prediction limit via subsequent sample analysis

Verify - a sample result that verified that the previous hit actually exceeded an intra-well prediction limit.

APPENDIX B

STATISTICAL RESULTS

Table 1

Summary Statistics and Intermediate Computations for Intra-Well Prediction Limits

Constituent	Units	Well	N	Mean	SD	Factor	Limit
Ammonia-n (nh3)	mg/L	LG-01	18				0.0200**
Ammonia-n (nh3)	mg/L	LG-02	18	0.0111	0.0032	2.6358	0.0196
Ammonia-n (nh3)	mg/L	LG-03	18	0.0111	0.0047	2.6358	0.0235
Ammonia-n (nh3)	mg/L	LG-04	18				0.0100**
Ammonia-n (nh3)	mg/L	LG-05	19				0.0400**
Arsenic, dissolved (as)	mg/L	LG-01	19				0.0010**
Arsenic, dissolved (as)	mg/L	LG-02	19	0.0038	0.0004	2.6174	0.0049
Arsenic, dissolved (as)	mg/L	LG-03	19	0.0012	0.0004	2.6174	0.0023
Arsenic, dissolved (as)	mg/L	LG-04	19				0.0010**
Arsenic, dissolved (as)	mg/L	LG-05	19	0.0011	0.0003	2.6174	0.0019
Barium, dissolved (ba)	mg/L	LG-01	19	0.0179	0.0054	2.6174	0.0319
Barium, dissolved (ba)	mg/L	LG-02	19	0.0115	0.0038	2.6174	0.0214
Barium, dissolved (ba)	mg/L	LG-03	19	0.0474	0.0188	2.6174	0.0966
Barium, dissolved (ba)	mg/L	LG-04	19	0.0226	0.0045	2.6174	0.0345
Barium, dissolved (ba)	mg/L	LG-05	19	0.0679	0.0178	2.6174	0.1145
Cadmium, dissolved (cd)	mg/L	LG-01	19				0.0020**
Cadmium, dissolved (cd)	mg/L	LG-02	19				0.0020**
Cadmium, dissolved (cd)	mg/L	LG-03	19				0.0020**
Cadmium, dissolved (cd)	mg/L	LG-04	19				0.0020**
Cadmium, dissolved (cd)	mg/L	LG-05	19				0.0020**
Chemical oxygen demand (cod)	mg/L	LG-01	19				11.0000**
Chemical oxygen demand (cod)	mg/L	LG-02	19				10.0000**
Chemical oxygen demand (cod)	mg/L	LG-03	18	7.9611	3.1468	2.6358	16.2555
Chemical oxygen demand (cod)	mg/L	LG-04	19				5.0000**
Chemical oxygen demand (cod)	mg/L	LG-05	19	11.5579	6.0822	2.6174	27.4776
Chromium, dissolved (cr)	mg/L	LG-01	19				0.0050**
Chromium, dissolved (cr)	mg/L	LG-02	19	0.0053	0.0009	2.6174	0.0078
Chromium, dissolved (cr)	mg/L	LG-03	19				0.0050**
Chromium, dissolved (cr)	mg/L	LG-04	19				0.0050**
Chromium, dissolved (cr)	mg/L	LG-05	19				0.0050**
Coliform, total	CFU/100 ml	LG-01	18				4.0000**
Coliform, total	CFU/100 ml	LG-02	19				14.0000**
Coliform, total	CFU/100 ml	LG-03	19				10.0000**
Coliform, total	CFU/100 ml	LG-04	19				1.0000**
Coliform, total	CFU/100 ml	LG-05	19				6.0000**
Copper, dissolved (cu)	mg/L	LG-01	19				0.0020**
Copper, dissolved (cu)	mg/L	LG-02	19	0.0023	0.0007	2.6174	0.0042
Copper, dissolved (cu)	mg/L	LG-03	19				0.0030**
Copper, dissolved (cu)	mg/L	LG-04	19				0.0020**
Copper, dissolved (cu)	mg/L	LG-05	19	0.0038	0.0015	2.6174	0.0079
Iron, dissolved (fe)	mg/L	LG-01	19				0.0200**
Iron, dissolved (fe)	mg/L	LG-02	19				0.0300**
Iron, dissolved (fe)	mg/L	LG-03	19				0.0200**
Iron, dissolved (fe)	mg/L	LG-04	19				0.0200**
Iron, dissolved (fe)	mg/L	LG-05	19				0.0200**
Lead, dissolved (pb)	mg/L	LG-01	19				0.0010**
Lead, dissolved (pb)	mg/L	LG-02	19				0.0010**
Lead, dissolved (pb)	mg/L	LG-03	19				0.0050**
Lead, dissolved (pb)	mg/L	LG-04	19				0.0010**
Lead, dissolved (pb)	mg/L	LG-05	19				0.0010**
Manganese, dissolved (mn)	mg/L	LG-01	19				0.0010**
Manganese, dissolved (mn)	mg/L	LG-02	19				0.0020**
Manganese, dissolved (mn)	mg/L	LG-03	19				0.0010**
Manganese, dissolved (mn)	mg/L	LG-04	19	0.0011	0.0003	2.6174	0.0019
Manganese, dissolved (mn)	mg/L	LG-05	19	0.0027	0.0017	2.6174	0.0071

* - Insufficient Data
** - Detection Frequency < 25%
*** - Zero Variance

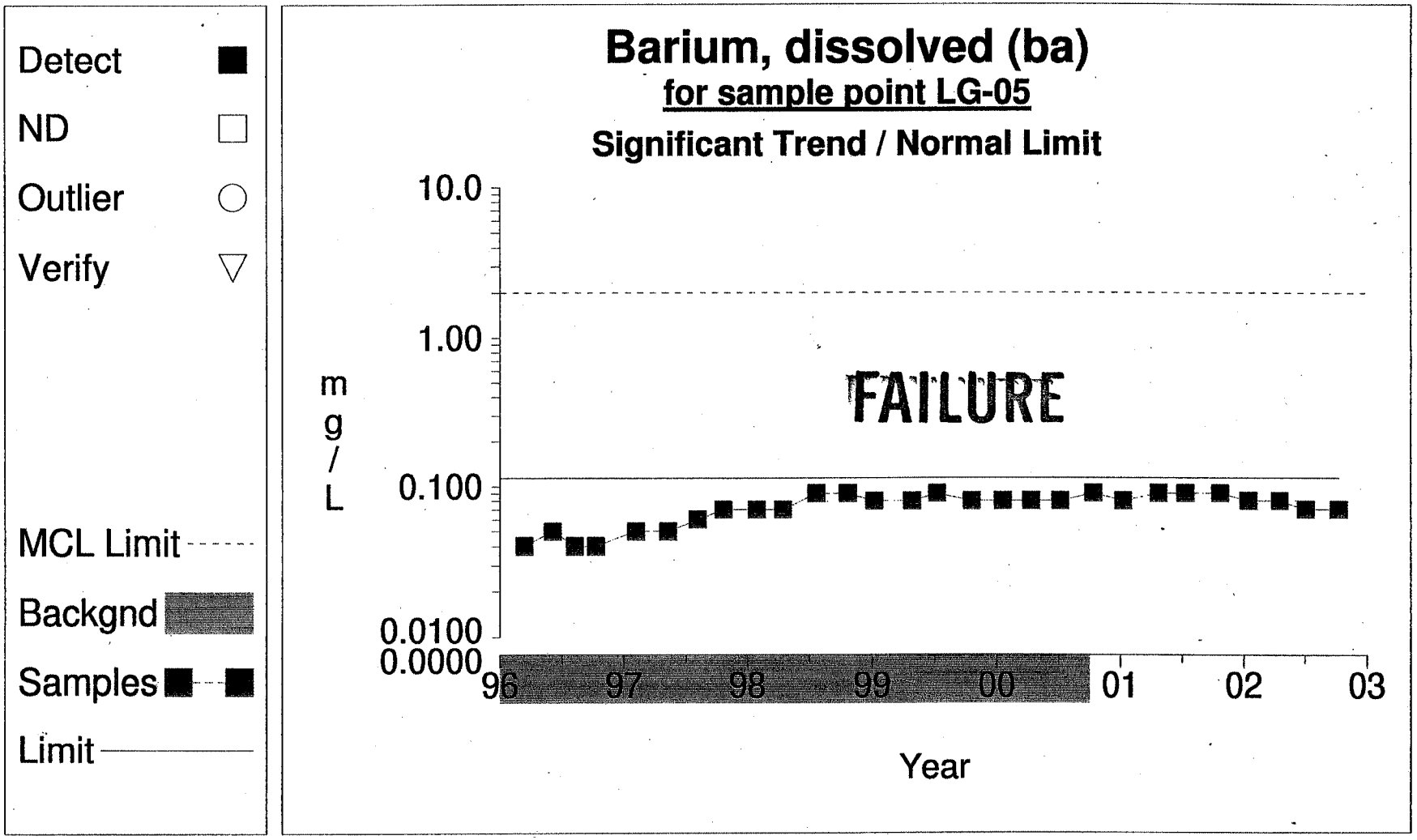
Table 1

Summary Statistics and Intermediate Computations for Intra-Well Prediction Limits

Constituent	Units	Well	N	Mean	SD	Factor	Limit
Mercury, dissolved (hg)	mg/L	LG-01	19				0.0001**
Mercury, dissolved (hg)	mg/L	LG-02	19				0.0001**
Mercury, dissolved (hg)	mg/L	LG-03	19				0.0001**
Mercury, dissolved (hg)	mg/L	LG-04	19				0.0001**
Mercury, dissolved (hg)	mg/L	LG-05	19				0.0001**
Nickel, dissolved (ni)	mg/L	LG-01	19				0.0100**
Nickel, dissolved (ni)	mg/L	LG-02	19				0.0100**
Nickel, dissolved (ni)	mg/L	LG-03	19				0.0200**
Nickel, dissolved (ni)	mg/L	LG-04	19				0.0100**
Nickel, dissolved (ni)	mg/L	LG-05	19	0.0116	0.0037	2.6174	0.0214
Nitrate-n (no3)	mg/L	LG-01	19	1.0621	0.4165	2.6174	2.1522
Nitrate-n (no3)	mg/L	LG-02	19	0.9984	0.2974	2.6174	1.7770
Nitrate-n (no3)	mg/L	LG-03	19	5.1895	2.2995	2.6174	11.2083
Nitrate-n (no3)	mg/L	LG-04	19	1.3058	0.2696	2.6174	2.0114
Nitrate-n (no3)	mg/L	LG-05	19	12.4737	5.2232	2.6174	26.1452
pH	std units	LG-01	18	6.6856	0.1337	2.9750	6.29 - 7.08
pH	std units	LG-02	18	7.2328	0.0960	2.9750	6.95 - 7.52
pH	std units	LG-03	18	6.5689	0.0853	2.9750	6.32 - 6.82
pH	std units	LG-04	18	6.4633	0.1250	2.9750	6.09 - 6.84
pH	std units	LG-05	18	6.5967	0.0924	2.9750	6.32 - 6.87
Selenium, dissolved (se)	mg/L	LG-01	19				0.0050**
Selenium, dissolved (se)	mg/L	LG-02	19				0.0020**
Selenium, dissolved (se)	mg/L	LG-03	19				0.0050**
Selenium, dissolved (se)	mg/L	LG-04	19				0.0020**
Selenium, dissolved (se)	mg/L	LG-05	19				0.0010**
Silver, dissolved (ag)	mg/L	LG-01	19				0.0030**
Silver, dissolved (ag)	mg/L	LG-02	19				0.0030**
Silver, dissolved (ag)	mg/L	LG-03	19				0.0030**
Silver, dissolved (ag)	mg/L	LG-04	19				0.0030**
Silver, dissolved (ag)	mg/L	LG-05	19				0.0030**
Specific conductance	umhos/cm	LG-01	19	385.5263	83.8467	2.6174	604.9906
Specific conductance	umhos/cm	LG-02	19	273.6842	57.4660	2.6174	424.0984
Specific conductance	umhos/cm	LG-03	19	764.2105	201.8062	2.6174	1292.4276
Specific conductance	umhos/cm	LG-04	19	356.8421	30.1943	2.6174	435.8741
Specific conductance	umhos/cm	LG-05	19	987.8947	155.4770	2.6174	1394.8476
Sulfate, total (so4)	mg/L	LG-01	19	23.0526	10.0359	2.6174	49.3211
Sulfate, total (so4)	mg/L	LG-02	19	11.6368	2.2838	2.6174	17.6146
Sulfate, total (so4)	mg/L	LG-03	19	76.7895	25.1453	2.6174	142.6060
Sulfate, total (so4)	mg/L	LG-04	19	18.8947	2.5797	2.6174	25.6470
Sulfate, total (so4)	mg/L	LG-05	19	46.2105	10.2501	2.6174	73.0396
Total organic carbon (toc)	mg/L	LG-01	19				3.0000**
Total organic carbon (toc)	mg/L	LG-02	19				3.2000**
Total organic carbon (toc)	mg/L	LG-03	19	3.2474	1.1983	2.6174	6.3839
Total organic carbon (toc)	mg/L	LG-04	19				2.8000**
Total organic carbon (toc)	mg/L	LG-05	19	4.4421	2.0974	2.6174	9.9320
Zinc, dissolved (zn)	mg/L	LG-01	19				0.0060**
Zinc, dissolved (zn)	mg/L	LG-02	19				0.0040**
Zinc, dissolved (zn)	mg/L	LG-03	19				0.0040**
Zinc, dissolved (zn)	mg/L	LG-04	19				0.0050**
Zinc, dissolved (zn)	mg/L	LG-05	19				0.0040**

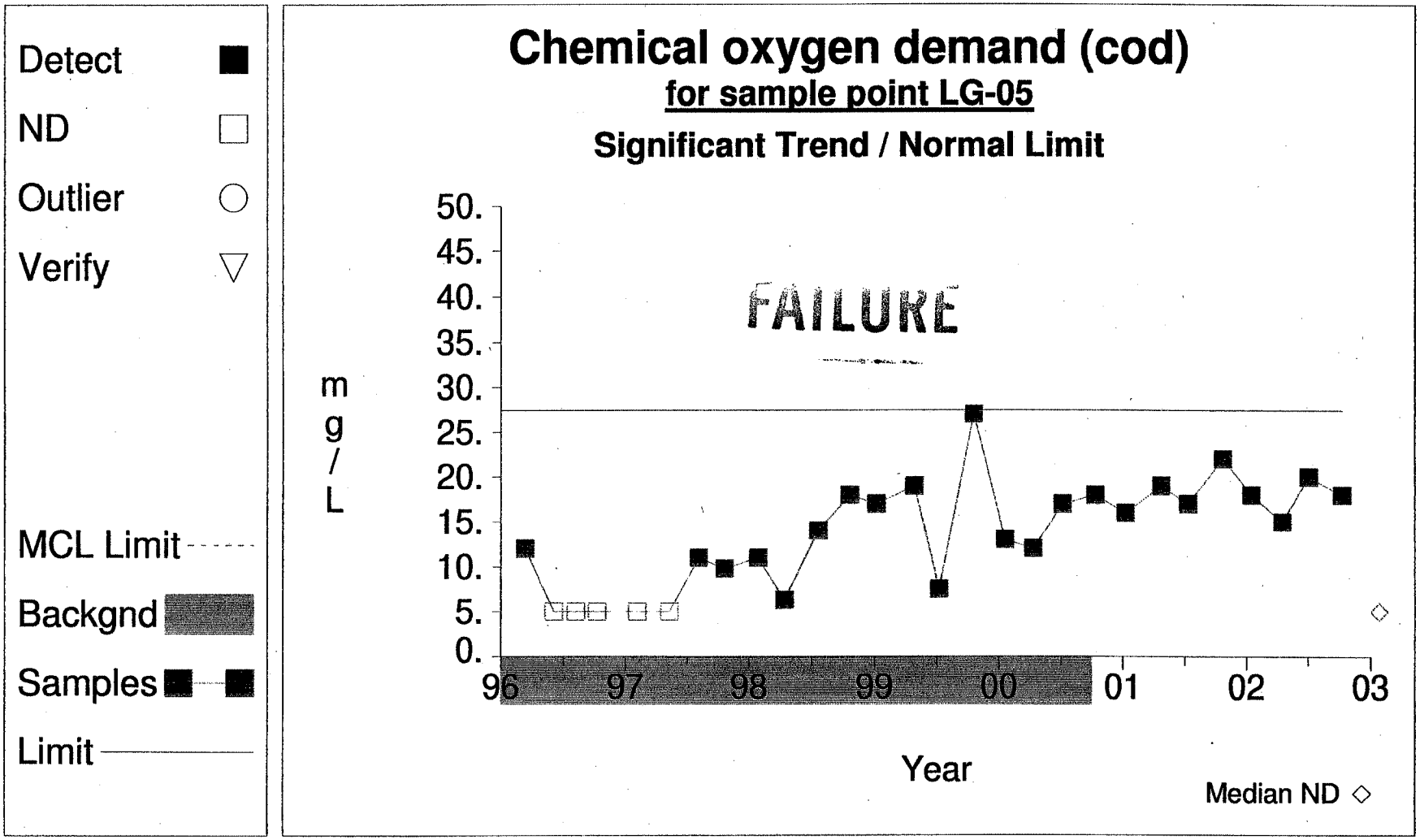
* - Insufficient Data
** - Detection Frequency < 25%
*** - Zero Variance

Intra-Well Prediction Limits



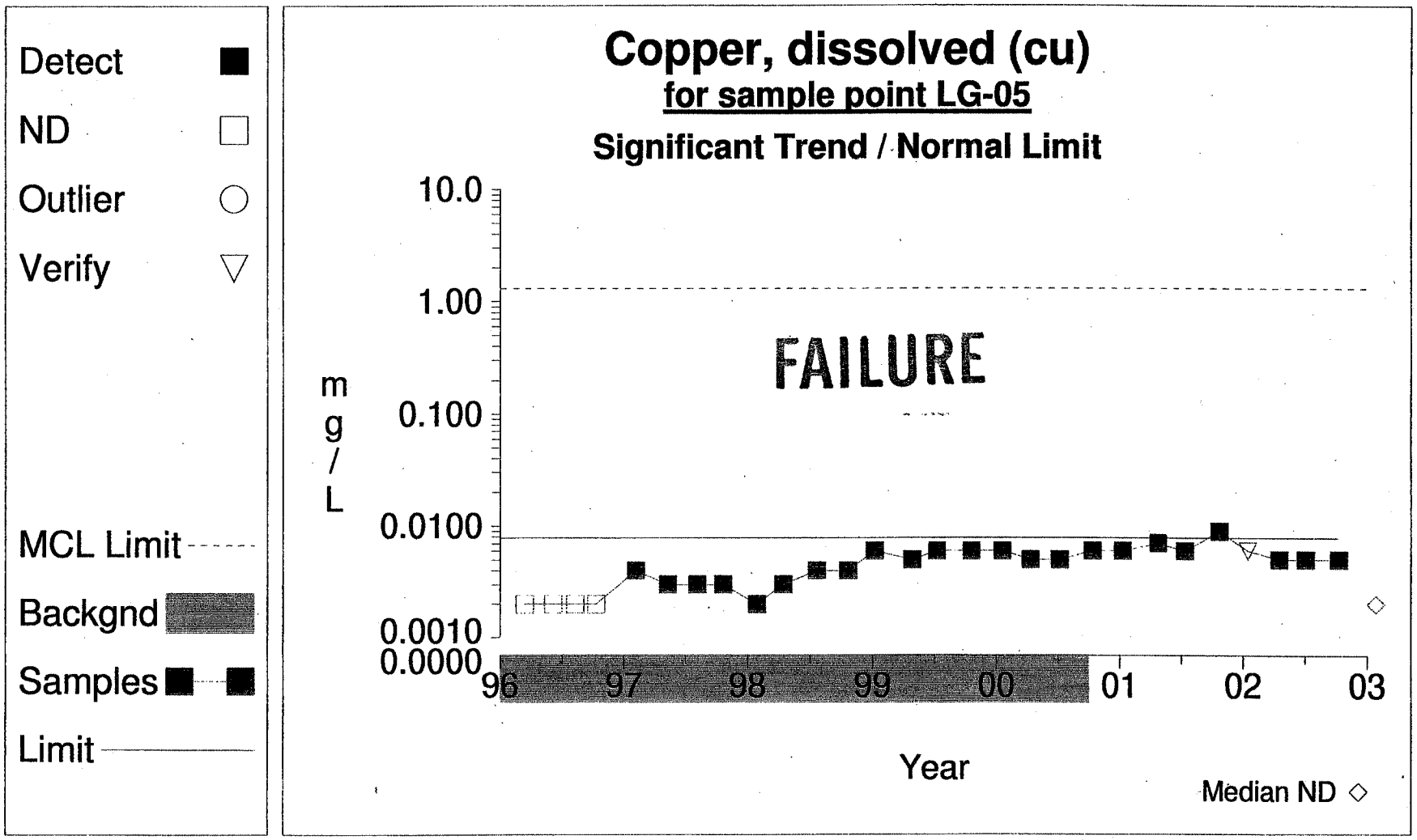
Graph 15

Intra-Well Prediction Limits



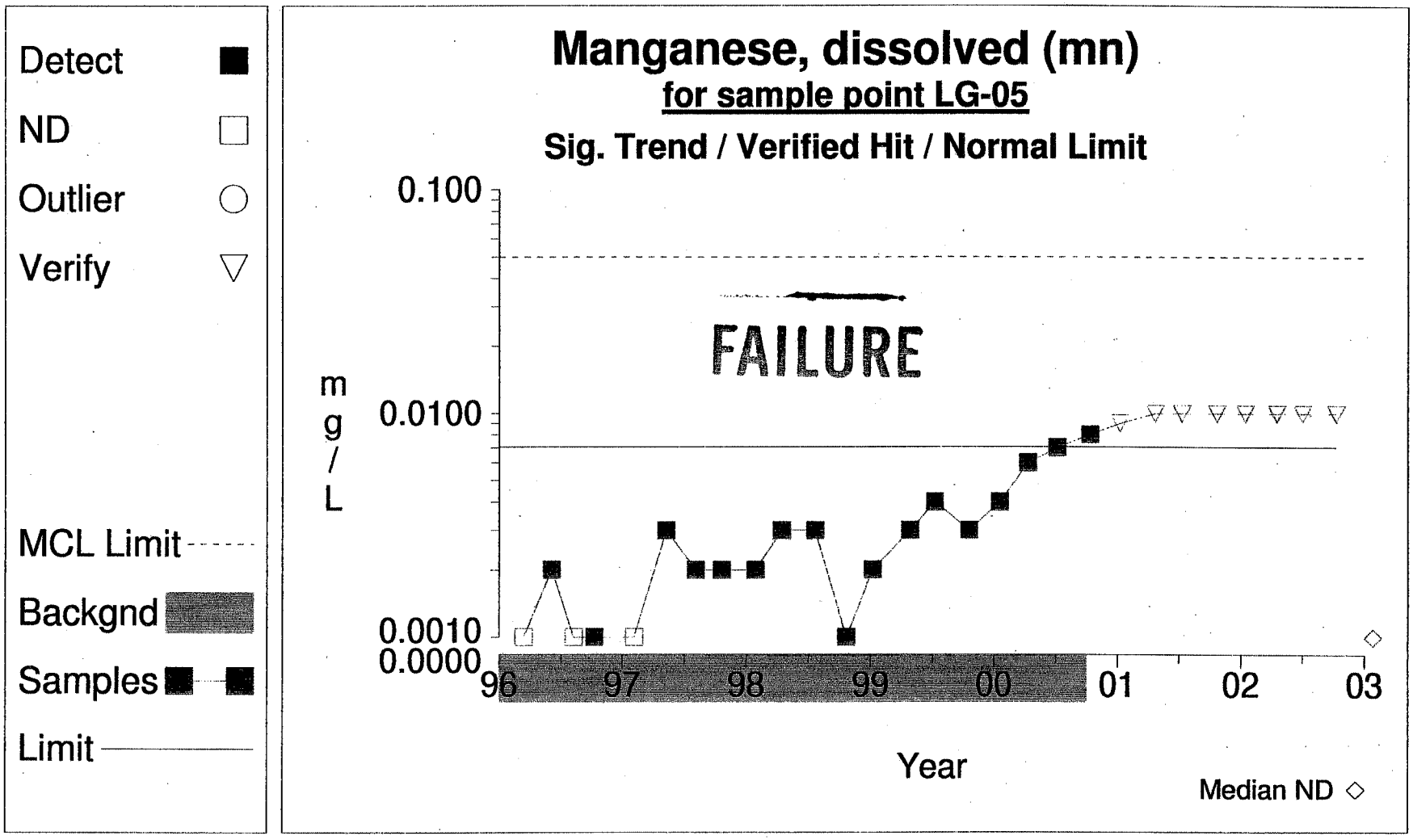
Graph 25

Intra-Well Prediction Limits



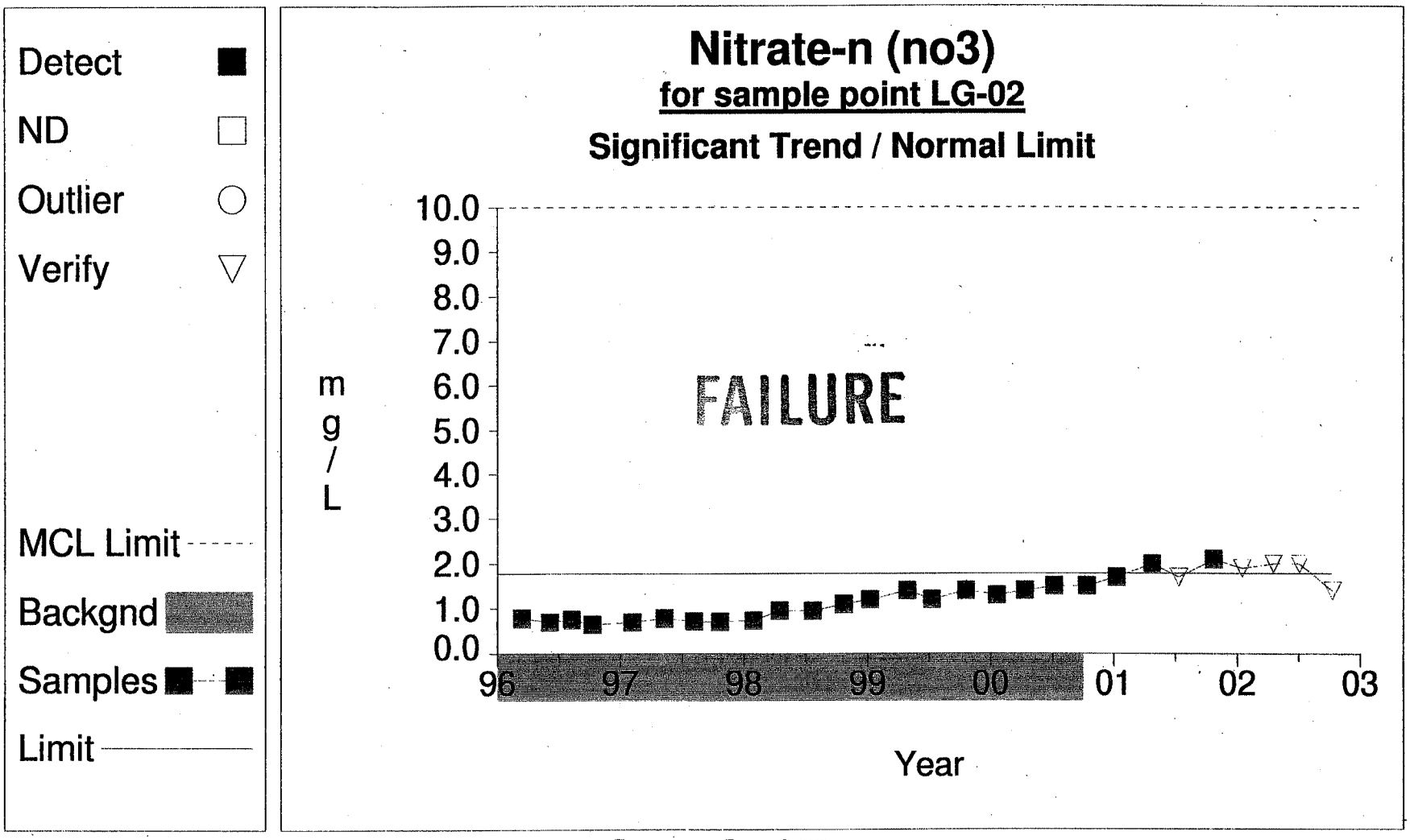
Graph 40

Intra-Well Prediction Limits



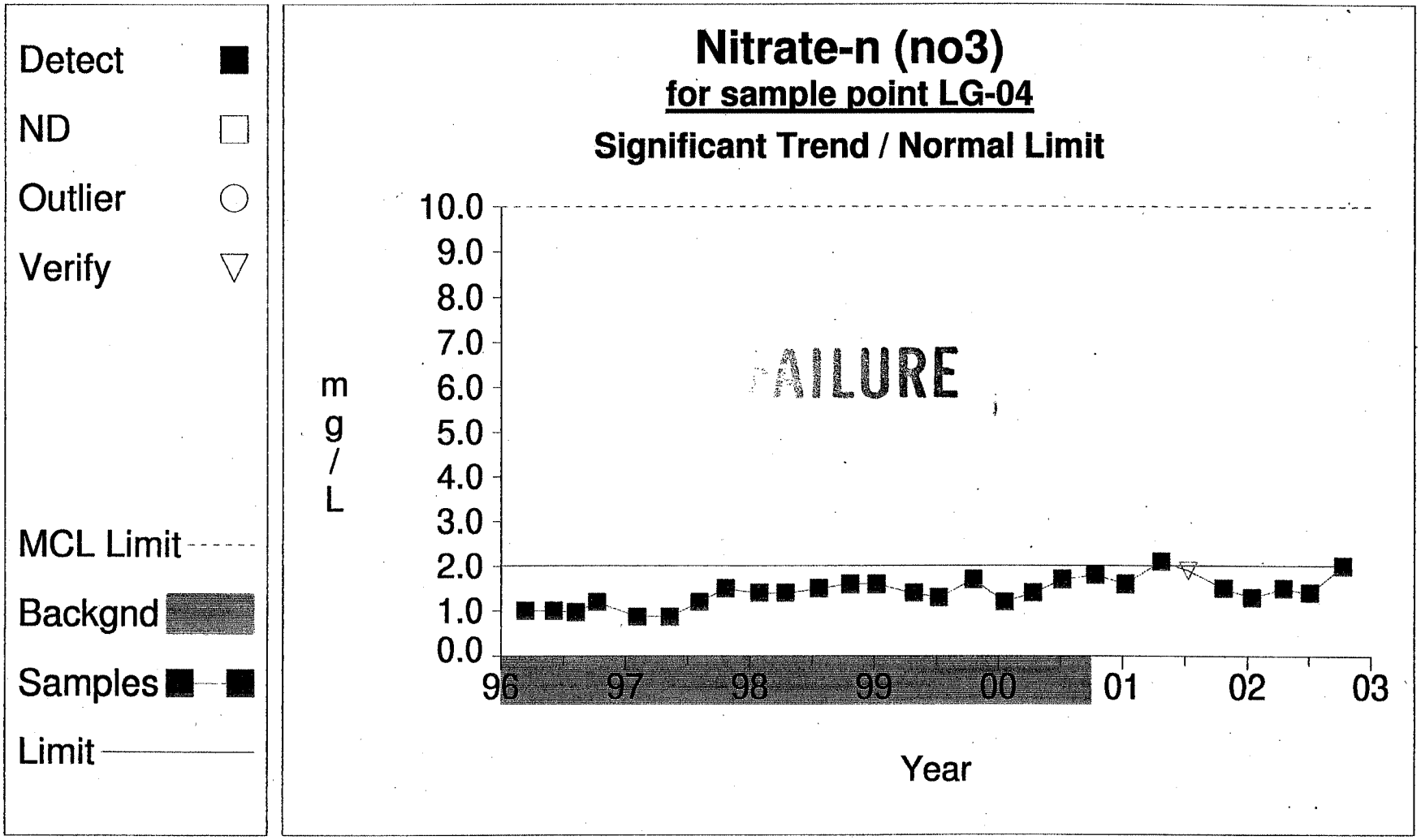
Graph 55

Intra-Well Prediction Limits



Graph 67

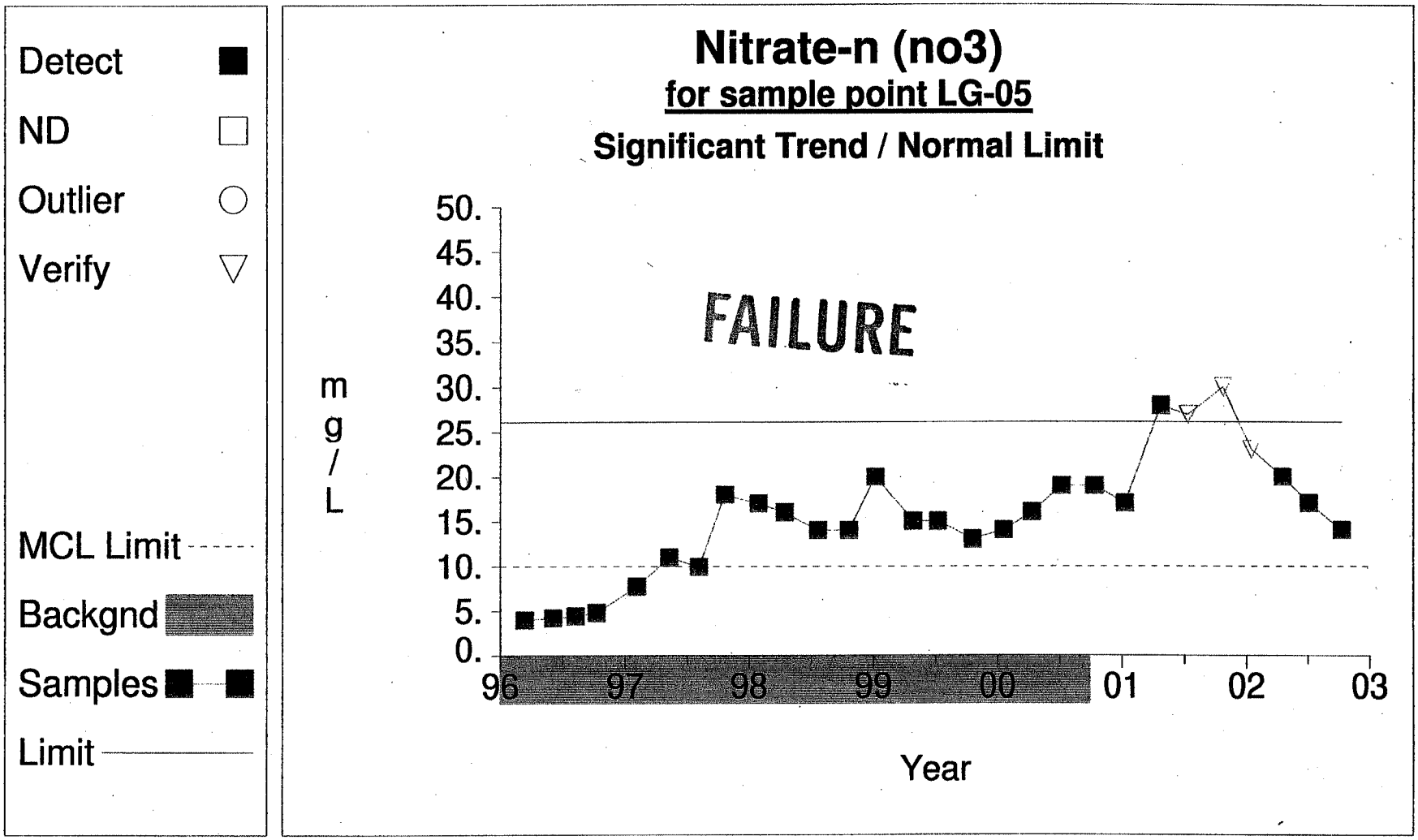
Intra-Well Prediction Limits



Graph 69

Analysis prepared on: 2/11/2003

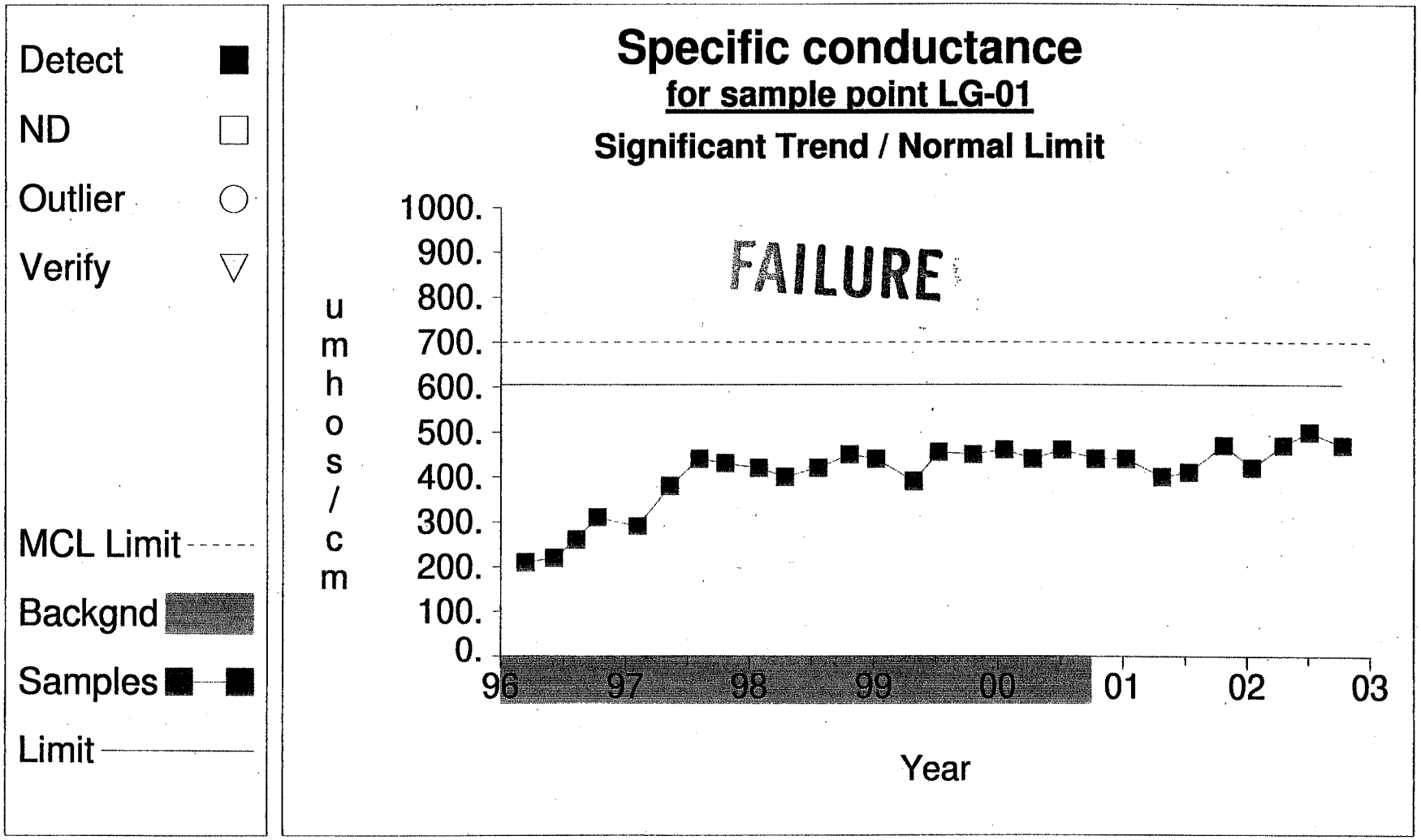
Intra-Well Prediction Limits



Graph 70

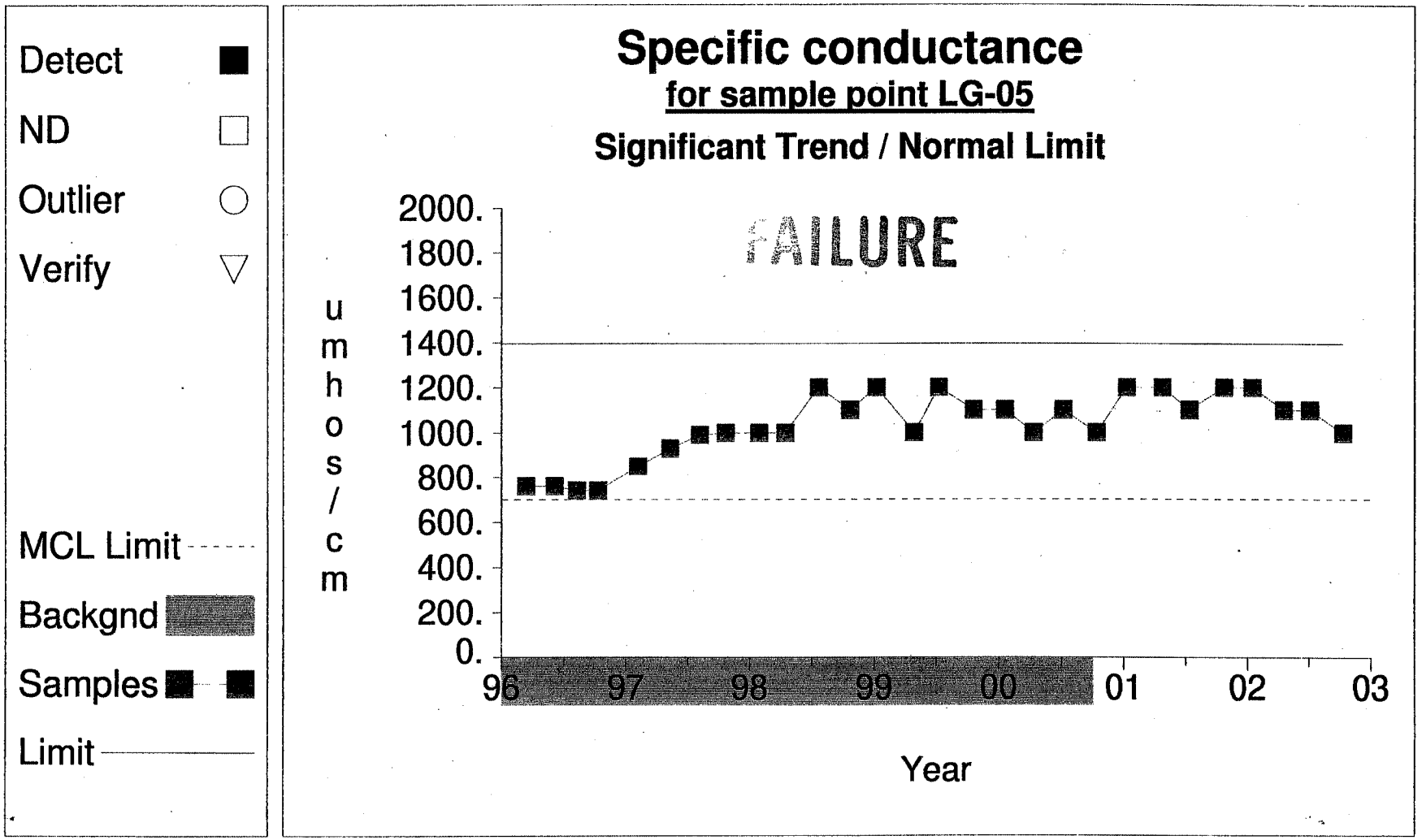
Prepared by: Snohomish County Solid Waste

Intra-Well Prediction Limits



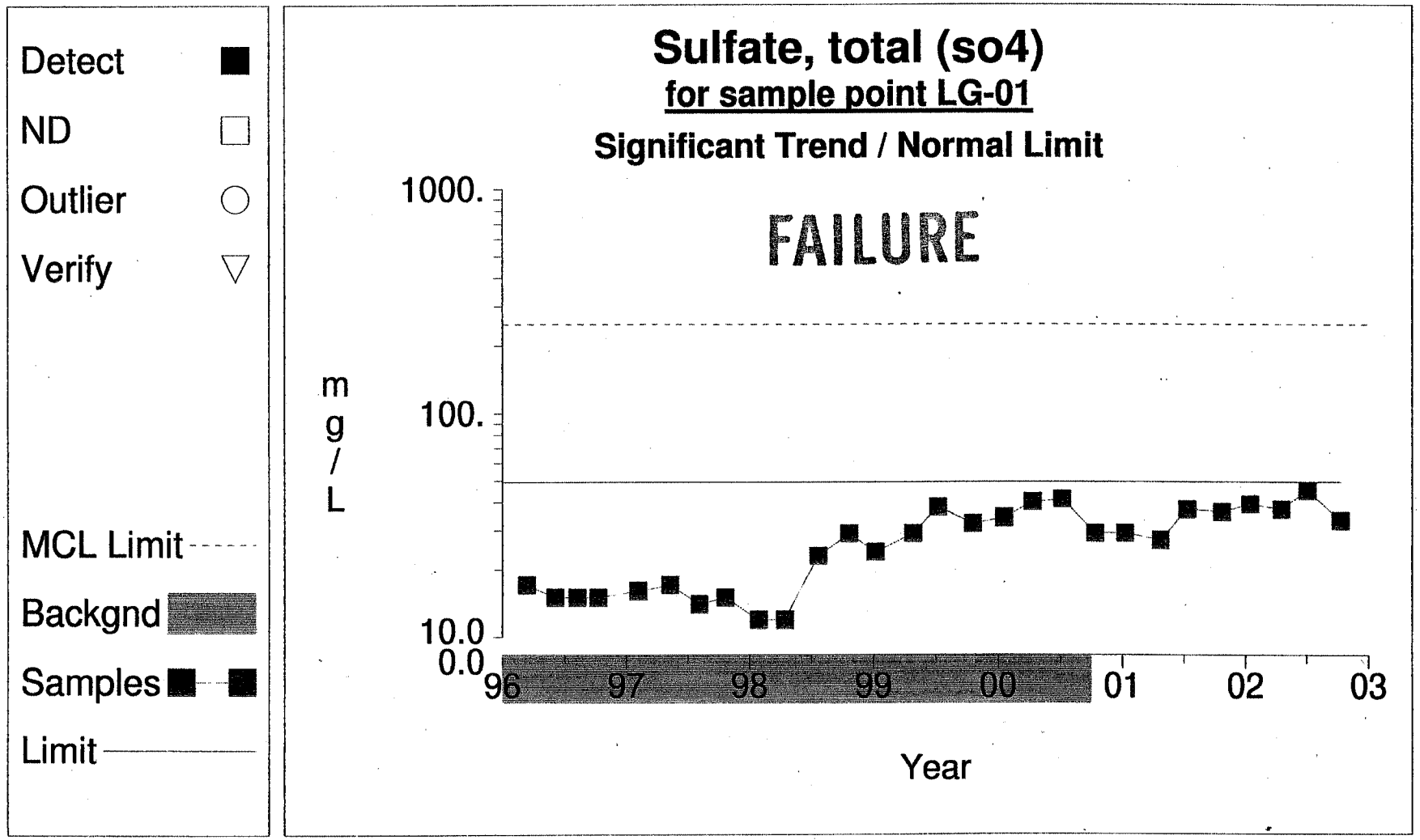
Graph 86

Intra-Well Prediction Limits



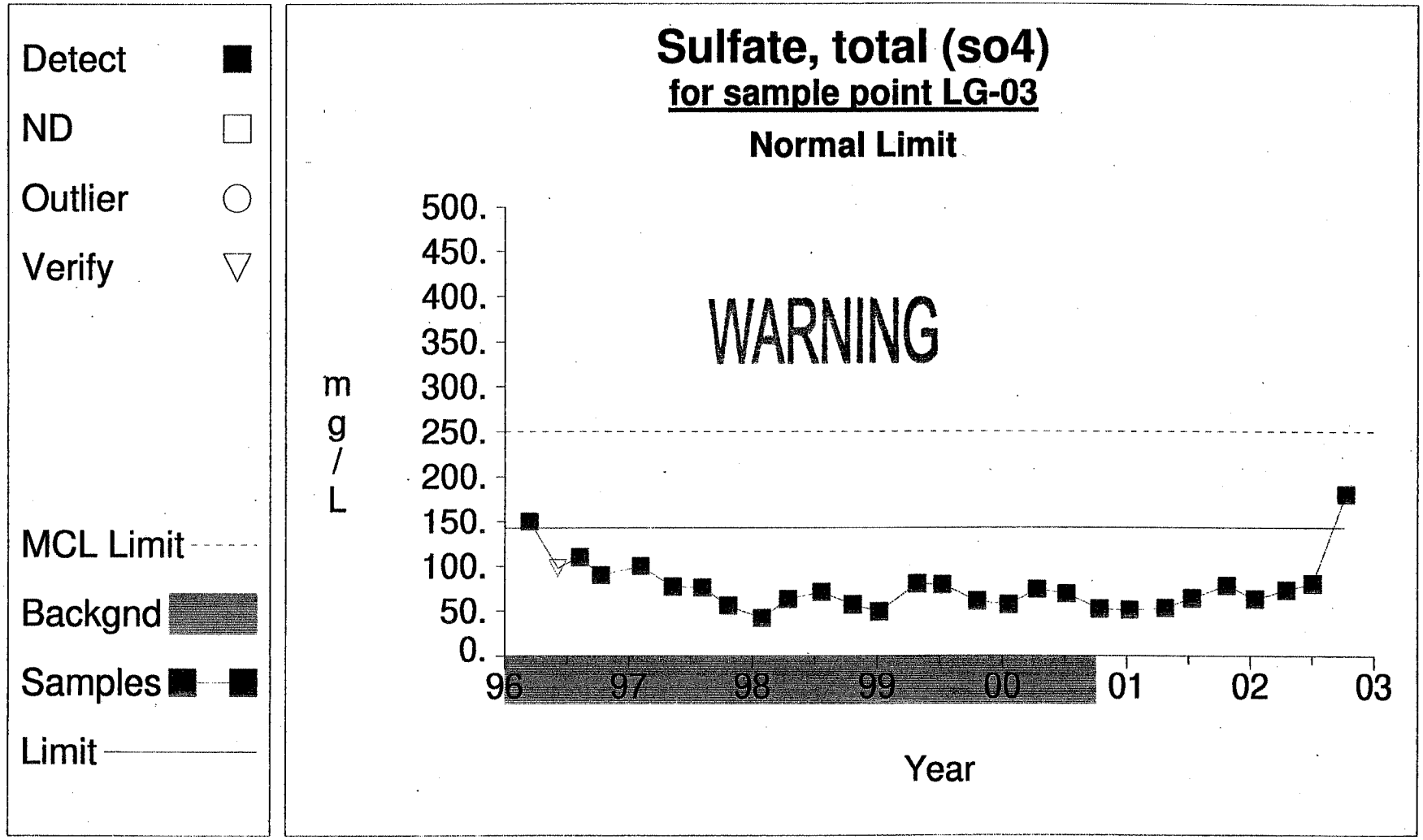
Graph 90

Intra-Well Prediction Limits



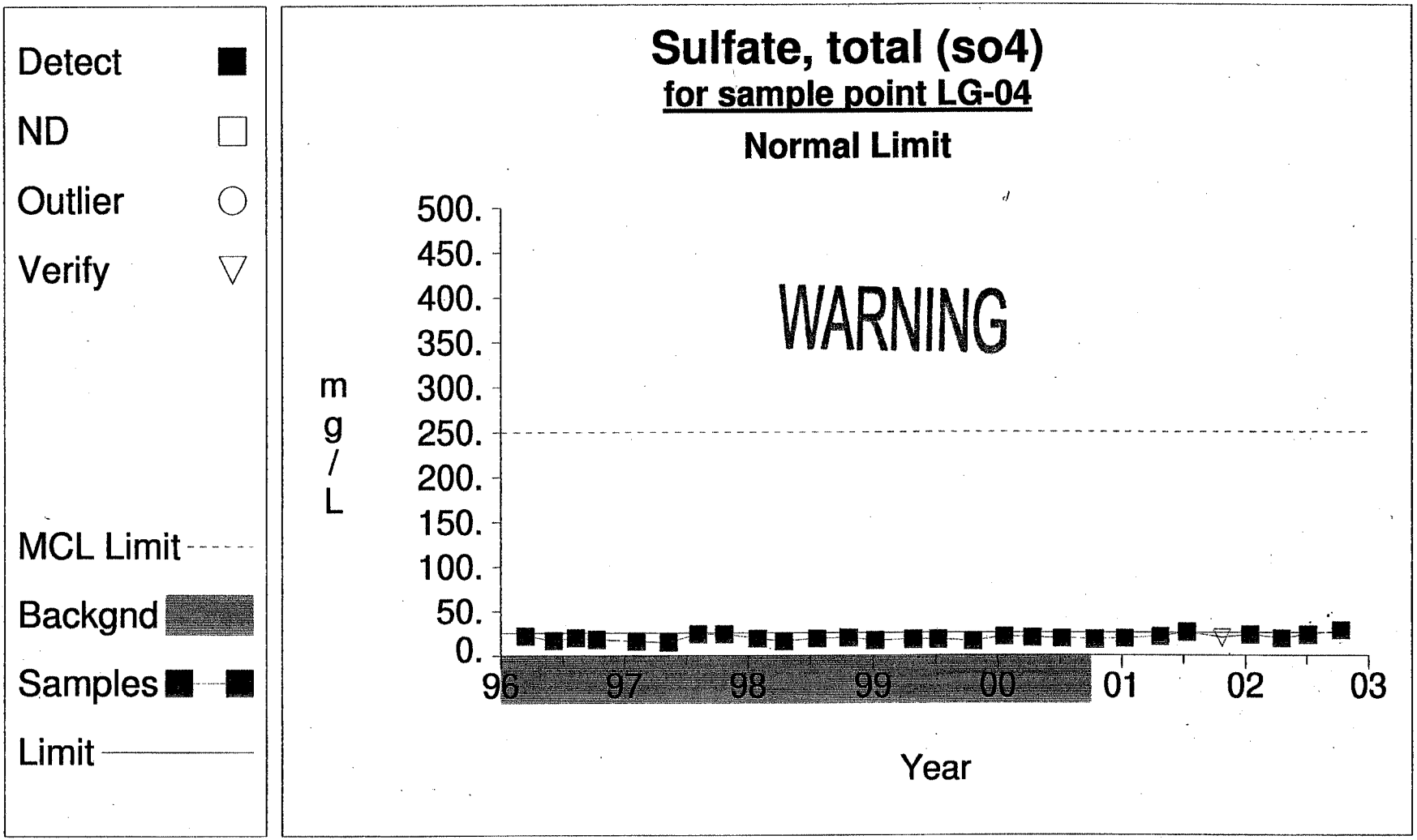
Graph 91

Intra-Well Prediction Limits



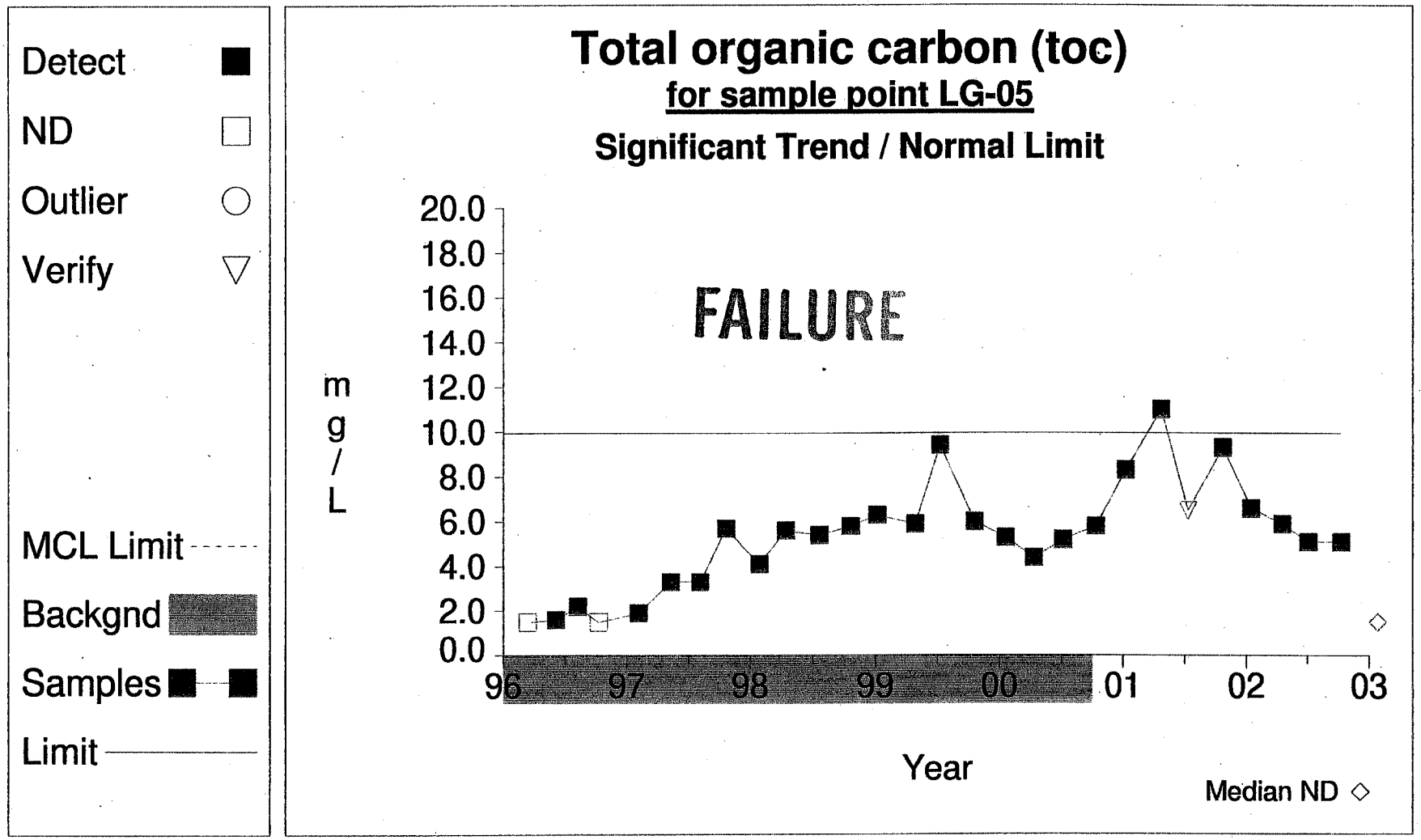
Graph 93

Intra-Well Prediction Limits



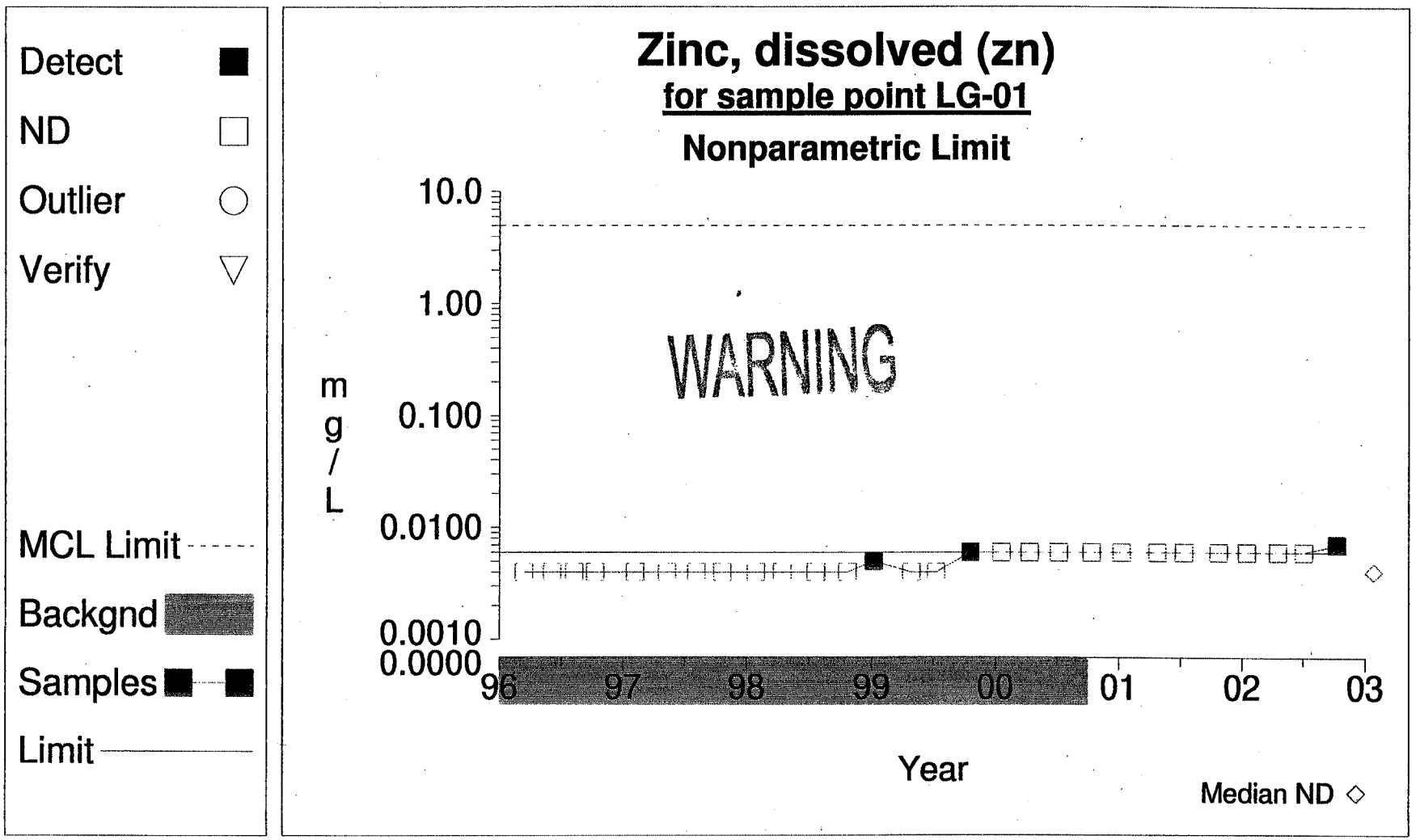
Graph 94

Intra-Well Prediction Limits



Graph 100

Intra-Well Prediction Limits



Graph 101

APPENDIX C

VOC HITS

Table 1

Historical Volatile Organic Compound Detections

Constituent	Units	Well	Date	Result	Limit
2-butanone	ug/L	LG-01	10/22/1998	110.0000	.0000
4-methyl-2-pentanone (mibk)	ug/L	LG-01	10/22/1998	28.0000	.0000
Acetone	ug/L	LG-01	12/27/1990	22.0000	.0000
Acetone	ug/L	LG-01	5/18/1992	4.0000	.0000
Acetone	ug/L	LG-01	10/21/1992	3.0000	.0000
Acetone	ug/L	LG-01	10/22/1998	20.0000	.0000
Benzene	ug/L	LG-01	7/08/1999	.9000	.0000
Carbon disulfide	ug/L	LG-01	5/09/1997	1.4000	.0000
Ethylbenzene	ug/L	LG-01	7/08/1999	1.4000	.0000
M,p-xylene	ug/L	LG-01	7/08/1999	1.7000	.0000
Methylene chloride	ug/L	LG-01	6/20/1991	1.0000	.0000
Methylene chloride	ug/L	LG-01	5/18/1992	3.0000	.0000
Methylene chloride	ug/L	LG-01	10/21/1992	4.0000	.0000
Methylene chloride	ug/L	LG-01	3/22/1994	1.3000	.0000
Methylene chloride	ug/L	LG-01	3/17/1995	1.6000	.0000
Methylene chloride	ug/L	LG-01	11/14/1995	1.1000	.0000
Toluene	ug/L	LG-01	10/22/1998	3.7000	.0000
Toluene	ug/L	LG-01	7/08/1999	3.2000	.0000
Toluene	ug/L	LG-01	7/08/1999	1.7000	.0000
2-butanone	ug/L	LG-02	10/22/1998	370.0000	.0000
4-methyl-2-pentanone (mibk)	ug/L	LG-02	10/22/1998	61.0000	.0000
Acetone	ug/L	LG-02	12/27/1990	18.0000	.0000
Acetone	ug/L	LG-02	10/22/1998	73.0000	.0000
Carbon disulfide	ug/L	LG-02	10/22/1998	2.3000	.0000
Methylene chloride	ug/L	LG-02	6/20/1991	3.0000	.0000
Methylene chloride	ug/L	LG-02	5/18/1992	3.0000	.0000
Methylene chloride	ug/L	LG-02	10/21/1992	3.0000	.0000
Methylene chloride	ug/L	LG-02	3/17/1995	1.3000	.0000
Methylene chloride	ug/L	LG-02	11/14/1995	1.2000	.0000
Toluene	ug/L	LG-02	7/08/1999	1.0000	.0000
Acetone	ug/L	LG-03	12/27/1990	13.0000	.0000
Acetone	ug/L	LG-03	5/18/1992	3.0000	.0000
Acetone	ug/L	LG-03	10/21/1992	4.0000	.0000
Carbon disulfide	ug/L	LG-03	10/21/1992	1.0000	.0000
Methylene chloride	ug/L	LG-03	5/18/1992	2.0000	.0000
Methylene chloride	ug/L	LG-03	10/21/1992	2.0000	.0000
Methylene chloride	ug/L	LG-03	9/13/1994	2.0000	.0000
Methylene chloride	ug/L	LG-03	10/25/1994	1.2000	1.0000
Methylene chloride	ug/L	LG-03	3/17/1995	1.1000	.0000
Methylene chloride	ug/L	LG-03	11/14/1995	1.1000	.0000
1,1,2-trichloroethene	ug/L	LG-04	10/25/1994	1.0000	3.0000
2-butanone	ug/L	LG-04	10/22/1998	15.0000	.0000
Acetone	ug/L	LG-04	12/17/1990	3.0000	.0000
Acetone	ug/L	LG-04	12/27/1990	59.0000	.0000
Carbon disulfide	ug/L	LG-04	8/05/1997	1.5000	.0000
Carbon disulfide	ug/L	LG-04	4/14/1998	2.0000	.0000
Carbon disulfide	ug/L	LG-04	10/22/1998	1.1000	.0000
Carbon disulfide	ug/L	LG-04	7/08/1999	4.8000	.0000
Methylene chloride	ug/L	LG-04	5/18/1992	2.0000	.0000
Methylene chloride	ug/L	LG-04	10/21/1992	3.0000	.0000
Methylene chloride	ug/L	LG-04	9/13/1994	1.7000	.0000
Methylene chloride	ug/L	LG-04	3/17/1995	1.2000	.0000
Methylene chloride	ug/L	LG-04	11/14/1995	1.2000	.0000
1,1,2-trichloroethene	ug/L	LG-05	10/25/1994	1.0000	3.0000
2-butanone	ug/L	LG-05	10/22/1998	14.0000	.0000
Carbon disulfide	ug/L	LG-05	10/21/1997	1.0000	.0000
Methylene chloride	ug/L	LG-05	10/21/1992	3.0000	.0000

Detections are shown for constituents selected in the VOC list and all selected wells
The Limit column refers to the laboratory reporting limit

Table 1

Historical Volatile Organic Compound Detections

Constituent	Units	Well	Date	Result	Limit
Methylene chloride	ug/L	LG-05	3/22/1994	1.7000	.0000
Methylene chloride	ug/L	LG-05	3/17/1995	1.3000	.0000
Methylene chloride	ug/L	LG-05	11/14/1995	1.3000	.0000
Styrene	ug/L	LG-05	11/26/1991	20.0000	.0000

Detections are shown for constituents selected in the VOC list and all selected wells
The Limit column refers to the laboratory reporting limit