N.A. WATER SYSTEMS

December 5, 2008 **This Submittal Delivered by Email Only**

Ref. No. 56007746 GE Church Rock Project

Mr. Mark Purcell
Remedial Project Manager
U.S. Environmental Protection Agency
1445 Ross Ave., Suite 1200 (6SF-LP)
Dallas, TX 75202-2733

Re: Revised Submittal
Estimated UCL95 Statistics and EPCs in Impacted Groundwater
UNC Church Rock Mill & Tailings Site, Church Rock, New Mexico

Dear Mr. Purcell:

N.A. Water Systems (N.A.WS) is pleased to provide this revised report on the calculation of statistics for the estimation of exposure point concentrations (EPCs) in impacted groundwater at UNC's Church Rock Mill & Tailings Site in Church Rock, New Mexico. This report includes descriptions of the methods used to classify sample data, the statistical methods, and the estimation results.

The post-mining/pre-tailings water is referred to as background water, and the post-mining/post-tailings water is referred to as impacted water.

Introduction

Statistical analyses for the task of estimating exposure point concentrations (EPCs) have been completed for impacted groundwater in each of the three hydrostratigraphic zones at the Church Rock Site. Statistics were calculated for the 21 contaminants of potential concern (COPCs) included in the Church Rock Sampling and Analysis Plan. The estimates were made using the current version of the EPA's ProUCL software (ver. 4.00.02) as prescribed by the EPA and reiterated in the teleconference on June 27, 2008. The teleconference participants included representatives of U.S. Environmental Protection Agency (EPA), New Mexico Environment Department (NMED), and N.A.WS. The methodology is summarized by the following steps:

1. Classify sample data for the purpose of forming logical groupings for EPC estimation. The criteria used for these classifications include the sampled

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hydrostratigraphic unit (i.e. the Southwest Alluvium (SWA), Zone 1, and Zone 3), determination of unequivocal impact from seepage fluids, representation of recent conditions (i.e. the most recent eight quarters of sampling), and location relative to administrative boundaries.

2. Use ProUCL software to estimate the upper confidence limits (UCL95) for the population means of COPC concentrations from sample groups determined to be representative of impacted groundwater quality.

3. Estimate EPCs in impacted groundwater for those COPCs for which valid UCL95 statistics have been estimated.

Classification of Samples

Identification of Samples Representative of Impacted Groundwater Quality

With respect to water quality, three exclusive classes of groundwater samples are germane to the estimation of EPCs. Those classes are post-mining/pre-tailings (background), post-mining/post-tailings (impacted), and other. For present purposes, the "other" class is meant to represent any samples that are not clearly representative of either background or impacted quality. These may include water whose quality is interpreted to be transitional or that is representative of pre-mining conditions.

Samples representative of background groundwater quality were identified for the SWA and Zone 1 in the license amendment request for changing the Groundwater Protection Standard for radium (N.A. Water Systems, February 2006, *Technical Analysis Report in Support of License Amendment Request for Changing the Method of Determining Exceedances of the Combined Radium Groundwater Protection Standard in Source Materials License SUA-1475 (TAC LU0092), Groundwater Corrective Action Program, Church Rock Site, Church Rock, New Mexico*, pp. 3-6). The same methods were used to identify samples from Zone 3 that are representative of background water quality (N.A. Water Systems, October 17, 2008, letter to Mark Purcell (EPA), *Calculation of Background Statistics with Comparison Values, UNC Church Rock Mill & Tailings Site, Church Rock, New Mexico*).

The methods used to identify wells having background water quality for the February 2006 and October 2008 submittals had as their essential criterion the absence of evidence of seepage impact. By extension, the same methods may be used to identify evidence of seepage impact. Samples where evidence of seepage impact was equivocal or clearly absent were excluded from the calculations presented in this report.

The data sets used in calculations made for this report are from the period July 2006 through April 2008 inclusive, which represents the most recent eight quarters of sampling available at the time of the calculations. This time frame was selected to be representative of recent conditions, while providing at least the minimum recommended number of samples to satisfy the requirements of the statistical methods. For this reason, the estimation of UCL95 statistics and EPCs extend only to the 21 current COPCs and do not include trace metals (plus iron) that had previously been dismissed as COPCs (EPA, *August 1988, Draft Final Remedial Investigation, United Nuclear Church Rock Site*). Table 1 lists wells interpreted as having samples representative of impacted groundwater during the most recent 8 quarters.

Grouping of Samples by Hydrostratigraphic Zone and by Administrative Area

The data sets used to calculate statistics were subdivided by hydrostratigraphic zone and by geographic location. The three hydrostratigraphic zones by which sample data were grouped are the SWA, Zone 1, and Zone 3. The geographic grouping resulted in the elimination from Zone 1 and Zone 3 datasets of sample data from wells within Section 2 of Township 16 North, Range 16 West. This discrimination of Section 2 data was based on two considerations. One consideration is that Section 2 encompasses the tailings disposal area, which will eventually be administered by the U.S Department of Energy (DOE). As such, groundwater exposure within Section 2 will be prohibited by DOE controls. The second consideration is that the more extreme effects of seepage impact evident in Zone 1 and Zone 3 wells proximal to the tailings disposal cells are not expected to migrate and occupy areas outside of Section 2. This judgment is based on the following conclusions:

1. The tailings cells are no longer a source of measurable quantities of seepage fluid (US Filter, January 19, 2004, *Rationale and Field Investigation Work Plan to Evaluate Recharge and Potential Cell Sourcing to the Zone 3 Plume, Church Rock Site, Gallup, New Mexico*).

2. Reductions of saturated thickness and diminishment of porosity and hydraulic conductivity (by geochemical reactions) will continue to reduce groundwater flux across the boundary of Sections 2 and 36 to less than the 0.5 gallons per minute estimated to have occurred in January 2005 (N.A. Water Systems, April 25, 2008, *Recommendations and Summary of Hydrogeologic Analysis, Evaluation of Groundwater Flow in Zone 3 for the Design of a Pumping System to Intercept Impacted Groundwater, United Nuclear Corporation's Church Rock Tailings Site, Gallup, New Mexico*).

3. Evidence from groundwater sampling indicates that water quality in Zone 1 Point of Compliance Wells has been improving since the third quarter of 1989 (N.A. Water Systems, February 2006, *Technical Analysis Report in Support of License Amendment Request for Changing the Method of Determining Exceedances of the Combined Radium Groundwater Protection Standard in Source Materials License SUA-1475 (TAC LU0092), Groundwater Corrective Action Program, Church Rock Site, Church Rock, New Mexico*; and N.A. Water Systems, January 2008, *Annual Review Report 2007 – Groundwater Corrective Action, Church Rock Site, Church Rock, New Mexico*).

Results

Basic Statistics and Upper Confidence Limits for Means

Tables 2 through 4 list summary and UCL95 statistics for all COPCs calculated from the impacted data sets from wells in the SWA, Zone 1, and Zone 3. The data sets include only primary samples (i.e. no QA/QC samples). The samples were collected over the most recent eight quarters (July 2006 through April 2008) of data presently available. Eight quarters were selected as a compromise between the objective of representing current (or recent) conditions and the objective of having sample populations of sufficient size to estimate meaningful statistics. Probability (normal) plots of each dataset are provided in Appendix B.

All of the statistics were calculated using ProUCL software (Singh et al., April 2007, *ProUCL Version 4.00.02 User Guide*, EPA/600/R-07/038). The UCL95 estimates were selected from values recommended by the ProUCL software. One exception was made for a recommended UCL statistic (for nitrate as nitrogen, NO3_as_N, in Zone 1, see Table 3) that exceeded the maximum detected value. Summary tables of the output of UCL95 estimates are provided in Appendix A. In cases where two alternative estimates of UCL95 statistics are provided by ProUCL, the higher value was selected and is listed in Tables 2 through 4, except in those cases where the software issued a warning that the higher value may be unreliable (typically because of the limitations of bootstrap methods with small sample sizes). In one case (manganese, Mn, in Zone 1, see Tables 3, A.2) ProUCL recommended three alternative UCL statistics. In this case the highest value was not selected, because it was based on an assumption that the population followed a log-normal distribution. Prior testing of a much larger background sample data set indicated that this distributional assumption is probably incorrect. The higher values were selected as conservative estimates, consistent with the use of these same statistics as estimators of exposure point concentrations (EPCs).

The numbers of distinct detected values were too few to calculate UCL95 estimates for a significant fraction of COPCs: nine in the southwest alluvium (SWA, Table 2), seven in Zone 1 (Table 3), and one in Zone 3 (Table 4). UCL95 statistics also could not be estimated for any of the trace metals not included among the analytes in the past eight quarters of sample analyses. Current COPCs lacking sufficient data to estimate UCL95 statistics are summarized by hydrostratigraphic zone in Table 5. Table 6 summarizes current COPCs having UCL95 estimates whose reliability may be suspect, according to warnings issued by ProUCL. Such warnings typically apply to datasets having four or fewer distinct detected values.

Discussion

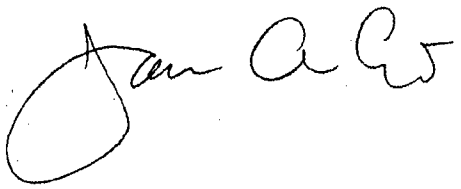
The constituents listed in Table 5 lack sufficient data (numbers of detections) to statistically quantify EPCs. The constituents listed in Table 6 have estimated UCL95 statistics that may not be sufficiently reliable to estimate EPCs. However, the constituents listed in Tables 5 and 6 either have not been detected in the past two years or have been detected infrequently and for the most part at concentrations below MCLs (or other applicable standards, if lacking MCLs). The exceptions are vanadium in Zone 1 (detected once at 0.2 mg/L), and vanadium in Zone 3 (detected four times at 0.2 mg/L). Therefore, the most of these constituents would be unlikely to present an unacceptable risk, even if there was a basis to quantify their EPC concentrations. Furthermore, with the few noted exceptions, these constituents would not be characterized as COPCs in their respective hydrostratigraphic zones if sampling data of the most recent two years were used to make such a determination.

Conclusion

This submittal provides estimates of UCL95 statistics for COPCs in impacted groundwater applicable to all areas in the SWA and to areas outside Section 2 in Zones 1 and 3. The estimated statistics provide a basis for estimating EPCs for those COPCs more likely to make a substantive contribution to quantifiable risk. Those COPCs for which UCL95 statistics cannot be reliably estimated were found, with few exceptions, to be unlikely to contribute substantively to quantifiable risk.

The UCL95 statistics provided in this submittal complement those submitted previously for background groundwater (N.A. Water Systems, October 17, 2008), which are bases for estimating EPCs in areas of the three hydrostratigraphic zones characterized as having background groundwater quality.

Very Truly Yours,



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Attachments

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Tables

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TABLE 1

Wells Having Samples Representative of Impacted Water Quality, July 2006 - April 2008

Southwest Alluvium	Zone 1	Zone 3
509 D (POC)	515 A	504 B
624	604 (POC)	517 (POC)
632 (POC)	614 (POC)	613 (POC)
801	EPA 5 (POC)	708 (POC)
802	EPA 7 (POC)	711 (POC)
803		717
808		719
EPA 23 (POC)		EPA 13
EPA 25		EPA 14
GW 1 (POC)		NBL 1
GW 2 (POC)		
GW 3 (POC)		

Notes:
POC = Point-of-Compliance Well.

TABLE 2

Summary Statistics for COPCs and Trace Metals in Southwest Alluvium Impacted Groundwater

Parameter	Units	Total Data	Percent Nondetect	Minimum Detected	Maximum Detected	Mean of Detected	Median of Detected	UCL95 of Mean
Al	mg/L	96	93.8%	0.1	0.3	0.167	0.15	**0.109**
As	mg/L	96	86.5%	0.001	0.01	0.00885	0.01	**0.00256**
Be	mg/L	96	100.0%	N/A	N/A	N/A	N/A	N/A
Cd	mg/L	96	100.0%	N/A	N/A	N/A	N/A	N/A
Co	mg/L	96	99.0%	0.01	0.01	N/A	N/A	N/A
Pb	mg/L	96	100.0%	N/A	N/A	N/A	N/A	N/A
Mn	mg/L	96	0.0%	0.03	5.4	1.865	1.83	**2.8**
Mo	mg/L	96	100.0%	N/A	N/A	N/A	N/A	N/A
Ni	mg/L	96	100.0%	N/A	N/A	N/A	N/A	N/A
Se	mg/L	96	99.0%	0.001	0.001	N/A	N/A	N/A
V	mg/L	96	100.0%	N/A	N/A	N/A	N/A	N/A
Cl	mg/L	96	0.0%	79	374	187.8	181	**199.6**
SO4	mg/L	96	0.0%	1510	4330	2745	2820	**2867**
NO3_as_N	mg/L	96	0.0%	0.3	160	65.08	76	**94.42**
U	mg/L	96	0.0%	0.0229	0.246	0.104	0.111	**0.128**
Chloroform	mg/L	96	49.0%	0.00061	0.0155	0.00479	0.00309	**0.00338**
Lab_TDS	mg/L	96	0.0%	3880	8250	6044	6245	**6250**
Rad-226	pCi/L	96	61.5%	0.1	1	0.435	0.4	**0.267**
Rad-228	pCi/L	96	77.1%	0.3	4.3	1.786	1.75	**0.86**
Rad_totl	pCi/L	96	57.3%	0.1	5.2	1.351	0.7	**0.828**
Th-230	pCi/L	96	89.6%	0.2	1.6	0.69	0.5	**0.29**
Pb-210	pCi/L	96	100.0%	N/A	N/A	N/A	N/A	N/A
Gross_Alpha	pCi/L	96	69.79%	1	2.4	1.317	1.2	**1.141**
Sb	mg/L	0	N/A	N/A	N/A	N/A	N/A	N/A
Ba	mg/L	0	N/A	N/A	N/A	N/A	N/A	N/A
Cr	mg/L	0	N/A	N/A	N/A	N/A	N/A	N/A
Cu	mg/L	0	N/A	N/A	N/A	N/A	N/A	N/A
Fe	mg/L	0	N/A	N/A	N/A	N/A	N/A	N/A
Hg	mg/L	0	N/A	N/A	N/A	N/A	N/A	N/A
Ag	mg/L	0	N/A	N/A	N/A	N/A	N/A	N/A
Tl	mg/L	0	N/A	N/A	N/A	N/A	N/A	N/A
Zn	mg/L	0	N/A	N/A	N/A	N/A	N/A	N/A

Notes:
N/A - insufficient data to make an estimate.
UCL95 statistics highlighted in yellow may be of questionable reliability.
Listed UCL statistics for Mn and NO3_as_N are at 97.5% confidence level

TABLE 3

Summary Statistics for COPCs and Trace Metals in Zone 1 Impacted Groundwater, Recent 8 Quarters 3rd Qtr. 2006 - 2nd Qtr. 2008, Excluding Samples from Section 2 Wells 0515 A, 0604, 0614

Parameter	Units	Total Data	Percent Nondetect	Minimum Detected	Maximum Detected	Mean of Detected	Median of Detected	UCL95 of Mean
Al	mg/L	16	56.3%	0.2	1.3	0.457	0.3	**0.44**
As	mg/L	16	75.0%	0.001	0.003	0.00175	0.0015	**0.00145**
Be	mg/L	16	100.0%	N/A	N/A	N/A	N/A	N/A
Cd	mg/L	16	100.0%	N/A	N/A	N/A	N/A	N/A
Co	mg/L	16	0.0%	0.02	0.06	0.0363	0.03	**0.0557**
Pb	mg/L	16	100.0%	N/A	N/A	N/A	N/A	N/A
Mn	mg/L	16	0.0%	0.95	2.96	1.656	1.47	**1.95**
Mo	mg/L	16	100.0%	N/A	N/A	N/A	N/A	N/A
Ni	mg/L	16	81.3%	0.05	0.06	0.0533	0.05	**0.0519**
Se	mg/L	16	93.8%	0.001	0.001	N/A	N/A	N/A
V	mg/L	16	93.8%	0.2	0.2	N/A	N/A	N/A
Cl	mg/L	16	0.0%	48	221	131.5	128.5	**214.3**
SO4	mg/L	16	0.0%	2960	4760	3778	3955	**4049**
NO3_as_N	mg/L	16	0.0%	16.2	200	80.5	72.75	**152***
U	mg/L	16	0.0%	0.0012	0.0022	0.00161	0.0015	**0.00174**
Chloroform	mg/L	16	87.5%	0.0006	0.00076	0.00068	0.00068	**0.00063873**
Lab_TDS	mg/L	16	0.0%	4620	7860	6208	6120	**6843**
Rad-226	pCi/L	16	18.8%	0.4	1.8	1.138	1.2	**1.213**
Rad-228	pCi/L	16	56.3%	1	4	2.286	1.9	**2.087**
Rad_totl	pCi/L	16	12.5%	0.6	5.2	2.2	1.6	**2.8**
Th-230	pCi/L	16	87.5%	0.6	0.7	0.65	0.65	**0.621**
Pb-210	pCi/L	16	100.0%	N/A	N/A	N/A	N/A	N/A
Gross_Alpha	pCi/L	16	18.8%	1.2	4.1	2.146	2	**2.319**
Sb	mg/L	0	N/A	N/A	N/A	N/A	N/A	N/A
Ba	mg/L	0	N/A	N/A	N/A	N/A	N/A	N/A
Cr	mg/L	0	N/A	N/A	N/A	N/A	N/A	N/A
Cu	mg/L	0	N/A	N/A	N/A	N/A	N/A	N/A
Fe	mg/L	0	N/A	N/A	N/A	N/A	N/A	N/A
Hg	mg/L	0	N/A	N/A	N/A	N/A	N/A	N/A
Ag	mg/L	0	N/A	N/A	N/A	N/A	N/A	N/A
Tl	mg/L	0	N/A	N/A	N/A	N/A	N/A	N/A
Zn	mg/L	0	N/A	N/A	N/A	N/A	N/A	N/A

Notes:

*95% Chebyshev (Mean, Sd) UCL chosen for NO3_as_N in lieu of ProUCL recommended UCL 99 statistic, which exceeded the maximum observed detection.

N/A - insufficient data to make an estimate.

UCL95 statistics highlighted in yellow may be of questionable reliability.

TABLE 4

Summary Statistics for COPCs and Trace Metals in Zone 3 Impacted Groundwater, Recent 8 Quarters 3rd Qtr. 2006 - 2nd Qtr. 2008, Exluding Samples from Section 2 Well 0613

Parameter	Units	Total Data	Percent Nondetect	Minimum Detected	Maximum Detected	Mean of Detected	Median of Detected	UCL95 of Mean
Al	mg/L	70	17.1%	0.1	163	16.14	2.45	**39.15**
As	mg/L	70	31.4%	0.001	2.5	0.206	0.025	**0.412**
Be	mg/L	70	87.1%	0.01	0.09	0.0589	0.06	**0.0202**
Cd	mg/L	70	77.1%	0.005	1	0.0713	0.0095	**0.0628**
Co	mg/L	70	0.0%	0.05	0.95	0.381	0.35	**0.439**
Pb	mg/L	70	100.0%	N/A	N/A	N/A	N/A	N/A
Mn	mg/L	70	0.0%	3.33	23.7	9.836	7.485	**10.89**
Mo	mg/L	70	54.3%	0.1	5	1.084	0.3	**0.739**
Ni	mg/L	70	0.0%	0.11	0.89	0.377	0.31	**0.489**
Se	mg/L	70	95.7%	0.001	0.01	0.00433	0.002	**0.0014**
V	mg/L	70	92.9%	0.1	0.2	0.18	0.2	**0.111**
Cl	mg/L	70	0.0%	14	98	43.66	37.5	**48.01**
SO4	mg/L	70	0.0%	2630	5260	3599	3545	**3717**
NO3_as_N	mg/L	70	61.4%	0.1	44.8	17.15	24	**16.09**
U	mg/L	70	0.0%	0.0011	0.138	0.0287	0.0219	**0.0431**
Chloroform	mg/L	70	81.4%	0.00093	0.00676	0.00441	0.00444	**0.00326**
Lab_TDS	mg/L	70	0.0%	3980	6680	5289	5290	**5441**
Rad-226	pCi/L	70	0.0%	2	27.6	9.823	7.9	**11.14**
Rad-228	pCi/L	70	0.0%	3.8	56.1	15.73	13.55	**17.84**
Rad_totl	pCi/L	70	0.0%	6.8	73.3	25.55	20.8	**29.14**
Th-230	pCi/L	70	91.4%	0.2	1.3	0.533	0.4	**0.259**
Pb-210	pCi/L	70	91.4%	1.8	8.1	4.883	4.9	**2.287**
Gross_Alpha	pCi/L	70	0.0%	2.4	35.2	12.62	10.55	**14.25**
Sb	mg/L	0	N/A	N/A	N/A	N/A	N/A	N/A
Ba	mg/L	0	N/A	N/A	N/A	N/A	N/A	N/A
Cr	mg/L	0	N/A	N/A	N/A	N/A	N/A	N/A
Cu	mg/L	0	N/A	N/A	N/A	N/A	N/A	N/A
Fe	mg/L	0	N/A	N/A	N/A	N/A	N/A	N/A
Hg	mg/L	0	N/A	N/A	N/A	N/A	N/A	N/A
Ag	mg/L	0	N/A	N/A	N/A	N/A	N/A	N/A
Tl	mg/L	0	N/A	N/A	N/A	N/A	N/A	N/A
Zn	mg/L	0	N/A	N/A	N/A	N/A	N/A	N/A

Notes:

N/A - insufficient data to make an estimate.

UCL95 statistics highlighted in yellow may be of questionable reliability.

Listed UCL statistics for Al, As, and NO3_as_N are at 97.5% confidence level

TABLE 5

COPCs Lacking Sufficient Data to Estimate UCL95 Statistics for Impacted Water Quality, July 2006 - April 2008

Southwest Alluvium	Zone 1	Zone 3
Be*	Be*	Pb*
Cd*	Cd*	
Co***	Pb*	
Pb*	Mo*	
Mo*	Se**	
Ni*	V	
Se**	Pb-210*	
V*		
Pb-210*		

Notes:
* no detected results in 8 quarters of sampling.
** one detected result at or below MCL in 8 quarters of sampling.
*** one detected result at or below New Mexico WQCC standard in 8 quarters of sampling.

TABLE 6

COPCs Having Estimated UCL95 Statistics of Questionable Reliability for Impacted Water Quality, July 2006 - April 2008

Southwest Alluvium	Zone 1	Zone 3
Al***	Ni** Chloroform* Th-230*	Se** V

Notes:

* 2 detected results at or below MCL or NRC compliance license standard in 8 quarters of sampling.

** 3 detected results at or below MCL or New Mexico WQCC standard in 8 quarters of sampling.

*** 6 detected results at or below New Mexico WQCC standard in 8 quarters of sampling.

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Appendix A

Summary Tables of Output from ProUCL for UCL95 Statistics

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TABLE A1

UCL95 Statistics for Southwest Alluvium Impacted Data Sets with Non-Detects

	Al	As	Be	Cd	Co	Pb	Mn	Mo	Ni	Se	V	Cl	SO4	NO3_as_N	U	Chloroform	Lab_TDS	Rad-226	Rad-228	Rad_totl	Th-230	Pb-210	Gross_Alpha
tal Number of Data	96	96	96	96	96	96	96	96	96	96	96	96	96	96	96	96	96	96	96	96	96	96	96
mber of Non-Detect Data	90	83	96	96	95	96	0	96	96	95	96	0	0	0	0	47	0	59	74	55	86	96	67
mber of Detected Data (or Distinct Obs. If zero ndetect)	6	13	0	0	1	0	79	0	0	1	0	72	80	75	76	49	82	37	22	41	10	0	29
nimum Detected	0.1	0.001			0.01		0.03			0.001		79	1510	0.3	0.0229	0.00061	3880	0.1	0.3	0.1	0.2		1
ximum Detected	0.3	0.01			0.01		5.4			0.001		374	4330	160	0.246	0.0155	8250	1	4.3	5.2	1.6		2.4
rcent Non-Detects	93.75%	86.46%	100.0%	100.0%	99.0%	100.0%	0.00%	100.0%	100.0%	99.00%	100.0%	0.0%	0.0%	0.00%	0.00%	48.96%	0.0%	61.46%	77.08%	57.29%	89.58%	100.0%	69.79%
nimum Non-detect	0.1	0.001	0.01	0.005	0.01	0.05		0.01	0.05	0.001	0.1					0.0005		0.001	0.04	0.2	0.2	1	0.9
ximum Non-detect	0.1	0.001	0.01	0.005	0.01	0.05		0.01	0.05	0.001	0.1					0.001		0.2	1	0.2	0.2	1	1
an of Detected Data	0.167	0.00885					1.865					187.8	2745	65.08	0.104	0.00479	6044	0.435	1.786	1.351	0.69		1.317
dian of Detected Data	0.15	0.01					1.83					181	2820	76	0.111	0.00309	6245	0.4	1.75	0.7	0.5		1.2
riance of Detected Data	0.00667	0.000006141					2.151					4459	521381	2118	0.00299	1.5975E-05	1483184	0.0596	1.269	1.673	0.257		0.131
) of Detected Data	0.0816	0.00248					1.467					66.78	722.1	46.03	0.0546	0.004	1218	0.244	1.126	1.293	0.507		0.363
/ of Detected Data	0.49	0.28					0.787					0.356	0.263	0.707	0.525	0.834	0.202	0.561	0.631	0.957	0.734		0.275
ewness of Detected Data	0.86	-3.05					0.696					0.78	0.05	-0.0574	0.632	1.28	-0.00205	0.536	0.449	1.12	1.09		1.52
an of Log-Transformed Detected Data	-1.888	-4.833					0.0407					5.172	7.881	3.523	-2.427	-5.686	8.686	-1.019	0.316	-0.208	-0.607		0.245
) of Log-Transformed Detected Data	0.477	0.629					1.414					0.364	0.275	1.569	0.619	0.881	0.208	0.67	0.829	1.085	0.729		0.244
scernable Distribution (0.05) of Detected Data	normal	none					none					gamma	none	none	none	none	none	normal	normal	none	gamma		none
plan-Meier (KM) Method																							
an	0.104	0.00206														0.00275		0.229	0.693	0.634	0.251		1.096
)	0.0247	2.82E-03														0.00351		0.221	0.799	1.039	0.216		0.244
andard Error of Mean	0.00276	3.00E-04														0.00036246		0.0229	0.0866	0.107	0.0232		0.0254
5% KM (t) UCL	0.109	0.00256														0.00335		0.267	0.837	0.813	0.29		1.138
5% KM (z) UCL	0.109	0.00256														0.00334		0.267	0.835	0.811	0.289		1.138
5% KM (BCA) UCL	N/A	0.00908														0.00338		0.272	0.895	0.828	0.501		1.143
5% KM (Percentile Bootstrap) UCL	N/A	0.00905														0.00338		0.267	0.86	0.828	0.439		1.141
5% KM (Chebyshev) UCL	0.116	0.00337														0.00433		0.329	1.07	1.102	0.352		1.206
7.5% KM (Chebyshev) UCL	0.121	0.00394														0.00501		0.372	1.234	1.305	0.396		1.254
9% KM (Chebyshev) UCL	0.132	0.00505														0.00635		0.457	1.555	1.703	0.482		1.348
tasets without Nondetects																							
udent's-t UCL							2.113					199.1	2867	72.88	0.113		6250						
% UCLs (Adjusted for Skewness)																							
5% Adjusted-CLT UCL							2.122					199.6	2866	72.78	0.114		6248						
5% Modified-t UCL							2.115					199.2	2867	72.88	0.113		6250						
n-Parametric UCLs																							
5% CLT UCL							2.111					199	2866	72.81	0.113		6248						
5% Jackknife UCL							2.113					199.1	2867	72.88	0.113		6250						
5% Standard Bootstrap UCL							2.106					198.9	2867	72.55	0.113		6246						
5% Bootstrap-t UCL							2.121					199.9	2864	73.19	0.113		6252						
5% Hall's Bootstrap UCL							2.12					199.9	2870	72.41	0.114		6257						
5% Percentile Bootstrap UCL							2.104					198.9	2866	72.69	0.114		6250						
5% BCA Bootstrap UCL							2.129					199.5	2862	72.77	0.114		6244						
% Chebyshev(Mean, Sd) UCL							2.517					217.5	3066	85.56	0.128		6586						
.5% Chebyshev(Mean, Sd) UCL							2.8					230.3	3205	94.42	0.139		6820						
% Chebyshev(Mean, Sd) UCL							3.354					255.6	3478	111.8	0.16		7281						
tential UCL to Use																							
5% KM (t) UCL	0.109	0.00256														0.00335		0.267	0.837		0.29		1.138
5% KM (z) UCL																							
5% KM (BCA) UCL																				0.828			
5% KM (Percentile Bootstrap) UCL		0.00905														0.00338		0.267	0.86				1.141
5% KM (Chebyshev) UCL																							
7.5% KM (Chebyshev) UCL																							
9% KM (Chebyshev) UCL																							
5% Student's-t UCL													2867				6250						
5% Modified-t UCL													2867				6250						
% Chebyshev(Mean, Sd) UCL															0.128								
.5% Chebyshev(Mean, Sd) UCL							2.8							94.42									
% Approximate Gamma UCL												199.6											
tes	2	5	4	4	3	4	6	4	4	3	4			6		1		1	1			4	1

tes:

Data have multiple DLs - Use of KM Method is recommended.

Warning: There are only 3 Distinct Detected Values in this data set.

The number of detected data may not be adequate enough to perform GOF tests, bootstrap, and ROS methods.

Warning: Only one distinct data value was detected! It is suggested to use alternative site specific values

determined by the Project Team to estimate environmental parameters (e.g., EPC, BTV).

Warning: All observations are Non-Detects (NDs), therefore all statistics and estimates should also be NDs!

The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).

Warning: There are only 4 Distinct Detected Values in this data. It should be noted that bootstrap calculations may not be reliable enough to draw conclusions.

Potential UCL to use is at 97.6% confidence level

TABLE A2

UCL95 Statistics for Zone 1 Impacted Data Sets with Non-Detects

	Al	As	Be	Cd	Co	Pb	Mn	Mo	Ni	Se	V	Cl	SO4	NO3_as_N	U	Chloroform	Lab_TDS	Rad-226	Rad-228	Rad_totl	Th-230	Pb-210	Gross_Alpha
tal Number of Data	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16
mber of Non-Detect Data	9	12	16	16	0	16	0	16	13	15	15	0	0	4	0	14	0	3	8	2	14	16	3
mber of Detected Data (or Distinct Obs. If zero ndetect)	7	4	0	0	4	0	15	0	3	1	1	15	16	12	8	2	15	13	8	14	2	0	13
nimum Detected	0.2	0.001			0.02		0.95		0.05	0.001	0.2	48	2960	16.2	0.0012	0.0006	4620	0.4	1	0.6	0.6		1.2
ximum Detected	1.3	0.003			0.06		2.96		0.06	0.001	0.2	221	4760	200	0.0022	0.00076	7860	1.8	4	5.2	0.7		4.1
rcent Non-Detects	56.25%	75.00%	100.0%	100.0%	0.00%	100.0%	0.00%	100.0%	81.25%	93.75%	93.8%	0.0%	0.0%	0.00%	0.00%	87.50%	0.0%	18.75%	50.00%	12.50%	87.50%	100.0%	18.75%
nimum Non-detect	0.1	0.001	0.01	0.005		0.05		0.1	0.05	0.001	0.1					0.0005		0.2	1	0.2	0.2	1	1
ximum Non-detect	0.1	0.001	0.01	0.005		0.05		0.1	0.05	0.001	0.1					0.001		0.2	1	0.2	0.2	1	1
an of Detected Data	0.457	0.00175			0.0363		1.656		0.0533			131.5	3778	80.5	0.00161	0.00068	6208	1.138	2.275	2.357	0.65		2.146
dian of Detected Data	0.3	0.0015			0.03		1.47		0.05			128.5	3955	72.75	0.0015	0.00068	6120	1.2	2.05	1.85	0.65		2
riance of Detected Data	0.15	9.17E-07			0.000318		0.436		3.33E-05			5780	382536	4300	9E-08	1.28E-08	2099270	0.136	1.171	2.133	0.005		0.549
of Detected Data	0.387	0.000957			0.0178		0.66		0.00577			76.02	618.5	65.57	0.0003	0.00011314	1449	0.369	1.082	1.461	0.0707		0.741
of Detected Data	0.846	0.547			0.492		0.399		0.108			0.578	0.164	0.815	0.187	0.166	0.233	0.324	0.476	0.62	0.109		0.345
ewness of Detected Data	2.25	0.86			0.33		0.649		1.73			0.02	0.02	0.259	0.948	N/A	0.0162	-0.491	0.718	0.75	N/A		1.60
an of Log-Transformed Detected Data	-0.996	-6.46			-3.436		0.433		-2.935			4.69	8.224	3.946	-6.449	-7.3	8.707	0.0661	0.723	0.668	-0.434		0.716
of Log-Transformed Detected Data	0.648	0.543			0.506		0.389		0.105			0.656	0.166	1.037	0.178	0.167	0.237	0.402	0.479	0.658	0.109		0.311
scernable Distribution (0.05) of Detected Data	gamma	normal			none		lognormal		none			none	normal	none	normal	none	none	normal	normal	gamma	none		normal
plan-Meier (KM) Method																							
an	0.313	0.00119							0.0506							0.00061143		1	1.638	2.138	0.606		1.969
	0.269	5.27E-04							0.00242							4.1206E-05		0.43	0.958	1.439	0.0242		0.741
ndard Error of Mean	0.0726	1.52E-04							7.41E-04							1.5575E-05		0.112	0.256	0.373	0.00856		0.193
5% KM (t) UCL	0.44	0.00145							0.0519							0.00063873		1.196	2.087	2.792	0.621		2.307
5% KM (z) UCL	0.432	0.00144							0.0518							0.00063705		1.184	2.059	2.752	0.62		2.286
5% KM (BCA) UCL	0.469	N/A							N/A							0.00076		1.238	2.388	2.813	N/A		2.394
5% KM (Percentile Bootstrap) UCL	0.45	N/A							N/A							N/A		1.213	2.256	2.8	N/A		2.319
5% KM (Chebyshev) UCL	0.629	0.00185							0.0539							0.00067932		1.488	2.754	3.765	0.644		2.809
7.5% KM (Chebyshev) UCL	0.766	0.00214							0.0553							0.00070869		1.699	3.237	4.469	0.66		3.172
9% KM (Chebyshev) UCL	1.035	0.0027							0.058							0.00076639		2.114	4.186	5.852	0.691		3.886
tasets without Nondetects																							
dent's-t UCL					0.0441		1.946					164.8	4049	109.2	0.00174		6843						
% UCLs (Adjusted for Skewness)																							
5% Adjusted-CLT UCL					0.044		1.956					162.9	4033	108.6	0.00175		6805						
5% Modified-t UCL					0.0441		1.95					164.8	4049	109.4	0.00174		6843						
n-Parametric UCLs																							
5% CLT UCL					0.0436		1.928					162.8	4032	107.5	0.00173		6804						
5% Jackknife UCL					0.0441		1.946					164.8	4049	109.2	0.00174		6843						
5% Standard Bootstrap UCL					0.0432		1.92					161.1	4024	106.7	0.00172		6780						
5% Bootstrap-t UCL					0.0445		1.991					162.8	4043	110.7	0.00177		6828						
5% Hall's Bootstrap UCL					0.0431		1.923					160	4008	106.9	0.00175		6735						
5% Percentile Bootstrap UCL					0.0438		1.917					161.1	4018	107	0.00173		6760						
5% BCA Bootstrap UCL					0.0431		1.954					161.3	4018	109.1	0.00174		6764						
% Chebyshev(Mean, Sd) UCL					0.0557		2.376					214.3	4452	152	0.00193		7787						
5% Chebyshev(Mean, Sd) UCL					0.0641		2.687					250.2	4744	182.9	0.00207		8470						
% Chebyshev(Mean, Sd) UCL					0.0806		3.299					320.6	5317	243.6	0.00235		9812						
ential UCL to Use																							
5% KM (t) UCL	0.44	0.00145							0.0519							0.00063873		1.196	2.087	2.792	0.621		2.307
5% KM (z) UCL																							
5% KM (BCA) UCL																							
5% KM (Percentile Bootstrap) UCL																		1.213	2.256	2.8			2.319
5% KM (Chebyshev) UCL																							
7.5% KM (Chebyshev) UCL																							
9% KM (Chebyshev) UCL																							
5% Student's-t UCL							1.946						4049				6843						
5% Modified-t UCL							1.95								0.00174		6843						
% Chebyshev(Mean, Sd) UCL					0.0557							214.3		152									
5% Chebyshev(Mean, Sd) UCL																							
% Chebyshev(Mean, Sd) UCL														243.6									
% Approximate Gamma UCL																							
% H-UCL							2.02																
es	5	5	4	4	5	4	7	4	2, 5	3	3			6, 8		1, 2, 5			5		2, 5	4	

es:

Data have multiple DLs - Use of KM Method is recommended.

here may not be adequate detected values to compute meaningful and reliable test statistics and estimates.

he Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).

Warning: Only one distinct data value was detected! It is suggested to use alternative site specific values

etermined by the Project Team to estimate environmental parameters (e.g., EPC, BTV).

Warning: All observations are Non-Detects (NDs), therefore all statistics and estimates should also be NDs!

he Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).

Warning: There are less than 10 Distinct Detected Values in this data. It should be noted that bootstrap calculations may not be reliable enough to draw conclusions.

ecommended 99% Chebyshev(Mean, Sd) UCL exceeds the maximum observation (log transformed standard deviation of 1.037 barely exceeds the threshold of 1.0 for using the 99% Chebyshev UCL)

% Chebyshev(Mean, Sd) UCL chosen alternative

5% Modified-t UCL selected instead of 95% H-UCL because of relatively small sample size and evidence from larger background Mn dataset that the population distribution may not be log-normal

TABLE A3

UCL95 Statistics for Zone 3 Impacted Data Sets with Non-Detects

	Al	As	Be	Cd	Co	Pb	Mn	Mo	Ni	Se	V	Cl	SO4	NO3_as_N	U	Chloroform	Lab_TDS	Rad-226	Rad-228	Rad_totl	Th-230	Pb-210	Gross_Alpha
al Number of Data	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70
nber of Non-Detect Data	12	22	61	54	0	70	0	38	0	67	65	0	0	43	0	57	0	0	0	0	64	64	0
nber of Detected Data (or Distinct Obs. If > nondetect)	58	48	9	16	46	0	64	32	31	3	5	39	58	27	63	13	60	58	59	61	6	6	62
imum Detected	0.1	0.001	0.01	0.005	0.05		3.33	0.1	0.11	0.001	0.1	14	2630	0.1	0.0011	0.00093	3980	2	3.8	6.8	0.2	1.8	2.4
dimum Detected	163	2.5	0.09	1	0.95		23.7	5	0.89	0.01	0.2	98	5260	44.8	0.138	0.00676	6680	27.6	56.1	73.3	1.3	8.1	35.2
cent Non-Detects	17.14%	31.43%	87.14%	77.14%	0.00%	100.0%	0.00%	54.29%	0.00%	95.71%	92.86%	0.0%	0.0%	61.43%	0.00%	81.43%	0.0%	0.00%	0.00%	0.00%	91.43%	91.43%	0.00%
imum Non-detect	0.1	0.001	0.01	0.005		0.05		0.1		0.001	0.1			0.1		0.0005					0.2	1	
dimum Non-detect	0.1	0.001	0.01	0.005		0.05		0.1		0.001	0.1			0.1		0.001					0.2	1	
n of Detected Data	16.14	0.206	0.0589	0.0713	0.381		9.836	1.084	0.377	0.00433	0.18	43.66	3599	17.15	0.0287	0.00441	5289	9.823	15.73	25.55	0.533	4.883	12.62
lian of Detected Data	2.45	0.025	0.06	0.0095	0.35		7.485	0.3	0.31	0.002	0.2	37.5	3545	24	0.0219	0.00444	5290	7.9	13.55	20.8	0.4	4.9	10.55
lance of Detected Data	1393	0.177	0.000586	0.0613	0.0572		27.12	1.533	0.0459	2.43E-05	0.002	468.3	349814	227.1	0.000764	3.3795E-06	585903	36.79	109.4	235.5	0.159	4.078	60.29
of Detected Data	37.32	0.421	0.0242	0.248	0.239		5.208	1.238	0.214	0.00493	0.0447	21.64	591.5	15.07	0.0276	0.00184	765.4	6.065	10.46	15.35	0.398	2.019	7.765
of Detected Data	2.312	2.04	0.411	3.473	0.627		0.529	1.142	0.568	1.138	0.248	0.496	0.164	0.879	0.964	0.417	0.145	0.617	0.665	0.601	0.747	0.414	0.615
wness of Detected Data	2.66	3.83	-0.65	4.00	0.68		1.079	-1.40	1.13	1.652	-2.24	0.75	0.18	-0.0511	2.408	-0.39	-0.191	0.921	1.671	1.22	1.88	0.14	1.13
n of Log-Transformed Detected Data	0.9	-3.518	-2.966	-4.416	-1.206		2.163	-0.642	-1.119	-5.909	-1.748	3.656	8.175	1.277	-3.922	-5.539	8.563	2.091	2.561	3.078	-0.816	1.497	2.355
of Log-Transformed Detected Data	1.832	2.251	0.657	1.216	0.772		0.489	1.271	0.536	1.181	0.31	0.498	0.166	2.572	0.928	0.559	0.149	0.647	0.632	0.572	0.641	0.496	0.617
ernable Distribution (0.05) of Detected Data	none	none	normal	none	gamma		none	none	none	normal	none	none	normal	none	none	normal	normal	gamma	gamma	lognormal	normal	normal	gamma
lan-Meier (KM) Method																							
n	13.39	0.142	0.0163	0.0202				0.55		0.00114	0.106			6.677		0.00158					0.229	2.064	
	34.22	3.58E-01	1.83E-02	0.118				0.959		0.00107	0.0232			12.38		0.00155					0.142	1.018	
ndard Error of Mean	4.125	4.32E-02	2.32E-03	1.46E-02				0.116		1.57E-04	0.0031			1.508		0.00019315					0.0185	0.133	
5% KM (t) UCL	20.27	0.214	0.0202	0.0444				0.744		0.0014	0.111			9.191		0.0019					0.259	2.287	
5% KM (z) UCL	20.18	0.213	0.0201	0.0441				0.742		0.0014	0.111			9.157		0.00189					0.259	2.284	
5% KM (BCA) UCL	20.79	0.224	0.054	0.0628				0.739		N/A	N/A			9.191		0.00339					0.439	5.093	
5% KM (Percentile Bootstrap) UCL	20.16	0.22	0.0529	0.0486				0.747		N/A	N/A			9.246		0.00326					0.421	4.941	
5% KM (Chebyshev) UCL	31.37	0.33	0.0264	0.0836				1.058		0.00183	0.119			13.25		0.00242					0.309	2.645	
97.5% KM (Chebyshev) UCL	39.15	0.412	0.0308	0.111				1.277		0.00212	0.125			16.09		0.00278					0.344	2.897	
99% KM (Chebyshev) UCL	54.44	0.572	0.0394	0.165				1.709		0.00271	0.137			21.68		0.0035					0.413	3.39	
sets without Nondetects																							
dent's-t UCL					0.429		10.87		0.42			47.97	3717		0.0342		5441	11.03	17.81	28.61			14.17
UCLs (Adjusted for Skewness)																							
% Adjusted-CLT UCL					0.431		10.95		0.423			48.16	3717		0.0351		5437	11.1	18.05	28.85			14.28
% Modified-t UCL					0.429		10.89		0.421			48.01	3717		0.0343		5441	11.04	17.85	28.65			14.19
-Parametric UCLs																							
% CLT UCL					0.428		10.86		0.419			47.91	3715		0.0341		5439	11.02	17.78	28.57			14.15
% Jackknife UCL					0.429		10.87		0.42			47.97	3717		0.0342		5441	11.03	17.81	28.61			14.17
% Standard Bootstrap UCL					0.428		10.85		0.42			47.86	3713		0.034		5438	10.97	17.74	28.53			14.12
% Bootstrap-t UCL					0.432		10.95		0.424			48.63	3716		0.0361		5436	11.13	18.14	28.91			14.18
% Hall's Bootstrap UCL					0.432		10.9		0.423			48	3719		0.0357		5447	11.14	18.31	29.03			14.29
% Percentile Bootstrap UCL					0.429		10.84		0.418			47.96	3716		0.034		5432	11.04	17.81	28.53			14.16
% BCA Bootstrap UCL					0.43		10.96		0.424			48.06	3710		0.0356		5442	11.05	17.99	28.56			14.24
Chebyshev(Mean, Sd) UCL					0.506		12.55		0.489			54.93	3907		0.0431		5688	12.98	21.18	33.54			16.67
% Chebyshev(Mean, Sd) UCL					0.56		13.72		0.537			59.81	4040		0.0493		5860	14.35	23.53	37			18.42
Chebyshev(Mean, Sd) UCL					0.666		16.03		0.632			69.39	4302		0.0615		6199	17.04	28.16	43.8			21.85
ntial UCL to Use																							
% KM (t) UCL			0.0202							0.0014	0.111					0.0019					0.259	2.287	
% KM (z) UCL																							
% KM (BCA) UCL				0.0628				0.739															
% KM (Percentile Bootstrap) UCL			0.0529													0.00326					0.421	4.941	
% KM (Chebyshev) UCL																							
97.5% KM (Chebyshev) UCL	39.15	0.412												16.09									
% KM (Chebyshev) UCL																							
% Student's-t UCL							10.87					47.97	3717				5441						
% Modified-t UCL							10.89					48.01											
Chebyshev(Mean, Sd) UCL									0.489						0.0431								
% Chebyshev(Mean, Sd) UCL																							
Chebyshev(Mean, Sd) UCL																							
Approximate Gamma UCL					0.439													11.14	17.64				14.25
H-UCL																				29.14			
s	6	6	5			4				3, 5	2, 5			6		1					5	5	

s:
ata have multiple DLs - Use of KM Method is recommended.
ere may not be adequate distinct detected values to compute meaningful and reliable test statistics and estimates
e Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).
arning: There are only 3 Distinct Detected Values in this data set.
e number of detected data may not be adequate enough to perform GOF tests, bootstrap, and ROS methods.
arning: All observations are Non-Detects (NDs), therefore all statistics and estimates should also be NDs!
e Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).
arning: There are less than 10 Distinct Detected Values in this data. It should be noted that bootstrap calculations may not be reliable enough to draw conclusions.
tential UCL to use is at 97.6% confidence level

N.A. WATER SYSTEMS

Appendix B

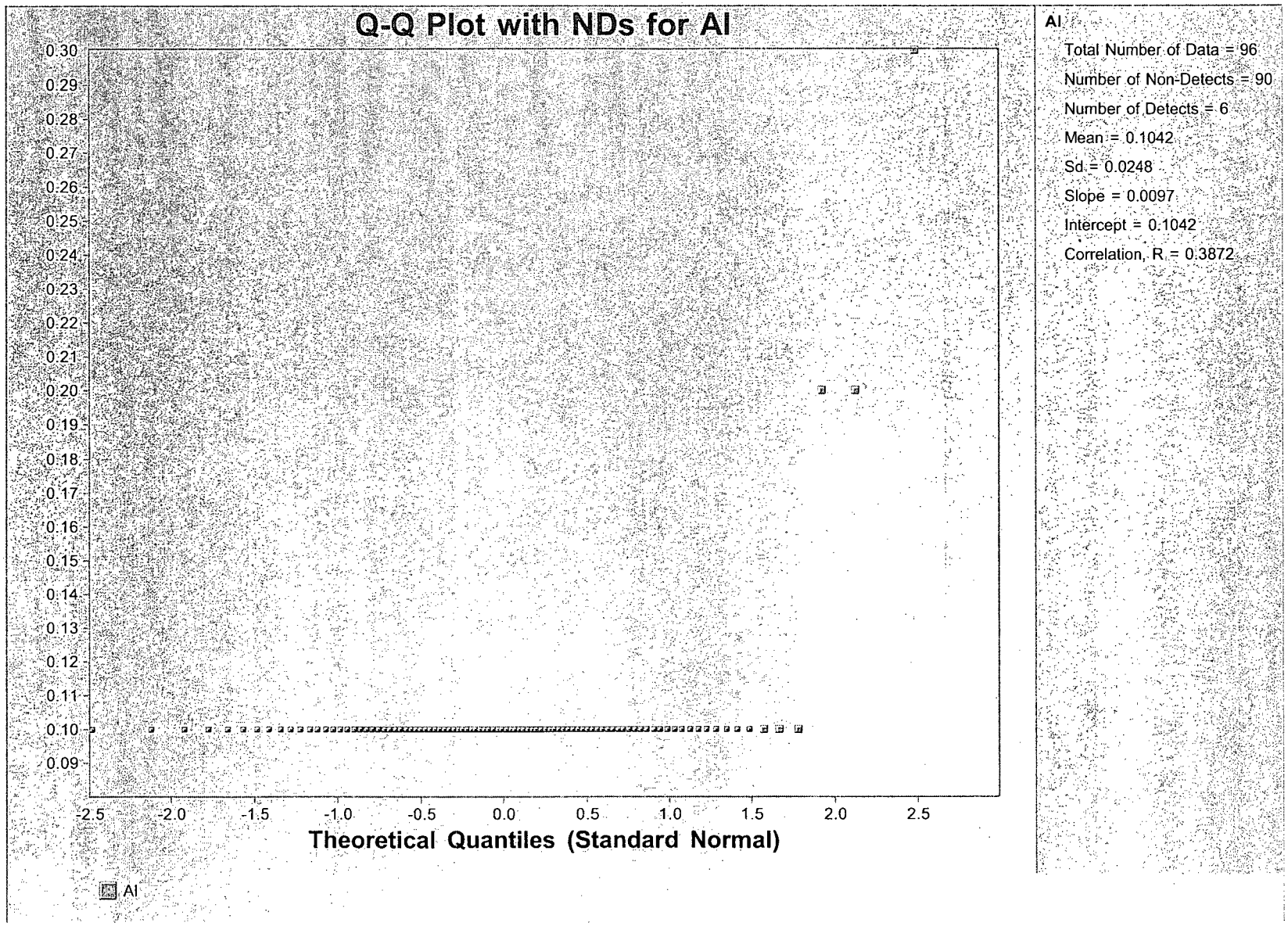
Probability Plots

N.A. Water Systems, LLC
Airside Business Park, 250 Airside Drive
Moon Township, Pennsylvania 15108-2793 USA
Tel: 412-809-6000 • Fax: 412-809-6075
Web site: www.nawatersystems.com

VEOLIA WATER
Solutions & Technologies

GRAPH B 1.1

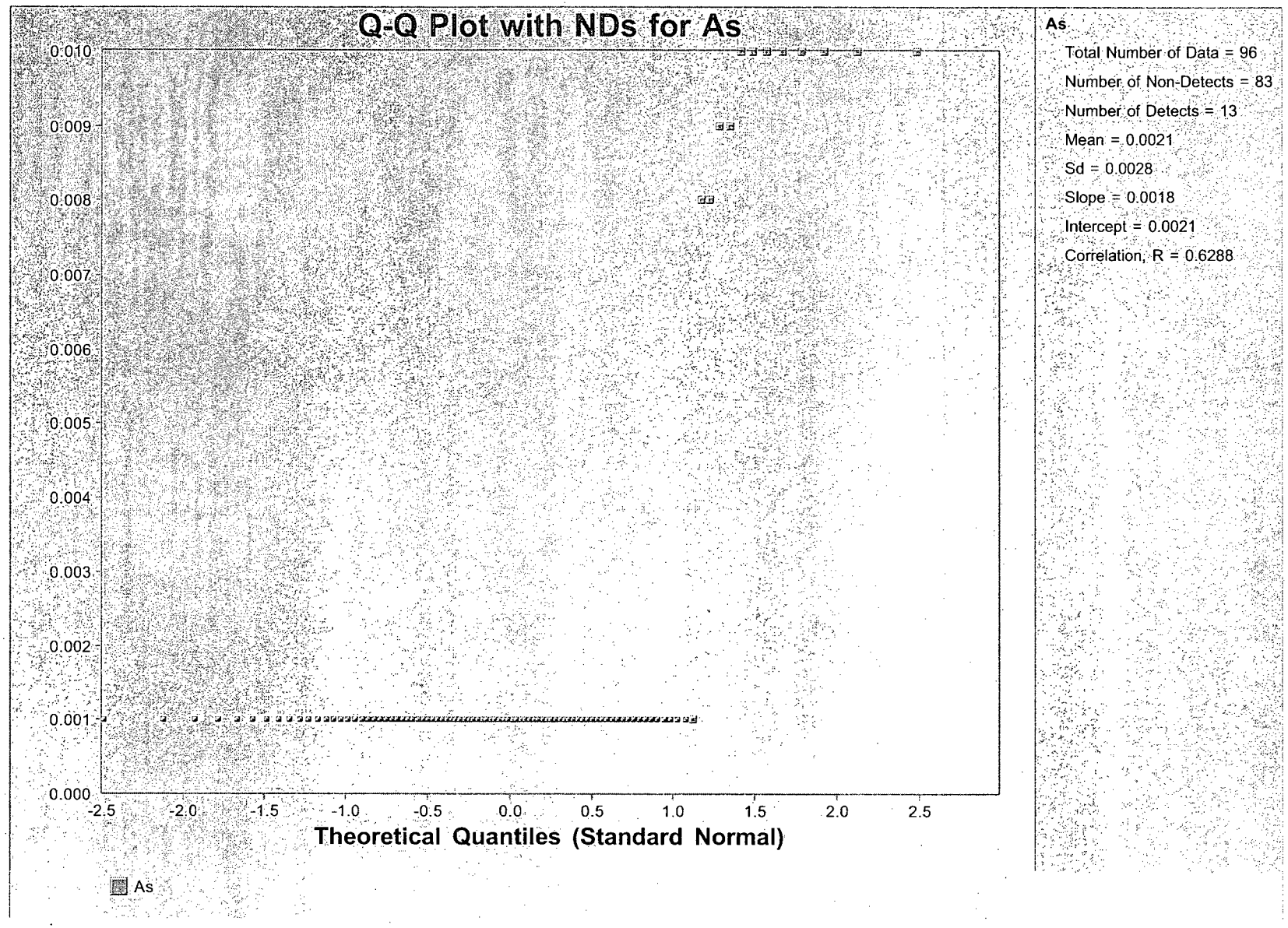
Probability Plot of Aluminum in Southwest Alluvium Impacted Groundwater, 3rd Qtr. 2006 - 2nd Qtr. 2008



(concentrations in milligrams per liter)

GRAPH B 1.2

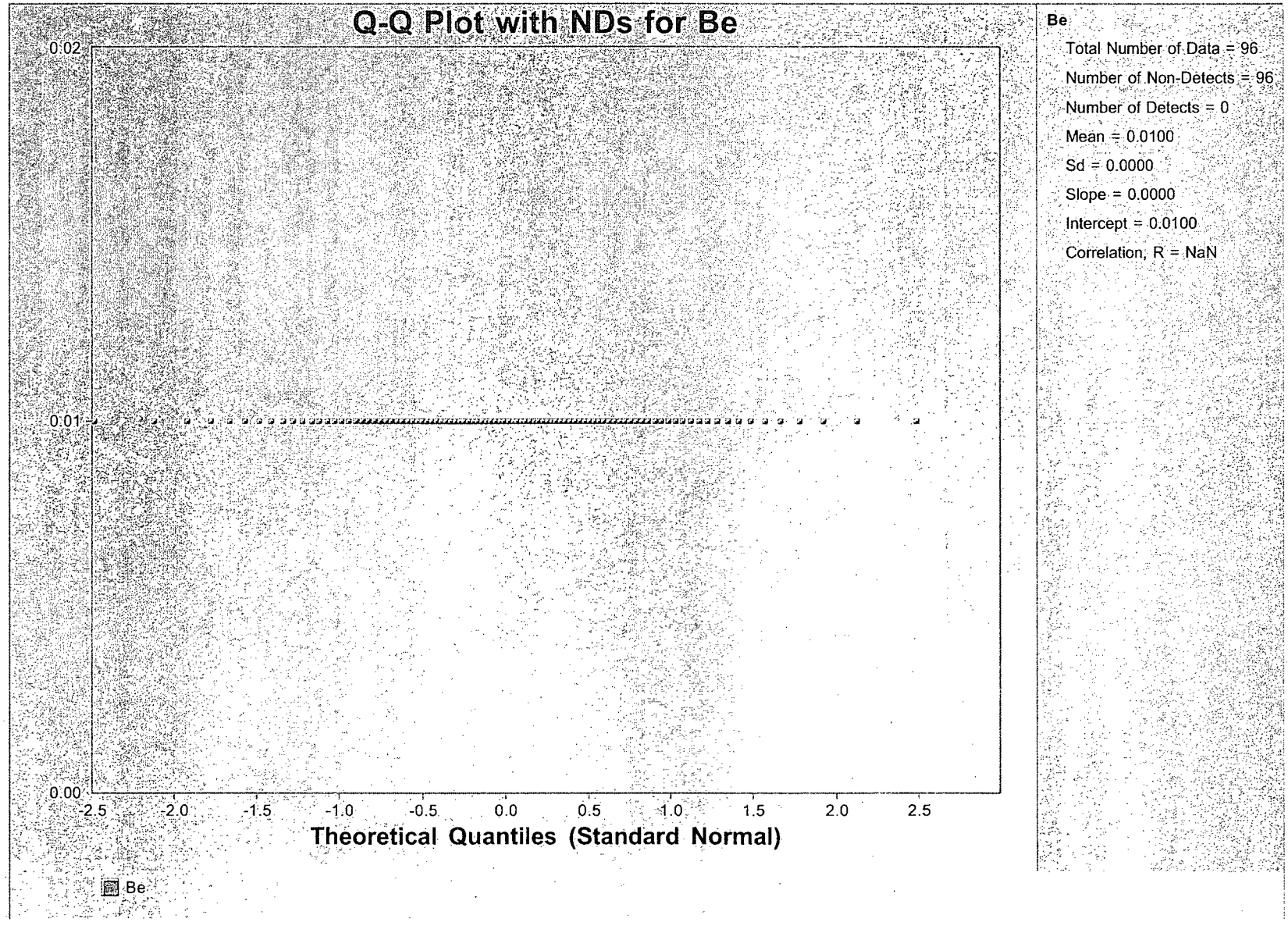
Probability Plot of Arsenic in Southwest Alluvium Impacted Groundwater, 3rd Qtr. 2006 - 2nd Qtr. 2008



(concentrations in milligrams per liter)

GRAPH B 1.3

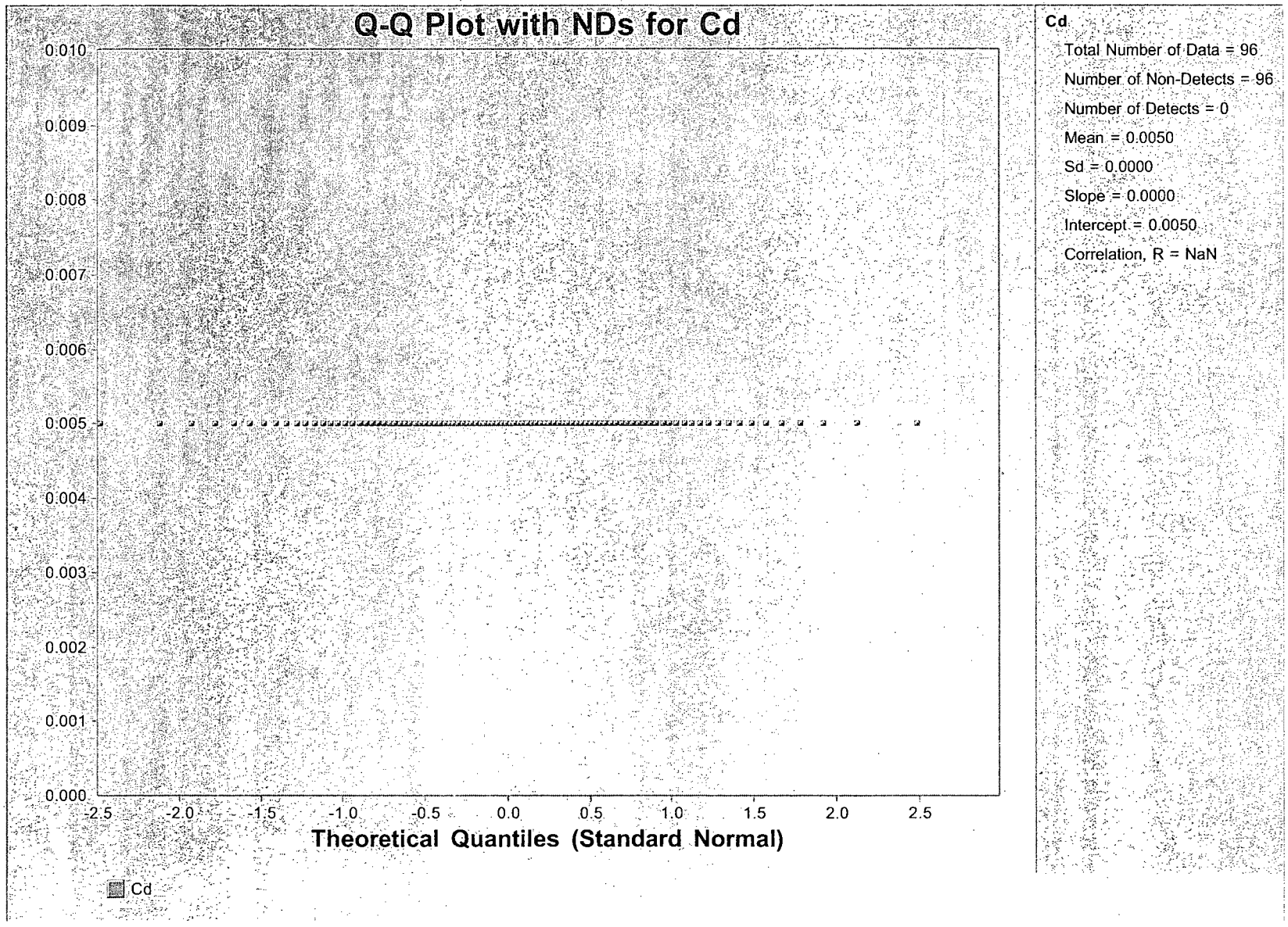
Probability Plot of Beryllium in Southwest Alluvium Impacted Groundwater, 3rd Qtr. 2006 - 2nd Qtr. 2008



(concentrations in milligrams per liter)

GRAPH B 1.4

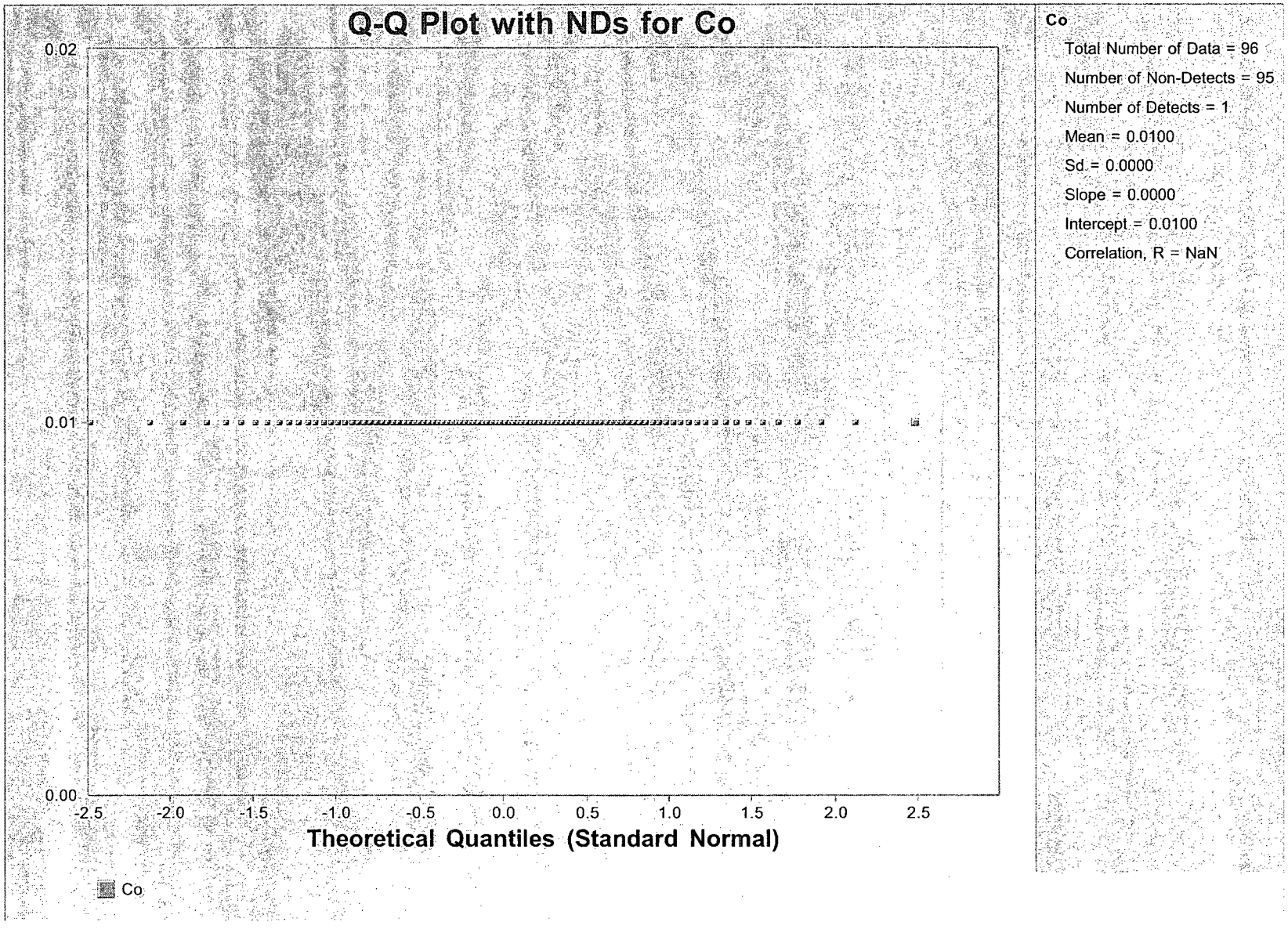
Probability Plot of Cadmium in Southwest Alluvium Impacted Groundwater, 3rd Qtr. 2006 - 2nd Qtr. 2008



(concentrations in milligrams per liter)

GRAPH B 1.5

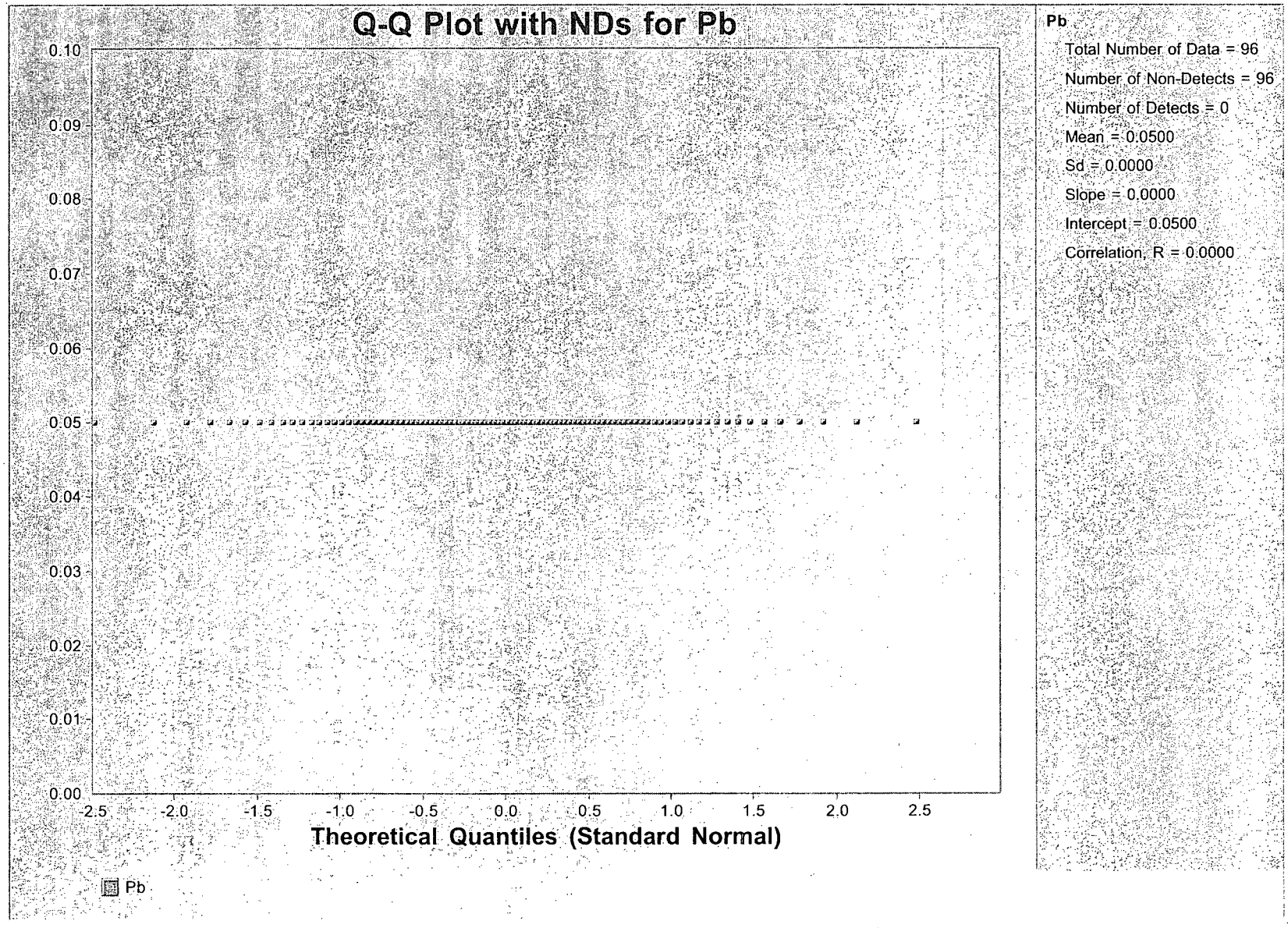
Probability Plot of Cobalt in Southwest Alluvium Impacted Groundwater, 3rd Qtr. 2006 - 2nd Qtr. 2008



(concentrations in milligrams per liter)

GRAPH B 1.6

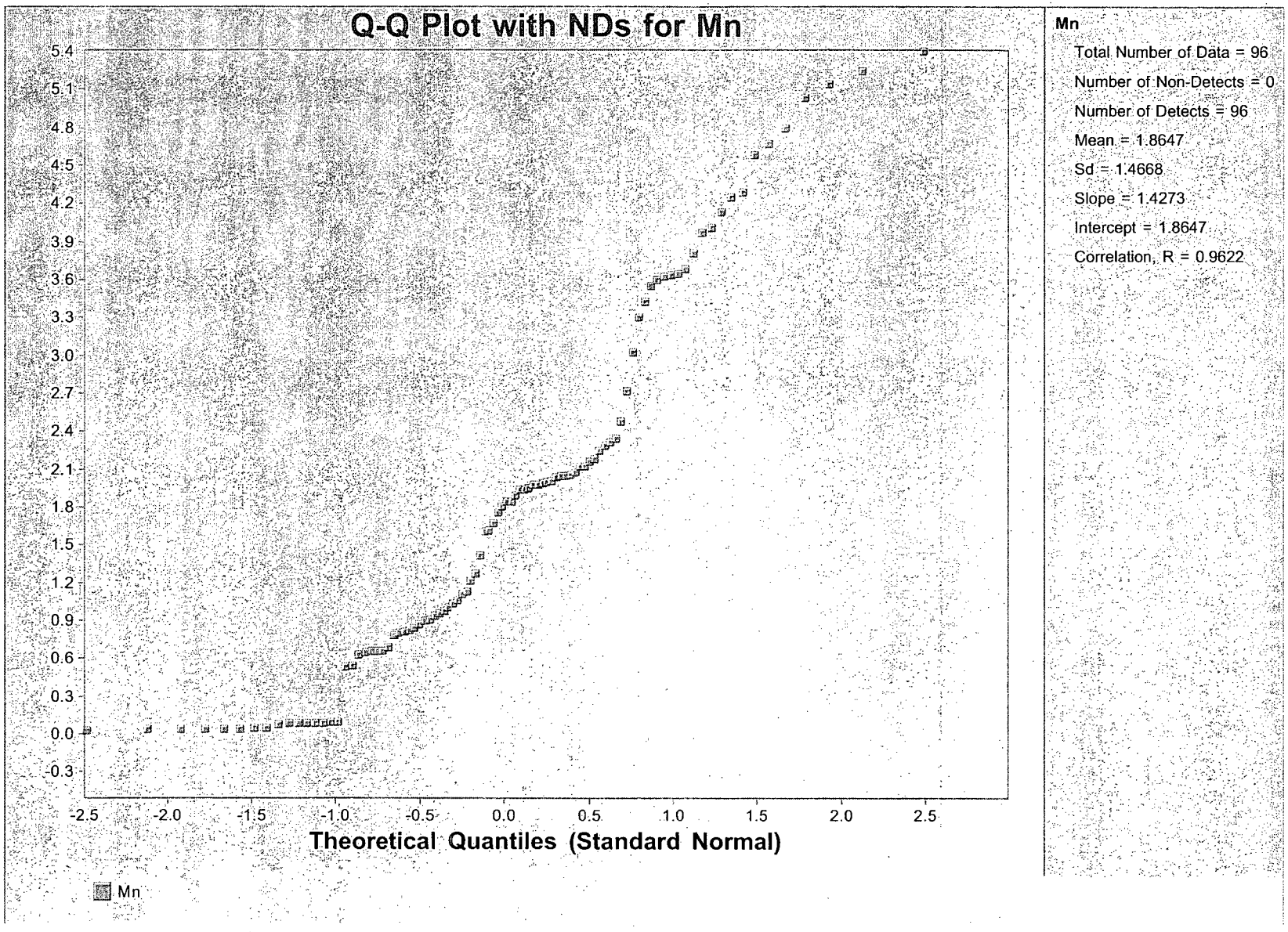
Probability Plot of Lead in Southwest Alluvium Impacted Groundwater, 3rd Qtr. 2006 - 2nd Qtr. 2008



(concentrations in milligrams per liter)

GRAPH B 1.7

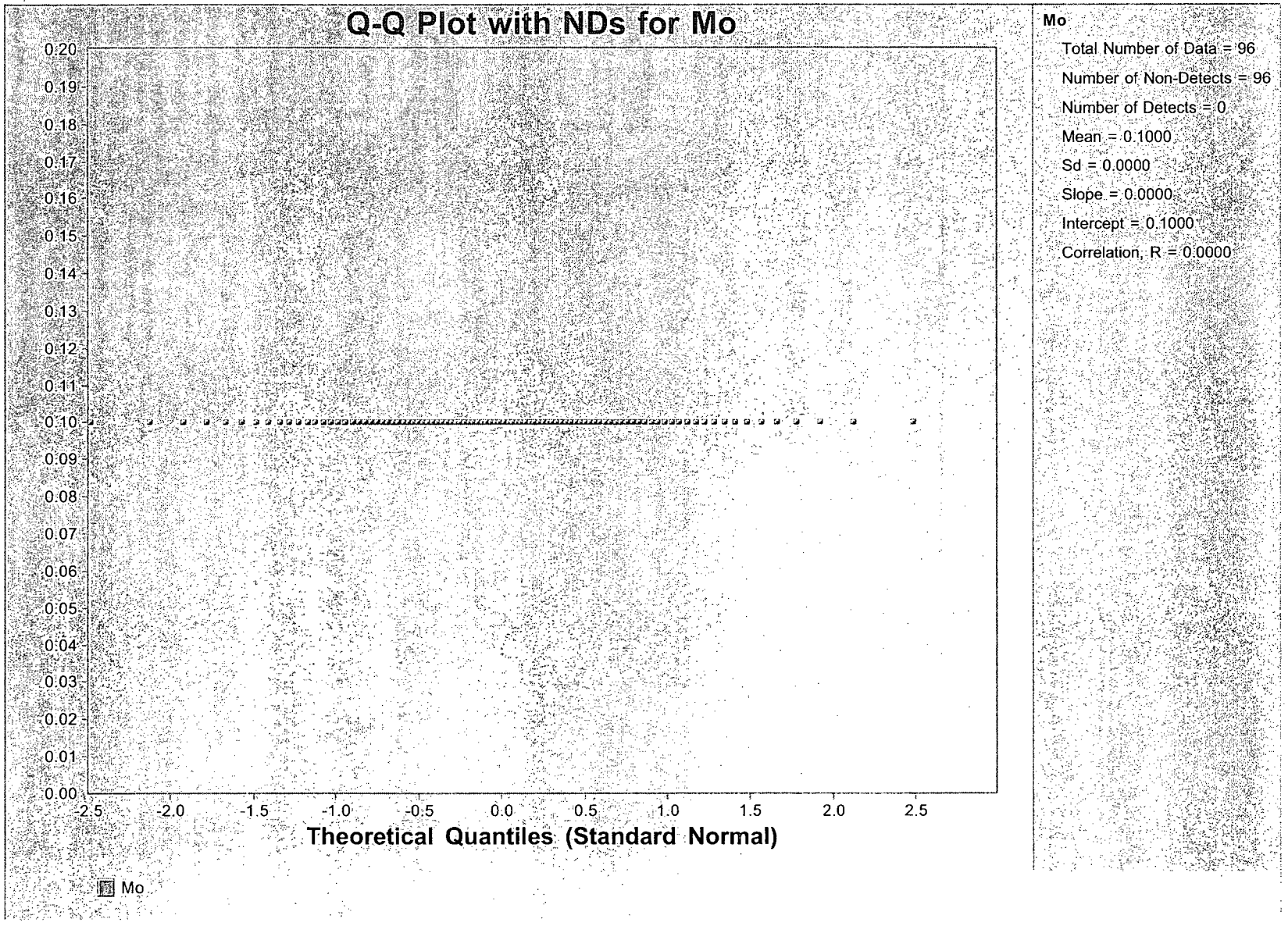
Probability Plot of Manganese in Southwest Alluvium Impacted Groundwater, 3rd Qtr. 2006 - 2nd Qtr. 2008



(concentrations in milligrams per liter)

GRAPH B 1.8

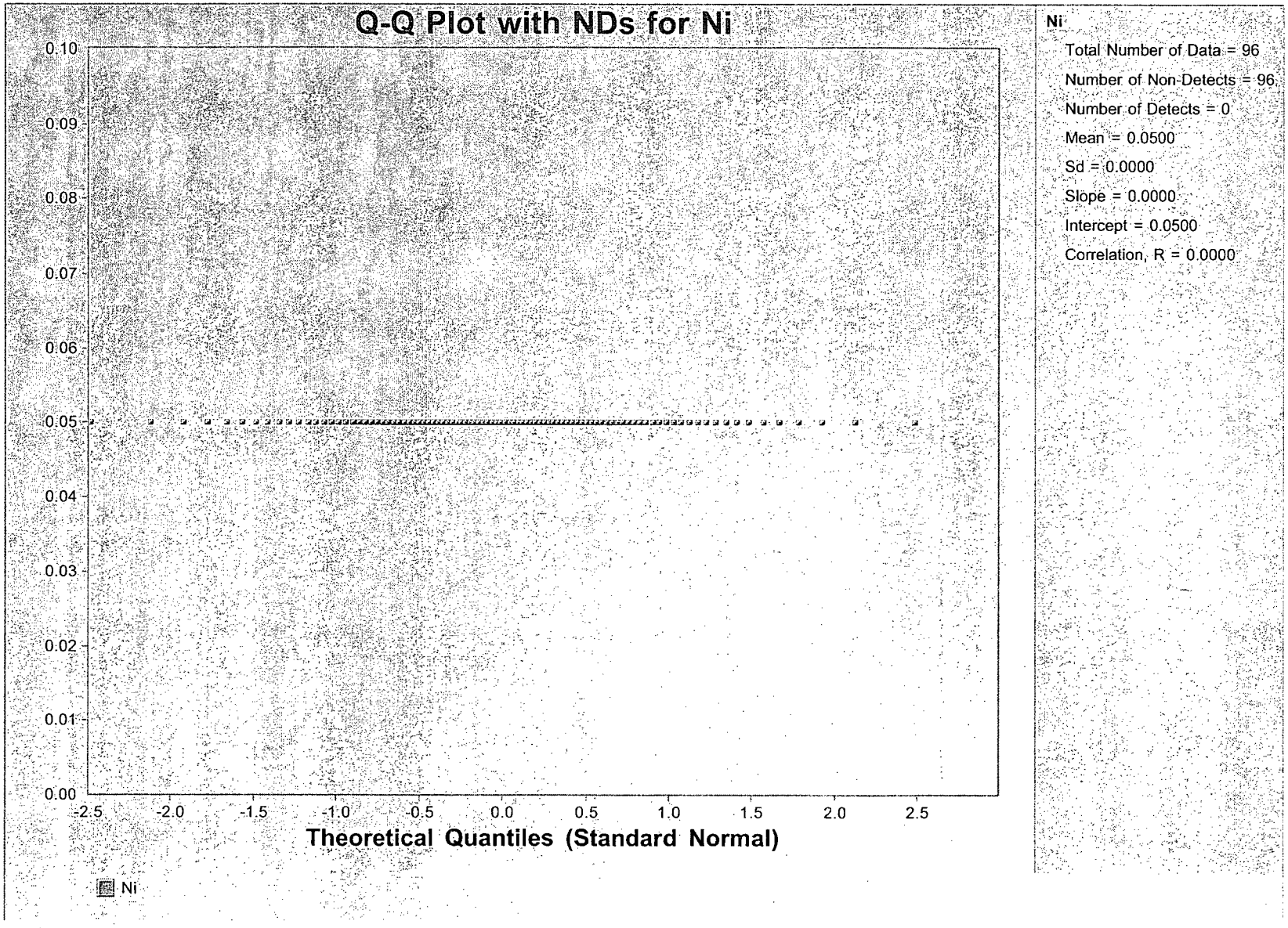
Probability Plot of Molybdenum in Southwest Alluvium Impacted Groundwater, 3rd Qtr. 2006 - 2nd Qtr. 2008



(concentrations in milligrams per liter)

GRAPH B 1.9

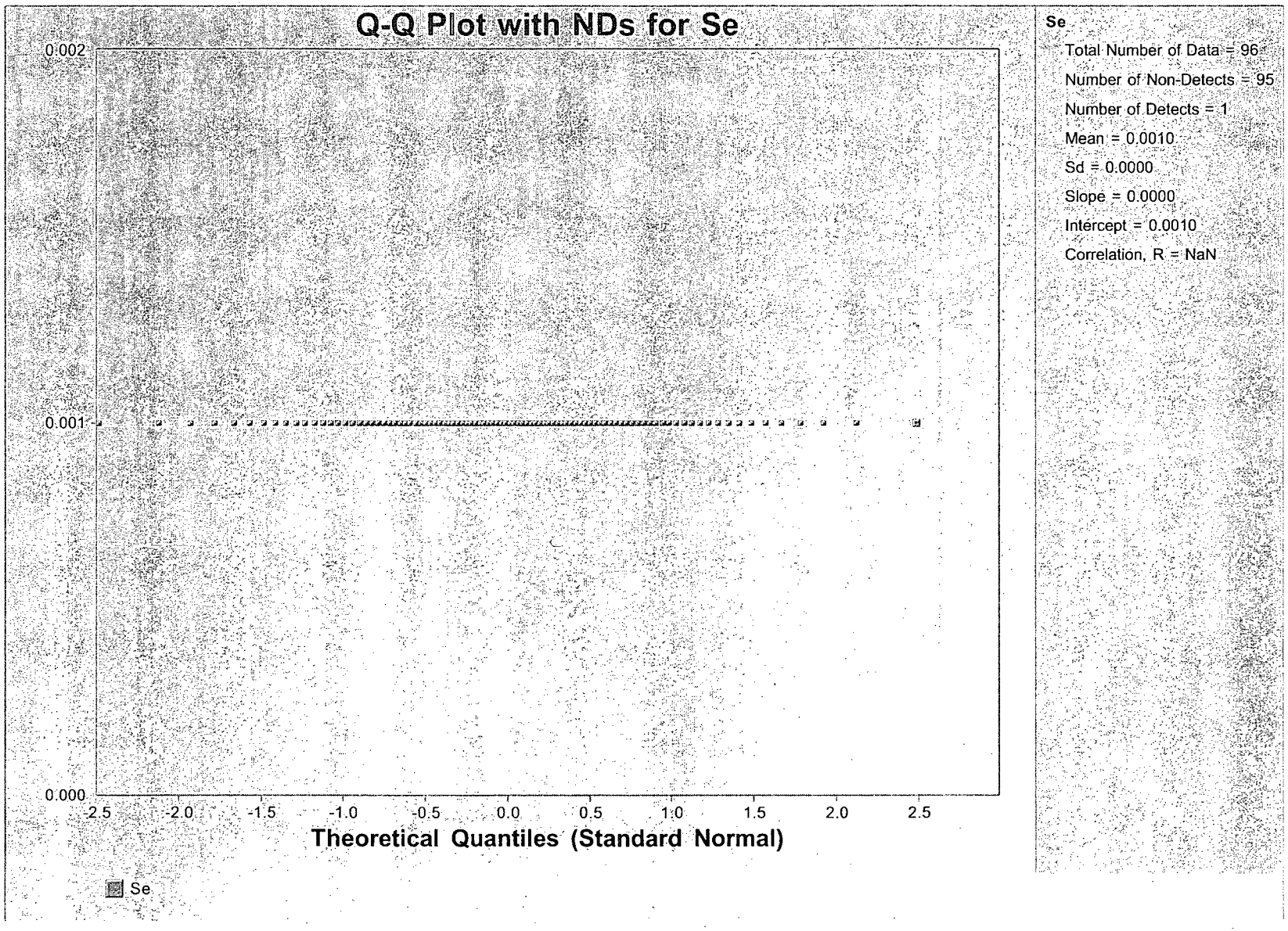
Probability Plot of Nickel in Southwest Alluvium Impacted Groundwater, 3rd Qtr. 2006 - 2nd Qtr. 2008



(concentrations in milligrams per liter)

GRAPH B 1.10

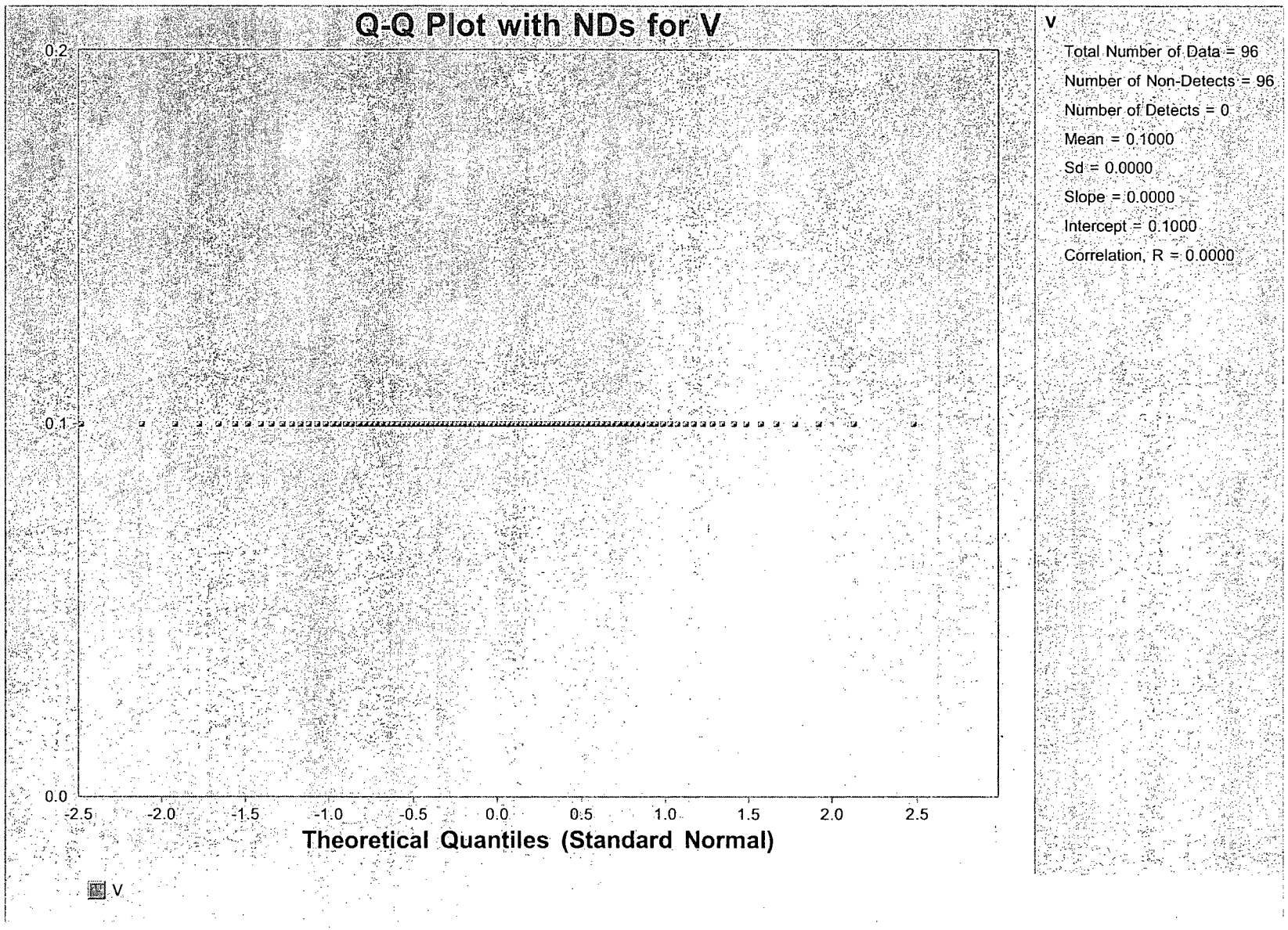
Probability Plot of Selenium in Southwest Alluvium Impacted Groundwater, 3rd Qtr. 2006 - 2nd Qtr. 2008



(concentrations in milligrams per liter)

GRAPH B 1.11

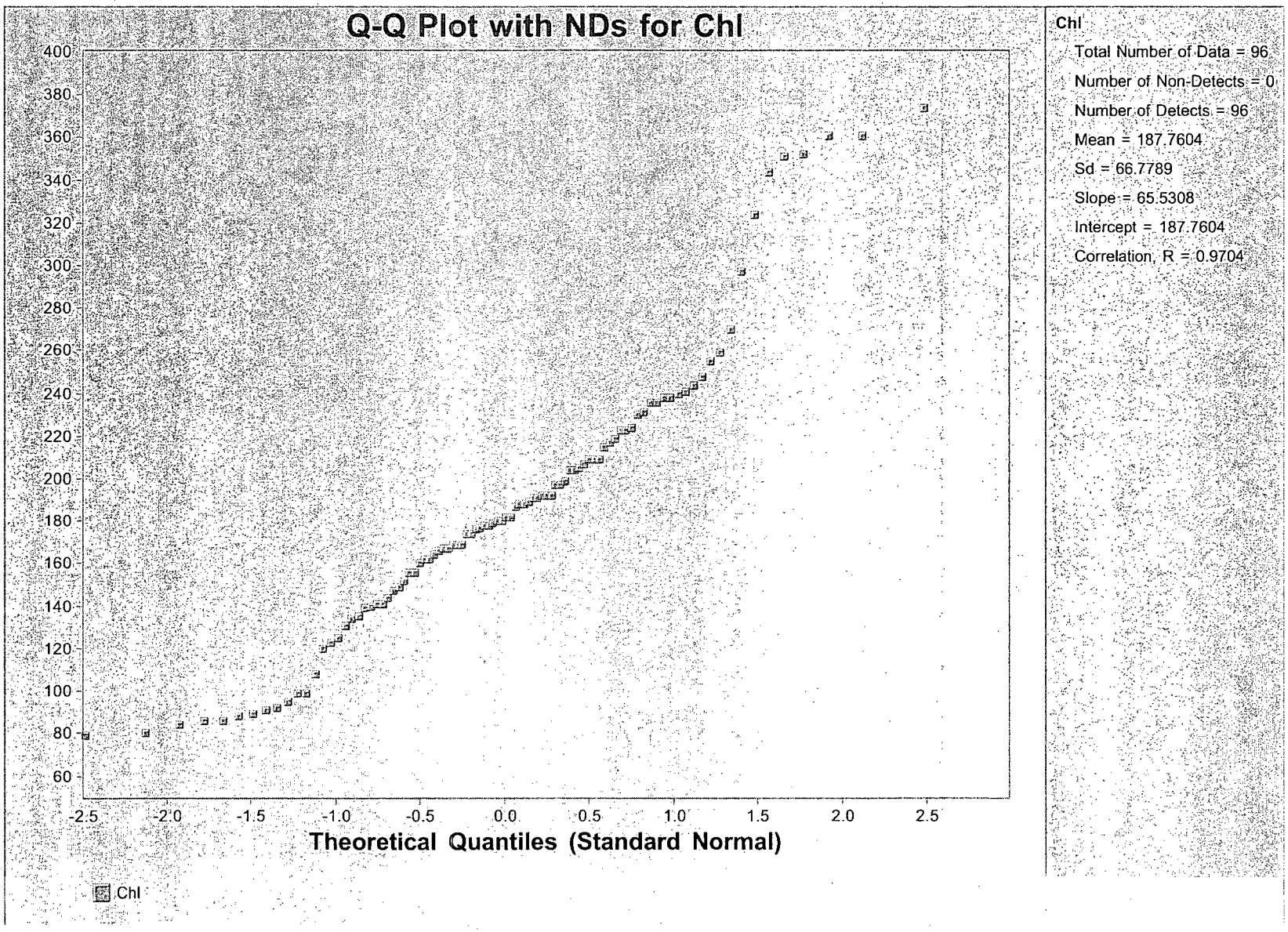
Probability Plot of Vandadium in Southwest Alluvium Impacted Groundwater, 3rd Qtr. 2006 - 2nd Qtr. 2008



(concentrations in milligrams per liter)

GRAPH B 1.12

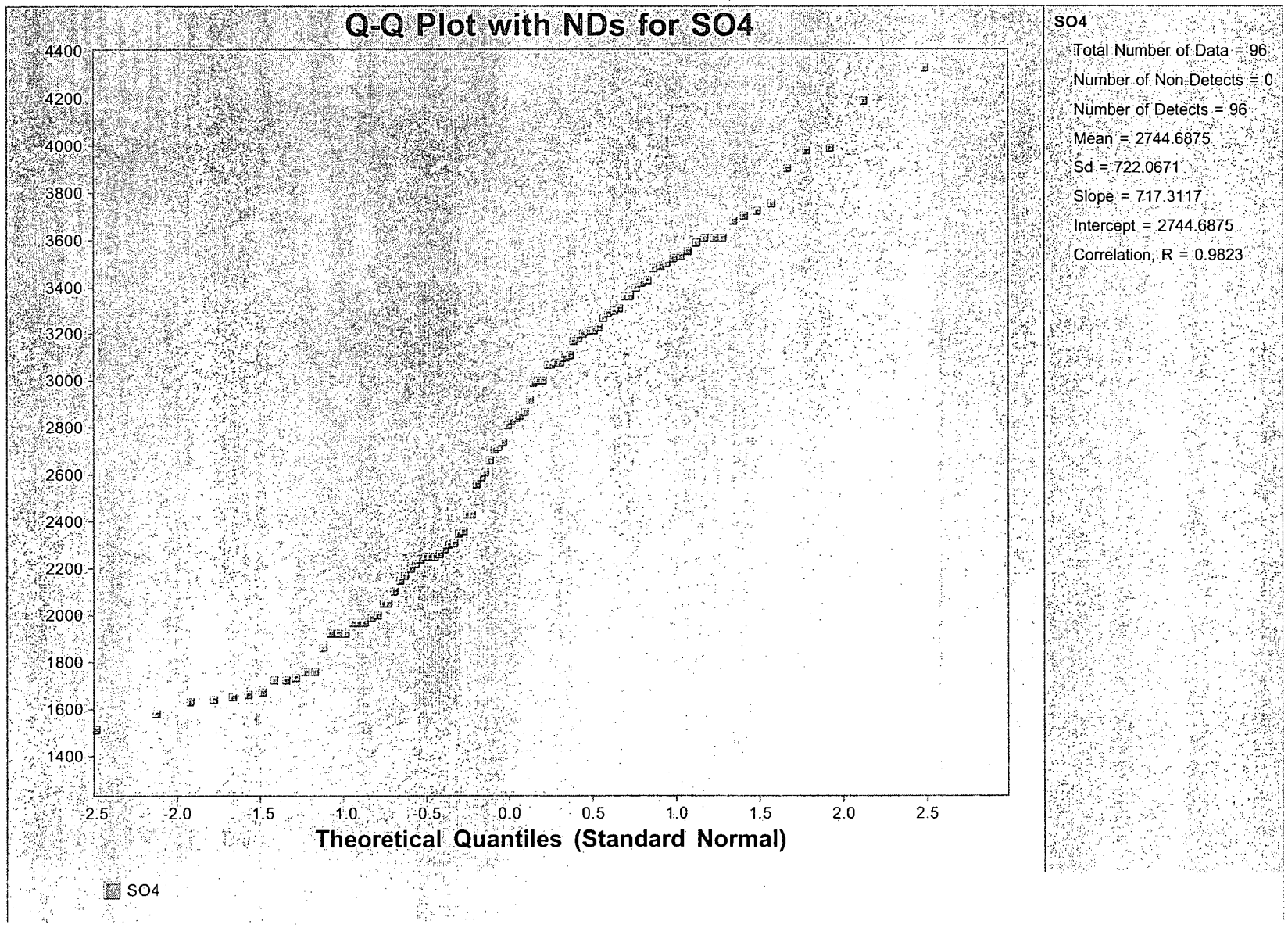
Probability Plot of Chloride in Southwest Alluvium Impacted Groundwater, 3rd Qtr. 2006 - 2nd Qtr. 2008



(concentrations in milligrams per liter)

GRAPH B 1.13

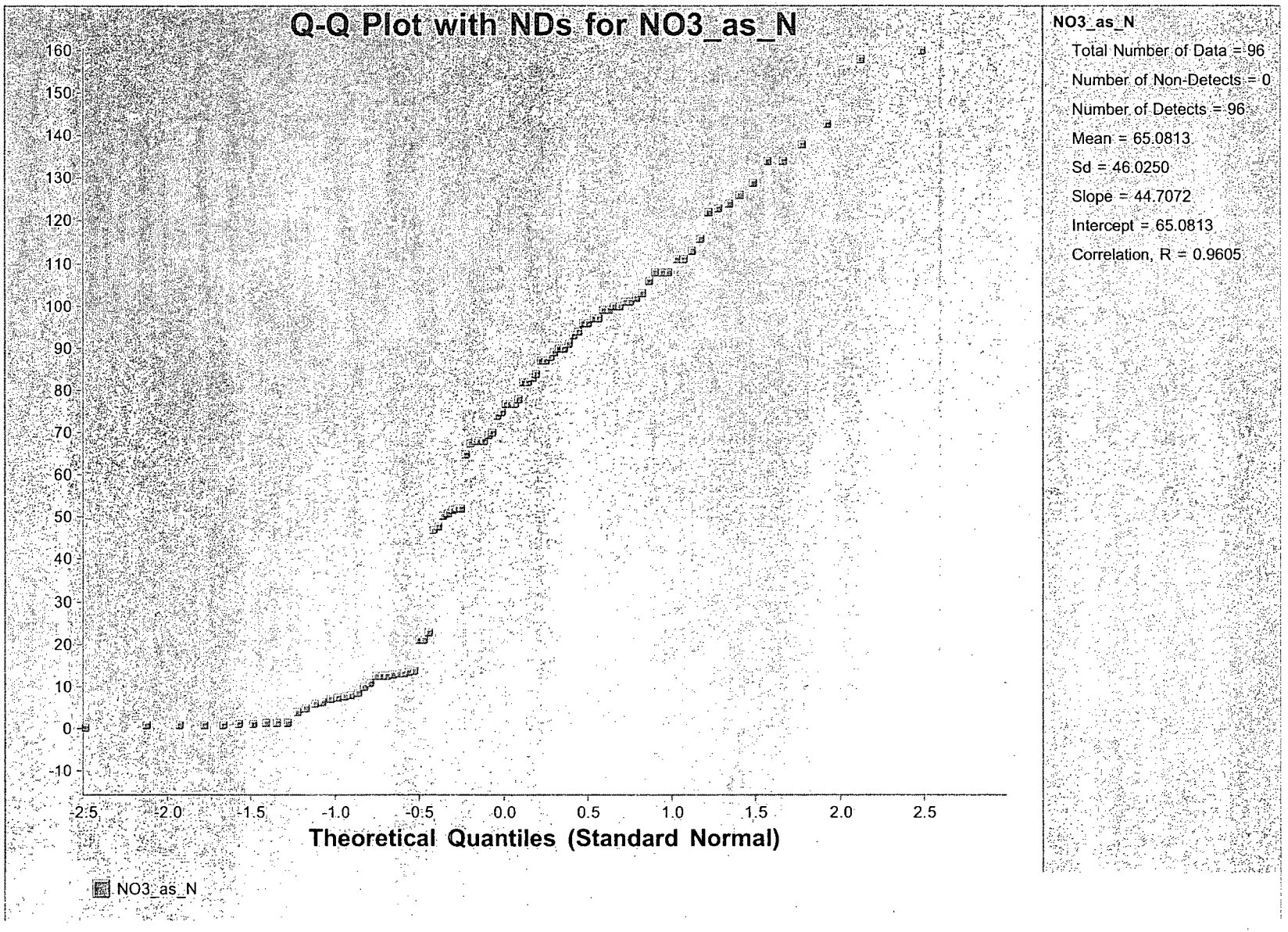
Probability Plot of Sulfate in Southwest Alluvium Impacted Groundwater, 3rd Qtr. 2006 - 2nd Qtr. 2008



(concentrations in milligrams per liter)

GRAPH B 1.14

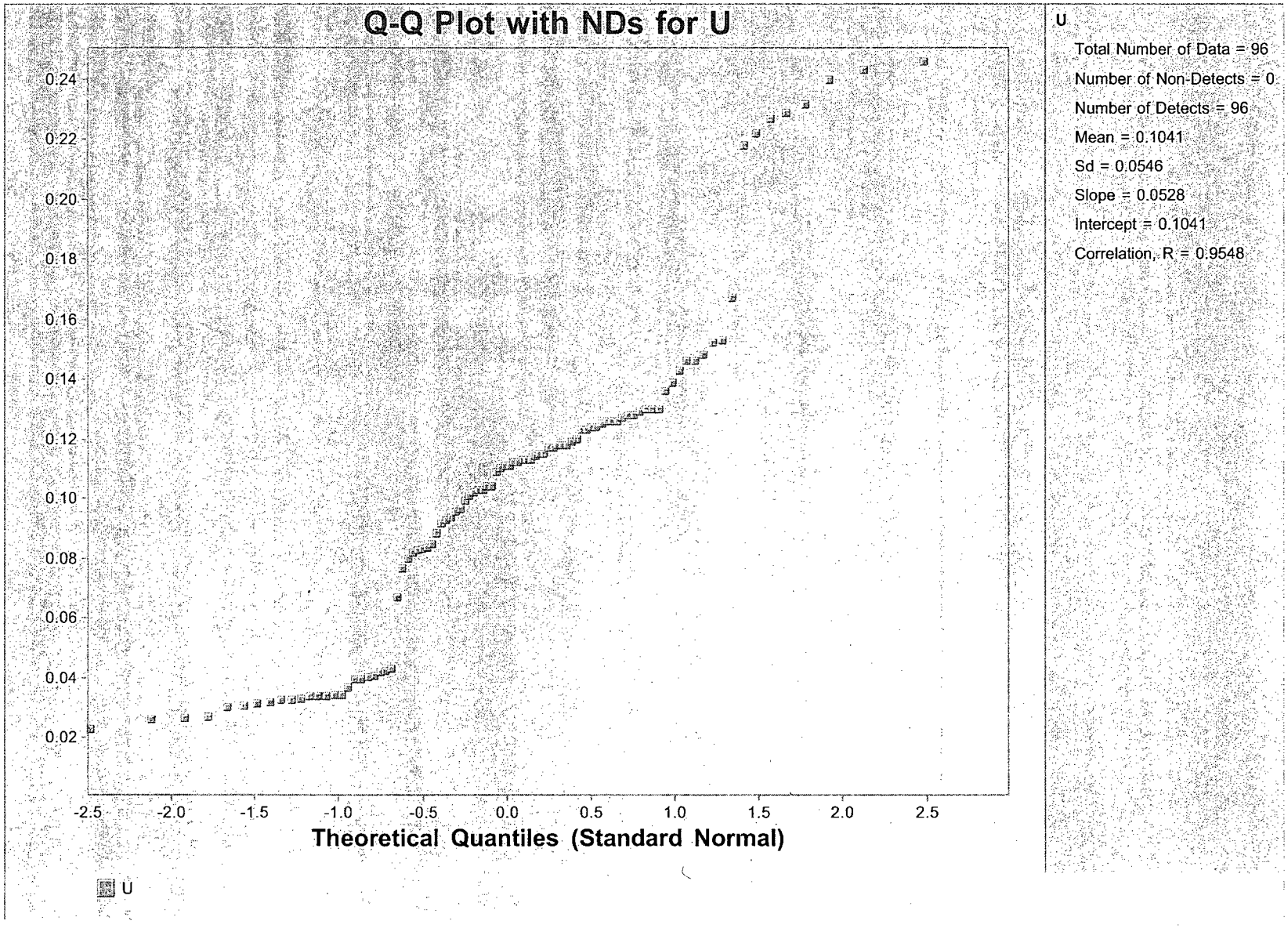
Probability Plot of Nitrate in Southwest Alluvium Impacted Groundwater, 3rd Qtr. 2006 - 2nd Qtr. 2008



(concentrations in milligrams per liter)

GRAPH B 1.15

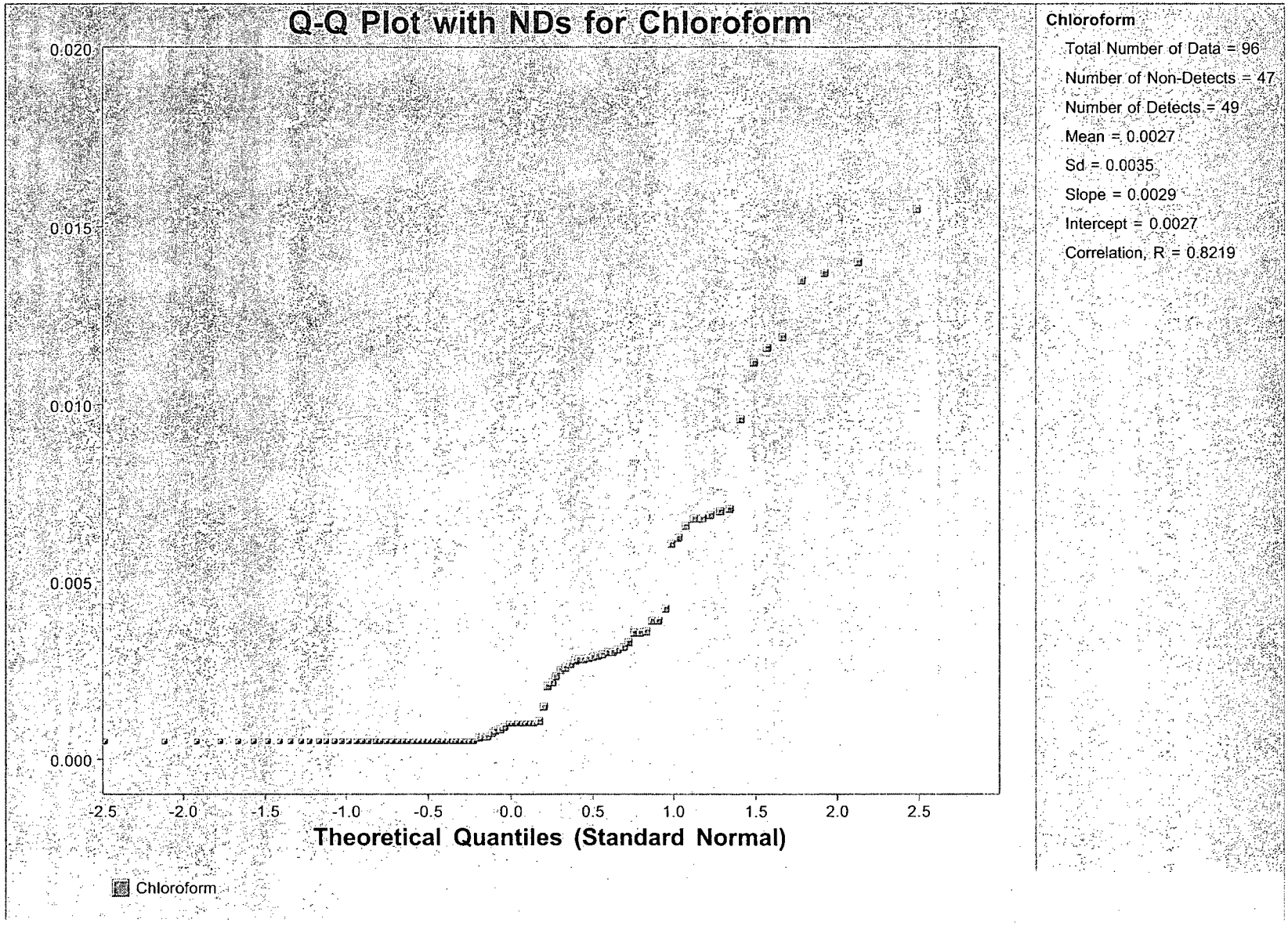
Probability Plot of Uranium in Southwest Alluvium Impacted Groundwater, 3rd Qtr. 2006 - 2nd Qtr. 2008



(concentrations in milligrams per liter)

GRAPH B 1.16

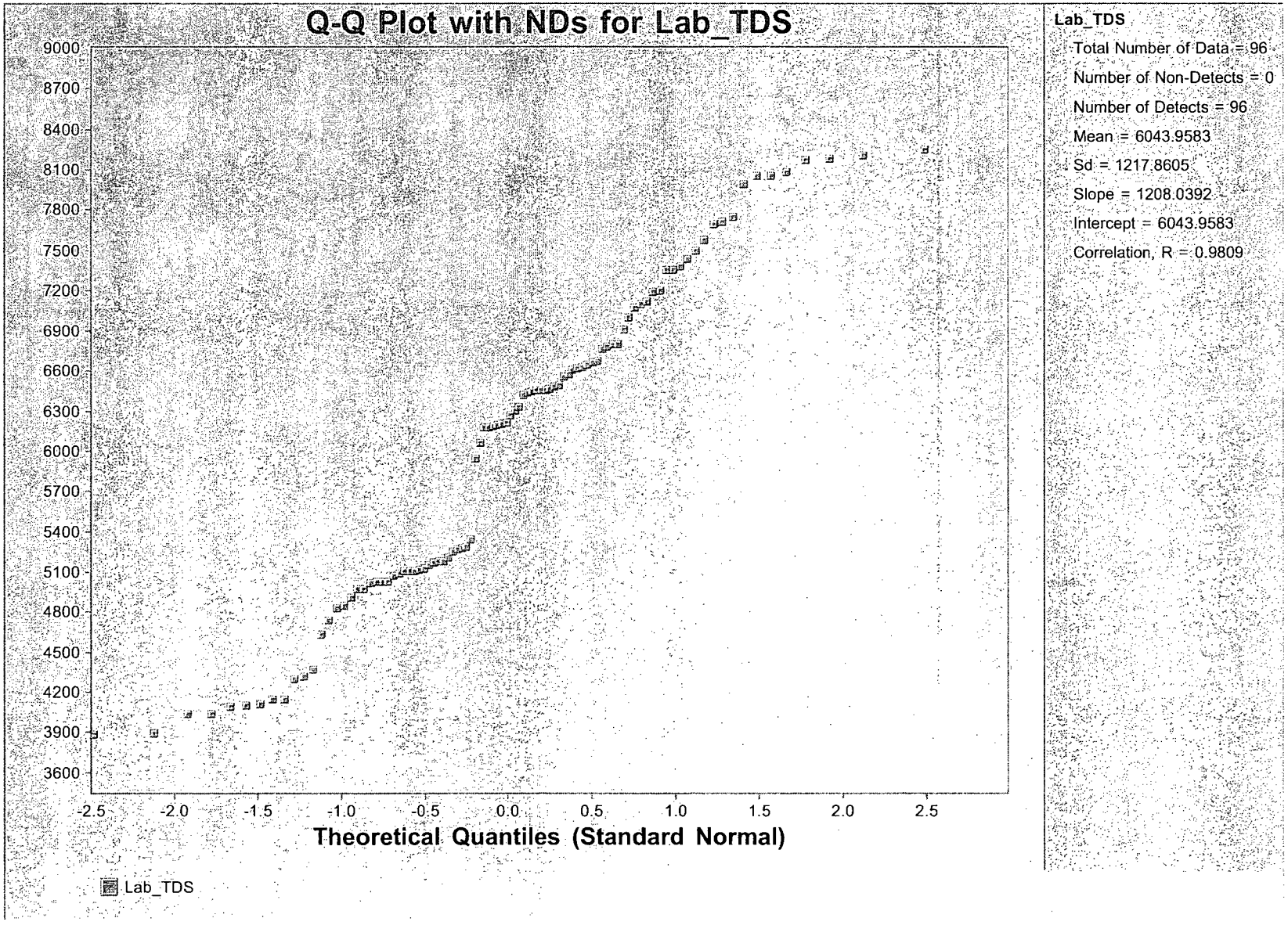
Probability Plot of Chloroform in Southwest Alluvium Impacted Groundwater, 3rd Qtr. 2006 - 2nd Qtr. 2008



(concentrations in milligrams per liter)

GRAPH B 1.17

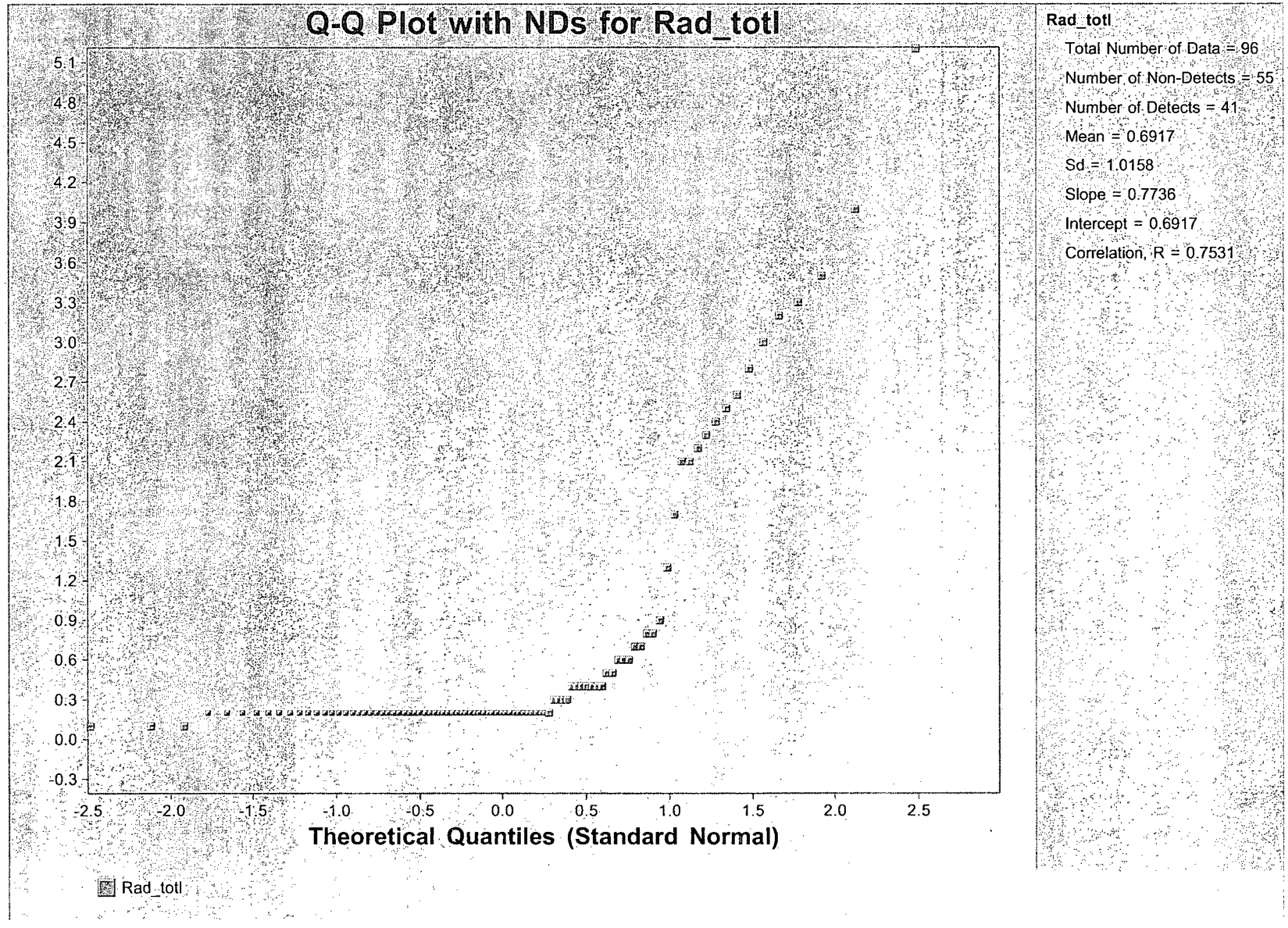
Probability Plot of Total Dissolved Solids in Southwest Alluvium Impacted Groundwater, 3rd Qtr. 2006 - 2nd Qtr. 2008



(concentrations in milligrams per liter)

GRAPH B 1.18

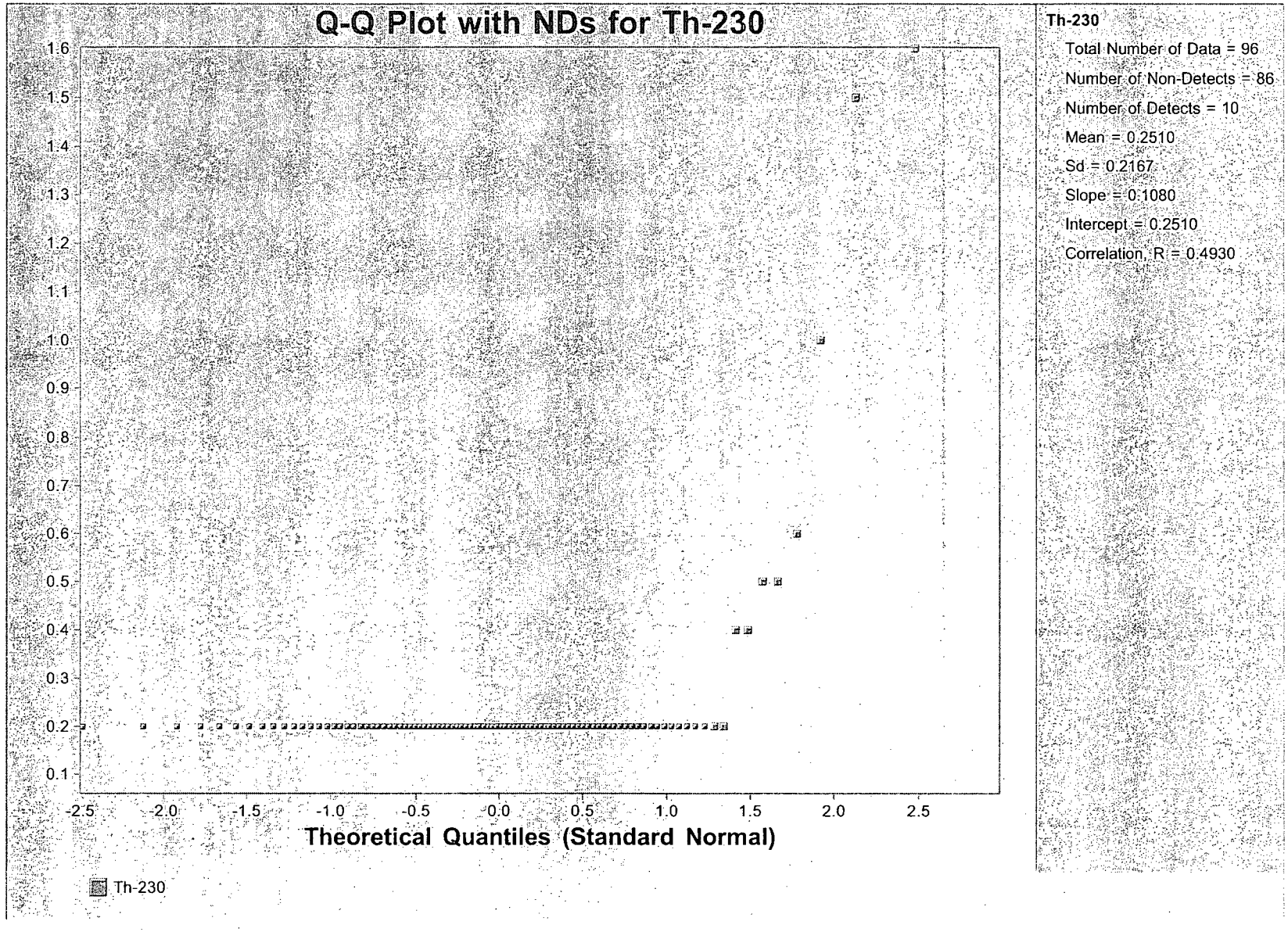
Probability Plot of Total Radium in Southwest Alluvium Impacted Groundwater, 3rd Qtr. 2006 - 2nd Qtr. 2008



(concentrations in pico curies per liter)

GRAPH B 1.19

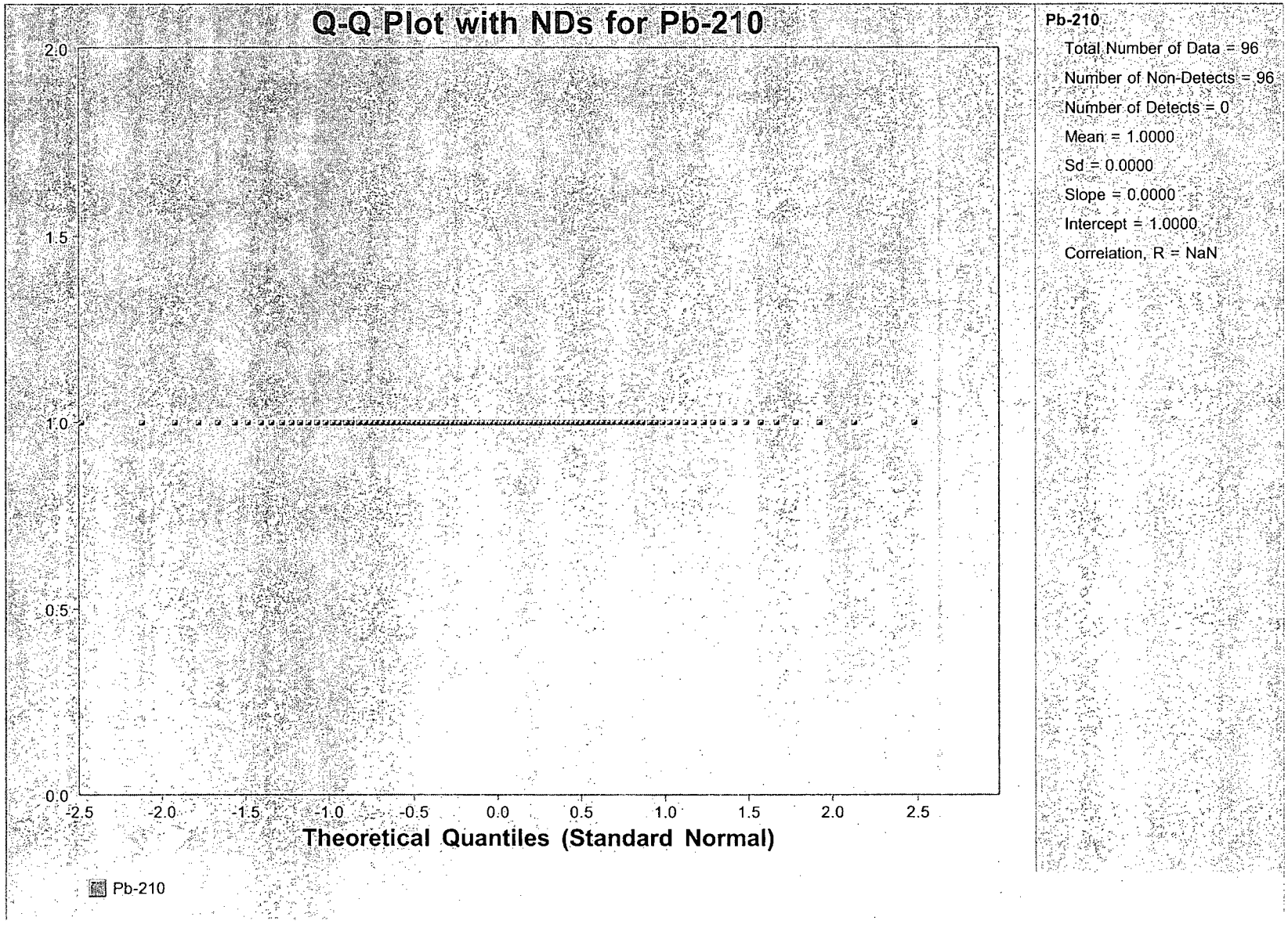
Probability Plot of Thorium-230 in Southwest Alluvium Impacted Groundwater, 3rd Qtr. 2006 - 2nd Qtr. 2008



(concentrations in pico curies per liter)

GRAPH B 1.20

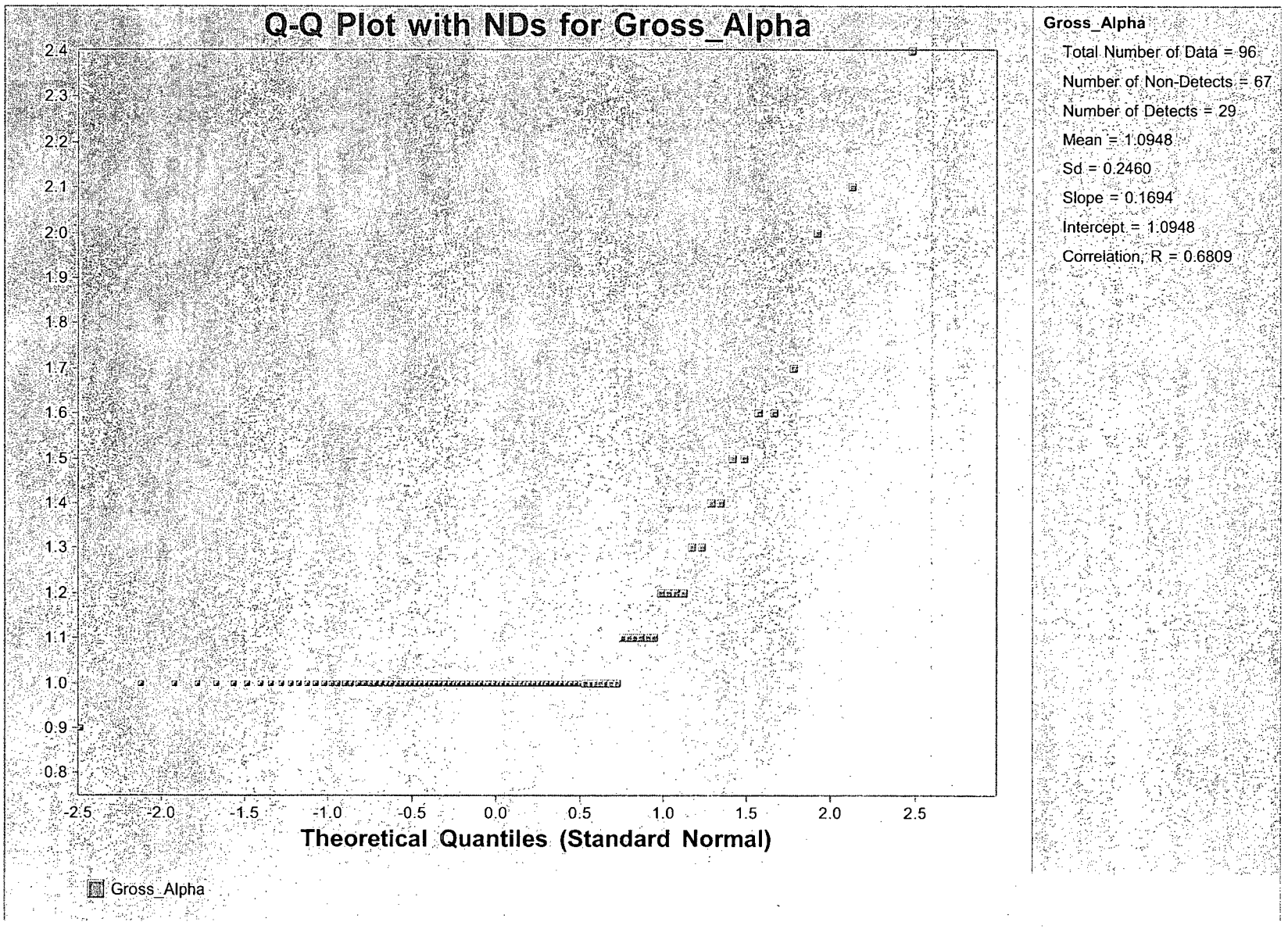
Probability Plot of Lead-210 in Southwest Alluvium Impacted Groundwater, 3rd Qtr. 2006 - 2nd Qtr. 2008



(concentrations in pico curies per liter)

GRAPH B 1.21

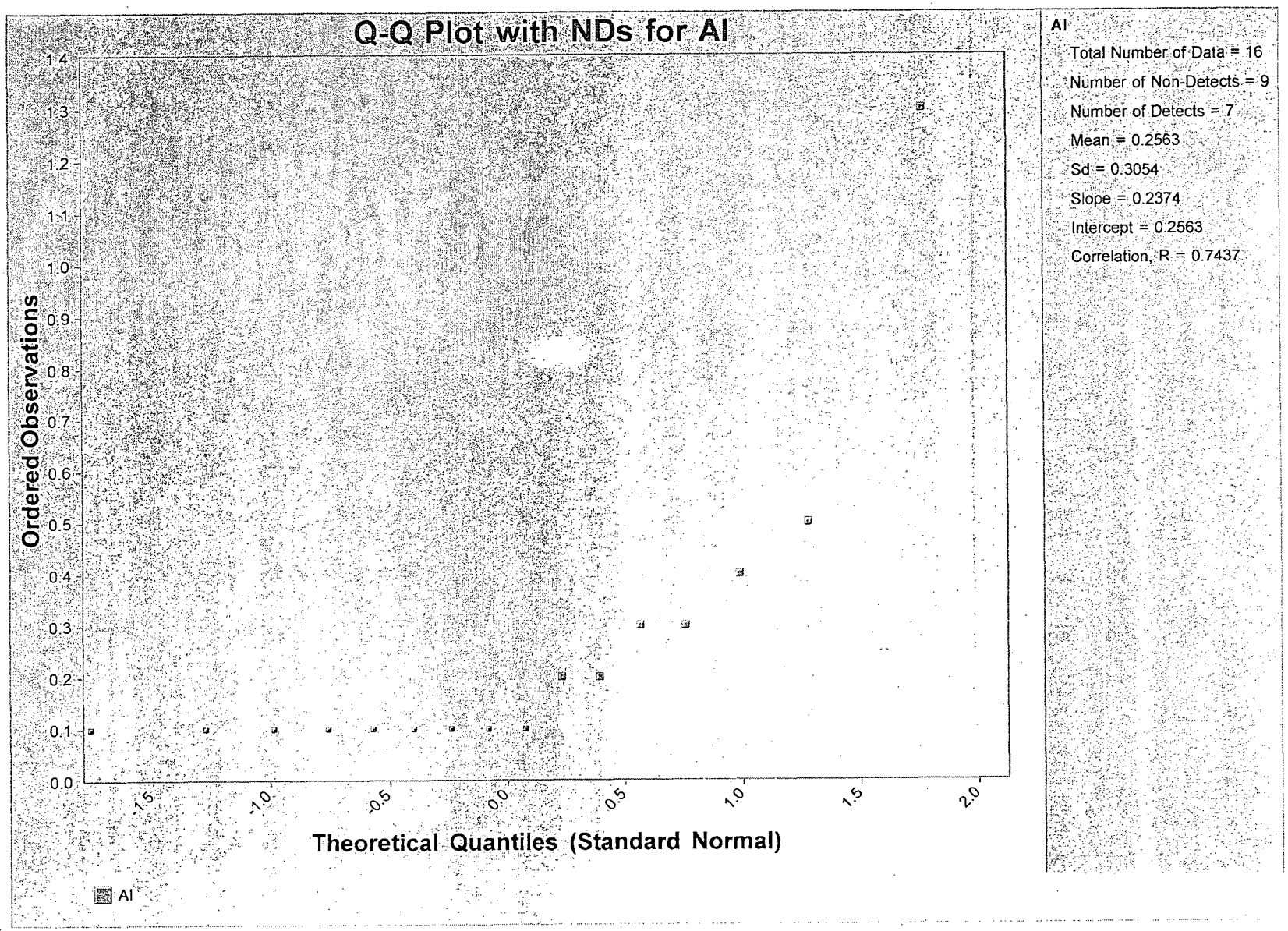
Probability Plot of Gross Alpha in Southwest Alluvium Impacted Groundwater, 3rd Qtr. 2006 - 2nd Qtr. 2008



(concentrations in pico curies per liter)

GRAPH B 2.1

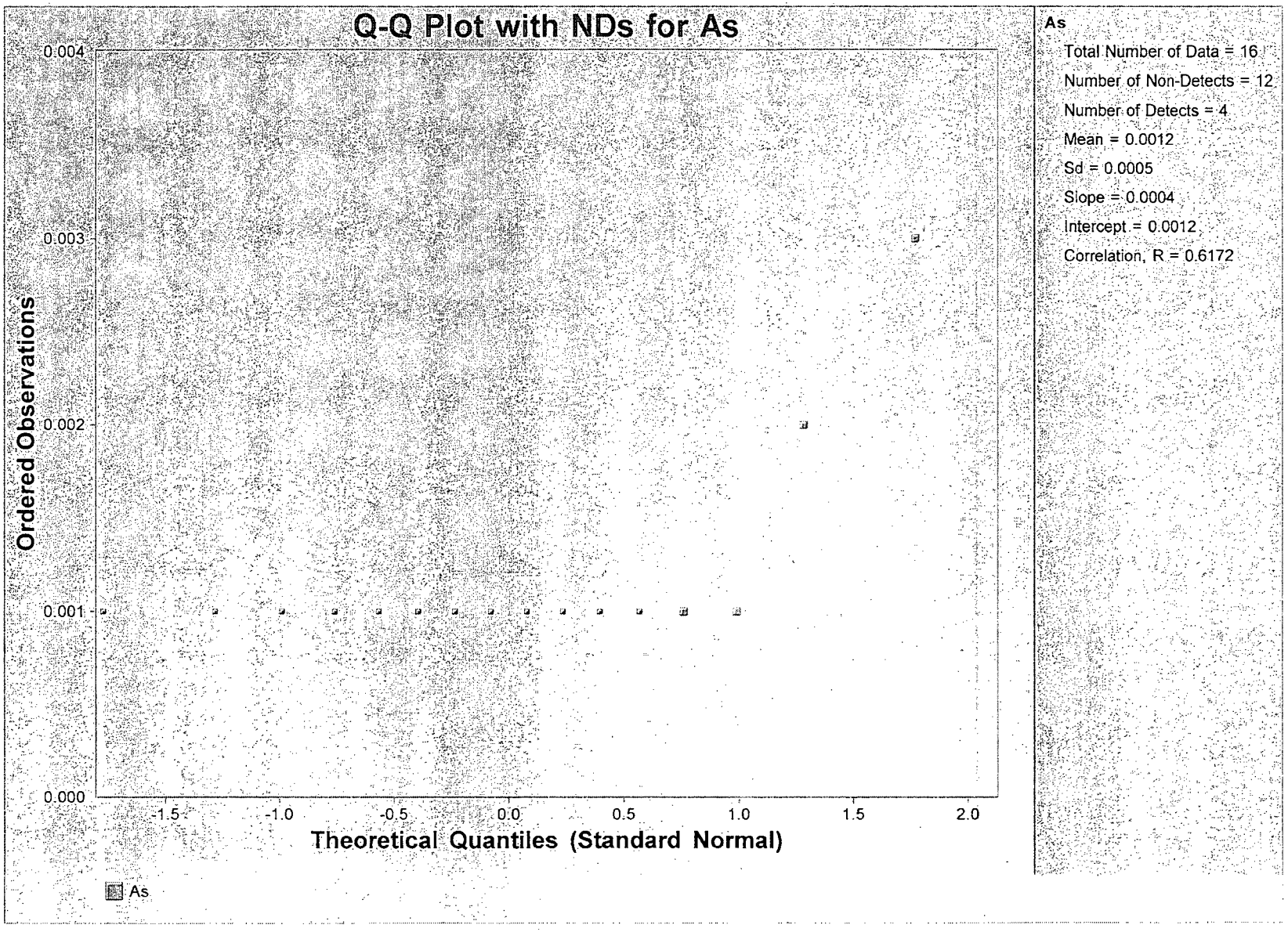
Probability Plot of Aluminum in Zone 1 Impacted Groundwater outside of Section 2, 3rd Qtr. 2006 - 2nd Qtr. 2008



(concentrations in milligrams per liter)

GRAPH B 2.2

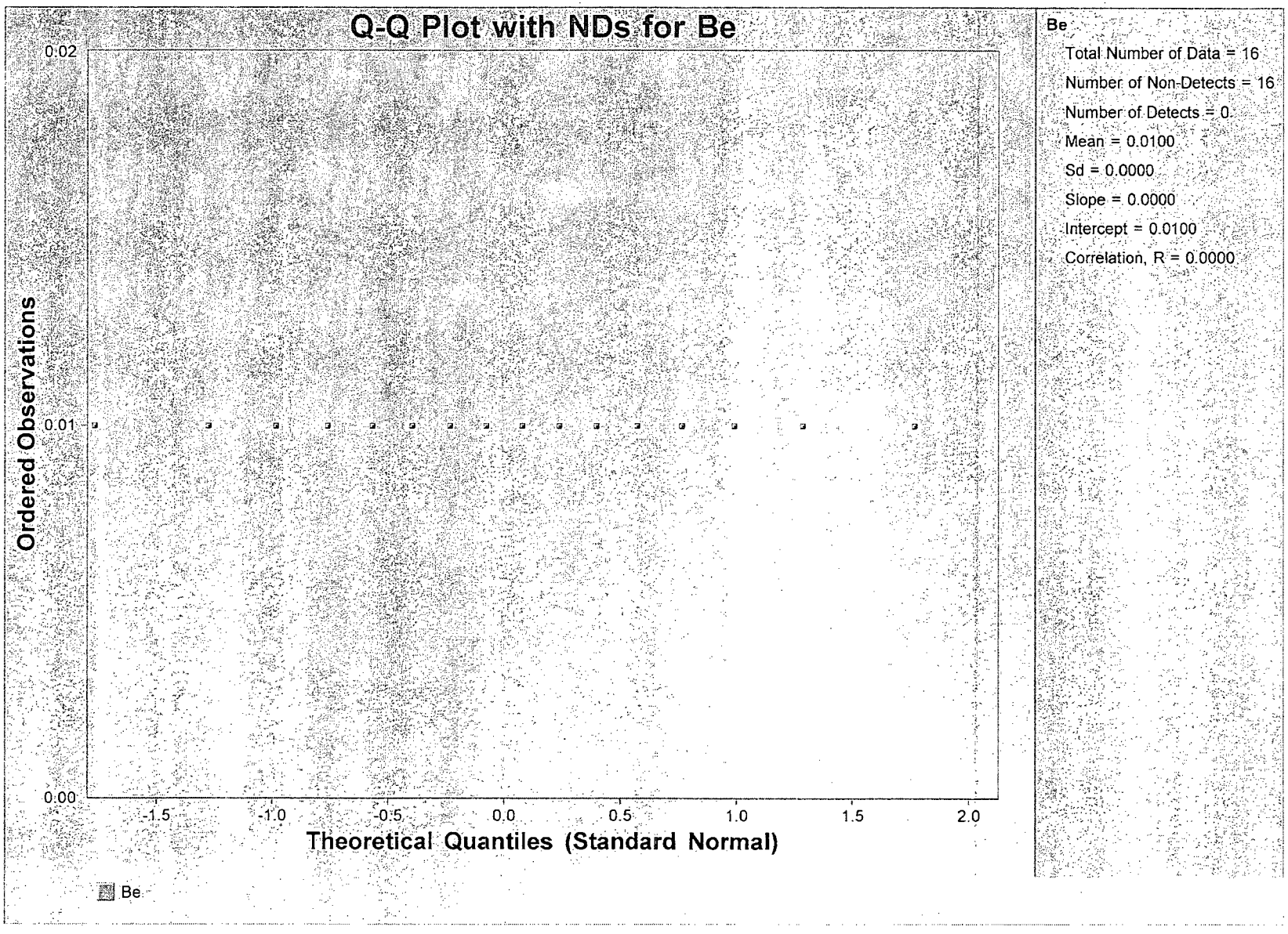
Probability Plot of Arsenic in Zone 1 Impacted Groundwater outside of Section 2, 3rd Qtr. 2006 - 2nd Qtr. 2008



(concentrations in milligrams per liter)

GRAPH B 2.3

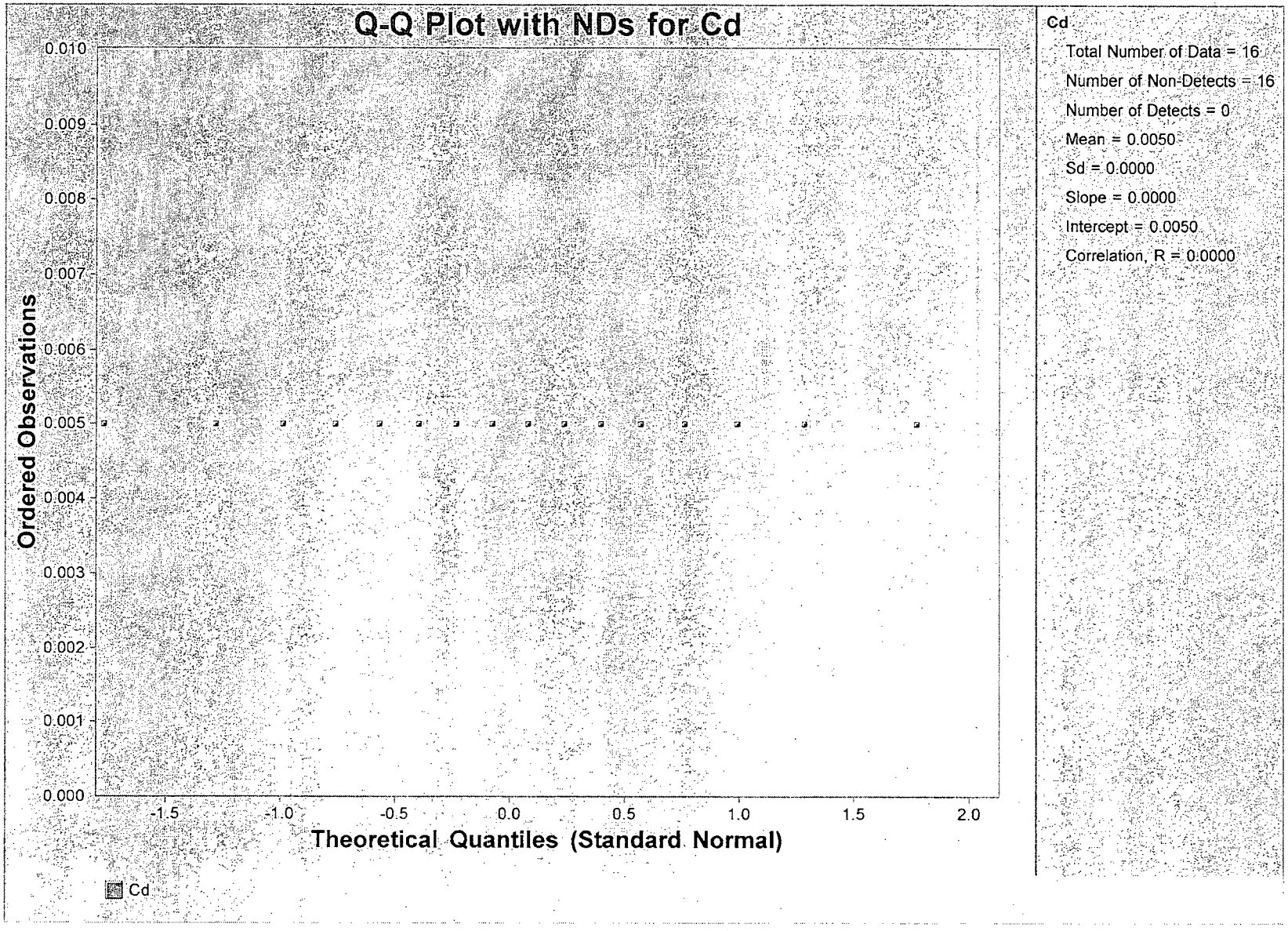
Probability Plot of Beryllium in Zone 1 Impacted Groundwater outside of Section 2, 3rd Qtr. 2006 - 2nd Qtr. 2008



(concentrations in milligrams per liter)

GRAPH B 2.4

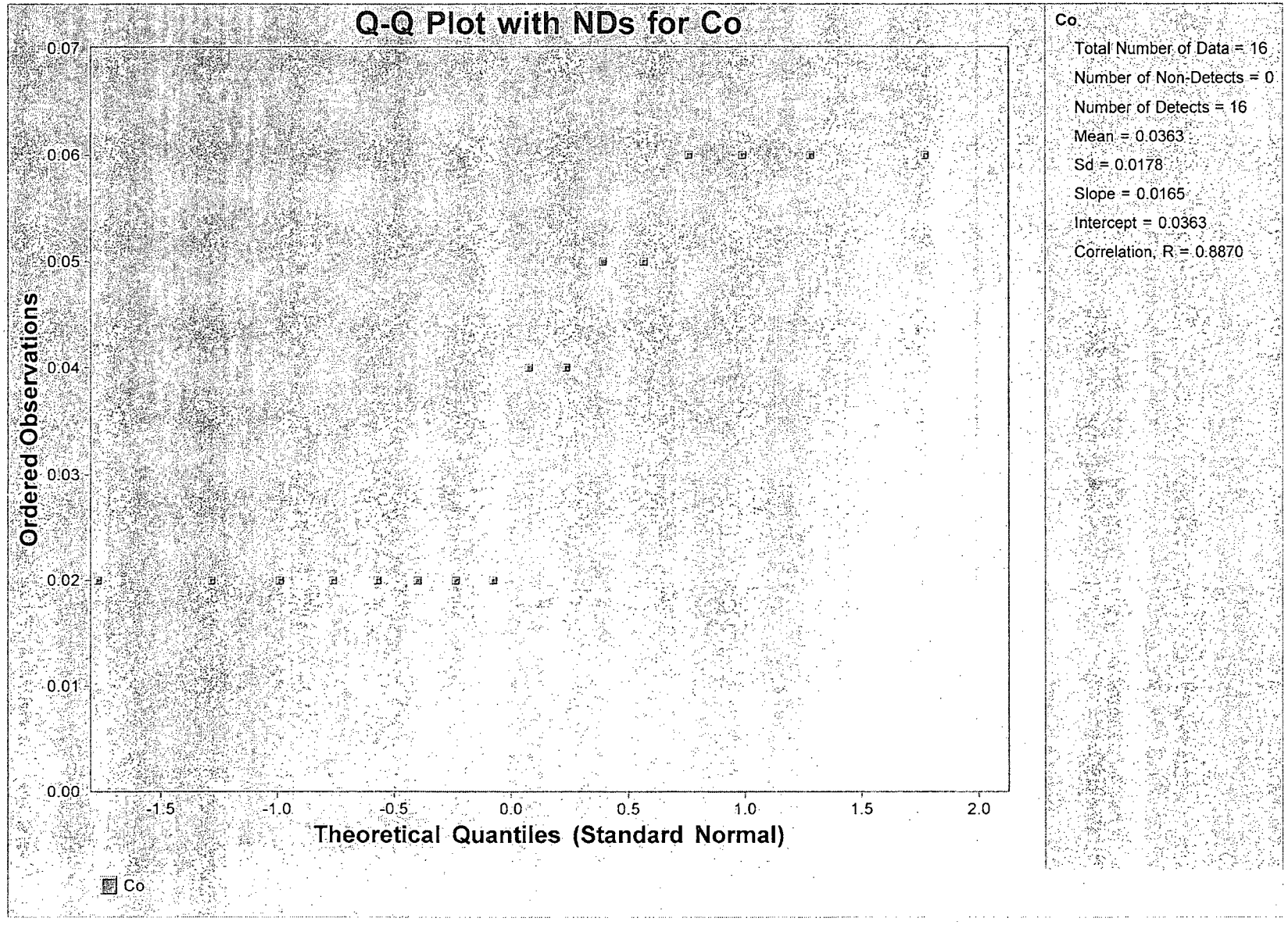
Probability Plot of Cadmium in Zone 1 Impacted Groundwater outside of Section 2, 3rd Qtr. 2006 - 2nd Qtr. 2008



(concentrations in milligrams per liter)

GRAPH B 2.5

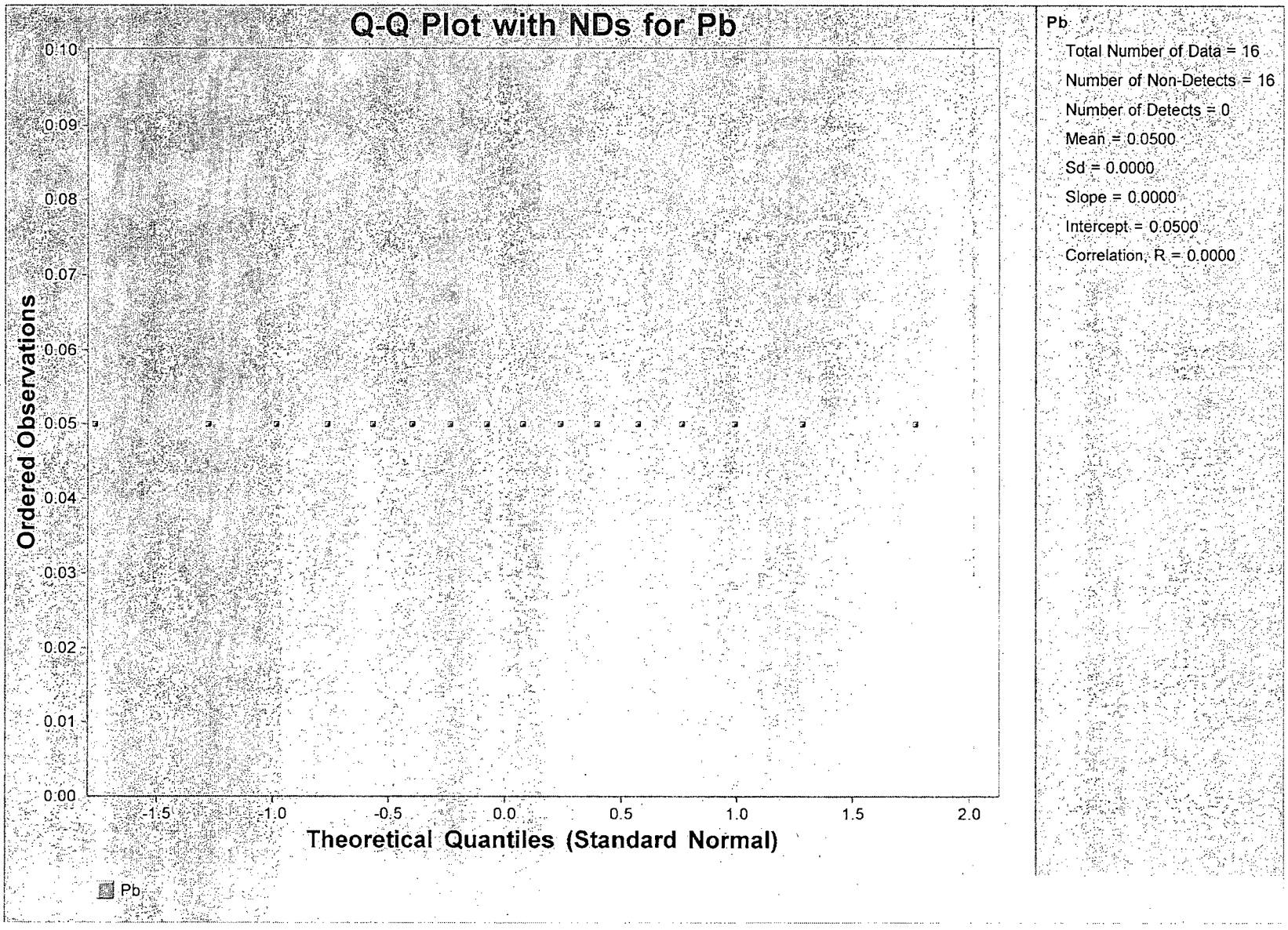
Probability Plot of Cobalt in Zone 1 Impacted Groundwater outside of Section 2, 3rd Qtr. 2006 - 2nd Qtr. 2008



(concentrations in milligrams per liter)

GRAPH B 2.6

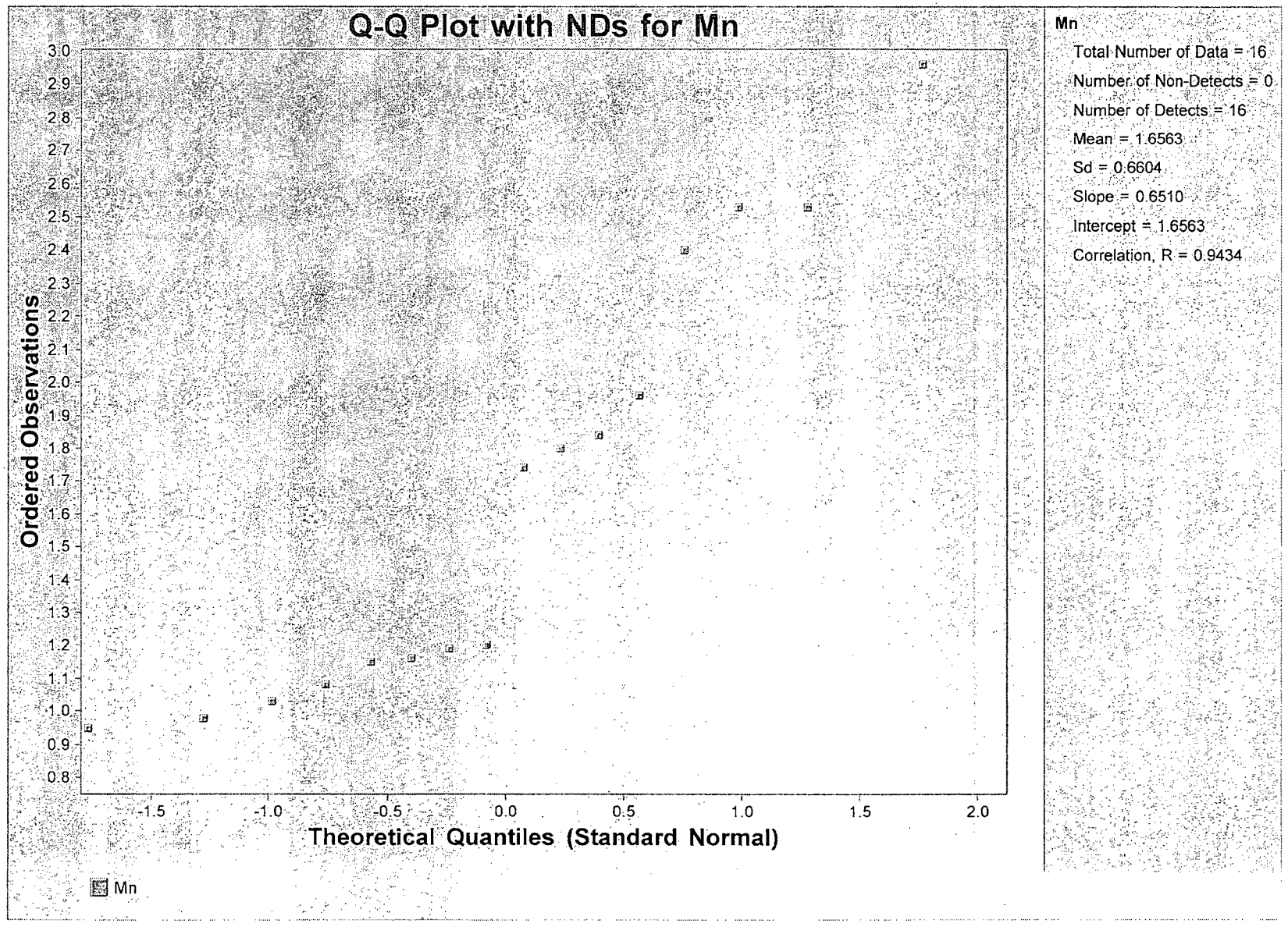
Probability Plot of Lead in Zone 1 Impacted Groundwater outside of Section 2, 3rd Qtr. 2006 - 2nd Qtr. 2008



(concentrations in milligrams per liter)

GRAPH B 2.7

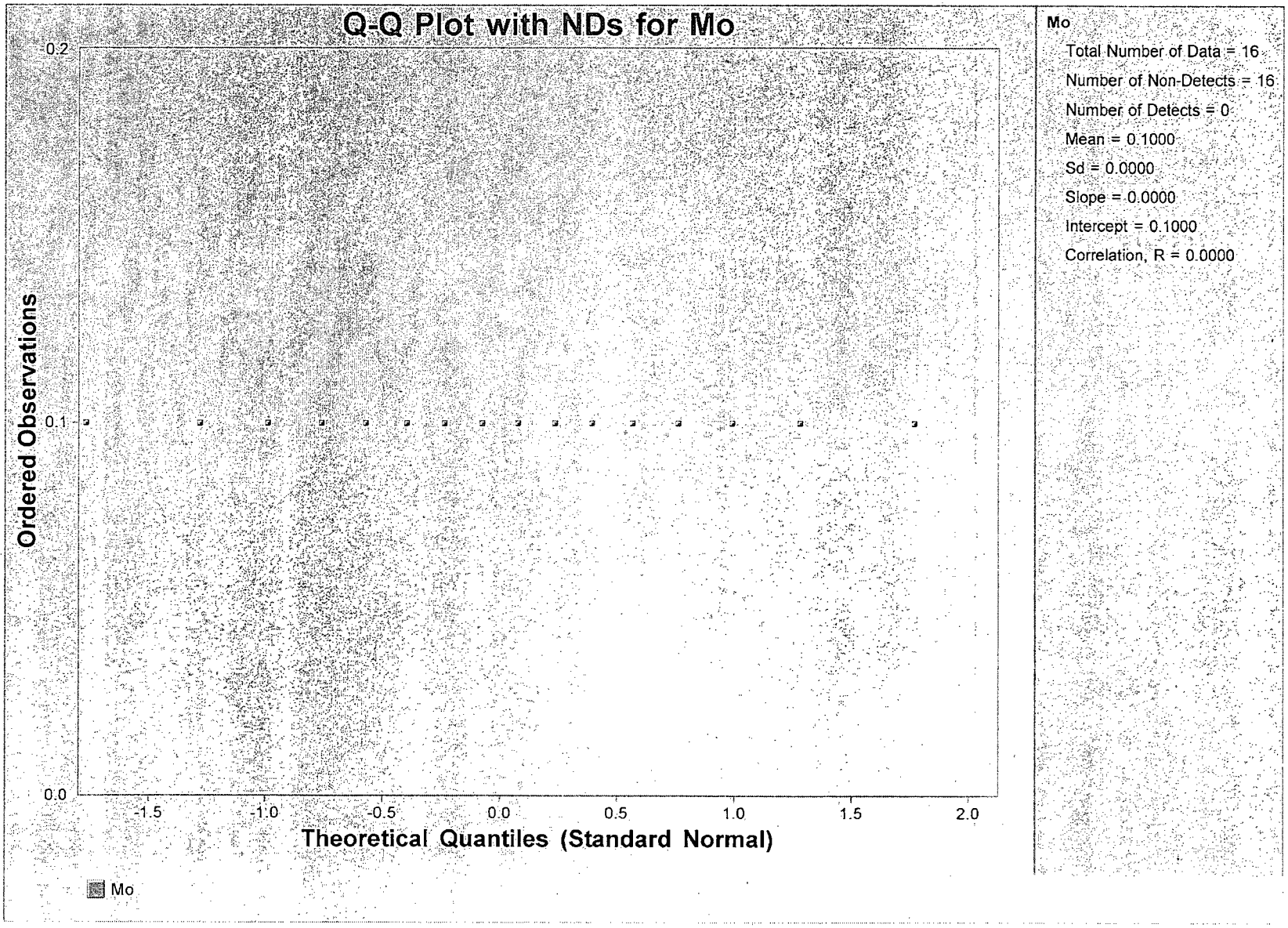
Probability Plot of Manganese in Zone 1 Impacted Groundwater outside of Section 2, 3rd Qtr. 2006 - 2nd Qtr. 2008



(concentrations in milligrams per liter)

GRAPH B 2.8

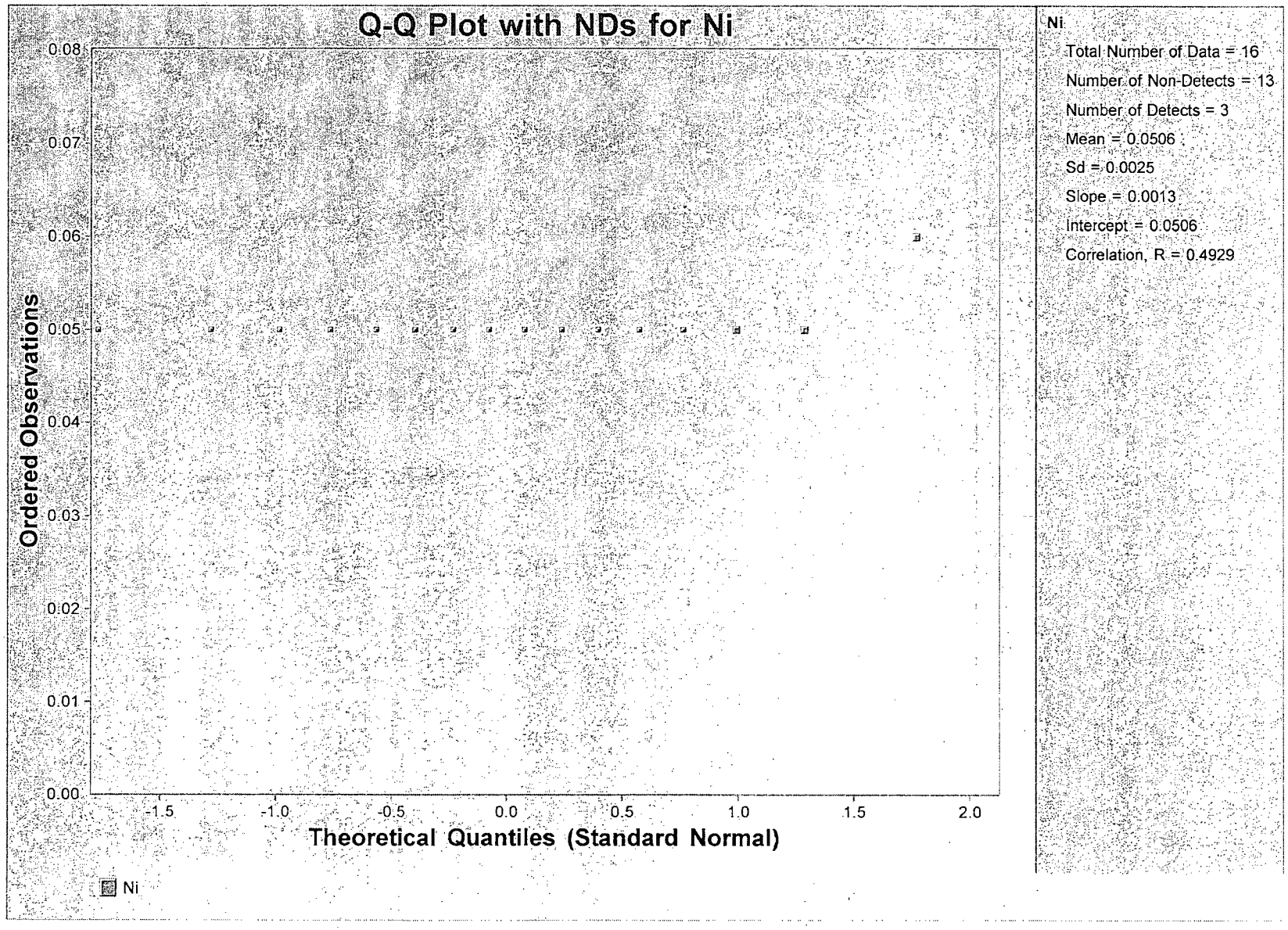
Probability Plot of Molybdenum in Zone 1 Impacted Groundwater outside of Section 2, 3rd Qtr. 2006 - 2nd Qtr. 2008



(concentrations in milligrams per liter)

GRAPH B 2.9

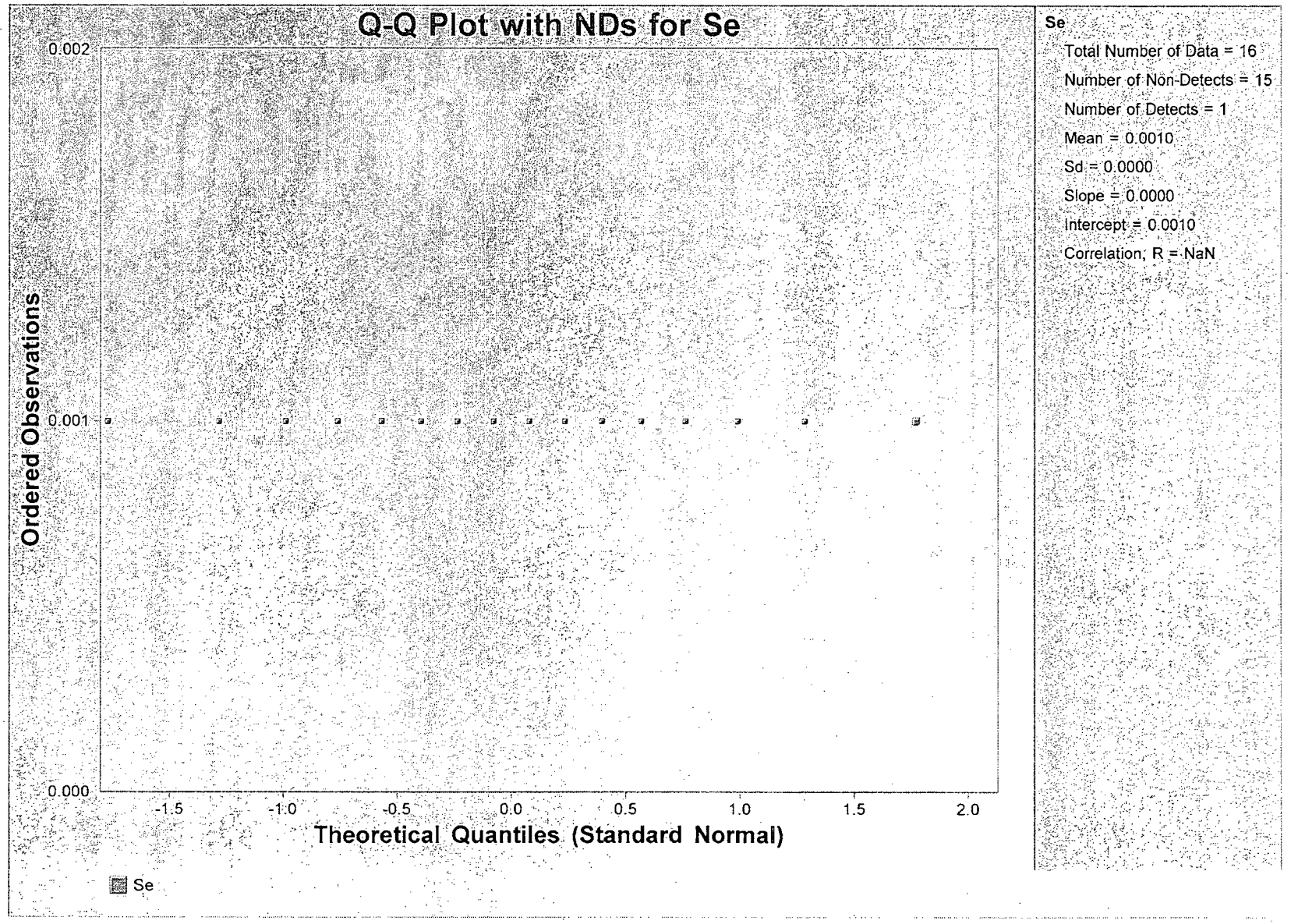
Probability Plot of Nickel in Zone 1 Impacted Groundwater outside of Section 2, 3rd Qtr. 2006 - 2nd Qtr. 2008



(concentrations in milligrams per liter)

GRAPH B 2.10

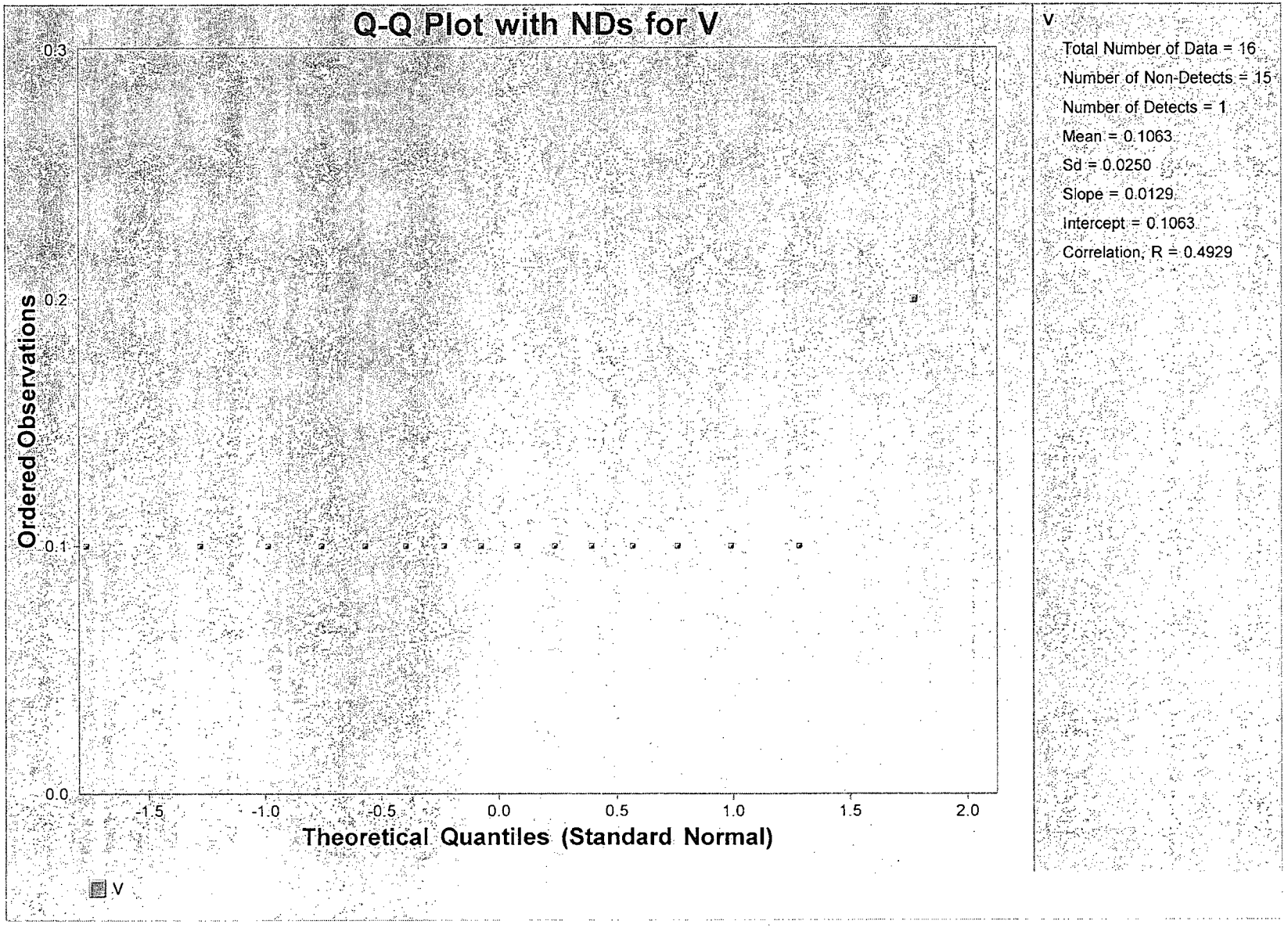
Probability Plot of Selenium in Zone 1 Impacted Groundwater outside of Section 2, 3rd Qtr. 2006 - 2nd Qtr. 2008



(concentrations in milligrams per liter)

GRAPH B 2.11

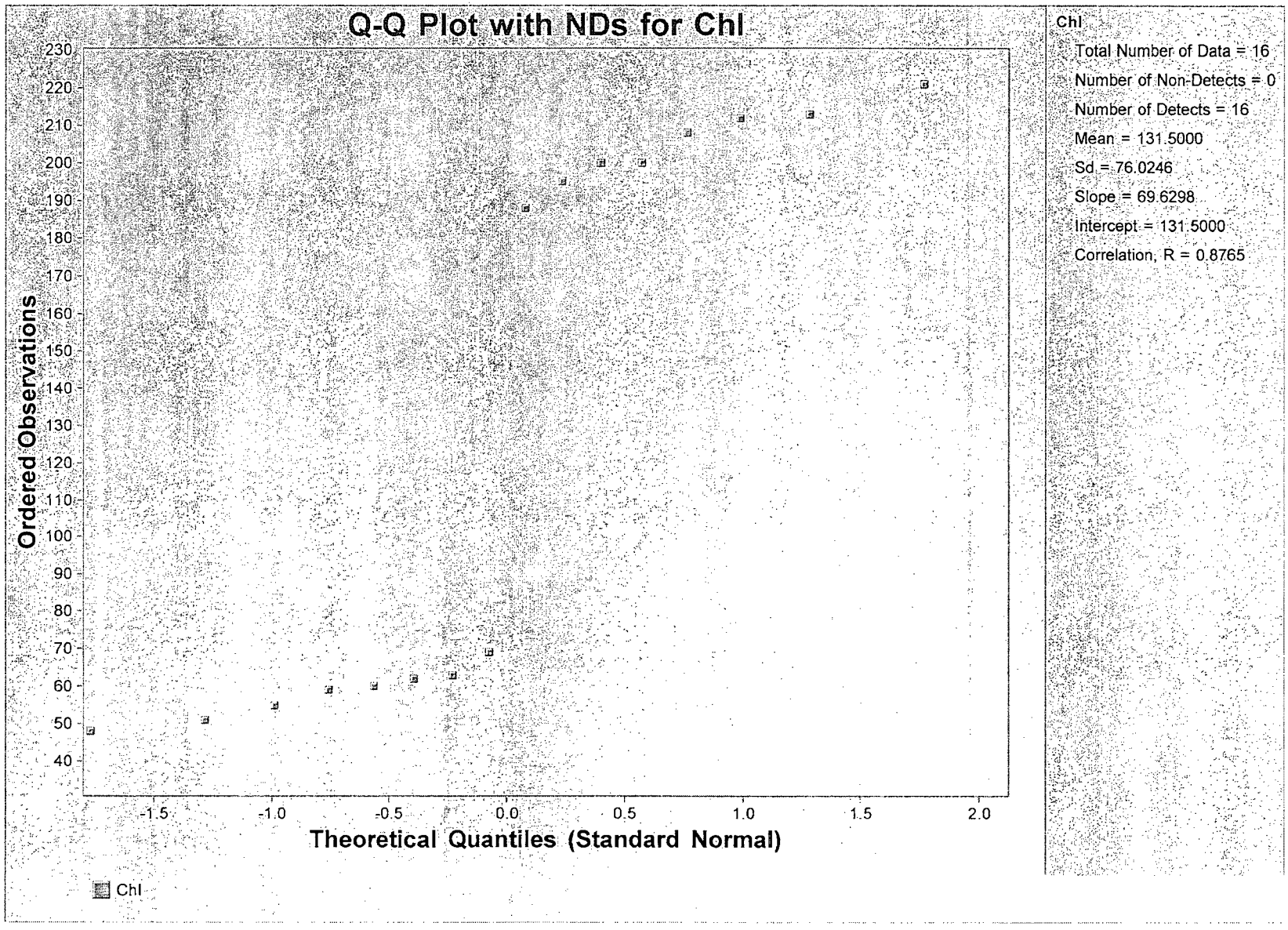
Probability Plot of Vanadium in Zone 1 Impacted Groundwater outside of Section 2, 3rd Qtr. 2006 - 2nd Qtr. 2008



(concentrations in milligrams per liter)

GRAPH B 2.12

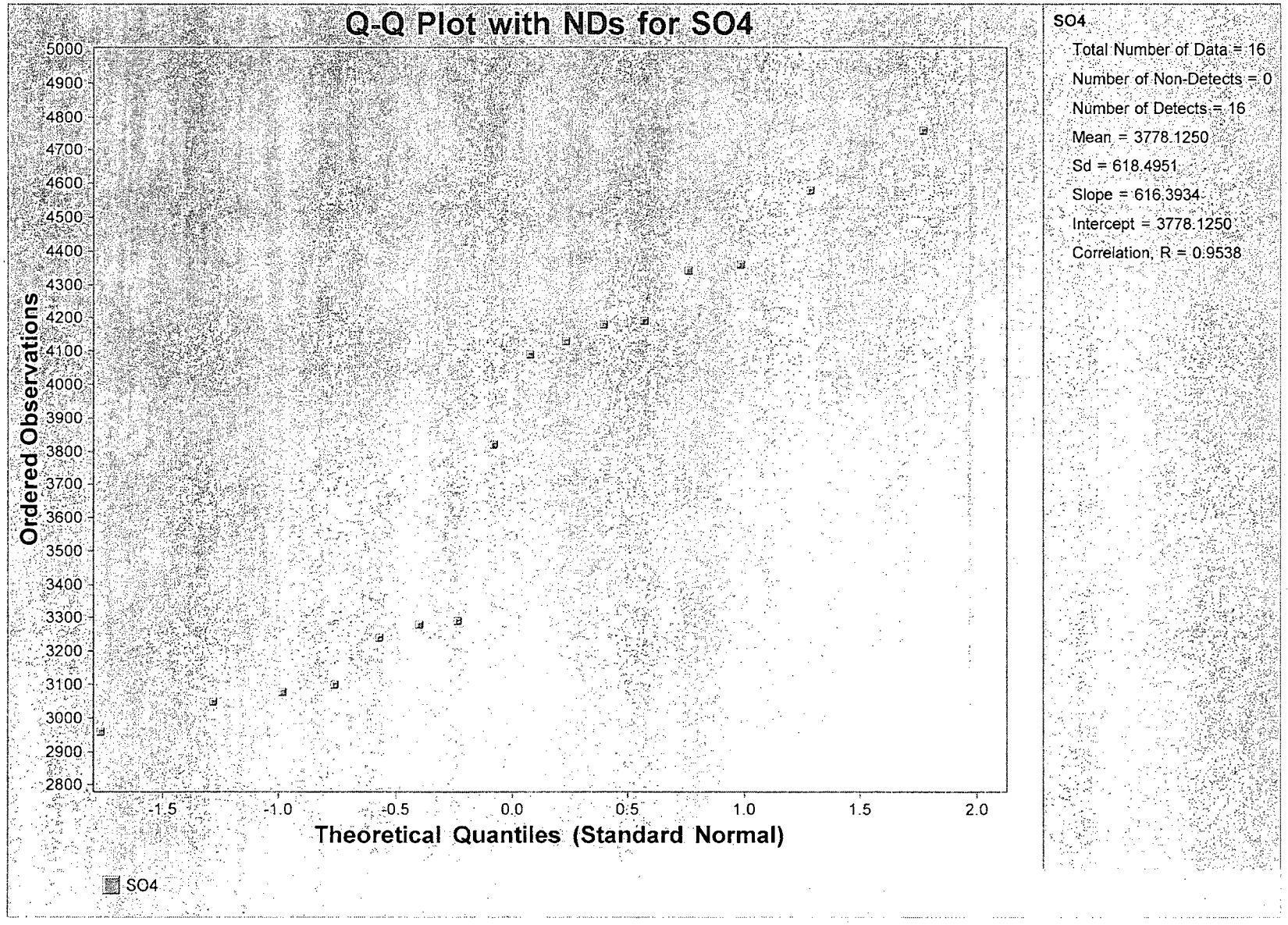
Probability Plot of Chloride in Zone 1 Impacted Groundwater outside of Section 2, 3rd Qtr. 2006 - 2nd Qtr. 2008



(concentrations in milligrams per liter)

GRAPH B 2.13

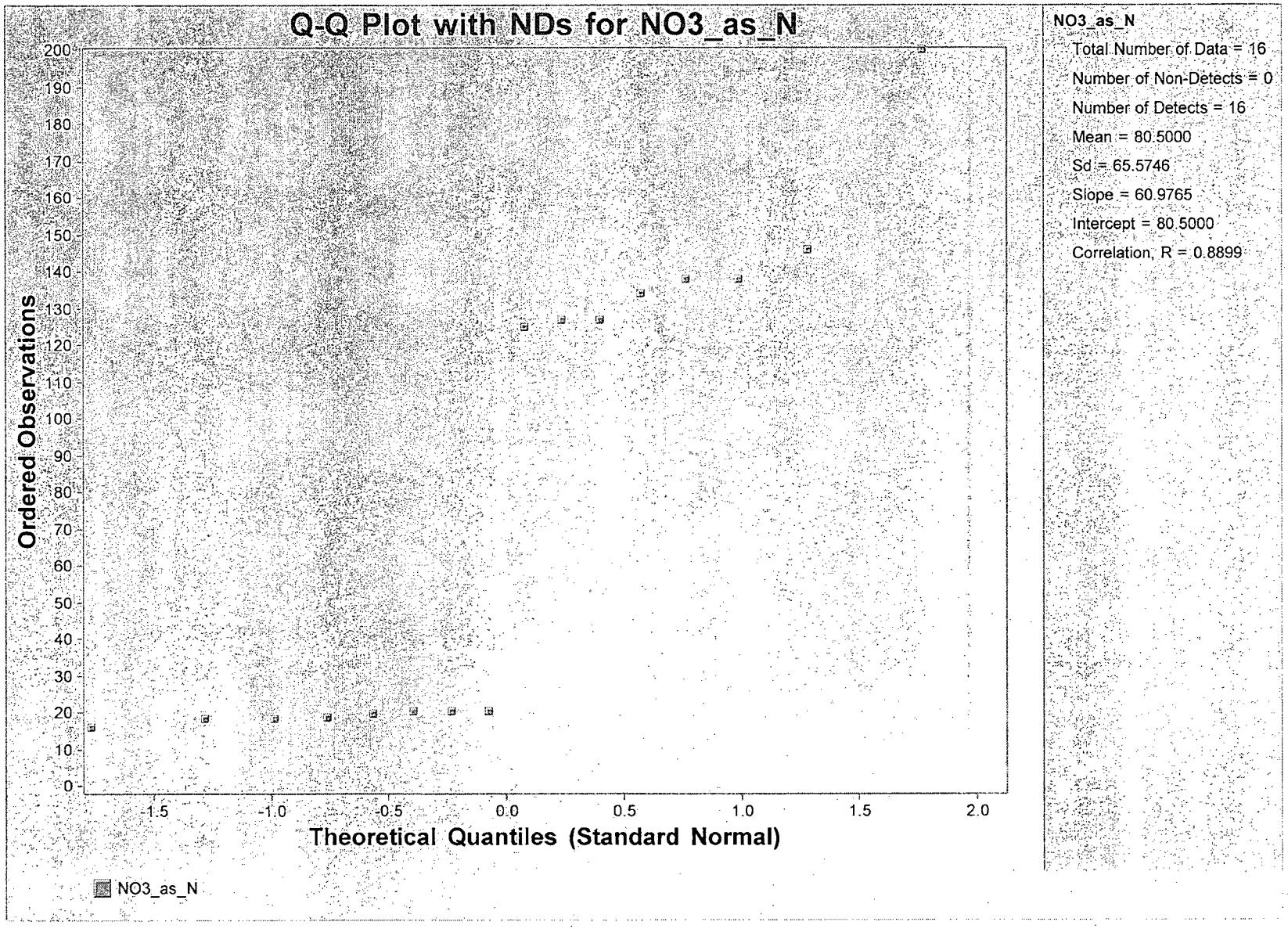
Probability Plot of Sulfate in Zone 1 Impacted Groundwater outside of Section 2, 3rd Qtr. 2006 - 2nd Qtr. 2008



(concentrations in milligrams per liter)

GRAPH B 2.14

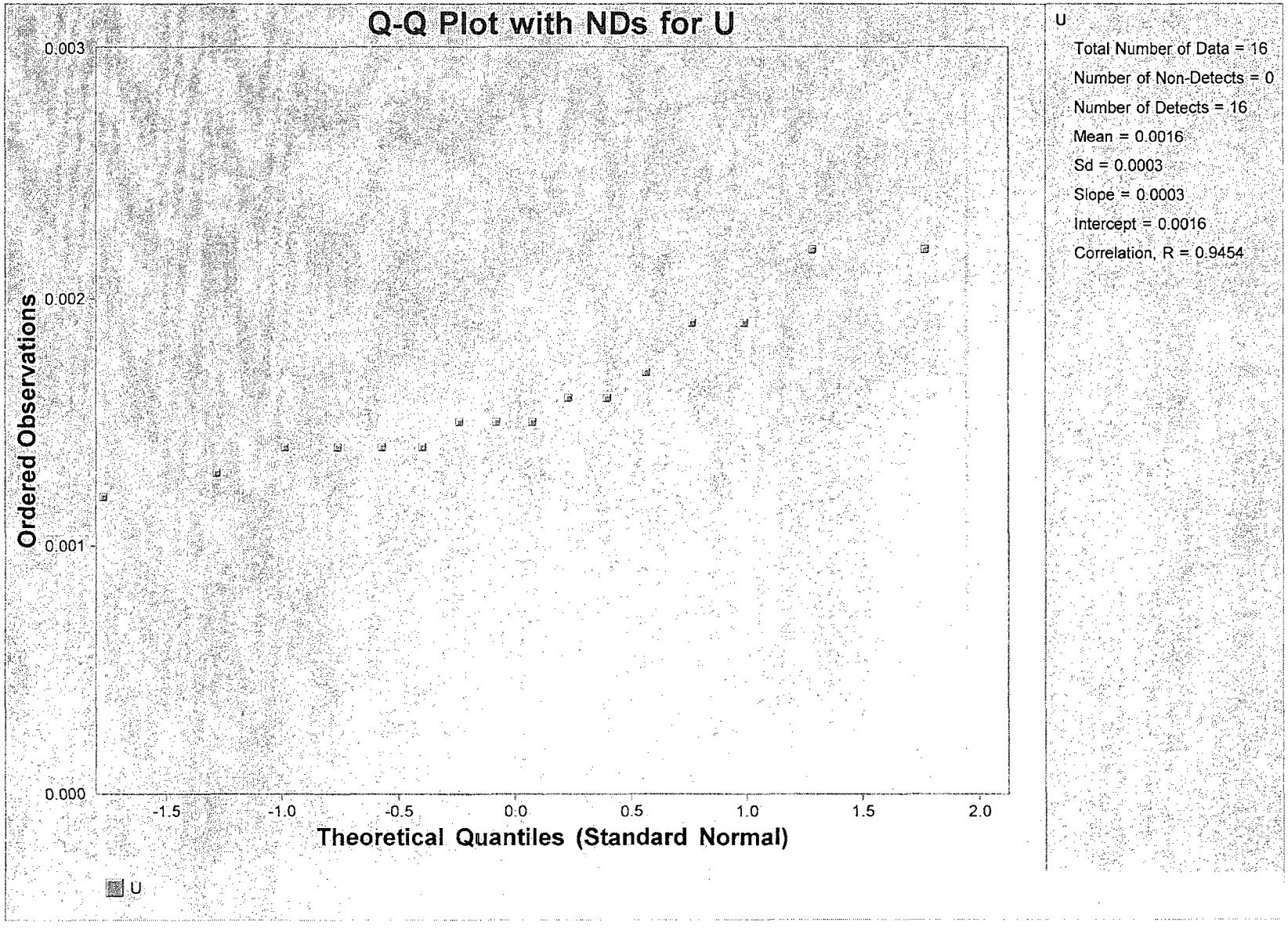
Probability Plot of Nitrate in Zone 1 Impacted Groundwater outside of Section 2, 3rd Qtr. 2006 - 2nd Qtr. 2008



(concentrations in milligrams per liter)

GRAPH B 2.15

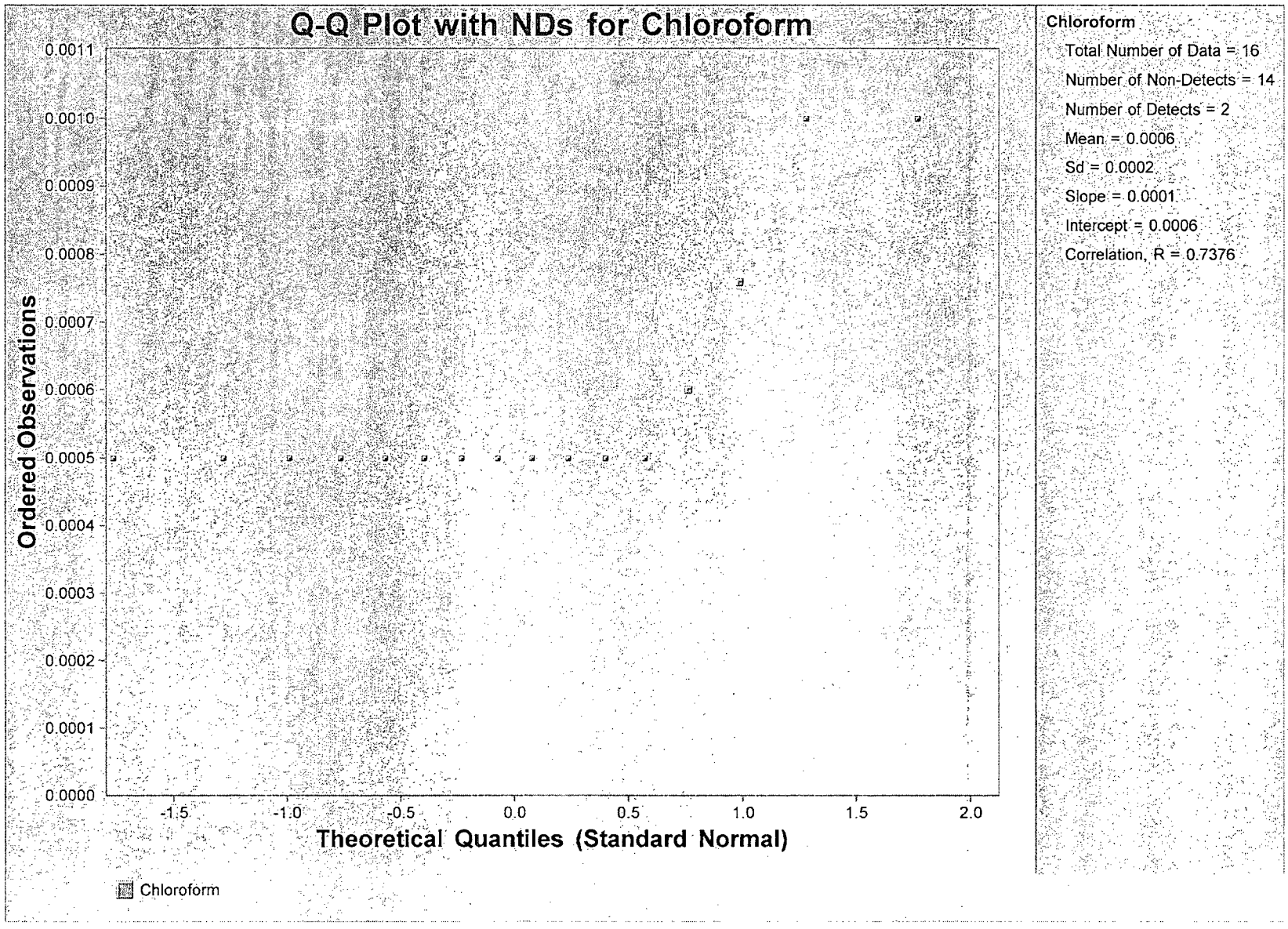
Probability Plot of Uranium in Zone 1 Impacted Groundwater outside of Section 2, 3rd Qtr. 2006 - 2nd Qtr. 2008



(concentrations in milligrams per liter)

GRAPH B 2.16

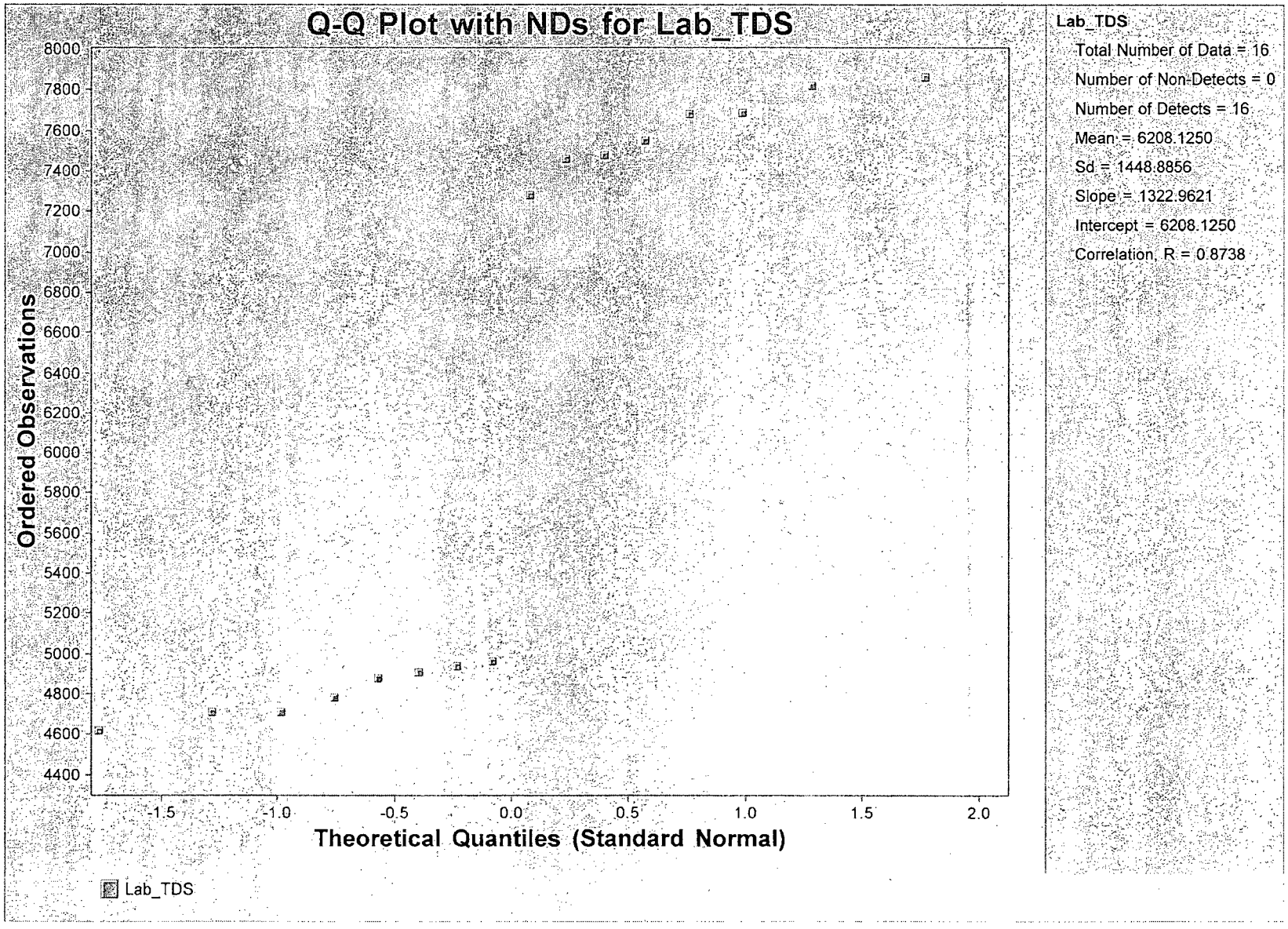
Probability Plot of Chloroform in Zone 1 Impacted Groundwater outside of Section 2, 3rd Qtr. 2006 - 2nd Qtr. 2008



(concentrations in milligrams per liter)

GRAPH B 2.17

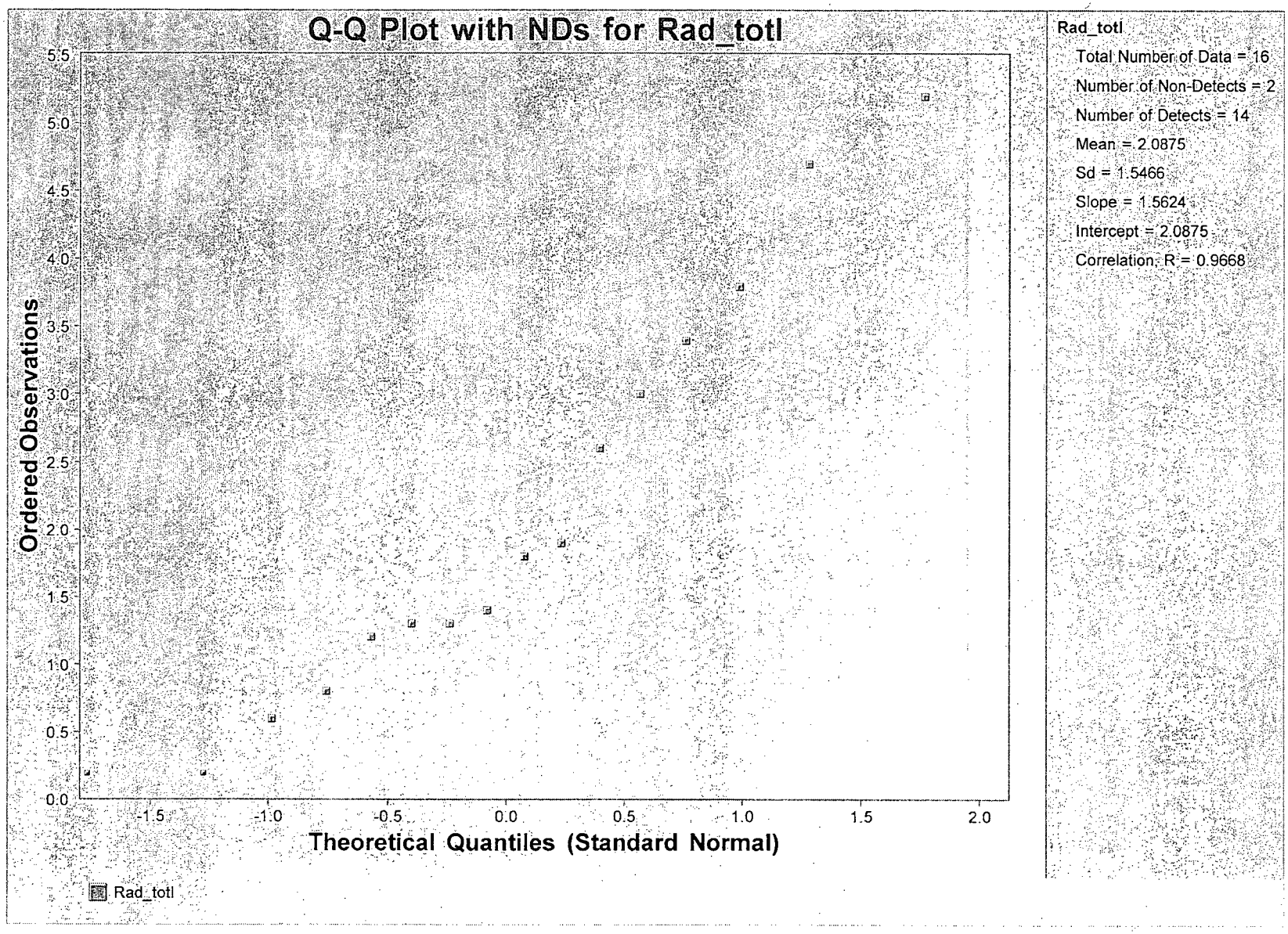
Probability Plot of Total Dissolved Solids in Zone 1 Impacted Groundwater outside of Section 2, 3rd Qtr. 2006 - 2nd Qtr. 2008



(concentrations in milligrams per liter)

GRAPH B 2.18

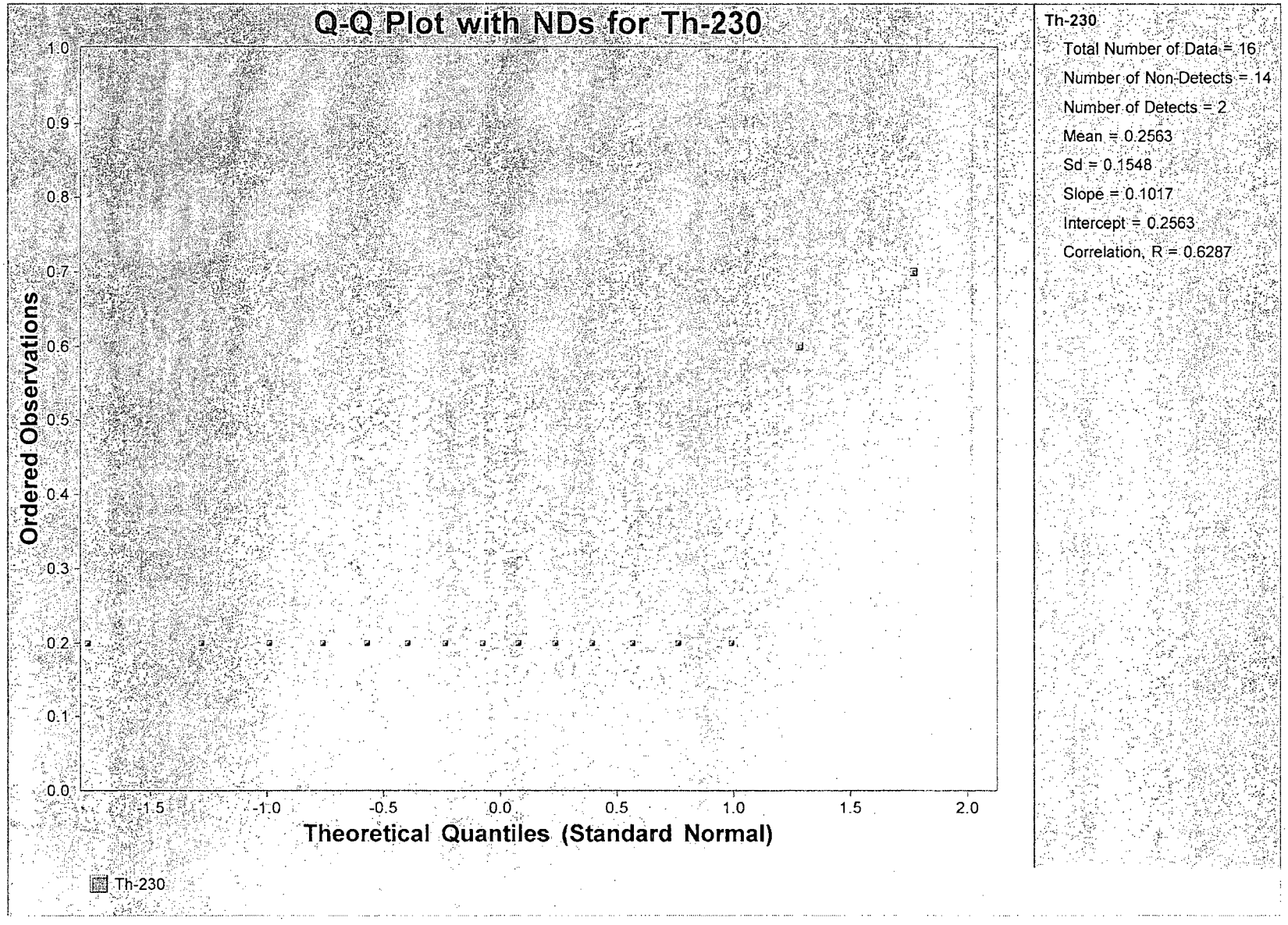
Probability Plot of Total Radium in Zone 1 Impacted Groundwater outside of Section 2, 3rd Qtr. 2006 - 2nd Qtr. 2008



(concentrations in pico curies per liter)

GRAPH B 2.19

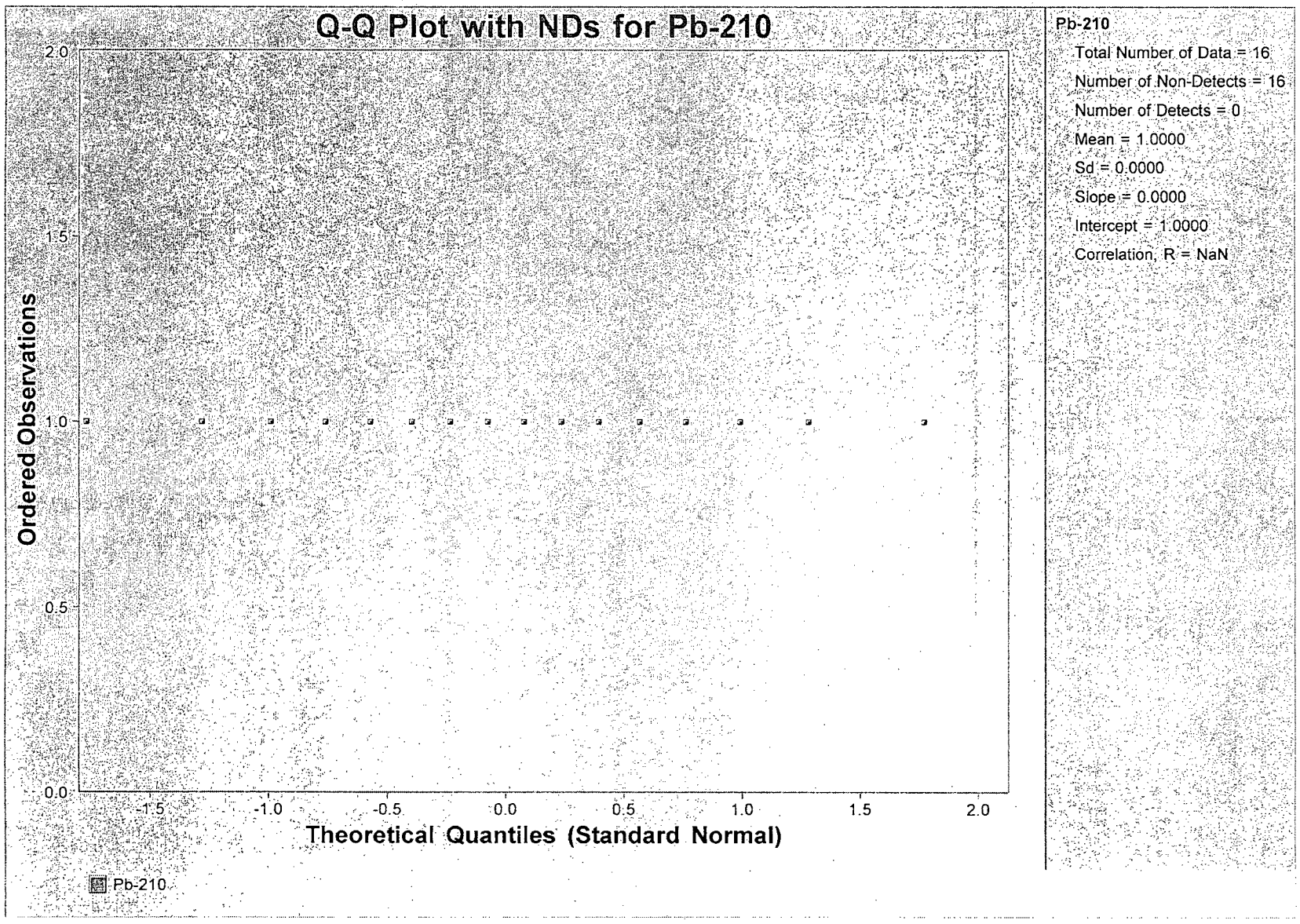
Probability Plot of Thorium-230 in Zone 1 Impacted Groundwater outside of Section 2, 3rd Qtr. 2006 - 2nd Qtr. 2008



(concentrations in pico curies per liter)

GRAPH B 2.20

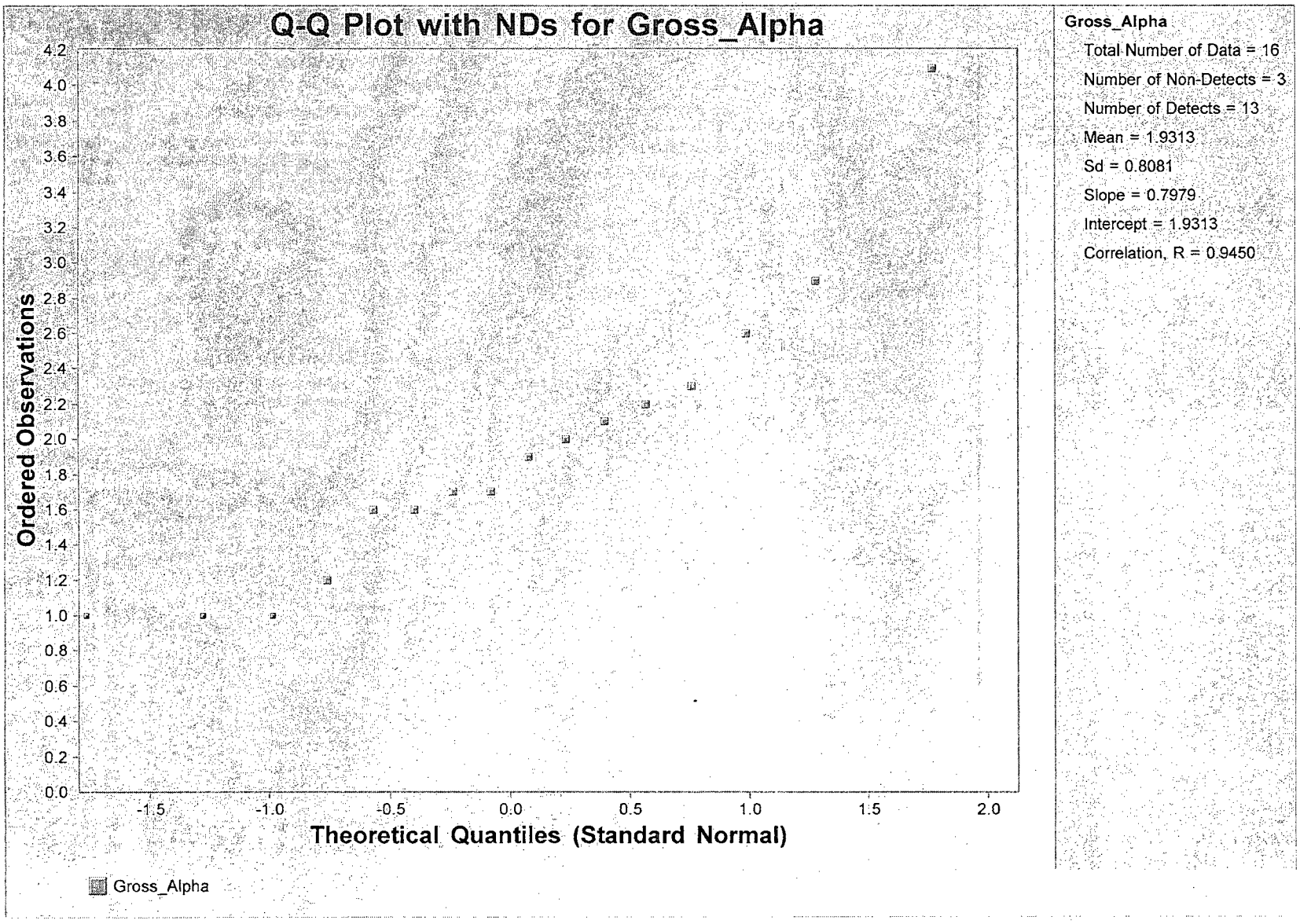
Probability Plot of Lead-210 in Zone 1 Impacted Groundwater outside of Section 2, 3rd Qtr. 2006 - 2nd Qtr. 2008



(concentrations in pico curies per liter)

GRAPH B 2.21

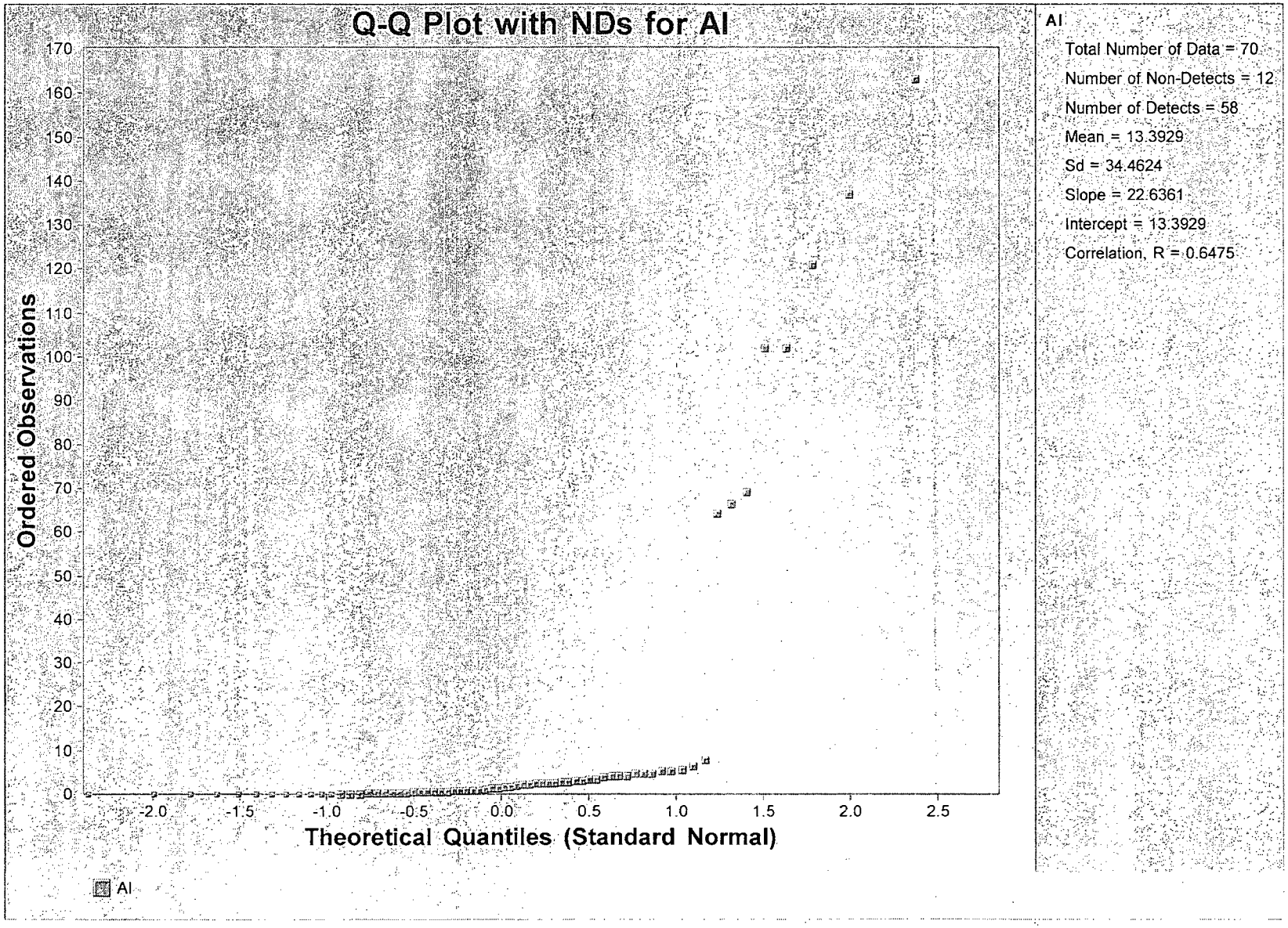
Probability Plot of Gross Alpha in Zone 1 Impacted Groundwater outside of Section 2, 3rd Qtr. 2006 - 2nd Qtr. 2008



(concentrations in pico curies per liter)

GRAPH B 3.1

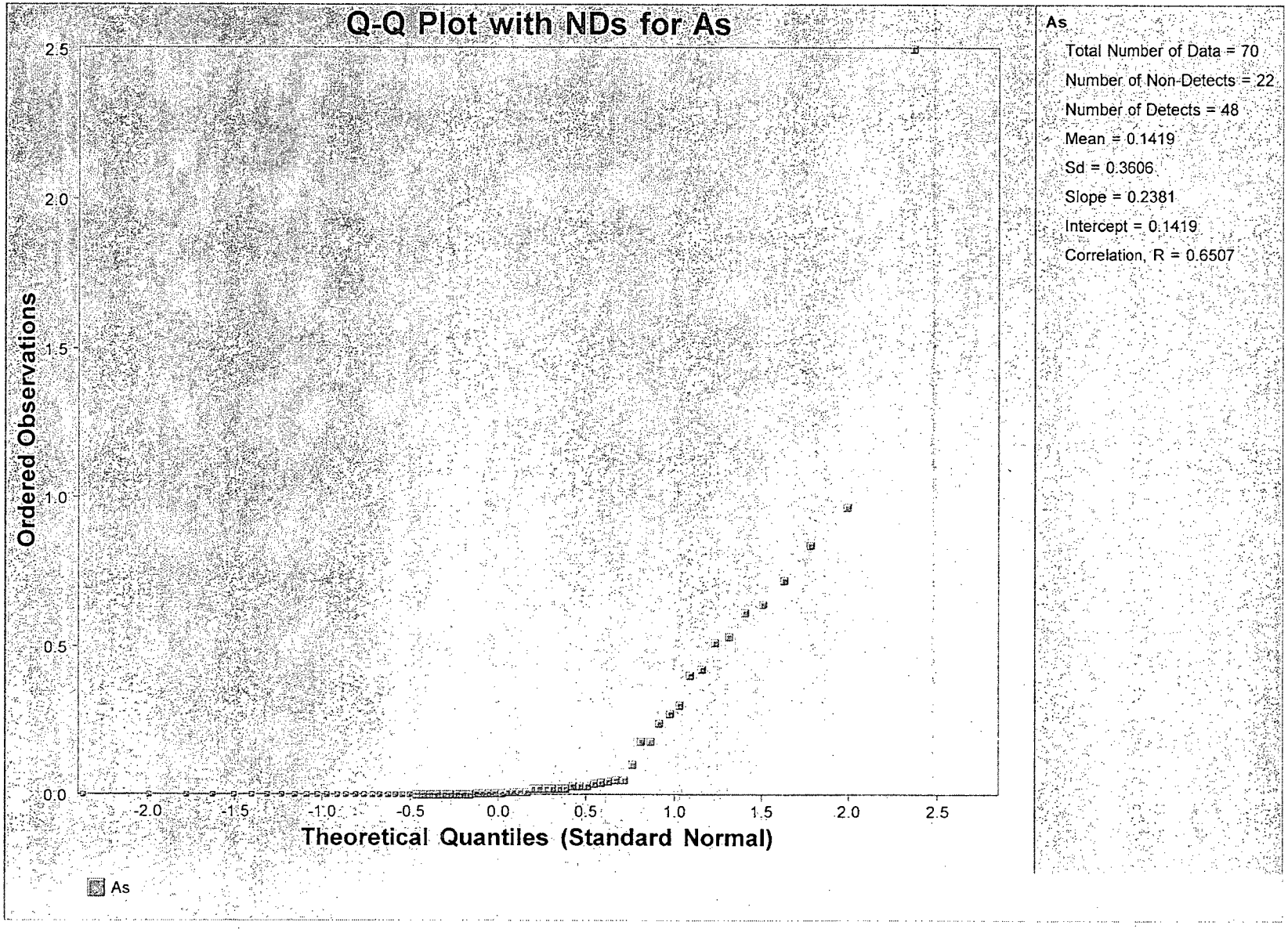
Probability Plot of Aluminum in Zone 3 Impacted Groundwater outside of Section 2, 3rd Qtr. 2006 - 2nd Qtr. 2008



(concentrations in milligrams per liter)

GRAPH B 3.2

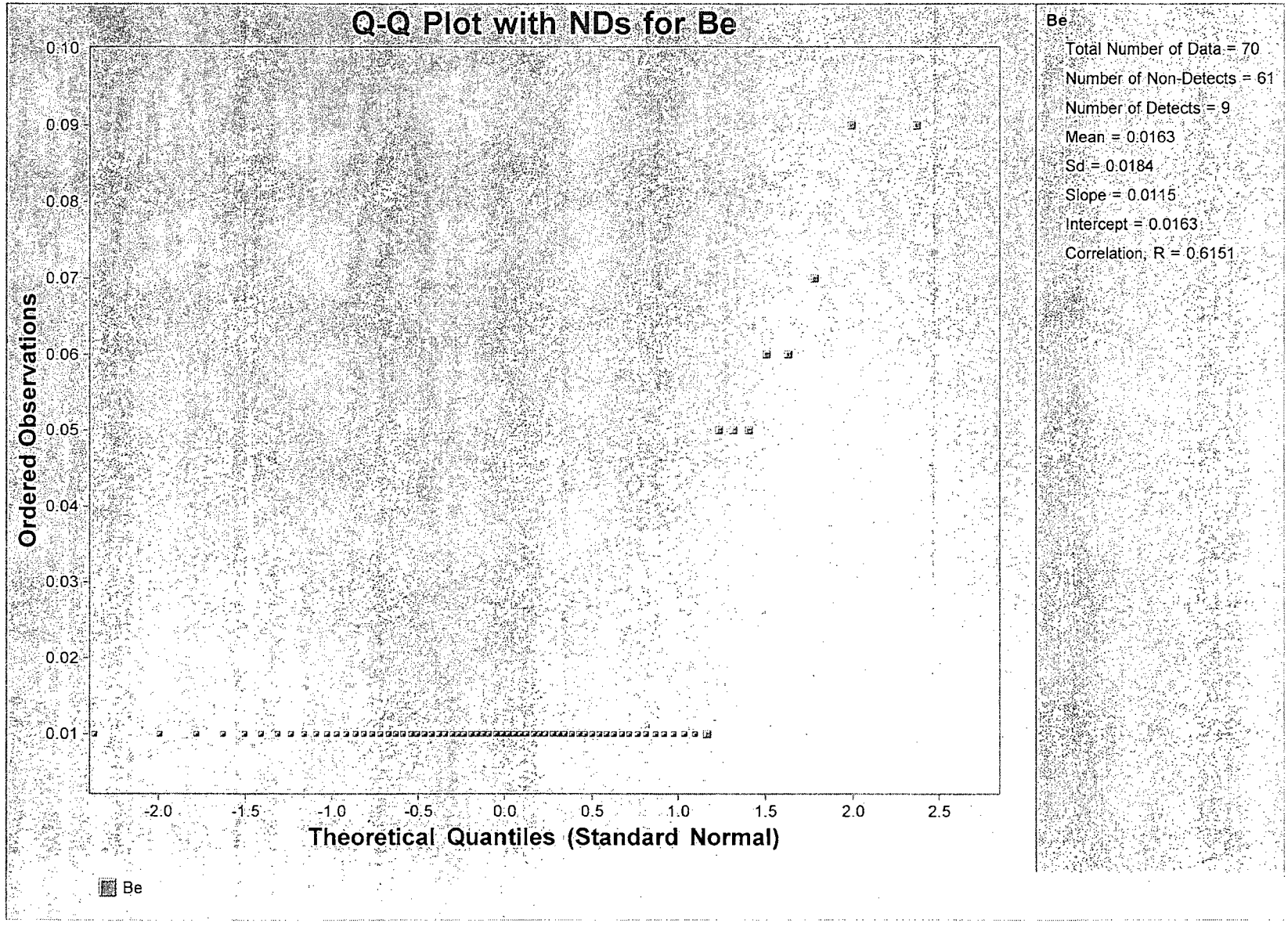
Probability Plot of Arsenic in Zone 3 Impacted Groundwater outside of Section 2, 3rd Qtr. 2006 - 2nd Qtr. 2008



(concentrations in milligrams per liter)

GRAPH B 3.3

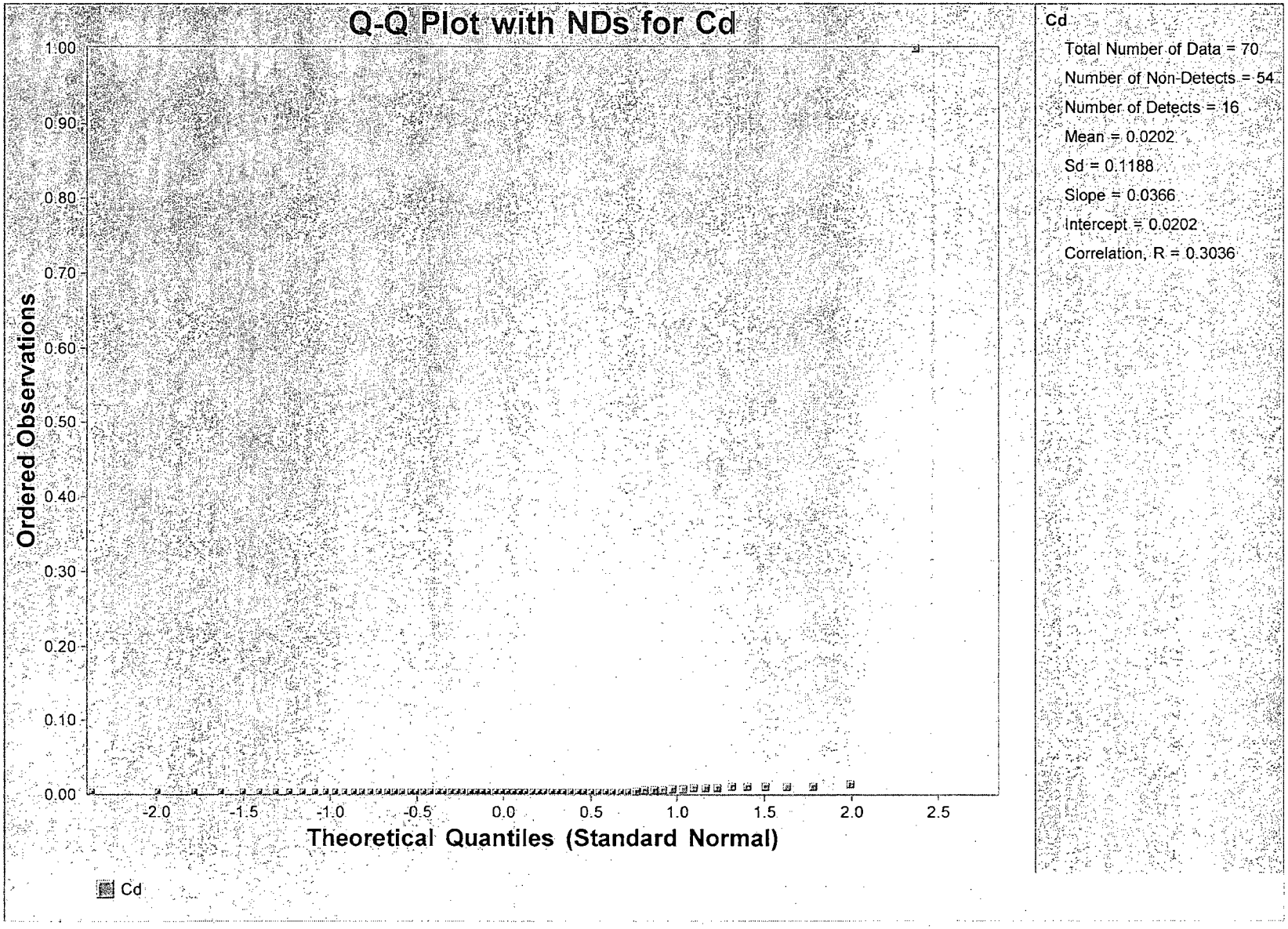
Probability Plot of Beryllium in Zone 3 Impacted Groundwater outside of Section 2, 3rd Qtr. 2006 - 2nd Qtr. 2008



(concentrations in milligrams per liter)

GRAPH B 3.4

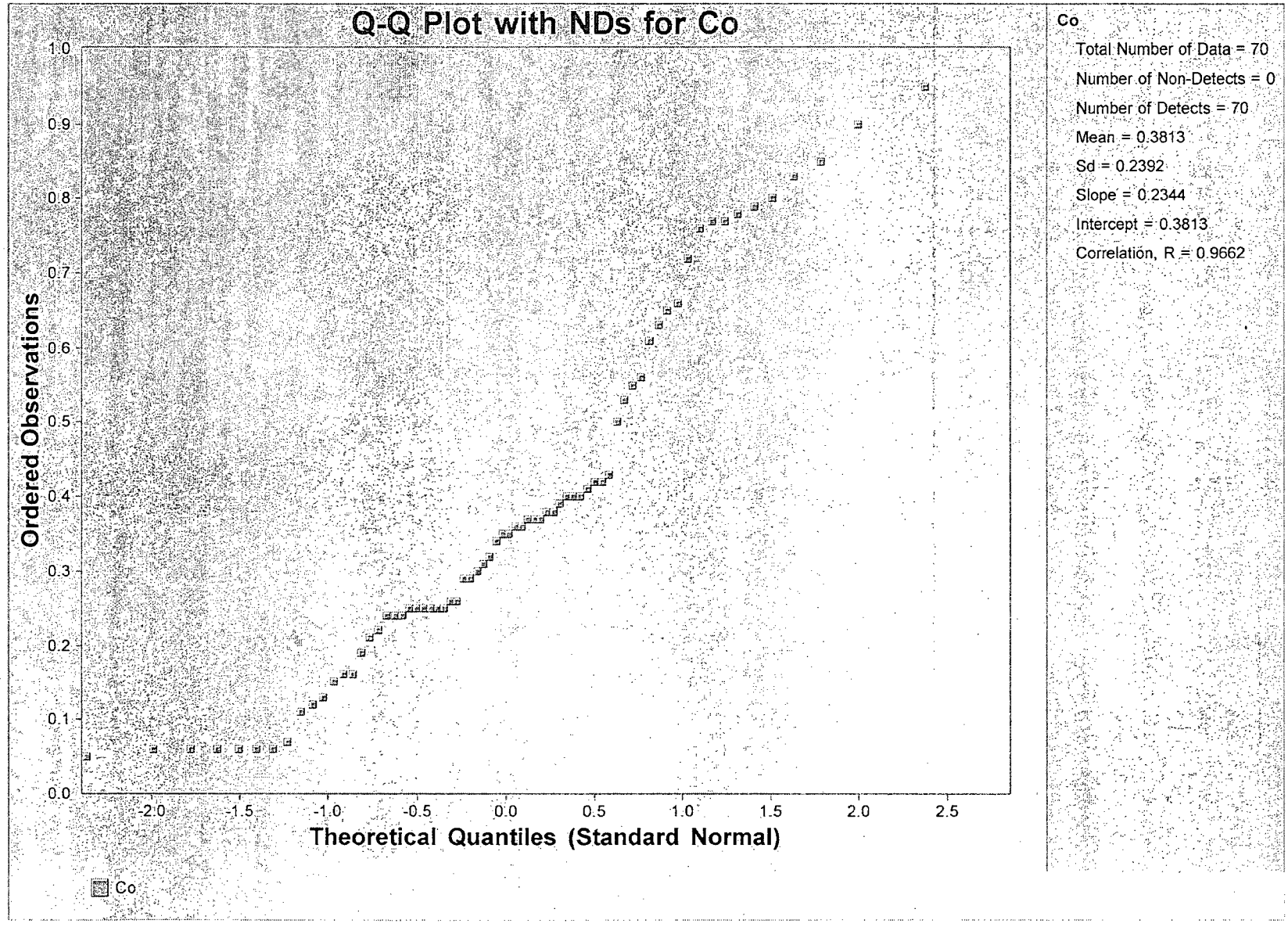
Probability Plot of Cadmium in Zone 3 Impacted Groundwater outside of Section 2, 3rd Qtr. 2006 - 2nd Qtr. 2008



(concentrations in milligrams per liter)

GRAPH B 3.5

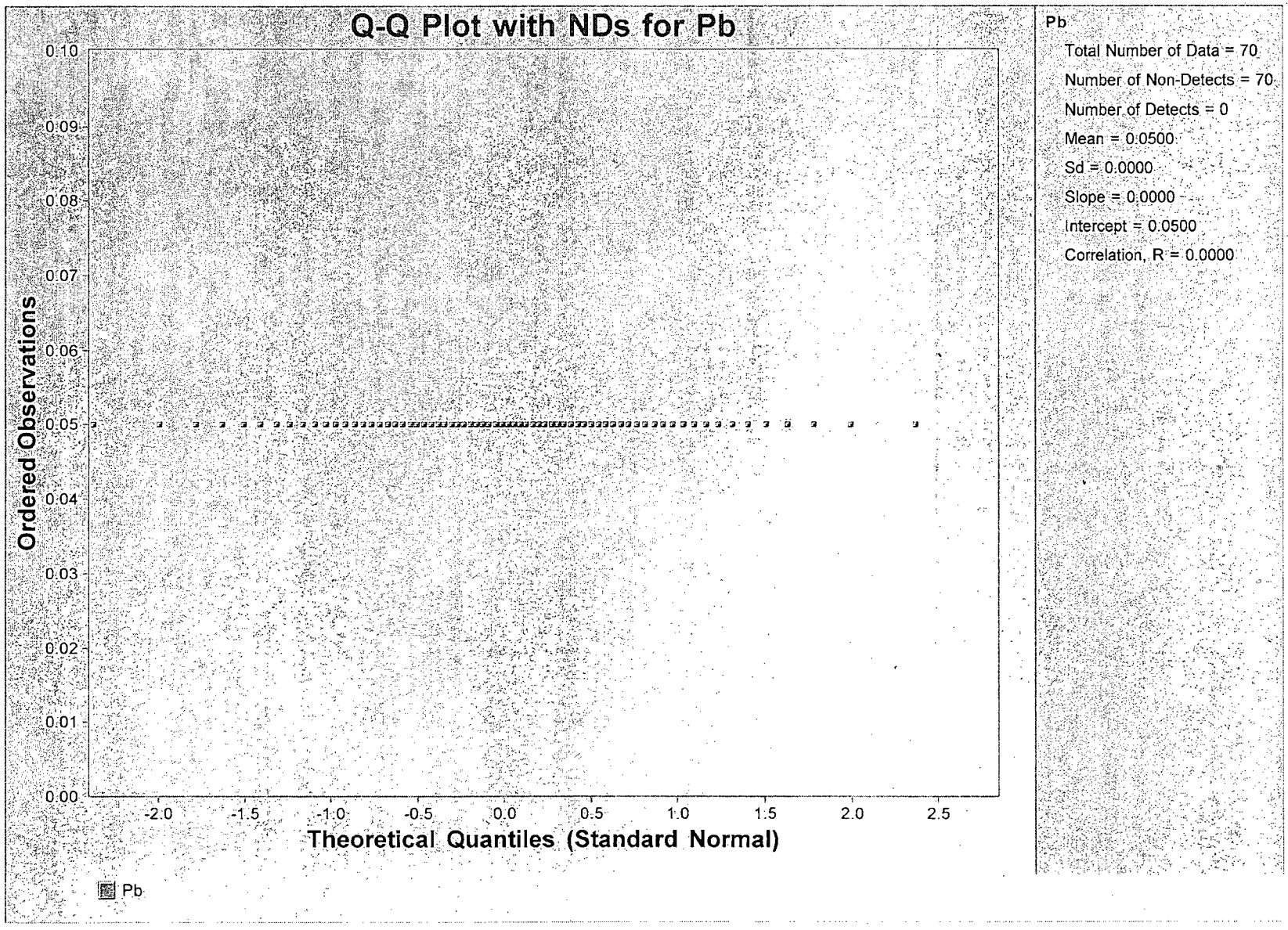
Probability Plot of Cobalt in Zone 3 Impacted Groundwater outside of Section 2, 3rd Qtr. 2006 - 2nd Qtr. 2008



(concentrations in milligrams per liter)

GRAPH B 3.6

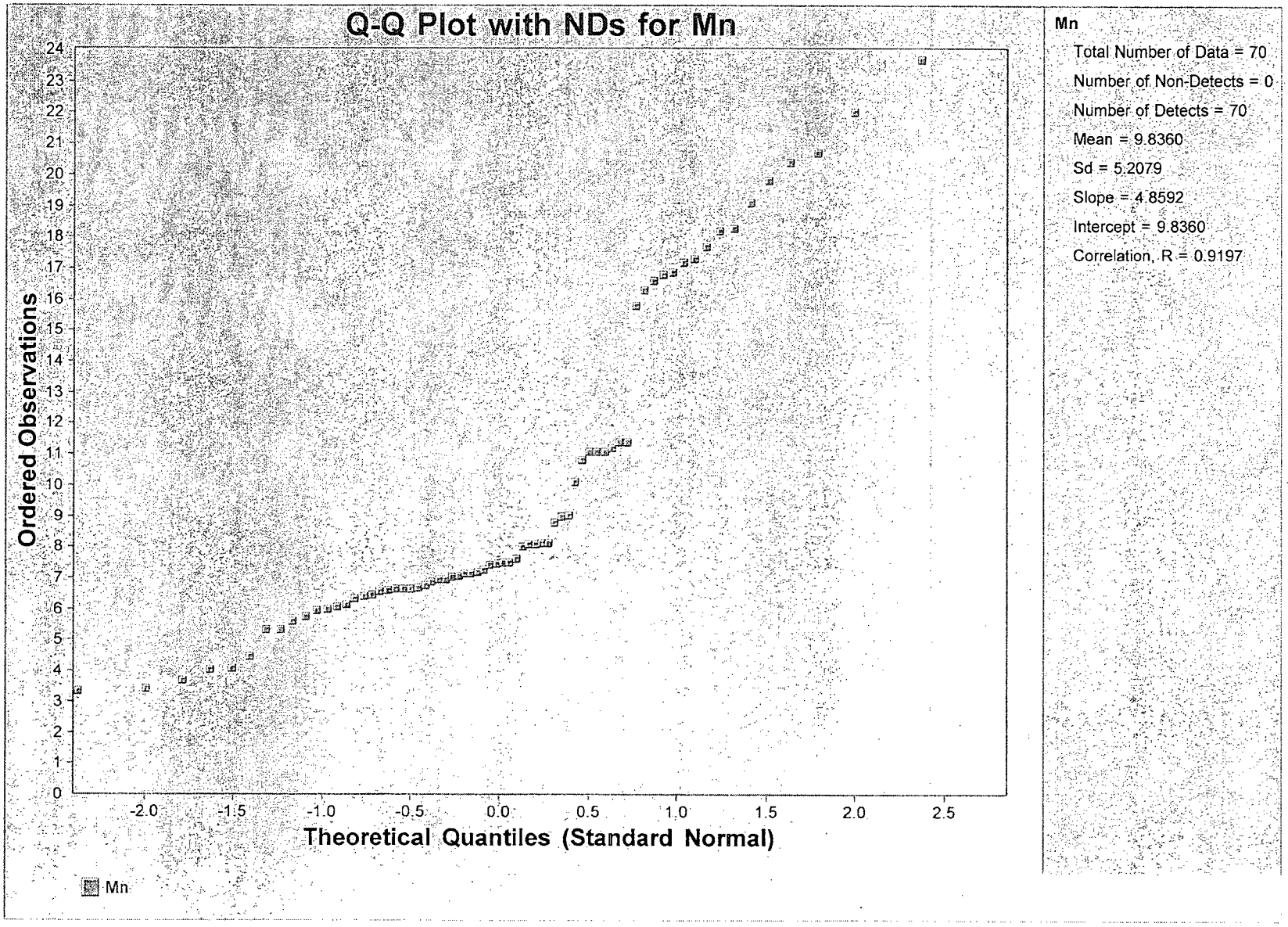
Probability Plot of Lead in Zone 3 Impacted Groundwater outside of Section 2, 3rd Qtr. 2006 - 2nd Qtr. 2008



(concentrations in milligrams per liter)

GRAPH B 3.7

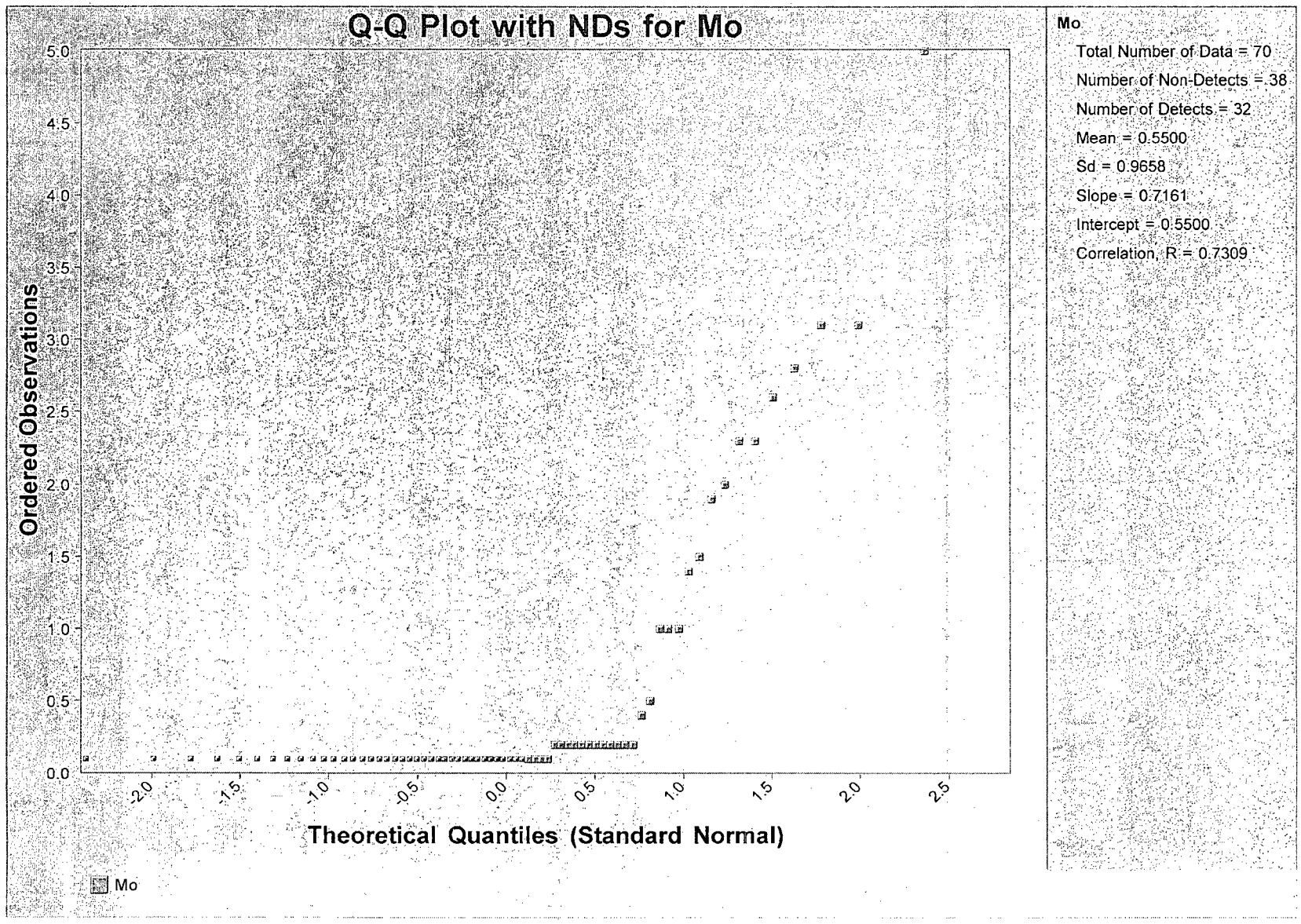
Probability Plot of Manganese in Zone 3 Impacted Groundwater outside of Section 2, 3rd Qtr. 2006 - 2nd Qtr. 2008



(concentrations in milligrams per liter)

GRAPH B 3.8

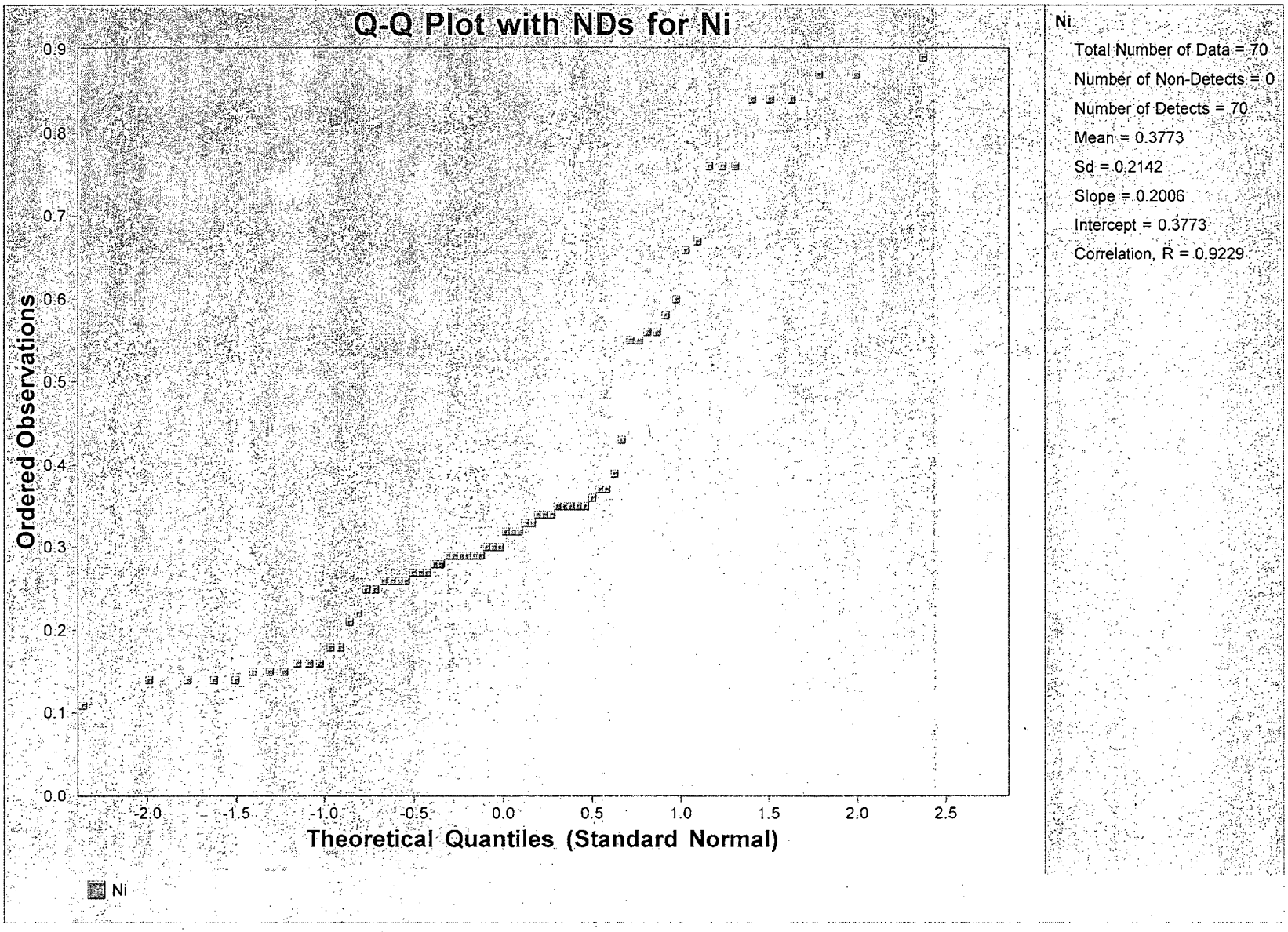
Probability Plot of Molybdenium in Zone 3 Impacted Groundwater outside of Section 2, 3rd Qtr. 2006 - 2nd Qtr. 2008



(concentrations in milligrams per liter)

GRAPH B 3.9

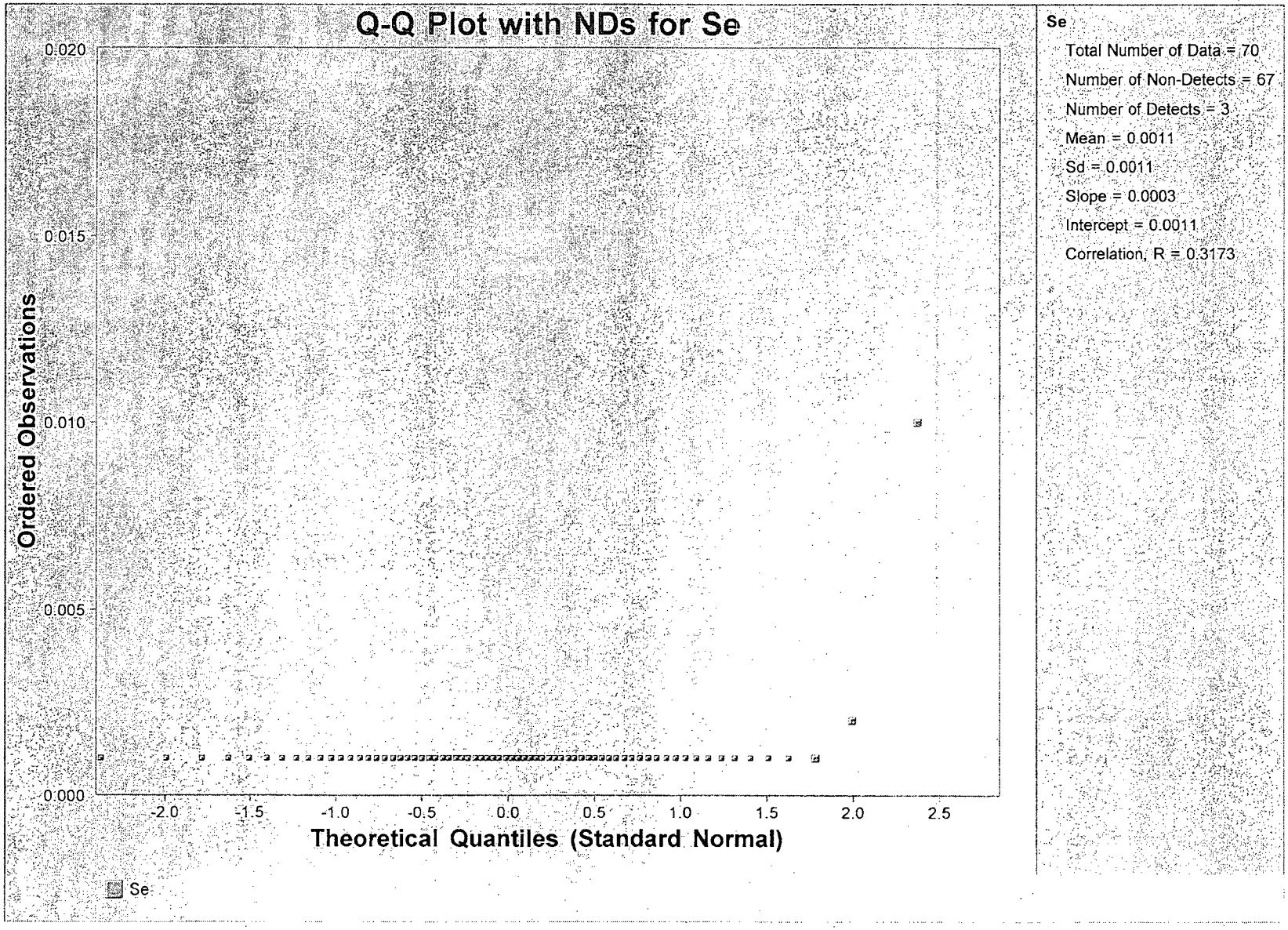
Probability Plot of Nickel in Zone 3 Impacted Groundwater outside of Section 2, 3rd Qtr. 2006 - 2nd Qtr. 2008



(concentrations in milligrams per liter)

GRAPH B 3.10

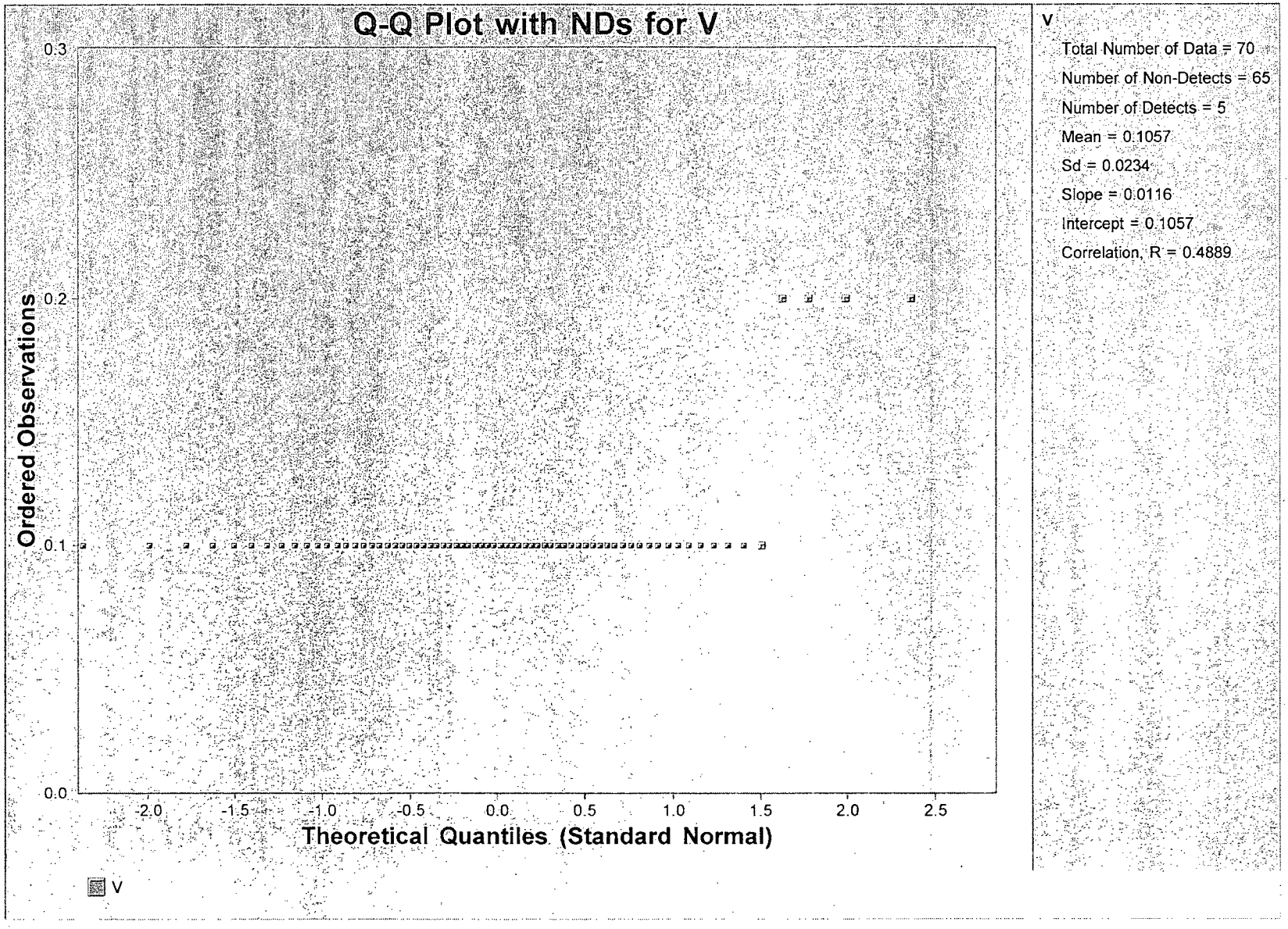
Probability Plot of Selenium in Zone 3 Impacted Groundwater outside of Section 2, 3rd Qtr. 2006 - 2nd Qtr. 2008



(concentrations in milligrams per liter)

GRAPH B 3.11

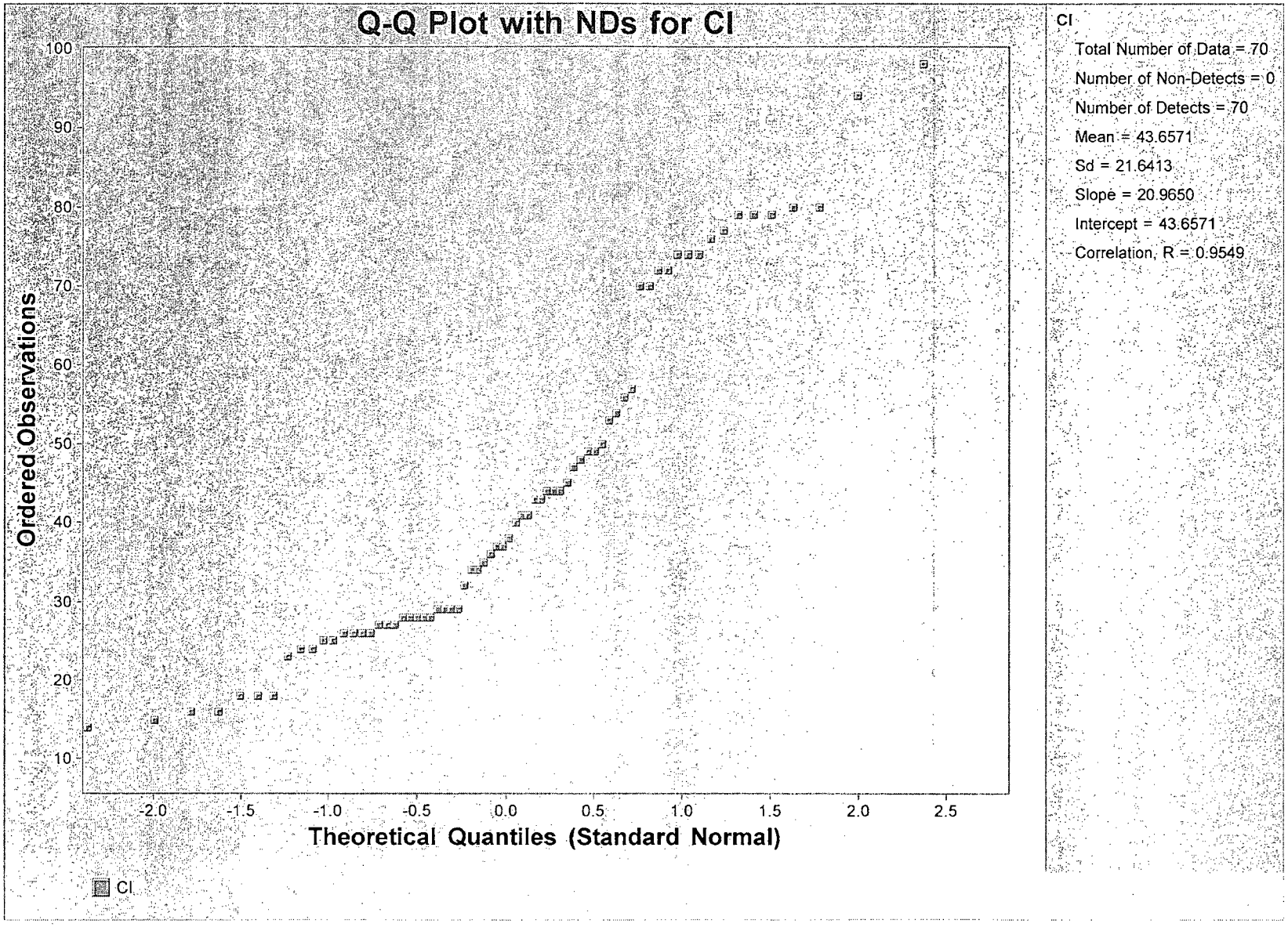
Probability Plot of Vanadium in Zone 3 Impacted Groundwater outside of Section 2, 3rd Qtr. 2006 - 2nd Qtr. 2008



(concentrations in milligrams per liter)

GRAPH B 3.12

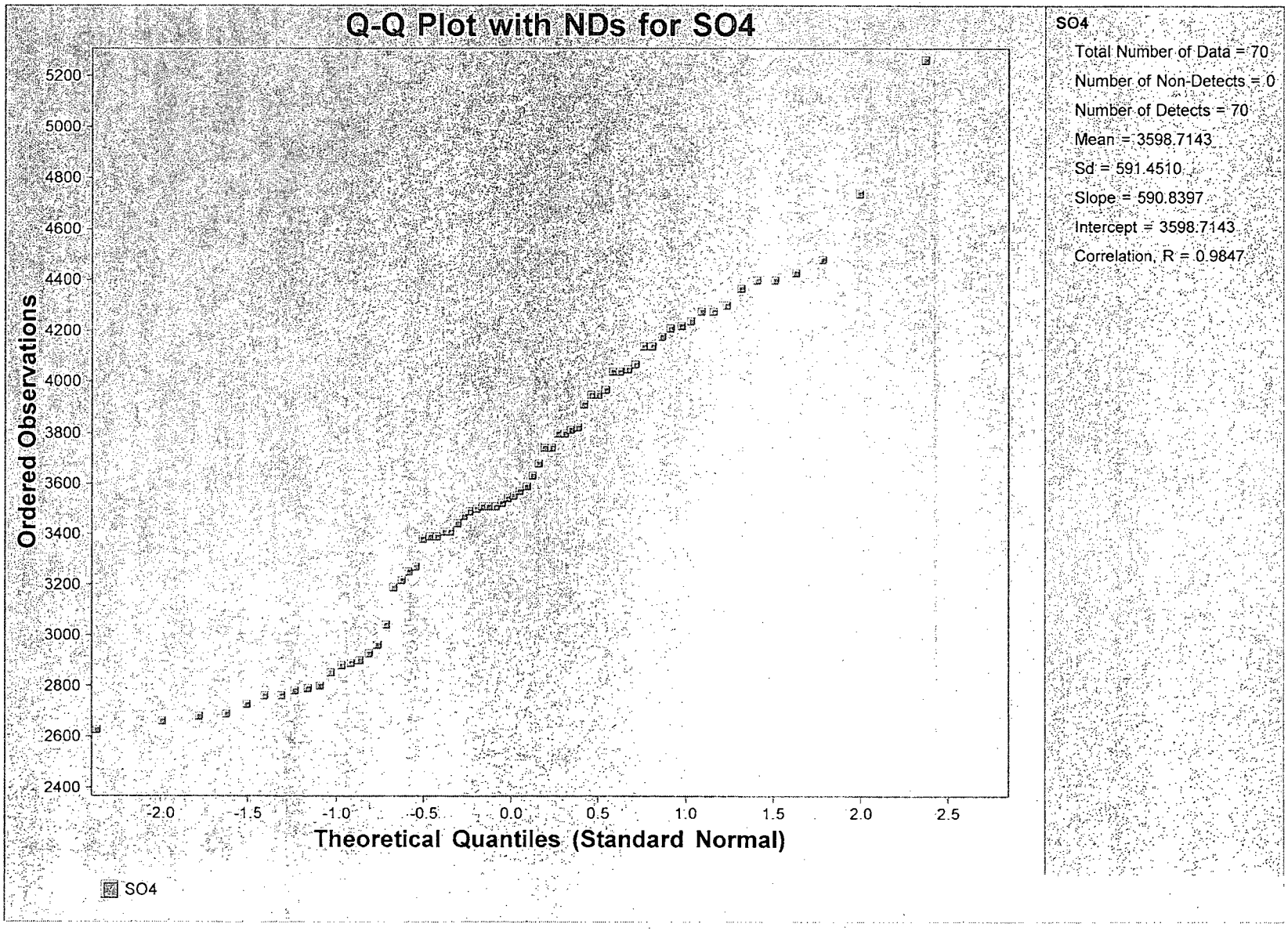
Probability Plot of Chloride in Zone 3 Impacted Groundwater outside of Section 2, 3rd Qtr. 2006 - 2nd Qtr. 2008



(concentrations in milligrams per liter)

GRAPH B 3.13

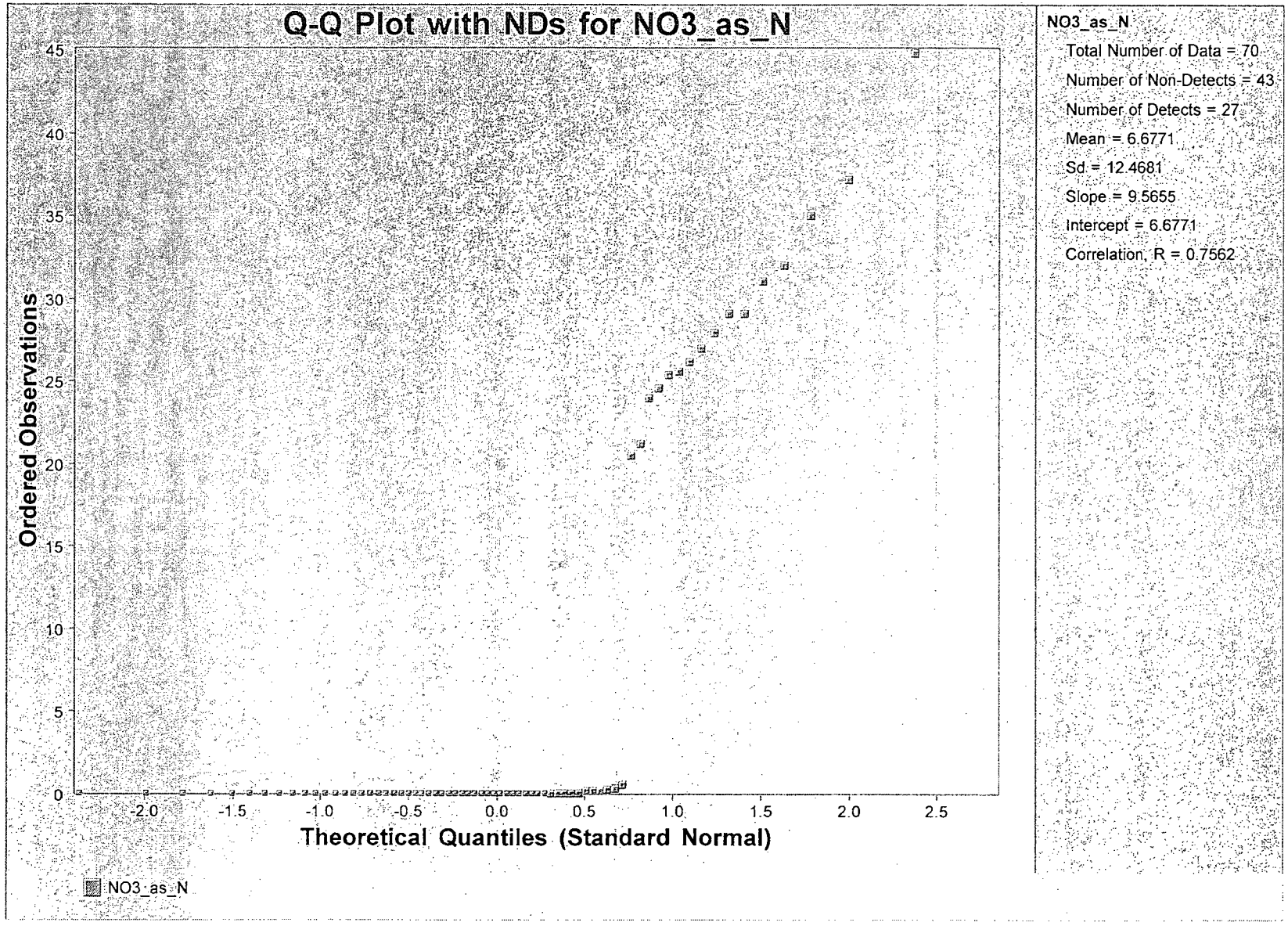
Probability Plot of Sulfate in Zone 3 Impacted Groundwater outside of Section 2, 3rd Qtr. 2006 - 2nd Qtr. 2008



(concentrations in milligrams per liter)

GRAPH B 3.14

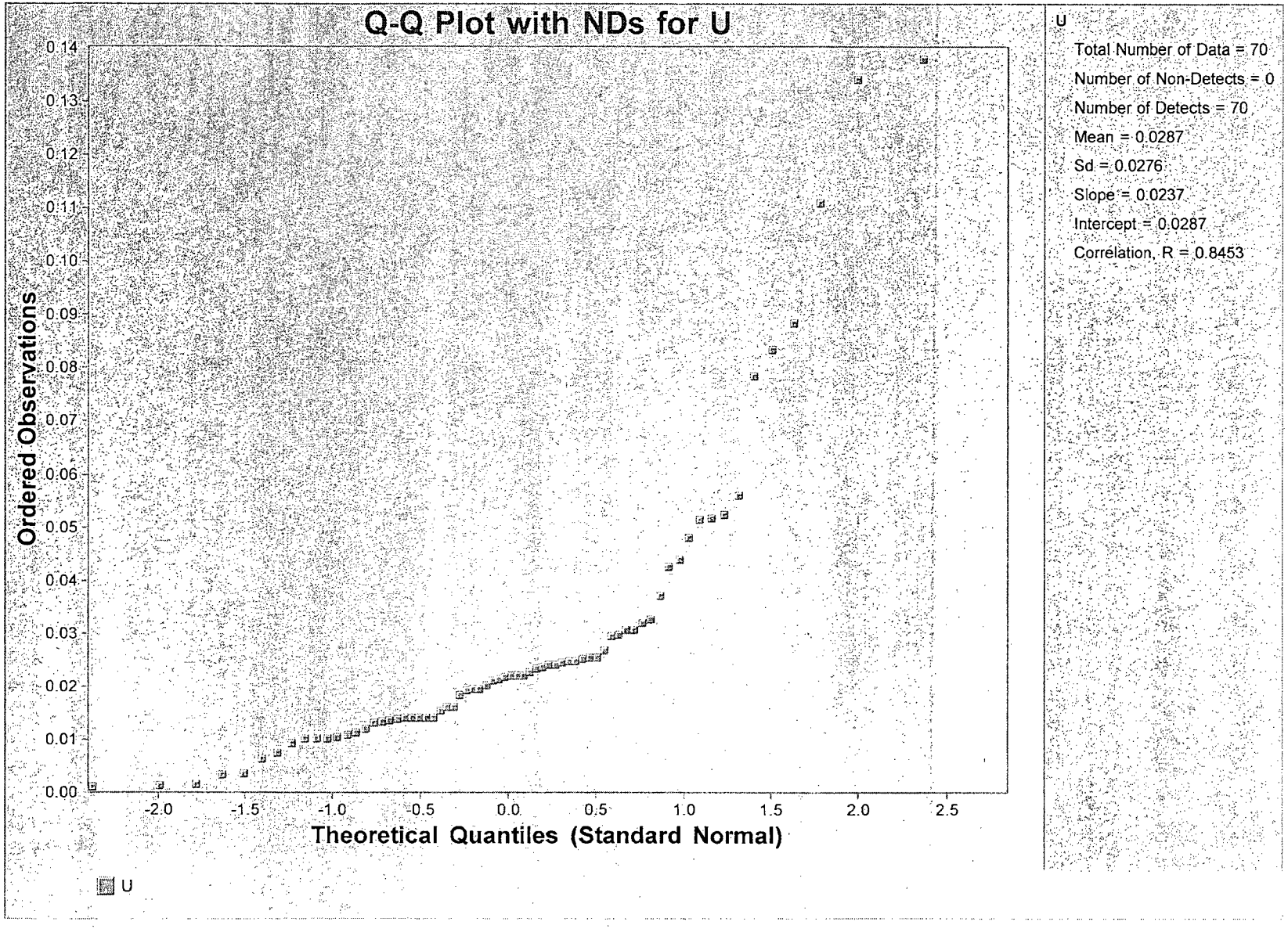
Probability Plot of Nitrate in Zone 3 Impacted Groundwater outside of Section 2, 3rd Qtr. 2006 - 2nd Qtr. 2008



(concentrations in milligrams per liter)

GRAPH B 3.15

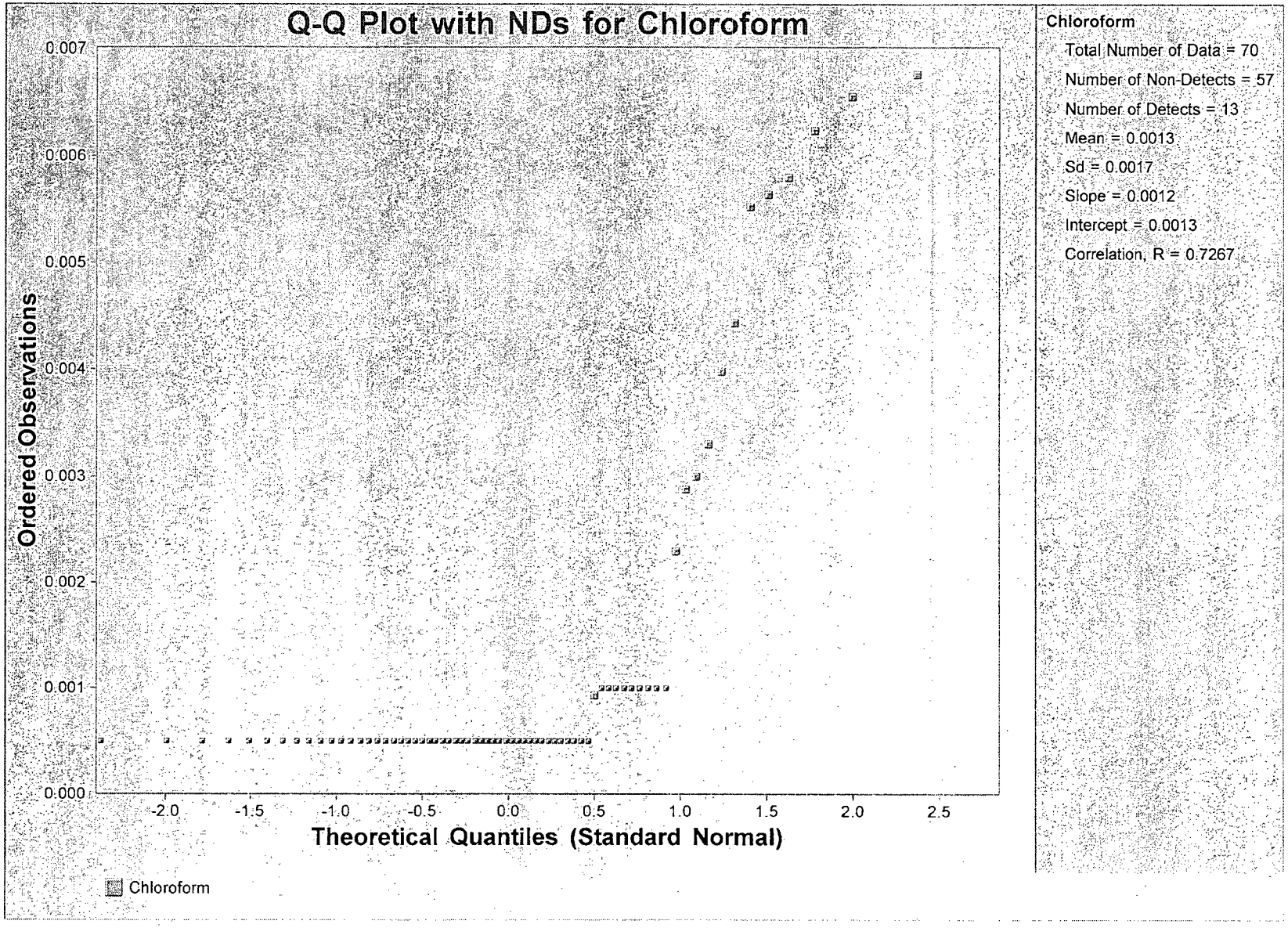
Probability Plot of Uranium in Zone 3 Impacted Groundwater outside of Section 2, 3rd Qtr. 2006 - 2nd Qtr. 2008



(concentrations in milligrams per liter)

GRAPH B 3.16

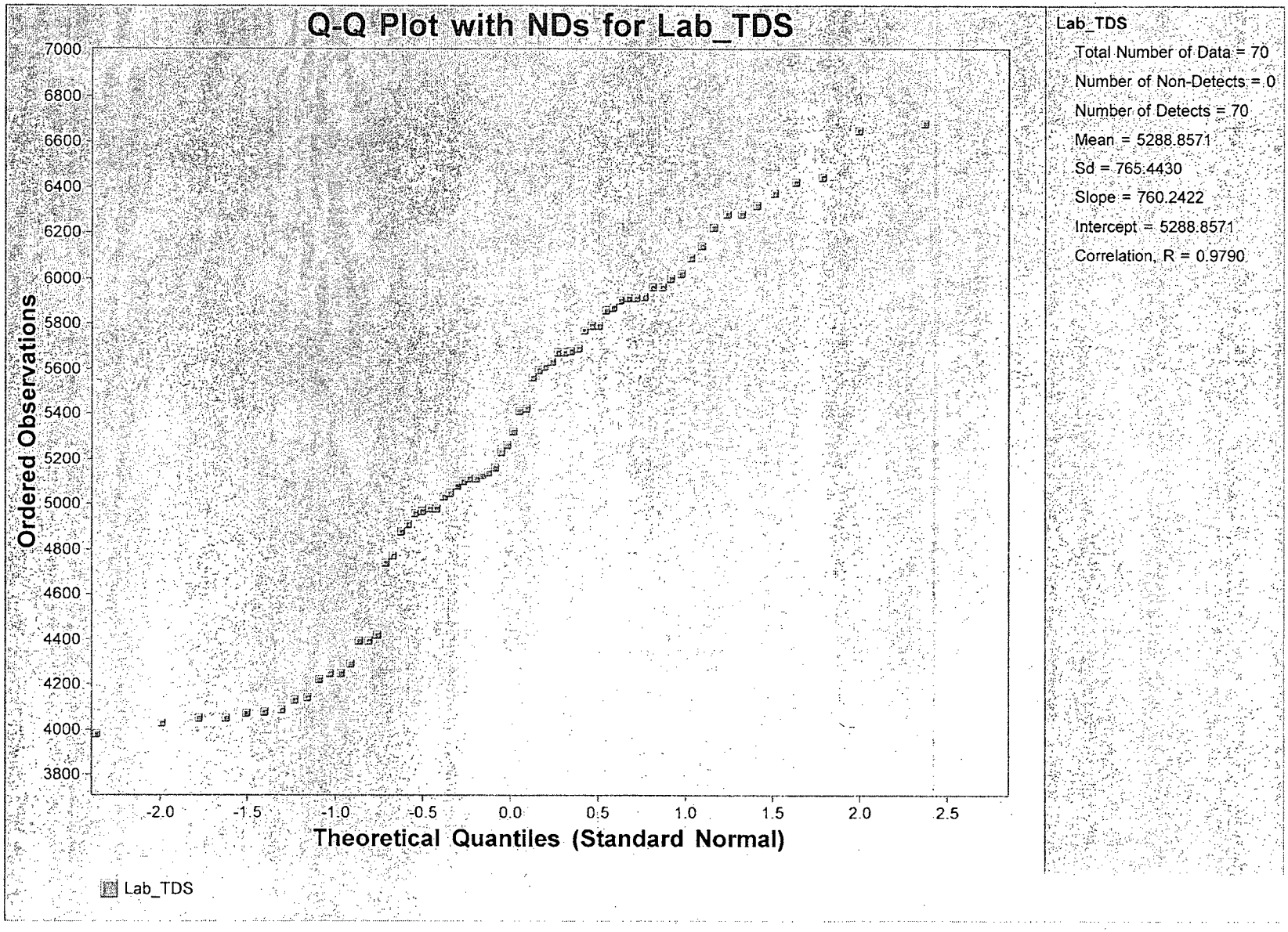
Probability Plot of Chloroform in Zone 3 Impacted Groundwater outside of Section 2, 3rd Qtr. 2006 - 2nd Qtr. 2008



(concentrations in milligrams per liter)

GRAPH B 3.17

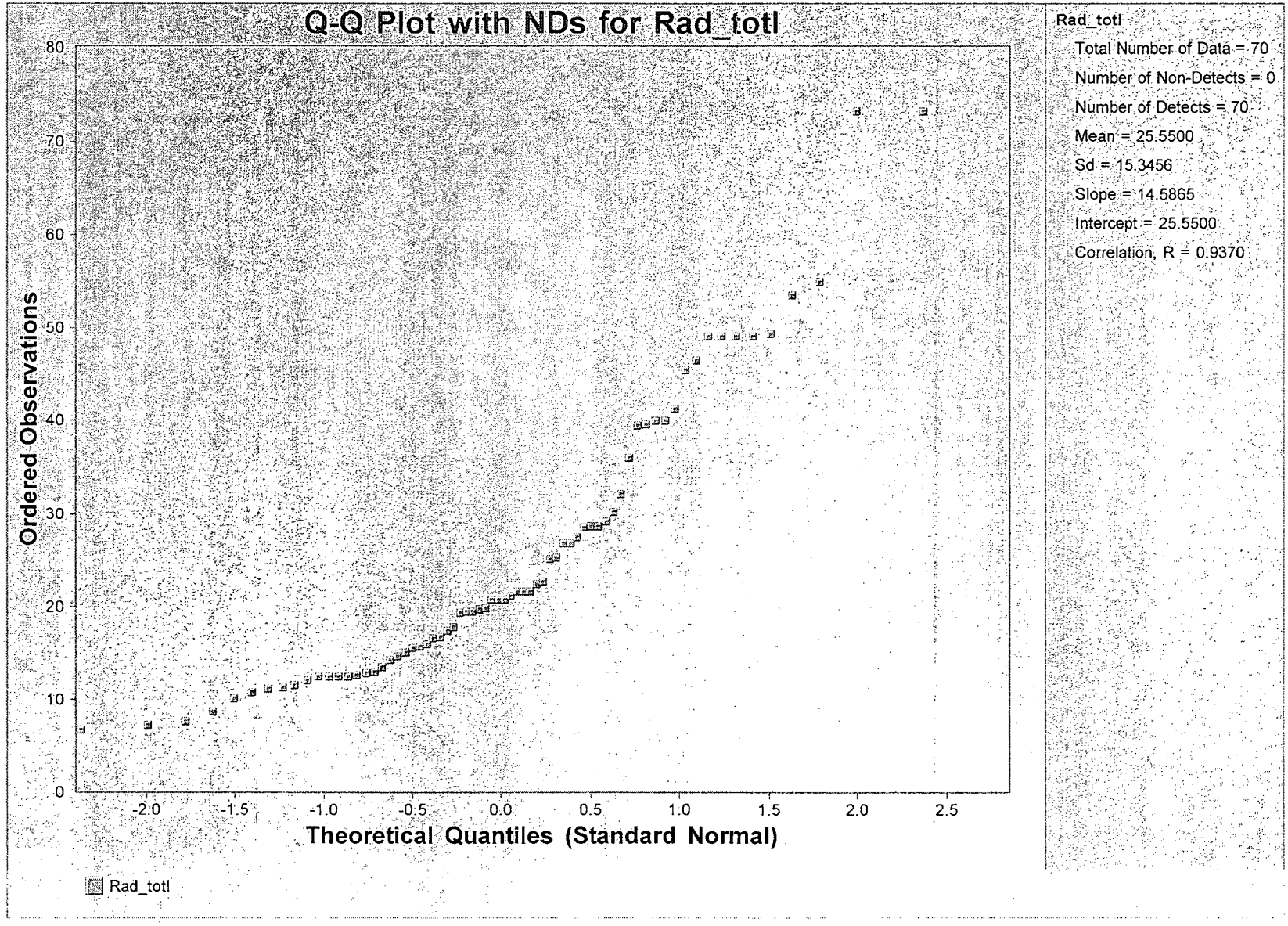
Probability Plot of Total Dissolved Solids in Zone 3 Impacted Groundwater outside of Section 2, 3rd Qtr. 2006 - 2nd Qtr. 2008



(concentrations in milligrams per liter)

GRAPH B 3.18

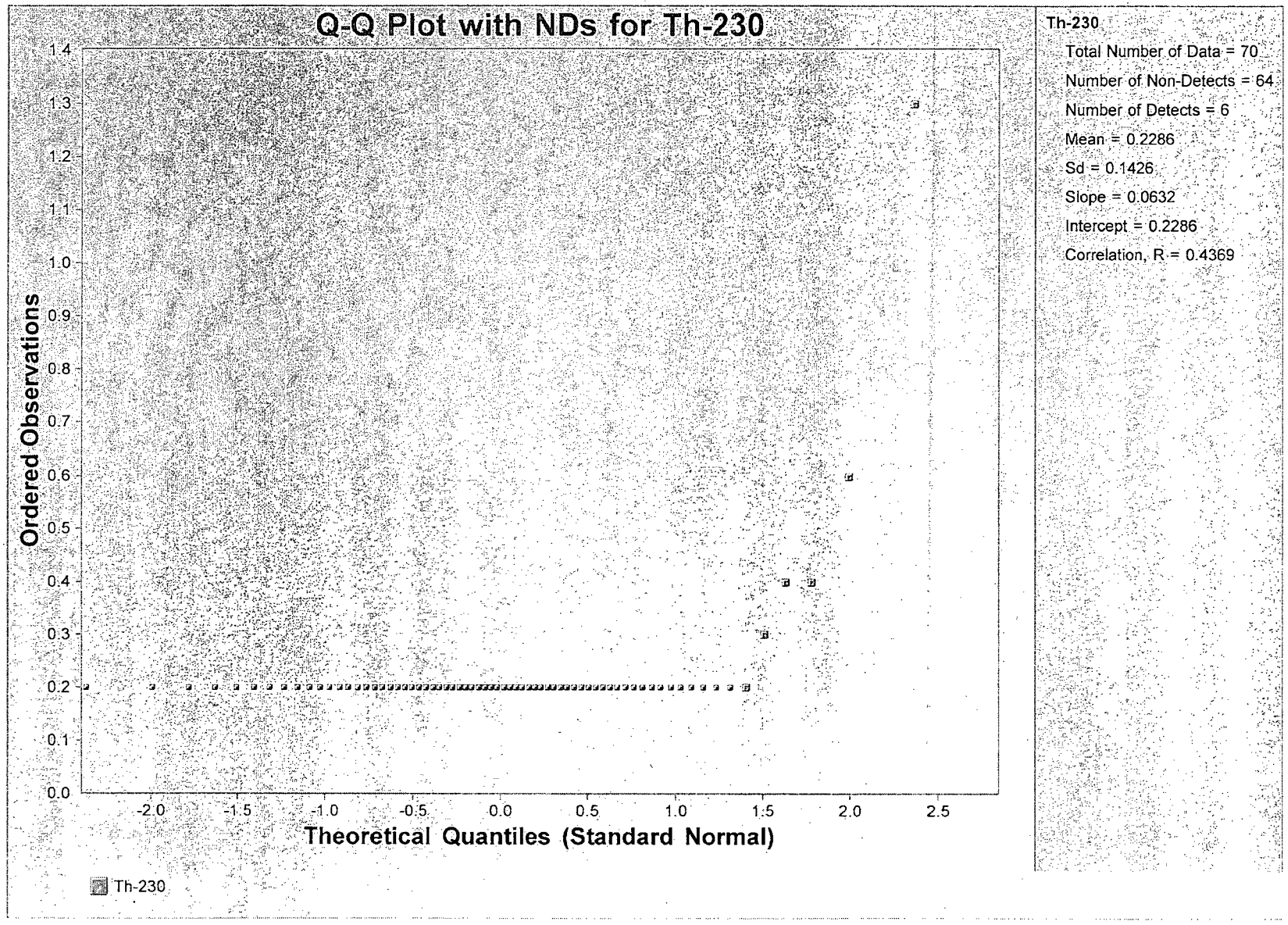
Probability Plot of Total Radium in Zone 3 Impacted Groundwater outside of Section 2, 3rd Qtr. 2006 - 2nd Qtr. 2008



(concentrations in pico curies per liter)

GRAPH B 3.19

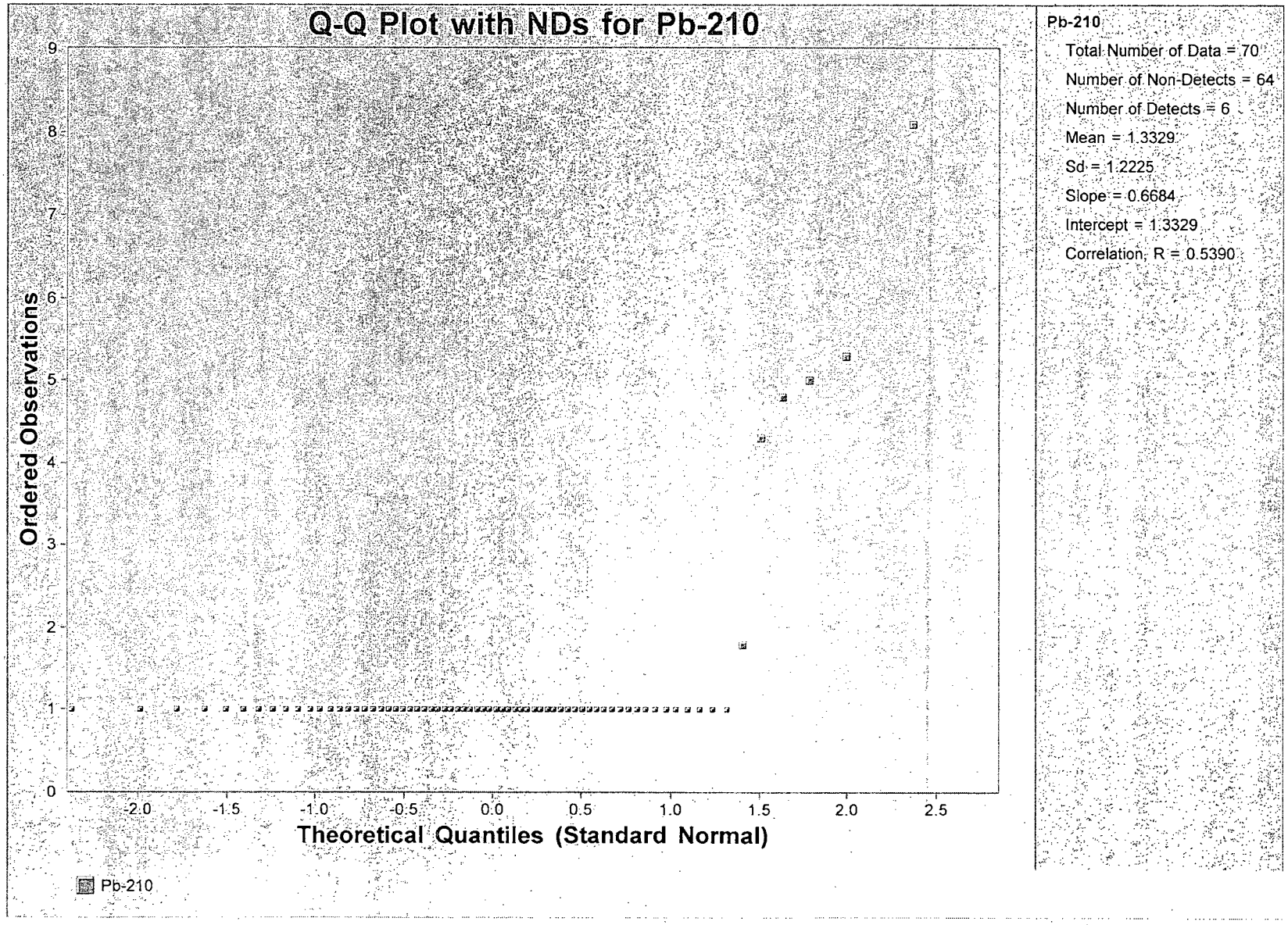
Probability Plot of Thorium-230 in Zone 3 Impacted Groundwater outside of Section 2, 3rd Qtr. 2006 - 2nd Qtr. 2008



(concentrations in pico curies per liter)

GRAPH B 3.20

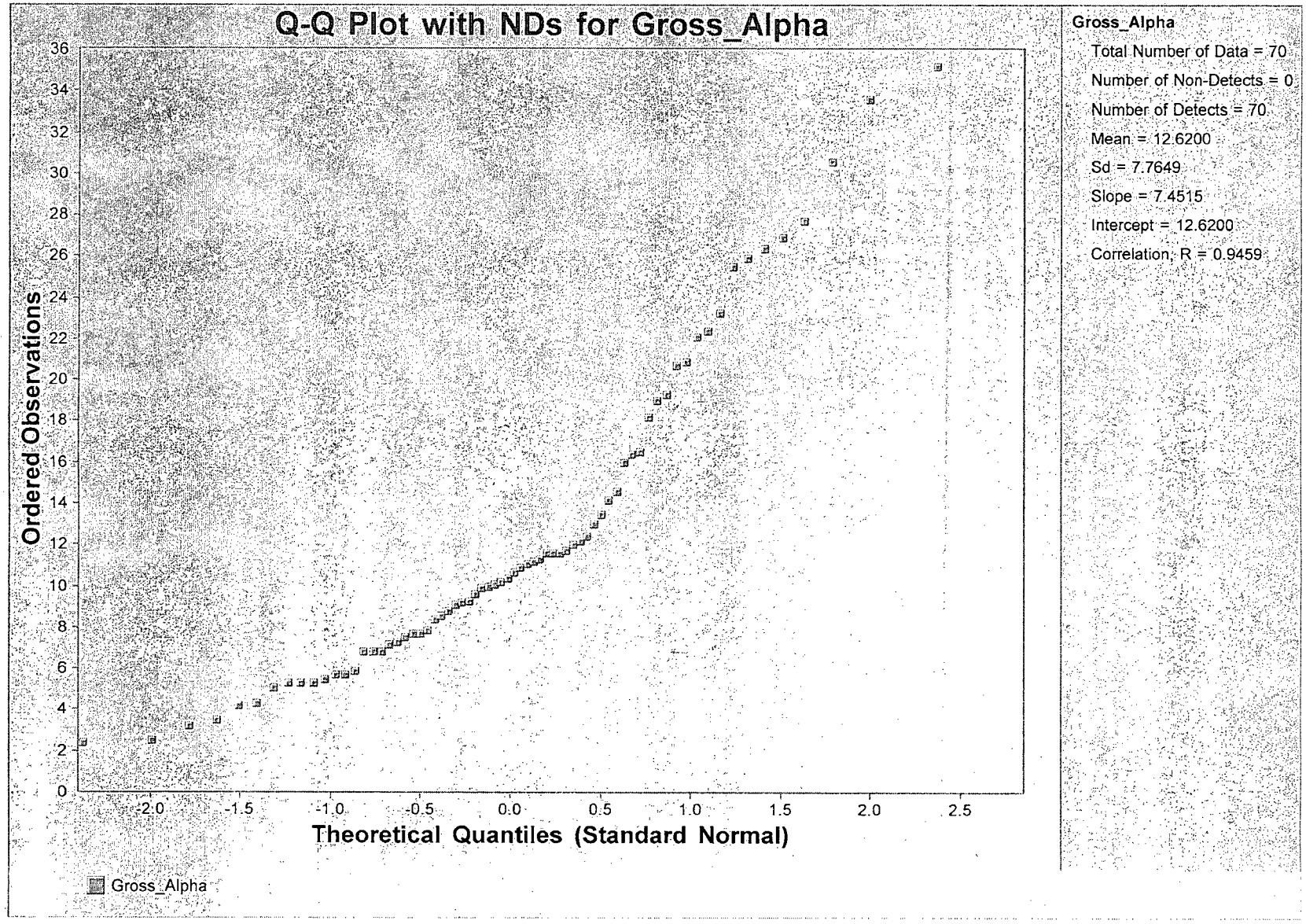
Probability Plot of Lead-210 in Zone 3 Impacted Groundwater outside of Section 2, 3rd Qtr. 2006 - 2nd Qtr. 2008



(concentrations in pico curies per liter)

GRAPH B 3.21

Probability Plot of Gross Alpha in Zone 3 Impacted Groundwater outside of Section 2, 3rd Qtr. 2006 - 2nd Qtr. 2008



(concentrations in pico curies per liter)