DOE/OR/07-1857&D2
Primary Document

Feasibility Study for the Groundwater Operable Unit at Paducah Gaseous Diffusion Plant Paducah, Kentucky

Volume 5. Appendix D Groundwater Background Document

I-04611-0131

Cleared for Public Release

GROUNDWATER BACKGROUND DOCUMENT

Parts of the data evaluation performed in the Data Summary Report (Volume 2, Appendix B of the Feasibility Study) and the Baseline Risk Assessment (Volume 3, Appendix C of the Feasibility Study) relied on screening constituent concentrations against those which may be naturally occurring (i.e., background).

Constituent concentrations in groundwater were screened against background concentrations presented in the following draft document.

The reader is cautioned that the values derived in the following draft background document are provisional and subject to significant revision.

DOE/OR/07-1857&D2
Primary Document

Feasibility Study for the Groundwater Operable Unit at Paducah Gaseous Diffusion Plant Paducah, Kentucky

Volume 5. Appendix D Groundwater Background Document

Date Issued—August 2001

Prepared for the
Department of Energy
Office of Environmental Management

By
Bechtel Jacobs Company LLC
managing the

Environmental Management Activities at the
Paducah Gaseous Diffusion Plant
Paducah, Kentucky 42001
managed by
Bechtel Jacobs Company LLC
for the
U.S. Department of Energy
under contract DE-AC05-98OR22700

SCIENCE APPLICATIONS INTERNATIONAL CORPORATION

contributed to the preparation of this document and should not be considered an eligible contractor for its review.

KY/EM-XXX

BACKGROUND CONCENTRATIONS OF NATURALLY OCCURRING INORGANIC CHEMICALS AND SELECTED RADIONUCLIDES IN THE REGIONAL GRAVEL AQUIFER AND MCNAIRY FORMATION AT THE PADUCAH GASEOUS DIFFUSION PLANT, PADUCAH, KENTUCKY

AUGUST 2001

THIS PAGE INTENTIONALLY LEFT BLANK

KY/EM-XXX

BACKGROUND CONCENTRATIONS OF NATURALLY OCCURRING INORGANIC CHEMICALS AND SELECTED RADIONUCLIDES IN THE REGIONAL GRAVEL AQUIFER AND MCNAIRY FORMATION AT THE PADUCAH GASEOUS DIFFUSION PLANT, PADUCAH, KENTUCKY

Date Issued—August 2001

Prepared by
Center for Information Studies
The University of Tennessee
Knoxville, TN
and
Scientific Applications International Corporation
Oak Ridge, TN

Prepared for the
U.S. Department of Energy
Office of Environmental Restoration and Waste Management
under budget and reporting code EW 20

Environmental Management Activities at the
PADUCAH GASEOUS DIFFUSION PLANT
Paducah, Kentucky 42002
managed by
BECHTEL JACOBS COMPANY LLC
for the
U.S. DEPARTMENT OF ENERGY
under contract DE-AC05-84OR22700

PREFACE

This report presents background concentrations for naturally occurring inorganic chemicals and selected radionuclides found in groundwater drawn from the Regional Gravel Aquifer (RGA) and the McNairy Formation at the Paducah Gaseous Diffusion Plant (PGDP), Paducah, Kentucky. In addition, this report compares the background concentrations to human health risk-based concentrations to develop a list of screening criteria that can be used to identify significant contamination in these groundwater sources at this facility. Such screening criteria are required for Resource Conservation and Recovery Act Appendix IX and Contract Laboratory Program total analyte list inorganic chemicals and for radionuclides to ensure that remedial investigations and feasibility studies for identified areas of concern and solid waste management units at PGDP focus on those contaminants that may influence human health risk. In addition, appropriate screening criteria are needed to determine if areas currently not under investigation should be added to the list of those areas to be investigated at PGDP. These values are to be used when completing work plans and reports produced as part of the environmental restoration and waste management programs at PGDP. The work was performed under Work Breakdown Structure 1.4.12.7.1.02.04 entitled Corrective Measures for Offsite Contamination.

THIS PAGE INTENTIONALLY LEFT BLANK

CONTENTS

PREFACE v

FIGURES xi

TABLES xiii

ACRONYMS xv

EXECUTIVE SUMMARY xvii

1. INTRODUCTION 1-1
   1.1 REGULATORY ISSUES 1-1
   1.2 ORGANIZATION OF THE REPORT 1-1

2. DATA EVALUATION 2-1
   2.1 SELECTION OF BACKGROUND WELLS 2-1
      2.1.1 Evaluation of Background Wells for the RGA 2-3
      2.1.2 Evaluation of Background Wells for the McNairy Formation 2-5
   2.2 DATA EVALUATION 2-9
      2.2.1 Reasons for Removing or Correcting Inorganic Chemical Data 2-10
      2.2.2 Reasons for Removing or Correcting Radionuclide Data 2-10
      2.2.3 Summary of Data Evaluation 2-11

3. DERIVATION AND PRESENTATION OF BACKGROUND VALUES 2-16
   3.1 GROUP 1 ANALYTES AND DERIVATION OF THEIR BACKGROUND VALUES 3-17
   3.2 GROUP 2 ANALYTES AND DERIVATION OF THEIR BACKGROUND VALUES 3-20
   3.3 DERIVATION OF BACKGROUND CONCENTRATIONS FOR URANIUM ISOTOPES 3-25
   3.4 SUMMARY OF BACKGROUND CONCENTRATIONS 3-26

4. SOURCES OF RISK-BASED CONCENTRATIONS AND OTHER COMPARISON CRITERIA 4-1
   4.1 RISK-BASED CONCENTRATIONS 4-1
   4.2 REGULATORY VALUES 4-1
   4.3 LITERATURE VALUES 4-3

5. RESULTS AND DISCUSSION 5-1
   5.1 COMPARISON OF BACKGROUND CONCENTRATIONS TO RBCs, MCLs, and KDEP RISK-BASED SCREENING VALUES 5-1
      5.1.1 Aluminum 5-1
      5.1.2 Aluminum, Dissolved 5-1
      5.1.3 Antimony 5-1
      5.1.4 Antimony, Dissolved 5-10
      5.1.5 Arsenic 5-10
      5.1.6 Arsenic, Dissolved 5-10
      5.1.7 Barium 5-10
      5.1.8 Barium, Dissolved 5-11
      5.1.9 Beryllium 5-11

5.1.10 Beryllium, Dissolved 5-11
5.1.11 Cadmium 5-11
5.1.12 Cadmium, Dissolved 5-12
5.1.13 Calcium 5-12
5.1.14 Calcium, Dissolved 5-12
5.1.15 Chloride 5-12
5.1.16 Chromium 5-12
5.1.17 Chromium, Dissolved 5-13
5.1.18 Cobalt 5-13
5.1.19 Cobalt, Dissolved 5-13
5.1.20 Copper 5-13
5.1.21 Copper, Dissolved 5-13
5.1.22 Fluoride 5-14
5.1.23 Iron 5-14
5.1.24 Iron, Dissolved 5-14
5.1.25 Lead 5-14
5.1.26 Lead, Dissolved 5-15
5.1.27 Magnesium 5-15
5.1.28 Magnesium, Dissolved 5-15
5.1.29 Manganese 5-15
5.1.30 Manganese, Dissolved 5-15
5.1.31 Mercury 5-16
5.1.32 Mercury, Dissolved 5-16
5.1.33 Molybdenum 5-16
5.1.34 Molybdenum, Dissolved 5-16
5.1.35 Nickel 5-17
5.1.36 Nickel, Dissolved 5-17
5.1.37 Nitrate as Nitrogen 5-17
5.1.38 Potassium 5-17
5.1.39 Potassium, Dissolved 5-18
5.1.40 Selenium 5-18
5.1.41 Selenium, Dissolved 5-18
5.1.42 Silica 5-18
5.1.43 Silver 5-18
5.1.44 Silver, Dissolved 5-19
5.1.45 Sodium 5-19
5.1.46 Sodium, Dissolved 5-19
5.1.47 Sulfate 5-19
5.1.48 Thallium 5-20
5.1.49 Thallium, Dissolved 5-20
5.1.50 Uranium 5-20
5.1.51 Uranium, Dissolved 5-20
5.1.52 Vanadium 5-20
5.1.53 Vanadium, Dissolved 5-21
5.1.54 Zinc 5-21
5.1.55 Zinc, Dissolved 5-21
5.1.56 Gross Alpha 5-21
5.1.57 Gross Beta 5-22
5.1.58 Neptunium-237 5-22
5.1.59 Plutonium-239 5-22
5.1.60 Radium-226 5-22

5.1.61 Radon-222 5-22
5.1.62 Technetium-99 5-23
5.1.63 Thorium-230 5-23
5.1.64 Total Radium 5-23
5.1.65 Uranium-234 5-23
5.1.66 Uranium-235 5-24
5.1.67 Uranium-238 5-24
5.1.68 Summary of Comparisons Between Background Concentrations and RBCs, MCLs, and KDEP Screening Values 5-24
5.2 COMPARISON OF BACKGROUND CONCENTRATIONS TO VALUES CONTAINED IN EARLIER REPORTS AND FOUND IN THE OPEN LITERATURE 5-40
5.2.1 Aluminum 5-49
5.2.2 Aluminum, Dissolved 5-49
5.2.3 Antimony 5-49
5.2.4 Antimony, Dissolved 5-50
5.2.5 Arsenic 5-50
5.2.6 Arsenic, Dissolved 5-50
5.2.7 Barium 5-50
5.2.8 Barium, Dissolved 5-51
5.2.9 Beryllium 5-51
5.2.10 Beryllium, Dissolved 5-51
5.2.11 Cadmium 5-52
5.2.12 Cadmium, Dissolved 5-52
5.2.13 Calcium 5-52
5.2.14 Calcium, Dissolved 5-52
5.2.15 Chloride 5-53
5.2.16 Chromium 5-53
5.2.17 Chromium, Dissolved 5-53
5.2.18 Cobalt 5-53
5.2.19 Cobalt, Dissolved 5-54
5.2.20 Copper 5-54
5.2.21 Copper, Dissolved 5-54
5.2.22 Fluoride 5-54
5.2.23 Iron 5-55
5.2.24 Iron, Dissolved 5-55
5.2.25 Lead 5-55
5.2.26 Lead, Dissolved 5-55
5.2.27 Magnesium 5-56
5.2.28 Magnesium, Dissolved 5-56
5.2.29 Manganese 5-56
5.2.30 Manganese, Dissolved 5-57
5.2.31 Mercury 5-57
5.2.32 Mercury, Dissolved 5-57
5.2.33 Molybdenum 5-57
5.2.34 Molybdenum, Dissolved 5-58
5.2.35 Nickel 5-58
5.2.36 Nickel, Dissolved 5-58
5.2.37 Nitrate as Nitrogen 5-58
5.2.38 Potassium 5-59
5.2.39 Potassium, Dissolved 5-59

5.2.40 Selenium 5-59
5.2.41 Selenium, Dissolved 5-59
5.2.42 Silica 5-60
5.2.43 Silver 5-60
5.2.44 Silver, Dissolved 5-60
5.2.45 Sodium 5-60
5.2.46 Sodium, Dissolved 5-61
5.2.47 Sulfate 5-61
5.2.48 Thallium 5-61
5.2.49 Thallium, Dissolved 5-61
5.2.50 Uranium 5-62
5.2.51 Uranium, Dissolved 5-62
5.2.52 Vanadium 5-62
5.2.53 Vanadium, Dissolved 5-62
5.2.54 Zinc 5-63
5.2.55 Zinc, Dissolved 5-63
5.2.56 Gross Alpha 5-63
5.2.57 Gross Beta 5-63
5.2.58 Neptunium-237 5-64
5.2.59 Plutonium-239 5-64
5.2.60 Radium-226 5-64
5.2.61 Radon-222 5-64
5.2.62 Technetium-99 5-64
5.2.63 Thorium-230 5-65
5.2.64 Total Radium 5-65
5.2.65 Uranium-234 5-65
5.2.66 Uranium-235 5-65
5.2.67 Uranium-238 5-65
5.2.68 Summary of Comparisons Between Background Concentrations and Values Found in Earlier Reports and the Open Literature 5-66
5.3 UNCERTAINTIES AFFECTING BACKGROUND CONCENTRATIONS 5-68
5.3.1 Data Set Uncertainties 5-68
5.3.2 Method of Calculation 5-70

6. BIBLIOGRAPHY 6-75

APPENDIX A – WELL SUMMARY INFORMATION A-1

APPENDIX B – DATA SUMMARIES FOR SELECTED BACKGROUND WELLS B-1

APPENDIX C – RESULTS OF REGRESSION AND CORRELATION ANALYSES FOR TURBIDITY AND DISSOLVED SOLIDS C-1

FIGURES

2.1 Background well locations 2-2
5.1 Summary of comparisons of background concentrations to risk-based criteria 5-25

THIS PAGE INTENTIONALLY LEFT BLANK

TABLES

ES-1 Background concentrations in total and filtered samples taken from the Regional Gravel Aquifer and McNairy Formation derived over all observations, residential use risk-based concentrations, and maximum contaminant levels xix
ES-2 Background concentrations in total and filtered samples taken from the Regional Gravel Aquifer and McNairy Formation derived over averages within wells, residential use risk-based concentrations, and maximum contaminant levels xxi
2.1 Initial well list 2-1
2.2 Summary of evaluation of RGA inorganic chemical data 2-12
2.3 Summary of evaluation of McNairy Formation inorganic chemical data 2-13
2.4 Summary of evaluation of RGA and McNairy Formation radionuclide data 2-15
3.1 Group 1 analytes and their background values–RGA data sets 3-18
3.2 Group 1 analytes and their background values–McNairy Formation data sets 3-19
3.3 Background values for Group 2 analytes over all observations–RGA data sets 3-21
3.4 Background values for Group 2 analytes over wells–RGA data sets 3-22
3.5 Background values for Group 2 analytes over all observations–McNairy Formation data sets 3-23
3.6 Background values for Group 2 analytes over wells–McNairy Formation data sets 3-24
3.7 Parameters used to convert total uranium concentrations to isotopic uranium concentrations 3-26
3.8 Summary of selected RGA and McNairy Formation background concentrations 3-27
4.1 RBCs, MCLs, and Commonwealth of Kentucky risk-based screening values 4-2
4.2 Reference values for groundwater taken from earlier reports produced for the PGDP and from literature sources 4-4
5.1 Comparison of RGA background concentrations derived over all observations against RBCs, MCLs, and Commonwealth of Kentucky risk-based screening values 5-2
5.2 Comparison of RGA background concentrations derived over averages within wells against RBCs, MCLs, and Commonwealth of Kentucky risk-based screening values 5-4
5.3 Comparison of McNairy Formation background concentrations derived over all observations against RBCs, MCLs, and Commonwealth of Kentucky risk-based screening values 5-6
5.4 Comparison of McNairy Formation background concentrations derived over averages within wells against RBCs, MCLs, and Commonwealth of Kentucky risk-based screening values 5-8
5.5 Factors of difference for the comparison of RGA background concentrations derived over all observations against RBCs, MCLs, and Commonwealth of Kentucky risk-based screening values 5-27
5.6 Factors of difference for the comparison of RGA background concentrations derived over averages within wells against RBCs, MCLs, and Commonwealth of Kentucky risk-based screening values 5-30
5.7 Factors of difference for the comparison of McNairy Formation background concentrations derived over all observations against RBCs, MCLs, and Commonwealth of Kentucky risk-based screening values 5-32
5.8 Factors of difference for the comparison of McNairy Formation background concentrations derived over averages within wells against RBCs, MCLs, and Commonwealth of Kentucky risk-based screening values 5-34
5.9 Comparison between RGA background concentrations over all observations derived in this report and background concentrations derived in the Tech Report, Site Investigation, and Moore Report or drawn from the open literature 5-41
5.10 Comparison between RGA background concentrations over averages within wells derived in this report and background concentrations derived in the Tech Report, Site Investigation, and Moore Report or drawn from the open literature 5-43

5.11 Comparison between McNairy Formation background concentrations over all observations derived in this report and background concentrations drawn from the open literature 5-45
5.12 Comparison between McNairy Formation background concentrations over averages within wells derived in this report and background concentrations drawn from the open literature.....5-47
5.13 Comparison of mean inorganic chemical concentrations derived over all observations from RGA background data against RBCs, MCLs, Commonwealth of Kentucky risk-based screening values, and open literature values.....5-73
5.14 Comparison of mean inorganic chemical concentrations derived over all observations from McNairy Formation background data against RBCs, MCLs, Commonwealth of Kentucky risk-based screening values, and open literature values 5-74

ACRONYMS

bgs	below ground surface
DOE	United States Department of Energy
ELCR	excess lifetime cancer risk
EPA	United States Environmental Protection Agency
HI	hazard index
IDs	identifiers
KDEP	Kentucky Department of Environmental Protection
PGDP	Paducah Gaseous Diffusion Plant
PQL	practical quantitation limit
RBCs	risk based concentrations
RGA	Regional Gravel Aquifer
TCE	trichloroethene

THIS PAGE INTENTIONALLY LEFT BLANK

EXECUTIVE SUMMARY

This report documents the methods used to develop background concentrations of naturally occurring inorganic chemicals and selected radionuclides present in groundwater drawn from the Regional Gravel Aquifer (RGA) and the McNairy Formation at the Paducah Gaseous Diffusion Plant (PGDP) located near Paducah, Kentucky. This report also presents the background concentrations developed and compares these concentrations to human health risk-based concentrations. Subsequent to this comparison, a list of screening criteria for the naturally occurring chemicals and selected radionuclides is developed. This list is provided so that users can determine if detected concentrations of naturally occurring inorganic chemicals and selected radionuclides are present at levels that represent contamination and at levels that may present an unacceptable risk to the health of groundwater users.

All data used in the development of the background concentrations were from groundwater taken from wells not believed to be impacted by contaminant releases from PGDP. The identifiers, general location, and screen depth of the background RGA wells are:

- MW103, south of the PGDP, deep RGA–79.5 to 90 feet below ground surface (ft bgs);
- MW106, northwest of the PGDP, middle RGA–62 to 75 ft bgs;
- MW141, west northwest of the PGDP, deep RGA–79 to 80 ft bgs;
- MW142, west northwest of the PGDP, upper RGA–42.5 to 52.5 ft bgs;
- MW150, east of the PGDP, deep RGA–66 to 96 ft bgs; and
- MW199, northwest of the PGDP, upper RGA–57 to 62 ft bgs.

The identifiers, general location, and screen depth of the background McNairy Formation wells are:

- MW102, south of the PGDP, middle McNairy Formation–136 to 146 ft bgs;
- MW120, southeast of the PGDP, deep McNairy Formation–160 to 170 ft bgs;
- MW121, northwest of the PGDP, deep McNairy Formation–200 to 210 ft bgs;
- MW122, east of the PGDP, middle McNairy Formation–148 to 158 ft bgs;
- MW133, northeast of the PGDP, upper McNairy Formation–80 to 90 ft bgs;
- MW140, west northwest of the PGDP, middle McNairy Formation–138 to 148 ft bgs;

Two additional McNairy Formation wells were considered for selection as background wells. These were MW239 and MW247. These wells, which are located in the north and south well fields installed as part of the northwest plume interim remedial action, were subsequently not selected as background wells because sampling results indicated that groundwater at these locations and depths may contain a primary PGDP contaminant, trichloroethene (TCE).

In the analyses of the groundwater data from these wells, data were summarized both over all observations within group (i.e., RGA and McNairy Formation) and over wells within group. Analyses were completed in this manner to ensure that the effect of temporal correlation between samples from a single well and the impact of varying well data set sizes could be examined. It should be noted that no attempt was made to adjust the background calculations for the effect of spatial correlation. This adjustment was not attempted because a preliminary analysis indicated that the number of wells within each group was not sufficient to allow for the estimation of any spatial correlation effects. If spatial correlation does exist, then the background concentrations may be underestimated. This effect is due to underestimation of the standard deviations and errors used in the derivation of the background concentrations (see Gilbert 1987; page 35). In any case, the net effect of not considering spatial correlation is that the background concentrations are unlikely to exceed the true background concentrations.

For inorganic chemicals, background concentrations were derived for both total and filtered samples over all observations within group and over wells within group after evaluating and correcting the data sets. Important reasons for correcting the data sets are listed below.

- Value in the data set was a nondetect, but the value was greater than the greatest detected concentration. In this case, the nondetect value was reduced to the greatest detected concentration in other samples taken from the well.

- Value was a detect that was much greater (generally more than 10×'s greater) than the next greatest detected concentration and appeared to be related to sample turbidity. In this case, the value was reduced to the next greatest detected concentration.

- Data point was for a filtered sample and was qualified "Q". In the data set used to derive the background concentrations, data points were "Q" qualified when analyses on a filtered sample were not performed because the results of the analyses of the total (unfiltered) sample were below the total sample's practical quantitation limit. In this case, the "Q" qualified data were modified by assigning to the data point the minimum detection limit of all samples taken from the well, or if there were no other nondetect results for the well, the minimum detection limit across all wells. This was done to ensure that the information such "nondetects" carry was included in the derivation of the background values.

For radionuclides, background concentrations were derived for total samples only because there were too few results from filtered samples. As with the summarization of the data for inorganic chemicals, some data were corrected during this activity. Reasons for correction of data for radionuclides were similar to those for inorganic chemicals.

Background concentrations for naturally occurring inorganic chemicals and selected radionuclides when data are summarized over all observations within group and summarized over wells within group are presented in Tables ES-1 and ES-2, respectively. In each of these tables, the background concentrations for inorganic chemicals in total and filtered samples and for radionuclides in total samples are listed by groundwater source. Also, human health risk-based concentrations (RBCs) based on residential use of groundwater and maximum contaminant limits (MCLs) are presented in each table.

Table ES-1. Background concentrations in total and filtered samples taken from the Regional Gravel Aquifer and McNairy Formation derived over all observations, residential use risk-based concentrations, and maximum contaminant levels

Analyte	Regional Gravel Aquifer Total Samples	Regional Gravel Aquifer Filtered Samples	McNairy Formation Total Samples	McNairy Formation Filtered Samples	Risk-based Concentration[a]	Maximum Contaminant Level[q]
Inorganic Chemicals (mg/L)						
Aluminum	2.189	0.311	0.687	0.579	1.5[HI]	0.050 - 0.200[k]
Antimony	0.060[b]	0.060[b]	0.060[b]	0.060[b]	0.00056[HI]	0.006
Arsenic	0.005[b]	0.005[b]	0.005[b]	0.005[b]	0.000035[CR]	0.050
Barium	0.235	0.200	0.296	0.268	0.10[HI]	2.000
Beryllium	0.004[b]	0.004[b]	0.017[b]	0.004[b]	0.000010[CR]	0.004
Cadmium	0.010[b]	0.010[b]	0.010[b]	0.010[b]	0.00066[HI]	0.005
Calcium	41.238	38.166	38.858	38.829	No Value	No Value
Chloride	91.021	No Data	19.708	No Data	No Value	250.000[k]
Chromium[d]	0.144	0.050[b]	0.060[b]	0.050[b]	0.0071[HI]	0.100
Cobalt	0.045[b]	0.045[b]	0.096	0.045[b]	0.091[HI]	No Value
Copper	0.036	0.020	0.057	0.013[b]	0.060[HI]	1.300
Fluoride	0.270	No Data	0.330	No Data	0.091[HI]	4.000
Iron	5.030	0.267	18.360	12.372	0.45[HI]	0.300[k]
Lead	0.129[c]	0.098[c]	0.050[b]	0.050[b]	0.00000015[HI]	0.015
Magnesium	16.262	16.215	13.418	14.171	No Value	No Value
Manganese	0.119	0.068	0.941	0.894	0.067[HI]	0.050[k]
Mercury	0.0002[b]	0.0002[e]	0.0002	0.0002[e]	0.00044[HI]	0.002
Molybdenum	0.050[b]	0.050[b]	0.050[b]	0.050[b]	0.0075[HI]	No Value
Nickel	0.682	0.305	0.109[b]	0.050[b]	0.030[HI]	0.100[o]
Nitrate as Nitrogen	15.561	No Data	1.474	No Data	2.40[HI]	10.000
Potassium	5.195	4.096	55.752	51.205	No Value	No Value
Selenium	0.005[b]	0.005[e]	0.005[b]	0.005[e]	0.0075[HI]	0.050
Silica	26.401	No Data	26.0	No Data	No Value	No Value
Silver	0.011[b]	0.060[b]	0.050[b]	0.050[b]	0.0075[HI]	0.100[k]
Sodium	59.450	60.433	29.2	27.98	No Value	No Value
Sulfate	19.947	No Data	28.9	No Data	No Value	500.000[h]
Thallium	0.056[b]	0.056[b]	0.644	0.056[b]	No Value	0.002
Uranium	0.002[b]	0.002[e]	0.001	0.001[e]	0.0045[HI]	0.020[h]
Vanadium	0.134	0.134	0.126	0.126	0.0092[HI]	No Value
Zinc	0.054	0.049	0.142	0.116	0.45[HI]	5.000[k]
Radionuclides (pCi/L)						
Gross Alpha	5.8	No Data	11.9	No Data	No Value	15[h]
Gross Beta	13.8	No Data	144.5	No Data	No Value	[i]
Neptunium-237[l]	0.8	No Data	0.5	No Data	0.13[CR]	[i]
Plutonium-239	0.1	No Data	0.2	No Data	0.12[CR]	[i]
Radium-226[m]	0.6	No Data	1.2	No Data	0.13[CR]	5[p]
Radon-222[n]	626	No Data	295	No Data	1.4[CR]	300[h]
Technetium-99	22.3	No Data	20.6	No Data	28.0[CR]	[i]
Thorium-230	1.1	No Data	1.5	No Data	1.0[CR]	[i]
Total Radium[f]	1.3	No Data	0.7	No Data	0.13[CR]	5[p]
Uranium-234[g]	0.7	0.33	0.3	No Data	0.87[CR]	[j]
Uranium-235[g]	0.3	0.015	0.2	No Data	0.82[CR]	[j]
Uranium-238[g]	0.7	0.35	0.3	No Data	0.62[CR]	[j]

Notes:

No Data indicates that a background concentration could not be derived because data were inadequate or not available.

No Value under "Risk-based Concentration" indicates that a value could not be derived because the analyte lacks toxicity values. No Value under "Maximum Contaminant Level" indicates that neither a primary nor a secondary maximum contaminant level was available.

Table ES-1. (continued)

[a] All risk-based concentrations (RBCs) were derived using methods presented in Appendix 2 of *Methods for Conducting Human Health Risk Assessments and Risk Evaluations at the Paducah Gaseous Diffusion Plant* (DOE/OR/07-1506&D1, as modified by comments from regulatory agencies). In each case, the value reported is the lesser of the RBCs based on child systemic toxicity (HI) and lifetime cancer risk (CR). For HI, all values are based on a target of 0.1. For CR, all values are based on a target of 1×10^{-6}.

[b] This analyte was not detected in any sample used in the background calculations or infrequently detected at concentrations similar to their detection limit. Therefore, the reported "background concentration" is the minimum detection limit used for the analyte. If lower detection limits are used in future sampling and analytical efforts, then the background concentration for this analyte should be reevaluated.

[c] The calculated 95% Upper Tolerance Limit (95% UTL) for this analyte exceeded the analyte's maximum detected value. Therefore, the background concentration selected for the analyte was the analyte's maximum detected value.

[d] Background values are for total chromium. Risk-based concentration is for Chromium VI.

[e] All data for this analyte were "Q" qualified. The definition of this qualifier is, "No result available or not required because total analyses is less than PQL ." Therefore, the reported "background concentration" is the minimum detection limit used for the total analyses. If lower detection limits are used in future sampling and analytical efforts, then the background concentration for this analyte should be reevaluated.

[f] The risk-based concentration for Total Radium is that for radium-226 (+D). That value is the smallest of all those for radium isotopes.

[g] Background values for uranium isotopes were calculated from the uranium metal background concentration because data for individual isotopes was lacking. In this calculation, the natural abundance, by weight, (i.e., 0.0056% U-234, 0.72% U-235, and 99.27% U-238) and the specific activities (i.e., 6.21×10^6 pCi/mg U-234, 2.15×10^3 pCi/mg U-235, and 3.35 pCi/mg U-238) of the uranium isotopes were used. The RBCs for Uranium-235 and Uranium-238 were calculated using the cancer slope factors for Uranium-235+D and Uranium-238+D, respectively.

[h] Proposed value.

[i] If two or more radionuclides are present, the sum of their annual dose equivalent to the total body or any organ is not to exceed 4 mrem/year.

[j] Proposed MCL for natural uranium (0.020 mg/L) is approximately equal to 30 pCi/L. This value applies to the sum of all isotopes.

[k] Secondary MCL.

[l] Risk-based concentration calculated using cancer slope factors for Neptunium+D.

[m] Risk-based concentration calculated using cancer slope factors for Radium-226+D.

[n] Risk-based concentration calculated using cancer slope factors for Radon-222+D.

[o] The EPA has deleted from the CFR both the MCL and the MCLG for nickel which have been vacated by court ruling, effective February 23, 1995 (60 FR 33926, June 29, 1995).

[p] The MCLs listed here for Radium-226 and Total Radium actually apply to combined Radium-226 and Radium-228.

[q] Federal and state MCLs were taken from the "Federal and State Guidelines" page found at the "Risk Assessment Information System" site at http://risk.lsd.ornl.gov/cgi-bin/guide/GUID_9709.

Table ES-2. Background concentrations in total and filtered samples taken from the Regional Gravel Aquifer and McNairy Formation derived over averages within wells, residential use risk-based concentrations, and maximum contaminant levels

Analyte	Regional Gravel Aquifer Total Samples	Regional Gravel Aquifer Filtered Samples	McNairy Formation Total Samples	McNairy Formation Filtered Samples	Risk-based Concentration[a]	Maximum Contaminant Level[q]
Inorganic Chemicals (mg/L)						
Aluminum	1.64	0.201	0.75	0.587	1.5HI	0.050 - 0.200k
Antimony	0.060[b]	0.060[b]	0.060[b]	0.060[b]	0.00056[HI]	0.006
Arsenic	0.005[b]	0.005[b]	0.005[b]	0.005[b]	0.000035[CR]	0.050
Barium	0.202	0.179	0.265	0.266	0.10[HI]	2.000
Beryllium	0.004[b]	0.004[b]	0.017[b]	0.004[b]	0.000010[CR]	0.004
Cadmium	0.010[b]	0.010[b]	0.010[b]	0.010[b]	0.00066[HI]	0.005
Calcium	40.0	35.8	39.47	40.27	No Value	No Value
Chloride	89.2	No Data	20.23	No Data	No Value	250.000[k]
Chromium[d]	0.134	0.050[b]	0.060[b]	0.050[b]	0.0071[HI]	0.100
Cobalt	0.045[b]	0.045[b]	0.072	0.045[b]	0.091[HI]	No Value
Copper	0.034	0.018	0.033	0.013[b]	0.060[HI]	1.300
Fluoride	0.245	No Data	0.298	No Data	0.091[HI]	4.000
Iron	3.72	0.164	15.83	9.446	0.45[HI]	0.300[k]
Lead	0.250	0.250	0.050[b]	0.050[b]	0.00000015[HI]	0.015
Magnesium	15.7	15.4	16.457	16.533	No Value	No Value
Manganese	0.082	0.048	0.729	0.682	0.067[HI]	0.050[k]
Mercury	0.0002[b]	0.0002[e]	0.0002[b]	0.0002[e]	0.00044[HI]	0.002
Molybdenum	0.050[b]	0.050[b]	0.050[b]	0.050[b]	0.0075[HI]	No Value
Nickel	0.682	0.305	0.109[b]	0.050[b]	0.030[HI]	0.100[o]
Nitrate as Nitrogen	13.5	No Data	1.43	No Data	2.40[HI]	10.000
Potassium	4.47	3.70	64.080	58.750	No Value	No Value
Selenium	0.005[b]	0.005[e]	0.005[b]	0.005[e]	0.0075[HI]	0.050
Silica	21.1	No Data	29.4	No Data	No Value	No Value
Silver	0.011[b]	0.060[b]	0.050[b]	0.050[b]	0.0075[HI]	0.100[k]
Sodium	63.5	65.7	24.92	25.90	No Value	No Value
Sulfate	19.1	No Data	27.27	No Data	No Value	500.000[h]
Thallium	0.056[b]	0.056[b]	0.255	0.056[b]	No Value	0.002
Uranium	0.002[b]	0.002[e]	0.001[b]	0.001	0.0045[HI]	0.020[h]
Vanadium	0.139	0.131	0.119	0.107	0.0092[HI]	No Value
Zinc	0.025	0.026	0.104	0.080	0.45[HI]	5.000[k]
Radionuclides (pCi/L)						
Gross Alpha	2.36	No Data	5.3	No Data	No Value	15[h]
Gross Beta	7.3	No Data	125.4	No Data	No Value	[i]
Neptunium-237[l]	0.21	No Data	0.13	No Data	0.13[CR]	[i]
Plutonium-239	0.03	No Data	0.04	No Data	0.12[CR]	[i]
Radium-226[m]	0.10	No Data	0.29	No Data	0.13[CR]	5[p]
Radon-222[n]	555.3	No Data	228.3	No Data	1.4[CR]	300[h]
Technetium-99	10.8	No Data	7.8	No Data	28.0[CR]	[i]
Thorium-230	0.54	No Data	0.40	No Data	1.0[CR]	[i]
Total Radium[f]	0.46	No Data	0.36	No Data	0.13[CR]	5[p]
Uranium-234[g]	0.7	0.33	0.3	No Data	0.87[CR]	[j]
Uranium-235[g]	0.3	0.015	0.2	No Data	0.82[CR]	[j]
Uranium-238[g]	0.7	0.35	0.3	No Data	0.62[CR]	[j]

Notes:

No Data indicates that a background concentration could not be derived because data were inadequate or not available.

No Value under "Risk-based Concentration" indicates that a value could not be derived because the analyte lacks toxicity values. No Value under "Maximum Contaminant Level" indicates that neither a primary nor a secondary maximum contaminant level was available.

Table ES-2. (continued)

[a] All risk-based concentrations (RBCs) were derived using methods presented in Appendix 2 of *Methods for Conducting Human Health Risk Assessments and Risk Evaluations at the Paducah Gaseous Diffusion Plant* (DOE/OR/07-1506&D1, as modified by comments from regulatory agencies). In each case, the value reported is the lesser of the RBCs based on child systemic toxicity (HI) and lifetime cancer risk (CR). For HI, all values are based on a target of 0.1. For CR, all values are based on a target of 1×10^{-6}.

[b] This analyte was not detected in any sample used in the background calculations or infrequently detected at concentrations similar to their detection limit. Therefore, the reported "background concentration" is the minimum detection limit used for the analyte. If lower detection limits are used in future sampling and analytical efforts, then the background concentration for this analyte should be reevaluated.

[c] The calculated 95% Upper Tolerance Limit (95% UTL) for this analyte exceeded the analyte's maximum detected value. Therefore, the background concentration selected for the analyte was the analyte's maximum detected value.

[d] Background values are for total chromium. Risk-based concentration is for Chromium VI.

[e] All data for this analyte were "Q" qualified. The definition of this qualifier is, "No result available or not required because total analyses is less than PQL." Therefore, the reported "background concentration" is the minimum detection limit used for the total analyses. If lower detection limits are used in future sampling and analytical efforts, then the background concentration for this analyte should be reevaluated.

[f] The risk-based concentration for Total Radium is that for radium-226 (+D). That value is the smallest of all those for radium isotopes.

[g] Background values for uranium isotopes were calculated from the uranium metal background concentration because data for individual isotopes was lacking. In this calculation, the natural abundance, by weight, (i.e., 0.0056% U-234, 0.72% U-235, and 99.27% U-238) and the specific activities (i.e., 6.21×10^{6} pCi/mg U-234, 2.15×10^{3} pCi/mg U-235, and 3.35 pCi/mg U-238) of the uranium isotopes were used. The RBCs for Uranium-235 and Uranium-238 were calculated using the cancer slope factors for Uranium-235+D and Uranium-238+D, respectively.

[h] Proposed value.

[i] If two or more radionuclides are present, the sum of their annual dose equivalent to the total body or any organ is not to exceed 4 mrem/year.

[j] Proposed MCL for natural uranium (0.020 mg/L) is approximately equal to 30 pCi/L. This value applies to the sum of all isotopes.

[k] Secondary MCL.

[l] Risk-based concentration calculated using cancer slope factors for Neptunium+D.

[m] Risk-based concentration calculated using cancer slope factors for Radium-226+D.

[n] Risk-based concentration calculated using cancer slope factors for Radon-222+D.

[o] The EPA has deleted from the CFR both the MCL and the MCLG for nickel which have been vacated by court ruling, effective February 23, 1995 (60 FR 33926, June 29, 1995).

[p] The MCLs listed here for Radium-226 and Total Radium actually apply to combined Radium-226 and Radium-228.

[q] Federal and state MCLs were taken from the "Federal and State Guidelines" page found at the "Risk Assessment Information System" site at http://risk.lsd.ornl.gov/cgi-bin/guide/GUID_9709.

1. INTRODUCTION

For the Paducah Gaseous Diffusion Plant (PGDP) to plan remedial investigations, complete final remedial investigations and feasibility study reports, and identify potential "new" release locations, both the background concentrations of all constituents that might be detected in environmental samples and the appropriate risk-based screening criteria must be established. However, as noted in regulatory agency comments on *Results of the Site Investigation, Phase II, at the Paducah Gaseous Diffusion Plant* (CH2M Hill 1991) and other documents, the reference sampling performed during the site investigations was not adequate to establish background concentrations in groundwater at the PGDP. Similarly, the regulatory agencies have noted that the groundwater background concentrations derived in *Baseline Risk Assessment and Technical Investigation Report for the Northwest Dissolved Phase Plume, Paducah Gaseous Diffusion Plant* (DOE 1994a) are suspect because the methods used to collect groundwater samples providing the data analyzed in that report are different than methods currently used for remedial investigations at the PGDP. As noted in those comments, the agencies believed that the methods used to collect those samples (i.e., bailers) may have resulted in background concentrations for metals which are greater than the concentrations expected to be found in samples collected using current methods at the PGDP (i.e., bladder pumps).

This report provides groundwater background concentrations for naturally occurring inorganic analytes and selected radionuclides and documents the source and derivation of these values. This document also compares these background concentrations to human health risk-based screening values (i.e., risk-based concentrations) derived using methods in *Methods for Conducting Human Health Risk Assessments and Risk Evaluations at the Paducah Gaseous Diffusion Plant* (DOE 1996a).

1.1 REGULATORY ISSUES

Guidance provided by the United States Environmental Protection Agency (EPA) recommends the establishment of background concentrations early in the remedial investigation/feasibility study process to ensure that only site-related contaminants are considered when planning clean-up activities (EPA 1988, 1989a, 1991a, 1991b, and 1995). Similarly, the Commonwealth of Kentucky encourages the development of background concentrations so that these values can be used to guide clean-up decisions (KDEP 1995). Therefore, background concentrations are needed when initiating or finalizing clean-up activities at the PGDP.

1.2 ORGANIZATION OF THE REPORT

This report is presented in five chapters. In Chapt. 1, the need for background and risk-based concentrations, some regulatory issues, and the report organization is discussed. In Chap. 2, the data used to derive the background concentrations are presented and evaluated. In Chapt. 3, the methods used to derive the background concentrations are discussed, and the background values are presented. In Chapt. 4, the sources of the human health risk-based concentrations, regulatory values, and other values to which the background concentrations are compared are discussed. Finally, in Chapt. 5, tables combining the background values, the human health risk-based values, the regulatory values, and other values are presented, and results shown in these tables are discussed. In addition, in Chapt. 5, general conclusions regarding these comparisons are provided.

To simplify the presentation of the large amount of analytical information contained in this report, appendices were prepared which summarize the data and its evaluation. Specifically, in App. A, information

supporting background well selection is presented; in App. B, the data and its evaluation for each analyte within aquifer classification (i.e., group) are shown; and, in App. C, analyses of the relationship between sample turbidity and analyte concentrations and between dissolved solids results and analyte concentrations are presented.

2. DATA EVALUATION

Similar to *Background Levels of Selected Radionuclide and Metals in Soils and Geologic Media at the Paducah Gaseous Diffusion Plant, Paducah, Kentucky* (DOE 1997) and unlike *Background Concentrations and Human Health Risk-based Screening Criteria for Metals in Soil at the Paducah Gaseous Diffusion Plant, Paducah, Kentucky* (DOE 1996b), all groundwater background concentrations presented in this document were derived using parametric statistics. Data used in the statistical analyses were from wells which were either installed in areas or screened at depths that have not been impacted by contaminants migrating from the PGDP. In this chapter, the data and its sources are presented, and the data evaluation and it results are described.

2.1 SELECTION OF BACKGROUND WELLS

All background data were drawn from the Paducah EMEF Electronic Data System. However, prior to accessing this system, sets of background wells for the Regional Gravel Aquifer (RGA) and the McNairy Formation were compiled. The wells selected for each of these sets, including location and depth of screening, are presented in Table 2.1. The general location of each of these wells in relation to the PGDP and the major contaminant plumes is depicted in Fig. 2.1. Additional information about well locations is shown in App. A.

Table 2.1. Initial well list

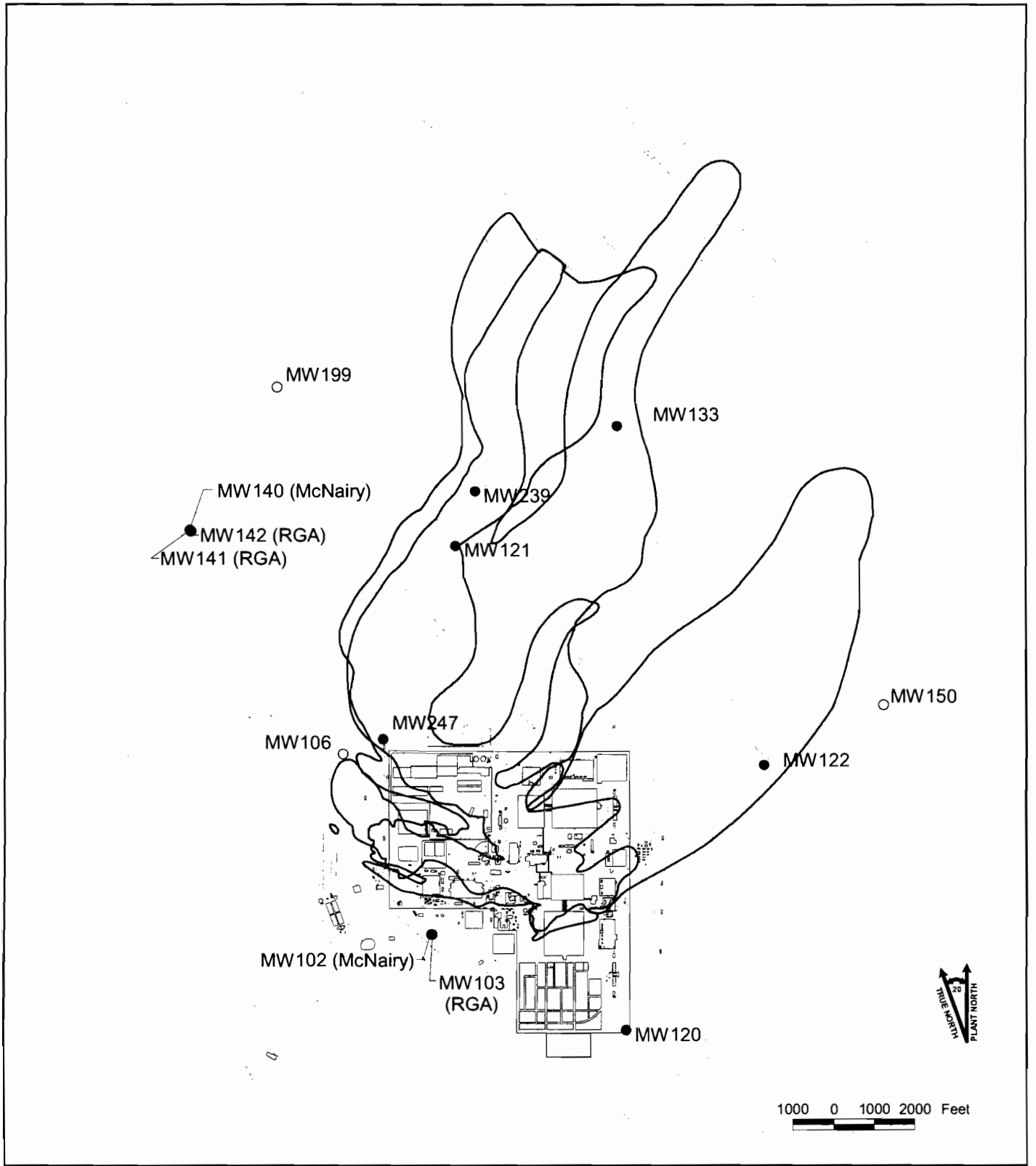
RGA Wells			McNairy Formation Wells		
Well ID	**Location[a]**	**Screened Depth[b]**	**Well ID**	**Location[a]**	**Screened Depth[b]**
MW103	N(-3500.84) E(-6252.14)	79.5 – 90	MW102	N(-3502.5) E(-6267.3)	136 – 146
MW106	N(8438.90) E(990.93)	62 – 75	MW120	N(-5880.16) E(-1489.08)	160 – 170
MW141	N(6544.69) E(-12173.02)	79 – 80	MW121	N(6161.5) E(-5677.7)	200 – 210
MW142	N(6529.75) E(-12162.411)	42.5 – 52.5	MW122	N(717.1) E(1876.2)	148 – 158
MW150	N(2239.80) E(-4652.86)	66 – 96	MW133	N(9124.7) E(-1715.7)	80 – 90
MW199	N(10090.1) E(-10076.6)	57 – 62	MW140	N(6558.5) E(-12179.2)	138 – 148
			MW239	N(7330) E(-5204)	147 – 157
			MW247	N(1358) E(-7433)	135 – 145

See App. A for additional well information, including construction and location diagrams and a complete list of sampling times by analyte class.

[a] All locations are in plant coordinates.

[b] All screening depths are in feet below ground surface.

As shown in Table 2.1, the initial background well list for the RGA consisted of 6 wells, and the initial background well list for the McNairy Formation consisted of 8 wells. After selecting these wells and acquiring the analytical data from each, sampling results were examined to determine the frequency of detection of major plant-related contaminants (i.e., organic compounds, especially trichloroethene, and



LEGEND:

- ○ RGA Monitoring Well
- ● McNairy Monitoring Well
- Groundwater Plume Outline
- Road
- Stream

U.S. DEPARTMENT OF ENERGY
DOE OAK RIDGE OPERATIONS
PADUCAH GASEOUS DIFFUSION PLANT

BECHTEL JACOBS
BECHTEL JACOBS COMPANY, LLC
MANAGED FOR THE US DEPARTMENT OF ENERGY UNDER
US GOVERNMENT CONTRACT DE-AC-05-98OR22700
Oak Ridge, Tennessee • Paducah, Kentucky • Portsmouth, Ohio

Fig. 2.1. Background well locations.

SAIC
Science Applications International Corporation
P.O. Box 2502
Oak Ridge, Tennessee 37831

Figure No. FS2-1
DATE 05-21-01

technetium-99). The following subsections describe the results of this evaluation for each well and present the conclusions drawn from this evaluation. (Note, the information used to develop the following subsections is presented in its entirety in App. A.)

2.1.1 Evaluation of Background Wells for the RGA

In total, 6 wells were selected for evaluation as background RGA wells. These wells were MW103, MW106, MW141, MW142, MW150, and MW199.

2.1.1.1 Evaluation of MW103

Monitoring well MW103 was installed in November 1991. Between the date of installation and February 1998, samples from this well were analyzed 11 times for one or more organic compounds, 12 times for one or more radionuclides, and 10 times for inorganic chemicals. In total, over all sampling times, the only organic compound detected was *cis*-1,2-dichloroethene. This compound was detected at a concentration of 1.8 μg/liter in a single sample collected in May 1997 (Sample ID 5327-97).

The radionuclide, technetium-99, was detected more frequently in samples taken from this well, but detected values are either similar to or less than their detection error. In total, over all sampling times, technetium-99 was detected 7 times at concentrations ranging from 5 ±93 pCi/liter (May 1993; Sample ID 5178-93) to 20 ±18 pCi/liter (July 1994; Sample ID 6026-94).

These results indicate that MW103 is acceptable as a background well because it is screened in an area outside the influence of contaminants migrating from the PGDP. Although an organic solvent, *cis*-1,2-dichloroethene, was detected in a sample taken from this well, the detected concentration of 1.8 μg/liter is below the method detection limit (5 μg/liter) for this analyte in water (SW-846, Method 8240). Additionally, the organic solvent was detected in only one of 11 samples so there is evidence that the detection may have been an anomaly. Similarly, although technetium-99 was detected, the detected values were very small in all cases and below the detection error in most cases. Therefore, the technetium-99 detections may also be anomalous.

2.1.1.2 Evaluation of MW106

Monitoring well MW106 was installed in November 1991. Between the date of installation and February 1998, samples from this well were analyzed 13 times for one or more organic compounds, 13 times for one or more radionuclides, and 7 times for inorganic chemicals. In total, over all sampling times, the only organic compound detected was trichloroethene. This compound was detected at a concentration of 1 XJX μg/liter in a single sample collected in March 1994 (Sample ID 4697-94). ("XJX" are data qualifiers that indicate that the detected concentration is estimated.)

The radionuclide, technetium-99, was detected more frequently in samples taken from this well, but detected values were either similar to or less than the detection error. In total, over all sampling times, technetium-99 was detected 13 times at concentrations ranging from 1 ±10 pCi/liter (February 1996; Sample ID 5289-96) to 29 ±23 pCi/liter (September 1993; Sample ID 5322-93).

These results indicate that MW106 is acceptable as a background well because it is screened in an area outside the influence of contaminants migrating from the PGDP. Although an organic solvent, trichloroethene, was detected in a sample taken from this well, the detected concentration of 1XJX μg/liter is below the method detection limit (5 μg/liter) for this analyte in water (SW-846, Method 8240). Additionally, the organic solvent was detected in only one of 7 samples so there is evidence that the detection may have been an anomaly. Similarly, although technetium-99 was detected, the detected values

were very small in all cases and below the detection error in most cases. Therefore, the technetium-99 detections may also be anomalous.

2.1.1.3 Evaluation of MW 141

Monitoring well MW141 was installed in April 1990. Between the date of installation and February 1998, samples from this well were analyzed 10 times for one or more organic compounds, 10 times for one or more radionuclides, and 9 times for inorganic chemicals. In total, over all sampling times, the only organic compounds detected were bis(2-ethylhexyl)phthalate and pyrene. Bis(2-ethylhexyl)phthalate was detected at a concentration of 5J μg/liter in a single sample collected in April 1990 (Sample ID CH200429-00000), and pyrene was detected at a concentration of 3J μg/liter in a single sample collected in March 1991 (Sample ID CH210011-00000).

The radionuclide, technetium-99, was detected more frequently in samples taken from this well, but detected values were less than the detection error in each case. In total, over all sampling times, technetium-99 was detected 7 times at concentrations ranging from -0.23 ±1.49 pCi/liter (March 1991; Sample ID CH210011-00000) to 15 ±20 pCi/liter (January 1994; Sample ID 4229-94).

These results indicate that MW141 is acceptable as a background well because it is screened in an area outside the influence of contaminants migrating from the PGDP. Although two organic compounds, bis(2-ethylhexyl)phthalate and pyrene, were detected in samples taken from this well, the detected concentrations of both were very small, estimated values, and below the organic compounds' method detection limit (10 μg/liter per SW-846, Method 8270). Additionally, one of the detected organic compounds, bis(2-ethylhexyl)phthalate is a known laboratory contaminant. Finally, the lack of multiple detections of either organic compound is evidence that the detections may have been an anomaly. Similarly, although technetium-99 was detected, the detected values were very small and less than the detection error in all cases. Therefore, the technetium-99 detections may also be anomalous.

2.1.1.4 Evaluation of MW 142

Monitoring well MW142 was installed in April 1990. Between the date of installation and February 1998, samples from this well were analyzed 14 times for one or more organic compounds, 14 times for one or more radionuclides, and 13 times for inorganic chemicals. In total, over all sampling times, the only organic compound detected was toluene. This compound was detected at a concentration of 1J μg/liter in a single sample collected in August 1990 (Sample ID CH200674-00000).

The radionuclide, technetium-99, was detected more frequently in samples taken from this well, but detected values were less than the detection error in each case. In total, over all sampling times, technetium-99 was detected 10 times at concentrations ranging from -1.6 ±1.59 pCi/liter (March 1991; Sample ID CH210012-00000) to 16 ±19 pCi/liter (February 1995; Sample ID 5464-95).

These results indicate that MW142 is acceptable as a background well because it is screened in an area outside the influence of contaminants migrating from the PGDP. Although an organic compound, toluene, was detected in a sample taken from this well, the detected concentration was very small, an estimated value, and near the organic compound's detection limit (5 μg/liter per SW-846, Method 8240). Additionally, the detected organic compound, toluene, is a known laboratory contaminant. Finally, the lack of multiple detections of the organic compound is evidence that the detection may have been an anomaly. Similarly, although technetium-99 was detected, the detected values were very small and less than the detection error in all cases. Therefore, the technetium-99 detections may also be anomalous.

2.1.1.5 Evaluation of MW 150

Monitoring well MW150 was installed in August 1990. Between the date of installation and February 1998, samples from this well were analyzed 13 times for one or more organic compounds, 13 times for one or more radionuclides, and 6 times for inorganic chemicals. In total, over all sampling times, the only organic compound detected was toluene. This compound was detected at concentrations of 23 and 12 µg/liter in a sample and duplicate collected in September 1990 (Sample IDs CH200691-00000 and CH200692-00000).

The radionuclide, technetium-99, was detected more frequently in samples taken from this well, but detected values were less than the detection error in all but one instance. In total, over all sampling times, technetium-99 was detected 11 times at concentrations ranging from 0.9 ±2.12 pCi/liter (March 1991; Sample ID CH210030-00000) to 22 ±19 pCi/liter (February 1995; Sample ID 5468-95).

These results indicate that MW150 is acceptable as a background well because it is screened in an area outside the influence of contaminants migrating from the PGDP. Although an organic compound, toluene, was detected in two samples taken from this well, the detected concentrations were small. (Note, the detected values did exceed the method detection limit for toluene, which is 10 µg/liter per SW-846, Method 8240). Additionally, the detected organic compound, toluene, is a known laboratory contaminant. Finally, the lack of multiple detections of the organic compound is evidence that the detections may have been anomalous events. Similarly, although technetium-99 was detected, the detected values were very small and less than the detection error in all but one case. Therefore, the technetium-99 detections may also be anomalous.

2.1.1.6 Evaluation of MW 199

Monitoring well MW199 was installed in May 1991. Between the date of installation and February 1998, samples from this well were analyzed 10 times for one or more organic compounds, 10 times for one or more radionuclides, and 9 times for inorganic chemicals. In total, over all sampling times, the only organic compound detected was bis(2-ethylhexyl)phthalate. This compound was detected at a concentration of 6J µg/liter in a sample collected in May 1991 (Sample ID CH210240-00000).

The radionuclide, technetium-99, was detected more frequently in samples taken from this well, but detected values were less than the detection error in all but one instance. In total, over all sampling times, technetium-99 was detected 8 times at concentrations ranging from -2.3 ±3.1 pCi/liter (May 1991; Sample ID CH210240-00000) to 24 ±20 pCi/liter (July 1994; Sample ID 6074-94).

These results indicate that MW199 is acceptable as a background well because it is screened in an area outside the influence of contaminants migrating from the PGDP. Although an organic compound, bis(2-ethylhexyl)phthalate, was detected in a sample taken from this well, the detected concentration was very small, an estimated value, and below the organic compound's detection limit (10 µg/liter per SW-846, Method 8270). Additionally, the detected organic compound, bis(2-ethylhexyl)phthalate, is a known laboratory contaminant. Finally, the lack of multiple detections of the organic compound is evidence that the detection may have been an anomaly. Similarly, although technetium-99 was detected, the detected values were very small and less than the detection error in all but one case. Therefore, the technetium-99 detections may also be anomalous.

2.1.2 Evaluation of Background Wells for the McNairy Formation

In total, 8 wells were selected for evaluation as background McNairy Formation wells. These wells were MW102, MW120, MW121, MW122, MW133, MW140, MW239, and MW247.

2.1.2.1 Evaluation of MW102

Monitoring well MW102 was installed in December 1991. Between the date of installation and February 1998, samples from this well were analyzed 14 times for one or more organic compounds, 14 times for one or more radionuclides, and 13 times for inorganic chemicals. In total, over all sampling times, no organic compounds were detected in samples collected from this well. However, the radionuclide, technetium-99, was detected in several samples taken from this well, but detected values were less than or equal to the detection error in all but one instance. In total, over all sampling times, technetium-99 was detected 10 times at concentrations ranging from 2 ±10 pCi/liter (September 1995; Sample ID 7467-95) to 23 ±19 pCi/liter (April 1994; Sample ID 5183-94).

These results indicate that MW102 is acceptable as a background well because it is screened in an area outside the influence of contaminants migrating from the PGDP. Although technetium-99 was detected, the detected values were very small and less than the detection error in all but one case. Therefore, the technetium-99 detections may be anomalous.

2.1.2.2 Evaluation of MW120

Monitoring well MW120 was installed in November 1989. Between the date of installation and February 1998, samples from this well were analyzed 15 times for one or more organic compounds, 15 times for one or more radionuclides, and 15 times for inorganic chemicals. In total, over all sampling times, four organic compounds have been detected in 2 samples collected from this well. In a sample collected in February 1990 (Sample ID CH200300-00000), bis(2-ethylhexy)phthalate was detected at a concentration of 210 μg/liter, and in a sample collected in April 1990 (Sample ID CH200414-00000), ethylbenzene, toluene, and xylene were detected at concentrations of 2J, 5, and 12 μg/liter, respectively.

The radionuclide, technetium-99, was detected more frequently in samples taken from this well, but detected values were less than or equal to the detection error in all but two instances. In total, over all sampling times, technetium-99 was detected 12 times at concentrations ranging from 1 ±12 pCi/liter (November 1997; Sample ID 5793-97) to 21 ±20 pCi/liter (February 1995; Sample ID 5448-95). [The two instances when technetium-99 concentration exceeded the detection error were in February 1991 (Sample ID CH210107-000) and February 1995 (Sample ID 5448-95). The detected concentrations and their errors are 2.6 ± 2.03 pCi/liter and 21 ± 20 pCi/liter, respectively.]

These results indicate that MW120 is acceptable as a background well because it is screened in an area outside the influence of contaminants migrating from the PGDP. Although organic compounds were detected in samples taken from this well, three of these compounds (ethylbenzene, toluene, and xylene) are related to fuel use (i.e., may be a sampling artifact) and were detected at low concentrations that are similar to or below the compounds' detection limits (5 μg/liter per SW-846, Method 8240). Additionally, the result for ethylbenzene is an estimated value. The result for the remaining organic compound, bis(2-ethylhexyl)phthalate, is relatively high and does exceed the detection limit for this compound in water (10 μg/liter per SW-846, Method 8270); however, this compound is also a known laboratory contaminant. Finally, the lack of multiple detections for all the organic compounds is evidence that the detection of each may have been an anomaly. Similarly, although technetium-99 was detected, the detected values were very small and less than the detection error in all but two cases. Therefore, the technetium-99 detections may also be anomalous.

2.1.2.3 Evaluation of MW121

Monitoring well MW121 was installed in November 1989. Between the date of installation and February 1998, samples from this well were analyzed 15 times for one or more organic compounds, 16 times for one

or more radionuclides, and 10 times for inorganic chemicals. In total, over all sampling times, 6 organic compounds were detected in three samples collected from this well. In a sample collected in February 1990 (Sample ID CH200304-00000), 4-nitrophenol, bis(2-ethylhexyl)phthalate, and di-n-butylphthalate were detected at concentrations of 15J, 300BJ, and 2J μg/liter, respectively. In a sample collected in April 1990 (Sample ID CH200419-00000), acetone and bis(2-ethylhexyl)phthalate were detected at concentrations of 320BEJ and 170BJ μg/liter, respectively. Finally, in a sample collected in March 1994 (Sample ID 4864-94), trichloroethene was detected at a concentration of 2 μg/liter.

The radionuclide, technetium-99, was detected in several samples taken from this well, but detected values were less than or equal to the detection error in all but two instances. In total, over all sampling times, technetium-99 was detected 8 times at concentrations ranging from 2 pCi/liter (February 1990; Sample ID 719-90) to 27 ±23 pCi/liter (June 1994; Sample ID 5517-94). [The two instances when technetium-99 concentration exceeded the detection error were in March 1991 (Sample ID CH210001-00000) and June 1994 (Sample ID 5517-94). The detected concentrations and their errors are 3.1 ± 1.4 pCi/liter and 27 ± 23 pCi/liter, respectively.]

These results indicate that MW121is acceptable as a background well because it is screened in an area outside the influence of contaminants migrating from the PGDP. Although organic compounds were detected in samples taken from this well, all results, except that for trichloroethene, were estimated values. Additionally, the "B" qualifier was attached to the three detections with the greatest results (i.e., those for acetone and bis(2-ethylhexyl)phthalate) indicating that these laboratory contaminants were also detected in one or more associated blank samples. The detected concentrations of the other three organic compounds, 4-nitrophenol, di-n-butylphthalate, and trichloroethene are very small and below the detection limits for these compounds (50, 10, and 5 μg/liter per SW-846; Method 8270, respectively). Finally, the lack of multiple detections of the organic compounds is evidence that the detections of each may have been an anomaly. Similarly, although technetium-99 was detected, the detected values were very small and less than the detection error in all but two cases. Therefore, the technetium-99 detections may also be anomalous.

2.1.2.4 Evaluation of MW122

Monitoring well MW122 was installed in November 1989. Between the date of installation and February 1998, samples from this well were analyzed 17 times for one or more organic compounds, 16 times for one or more radionuclides, and 12 times for inorganic chemicals. In total, over all sampling times, 1 organic compound was detected in a sample collected from this well. In a sample collected in April 1990 (Sample ID CH200423-00000), bis(2-ethylhexyl)phthalate was detected at 189BJ μg/liter.

The radionuclide, technetium-99, was detected in several samples taken from this well, but detected values were less than or equal to the detection error in all but one instance. In total, over all sampling times, technetium-99 was detected 12 times at concentrations ranging from 1 ±11 pCi/liter (February 1997; Sample ID 5145-97) to 20 ±20 pCi/liter (February 1995; Sample ID 5456-95). [The single instance when technetium-99 concentration exceeded the detection error was in March 1991 (Sample ID CH210005-00000). The detected concentration and its error is 5.9 ± 3.2 pCi/liter.]

These results indicate that MW122 is acceptable as a background well because it is screened in an area outside the influence of contaminants migrating from the PGDP. Although an organic compound was detected at a relatively high concentration in a sample taken from this well, this result is an estimated value to which the "B" qualifier is attached. Therefore, the organic compound, which is a known laboratory contaminant, was also detected in one or more associated blank samples. Finally, the lack of multiple detections of the organic compound is evidence that the detection may have been an anomaly.

Similarly, although technetium-99 was detected, the detected values were very small and less than the detection error in all but one case. Therefore, the technetium-99 detections may also be anomalous.

2.1.2.5 Evaluation of MW133

Monitoring well MW133 was installed in November 1989. Between the date of installation and February 1998, samples from this well were analyzed 12 times for one or more organic compounds, 12 times for one or more radionuclides, and 8 times for inorganic chemicals. In total, over all sampling times, 3 organic compounds were detected in two samples collected from this well. In a sample collected in May 1990 (Sample ID CH200432-00000), bis(2-ethylhexyl)phthalate and chloroform were detected at 230BJ and 1J µg/liter, respectively. In a sample collected in August 1990 (Sample ID CH200676-00000), carbon disulfide was detected at 2J µg/liter.

The radionuclide, technetium-99, was detected in several samples taken from this well, but detected values were less than or equal to the detection error in all but one instance. In total, over all sampling times, technetium-99 was detected 11 times at concentrations ranging from -2 ±0 pCi/liter (November 1997; Sample ID 5789-97) to 22 ±22 pCi/liter (September 1993; Sample ID 6740-93). [The single instance when technetium-99 concentration exceeded the detection error was in May 1990 (Sample ID CH200432-00000). The detected concentration and its error is 9 ± 6 pCi/liter.]

These results indicate that MW133 is acceptable as a background well because it is screened in an area outside the influence of contaminants migrating from the PGDP. Although three organic compounds were detected in samples taken from this well, all are known laboratory contaminants, all have results that are estimated values that are below the detection limit for the contaminant (10, 5, and 5 µg/liter per SW-846, Method 8240 or 8270, for bis(2-ethylhexyl)phthalate, chloroform, and carbon disulfide, respectively), and one is qualified "B", indicating the organic compound was also detected in one or more associated blank samples. Finally, the lack of multiple detections of the organic compounds is evidence that each of the detections may have been an anomaly. Similarly, although technetium-99 was detected, the detected values were very small and less than the detection error in all but one case. Therefore, the technetium-99 detections may also be anomalous.

2.1.2.6 Evaluation of MW140

Monitoring well MW140 was installed in March 1990. Between the date of installation and February 1998, samples from this well were analyzed 13 times for one or more organic compounds, 13 times for one or more radionuclides, and 13 times for inorganic chemicals. In total, over all sampling times, 1 organic compound was detected in a sample collected from this well. In a sample collected in May 1990 (Sample ID CH200428-00000), benzene was detected at 1J µg/liter.

The radionuclide, technetium-99, was detected in several samples taken from this well, but detected values were less than or equal to the detection error in all but one instance. In total, over all sampling times, technetium-99 was detected 10 times at concentrations ranging from -0.67 ±1.74 pCi/liter (March 1991; Sample ID CH210009-00000) to 13 ±11 pCi/liter (November 1997; Sample ID 5796-97). [The single instance when technetium-99 concentration exceeded the detection error was in November 1997 (Sample ID 5796-97). The detected concentration and its error is 13 ± 11 pCi/liter.]

These results indicate that MW140 is acceptable as a background well because it is screened in an area outside the influence of contaminants migrating from the PGDP. Although an organic compound was detected in samples taken from this well, the compound is a known laboratory contaminant, was detected at a concentration near its detection limit (5 µg/liter per SW-846, Method 8240), and is an estimated value. Finally, the lack of multiple detections of the organic compounds is evidence that the detection

may have been an anomaly. Similarly, although technetium-99 was detected, the detected values were very small and less than the detection error in all but one case. Therefore, the technetium-99 detections may also be anomalous.

2.1.2.7 Evaluation of MW239

Monitoring well MW239 was installed in September 1994. Between the date of installation and February 1998, samples from this well were analyzed 31 times for one or more organic compounds, 31 times for one or more radionuclides, and 32 times for inorganic chemicals. In total, over all sampling times, 1 organic compound was detected in three samples collected from this well. In a samples collected in December 1996, June 1997, and August 1997 (Sample IDs 6395-96, 5409-97, and 5575-97, respectively), trichloroethene was detected at 2, 7, and 7 μg/liter, respectively.

The radionuclide, technetium-99, was detected in several samples taken from this well, but detected values were less than or equal to the detection error in all but four instances. In total, over all sampling times, technetium-99 was detected 27 times at concentrations ranging from 1 ±11 pCi/liter (August 1995; Sample ID 7230-95) to 20 ±19 pCi/liter (April 1995; Sample ID 6143-95).

The detection of trichloroethene in three samples indicates that monitoring well MW239 may be screened in an area that is being impacted by contaminants migrating from the PGDP. Because other wells are available for which evidence of no impact is stronger, this well was removed from the list of potential background wells.

2.1.2.8 Evaluation of MW247

Monitoring well MW247 was installed in September 1994. Between the date of installation and February 1998, samples from this well were analyzed 32 times for one or more organic compounds, 32 times for one or more radionuclides, and 31 times for inorganic chemicals. In total, over all sampling times, 1 organic compound was detected in four samples collected from this well. In samples collected in September 1995, March 1997, May 1997, and July 1997 (Sample IDs 7393-95, 5180-97, 5339-97, and 5524-97, respectively), trichloroethene was detected at 2, 1, 2, and 9,600 μg/liter, respectively.

The radionuclide, technetium-99, was detected in several samples taken from this well, but detected values were less than or equal to the detection error in all but six instances. In total, over all sampling times, technetium-99 was detected 25 times at concentrations ranging from -12 ±0 pCi/liter (November 1997; Sample ID 5857-97) to 1,953 ±43 pCi/liter (July 1997; Sample ID 5524-97).

Although the concentrations of trichloroethene and technetium-99 in Sample ID 5524-97 appear anomalous because they differ so markedly from other results, the presence of trichloroethene in three other samples indicates that monitoring well MW247 may be screened in an area that is being impacted by contaminants migrating from the PGDP. Therefore, because other wells are available for which evidence of no impact is stronger, this well was removed from the list of potential background wells.

2.2 DATA EVALUATION

After the list of potential wells was evaluated, and the background wells selected from that list, the inorganic chemical data from each well were evaluated, and anomalous values were identified and corrected. This section summarizes the methods used for the identification and correction of anomalous values and the results of the data evaluation and correction.

2.2.1 Reasons for Removing or Correcting Inorganic Chemical Data

Reasons for removing or correcting data are listed in the following bullets.

- Sample was collected before 1993. These data were deleted from the data set to remove sampling bias. Prior to 1993, some samples were collected using methods (i.e., bailers) that are inconsistent with methods used after 1993 (i.e., bladder pumps). Generally, because samples collected with bailers are more likely to contain higher amounts of particulates than samples collected with bladder pumps, and because particulate levels are directly related to the concentrations of inorganic chemicals (see App. C), deletion of these data resulted in a data set which yielded lower background values when analyzed.

- Value was a nondetect but was greater than the greatest detected value from a sample from the well. In this case, the nondetect concentration was reduced to the greatest detected value from a sample taken from the well. These data were corrected so that nondetect values would not bias the background concentrations high.

- Value was a detect that was much greater (generally more than 10×'s greater) than the next greatest detect and appeared to be related to sample turbidity. In this case, the value was reduced to the next greatest detected value. These data were corrected so that turbidity of the sample would not bias high the resulting background concentrations. Note, the effect of turbidity upon the results for total samples is discussed in more detail in Chapt. 5.

- Value was a detect that was much smaller (generally more than 10×'s smaller) than the next smallest detect. In this case, the value was increased to the next smallest value. These data were corrected so that very small results would not unduly impact the standard error of the data set and bias high the background concentrations.

- Data point was for a filtered sample and was qualified "Q". In the data set used to derive the background concentrations, data points were "Q" qualified when analyses on a filtered sample were not performed because the results of the analyses of the total (unfiltered) sample were below the total sample's practical quantitation limit. In this case, the "Q" qualified data were modified by assigning to the data point the minimum detection limit for the analyte from all samples taken from the well or, if none of the samples taken from the well had a numerical result for the analyte, the minimum detection limit for the analyte over all wells. This was done to ensure that the information such "nondetects" carry was included in the derivation of the background values. Generally, not including this correction would have resulted in greater background concentrations because, generally, the standard error of a data set increases as sample size decreases.

2.2.2 Reasons for Removing or Correcting Radionuclide Data

After evaluating the inorganic data for each of the background wells, the radionuclide data was evaluated to remove or correct anomalous values. The reasons for removing or correcting these data are listed in the following bullets.

- Sample was collected before 1993. Data from samples collected prior to 1993 were deleted from the data set to remove sampling bias. As noted previously, some samples collected prior to 1993 were collected using methods (i.e., bailers) that are inconsistent with the methods currently used for remedial investigations (i.e., bladder pumps).

- Value was a detect that was much greater (generally more than 10×'s greater) than the next greatest detect and appeared to be related to sample turbidity. In this case, the value was reduced to the next greatest detected value. As noted previously, these data were corrected so that turbidity of the sample would not bias high the resulting background concentrations.

- Value was a detect that was much smaller (generally more than 10×'s smaller) than the next smallest detect. In this case the value was increased to the next greatest value. As noted previously, these data were corrected so that results with very small values would not unduly impact the standard error of the data set and bias high the background concentrations.

- Observation was "Q" qualified. In the data set used to derive the background concentrations, data points for radionuclides were "Q" qualified when analyses were planned but not performed because the sample contained an indicator radionuclide at a concentration less than the minimum detection limit. As noted previously, all "Q" qualified data were assigned the minimum detection limit used for other samples taken from the well or across wells. This procedure was followed so that the information "Q" qualified data could be included in the derivation of the background values.

Unlike the data sets for inorganic chemicals, where there was at least one observation for each inorganic chemicals from each background well, the data sets for several radionuclides did not include observations from all wells. The radionuclide data sets lacking observations from all wells are neptunium-237, plutonium-239, radium-226, radon-222, thorium-230, and total radium. Additionally, please note that only results for total samples were available and that data sets for uranium isotopes were not available.

2.2.3 Summary of Data Evaluation

This subsection summarizes the data evaluation. In addition, this subsection presents the summary statistics calculated for each analyte. As with the discussion of background well selection, the results are segregated by analyte class within an aquifer. Note, a more detailed presentation of the results summarized here are in App. B.

For the RGA inorganic chemical data set, 2,108 observations were available in the corrected data sets over all analytes and wells. Of these 2,108 observations, 281 or 13.3% of the total number of observations were modified for one of the reasons discussed earlier. Of the 281 observations that were modified, 179 observations (8.5% of the total number of observations) were corrected for being "Q" qualified, 1 observation (<0.1% of the total) was corrected for being anomalously small, 11 observations (<0.1% of the total) were corrected for being anomalously large, and 90 observations (4.3% of the total) were corrected because the nondetect value reported exceeded the maximum detected value reported. A complete summary of these results by analyte is presented in Table 2.2. Please note, the summary statistics presented in this table are for the corrected data sets presented in App. B.

For the McNairy Formation inorganic chemical data set, 2,151 observations were available in the corrected data set over all analytes and wells. Of these 2,151 observations, 280 or 13.0% of the total number of observations were modified for one of the reasons discussed earlier. Of the 280 observations that were modified, 217 observations (10% of the total number of observations) were corrected for being "Q" qualified, 13 observations (<0.1% of the total) were corrected for being anomalously large, 49 observations (2.2% of the total) were corrected because the nondetect value reported exceeded the maximum detected value reported, and 1 observation was corrected for other reasons (i.e., blank contamination). A complete summary is presented in Table 2.3. Please note, the summary statistics reported in this table are for the corrected data sets presented in App. B.

Table 2.2. Summary of evaluation of RGA inorganic chemical data

Analyte	Number of Data Points	Number of Data Points Corrected for: "Q" Qualified Data	Small Values	Large Values	Nondetect > Max Detect	Other	Total Percent Corrected	Frequency of Detection	Minimum Value [a] (pCi/liter)	Maximum Value [a] (pCi/liter)	Overall Average [b] (pCi/liter)	Weighted Average [b] (pCi/liter)
Aluminum	40	0	0	2	7	0	22.5	29/40	0.100	2.60	0.638	0.654
Aluminum, Dissolved	36	3	0	1	5	0	25.0	19/36	0.082	0.259	0.166	0.167
Antimony	44	0	0	0	0	0	0	0/44	0.060	0.25	0.111	0.113
Antimony, Dissolved	37	5	0	0	0	0	13.5	0/37	0.060	0.190	0.083	0.084
Arsenic	44	0	0	0	0	0	0	2/44	0.005	0.007	0.005	0.005
Arsenic, Dissolved	44	42	0	0	0	0	95.5	0/44	0.005	0.005	0.005	0.005
Barium	44	0	0	0	2	0	4.5	41/44	0.010	0.282	0.119	0.127
Barium, Dissolved	44	2	0	0	2	0	9.1	39/44	0.005	0.200	0.111	0.119
Beryllium	44	0	0	0	0	0	0	0/44	0.004	0.025	0.009	0.010
Beryllium, Dissolved	40	3	0	0	0	0	5.0	0/40	0.004	0.015	0.007	0.007
Cadmium	44	0	0	0	2	0	4.5	1/44	0.010	0.100	0.020	0.020
Cadmium, Dissolved	44	7	0	0	0	0	15.9	0/44	0.010	0.025	0.013	0.013
Calcium	44	0	0	0	0	0	0	44/44	2.88	56.5	21.7	22.7
Calcium, Dissolved	40	0	1	0	0	0	2.5	40/40	10.9	37	21.6	22.7
Chloride	43	0	0	0	0	0	0	43/43	2.9	109.1	37.1	40.1
Chromium	37	0	0	1	0	0	2.7	11/37	0.050	0.232	0.069	0.075
Chromium, Dissolved	37	0	0	0	0	0	0	1/37	0.050	0.092	0.054	0.054
Cobalt	44	0	0	0	0	0	0	0/40	0.045	0.100	0.052	0.052
Cobalt, Dissolved	40	3	0	0	1	0	10.0	0/40	0.045	0.050	0.049	0.049
Copper	44	0	0	0	7	0	15.9	7/44	0.010	0.100	0.017	0.018
Copper, Dissolved	40	3	0	0	3	0	7.5	3/40	0.010	0.025	0.013	0.013
Fluoride	35	0	0	0	0	0	0	34/35	0.100	0.270	0.163	0.169
Iron	44	0	0	3	0	0	6.8	37/44	0.010	9.2	1.33	1.41
Iron, Dissolved	40	2	0	1	10	0	32.5	21/40	0.010	0.333	0.080	0.085
Lead	32	0	0	0	3	0	9.4	4/32	0.050	0.250	0.088	0.135
Lead, Dissolved	32	3	0	0	1	0	12.5	1/32	0.050	0.250	0.097	0.140

[a] The minimum and maximum values over all observations and all wells for the corrected data set are reported.

[b] The overall average is the arithmetic average of all analyte results over all wells. The weighted average is the arithmetic average of the within well averages from the corrected data set.

[c] Because no numerical results were in the mercury, dissolved; selenium, dissolved; and uranium, dissolved data sets, it was not possible to determine or calculate any of the summary statistics. Therefore, NV appears in the summary statistics' columns.

Table 2.3. Summary of evaluation of McNairy Formation inorganic chemical data

Analyte	Number of Data Points	Number of Data Points Corrected for: "Q" Qualified Data	Small Values	Large Values	Nondetect > Max Detect	Other	Total Percent Corrected	Frequency of Detection	Minimum Value [a] (mg/liter)	Maximum Value [a] (mg/liter)	Overall Average [b] (mg/liter)	Weighted Average [b] (mg/liter)
Aluminum	37	0	0	2	11	0	35.1	23/37	0.100	0.750	0.284	0.335
Aluminum, Dissolved	32	4	0	0	3	0	21.9	21/32	0.087	0.772	0.209	0.241
Antimony	46	0	0	0	0	0	0	0/46	0.060	0.250	0.127	0.127
Antimony, Dissolved	41	13	0	0	0	0	31.7	0/41	0.060	0.185	0.078	0.074
Arsenic	46	0	0	1	0	0	2.2	2/46	0.005	0.005	0.005	0.005
Arsenic, Dissolved	45	43	0	0	0	0	95.6	0/45	0.005	0.005	0.005	0.005
Barium	46	0	0	1	0	0	2.2	44/46	0.070	0.354	0.155	0.161
Barium, Dissolved	46	0	0	0	0	0	0	44/46	0.050	0.320	0.143	0.144
Beryllium	46	0	0	0	1	0	2.2	1/46	0.004	0.025	0.011	0.011
Beryllium, Dissolved	41	6	0	0	0	0	14.6	0/41	0.004	0.015	0.007	0.008
Cadmium	46	0	0	0	3	0	6.5	0/46	0.010	0.100	0.024	0.023
Cadmium, Dissolved	46	11	0	0	0	0	23.9	0/46	0.010	0.025	0.013	0.013
Calcium	46	0	0	0	0	0	0	46/46	6.48	41.0	22.6	24.4
Calcium, Dissolved	41	0	0	0	0	0	0	41/41	5.5	41.1	21.8	22.6
Chloride	45	0	0	0	0	0	0	45/45	2.6	31.0	10.0	11.4
Chromium	36	0	0	1	0	0	2.8	1/36	0.050	0.060	0.054	0.054
Chromium, Dissolved	36	0	0	0	0	0	0	0/36	0.050	0.060	0.053	0.053
Cobalt	46	0	0	0	0	0	0	1/46	0.045	0.121	0.055	0.056
Cobalt, Dissolved	41	6	0	0	0	0	14.6	0/41	0.045	0.050	0.048	0.048
Copper	46	0	0	1	13	0	30.4	5/46	0.010	0.100	0.019	0.019
Copper, Dissolved	41	5	0	0	1	0	14.6	1/41	0.010	0.025	0.014	0.014
Fluoride	38	0	0	0	0	0	0	38/38	0.16	0.33	0.224	0.229
Iron	46	0	0	1	0	0	2.2	45/46	0.222	20.30	7.37	7.33
Iron, Dissolved	41	0	0	1	0	0	2.6	39/41	0.024	12.4	5.05	4.71
Lead	30	0	0	0	0	0	0	0/30	0.050	0.250	0.124	0.147
Lead, Dissolved	30	5	0	0	0	0	16.7	0/30	0.050	0.250	0.122	0.145

[a] The minimum and maximum values over all observations and all wells for the corrected data set are reported.

[b] The overall average is the arithmetic average of all analyte results over all wells. The weighted average is the arithmetic average of the within well averages for the corrected data set.

[c] Because no numerical results were in the mercury, dissolved; selenium, dissolved; and uranium, dissolved data sets, it was not possible to determine or calculate any of the summary statistics. Therefore, NV appears in the summary statistics' columns.

For the RGA radionuclide data set, 339 observations were available in the corrected data set over all analytes and wells. Of these 339 observations, 7 or 2.1% of the total number of observations were modified for one of the reasons discussed earlier. Of the 7 observations that were modified, 2 observations (<1% of the total) were corrected for being "Q" qualified, and 5 observations (1.4% of the total) were corrected for being anomalously large. A complete summary is presented in Table 2.4. Please note, the summary statistics reported in Table 2.4 are for the corrected data sets presented in App. B.

For the McNairy radionuclide data set, 334 observations were available in the corrected data set over all analytes and wells. Of these 334 observations, 3 or less than 1% of the total number of observations were modified for one of the reasons discussed earlier. Of the 3 observations that were modified, 1 observation (<1% of the total) was corrected for being "Q" qualified, and 2 observations (<1% of the total) were corrected for being anomalously small. A complete summary is presented in Table 2.4. Please note, the summary statistics reported in Table 2.4 are for the corrected data sets presented in App. B.

Overall, very few corrections were made to the data sets used to derive the background values. In total, 571 of 4,932 observations (11.6%) were modified or corrected. Of the 571 corrections, over one-half (i.e., 399 or 8.1% of total number of observations) were for insertion of the minimum detection limit as a value for an analyte when the observation was "Q" qualified. The next most common reason for correcting or modifying the data set was to reduce a nondetect value to the maximum detected value either within a well's data set or over an analyte's data set. A total of 139 observations (2.8% of total number of observations) was corrected for this reason. Of the remaining 33 corrections (<1% of the total number of observations), 3 were for anomalously small values that were increased to the next smallest detected value, 29 were for anomalously large values that were decreased to the next greatest detected value, and 1 was for the reduction of a maximum detection value that was "B" qualified. (Note, a "B" qualifier indicates that the chemical was also detected in at least one blank sample associated with the observation.)

Table 2.4. Summary of evaluation of RGA and McNairy Formation radionuclide data

Analyte	Number of Data Points	Number of Data Points Corrected for: "Q" Qualified Data	Small Values	Large Values	Nondetect > Max Detect	Other	Total Percent Corrected	Frequency of Detection	Minimum Value [a] (pCi/liter)	Maximum Value [a] (pCi/liter)	Overall Average [b] (pCi/liter)	Weighted Average [b] (pCi/liter)
RGA data sets												
Gross Alpha	56	0	0	3	0	0	5.4	56/56	-5.3	7.5	1.29	1.36
Gross Beta	58	0	0	2	0	0	3.4	58/58	-3.0	20.0	5.80	5.80
Neptunium-237	28	0	0	0	0	0	0	25/28	-0.4	0.8	0.11	0.11
Plutonium-239	28	0	0	0	0	0	0	5/28	0	0.2	0.02	0.02
Radium-226	28	2	0	0	0	0	0	5/28	0	0.7	0.09	0.09
Radon-222	39	0	0	0	0	0	0	39/39	5.5	626	361.2	398.0
Technetium-99	54	0	0	0	0	0	0	54/59	0	29	7.9	7.8
Thorium-230	28	0	0	0	0	0	0	24/28	0	1.1	0.39	0.39
Total Radium	20	0	0	0	0	0	0	17/20	-1.0	1.3	0.07	0.06
McNairy Formation data sets												
Gross Alpha	65	0	0	0	0	0	0	65/65	-18	18.9	2.40	2.26
Gross Beta	65	0	0	0	0	0	0	65/65	1	236	38.8	39.5
Neptunium-237	21	0	0	0	0	0	0	19/21	-0.7	0.5	0.00	0.00
Plutonium-239	21	0	0	0	0	0	0	4/21	0	0.2	0.02	0.02
Radium-226	21	1	0	0	0	0	4.8	4/21	0	1.3	0.20	0.20
Radon-222	40	0	2	0	0	0	5.0	38/40	37	333	139.7	140.3
Technetium-99	65	0	0	0	0	0	0	50/65	-7	27	6.4	6.4
Thorium-230	21	0	0	0	0	0	0	14/21	-0.1	2.3	0.25	0.25
Total Radium	15	0	0	0	0	0	0	15/15	-0.7	0.7	0.26	0.26

[a] The minimum and maximum values over all observations and all wells for the corrected data set are reported.

[b] The overall average is the arithmetic average of all analyte results over all wells. The weighted average is the arithmetic average of the within well averages for the corrected data set.

THIS PAGE INTENTIONALLY LEFT BLANK

3. DERIVATION AND PRESENTATION OF BACKGROUND VALUES

This chapter discusses the methods used to derive the background concentrations and presents the background values for each analyte within an aquifer. Note, discussions of the significance of the background values, uncertainties in their derivation, and comparisons against various criteria are in Chapt. 5.

Because multiple observations were available for each analyte and well combination, two sets of background values are presented. The first set contains background concentrations derived ignoring the well of origin of the observation. The second set contains background concentrations derived after summarizing the observations within wells.

Also, as shown in Chapt. 2, the number of detected observations varied by analyte. In fact, for some analytes, the data set contained only nondetect values. Because of this, the data sets developed in Chapt. 2 were segregated into two groups. In Group 1 are those analytes for which background values were derived qualitatively. In Group 2 are those analytes for which background values were derived quantitatively.

3.1 GROUP 1 ANALYTES AND DERIVATION OF THEIR BACKGROUND VALUES

Analytes falling into Group 1 are listed in the Tables 3.1 (RGA) and 3.2 (McNairy Formation). In each table is the analyte's frequency of detection, minimum detection limit, maximum detected value, and selected background value. Unlike Group 2 analytes where background concentrations were derived both over all observations and over wells, background concentrations for analytes falling in Group 1 were only derived over all observations.

Analytes assigned to Group 1 met one of the following two criteria:

- Analyte was not detected in any sample within an aquifer.
- Analyte was detected in fewer than 10% of all samples, exhibited little variation in detected concentrations, and had detected concentrations that were similar to their detection limits.

(Note, for some analytes the maximum detected values reported in Tables 3.1 and 3.2 differ from the maximum values reported for the analyte in Chapt. 2. This is the result of the data evaluation process used in Chapt. 2. As discussed in Chapt. 2, if an analyte was never detected in a well, the value reported as the maximum concentration for samples taken from the well was the maximum detection limit over all samples from the well. This value may exceed the maximum detected value over all samples from all wells. Please see App. B for additional information concerning maximum detected concentrations.

As noted above, the background values reported in Tables 3.1 and 3.2 were qualitatively determined. For those analytes that were never detected, the background value selected is the minimum detection limit over all samples from all wells within an aquifer. The minimum detection limit was chosen in this case because this value best represents the maximum value that could be present in any sample and not be reported as a detected value. (Note, if lower detection limits are used in the future for these analytes, additional evaluation of the analytes' background values should be considered.) For those analytes that were infrequently detected, the background value selected is the maximum detected value over all samples from all wells within an aquifer. The maximum detected value was chosen in this case because previous statistical analyses with similar data have shown that any value derived from an assumed distribution (e.g., the 95% upper tolerance limit of a normal distribution; see Subsect. 3.2) would exceed this

Table 3.1. Group 1 analytes and their background values–RGA data sets

Analyte	Frequency of Detection	Minimum Detection Limit (mg/liter)	Maximum Detected Value (mg/liter)	Selected Background Value (mg/liter)
Antimony	0/44	0.060	None	0.060
Antimony, Dissolved	0/37	0.060	None	0.060
Arsenic	2/44	0.005	0.007	0.007
Arsenic, Dissolved	0/44	0.005	None	0.005
Beryllium	0/44	0.004	None	0.004
Beryllium, Dissolved	0/40	0.004	None	0.004
Cadmium	1/44	0.010	0.012	0.012
Cadmium, Dissolved	0/44	0.010	None	0.010
Chromium, Dissolved	1/37	0.050	0.092	0.092
Cobalt	0/44	0.045	None	0.045
Cobalt, Dissolved	0/40	0.045	None	0.045
Mercury	0/32	0.0002	None	0.0002
Mercury, Dissolved [a]	0/32	None	None	0.0002
Molybdenum	0/40	0.050	None	0.050
Molybdenum, Dissolved	0/36	0.050	None	0.050
Selenium	0/39	0.005	None	0.005
Selenium, Dissolved [a]	0/39	None	None	0.005
Silver	0/11	0.011	None	0.011
Silver, Dissolved	0/11	0.060	None	0.011 [b]
Thallium	0/35	0.056	None	0.056
Thallium, Dissolved	1/35	0.056	0.063	0.056 [c]
Uranium	2/46	0.001	0.002	0.002
Uranium, Dissolved [a]	0/8	None	None	0.002

[a] There were no numerical results in the data sets for mercury, dissolved; selenium, dissolved; or uranium, dissolved. Therefore, the value selected for the background concentration in the dissolved samples is the value for the total (i.e., unfiltered) sample.

[b] The minimum detection limit for silver, dissolved exceeds the minimum detection limit for silver. Because it would be nonsensical to have a background value for dissolved samples that exceeds that for total samples, the background value for the dissolved sample was reduced to that for total samples.

[c] The maximum detected value for thallium, dissolved, which should be selected following the rules described in the main text, exceeds the background value selected for thallium. Because it would be nonsensical to have a background for dissolved samples that exceeds that for total samples, the background value for the dissolved sample was reduced to that for the total samples.

Table 3.2. Group 1 analytes and their background values–McNairy Formation data sets

Analyte	Frequency of Detection	Minimum Detection Limit (mg/liter)	Maximum Detected Value (mg/liter)	Selected Background Value (mg/liter)
Antimony	0/46	0.060	None	0.060
Antimony, Dissolved	0/41	0.060	None	0.060
Arsenic	2/46	0.005	0.005	0.005
Arsenic, Dissolved	0/45	0.005	None	0.005
Beryllium	1/46	0.004	0.017	0.017
Beryllium, Dissolved	0/41	0.004	None	0.004
Cadmium	0/46	0.010	None	0.010
Cadmium, Dissolved	0/46	0.010	None	0.010
Chromium	1/36	0.050	0.060	0.060
Chromium, Dissolved	0/36	0.050	None	0.050
Cobalt, Dissolved	0/41	0.045	None	0.045
Copper, Dissolved	1/41	0.010	0.013	0.013
Lead	0/30	0.050	None	0.050
Lead, Dissolved	0/30	0.050	None	0.050
Mercury	1/30	0.0002	0.0002	0.0002
Mercury, Dissolved [a]	0/30	None	None	0.0002
Molybdenum	0/37	0.050	None	0.050
Molybdenum, Dissolved	0/32	0.050	None	0.050
Nickel	2/46	0.050	0.109	0.109
Nickel, Dissolved	0/41	0.050	None	0.050
Selenium	0/40	0.005	None	0.005
Selenium, Dissolved [a]	0/40	None	None	0.005
Silver	0/19	0.050	None	0.050
Silver, Dissolved[b]	0/19	0.060	None	0.050
Thallium, Dissolved	0/26	0.056	None	0.056
Uranium	1/52	0.001	0.001	0.001
Uranium, Dissolved [a]	0/15	None	None	0.001

[a] No numerical results were available for dissolved mercury, selenium, or uranium. Therefore, the value selected for the background concentration in the dissolved samples is that for the total sample.

[b] The minimum detection limit for silver, dissolved exceeds the minimum detection limit for silver. Because it would be nonsensical to have a background value for dissolved samples that exceeds that for total samples, the background value for the dissolved sample was reduced to that for total samples.

maximum detected value. As discussed in Subsect. 3.2, when the calculated value exceeds the maximum detected value, then the maximum detected value becomes the selected background value.

In total, for the RGA, 23 of the 64 analyte data sets were assigned to Group 1. For the McNairy Formation, 27 of the 64 analyte data sets were assigned to Group 1.

3.2 GROUP 2 ANALYTES AND DERIVATION OF THEIR BACKGROUND VALUES

Analytes falling into Group 2 are listed in the Tables 3.3 and 3.4 (RGA) and Tables 3.5 and 3.6 (McNairy Formation). In Tables 3.3 and 3.5, statistics for the corrected data sets summarized over all observations are presented. In Tables 3.4 and 3.6, statistics for the corrected data sets summarized over average concentration within well are presented. Specifically, Tables 3.3 and 3.5 present the following information for all observations in the corrected data sets: analyte name, frequency of detection, minimum and maximum value (from tables in Chapt.2), maximum detected value over all observations (from App. B), 95% upper tolerance limit (95% UTL), and selected background value. Specifically, Tables 3.4 and 3.6, present the following information for observations over average concentration within wells in the corrected data set: analyte name, minimum and maximum average concentration over wells (from tables in Chapt. 2), 95% UTL, and selected background value.

Analytes assigned to Group 2 meet both of the following criteria:

- Analyte was detected in at least one sample within an aquifer.
- The detected concentrations of the analyte were not similar to the detection limit used for the analyte in other samples (i.e., the analyte displayed marked variation in the detected concentrations.)

For Tables 3.3 and 3.5, the selected background values are the lessor of the maximum detected value and the 95% UTL. For Tables 3.4 and 3.6, the selected background values are the lessor of the maximum average concentration within a well and the 95% UTL. The calculation of the 95% UTL is described below.

The upper 95% UTL was calculated using the methods for normal distributions described in Sects. 11.2 and 11.3 of *Statistical Methods for Environmental Pollution Monitoring* (Gilbert 1987). The general formulas used for this calculation are as follows:

$$\hat{x}_p = \bar{x} + Z_p s \qquad [1]$$

where:

$\hat{x}_p$ is an estimate of the pth quantile (i.e., p^{th} percentile) of the analyte's distribution.
$\bar{x}$ is the mean concentration assuming a normal distribution.
Z_p is p^{th} quantile of the standard normal distribution from Table A1 in Gilbert (1987).
s is the standard deviation assuming a normal distribution.

$$UL_{1-\alpha}(x_p) = \bar{x} + sK_{1-\alpha,p} \qquad [2]$$

where:

$UL_{1-\alpha}(x_p)$ is the upper $100(1-\alpha)\%$ confidence limit of the true p^{th} quantile.
$\bar{x}$ is the mean concentration assuming a normal distribution.
s is the standard deviation assuming a normal distribution.
$K_{1-\alpha,p}$ is selected from Table A3 in Gilbert (1987).

Table 3.3. Background values for Group 2 analytes over all observations–RGA data sets

Analyte	Freq.[a]	Corrected Data (mg/liter) Min[b]	Max[b]	Max Detect[c]	95% UTL[d] (mg/liter)	Selected Background Value[e] (mg/liter)
Aluminum	29/40	0.100	2.60	2.6	2.189	2.189
Aluminum, Dissolved	19/36	0.082	0.259	0.259	0.311	0.311
Barium	41/44	0.010	0.282	0.282	0.235	0.235
Barium, Dissolved	39/44	0.005	0.200	0.200	0.221	0.200
Calcium	44/44	2.88	56.5	56.5	41.238	41.238
Calcium, Dissolved	40/40	10.9	37	37	38.166	38.166
Chloride	43/43	2.9	109.1	109.1	91.021	91.021
Chromium	11/37	0.050	0.232	0.232	0.144	0.144
Copper	7/44	0.010	0.100	0.036	0.048	0.036
Copper, Dissolved	3/44	0.010	0.025	0.02	0.025	0.020
Fluoride	34/35	0.100	0.270	0.270	0.283	0.270
Iron	37/44	0.010	9.2	9.2	5.030	5.030
Iron, Dissolved	21/40	0.010	0.333	0.333	0.267	0.267
Lead	4/32	0.050	0.250	0.129	0.252	0.129
Lead, Dissolved	1/32	0.050	0.250	0.098	0.281	0.098
Magnesium	44/44	0.879	18.7	18.7	16.262	16.262
Magnesium, Dissolved	39/39	3.01	17	17	16.215	16.215
Manganese	30/44	0.005	0.165	0.165	0.119	0.119
Manganese, Dissolved	21/40	0.005	0.128	0.128	0.068	0.068
Nickel	10/44	0.050	1.66	1.66	0.682	0.682
Nickel, Dissolved	7/40	0.050	0.382	0.382	0.305	0.305
Nitrate as N	33/43	1.0	38.3	38.3	15.561	15.561
Potassium	22/44	2.0	5.51	5.51	5.195	5.195
Potassium, Dissolved	25/40	2.0	4.26	4.26	4.096	4.096
Silica	43/43	7.68	27	27	26.401	26.401
Sodium	44/44	3.71	69.6	69.6	59.450	59.450
Sodium, Dissolved	40/40	0.317	69.0	69.0	60.433	60.433
Sulfate	32/32	4.0	22.6	22.6	19.947	19.947
Vanadium	22/33	0.023	0.147	0.147	0.134	0.134
Vanadium, Dissolved	21/33	0.020	0.141	0.141	0.134	0.134
Zinc	17/44	0.005	0.072	0.072	0.054	0.054
Zinc, Dissolved	13/40	0.005	0.083	0.083	0.049	0.049
Gross Alpha	56/56	-5.3	7.5	7.5	5.8	5.8
Gross Beta	58/58	-3.0	20.0	20	13.8	13.8
Neptunium-237	25/28	-0.4	0.8	0.8	0.8	0.8
Plutonium-239	5/28	0	0.2	0.2	0.1	0.1
Radium-226	5/28	0	0.7	0.7	0.6	0.6
Radon-222	39/39	5.5	626	626	684.9	626
Technetium-99	54/59	0	29	29	22.3	22.3
Thorium-230	24/28	0	1.1	1.1	1.2	1.1
Total Radium	17/20	-1.0	1.3	1.3	1.5	1.3

[a] Freq = the number of samples in which the analyte was detected over the total number of samples.

[b] Min = the minimum value for the analyte over all observations in the corrected data set.
Max = the maximum value for the analyte over all observations in the corrected data set.

[c] Max Detect = the maximum detected value over all observations in the corrected data set. This value may differ from the Max value because detection limits for samples varied between wells.

[d] 95% UTL = the 95% upper confidence limit on the 95th quantile of all observations assuming a normal distribution and temporal and spatial independence between samples.

[e] The lessor of the maximum detected value and the 95% UTL.

Table 3.4. Background values for Group 2 analytes over wells–RGA data sets

Analyte	Corrected Data (mg/liter) Min[a]	Max[a]	95% UTL[b] (mg/liter)	Selected Background Value[c] (mg/liter)
Aluminum	0.181	1.64	2.870	1.64
Aluminum, Dissolved	0.130	0.201	0.279	0.201
Barium	0.042	0.202	0.330	0.202
Barium, Dissolved	0.031	0.179	0.312	0.179
Calcium	11.4	40.0	59.864	40.0
Calcium, Dissolved	11.8	35.8	54.474	35.8
Chloride	4.8	89.2	144.623	89.2
Chromium	0.053	0.134	0.191	0.134
Copper	0.013	0.034	0.048	0.034
Copper, Dissolved	0.010	0.018	0.023	0.018
Fluoride	0.108	0.245	0.376	0.245
Iron	0.215	3.72	6.031	3.72
Iron, Dissolved	0.019	0.164	0.313	0.164
Lead	0.050	0.250	0.470	0.250
Lead, Dissolved	0.064	0.250	0.460	0.250
Magnesium	2.97	15.7	24.284	15.7
Magnesium, Dissolved	3.27	15.4	23.737	15.4
Manganese	0.010	0.082	0.150	0.082
Manganese, Dissolved	0.006	0.048	0.085	0.048
Nickel	0.070	0.523	0.829	0.523
Nickel, Dissolved	0.061	0.288	0.442	0.288
Nitrate as N	1.04	13.5	21.425	13.5
Potassium	2.35	4.47	6.099	4.47
Potassium, Dissolved	2.0	3.70	5.065	3.70
Silica	16.8	21.1	24.691	21.1
Sodium	14.1	63.5	93.855	63.5
Sodium, Dissolved	16.2	65.7	97.794	65.7
Sulfate	6.8	19.1	27.061	19.1
Vanadium	0.023	0.139	0.214	0.139
Vanadium, Dissolved	0.020	0.131	0.209	0.131
Zinc	0.016	0.025	0.033	0.025
Zinc, Dissolved	0.011	0.026	0.036	0.026
Gross Alpha	0.09	2.36	4.1	2.36
Gross Beta	3.9	7.3	10.4	7.3
Neptunium-237	-0.01	0.21	0.7	0.21
Plutonium-239	0.01	0.03	0.1	0.03
Radium-226	0.06	0.10	0.2	0.10
Radon-222	82.6	555.3	1045	555.3
Technetium-99	5.2	10.8	16.3	10.8
Thorium-230	0.26	0.54	1.1	0.54
Total Radium	-0.26	0.46	1.9	0.46

[a] Min = the minimum average concentration for the analyte over wells in the corrected data set.
Max = the maximum average concentration for the analyte over wells in the corrected data set.

[b] 95% UTL = the 95% upper confidence limit on the 95th quantile of the well average concentrations assuming a normal distribution and spatial independence between wells.

[c] The lessor of the maximum average concentration and the 95% UTL.

Table 3.5. Background values for Group 2 analytes over all observations–McNairy Formation data sets

Analyte	Freq.[a]	Corrected Data (mg/liter) Min[b]	Max[b]	Max Detect[c]	95% UTL[d] (mg/liter)	Selected Background Value[e] (mg/liter)
Aluminum	23/37	0.100	0.750	0.750	0.687	0.687
Aluminum, Dissolved	21/32	0.087	0.772	0.772	0.579	0.579
Barium	44/46	0.070	0.354	0.354	0.296	0.296
Barium, Dissolved	44/46	0.050	0.320	0.320	0.268	0.268
Calcium	46/46	6.48	41.0	41.0	38.858	38.858
Calcium, Dissolved	41/41	5.5	41.1	41.1	38.829	38.829
Chloride	45/45	2.6	31.0	31.0	19.708	19.708
Cobalt	1/46	0.045	0.121	0.121	0.096	0.096
Copper	5/46	0.010	0.100	0.100	0.057	0.057
Fluoride	38/38	0.16	0.33	0.33	0.339	0.33
Iron	45/46	0.222	20.3	20.3	18.630	18.630
Iron, Dissolved	39/41	0.024	12.4	12.4	12.372	12.372
Magnesium	46/46	2.14	17.6	17.6	13.418	13.418
Magnesium, Dissolved	41/41	2.3	17.3	17.3	14.171	14.171
Manganese	46/46	0.082	0.983	0.983	0.941	0.941
Manganese, Dissolved	41/41	0.040	1.05	1.05	0.894	0.894
Nitrate as Nitrogen	3/45	1.0	2.3	2.3	1.474	1.474
Potassium	39/46	3.82	86.1	86.1	55.752	55.752
Potassium, Dissolved	33/41	2.0	101.0	101.0	51.205	51.205
Silica	45/45	8.73	36.0	36.0	39.886	36.0
Sodium	46/46	14.1	29.2	29.2	29.922	29.2
Sodium, Dissolved	41/41	13.7	27.98	27.98	29.642	27.98
Sulfate	37/37	6.9	28.9	28.9	32.217	28.9
Thallium	2/27	0.056	1.02	1.02	0.644	0.644
Vanadium	17/27	0.050	0.187	0.187	0.126	0.126
Vanadium, Dissolved	15/27	0.048	0.163	0.163	0.126	0.126
Zinc	27/46	0.005	0.190	0.190	0.142	0.142
Zinc, Dissolved	23/41	0.005	0.160	0.160	0.116	0.116
Gross Alpha	65/65	-18	18.9	18.9	11.9	11.9
Gross Beta	65/65	1	236	236	144.5	144.5
Neptunium-237	19/21	-0.7	0.5	0.5	0.7	0.5
Plutonium-239	4/21	0	0.2	0.2	0.2	0.2
Radium-226	4/21	0	1.3	1.3	1.2	1.2
Radon-222	38/40	37	333	333	295.0	295.0
Technetium-99	50/65	-7	27	27	20.6	20.6
Thorium-230	14/21	-0.1	2.3	2.3	1.5	1.5
Total Radium	15/15	-0.7	0.7	0.7	1.3	0.7

[a] Freq = the number of samples in which the analyte was detected over the total number of samples.

[b] Min = the minimum value for the analyte over all observations in the corrected data set.
Max = the maximum value for the analyte over all observations in the corrected data set.

[c] Max Detect = the maximum detected value over all observations in the corrected data set. This value may differ from the Max value because detection limits for samples varied between wells.

[d] 95% UTL = the 95% upper confidence limit on the 95th quantile of all observations assuming a normal distribution and temporal and spatial independence between samples.

[e] the lessor of the maximum detected value and the 95% UTL.

Table 3.6. Background values for Group 2 analytes over wells–McNairy Formation data sets

Analyte	Corrected Data (mg/liter) Min[a]	Max[a]	95% UTL[b] (mg/liter)	Selected Background Value[c] (mg/liter)
Aluminum	0.172	0.750	1.135	0.75
Aluminum, Dissolved	0.152	0.587	0.872	0.587
Barium	0.085	0.265	0.385	0.265
Barium, Dissolved	0.077	0.266	0.391	0.266
Calcium	18.17	39.47	53.777	39.47
Calcium, Dissolved	8.56	40.27	61.849	40.27
Chloride	3.62	20.23	32.901	20.23
Cobalt	0.048	0.072	0.087	0.072
Copper	0.011	0.033	0.049	0.033
Fluoride	0.173	0.298	0.399	0.298
Iron	0.328	15.83	29.051	15.83
Iron, Dissolved	0.165	9.446	17.459	9.446
Magnesium	4.146	16.457	24.387	16.457
Magnesium, Dissolved	3.348	16.533	25.087	16.533
Manganese	0.113	0.729	1.374	0.729
Manganese, Dissolved	0.113	0.682	1.192	0.682
Nitrate as Nitrogen	1.00	1.43	1.717	1.43
Potassium	6.440	64.080	102.569	64.080
Potassium, Dissolved	5.699	58.750	93.990	58.750
Silica	13.0	29.4	48.651	29.4
Sodium	15.28	24.92	36.532	24.92
Sodium, Dissolved	15.71	25.90	35.683	25.90
Sulfate	7.40	27.27	39.962	27.27
Thallium	0.058	0.255	0.386	0.255
Vanadium	0.050	0.119	0.165	0.119
Vanadium, Dissolved	0.050	0.107	0.152	0.107
Zinc	0.012	0.104	0.166	0.104
Zinc, Dissolved	0.008	0.080	0.128	0.080
Gross Alpha	-1.1	5.3	10.5	5.3
Gross Beta	11.2	125.4	207.8	125.4
Neptunium-237	-0.2	0.13	1.3	0.13
Plutonium-239	0.01	0.04	0.153	0.04
Radium-226	0.11	0.29	0.887	0.29
Radon-222	64.0	228.3	388.1	228.3
Technetium-99	4.2	7.8	11.0	7.8
Thorium-230	0.11	0.40	1.4	0.4
Total Radium	0.20	0.36	0.9	0.36

[a] Min = the minimum average concentration for the analyte over wells in the corrected data set.
Max = the maximum average concentration for the analyte over wells in the corrected data set.

[b] 95% UTL = the 95% upper confidence limit on the 95th quantile of the well average concentrations assuming a normal distribution and spatial independence between wells.

[c] The lessor of the maximum average concentration and the 95% UTL.

For calculations of the 95% UTL, p equaled 0.95 (i.e. 95th quantile), and α equaled 0.95. Therefore, the 95% UTL equals the 95% upper confidence limit of the 95th quantile.

When reducing data over all observations, the mean ($\bar{x}$) and standard deviation (s) used in these equations were derived over all observations using the following formulas:

$$\bar{x} = \frac{1}{n}\sum_{i=1}^{n} x_i \qquad [3]$$

where:

$\bar{x}$ is the mean over all observations.
x_i is value for any particular observation.
n is the total number of observations.

$$s = \sqrt{\frac{1}{n-1}\sum_{i=1}^{n}\left(x_i - \bar{x}\right)^2} \qquad [4]$$

where:

s is the standard deviation of all observations.
n is the total number of observations.
x_i is the value for any particular observation.
$\bar{x}$ is the mean over all observations.

Formulas [3] and [4] were also used when calculating the mean and standard deviation for derivation of the 95% UTLs for averages within well. However, the parameters used in these equations differed. In both formulas, (x_i) became the average within well versus the value for any particular observation, and (n) became the total number of wells providing information. Therefore, ($\bar{x}$) became the mean over well averages, and (s) became the standard deviation of the well average concentrations.

3.3 DERIVATION OF BACKGROUND CONCENTRATIONS FOR URANIUM ISOTOPES

No uranium isotopic results were available in the background data sets. Therefore, background concentrations for uranium isotopes were derived utilizing the known relationship between the concentration of total uranium in units of mass and the concentrations of the three major uranium isotopes (uranium-234, uranium-235, and uranium-238) in units of activity. Steps taken in this derivation are presented below.

- Convert total uranium mass concentration (mg/liter) to isotopic-specific mass concentration using the mass fraction of each isotope. Note, the natural isotopic mass fractions were used in this calculation because it is assumed that the uranium concentrations in the background wells are not affected by plant releases.

- Convert isotopic-specific mass concentrations (mg/liter) to units of activity by multiplying by the specific activity of the uranium isotope.

These two steps can be combined as in the following equation.

$$C_i = C_{total\,U} \times F_i \times SA_i \qquad [5]$$

where:

C_i is the concentration of the uranium isotope in pCi/liter.
$C_{total\ U}$ is the concentration of the total uranium in mg/liter.
F_i is the mass fraction of the uranium isotope.
SA_i is the specific activity of the uranium isotope (pCi/mg).

The variables used in this equation and the resulting uranium isotope concentrations are shown in Table 3.7.

Table 3.7. Parameters used to convert total uranium concentrations to isotopic uranium concentrations

Parameter	Uranium Isotope		
	Uranium-234	Uranium-235	Uranium-238
Total U concentration for RGA (mg/liter)	----------0.002----------		
Fraction of Total U Mass (unitless)	0.000056	0.0072	0.9927
Specific Activity (pCi/mg)	6.21×10^6	2.15×10^3	3.35×10^2
Isotopic Uranium Concentration (pCi/liter)[a]	0.7	0.03	0.7
Total U concentration for McNairy Formation (mg/liter)	----------0.001----------		
Fraction of Total U Mass (unitless)	0.000056	0.0072	0.9927
Specific Activity (pCi/mg)	6.21×10^6	2.15×10^3	3.35×10^2
Isotopic Uranium Concentration (pCi/liter)[a]	0.3	0.02	0.3

[a] Values rounded to one significant digit.

3.4 SUMMARY OF BACKGROUND CONCENTRATIONS

Table 3.8 presents a summary of selected background concentrations both over all observations and over means within wells. As shown in this table, the selected background concentrations for the RGA and McNairy Formation are similar for most analytes.

If the selected background concentrations are compared between method of derivation within aquifer (i.e., using all observations versus using averages within wells), then several of the selected background concentrations for the 67 analytes are seen to be identical, and none vary by as much as an order of magnitude. In fact, for the RGA, only nine analytes have selected background concentrations that vary by more than a factor of 2 between method of derivation. These analytes and the factors of their difference are lead, dissolved (2.6); zinc (2.2); gross alpha (2.5); neptunium-237 (3.8); plutonium-239 (3.3); radium-226 (6); technetium-99 (2.1); thorium-230 (2); and total radium (2.8). For the McNairy Formation, only seven analytes have selected background values which vary by more than a factor of 2 between method of derivation. These analytes and the factors of their difference are thallium (2.5); gross alpha (2.2); neptunium-237 (3.8); plutonium-239 (5); radium-226 (4.1); technetium-99 (2.7); thorium-230 (3.8).

Similarly, if the selected background concentrations are compared between aquifers within method of derivation, most of the background concentrations for the 67 analytes are similar. However, several concentrations do vary by more than an order of magnitude. For example, when the selected backgrounds derived using all observations are compared between aquifers, seven vary by more than an order of magnitude (i.e., nitrate as nitrogen; iron, dissolved; manganese, dissolved; potassium; potassium, dissolved; thallium; and gross beta). In total, when selected background concentrations derived over all observations are compared between aquifers, fourteen analytes are seen to have selected background concentrations that are more than a factor of 2 greater for the RGA than for the McNairy Formation, and thirteen analytes are seen to have selected background concentrations that are more than a factor of 2 greater for the McNairy Formation than for the RGA. The analytes with selected backgrounds concentrations that are greater for the RGA and their factor of difference are aluminum (3.2); chloride (4.6); chromium (2.4); lead (2.6);

Table 3.8. Summary of selected RGA and McNairy Formation background concentrations

Analyte	Over All Observations		Over Wells	
	RGA	McNairy	RGA	McNairy
Inorganic Chemicals (mg/L)				
Aluminum	2.189	0.687	1.64	0.75
Aluminum, Dissolved	0.311	0.579	0.201	0.587
Antimony	0.060 [a]	0.060 [a]	0.060 [a]	0.060 [a]
Antimony, Dissolved	0.060 [a]	0.060 [a]	0.060 [a]	0.060 [a]
Arsenic	0.005 [a]	0.005 [a]	0.005 [a]	0.005 [a]
Arsenic, Dissolved	0.005 [a]	0.005 [a]	0.005 [a]	0.005 [a]
Barium	0.235	0.296	0.202	0.265
Barium, Dissolved	0.200	0.268	0.179	0.266
Beryllium	0.004 [a]	0.017 [a]	0.004 [a]	0.017 [a]
Beryllium, Dissolved	0.004 [a]	0.004 [a]	0.004 [a]	0.004 [a]
Cadmium	0.010 [a]	0.010 [a]	0.010 [a]	0.010 [a]
Cadmium, Dissolved	0.010 [a]	0.010 [a]	0.010 [a]	0.010 [a]
Calcium	41.238	38.858	40.0	39.47
Calcium, Dissolved	38.166	38.829	35.8	40.27
Chloride	91.021	19.708	89.2	20.23
Chromium	0.144	0.060 [a]	0.134	0.060 [a]
Chromium, Dissolved	0.050 [a]	0.050 [a]	0.050 [a]	0.050 [a]
Cobalt	0.045 [a]	0.096	0.045 [a]	0.072
Cobalt, Dissolved	0.045 [a]	0.045 [a]	0.045 [a]	0.045 [a]
Copper	0.036	0.057	0.034	0.033
Copper, Dissolved	0.020	0.013 [a]	0.018	0.013 [a]
Fluoride	0.270	0.330	0.245	0.298
Iron	5.030	18.360	3.72	15.83
Iron, Dissolved	0.267	12.372	0.164	9.446
Lead	0.129	0.050 [a]	0.250	0.050 [a]
Lead, Dissolved	0.098	0.050 [a]	0.250	0.050 [a]
Magnesium	16.262	13.418	15.7	16.457
Magnesium, Dissolved	16.215	14.171	15.4	16.533
Manganese	0.119	0.941	0.082	0.729
Manganese, Dissolved	0.068	0.894	0.048	0.682
Mercury	0.0002 [a]	0.0002 [a]	0.0002 [a]	0.0002 [a]
Mercury, Dissolved	0.0002 [a]	0.0002 [a]	0.0002 [a]	0.0002 [a]
Molybdenum	0.050 [a]	0.050 [a]	0.050 [a]	0.050 [a]
Molybdenum, Dissolved	0.050 [a]	0.050 [a]	0.050 [a]	0.050 [a]
Nickel	0.682	0.109 [a]	0.682	0.109 [a]
Nickel, Dissolved	0.305	0.050 [a]	0.305	0.050 [a]
Nitrate as Nitrogen	15.561	1.474	13.5	1.43
Potassium	5.195	55.752	4.47	64.080
Potassium, Dissolved	4.096	51.205	3.70	58.750
Selenium	0.005 [a]	0.005 [a]	0.005 [a]	0.005 [a]
Selenium, Dissolved	0.005 [a]	0.005 [a]	0.005 [a]	0.005 [a]
Silica	26.401	36.0	21.1	29.4
Silver	0.011 [a]	0.050 [a]	0.011 [a]	0.050 [a]
Silver, Dissolved	0.060 [a]	0.050 [a]	0.060 [a]	0.050 [a]
Sodium	59.450	29.2	63.5	24.92
Sodium, Dissolved	60.433	27.98	65.7	25.90
Sulfate	19.947	28.9	19.1	27.27
Thallium	0.056 [a]	0.644	0.056 [a]	0.255
Thallium, Dissolved	0.056 [a]	0.056 [a]	0.056 [a]	0.056 [a]
Uranium	0.002 [a]	0.001 [a]	0.002 [a]	0.001 [a]
Uranium, Dissolved	0.002 [a]	0.001	0.002 [a]	0.001

Table 3.8. (continued)

Analyte	Over All Observations		Over Wells	
	RGA	McNairy	RGA	McNairy
Inorganic Chemicals (mg/L) (continued)				
Vanadium	0.134	0.126	0.139	0.119
Vanadium, Dissolved	0.134	0.126	0.131	0.107
Zinc	0.054	0.142	0.025	0.104
Zinc, Dissolved	0.049	0.116	0.026	0.080
Radionuclides (pCi/L)				
Gross Alpha	5.8	11.9	2.36	5.3
Gross Beta	13.8	144.5	7.3	125.4
Neptunium-237	0.8	0.5	0.21	0.13
Plutonium-239	0.1	0.2	0.03	0.04
Radium-226	0.6	1.2	0.10	0.29
Radon-222	626	295	555.3	228.3
Technetium-99	22.3	20.6	10.8	7.8
Thorium-230	1.1	1.5	0.54	0.40
Total Radium	1.3	0.7	0.46	0.36
Uranium-234 [b]	0.7	0.3	0.7	0.3
Uranium-235 [b]	0.3	0.2	0.3	0.2
Uranium-238 [b]	0.7	0.3	0.7	0.3

[a] Background value was derived qualitatively over all observations because analyte was never detected or was detected infrequently at a concentration near the analyte's detection limit.

[b] Uranium isotopic concentrations were derived from the mass concentration of uranium. See Subsect 3.3.

nickel (6.3); nickel, dissolved (6.1); nitrate as nitrogen (10.6); sodium (2.0); sodium, dissolved (2.0); uranium (2.0); uranium, dissolved (2.0); radon-222 (2.1); uranium-234 (2.3); and uranium-238 (2.3). The analytes with selected background concentrations that are more than a factor of 2 greater for the McNairy Formation than for the RGA and their factor of difference are beryllium (4.3); cobalt (2.1); iron (3.7); iron, dissolved (46.3); manganese (7.9); manganese, dissolved (13.1); potassium (10.7); potassium, dissolved (12.5); silver (4.5); thallium (11.5); gross beta (10.5); plutonium-239 (2.0); and radium-226 (2.0).

Generally, the comparisons between methods of derivation within aquifers indicate that the methods of derivation gave similar results, and the comparisons between aquifers within method of derivation indicate that the waters of the RGA are different than the waters of the McNairy Formation. Of greatest importance is the differences between aquifers because these differences indicate that when used to evaluate environmental data, the background concentrations from the appropriate aquifer must be used. (Note, in the aforementioned comparisons, no attempt was made to segregate those analytes which had their background concentrations derived using primarily nondetect results [i.e., Group 1 analytes]. If only Group 2 analytes are considered fewer noticeable differences would be observed.)

4. SOURCES OF RISK-BASED CONCENTRATIONS AND OTHER COMPARISON CRITERIA

This chapter discusses the methods used to derive the risk-based concentrations and the sources of the other criteria to which the background values are compared in Chapt. 5. This chapter also presents the various criteria. Generally, most of this material is presented by reference to limit the size of this document.

4.1 RISK-BASED CONCENTRATIONS

All risk-based concentrations (RBCs) to which background concentrations are compared in Chapt. 5 were derived using methods presented in App. 2 of *Methods for Conducting Human Health Risk Assessments and Risk Evaluations at the Paducah Gaseous Diffusion Plant* (DOE 1996a) for the derivation of risk-based preliminary remediation goals (risk-based PRGs). Note, because the inhalation exposure equations, some toxicity values, and some chemical-specific parameters have changed since the production of the aforementioned document, the risk-based concentrations for some analytes presented here differ from those presented for groundwater use in Table 2 in App. 2 of that document.

Salient points about the RBCs used in Chapt. 5 are as follows:

- the RBCs are for exposure to water under a residential scenario.
- the exposure routes considered when deriving the RBCs were ingestion of groundwater, dermal contact with water while showering, inhalation of vapors emitted by water while showering, and inhalation of vapors emitted by water while using water in the home.
- the exposure duration used in the calculation of the RBC for carcinogenic chemicals was 40 years and assumed 6 years for exposure as a child and 34 years as exposure as an adult.
- the exposure duration used in the calculation of the RBC for noncarcinogenic chemicals was one year, and the individual assumed to be exposed was a child from 1 to 7 years of age.
- the toxicity values used in the calculations were for chronic exposure to water.
- the target excess lifetime cancer risk used in the calculation was 1×10^{-6}.
- the target hazard index (a measure of systemic toxicity) was 0.1.
- if an analyte has both systemic toxic and cancer effects, then the RBC used in Chapt. 5 is the lesser of the RBCs calculated for these endpoints.

Table 4.1 presents the RBCs used in Chapt. 5.

4.2 REGULATORY VALUES

In Chapt. 5, the selected background concentrations are compared to two sets of values from regulatory sources. These are maximum contaminant levels (MCLs) and Commonwealth of Kentucky risk-based screening values.

Table 4.1. RBCs, MCLs, and Commonwealth of Kentucky risk-based screening values

Analyte	RBC[a]	MCL[b]	KDEP[c]
	Inorganic Chemicals (mg/L)		
Aluminum[d]	1.5[HI]	0.050 – 0.200	37
Antimony	0.00056[HI]	0.006	0.015
Arsenic[e]	0.000035[CR]	0.050	0.000038
Barium	0.10[HI]	2.000	2.6
Beryllium	0.000010[CR]	0.004	0.000016
Cadmium	0.00066[HI]	0.005	0.018
Calcium	NV	NV	NV
Chloride[f]	NV	250	NV
Chromium[g]	0.0071[HI]	0.100	0.18
Cobalt	0.091[HI]	NV	NV
Copper	0.060[HI]	1.3	1.4
Fluoride	0.091[HI]	4.0	2.2
Iron[h]	0.45[HI]	0.3	NV
Lead[i]	0.00000015[HI]	0.015	0.004
Magnesium	NV	NV	NV
Manganese[j]	0.067[HI]	0.050	0.18
Mercury	0.00044[HI]	0.002	0.011
Molybdenum	0.0075[HI]	NV	0.180
Nickel[s]	0.030[HI]	0.100	0.730
Nitrate as Nitrogen	2.40[HI]	10	58
Potassium	NV	NV	NV
Selenium	0.0075[HI]	0.050	0.18
Silica	NV	NV	NV
Silver[j]	0.0075[HI]	0.100	0.18
Sodium	NV	NV	NV
Sulfate[k]	NV	500	NV
Thallium	NV	0.002	NV
Uranium[k]	0.0045[HI]	0.020	0.11
Vanadium	0.0092[HI]	NV	NV
Zinc[j]	0.45[HI]	5.0	11
	Radionuclides (pCi/L)		
Gross Alpha	NV	15	NV
Gross Beta[l]	NV	See footnote	NV
Neptunium-237[l]	0.13[CR]	See footnote	NV
Plutonium-239[l]	0.12[CR]	See footnote	NV
Radium-226[m]	0.13[CR]	5	NV
Radon-222[n]	1.4[CR]	300	NV
Technetium-99[l]	28.0[CR]	See footnote	NV
Thorium-230[l]	1.0[CR]	See footnote	NV
Total Radium[o]	0.13[CR]	5	NV
Uranium-234[p]	0.87[CR]	30	NV
Uranium-235[p, q]	0.82[CR]	30	NV
Uranium-238[p, r]	0.62[CR]	30	NV

Notes:

NV indicates that a value is not available for the analyte.

[a] The derivation of the risk-based concentrations (RBCs) is discussed in Subsect. 4.1. Under this column, "CR" indicates that the most sensitive target for the RBC is cancer risk, and HI indicates that the most sensitive target for the RBC is systemic toxicity.

[b] The source of the maximum contaminant levels (MCLs) is discussed in Subsect. 4.2. Values presented here are a mixture of primary and secondary MCLs and proposed values. If both federal and Commonwealth of Kentucky MCLs were available, then the lesser of the two is presented. If not otherwise indicated the MCL is a primary MCL.

[c] The source of the Commonwealth of Kentucky Department of Environmental Protection's (KDEP's) risk-base screening values is discussed in Subsect. 4.2.
[d] The MCL reported for aluminum is a secondary MCL.
[e] The KDEP value reported is that for carcinogenic effects.
[f] The MCL reported for chloride is a secondary MCL.
[g] The RBC and the KDEP value are for Chromium VI.
[h] The MCL reported for iron is a secondary MCL.
[i] The RBC for lead is based upon a reference dose that has not received peer approval and was supplied to PGDP by the Commonwealth of Kentucky for screening purposes.
[j] The MCLs for manganese and silver are secondary MCLs.
[k] The MCLs for sulfate and uranium are a proposed values.
[l] If two or more radionuclides are present, then the sum of their annual dose equivalent to the total body or any organ is not to exceed 4 mrem/year.
[m] The RBC was calculated using the cancer slope factor for radium-226+D. The MCL for radium-226 applies to a combination of radium-226 and radium-228.
[n] The RBC was calculated using the cancer slope factor for radon-222+D.
[o] The RBC for Total Radium is that for radium-226(+D). That value is the smallest of all those for radium isotopes. The MCL for Total Radium applies to a combination of radium-226 and radium-228.
[p] The proposed MCL for natural uranium isotopes is 0.020 mg/liter. This is approximately equal to 30 pCi/liter for total uranium if natural abundance is assumed.
[q] The RBC was calculated using the cancer slope factor for uranium-235+D.
[r] The RBC was calculated using the cancer slope factor for uranium-238+D.
[s] The EPA has deleted from the CFR both the MCL and MCLG for nickel, which have been vacated by court ruling, effective February 23, 1995.

The maximum contaminant levels used in Chapt. 5 were taken from the "Federal and State Guideline Values" page of the "Risk Assessment Information System" at http://risk.lsd.ornl.gov/cgi-bin/guide/GUID_9709 DOE 1999 and include both primary and secondary MCLs as well as proposed values. If the federal MCL differed from the Commonwealth of Kentucky MCL, the lesser of the two values was used in the comparison. Table 4.1 presents the MCLs used in Chapt. 5.

The Commonwealth of Kentucky risk-based screening values used in Chapt. 5 were taken from App. A of the *Risk Assessment Guidance* (KDEP 1995c) prepared by the Department of Environmental Protection of the Commonwealth of Kentucky. Table 4.1 presents the Commonwealth of Kentucky risk-based screening values used in Chapt. 5.

4.3 LITERATURE VALUES

In Chapt. 5, the selected background concentrations are compared to three sets of reference values derived in earlier reports and to a set of values taken from the reference materials. The earlier reports from which the reference values were taken are *Baseline Risk Assessment and Technical Investigation Report for the Northwest Dissolved Phase Plume, Paducah Gaseous Diffusion Plant* (DOE 1994a) (Tech Report), *Results of the Site Investigation, Phase II, at the Paducah Gaseous Diffusion Plant* (CH2M Hill 1991) (Site Investigation), and *Inorganic Soil and Groundwater Chemistry Near Paducah Gaseous Diffusion Plant, Paducah, Kentucky* (Moore 1995) (Moore Report). The reference materials providing the additional set of values are *The Properties of Groundwater* (Matthess and Harvey 1982), *Hydrogeology* (Davis and DeWiest 1966), *Ground Water Quality Protection* (Canter et al. 1987), and *Metals in Groundwater* (Allen *et al.* 1993). Each of the four sets of values is presented in Table 4.2.

Table 4.2. Reference values for groundwater taken from earlier reports produced for the PGDP and from literature sources

Analyte	Tech Report[a]	Site Investigation[b]	Moore Report[c]	Literature Sources[d]
		Inorganic Chemicals (mg/L)		
Aluminum	2.19	8.880	NV	NV
Aluminum, Dissolved	NV	0.195	NV	0.0001 to 0.1
Antimony	0.111	ND	0.050	NV
Antimony, Dissolved	NV	0.027	NV	0.0001 to 0.1
Arsenic	0.011	ND	0.023	NV
Arsenic, Dissolved	NV	ND	NV	0.0001 to 0.1
Barium	0.286	0.210	0.15	NV
Barium, Dissolved	NV	0.195	NV	0.0001 to 0.1
Beryllium	0.009	ND	0.003	NV
Beryllium, Dissolved	NV	ND	NV	<0.001
Cadmium	0.021	ND	0.005	NV
Cadmium, Dissolved	NV	ND	NV	0.0001 to 0.1
Calcium	44.2	38.700	NV	NV
Calcium, Dissolved	NV	38.100	NV	1.0 to 1000
Chloride	68.6	NV	NV	1.0 to 1000
Chromium	0.131	0.031	0.040	NV
Chromium, Dissolved	NV	0.002	NV	0.0001 to 0.1
Cobalt	0.096	0.008	0.010	NV
Cobalt, Dissolved	NV	0.005	NV	0.0001 to 0.1
Copper	0.022	0.012	0.090	NV
Copper, Dissolved	NV	ND	NV	0.0001 to 0.1
Fluoride	0.354	NV	NV	0.01 to 10.0
Iron	5.06	16.400	NV	NV
Iron, Dissolved	NV	2.04	NV	0.01 to 10
Lead	0.104	0.004	0.015	NV
Lead, Dissolved	NV	ND	NV	0.0001 to 0.1
Magnesium	16.7	15.200	NV	NV
Magnesium, Dissolved	NV	15.0	NV	1.0 to 1000
Manganese	0.159	0.335	NV	NV
Manganese, Dissolved	NV	0.264	NV	0.0001 to 0.1
Mercury	0.0004	ND	0.0002	NV
Mercury, Dissolved	NV	ND	NV	NV
Molybdenum	0.100	NV	NV	NV
Molybdenum, Dissolved	NV	NV	NV	0.0001 to 0.1
Nickel	0.062	0.010	0.009	NV
Nickel, Dissolved	NV	0.005	NV	0.0001 to 0.1
Nitrate as Nitrogen	6.13	NV	NV	0.01 to 10.0
Potassium	6.18	8.510	NV	NV
Potassium, Dissolved	NV	8.850	NV	0.01 to 10.0
Selenium	0.009	0.003	0.001	NV
Selenium, Dissolved	NV	0.003	NV	0.0001 to 0.1
Silica	39.3	NV	NV	NV
Silver	0.004	ND	0.010	NV
Silver, Dissolved	NV	ND	NV	<0.001
Sodium	60.2	97.600	200	NV
Sodium, Dissolved	NV	98.300	NV	1.0 to 1000
Sulfate	19.9	NV	NV	1.0 to 1000
Thallium	0.108	ND	0.012	NV
Thallium, Dissolved	NV	ND	NV	<0.001
Uranium	0.002	NV	NV	NV
Uranium, Dissolved	NV	NV	NV	0.0001 to 0.1

Table 4.2. (continued)

Analyte	Tech Report[a]	Site Investigation[b]	Moore Report[c]	Literature Sources[d]
		Inorganic Chemicals (mg/L) (continued)		
Vanadium	0.137	0.005	0.010	NV
Vanadium, Dissolved	NV	0.001	NV	0.0001 to 0.1
Zinc	0.027	0.116	0.6	NV
Zinc, Dissolved	NV	0.049	NV	0.0001 to 0.1
		Radionuclides (pCi/L)		
Gross Alpha	NV	ND	NV	NV
Gross Beta	NV	19	NV	NV
Neptunium-237	NV	ND	NV	NV
Plutonium-239	NV	ND	NV	NV
Radium-226	NV	NV	NV	NV
Radon-222	NV	NV	NV	NV
Technetium-99	NV	ND	NV	NV
Thorium-230	1.41	0.26	NV	NV
Total Radium	0.938	NV	NV	NV
Uranium-234	1.21	0.53	NV	NV
Uranium-235	0.153	ND	NV	NV
Uranium-238	1.04	ND	NV	NV

Notes:

NV = No value reported.

ND = Value reported as detection limit in CH2M Hill 1992 (Table 4-2 or 4-3).

[a] Values from *Baseline Risk Assessment and Technical Investigation Report for the Northwest Dissolved Phase Plume, Paducah Gaseous Diffusion Plant* (DOE 1994a).

[b] Values from Tables 4-2 and 4-3 in *Results of the Site Investigation, Phase II, at the Paducah Gaseous Diffusion Plant* (CH2M Hill 1991).

[c] Values from Table 9 in *Inorganic Soil and Groundwater Chemistry Near Paducah Gaseous Diffusion Plant, Paducah, Kentucky* (Moore 1995). Although presented here as being for samples drawn from the RGA, Moore states that these background values are "maximum background concentrations in groundwater" at the PGDP.

[d] List taken from that presented in Table 4.2 in *Hydrogeology* (Davis and DeWiest 1966). Note, only dissolved concentrations are presented because total concentrations are highly dependent on methods of sample collection and sample preservation.

THIS PAGE INTENTIONALLY LEFT BLANK

5. RESULTS AND DISCUSSION

In this chapter, tables comparing the background concentrations presented in Chapt. 3 with the various criteria introduced in Chapt. 4 are presented, and the results of these comparisons are discussed. In addition, some of the uncertainties associated with the background concentrations and their derivation are noted.

5.1 COMPARISON OF BACKGROUND CONCENTRATIONS TO RBCS, MCLS, AND KDEP RISK-BASED SCREENING VALUES

Tables comparing the background concentrations to RBCs, MCLs, and KDEP risk-based screening values are presented on the following pages. In Tables 5.1 and 5.2, the background concentrations derived for the RGA over all observations and over average concentrations within wells, respectively, are compared to these values. In Tables 5.3 and 5.4, the background concentrations derived for the McNairy Formation over all observations and over average concentrations within wells, respectively, are compared to these values. The following sections discusses the results presented in these tables.

5.1.1 Aluminum

RGA. When summarized over all observations and over averages within wells, the background concentrations for aluminum in water drawn from the RGA (2.189 and 1.64 mg/l, respectively) exceed both the RBC (1.5 mg/l) and MCL (0.200 mg/l); however, both of these background concentrations are markedly lower than the KDEP risk-based screening value (37 mg/l).

McNairy Formation. When summarized over all observations and over averages within wells, the background concentrations for aluminum in water drawn from the McNairy Formation (0.687 and 0.75 mg/l, respectively) exceed only the MCL (0.200 mg/l). Both of these background concentrations are lower than the RBC (1.5 mg/l) and the KDEP risk-based screening value (37 mg/l).

5.1.2 Aluminum, Dissolved

RGA. When summarized over all observations and over averages within wells, the background concentrations for aluminum, dissolved in water drawn from the RGA (0.311 and 0.201 mg/l, respectively) exceed only the MCL (0.200 mg/l). Both of these background concentrations are lower than the RBC (1.5 mg/l) and the KDEP risk-based screening value (37 mg/l).

McNairy Formation. When summarized over all observations and over averages within wells, the background concentrations for aluminum, dissolved in water drawn from the McNairy Formation (0.579 and 0.587 mg/l, respectively) exceed only the MCL (0.200 mg/l). Both of these background concentrations are lower than the RBC (1.5 mg/l) and the KDEP risk-based screening value (37 mg/l).

5.1.3 Antimony

RGA. When summarized over all observations and over averages within wells, the qualitatively determined backgrounds concentration for antimony in water drawn from the RGA (0.060 mg/l for both) exceed all three comparison criteria (RBC, 0.00056 mg/l; MCL, 0.006 mg/l; KDEP screening value, 0.015 mg/l).

Table 5.1. Comparison of RGA background concentrations derived over all observations against RBCs, MCLs, and Commonwealth of Kentucky risk-based screening values

Analyte	Background[a]	Criteria			Criteria Exceeded?
		RBC[b]	MCL[c]	KDEP[d]	
Inorganic Chemicals (mg/L)					
Aluminum	2.189	1.5[HI]	0.050 – 0.200	37	RBC, MCL
Aluminum, Dissolved	0.311				MCL
Antimony	0.060[†]	0.00056[HI]	0.006	0.015	RBC, MCL, KDEP
Antimony, Dissolved	0.060[†]				RBC, MCL, KDEP
Arsenic	0.005[†]	0.000035[CR]	0.050	0.000038	RBC, KDEP
Arsenic, Dissolved	0.005[†]				RBC, KDEP
Barium	0.235	0.10[HI]	2.000	2.6	RBC
Barium, Dissolved	0.200				RBC
Beryllium	0.004[†]	0.000010[CR]	0.004	0.000016	RBC, KDEP
Beryllium, Dissolved	0.004[†]				RBC, KDEP
Cadmium	0.010[†]	0.00066[HI]	0.005	0.018	RBC, MCL
Cadmium, Dissolved	0.010[†]				RBC, MCL
Calcium	41.238	NV	NV	NV	None
Calcium, Dissolved	38.166				None
Chloride	91.021	NV	250	NV	None
Chromium	0.144	0.0071[HI]	0.100	0.18	RBC, MCL
Chromium, Dissolved	0.050[†]				RBC
Cobalt	0.045[†]	0.091[HI]	NV	NV	None
Cobalt, Dissolved	0.045[†]				None
Copper	0.036	0.060[HI]	1.3	1.4	None
Copper, Dissolved	0.020				None
Fluoride	0.270	0.091[HI]	4.0	2.2	RBC
Iron	5.030	0.45[HI]	0.3	NV	RBC, MCL
Iron, Dissolved	0.267				None
Lead	0.129	0.00000015[HI]	0.015	0.004	RBC, MCL, KDEP
Lead, Dissolved	0.098				RBC, MCL, KDEP
Magnesium	16.262	NV	NV	NV	None
Magnesium, Dissolved	16.215				None
Manganese	0.119	0.067[HI]	0.050	0.18	RBC, MCL
Manganese, Dissolved	0.068				RBC, MCL
Mercury	0.0002[†]	0.00044[HI]	0.002	0.011	None
Mercury, Dissolved	0.0002[†]				None
Molybdenum	0.050[†]	0.0075[HI]	NV	0.180	RBC
Molybdenum, Dissolved	0.050[†]				RBC
Nickel	0.682	0.030[HI]	0.100	0.730	RBC, MCL
Nickel, Dissolved	0.305				RBC, MCL
Nitrate as Nitrogen	15.561	2.40[HI]	10	58	RBC, MCL
Potassium	5.195	NV	NV	NV	None
Potassium, Dissolved	4.096				None
Selenium	0.005[†]	0.0075[HI]	0.050	0.18	None
Selenium, Dissolved	0.005[†]				None
Silica	26.401	NV	NV	NV	None
Silver	0.011[†]	0.0075[HI]	0.100	0.18	RBC
Silver, Dissolved	0.060[†]				RBC
Sodium	59.450	NV	NV	NV	None
Sodium, Dissolved	60.433				None
Sulfate	19.947	NV	500	NV	None
Thallium	0.056[†]	NV	0.002	NV	MCL
Thallium, Dissolved	0.056[†]				MCL

Table 5.1. (continued)

Analyte	Background[a]	Criteria			Criteria Exceeded?
		RBC[b]	MCL[c]	KDEP[d]	
Inorganic Chemicals (mg/L) (continued)					
Uranium	0.002†	0.0045[HI]	0.020	0.11	None
Uranium, Dissolved	0.002†				None
Vanadium	0.134	0.0092[HI]	NV	NV	RBC
Vanadium, Dissolved	0.134				RBC
Zinc	0.054	0.45[HI]	5.0	11	None
Zinc, Dissolved	0.049				None
Radionuclides (pCi/L)					
Gross Alpha	5.8	NV	15	NV	None
Gross Beta	13.8	NV	See footnote[e]	NV	None
Neptunium-237	0.8	0.13[CR]	See footnote[e]	NV	RBC
Plutonium-239	0.1	0.12[CR]	See footnote[e]	NV	None
Radium-226	0.6	0.13[CR]	5	NV	RBC
Radon-222	626	1.4[CR]	300	NV	RBC, MCL
Technetium-99	22.3	28.0[CR]	See footnote[e]	NV	None
Thorium-230	1.1	1.0[CR]	See footnote[e]	NV	RBC
Total Radium	1.3	0.13[CR]	5	NV	RBC
Uranium-234	0.7	0.87[CR]	30	NV	None
Uranium-235	0.3	0.82[CR]	30	NV	None
Uranium-238	0.7	0.62[CR]	30	NV	RBC

Notes:

Criteria are only listed once for analyte type (e.g., once for both aluminum and aluminum, dissolved) because the same criterion applies to both.

NV indicates that a value is not available for the analyte.

[a] Background concentrations marked with a dagger (†) were derived qualitatively because they were either never detected or were only detected at concentrations near their detection limit. Therefore, the actual background concentrations may be less than the concentrations reported here.

[b] See Subsect. 4.1 for a discussion of the derivation of the RBCs. RBCs marked with HI are based on a target hazard index of 1. RBCs marked with CR are based on a cancer risk of 1×10^{-6}.

[c] See Subsect 4.2 and footnotes to Table 4.1 for a discussion of the source of the MCLs.

[d] See Subsect. 4.2 for a discussion of the source of the KDEP risk-based screening values.

[e] A definitive value can not be calculated. See footnote l to Table 4.1.

Table 5.2. Comparison of RGA background concentrations derived over averages within wells against RBCs, MCLs, and Commonwealth of Kentucky risk-based screening values

Analyte	Background[a]	Criteria RBC[b]	Criteria MCL[c]	Criteria KDEP[d]	Criteria Exceeded?
Inorganic Chemicals (mg/L)					
Aluminum	1.64	1.5[HI]	0.050 – 0.200	37	RBC, MCL
Aluminum, Dissolved	0.201				MCL
Antimony	0.060[†]	0.00056[HI]	0.006	0.015	RBC, MCL, KDEP
Antimony, Dissolved	0.060[†]				RBC, MCL, KDEP
Arsenic	0.005[†]	0.000035[CR]	0.050	0.000038	RBC, KDEP
Arsenic, Dissolved	0.005[†]				RBC, KDEP
Barium	0.202	0.10[HI]	2.000	2.6	RBC
Barium, Dissolved	0.179				RBC
Beryllium	0.004[†]	0.000010[CR]	0.004	0.000016	RBC, KDEP
Beryllium, Dissolved	0.004[†]				RBC, KDEP
Cadmium	0.010[†]	0.00066[HI]	0.005	0.018	RBC, MCL
Cadmium, Dissolved	0.010[†]				RBC, MCL
Calcium	40.0	NV	NV	NV	None
Calcium, Dissolved	35.8				None
Chloride	89.2	NV	250	NV	None
Chromium	0.134	0.0071[HI]	0.100	0.18	RBC, MCL
Chromium, Dissolved	0.050[†]				RBC
Cobalt	0.045[†]	0.091[HI]	NV	NV	None
Cobalt, Dissolved	0.045[†]				None
Copper	0.034	0.060[HI]	1.3	1.4	None
Copper, Dissolved	0.018				None
Fluoride	0.245	0.091[HI]	4.0	2.2	RBC
Iron	3.72	0.45[HI]	0.3	NV	RBC, MCL
Iron, Dissolved	0.164				None
Lead	0.250	0.00000015[HI]	0.015	0.004	RBC, MCL, KDEP
Lead, Dissolved	0.250				RBC, MCL, KDEP
Magnesium	15.7	NV	NV	NV	None
Magnesium, Dissolved	15.4				None
Manganese	0.082	0.067[HI]	0.050	0.18	RBC, MCL
Manganese, Dissolved	0.048				None
Mercury	0.0002[†]	0.00044[HI]	0.002	0.011	None
Mercury, Dissolved	0.0002[†]				None
Molybdenum	0.050[†]	0.0075[HI]	NV	0.180	RBC
Molybdenum, Dissolved	0.050[†]				RBC
Nickel	0.682	0.030[HI]	0.100	0.730	RBC, MCL
Nickel, Dissolved	0.305				RBC, MCL
Nitrate as Nitrogen	13.5	2.40[HI]	10	58	RBC, MCL
Potassium	4.47	NV	NV	NV	None
Potassium, Dissolved	3.70				None
Selenium	0.005[†]	0.0075[HI]	0.050	0.18	None
Selenium, Dissolved	0.005[†]				None
Silica	21.1	NV	NV	NV	None
Silver	0.011[†]	0.0075[HI]	0.100	0.18	RBC
Silver, Dissolved	0.060[†]				RBC
Sodium	63.5	NV	NV	NV	None
Sodium, Dissolved	65.7				None
Sulfate	19.1	NV	500	NV	None
Thallium	0.056[†]	NV	0.002	NV	MCL
Thallium, Dissolved	0.056[†]				MCL

Table 5.2. (continued)

Analyte	Background[a]	Criteria RBC[b]	Criteria MCL[c]	Criteria KDEP[d]	Criteria Exceeded?
Inorganic Chemicals (mg/L) (continued)					
Uranium	0.002†	0.0045[HI]	0.020	0.11	None
Uranium, Dissolved	0.002†				None
Vanadium	0.139	0.0092[HI]	NV	NV	RBC
Vanadium, Dissolved	0.131				RBC
Zinc	0.025	0.45[HI]	5.0	11	None
Zinc, Dissolved	0.026				None
Radionuclides (pCi/L)					
Gross Alpha	2.36	NV	15	NV	None
Gross Beta	7.3	NV	See footnote[e]	NV	None
Neptunium-237	0.21	0.13[CR]	See footnote[e]	NV	RBC
Plutonium-239	0.03	0.12[CR]	See footnote[e]	NV	None
Radium-226	0.10	0.13[CR]	5	NV	None
Radon-222	555.3	1.4[CR]	300	NV	RBC, MCL
Technetium-99	10.8	28.0[CR]	See footnote[e]	NV	None
Thorium-230	0.54	1.0[CR]	See footnote[e]	NV	None
Total Radium	0.46	0.13[CR]	5	NV	RBC
Uranium-234	0.7	0.87[CR]	30	NV	None
Uranium-235	0.3	0.82[CR]	30	NV	None
Uranium-238	0.7	0.62[CR]	30	NV	RBC

Notes:

Criteria are only listed once for analyte type (e.g., once for both aluminum and aluminum, dissolved because the same criterion applies to both.

NV indicates that a value is not available for the analyte.

[a] Background concentrations marked with a dagger (†) were derived qualitatively because they were either never detected or were only detected at a concentrations near their detection limit. Therefore, the actual background concentrations may be less than those reported here.

[b] See Subsect. 4.1 for a discussion of the derivation of the RBCs. RBCs marked with HI are based on a target hazard index of 1. RBCs marked with CR are based on a cancer risk of 1×10^{-6}.

[c] See Subsect. 4.2 and footnotes to Table 4.1 for a discussion of the source of the MCLs.

[d] See Subsect. 4.2 for a discussion of the source of the KDEP risk-based screening values.

[e] A definitive value can not be calculated. See footnote l to Table 4.1.

Table 5.3. Comparison of McNairy Formation background concentrations derived over all observations against RBCs, MCLs, and Commonwealth of Kentucky risk-based screening values

Analyte	Background[a]	Criteria RBC[b]	Criteria MCL[c]	Criteria KDEP[d]	Criteria Exceeded?
Inorganic Chemicals (mg/L)					
Aluminum	0.687	1.5[HI]	0.050 – 0.200	37	MCL
Aluminum, Dissolved	0.579				MCL
Antimony	0.060[†]	0.00056[HI]	0.006	0.015	RBC, MCL, KDEP
Antimony, Dissolved	0.060[†]				RBC, MCL, KDEP
Arsenic	0.005[†]	0.000035[CR]	0.050	0.000038	RBC, KDEP
Arsenic, Dissolved	0.005[†]				RBC, KDEP
Barium	0.296	0.10[HI]	2.000	2.6	RBC
Barium. Dissolved	0.268				RBC
Beryllium	0.017[†]	0.000010[CR]	0.004	0.000016	RBC, MCL, KDEP
Beryllium, Dissolved	0.004[†]				RBC, KDEP
Cadmium	0.010[†]	0.00066[HI]	0.005	0.018	RBC, MCL
Cadmium, Dissolved	0.010[†]				RBC, MCL
Calcium	38.858	NV	NV	NV	None
Calcium, Dissolved	38.829				None
Chloride	19.708	NV	250	NV	None
Chromium	0.060[†]	0.0071[HI]	0.100	0.18	RBC
Chromium, Dissolved	0.050[†]				RBC
Cobalt	0.096	0.091[HI]	NV	NV	RBC
Cobalt, Dissolved	0.045[†]				None
Copper	0.057	0.060[HI]	1.3	1.4	None
Copper, Dissolved	0.013[†]				None
Fluoride	0.330	0.091[HI]	4.0	2.2	RBC
Iron	18.360	0.45[HI]	0.3	NV	RBC, MCL
Iron, Dissolved	12.372				RBC, MCL
Lead	0.050[†]	0.00000015[HI]	0.015	0.004	RBC, MCL, KDEP
Lead, Dissolved	0.050[†]				RBC, MCL, KDEP
Magnesium	13.418	NV	NV	NV	None
Magnesium, Dissolved	14.171				None
Manganese	0.941	0.067[HI]	0.050	0.18	RBC, MCL, KDEP
Manganese, Dissolved	0.894				RBC, MCL, KDEP
Mercury	0.0002[†]	0.00044[HI]	0.002	0.011	None
Mercury, Dissolved	0.0002[†]				None
Molybdenum	0.050[†]	0.0075[HI]	NV	0.180	RBC
Molybdenum, Dissolved	0.050[†]				RBC
Nickel	0.109[†]	0.030[HI]	0.100	0.730	RBC, MCL
Nickel, Dissolved	0.050[†]				RBC
Nitrate as Nitrogen	1.474	2.40[HI]	10	58	None
Potassium	55.752	NV	NV	NV	None
Potassium, Dissolved	51.205				None
Selenium	0.005[†]	0.0075[HI]	0.050	0.18	None
Selenium, Dissolved	0.005[†]				None
Silica	26.0	NV	NV	NV	None
Silver	0.050[†]	0.0075[HI]	0.100	0.18	RBC
Silver, Dissolved	0.050[†]				RBC
Sodium	29.2	NV	NV	NV	None
Sodium, Dissolved	27.98				None
Sulfate	28.9	NV	500	NV	None
Thallium	0.644	NV	0.002	NV	MCL
Thallium, Dissolved	0.056[†]				MCL

Table 5.3. (continued)

Analyte	Background[a]	Criteria RBC[b]	Criteria MCL[c]	Criteria KDEP[d]	Criteria Exceeded?
Inorganic Chemicals (mg/L) (continued)					
Uranium	0.001†	0.0045[HI]	0.020	0.11	None
Uranium, Dissolved	0.001				None
Vanadium	0.126	0.0092[HI]	NV	NV	RBC
Vanadium, Dissolved	0.126				RBC
Zinc	0.142	0.45[HI]	5.0	11	None
Zinc, Dissolved	0.116				None
Radionuclides (pCi/L)					
Gross Alpha	11.9	NV	15	NV	None
Gross Beta	144.5	NV	See footnote[e]	NV	None
Neptunium-237	0.5	0.13[CR]	See footnote[e]	NV	RBC
Plutonium-239	0.2	0.12[CR]	See footnote[e]	NV	RBC
Radium-226	1.2	0.13[CR]	5	NV	RBC
Radon-222	295	1.4[CR]	300	NV	RBC
Technetium-99	20.6	28.0[CR]	See footnote[e]	NV	None
Thorium-230	1.5	1.0[CR]	See footnote[e]	NV	RBC
Total Radium	0.7	0.13[CR]	5	NV	RBC
Uranium-234	0.3	0.87[CR]	30	NV	None
Uranium-235	0.2	0.82[CR]	30	NV	None
Uranium-238	0.3	0.62[CR]	30	NV	None

Notes:

Criteria are only listed once for analyte type (e.g., once for both aluminum and aluminum, dissolved) because the same criterion applies to both.

NV indicates that a value is not available for the analyte.

[a] Background concentrations marked with a dagger (†) were derived qualitatively because they were either never detected or were only detected at concentrations near their detection limit. Therefore, the actual background concentrations may be less than those reported here.

[b] See Subsect. 4.1 for a discussion of the derivation of the RBCs. RBCs marked with HI are based on a target hazard index of 1. RBCs marked with CR are based on a cancer risk of 1×10^{-6}.

[c] See Subsect 4.2 and footnotes to Table 4.1 for a discussion of the source of the MCLs.

[d] See Subsect. 4.2 for a discussion of the source of the KDEP risk-based screening values.

[e] A definitive value can not be calculated. See footnote 1 to Table 4.1.

Table 5.4. Comparison of McNairy Formation background concentrations derived over averages within wells against RBCs, MCLs, and Commonwealth of Kentucky risk-based screening values

Analyte	Background[a]	Criteria RBC[b]	Criteria MCL[c]	Criteria KDEP[d]	Criteria Exceeded?
Inorganic Chemicals (mg/L)					
Aluminum	0.75	1.5[HI]	0.050 – 0.200	37	MCL
Aluminum, Dissolved	0.587				MCL
Antimony	0.060[†]	0.00056[HI]	0.006	0.015	RBC, MCL, KDEP
Antimony, Dissolved	0.060[†]				RBC, MCL, KDEP
Arsenic	0.005[†]	0.000035[CR]	0.050	0.000038	RBC, KDEP
Arsenic, Dissolved	0.005[†]				RBC, KDEP
Barium	0.265	0.10[HI]	2.000	2.6	RBC
Barium, Dissolved	0.266				RBC
Beryllium	0.017[†]	0.000010[CR]	0.004	0.000016	RBC, MCL, KDEP
Beryllium, Dissolved	0.004[†]				RBC, KDEP
Cadmium	0.010[†]	0.00066[HI]	0.005	0.018	RBC, MCL
Cadmium, Dissolved	0.010[†]				RBC, MCL
Calcium	39.47	NV	NV	NV	None
Calcium, Dissolved	40.27				None
Chloride	20.23	NV	250	NV	None
Chromium	0.060[†]	0.0071[HI]	0.100	0.18	RBC
Chromium, Dissolved	0.050[†]				RBC
Cobalt	0.072	0.091[HI]	NV	NV	None
Cobalt, Dissolved	0.045[†]				None
Copper	0.033	0.060[HI]	1.3	1.4	None
Copper, Dissolved	0.013[†]				None
Fluoride	0.298	0.091[HI]	4.0	2.2	RBC
Iron	15.83	0.45[HI]	0.3	NV	RBC, MCL
Iron, Dissolved	9.446				RBC, MCL
Lead	0.050[†]	0.00000015[HI]	0.015	0.004	RBC, MCL, KDEP
Lead, Dissolved	0.050[†]				RBC, MCL, KDEP
Magnesium	16.457	NV	NV	NV	None
Magnesium, Dissolved	16.533				None
Manganese	0.729	0.067[HI]	0.050	0.18	RBC, MCL, KDEP
Manganese, Dissolved	0.682				RBC, MCL, KDEP
Mercury	0.0002[†]	0.00044[HI]	0.002	0.011	None
Mercury, Dissolved	0.0002[†]				None
Molybdenum	0.050[†]	0.0075[HI]	NV	0.180	RBC
Molybdenum, Dissolved	0.050[†]				RBC
Nickel	0.109[†]	0.030[HI]	0.100	0.730	RBC, MCL
Nickel, Dissolved	0.050[†]				RBC
Nitrate as Nitrogen	1.43	2.40[HI]	10	58	None
Potassium	64.080	NV	NV	NV	None
Potassium, Dissolved	58.750				None
Selenium	0.005[†]	0.0075[HI]	0.050	0.18	None
Selenium, Dissolved	0.005[†]				None
Silica	29.4	NV	NV	NV	None
Silver	0.050[†]	0.0075[HI]	0.100	0.18	RBC
Silver, Dissolved	0.050[†]				RBC
Sodium	24.92	NV	NV	NV	None
Sodium, Dissolved	25.90				None
Sulfate	27.27	NV	500	NV	None
Thallium	0.255	NV	0.002	NV	MCL
Thallium, Dissolved	0.056[†]				MCL

Table 5.4. (continued)

Analyte	Background[a]	Criteria RBC[b]	Criteria MCL[c]	Criteria KDEP[d]	Criteria Exceeded?
Inorganic Chemicals (mg/L) (continued)					
Uranium	0.001†	0.0045HI	0.020	0.11	None
Uranium, Dissolved	0.001				None
Vanadium	0.119	0.0092HI	NV	NV	RBC
Vanadium, Dissolved	0.107				RBC
Zinc	0.104	0.45HI	5.0	11	None
Zinc, Dissolved	0.080				None
Radionuclides (pCi/L)					
Gross Alpha	5.3	NV	15	NV	None
Gross Beta	125.4	NV	See footnote[e]	NV	None
Neptunium-237	0.13	0.13CR	See footnote[e]	NV	None
Plutonium-239	0.04	0.12CR	See footnote[e]	NV	None
Radium-226	0.29	0.13CR	5	NV	RBC
Radon-222	228.3	1.4CR	300	NV	RBC
Technetium-99	7.8	28.0CR	See footnote[e]	NV	None
Thorium-230	0.40	1.0CR	See footnote[e]	NV	None
Total Radium	0.36	0.13CR	5	NV	RBC
Uranium-234	0.3	0.87CR	30	NV	None
Uranium-235	0.2	0.82CR	30	NV	None
Uranium-238	0.3	0.62CR	30	NV	None

Notes:

Criteria are only listed once for analyte type (e.g., once for both aluminum and aluminum, dissolved because the same criterion applies to both.

NV indicates that a value is not available for the analyte.

[a] Background concentrations marked with a dagger (†) were derived qualitatively because they were either never detected or were only detected at concentrations near their detection limit. Therefore, the actual background concentrations may be less than those reported here.

[b] See Subsect. 4.1 for a discussion of the derivation of the RBCs. RBCs marked with HI are based on a target hazard index of 1. RBCs marked with CR are based on a cancer risk of 1×10^{-6}.

[c] See Subsect. 4.2 and footnotes to Table 4.1 for a discussion of the source of the MCLs.

[d] See Subsect. 4.2 for a discussion of the source of the KDEP risk-based screening values.

[e] A definitive value can not be calculated. See footnote l to Table 4.1.

McNairy Formation. When summarized over all observations and over averages within wells, the qualitatively determined background concentrations for antimony in water drawn from the McNairy Formation (0.060 mg/l for both) exceed all three comparison criteria (RBC, 0.00056 mg/l; MCL, 0.006 mg/l; KDEP screening value, 0.015 mg/l).

5.1.4 Antimony, Dissolved

RGA. When summarized over all observations and over averages within wells, the qualitatively determined background concentrations for antimony, dissolved in water drawn from the RGA (0.060 mg/l for both) exceed all three comparison criteria (RBC, 0.00056 mg/l; MCL, 0.006 mg/l; KDEP screening value, 0.015 mg/l).

McNairy Formation. When summarized over all observations and over averages within wells, the qualitatively determined background concentrations for antimony, dissolved in water drawn from the McNairy Formation (0.060 mg/l for both) exceed all three comparison criteria (RBC, 0.00056 mg/l; MCL, 0.006 mg/l; KDEP screening value, 0.015 mg/l).

5.1.5 Arsenic

RGA. When summarized over all observations and over averages within wells, the qualitatively determined background concentrations for arsenic in water drawn from the RGA (0.005 mg/l for both) exceed both the RBC and KDEP screening value (0.000035 and 0.000038 mg/l, respectively); however, both background concentrations are markedly lower than the MCL (0.050 mg/l).

McNairy Formation. When summarized over all observations and over averages within wells, the qualitatively determined background concentrations for arsenic in water drawn from the McNairy Formation (0.005 mg/l for both) exceed both the RBC and KDEP screening value (0.000035 and 0.000038 mg/l, respectively); however, both background concentrations are markedly lower than the MCL (0.050 mg/l).

5.1.6 Arsenic, Dissolved

RGA. When summarized over all observations and over averages within wells, the qualitatively determined background concentrations for arsenic, dissolved in water drawn from the RGA (0.005 mg/l for both) exceed both the RBC and KDEP screening value (0.000035 mg/l and 0.000038 mg/l, respectively); however, both of these background concentrations are markedly lower than the MCL (0.050 mg/l).

McNairy Formation. When summarized over all observations and over averages within wells, the qualitatively determined background concentrations for arsenic, dissolved in water drawn from the McNairy Formation (0.005 mg/l for both) exceed both the RBC and KDEP screening value (0.000035 and 0.000038 mg/l, respectively); however, both of these background concentrations are markedly lower than the MCL (0.050 mg/l).

5.1.7 Barium

RGA. When summarized over all observations and over averages within wells, the background concentrations for barium in water drawn from the RGA (0.235 and 0.202 mg/l, respectively) exceed only the RBC (0.10 mg/l). Both of these background concentrations are markedly lower than the MCL and KDEP screening value (2.000 and 2.6 mg/l, respectively).

McNairy Formation. When summarized over all observations and over averages within wells, the background concentrations for barium in water drawn from the McNairy Formation (0.296 and 0.265 mg/l,

respectively) exceed only the RBC (0.10 mg/l). Both of these background concentrations are markedly lower than the MCL and KDEP screening value (2.000 and 2.6 mg/l, respectively).

5.1.8 Barium, Dissolved

RGA. When summarized over all observations and over averages within wells, the background concentrations for barium, dissolved in water drawn from the RGA (0.200 and 0.179 mg/l, respectively) exceed only the RBC (0.10 mg/l). Both of these background concentrations are markedly lower than the MCL and KDEP screening value (2.000 and 2.6 mg/l, respectively).

McNairy Formation. When summarized over all observations and over averages within wells, the background concentrations for barium, dissolved in water drawn from the McNairy Formation (0.268 and 0.266 mg/l, respectively) exceed only the RBC (0.10 mg/l). Both of these background concentrations are markedly lower than the MCL and KDEP screening value (2.000 and 2.6 mg/l, respectively).

5.1.9 Beryllium

RGA. When summarized over all observations and over averages within wells, the qualitatively determined background concentrations for beryllium in water drawn from the RGA (0.004 mg/l for both) exceed both the RBC and the KDEP screening value (0.000010 and 0.000016 mg/l, respectively); however, these background concentrations equal the MCL for beryllium (0.004 mg/l).

McNairy Formation. When summarized over all observations and over averages within wells, the qualitatively determined background concentrations for beryllium in water drawn from the McNairy Formation (0.017 mg/l for both) exceed all three values used for comparison (RBC, 0.000010 mg/l; MCL, 0.004 mg/l; KDEP screening value, 0.000016 mg/l).

5.1.10 Beryllium, Dissolved

RGA. When summarized over all observations and over averages within wells, the qualitatively determined background concentrations for beryllium, dissolved in water drawn from the RGA (0.004 mg/l for both) exceed both the RBC and the KDEP screening value (0.000010 and 0.000016 mg/l, respectively); however, these background concentrations equal the MCL for beryllium (0.004 mg/l).

McNairy Formation. When summarized over all observations and over averages within wells, the qualitatively determined background concentrations for beryllium, dissolved in water drawn from the McNairy Formation (0.004 mg/l for both) exceed both the RBC and the KDEP screening value (0.000010 and 0.000016 mg/l, respectively); however, these background concentrations equal the MCL for beryllium (0.004 mg/l).

5.1.11 Cadmium

RGA. When summarized over all observations and over averages within wells, the qualitatively determined background concentrations for cadmium in water drawn from the RGA (0.010 mg/l for both) exceed both the RBC and the MCL (0.00066 and 0.005 mg/l, respectively); however, these background concentrations are less than the KDEP screening value (0.018 mg/l).

McNairy Formation. When summarized over all observations and over averages within wells, the qualitatively determined background concentrations for cadmium in water drawn from the McNairy Formation (0.010 mg/l for both) exceed both the RBC and the MCL (0.00066 and 0.005 mg/l, respectively); however, these background concentrations are less than the KDEP screening value (0.018 mg/l).

5.1.12 Cadmium, Dissolved

RGA. When summarized over all observations and over averages within wells, the qualitatively determined background concentrations for cadmium, dissolved in water drawn from the RGA (0.010 mg/l for both) exceed both the RBC and the MCL (0.00066 and 0.005 mg/l, respectively); however, these background concentrations are less than the KDEP screening value (0.018 mg/l).

McNairy Formation. When summarized over all observations and over averages within wells, the qualitatively determined background concentrations for cadmium, dissolved in water drawn from the McNairy Formation (0.010 mg/l for both) exceed both the RBC and the MCL (0.00066 and 0.005 mg/l, respectively); however, these background concentrations are less than the KDEP screening value (0.018 mg/l).

5.1.13 Calcium

RGA. No values are available for comparison. The background concentrations for calcium in water drawn from the RGA when summarized over all observations and over averages within wells are 41.238 and 40.0 mg/l, respectively.

McNairy Formation. No values are available for comparison. The background concentrations for calcium in water drawn from the McNairy Formation when summarized over all observations and over averages within wells are 38.858 and 39.47 mg/l, respectively.

5.1.14 Calcium, Dissolved

RGA. No values are available for comparison. The background concentrations for calcium, dissolved in water drawn from the RGA when summarized over all observations and over averages within wells are 38.166 and 35.8 mg/l, respectively.

McNairy Formation. No values are available for comparison. The background concentrations for calcium in water drawn from the McNairy Formation when summarized over all observations and over averages within wells are 38.829 and 40.27 mg/l, respectively.

5.1.15 Chloride

RGA. When summarized over all observations and over averages within wells, the background concentrations for chloride in water drawn from the RGA (91.021 and 89.2 mg/l, respectively) are markedly less than the MCL (250 mg/l), the only value available for comparison.

McNairy Formation. When summarized over all observations and over averages within wells, the background concentrations for chloride in water drawn from the McNairy Formation (19.708 and 20.23 mg/l, respectively) are markedly less than the MCL (250 mg/l), the only value available for comparison.

5.1.16 Chromium

RGA. When summarized over all observations and over averages within wells, the background concentrations for chromium in water drawn from the RGA (0.144 and 0.134 mg/l, respectively) exceed both the RBC and the MCL (0.0071 and 0.100 mg/l, respectively); however, these background values are less than the KDEP screening value (0.18 mg/l).

McNairy Formation. When summarized over all observations and over averages within wells, the qualitatively determined background concentrations for chromium in water drawn from the McNairy

Formation (0.060 mg/l for both) exceed only the RBC (0.0071 mg/l). These background values are less than the MCL and the KDEP screening value (0.100 and 0.18 mg/l, respectively).

5.1.17 Chromium, Dissolved

RGA. When summarized over all observations and over averages within wells, the qualitatively determined background concentrations for chromium, dissolved in water drawn from the RGA (0.050 mg/l for both) exceed only the RBC (0.0071 mg/l). These background values are less than the MCL and the KDEP screening value (0.100 and 0.18 mg/l, respectively).

McNairy Formation. When summarized over all observations and over averages within wells, the qualitatively determined background concentrations for chromium, dissolved in water drawn from the McNairy Formation (0.050 mg/l for both) exceed only the RBC (0.0071 mg/l). These background values are less than the MCL and the KDEP screening value (0.100 and 0.18 mg/l, respectively).

5.1.18 Cobalt

RGA. When summarized over all observations and over averages within wells, the qualitatively determined background concentrations for cobalt in water drawn from the RGA (0.045 mg/l for both) do not exceed the RBC (0.091 mg/l), the only value available for comparison.

McNairy Formation. When summarized over all observations but not when summarized over averages within wells, the background concentration for cobalt in water drawn from the McNairy Formation (0.096 and 0.072 mg/l, respectively) exceeds the RBC (0.091 mg/l), the only value available for comparison.

5.1.19 Cobalt, Dissolved

RGA. When summarized over all observations and over averages within wells, the qualitatively determined background concentrations for cobalt, dissolved in water drawn from the RGA (0.045 mg/l for both) do not exceed the RBC (0.091 mg/l), the only value available for comparison.

McNairy Formation. When summarized over all observations and over averages within wells, the qualitatively determined background concentrations for cobalt, dissolved in water drawn from the McNairy Formation (0.045 mg/l, respectively) do not exceed the RBC (0.091 mg/l), the only value available for comparison.

5.1.20 Copper

RGA. When summarized over all observations and over averages within wells, the background concentrations for copper in water drawn from the RGA (0.036 and 0.034 mg/l, respectively) do not exceed any comparison criteria (RBC, 0.060 mg/l; MCL, 1.3 mg/l; KDEP screening value, 1.4 mg/l).

McNairy Formation. When summarized over all observations and over averages within wells, the background concentrations for copper in water drawn from the McNairy Formation (0.057 and 0.033 mg/l, respectively) do not exceed any comparison criteria (RBC, 0.060 mg/l; MCL, 1.3 mg/l; KDEP screening value, 1.4 mg/l).

5.1.21 Copper, Dissolved

RGA. When summarized over all observations and over averages within wells, the background concentrations for copper, dissolved in water drawn from the RGA (0.020 and 0.018 mg/l, respectively) do not exceed any comparison criteria (RBC, 0.060 mg/l; MCL, 1.3 mg/l; KDEP screening value, 1.4 mg/l).

McNairy Formation. When summarized over all observations and over averages within wells, the qualitatively determined background concentrations for copper, dissolved in water drawn from the McNairy Formation (0.013 mg/l for both) do not exceed any comparison criteria (RBC, 0.060 mg/l; MCL, 1.3 mg/l; KDEP screening value, 1.4 mg/l).

5.1.22 Fluoride

RGA. When summarized either over all observation or over averages within wells, the background concentrations for fluoride in water drawn from the RGA (0.270 and 0.245 mg/l, respectively) exceed the RBC (0.091 mg/l); however, the background concentrations are markedly less than the MCL and KDEP screening value (4.0 and 2.2 mg/l, respectively).

McNairy Formation. When summarized over all observations and over averages within wells, the background concentrations for fluoride in water drawn from the McNairy Formation (0.330 and 0.298 mg/l, respectively) exceed the RBC (0.091 mg/l); however, the background concentrations are markedly less than the MCL and KDEP screening value (4.0 and 2.2 mg/l, respectively).

5.1.23 Iron

RGA. When summarized over all observations and over averages within wells, the background concentrations for iron in water drawn from the RGA (5.030 and 3.72 mg/l, respectively) exceed the RBC and MCL (0.45 and 0.3 mg/l, respectively). There is no KDEP screening value available for this analyte.

McNairy Formation. When summarized over all observations and over averages within wells, the background concentrations for iron in water drawn from the McNairy Formation (18.360 and 15.83, mg/l, respectively) exceed the RBC and MCL (0.45 and 0.3 mg/l, respectively). There is no KDEP screening value for this analyte.

5.1.24 Iron, Dissolved

RGA. When summarized over all observations and over averages within wells, the background concentrations for iron, dissolved in water drawn from the RGA (0.267 and 0.164 mg/l, respectively) do not exceed any comparison criteria (RBC, 0.45 mg/l; MCL, 0.3 mg/l; KDEP screening value, not available).

McNairy Formation. When summarized over all observations and over averages within wells, the background concentrations for iron, dissolved in water drawn from the McNairy Formation (12.372 and 9.446 mg/l, respectively) exceed the RBC and MCL (0.45 and 0.3 mg/l, respectively). There is no KDEP screening value available for this analyte.

5.1.25 Lead

RGA. When summarized over all observations and over averages within wells, the background concentrations for lead in water drawn from the RGA (0.129 and 0.250 mg/l, respectively) exceed all three comparison criteria (RBC, 0.00000015 mg/l; MCL, 0.015 mg/l; KDEP screening value, 0.004 mg/l).

McNairy Formation. When summarized over all observations and over averages within wells, the qualitatively determined background concentrations for lead in water drawn from the McNairy Formation (0.050 mg/l for both) exceed all three comparison criteria (RBC, 0.00000015 mg/l; MCL, 0.015 mg/l; KDEP screening value, 0.004 mg/l).

5.1.26 Lead, Dissolved

RGA. When summarized over all observations and over averages within wells, the background concentrations for lead, dissolved in water drawn from the RGA (0.098 and 0.250 mg/l, respectively) exceed all three comparison criteria (RBC, 0.00000015 mg/l; MCL, 0.015 mg/l; KDEP screening value, 0.004 mg/l).

McNairy Formation. When summarized over all observations and over averages within wells, the qualitatively determined background concentrations for lead, dissolved in water drawn from the McNairy Formation (0.050 mg/l for both) exceed all three comparison criteria (RBC, 0.00000015 mg/l; MCL, 0.015 mg/l; KDEP screening value, 0.004 mg/l).

5.1.27 Magnesium

RGA. No values are available for comparison. The background concentrations for magnesium in water drawn from the RGA when summarized over all observations and over averages within wells are 16.262 and 15.7 mg/l, respectively.

McNairy Formation. No values are available for comparison. The background concentrations for magnesium in water drawn from the McNairy Formation when summarized over all observations and over averages within wells are 13.418 and 16.457 mg/l, respectively.

5.1.28 Magnesium, Dissolved

RGA. No values are available for comparison. The background concentrations for magnesium, dissolved in water drawn from the RGA when summarized over all observations and over averages within wells are 16.215 and 15.4 mg/l, respectively.

McNairy Formation. No values are available for comparison. The background concentrations for magnesium, dissolved in water drawn from the McNairy Formation when summarized over all observations and over averages within wells are 14.171 and 16.533 mg/l, respectively.

5.1.29 Manganese

RGA. When summarized over all observations and over averages within wells, the background concentrations for manganese in water drawn from the RGA (0.119 and 0.082 mg/l, respectively) exceed the RBC and MCL (0.067 and 0.050 mg/l, respectively); however, the background concentrations are less than the KDEP screening value (0.18 mg/l).

McNairy Formation. When summarized over all observations and over averages within wells, the background concentrations for manganese in water drawn from the McNairy Formation (0.941 and 0.729 mg/l, respectively) exceed all three comparison criteria (RBC, 0.067 mg/l; MCL, 0.050 mg/l; KDEP screening value, 0.18 mg/l).

5.1.30 Manganese, Dissolved

RGA. When summarized over all observations, the background concentration for manganese, dissolved in water drawn from the RGA (0.068 mg/l) exceeds the RBC and MCL (0.067 and 0.050 mg/l, respectively); however, when summarized over averages within well, the background concentration for manganese, dissolved in water drawn from the RGA (0.048 mg/l) did not exceed either the RBC or the MCL (0.067 and 0.050 mg/l, respectively). The two background concentrations are less than the KDEP screening value (0.18 mg/l).

McNairy Formation. When summarized over all observations and over averages within wells, the background concentrations for manganese, dissolved in water drawn from the McNairy Formation (0.894 and 0.682 mg/l, respectively) exceed all three comparison criteria (RBC, 0.067 mg/l; MCL, 0.050 mg/l; KDEP screening value, 0.18 mg/l).

5.1.31 Mercury

RGA. When summarized over all observations and over averages within wells, the qualitatively determined background concentrations for mercury in water drawn from the RGA (0.0002 mg/l for both) do not exceed any comparison criteria (RBC, 0.00044 mg/l; MCL, 0.002 mg/l; KDEP screening value, 0.011 mg/l).

McNairy Formation. When summarized over all observations and over averages within wells, the qualitatively determined background concentrations for mercury in water drawn from the McNairy Formation (0.0002 mg/l for both) do not exceed any comparison criteria (RBC, 0.00044 mg/l; MCL, 0.002 mg/l; KDEP screening value, 0.011 mg/l).

5.1.32 Mercury, Dissolved

RGA. When summarized over all observations and over averages within wells, the qualitatively determined background concentrations for mercury, dissolved in water drawn from the RGA (0.0002 mg/l for both) do not exceed any comparison criteria (RBC, 0.00044 mg/l; MCL, 0.002 mg/l; KDEP screening value, 0.011 mg/l).

McNairy Formation. When summarized over all observations and over averages within wells, the qualitatively determined background concentrations for mercury, dissolved in water drawn from the McNairy Formation (0.0002 mg/l for both) do not exceed any comparison criteria (RBC, 0.00044 mg/l; MCL, 0.002 mg/l; KDEP screening value, 0.011 mg/l).

5.1.33 Molybdenum

RGA. When summarized over all observations and over averages within wells, the qualitatively determined background concentrations for molybdenum in water drawn from the RGA (0.050 mg/l for both) exceed the RBC (0.0075 mg/l); however, the background concentrations are less than the KDEP screening value (0.180 mg/l). An MCL for molybdenum is not available.

McNairy Formation. When summarized over all observations and over averages within wells, the qualitatively determined background concentrations for molybdenum in water drawn from the McNairy Formation (0.050 mg/l for both) exceed the RBC (0.0075 mg/l); however, the background concentrations are less than the KDEP screening value (0.180 mg/l). An MCL for molybdenum is not available.

5.1.34 Molybdenum, Dissolved

RGA. When summarized over all observations and over averages within wells, the qualitatively determined background concentrations for molybdenum, dissolved in water drawn from the RGA (0.050 mg/l for both) exceed the RBC (0.0075 mg/l); however, the background concentrations are less than the KDEP screening value (0.180 mg/l). An MCL for molybdenum is not available.

McNairy Formation. When summarized over all observations and over averages within wells, the qualitatively determined background concentrations for molybdenum, dissolved in water drawn from the McNairy Formation (0.050 mg/l for both) exceed the RBC (0.0075 mg/l); however, the background

concentrations are less than the KDEP screening value (0.180 mg/l). An MCL for molybdenum is not available.

5.1.35 Nickel

RGA. When summarized over all observations and over averages within wells, the background concentrations for nickel in water drawn from the RGA (0.682 mg/l for both) exceed the RBC and MCL (0.030 and 0.100 mg/l, respectively); however, the two background concentrations are less than the KDEP screening value (0.730 mg/l).

McNairy Formation. When summarized over all observations and over averages within wells, the qualitatively determined background concentrations for nickel in water drawn from the McNairy Formation (0.109 mg/l for both) exceed the RBC and MCL (0.030 and 0.100 mg/l, respectively); however, the two background concentrations are less than the KDEP screening value (0.730 mg/l).

5.1.36 Nickel, Dissolved

RGA. When summarized over all observations and over averages within wells, the background concentrations for nickel, dissolved in water drawn from the RGA (0.305 mg/l for both) exceed the RBC and MCL (0.030 and 0.100 mg/l, respectively); however, the two background concentrations are less than the KDEP screening value (0.730 mg/l).

McNairy Formation. When summarized over all observations and over averages within wells, the qualitatively determined background concentration for nickel, dissolved in water drawn from the McNairy Formation (0.050 mg/l) exceed the RBC (0.030 mg/l); however, the two background concentrations are less than the MCL and the KDEP screening value (0.100 and 0.730 mg/l, respectively).

5.1.37 Nitrate as Nitrogen

RGA. When summarized over all observations and over averages within wells, the background concentrations for nitrate as nitrogen in water drawn from the RGA (15.561 and 13.5 mg/l, respectively) exceed the RBC and MCL (2.40 and 10 mg/l, respectively); however, the two background concentrations are less than the KDEP screening value (58 mg/l).

McNairy Formation. When summarized over all observations and over averages within wells, the background concentrations for nitrate as nitrogen in water drawn from the McNairy Formation (1.47 and 1.43 mg/l, respectively) do not exceed any comparison criteria (RBC, 2.40 mg/l; MCL, 10 mg/l; KDEP screening value, 58 mg/l).

5.1.38 Potassium

RGA. No values are available for comparison. The background concentrations for potassium in water drawn from the RGA when summarized over all observations and over averages within wells are 5.195 and 4.47 mg/l, respectively.

McNairy Formation. No values are available for comparison. The background concentrations for potassium in water drawn from the McNairy Formation when summarized over all observations and over averages within wells are 55.572 and 64.080 mg/l, respectively.

5.1.39 Potassium, Dissolved

RGA. No values are available for comparison. The background concentrations for potassium, dissolved in water drawn from the RGA when summarized over all observations and over averages within wells are 4.096 and 3.70 mg/l, respectively.

McNairy Formation. No values are available for comparison. The background concentrations for potassium, dissolved in water drawn from the McNairy Formation when summarized over all observations and over averages within wells are 51.205 and 58.750 mg/l, respectively.

5.1.40 Selenium

RGA. When summarized over all observations and over averages within wells, the qualitatively determined background concentrations for selenium in water drawn from the RGA (0.005 mg/l for both) do not exceed any comparison criteria (RBC, 0.0075 mg/l; MCL, 0.050 mg/l; KDEP screening value, 0.18 mg/l).

McNairy Formation. When summarized over all observations and over averages within wells, the qualitatively determined background concentrations for selenium in water drawn from the McNairy Formation (0.005 mg/l for both) do not exceed any comparison criteria (RBC, 0.0075 mg/l; MCL, 0.050 mg/l; KDEP screening value, 0.18 mg/l).

5.1.41 Selenium, Dissolved

RGA. When summarized over all observations and over averages within wells, the qualitatively determined background concentrations for selenium, dissolved in water drawn from the RGA (0.005 mg/l for both) do not exceed any comparison criteria (RBC, 0.0075 mg/l; MCL, 0.050 mg/l; KDEP screening value, 0.18 mg/l).

McNairy Formation. When summarized over all observations and over averages within wells, the qualitatively determined background concentrations for selenium, dissolved in water drawn from the McNairy Formation (0.005 mg/l for both) do not exceed any comparison criteria (RBC, 0.0075 mg/l; MCL, 0.050 mg/l; KDEP screening value, 0.18 mg/l).

5.1.42 Silica

RGA. No values are available for comparison. The background concentrations for silica in water drawn from the RGA when summarized over all observations and over averages within wells are 26.401 and 21.1 mg/l, respectively.

McNairy Formation. No values are available for comparison. The background concentrations for silica in water drawn from the McNairy Formation when summarized over all observations and over averages within wells are 26.0 and 29.4 mg/l, respectively.

5.1.43 Silver

RGA. When summarized either over all observation or over averages within wells, the qualitatively determined background concentrations for silver in water drawn from the RGA (0.011 mg/l for both) exceed the RBC (0.0075 mg/l); however, the background concentrations are less than both the MCL and the KDEP screening value (0.100 and 0.18 mg/l, respectively).

McNairy Formation. When summarized over all observations and over averages within wells, the qualitatively determined background concentrations for silver in water drawn from the McNairy Formation (0.050 mg/l for both) exceed the RBC (0.0075 mg/l); however, the background concentrations are less than both the MCL and the KDEP screening value (0.100 and 0.18 mg/l, respectively).

5.1.44 Silver, Dissolved

RGA. When summarized over all observations and over averages within wells, the qualitatively determined background concentrations for silver, dissolved in water drawn from the RGA (0.060 mg/l for both) exceed the RBC (0.0075 mg/l); however, the background concentrations are less than both the MCL and the KDEP screening value (0.100 and 0.18 mg/l, respectively).

McNairy Formation. When summarized over all observations and over averages within wells, the qualitatively determined background concentrations for silver, dissolved in water drawn from the McNairy Formation (0.050 mg/l for both) exceed the RBC (0.0075 mg/l); however, the background concentrations are less than both the MCL and the KDEP screening value (0.100 and 0.18 mg/l, respectively).

5.1.45 Sodium

RGA. No values are available for comparison. The background concentrations for sodium in water drawn from the RGA when summarized over all observations and over averages within wells are 59.450 and 63.5 mg/l, respectively.

McNairy Formation. No values are available for comparison. The background concentrations for sodium in water drawn from the McNairy Formation when summarized over all observations and over averages within wells are 29.2 and 24.92 mg/l, respectively.

5.1.46 Sodium, Dissolved

RGA. No values are available for comparison. The background concentrations for sodium, dissolved in water drawn from the RGA when summarized over all observations and over averages within wells are 60.433 and 65.7 mg/l, respectively.

McNairy Formation. No values are available for comparison. The background concentrations for sodium, dissolved in water drawn from the McNairy Formation when summarized over all observations and over averages within wells are 27.98 and 25.90 mg/l, respectively.

5.1.47 Sulfate

RGA. When summarized over all observations and over averages within wells, the background concentrations for sulfate in water drawn from the RGA (19.947 and 19.1 mg/l, respectively) are less than the MCL (500 mg/l). Neither an RBC nor a KDEP screening value are available for comparison.

McNairy Formation. When summarized over all observations and over averages within wells, the background concentrations for sulfate in water drawn from the McNairy Formation (28.9 and 27.27 mg/l, respectively) are less than the MCL (500 mg/l). Neither an RBC nor a KDEP screening value are available for comparison.

5.1.48 Thallium

RGA. When summarized over all observations and over averages within wells, the qualitatively determined background concentrations for thallium in water drawn from the RGA (0.056 mg/l for both) exceed the MCL (0.002 mg/l). Neither an RBC nor a KDEP screening value are available for comparison.

McNairy Formation. When summarized over all observations and over averages within wells, the background concentrations for thallium in water drawn from the McNairy Formation (0.644 and 0.255 mg/l, respectively) exceed the MCL (0.002 mg/l). Neither an RBC nor a KDEP screening value are available for comparison.

5.1.49 Thallium, Dissolved

RGA. When summarized over all observation and over averages within wells, the qualitatively determined background concentrations for thallium, dissolved in water drawn from the RGA (0.056 mg/l for both) exceed the MCL (0.002 mg/l). Neither an RBC nor a KDEP screening value are available for comparison.

McNairy Formation. When summarized over all observation and over averages within wells, the qualitatively determined background concentrations for thallium, dissolved in water drawn from the RGA (0.056 mg/l for both) exceed the MCL (0.002 mg/l). Neither an RBC nor a KDEP screening value are available for comparison.

5.1.50 Uranium

RGA. When summarized over all observations and over averages within wells, the qualitatively determined background concentrations for uranium in water drawn from the RGA (0.002 mg/l for both) do not exceed any comparison criteria (RBC, 0.0045 mg/l; MCL, 0.020 mg/l; KDEP screening value, 0.11 mg/l).

McNairy Formation. When summarized over all observations and over averages within wells, the qualitatively determined background concentrations for uranium in water drawn from the McNairy Formation (0.001 mg/l for both) do not exceed any comparison criteria (RBC, 0.0045 mg/l; MCL, 0.020 mg/l; KDEP screening value, 0.11 mg/l).

5.1.51 Uranium, Dissolved

RGA. When summarized over all observations and over averages within wells, the qualitatively determined background concentrations for uranium, dissolved in water drawn from the RGA (0.002 mg/l for both) do not exceed any comparison criteria (RBC, 0.0045 mg/l; MCL, 0.020 mg/l; KDEP screening value, 0.11 mg/l).

McNairy Formation. When summarized over all observations and over averages within wells, the background concentrations for uranium, dissolved in water drawn from the McNairy Formation (0.001 mg/l for both) do not exceed any comparison criteria (RBC, 0.0045 mg/l; MCL, 0.020 mg/l; KDEP screening value, 0.11 mg/l).

5.1.52 Vanadium

RGA. When summarized over all observations and over averages within wells, the background concentrations for vanadium in water drawn from the RGA (0.134 and 0.139 mg/l, respectively) exceed the RBC (0.0092 mg/l). Neither an MCL nor a KDEP screening value are available for comparison.

McNairy Formation. When summarized over all observations and over averages within wells, the background concentrations for vanadium in water drawn from the McNairy Formation (0.126 and 0.119 mg/l, respectively) exceed the RBC (0.0092 mg/l). Neither an MCL nor a KDEP screening value are available for comparison.

5.1.53 Vanadium, Dissolved

RGA. When summarized over all observations and over averages within wells, the background concentrations for vanadium, dissolved in water drawn from the RGA (0.134 and 0.131 mg/l, respectively) exceed the RBC (0.0092 mg/l). Neither an MCL nor a KDEP screening value are available for comparison.

McNairy Formation. When summarized over all observations and over averages within wells, the background concentrations for vanadium, dissolved in water drawn from the McNairy Formation (0.126 and 0.107 mg/l, respectively) exceed the RBC (0.0092 mg/l). Neither an MCL nor a KDEP screening value are available for comparison.

5.1.54 Zinc

RGA. When summarized over all observations and over averages within wells, the background concentrations for zinc in water drawn from the RGA (0.054 and 0.025 mg/l, respectively) do not exceed any comparison criteria (RBC, 0.45 mg/l; MCL, 5.0 mg/l; KDEP screening value, 11 mg/l).

McNairy Formation. When summarized over all observations and over averages within wells, the background concentrations for zinc in water drawn from the McNairy Formation (0.142 and 0.104 mg/l, respectively) do not exceed any comparison criteria (RBC, 0.45 mg/l; MCL, 5.0 mg/l; KDEP screening value, 11 mg/l).

5.1.55 Zinc, Dissolved

RGA. When summarized over all observations and over averages within wells, the background concentrations for zinc, dissolved in water drawn from the RGA (0.049 and 0.026 mg/l, respectively) do not exceed any comparison criteria (RBC, 0.45 mg/l; MCL, 5.0 mg/l; KDEP screening value, 11 mg/l).

McNairy Formation. When summarized over all observations and over averages within wells, the background concentrations for zinc in water drawn from the McNairy Formation (0.142 and 0.104 mg/l, respectively) do not exceed any comparison criteria (RBC, 0.45 mg/l; MCL, 5.0 mg/l; KDEP screening value, 11 mg/l).

5.1.56 Gross Alpha

RGA. When summarized over all observation and over averages within wells, the background concentrations for gross alpha in water drawn from the RGA (5.8 and 2.36 pCi/l, respectively) do not exceed the MCL (15 pCi/l). Neither an RBC nor a KDEP screening value are available for comparison.

McNairy Formation. When summarized over all observations and over averages within wells, the background concentrations for gross alpha in water drawn from the McNairy Formation (11.9 and 5.3 pCi/l, respectively) do not exceed the MCL (15 pCi/l). Neither an RBC nor a KDEP screening value are available for comparison.

5.1.57 Gross Beta

RGA. No values are available for comparison. The background concentrations for gross beta in water drawn from the RGA when summarized over all observations and over averages within wells are 13.8 and 7.3 pCi/l, respectively.

McNairy Formation. No values are available for comparison. The background concentrations for gross beta in water drawn from the McNairy Formation when summarized over all observations and over averages within wells are 144.5 and 125.4 pCi/l, respectively.

5.1.58 Neptunium-237

RGA. When summarized over all observations and over averages within wells, the background concentrations for neptunium-237 in water drawn from the RGA (0.8 and 0.21 pCi/l, respectively) exceed the RBC (0.13 pCi/l). Neither an MCL nor a KDEP screening value are available for comparison.

McNairy Formation. When summarized over all observations, the background concentration for neptunium-237 in water drawn from the McNairy Formation (0.5 pCi/l) exceeds the RBC (0.13 pCi/l); however, when summarized over averages within wells, the background concentration (0.13 pCi/l) equals the RBC. Neither an MCL nor a KDEP screening value are available for comparison.

5.1.59 Plutonium-239

RGA. When summarized over all observations and over averages within wells, the background concentrations for plutonium-239 in water drawn from the RGA (0.1 and 0.03 pCi/l, respectively) are less than the RBC (0.12 pCi/l). Neither an MCL nor a KDEP screening value are available for comparison.

McNairy Formation. When summarized over all observations, the background concentration for plutonium-239 in water drawn from the McNairy Formation (0.2 pCi/l) exceeds the RBC (0.12 pCi/l); however, when summarized over averages within wells, the background concentration (0.04 pCi/l) is less than the RBC. Neither an MCL nor a KDEP screening value are available for comparison.

5.1.60 Radium-226

RGA. When summarized over all observations, the background concentration for radium-226 in water drawn from the RGA (0.6 pCi/l) exceeds the RBC (0.13 pCi/l); however, when summarized over averages within wells, the background concentration (0.10 pCi/l) is less than the RBC. Neither background concentration exceeds the MCL (5 pCi/l). A KDEP screening value is not available.

McNairy Formation. When summarized over all observations and over averages within wells, the background concentrations for radium-226 in water drawn from the McNairy Formation (1.2 and 0.29 pCi/l, respectively) exceed the RBC (0.13 pCi/l); however, these background concentrations are less than the MCL (5 pCi/l). A KDEP screening value is not available.

5.1.61 Radon-222

RGA. When summarized over all observations and over averages within wells, the background concentrations for radon-222 in water drawn from the RGA (626 and 555.3 pCi/l, respectively) exceed the RBC and the MCL (1.4 and 300 pCi/l, respectively). A KDEP screening value is not available.

McNairy Formation. When summarized over all observations and over averages within wells, the background concentrations for radon-222 in water drawn from the McNairy Formation (295 and 228.3 pCi/l, respectively) exceed the RBC (1.4 pCi/l); however, these background concentrations are less than the MCL (300 pCi/l). A KDEP screening value is not available.

5.1.62 Technetium-99

RGA. When summarized over all observations and over averages within wells, the background concentrations for technetium-99 in water drawn from the RGA (22.3 and 10.8 pCi/l, respectively) do not exceed the RBC (28.0 pCi/l). Neither an MCL nor a KDEP screening value are available for comparison.

McNairy Formation. When summarized over all observations and over averages within wells, the background concentrations for technetium-99 in water drawn from the McNairy Formation (20.6 and 7.8 pCi/l, respectively) do not exceed the RBC (28.0 pCi/l). Neither an MCL nor a KDEP screening value are available for comparison.

5.1.63 Thorium-230

RGA. When summarized over all observations, the background concentration for thorium-230 in water drawn from the RGA (1.1 pCi/l) exceeds the RBC (1.0 pCi/l); however when summarized over averages within well, the background concentration (0.54 pCi/l) does not exceed the RBC. Neither an MCL nor a KDEP screening value are available for comparison.

McNairy Formation. When summarized over all observations, the background concentration for thorium-230 in water drawn from the McNairy Formation (1.5 pCi/l) exceeds the RBC (1.0 pCi/l); however when summarized over averages within well, the background concentration (0.40 pCi/l) does not exceed the RBC. Neither an MCL nor a KDEP screening value are available for comparison.

5.1.64 Total Radium

RGA. When summarized over all observations and over averages within wells, the background concentrations for total radium in water drawn from the RGA (1.3 and 0.46 pCi/l, respectively) exceed the RBC (0.13 pCi/l); however, both background concentrations are less than the MCL (5 pCi/l). A KDEP screening value is not available for comparison.

McNairy Formation. When summarized over all observations and over averages within wells, the background concentrations for total radium in water drawn from the McNairy Formation (0.7 and 0.36 pCi/l, respectively) exceed the RBC (0.13 pCi/l); however, both background concentrations are less than the MCL (5 pCi/l). A KDEP screening value is not available for comparison.

5.1.65 Uranium-234

RGA. When summarized over all observations and over averages within wells, the background concentrations for uranium-234 in water drawn from the RGA (0.7 pCi/l for both) do not exceed the RBC or MCL (0.87 and 30 pCi/l, respectively). A KDEP screening value is not available for comparison.

McNairy Formation. When summarized over all observations and over averages within wells, the background concentrations for uranium-234 in water drawn from the McNairy Formation (0.3 pCi/l for both) do not exceed the RBC or MCL (0.87 and 30 pCi/l, respectively). A KDEP screening value is not available for comparison.

5.1.66 Uranium-235

RGA. When summarized over all observations and over averages within wells, the background concentrations for uranium-235 in water drawn from the RGA (0.3 pCi/l for both) do not exceed the RBC or MCL (0.82 and 30 pCi/l, respectively). A KDEP screening value is not available for comparison.

McNairy Formation. When summarized over all observations and over averages within wells, the background concentrations for uranium-235 in water drawn from the McNairy Formation (0.2 pCi/l for both) do not exceed the RBC or MCL (0.82 and 30 pCi/l, respectively). A KDEP screening value is not available for comparison.

5.1.67 Uranium-238

RGA. When summarized over all observations and over averages within wells, the background concentrations for uranium-238 in water drawn from the RGA (0.7 pCi/l for both) do exceed the RBC (0.62 pCi/L) but not the MCL (30 pCi/l). A KDEP screening value is not available for comparison.

McNairy Formation. When summarized over all observations and over averages within wells, the background concentrations for uranium-238 in water drawn from the McNairy Formation (0.3 pCi/l for both) do not exceed the RBC or the MCL (0.62 and 30 pCi/l, respectively). A KDEP screening value is not available for comparison.

5.1.68 Summary of Comparisons Between Background Concentrations and RBCs, MCLs, and KDEP Screening Values

In summary, as shown in Fig. 5.1, without considering if the background concentrations were derived quantitatively or qualitatively, 37 of 67 RGA background concentrations derived from all observations, 34 of 67 RGA background concentrations derived from averages within wells, 38 of 67 McNairy Formation background concentrations derived from all observations, and 34 of 67 McNairy Formation background concentrations derived from averages within wells exceed one or more of the risk-based comparison criteria. Of the 37 RGA background concentrations derived from all observations that exceed one or more risk-based criteria, 34 exceed at least the RBC, 18 exceed at least the MCL, and 8 exceed at least the KDEP risk-based screening value. Of the 34 RGA background concentrations derived from averages within wells that exceed one or more risk-based criteria, 31 exceed at least the RBC, 17 exceed at least the MCL, and 8 exceed at least the KDEP risk-based screening value. Of the 38 McNairy Formation background concentrations derived from all observations that exceed one or more risk-based criteria, 34 exceed at least the RBC, 16 exceed at least the MCL, and 10 exceed at least the KDEP risk-based screening value. Of the 34 McNairy Formation background concentrations derived from averages within wells that exceed one or more risk-based criteria, 30 exceed at least the RBC, 16 exceed at least the MCL, and 10 exceed at least the KDEP risk-based screening criteria.

If the method of derivation of the background concentration is considered (i.e., quantitatively versus qualitatively), then a marked proportion of the background concentrations that exceed one or more risk-based criteria are seen to fall within the group of background concentrations that were derived qualitatively. For background concentrations derived qualitatively, 15 of 23 RGA background concentrations derived from all observations, 15 of 23 RGA background concentrations derived from averages within wells, 19 of 26 McNairy Formation background concentrations derived from all observations, and 19 of 26 McNairy Formation background concentrations derived from averages within wells are seen to exceed one or more risk-based comparison criteria. However, for background concentrations derived quantitatively, only 22 of 44 RGA background concentrations derived from all observations, 19 of 44 RGA background concentrations derived from averages within wells, 19 of 41 McNairy Formation background concentrations derived

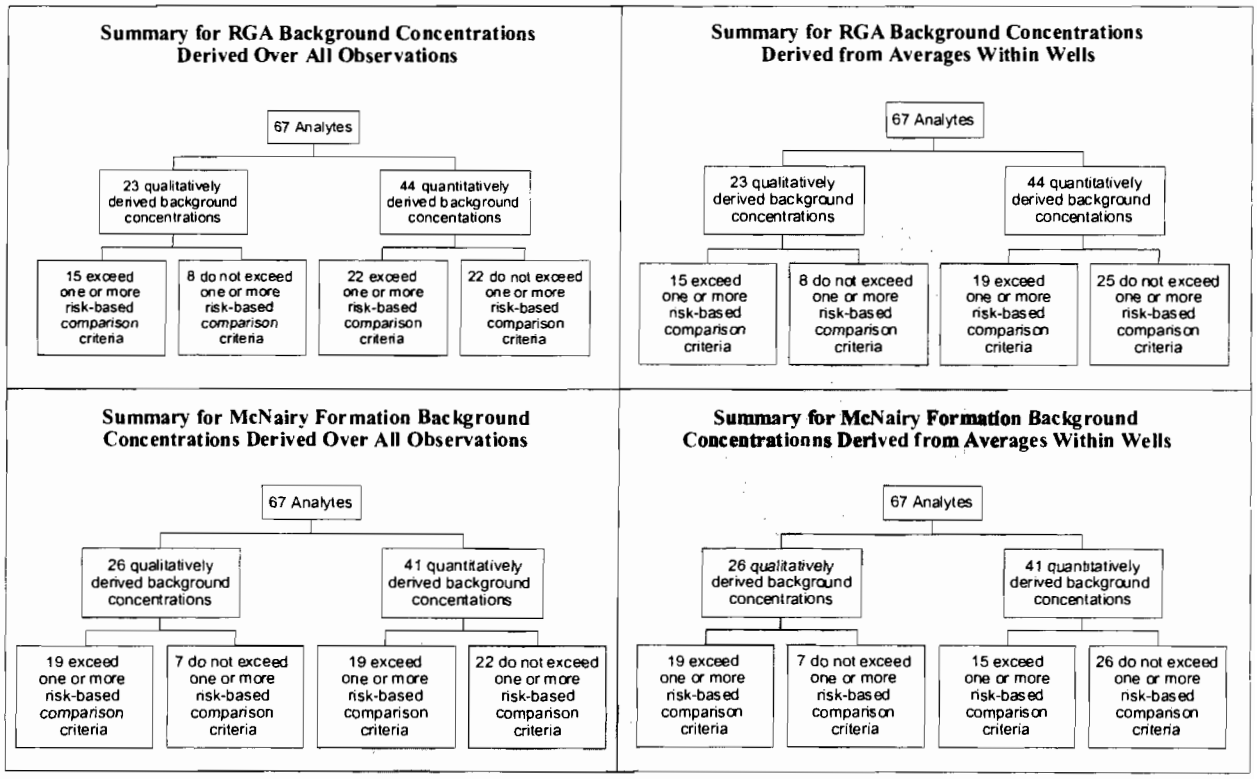


Fig. 5.1. Summary of comparisons of background concentrations to risk-based criteria.

from all observations, and 15 of 41 McNairy Formation Background concentrations derived from averages within wells are seen to exceed one or more risk-based comparison criteria.

Tables 5.5, 5.6, 5.7, and 5.8 illustrate the magnitude by which the background concentrations exceed their risk-based comparison criteria. Values in these tables were derived using the following equation [6]:

$$\text{Value} = \frac{\text{Background Concentration}}{\text{Comparison Criterion}} \qquad \textbf{[6]}$$

Therefore, the values in Tables 5.5, 5.6, 5.7, and 5.8 are the factors by which the background concentrations exceed the comparison criteria.

5.1.68.1 Summary of comparisons to RBCs

As shown in Tables 5.5 and 5.6, the RGA background concentrations that were derived qualitatively over all observations and that are greater than their RBCs are identical with the RGA background concentrations that were derived qualitatively over averages within wells and that are greater than their RBCs. Additionally, the factor by which the background concentrations for each of these analytes exceed their RBC is similar. For both methods of derivation, six RGA background concentrations exceed their RBCs by more than 2 or more orders of magnitude, two RGA background concentrations exceed their RBCs by more than 1 but less than 2 orders of magnitude, and five RGA background concentrations exceed their RBCs by less than 1 order of magnitude. The analytes falling in each of these groups are summarized below.

- Analytes with RGA background concentration derived qualitatively that exceed their RBC by more than 2 orders of magnitude–antimony; antimony, dissolved; arsenic; arsenic, dissolved; beryllium; and beryllium, dissolved.

- Analytes with RGA background concentration derived qualitatively that exceed their RBC by more than 1 but less than 2 orders of magnitude– cadmium and cadmium, dissolved.

- Analytes with RGA background concentrations derived qualitatively that exceed their RBC by less than 1 order of magnitude–chromium, dissolved; molybdenum; molybdenum, dissolved; silver; and silver, dissolved.

As shown in Tables 5.7 and 5.8, the analytes with McNairy Formation background concentrations derived qualitatively over all observations and over averages within well that exceed their RBCs are similar to those for the RGA. When placed in the groups used above, eight McNairy Formation background concentrations are seen to exceed their RBCs by more than 2 or more orders of magnitude, two McNairy Formation background concentrations exceed their RBCs by more than 1 but less than 2 orders of magnitude, and eight McNairy Formation background concentrations exceed their RBCs by less than 1 order of magnitude. Analytes falling within each group are summarized below.

- Analytes with McNairy Formation background concentration derived qualitatively that exceed their RBC by more than 2 orders of magnitude–antimony; antimony, dissolved; arsenic; arsenic, dissolved; beryllium; beryllium, dissolved; lead; and lead, dissolved.

- Analytes with McNairy Formation background concentration derived qualitatively that exceed their RBC by more than 1 but less than 2 orders of magnitude–cadmium and cadmium, dissolved.

Table 5.5. Factors of difference for the comparison of RGA background concentrations derived over all observations against RBCs, MCLs, and Commonwealth of Kentucky risk-based screening values

Analyte	Background[a]	Factor[b]		
		RBC[c]	MCL[d]	KDEP[e]
Inorganic Chemicals (mg/L)				
Aluminum	2.189	1.46	**10.95**	<
Aluminum, Dissolved	0.311	<	1.56	<
Antimony	0.060 †	***107.14***	**10.00**	4.00
Antimony, Dissolved	0.060 †	***107.14***	**10.00**	4.00
Arsenic	0.005 †	***142.86***	=	***131.58***
Arsenic, Dissolved	0.005 †	***142.86***	=	***131.58***
Barium	0.235	2.35	<	<
Barium. Dissolved	0.200	2.00	<	<
Beryllium	0.004 †	***400.00***	=	***250.00***
Beryllium, Dissolved	0.004 †	***400.00***	=	***250.00***
Cadmium	0.010 †	**15.15**	2.00	<
Cadmium, Dissolved	0.010 †	**15.15**	2.00	<
Calcium	41.238	NV	NV	NV
Calcium, Dissolved	38.166	NV	NV	NV
Chloride	91.021	NV	<	NV
Chromium	0.144	**20.28**	1.44	<
Chromium, Dissolved	0.050 †	7.04	<	<
Cobalt	0.045 †	<	NV	NV
Cobalt, Dissolved	0.045 †	<	<	<
Copper	0.036	<	<	<
Copper, Dissolved	0.020	<	<	<
Fluoride	0.270	2.97	<	<
Iron	5.030	**11.18**	**16.77**	NV
Iron, Dissolved	0.267	<	<	<
Lead	0.129	***860,000***	8.60	**32.25**
Lead, Dissolved	0.098	***653,333***	6.30	**24.50**
Magnesium	16.262	NV	NV	NV
Magnesium, Dissolved	16.215	NV	NV	NV
Manganese	0.119	1.78	2.38	<
Manganese, Dissolved	0.068	1.01	1.36	<
Mercury	0.0002 †	<	<	<
Mercury, Dissolved	0.0002 †	<	<	<
Molybdenum	0.050 †	6.67	NV	<
Molybdenum, Dissolved	0.050 †	6.67	NV	<
Nickel	0.682	**22.73**	6.82	<
Nickel, Dissolved	0.305	**10.17**	3.05	<
Nitrate as Nitrogen	15.561	6.48	1.56	<
Potassium	5.195	NV	NV	NV
Potassium, Dissolved	4.096	NV	NV	NV
Selenium	0.005 †	<	<	<
Selenium, Dissolved	0.005 †	<	<	<
Silica	26.401	NV	NV	NV
Silver	0.011 †	1.47	<	<
Silver, Dissolved	0.060 †	8.00	<	<
Sodium	59.450	NV	NV	NV
Sodium, Dissolved	60.433	NV	NV	NV
Sulfate	19.947	NV	<	NV
Thallium	0.056 †	NV	**28.00**	NV
Thallium, Dissolved	0.056 †	NV	**28.00**	NV

Uranium	0.002 †	<	<	<

Table 5.5. Factors of difference for the comparison of RGA background concentrations derived over all observations against RBCs, MCLs, and Commonwealth of Kentucky risk-based screening values (continued)

Analyte	Background[a]	Factor[b]		
		RBC[c]	MCL[d]	KDEP[e]
Inorganic Chemicals (mg/L) (continued)				
Uranium, Dissolved	0.002 †	<	<	<
Vanadium	0.134	**14.57**	NV	NV
Vanadium, Dissolved	0.134	**14.57**	NV	NV
Zinc	0.054	<	<	<
Zinc, Dissolved	0.049	<	<	<
Radionuclides (pCi/L)				
Gross Alpha	5.8	NV	<	NV
Gross Beta	13.8	NV	See footnote[f]	NV
Neptunium-237	0.8	6.15	See footnote[f]	NV
Plutonium-239	0.1	<	See footnote[f]	NV
Radium-226	0.6	4.62	<	NV
Radon-222	626	***447.14***	2.09	NV
Technetium-99	22.3	<	See footnote[f]	NV
Thorium-230	1.1	1.10	See footnote[f]	NV
Total Radium	1.3	**10.00**	<	NV
Uranium-234	0.7	<	<	NV
Uranium-235	0.3	<	<	NV
Uranium-238	0.7	1.13	<	NV

Notes:

Less than sign (<) indicates that background value is less than the comparison criterion. Therefore, the factor is less than 1.
Equal sign (=) indicates that the background value equals the comparison criterion.
NV indicates that a value is not available for the analyte.
Use of bold font indicates that the factor of difference exceeds 1 order of magnitude.
Use of bold, italicized font indicates that the factor of difference exceeds 10 orders of magnitude.

[a] Background concentrations marked with a dagger (†) were derived qualitatively because they were either never detected or were only detected at concentrations near their detection limit. Therefore, the actual background concentrations may be less than the concentrations reported here.
[b] See Equation 6 for the derivation of the factor values.
[c] See Subsect. 4.1 for a discussion of the derivation of the RBCs.
[d] See Subsect 4.2 and footnotes to Table 4.1 for a discussion of the source of the MCLs.
[e] See Subsect. 4.2 for a discussion of the source of the KDEP risk-based screening values.
[f] Factor could not be calculated because a definitive value is not available. See footnote 1 to Table 4.1.

Table 5.6. Factors of difference for the comparison of RGA background concentrations derived over averages within wells against RBCs, MCLs, and Commonwealth of Kentucky risk-based screening values

Analyte	Background[a]	Factor[b]		
		RBC[c]	MCL[d]	KDEP[e]
		Inorganic Chemicals (mg/L)		
Aluminum	1.64	1.09	8.20	<
Aluminum, Dissolved	0.201	<	1.01	<
Antimony	0.060 †	***107.14***	**10.00**	4.00
Antimony, Dissolved	0.060 †	***107.14***	**10.00**	4.00
Arsenic	0.005 †	***142.86***	=	***131.58***
Arsenic, Dissolved	0.005 †	***142.86***	=	***131.58***
Barium	0.202	2.02	<	<
Barium. Dissolved	0.179	1.79	<	<
Beryllium	0.004 †	***400.00***	=	***250.00***
Beryllium, Dissolved	0.004 †	***400.00***	=	***250.00***
Cadmium	0.010 †	**15.15**	2.00	<
Cadmium, Dissolved	0.010 †	**15.15**	2.00	<
Calcium	40.0	NV	NV	NV
Calcium, Dissolved	35.8	NV	NV	NV
Chloride	89.2	NV	<	NV
Chromium	0.134	**18.87**	1.34	<
Chromium, Dissolved	0.050 †	7.04	<	<
Cobalt	0.045 †	<	NV	NV
Cobalt, Dissolved	0.045 †	<	NV	NV
Copper	0.034	<	<	<
Copper, Dissolved	0.018	<	<	<
Fluoride	0.245	2.69	<	<
Iron	3.72	**8.27**	**12.40**	NV
Iron, Dissolved	0.164	<	<	NV
Lead	0.250	***1,666,667***	**16.67**	**62.5**
Lead, Dissolved	0.250	***1,666,667***	**16.67**	**62.5**
Magnesium	15.7	NV	NV	NV
Magnesium, Dissolved	15.4	NV	NV	NV
Manganese	0.082	1.22	1.64	<
Manganese, Dissolved	0.048	<	<	<
Mercury	0.0002 †	<	<	<
Mercury, Dissolved	0.0002 †	<	<	<
Molybdenum	0.050 †	6.67	NV	<
Molybdenum, Dissolved	0.050 †	6.67	NV	<
Nickel	0.682	**22.73**	6.82	<
Nickel, Dissolved	0.305	**10.17**	3.05	<
Nitrate as Nitrogen	13.5	5.63	1.35	<
Potassium	4.47	NV	NV	NV
Potassium, Dissolved	3.70	NV	NV	NV
Selenium	0.005 †	<	<	<
Selenium, Dissolved	0.005 †	<	<	<
Silica	21.1	NV	NV	NV
Silver	0.011 †	1.47	<	<
Silver, Dissolved	0.060 †	8.00	<	<
Sodium	63.5	NV	NV	NV
Sodium, Dissolved	65.7	NV	NV	NV
Sulfate	19.1	NV	<	NV
Thallium	0.056 †	NV	**28.00**	NV
Thallium, Dissolved	0.056 †	NV	**28.00**	NV
Uranium	0.002 †	<	<	<

Table 5.6. Factors of difference for the comparison of RGA background concentrations derived over averages within wells against RBCs, MCLs, and Commonwealth of Kentucky risk-based screening values (continued)

Analyte	Background[a]	Factor[b]		
		RBC[c]	MCL[d]	KDEP[e]
Inorganic Chemicals (mg/L) (continued)				
Uranium, Dissolved	0.002 †	<	<	<
Vanadium	0.139	**15.11**	NV	NV
Vanadium, Dissolved	0.131	**14.24**	NV	NV
Zinc	0.025	<	<	<
Zinc, Dissolved	0.026	<	<	<
Radionuclides (pCi/L)				
Gross Alpha	2.36	NV	<	NV
Gross Beta	7.3	NV	See footnote[f]	NV
Neptunium-237	0.21	1.62	See footnote[f]	NV
Plutonium-239	0.03	<	See footnote[f]	NV
Radium-226	0.10	<	<	NV
Radon-222	555.3	***396.64***	1.85	NV
Technetium-99	10.8	<	See footnote[f]	NV
Thorium-230	0.54	<	See footnote[f]	NV
Total Radium	0.46	3.54	<	NV
Uranium-234	0.7	<	<	NV
Uranium-235	0.3	<	<	NV
Uranium-238	0.7	1.13	<	NV

Notes:

Less than sign (<) indicates that background value is less than the comparison criterion. Therefore, the factor is less than 1.
Equal sign (=) indicates that the background value equals the comparison criterion.
NV indicates that a value is not available for the analyte.
Use of bold font indicates that the factor of difference exceeds 1 order of magnitude.
Use of bold, italicized font indicates that the factor of difference exceeds 10 orders of magnitude.

[a] Background concentrations marked with a dagger (†) were derived qualitatively because they were either never detected or were only detected at concentrations near their detection limit. Therefore, the actual background concentrations may be less than the concentrations reported here.
[b] See Equation 6 for the derivation of the factor values.
[c] See Subsect. 4.1 for a discussion of the derivation of the RBCs.
[d] See Subsect 4.2 and footnotes to Table 4.1 for a discussion of the source of the MCLs.
[e] See Subsect. 4.2 for a discussion of the source of the KDEP risk-based screening values.
[f] Factor could not be calculated because a definitive value is not available. See footnote l to Table 4.1.

Table 5.7. Factors of difference for the comparison of McNairy Formation background concentrations derived over all observations against RBCs, MCLs, and Commonwealth of Kentucky risk-based screening values

Analyte	Background[a]	Factor[b]		
		RBC[c]	MCL[d]	KDEP[e]
		Inorganic Chemicals (mg/L)		
Aluminum	0.687	<	3.44	<
Aluminum, Dissolved	0.579	<	2.90	<
Antimony	0.060 †	***107.14***	**10.00**	400
Antimony, Dissolved	0.060 †	***107.14***	**10.00**	4.00
Arsenic	0.005 †	***142.86***	=	***131.58***
Arsenic, Dissolved	0.005 †	***142.86***	=	***131.58***
Barium	0.296	2.96	<	<
Barium. Dissolved	0.268	2.68	<	<
Beryllium	0.017 †	***1,700.00***	4.25	***1,062.50***
Beryllium, Dissolved	0.004 †	***400.00***	=	***250.00***
Cadmium	0.010 †	**15.15**	2.00	<
Cadmium, Dissolved	0.010 †	**15.15**	2.00	<
Calcium	38.858	NV	NV	NV
Calcium, Dissolved	38.829	NV	NV	NV
Chloride	19.708	NV	<	NV
Chromium	0.060 †	8.45	<	<
Chromium, Dissolved	0.050 †	7.04	<	<
Cobalt	0.096	1.05	NV	NV
Cobalt, Dissolved	0.045 †	<	NV	NV
Copper	0.057	<	<	<
Copper, Dissolved	0.013 †	<	<	<
Fluoride	0.330	3.63	<	<
Iron	18.360	**40.80**	**61.20**	NV
Iron, Dissolved	12.372	**27.49**	**41.24**	NV
Lead	**0.050** †	***333,333***	3.33	**12.50**
Lead, Dissolved	**0.050** †	***333,333***	3.33	**12.50**
Magnesium	**13.418**	NV	NV	NV
Magnesium, Dissolved	**14.171**	NV	NV	NV
Manganese	**0.941**	**14.04**	**18.82**	5.23
Manganese, Dissolved	**0.894**	13.34	17.88	4.97
Mercury	0.0002 †	<	<	<
Mercury, Dissolved	0.0002 †	<	<	<
Molybdenum	**0.050** †	6.67	NV	<
Molybdenum, Dissolved	**0.050** †	6.67	NV	<
Nickel	**0.109** †	3.63	1.09	<
Nickel, Dissolved	**0.050** †	1.67	<	<
Nitrate as Nitrogen	**1.474**	<	<	<
Potassium	**55.752**	NV	NV	NV
Potassium, Dissolved	51.205	NV	NV	NV
Selenium	0.005 †	<	<	<
Selenium, Dissolved	0.005 †	<	<	<
Silica	26.0	NV	NV	NV
Silver	0.050 †	6.67	<	<
Silver, Dissolved	0.050 †	6.67	<	<
Sodium	29.2	NV	NV	NV
Sodium, Dissolved	27.98	NV	NV	NV
Sulfate	28.9	NV	<	NV
Thallium	0.644	NV	***322.00***	NV
Thallium, Dissolved	0.056 †	NV	**28.00**	NV
Uranium	0.001 †	<	<	<

Table 5.7. Factors of difference for the comparison of McNairy Formation background concentrations derived over all observations against RBCs, MCLs, and Commonwealth of Kentucky risk-based screening values (continued)

Analyte	Background[a]	Factor[b]		
		RBC[c]	MCL[d]	KDEP[e]
Inorganic Chemicals (mg/L) (continued)				
Uranium, Dissolved	0.001	<	<	<
Vanadium	0.126	**13.70**	NV	NV
Vanadium, Dissolved	0.126	**13.70**	NV	NV
Zinc	0.142	<	<	<
Zinc, Dissolved	0.116	<	<	<
Radionuclides (pCi/L)				
Gross Alpha	11.9	NV	<	NV
Gross Beta	144.5	NV	See footnote[f]	NV
Neptunium-237	0.5	3.85	See footnote[f]	NV
Plutonium-239	0.2	1.67	See footnote[f]	NV
Radium-226	1.2	9.23	<	NV
Radon-222	295	***210.71***	<	NV
Technetium-99	20.6	<	See footnote[f]	NV
Thorium-230	1.5	1.50	See footnote[f]	NV
Total Radium	0.7	5.38	<	NV
Uranium-234	0.3	<	<	NV
Uranium-235	0.2	<	<	NV
Uranium-238	0.3	<	<	NV

Notes:

Less than sign (<) indicates that background value is less than the comparison criterion. Therefore, the factor is less than 1.
Equal sign (=) indicates that the background value equals the comparison criterion.
NV indicates that a value is not available for the analyte.
Use of bold font indicates that the factor of difference exceeds 1 order of magnitude.
Use of bold, italicized font indicates that the factor of difference exceeds 10 orders of magnitude.

[a] Background concentrations marked with a dagger (†) were derived qualitatively because they were either never detected or were only detected at concentrations near their detection limit. Therefore, the actual background concentrations may be less than the concentrations reported here.
[b] See Equation 6 for the derivation of the factor values.
[c] See Subsect. 4.1 for a discussion of the derivation of the RBCs.
[d] See Subsect. 4.2 and footnotes to Table 4.1 for a discussion of the source of the MCLs.
[e] See Subsect. 4.2 for a discussion of the source of the KDEP risk-based screening values.
[f] Factor could not be calculated because a definitive value is not available. See footnote l to Table 4.1.

Table 5.8. Factors of difference for the comparison of McNairy Formation background concentrations derived over averages within wells against RBCs, MCLs, and Commonwealth of Kentucky risk-based screening values

Analyte	Background[a]	Factor[b]		
		RBC[c]	MCL[d]	KDEP[e]
	Inorganic Chemicals (mg/L)			
Aluminum	0.75	<	3.75	<
Aluminum, Dissolved	0.587	<	2.94	<
Antimony	0.060 †	***107.14***	**10.00**	4.00
Antimony, Dissolved	0.060 †	***107.14***	**10.00**	4.00
Arsenic	0.005 †	***142.86***	=	***131.58***
Arsenic, Dissolved	0.005 †	***142.86***	=	***131.58***
Barium	0.265	2.65	<	<
Barium. Dissolved	0.266	2.66	<	<
Beryllium	0.017 †	***1,700.00***	4.25	***1,062.50***
Beryllium, Dissolved	0.004 †	***400.00***	=	***250.00***
Cadmium	0.010 †	**15.15**	2.00	<
Cadmium, Dissolved	0.010 †	**15.15**	2.00	<
Calcium	39.47	NV	NV	NV
Calcium, Dissolved	40.27	NV	NV	NV
Chloride	20.23	NV	<	NV
Chromium	0.060 †	8.45	<	<
Chromium, Dissolved	0.050 †	7.04	<	<
Cobalt	0.072	<	NV	NV
Cobalt, Dissolved	0.045 †	<	NV	NV
Copper	0.033	<	<	<
Copper, Dissolved	0.013 †	<	<	<
Fluoride	0.298	3.27	<	<
Iron	15.83	**35.18**	**52.77**	NV
Iron, Dissolved	9.446	**20.99**	**31.49**	NV
Lead	**0.050** †	***333,333***	3.33	**12.50**
Lead, Dissolved	**0.050** †	***333,333***	3.33	**12.50**
Magnesium	**16.457**	NV	NV	NV
Magnesium, Dissolved	**16.533**	NV	NV	NV
Manganese	**0.729**	**10.88**	**14.58**	4.05
Manganese, Dissolved	**0.682**	**10.18**	**13.64**	3.79
Mercury	0.0002 †	<	<	<
Mercury, Dissolved	0.0002 †	<	<	<
Molybdenum	0.050 †	6.67	NV	<
Molybdenum, Dissolved	**0.050** †	6.67	NV	<
Nickel	**0.109** †	3.63	1.09	<
Nickel, Dissolved	**0.050** †	1.67	<	<
Nitrate as Nitrogen	**1.43**	<	<	<
Potassium	**64.080**	NV	NV	NV
Potassium, Dissolved	58.750	NV	NV	NV
Selenium	0.005 †	<	<	<
Selenium, Dissolved	0.005 †	<	<	<
Silica	29.4	NV	NV	NV
Silver	0.050 †	6.67	<	<
Silver, Dissolved	0.050 †	6.67	<	<
Sodium	24.92	NV	NV	NV
Sodium, Dissolved	25.90	NV	NV	NV
Sulfate	27.27	NV	<	NV
Thallium	0.255	NV	***127.50***	NV
Thallium, Dissolved	0.056 †	NV	**28.00**	NV
Uranium	0.001 †	<	<	<

Table 5.8. Factors of difference for the comparison of McNairy Formation background concentrations derived over averages within wells against RBCs, MCLs, and Commonwealth of Kentucky risk-based screening values (continued)

Analyte	Background[a]	Factor[b]		
		RBC[c]	MCL[d]	KDEP[e]
Inorganic Chemicals (mg/L) (continued)				
Uranium, Dissolved	0.001	<	<	<
Vanadium	0.119	**12.93**	NV	NV
Vanadium, Dissolved	0.107	**11.63**	NV	NV
Zinc	0.104	<	<	<
Zinc, Dissolved	0.080	<	<	<
Radionuclides (pCi/L)				
Gross Alpha	5.3	NV	<	NV
Gross Beta	125.4	NV	See footnote[f]	NV
Neptunium-237	0.13	=	See footnote[f]	NV
Plutonium-239	0.04	<	See footnote[f]	NV
Radium-226	0.29	2.23	<	NV
Radon-222	228.3	***163.07***	<	NV
Technetium-99	7.8	<	See footnote[f]	NV
Thorium-230	0.40	<	See footnote[f]	NV
Total Radium	0.36	2.77	<	NV
Uranium-234	0.3	<	<	NV
Uranium-235	0.2	<	<	NV
Uranium-238	0.3	<	<	NV

Notes:

Less than sign (<) indicates that background value is less than the comparison criterion. Therefore, the factor is less than 1.
Equal sign (=) indicates that the background value equals the comparison criterion.
NV indicates that a value is not available for the analyte.
Use of bold font indicates that the factor of difference exceeds 1 order of magnitude.
Use of bold, italicized font indicates that the factor of difference exceeds 10 orders of magnitude.

[a] Background concentrations marked with a dagger (†) were derived qualitatively because they were either never detected or were only detected at concentrations near their detection limit. Therefore, the actual background concentrations may be less than the concentrations reported here.
[b] See Equation 6 for the derivation of the factor values.
[c] See Subsect. 4.1 for a discussion of the derivation of the RBCs.
[d] See Subsect. 4.2 and footnotes to Table 4.1 for a discussion of the source of the MCLs.
[e] See Subsect. 4.2 for a discussion of the source of the KDEP risk-based screening values.
[f] Factor could not be calculated because a definitive value is not available. See footnote l to Table 4.1.

- Analytes with McNairy Formation background concentrations derived qualitatively that exceed their RBC by less than 1 order of magnitude–chromium; chromium, dissolved; molybdenum; molybdenum, dissolved; nickel; nickel, dissolved; silver; and silver, dissolved.

As shown in Tables 5.5 and 5.6, the RGA background concentrations that were derived quantitatively over all observations and that are greater than their RBCs are very similar to the RGA background concentrations that were derived quantitatively over averages within wells and that are greater than their RBCs. Additionally, the factor by which the background concentrations for each of these analytes exceed their RBC is similar. For RGA background concentrations derived over all observations, three RGA background concentrations exceed their RBCs by more than 2 or more orders of magnitude, seven RGA background concentrations exceed their RBCs by more than 1 but less than 2 orders of magnitude, and eleven RGA background concentrations exceed their RBCs by less than 1 order of magnitude. For RGA background concentrations derived over averages within wells, three RGA background concentrations exceed their RBCs by more than 2 or more orders of magnitude, six RGA background concentrations exceed their RBCs by more than 1 but less than 2 orders of magnitude, and nine RGA background concentrations exceed this RBCs by less than 1 order of magnitude. The analytes falling in each of these groups are summarized below.

- Analytes with RGA background concentration derived quantitatively that exceed their RBC by more than 2 orders of magnitude–lead; lead, dissolved; and radon-222.

- Analytes with RGA background concentration derived quantitatively that exceed their RBC by more than 1 but less than 2 orders of magnitude–chromium; iron; nickel; nickel, dissolved; vanadium; vanadium, dissolved; and total radium (derived over all observations only).

- Analytes with RGA background concentrations derived quantitatively that exceed their RBC by less than 1 order of magnitude–aluminum; barium; barium, dissolved; fluoride; manganese; manganese, dissolved (derived over all observations only); nitrate as nitrogen; neptunium-237; radium-226 (derived over all observations only); thorium-230 (derived over all observations only); total radium (derived over averages within well only), and uranium-238.

As shown in Tables 5.7 and 5.8, the analytes with McNairy Formation background concentrations derived quantitatively over all observations and over averages within well that exceed their RBCs are similar to those for the RGA. When placed in the groups used above, for values derived over all observations, one McNairy Formation background concentration is seen to exceed its RBC by more than 2 or more orders of magnitude, six McNairy Formation background concentrations exceed their RBCs by more than 1 but less than 2 orders of magnitude, and nine McNairy Formation background concentrations exceed their RBCs by less than 1 order of magnitude. For values derived over averages within wells, one McNairy Formation background concentration is seen to exceed its RBC by more than 2 orders of magnitude, six McNairy Formation background concentrations exceed their RBCs by more than 1 but less than 2 orders of magnitude, and five McNairy Formation background concentrations exceed their RBCs by less than 1 order of magnitude. Analytes falling within each group are summarized below.

- Analytes with McNairy Formation background concentration derived quantitatively that exceed their RBC by more than 2 orders of magnitude–radon-222.

- Analytes with McNairy Formation background concentration derived quantitatively that exceed their RBC by more than 1 but less than 2 orders of magnitude–iron; iron, dissolved; manganese; manganese, dissolved; vanadium; and vanadium, dissolved.

- Analytes with McNairy Formation background concentrations derived quantitatively that exceed their RBC by less than 1 order of magnitude–barium; barium, dissolved; cobalt (derived over all observations

only); fluoride; neptunium-237 (derived over all observations only); plutonium-239 (derived over all observations only); radium-226; thorium-230 (derived over all observations only); and total radium.

5.1.68.2 Summary of comparisons to MCLs

As shown in Tables 5.5 and 5.6, the RGA background concentrations that were derived qualitatively over all observations and that are greater than their MCLs are identical with the RGA background concentrations that were derived qualitatively over averages within wells and that are greater than their MCLs. Additionally, the factor by which the background concentrations for each of these analytes exceed their MCL is similar. For both methods of derivation, unlike comparisons against RBCs, no RGA background concentrations exceed their MCL by more than 2 or more orders of magnitude, four RGA background concentrations exceed their MCL by more than 1 but less than 2 orders of magnitude, and three RGA background concentrations exceed their MCLs by less than 1 order of magnitude. The analytes falling in each of these groups are summarized below.

- Analytes with RGA background concentration derived qualitatively that exceed their MCL by more than 2 orders of magnitude–none.

- Analytes with RGA background concentration derived qualitatively that exceed their MCL by more than 1 but less than 2 orders of magnitude– antimony; antimony, dissolved; thallium; and thallium, dissolved.

- Analytes with RGA background concentrations derived qualitatively that exceed their MCL by less than 1 order of magnitude–cadmium and cadmium, dissolved.

As shown in Tables 5.7 and 5.8, the analytes with McNairy Formation background concentrations derived qualitatively over all observations and over averages within well that exceed their MCL are similar to those for the RGA. When placed in the groups used above, no McNairy Formation background concentrations are seen to exceed their MCL by more than 2 or more orders of magnitude, three McNairy Formation background concentrations exceed their MCL by more than 1 but less than 2 orders of magnitude, and six McNairy Formation background concentrations exceed their MCL by less than 1 order of magnitude. Analytes falling within each group are summarized below.

- Analytes with McNairy Formation background concentration derived qualitatively that exceed their MCL by more than 2 orders of magnitude–none.

- Analytes with McNairy Formation background concentration derived qualitatively that exceed their MCL by more than 1 but less than 2 orders of magnitude–antimony; antimony, dissolved; and thallium, dissolved.

- Analytes with McNairy Formation background concentrations derived qualitatively that exceed their MCL by less than 1 order of magnitude–beryllium; cadmium; cadmium, dissolved; lead; lead, dissolved; and nickel.

As shown in Tables 5.5 and 5.6, the RGA background concentrations that were derived quantitatively over all observations and that are greater than their MCL are somewhat similar to the RGA background concentrations that were derived quantitatively over averages within wells and that are greater than their MCL. Additionally, the factor by which the background concentrations for each of these analytes exceed their MCL is similar. For RGA background concentrations derived over all observations, no RGA background concentrations exceed their MCL by more than 2 or more orders of magnitude, two RGA background concentrations exceed their MCL by more than 1 but less than 2 orders of magnitude, and ten RGA background concentrations exceed their MCL by less than 1 order of magnitude. For RGA background

concentrations derived over averages within wells, no RGA background concentrations exceed their MCL by more than 2 or more orders of magnitude, three RGA background concentrations exceed their MCL by more than 1 but less than 2 orders of magnitude, and eight RGA background concentrations exceed their MCL by less than 1 order of magnitude. The analytes falling in each of these groups are summarized below.

- Analytes with RGA background concentration derived quantitatively that exceed their MCL by more than 2 orders of magnitude–none.

- Analytes with RGA background concentration derived quantitatively that exceed their MCL by more than 1 but less than 2 orders of magnitude–aluminum (derived over all observations only); iron; lead (derived over averages within wells only); lead, dissolved (derived over averages within wells only).

- Analytes with RGA background concentrations derived quantitatively that exceed their MCL by less than 1 order of magnitude–aluminum (derived over averages within wells only); aluminum, dissolved; chromium; lead (derived over all observations only); lead, dissolved (derived over all observations only); manganese; manganese, dissolved (derived over all observations only); nickel; nickel, dissolved; nitrate as nitrogen; radon-222.

As shown in Tables 5.7 and 5.8, the analytes with McNairy Formation background concentrations derived quantitatively over all observations and over averages within well that exceed their MCL are similar to those for the RGA. Additionally, the analytes that are greater than their MCL when derived over all observations are identical to those that are derived over averages within wells. When segregated into the groups used previously, one McNairy Formation background concentration is seen to exceed its MCL by more than 2 or more orders of magnitude, four McNairy Formation background concentrations exceed their MCL by more than 1 but less than 2 orders of magnitude, and two McNairy Formation background concentrations exceed their MCL by less than 1 order of magnitude. The analytes falling within each group are summarized below.

- Analytes with McNairy Formation background concentration derived quantitatively that exceed their MCL by more than 2 orders of magnitude–thallium.

- Analytes with McNairy Formation background concentration derived quantitatively that exceed their MCL by more than 1 but less than 2 orders of magnitude–iron; iron, dissolved; manganese; and manganese, dissolved.

- Analytes with McNairy Formation background concentrations derived quantitatively that exceed their MCL by less than 1 order of magnitude–aluminum and aluminum, dissolved.

5.1.68.3 Summary of comparisons to KDEP risk-based screening values

As shown in Tables 5.5 and 5.6, the RGA background concentrations that were derived qualitatively over all observations and that are greater than their KDEP risk-based screening value are identical with the RGA background concentrations that were derived qualitatively over averages within wells and that are greater than their KDEP risk-based screening value. Additionally, the factor by which the background concentrations for each of these analytes exceed their KDEP risk-based screening value is similar. For both methods of derivation, four RGA background concentrations exceed their KDEP risk-based screening value by more than 2 or more orders of magnitude, no RGA background concentrations exceed their KDEP risk-based screening value by more than 1 but less than 2 orders of magnitude, and two RGA

background concentrations exceed their KDEP risk-based screening value by less than 1 order of magnitude. The analytes falling in each of these groups are summarized below.

- Analytes with RGA background concentration derived qualitatively that exceed their KDEP risk-based screening value by more than 2 orders of magnitude–arsenic; arsenic, dissolved; beryllium; and beryllium, dissolved.

- Analytes with RGA background concentration derived qualitatively that exceed their KDEP risk-based screening value by more than 1 but less than 2 orders of magnitude–none.

- Analytes with RGA background concentrations derived qualitatively that exceed their MCL by less than 1 order of magnitude–antimony and antimony, dissolved.

As shown in Tables 5.7 and 5.8, the analytes with McNairy Formation background concentrations derived qualitatively over all observations and over averages within well that exceed their KDEP risk-based screening value are similar to those for the RGA. When placed in the groups used above, four McNairy Formation background concentrations are seen to exceed their KDEP risk-based screening value by more than 2 or more orders of magnitude, two McNairy Formation background concentrations exceed their KDEP risk-based screening value by more than 1 but less than 2 orders of magnitude, and two McNairy Formation background concentrations exceed their KDEP risk-based screening value by less than 1 order of magnitude. Analytes falling within each group are summarized below.

- Analytes with McNairy Formation background concentration derived qualitatively that exceed their KDEP risk-based screening value by more than 2 orders of magnitude–arsenic; arsenic, dissolved; beryllium; and beryllium, dissolved.

- Analytes with McNairy Formation background concentration derived qualitatively that exceed their KDEP risk-based screening value by more than 1 but less than 2 orders of magnitude–lead and lead, dissolved.

- Analytes with McNairy Formation background concentrations derived qualitatively that exceed their KDEP risk-based screening value by less than 1 order of magnitude–antimony and antimony, dissolved.

As shown in Tables 5.5 and 5.6, the RGA background concentrations that were derived quantitatively over all observations and that are greater than their KDEP risk-based screening value are identical to the RGA background concentrations that were derived quantitatively over averages within wells and that are greater than their MCL. Additionally, the factors by which the background concentrations exceed their KDEP risk-based screening value are similar. For RGA background concentrations derived over all observations and over averages within wells, no RGA background concentrations exceed their KDEP risk-based screening value by more than 2 or more orders of magnitude, two RGA background concentrations exceed their KDEP risk-based screening value by more than 1 but less than 2 orders of magnitude, and no RGA background concentrations exceed their KDEP risk-based screening value by less than 1 order of magnitude. The analytes falling in each of these groups are summarized below.

- Analytes with RGA background concentration derived quantitatively that exceed their KDEP risk-based screening value by more than 2 orders of magnitude–none.

- Analytes with RGA background concentration derived quantitatively that exceed their KDEP risk-based screening value by more than 1 but less than 2 orders of magnitude–lead and lead, dissolved.

- Analytes with RGA background concentrations derived quantitatively that exceed their KDEP risk-based screening value by less than 1 order of magnitude–none.

As shown in Tables 5.7 and 5.8, the analytes with McNairy Formation background concentrations derived quantitatively over all observations and over averages within well that exceed their KDEP risk-based screening value are similar to those for the RGA. Additionally, the analytes that are greater than their KDEP risk-based screening value when derived over all observations are identical to those that are derived over averages within wells. When segregated into the groups used previously, no McNairy Formation background concentration is seen to exceed its KDEP risk-based screening value by more than 2 or more orders of magnitude, no McNairy Formation background concentrations exceed their KDEP risk-based screening value by more than 1 but less than 2 orders of magnitude, and two McNairy Formation background concentrations exceed their KDEP risk-based screening value by less than 1 order of magnitude. The analytes falling within each group are summarized below.

- Analytes with McNairy Formation background concentration derived quantitatively that exceed their KDEP risk-based screening value by more than 2 orders of magnitude–none.

- Analytes with McNairy Formation background concentration derived quantitatively that exceed their KDEP risk-based screening value by more than 1 but less than 2 orders of magnitude–none.

- Analytes with McNairy Formation background concentrations derived quantitatively that exceed their KDEP risk-based screening value by less than 1 order of magnitude–manganese and manganese, dissolved.

5.2 COMPARISON OF BACKGROUND CONCENTRATIONS TO VALUES CONTAINED IN EARLIER REPORTS AND FOUND IN THE OPEN LITERATURE

Tables comparing the background concentrations to values derived in earlier reports or to naturally occurring values found in the open literature are presented on the following pages. In Tables 5.9 and 5.10, the background concentrations derived for the RGA over all observations and over average concentrations within wells, respectively, are compared to these values. In Tables 5.11 and 5.12, the background concentrations derived for the McNairy Formation over all observations and over average concentrations within wells, respectively, are compared to values from the open literature values alone because background concentrations for the McNairy Formation have not been presented previously.

Earlier reports produced for the PGDP providing values are *Baseline Risk Assessment and Technical Investigation Report for the Northwest Dissolved Phase Plume, Paducah Gaseous Diffusion Plant* (DOE 1994a), *Results of the Site Investigation, Phase II, at the Paducah Gaseous Diffusion Plant* (CH2M Hill 1991), and *Inorganic Soil and Groundwater Chemistry Near Paducah Gaseous Diffusion Plant, Paducah, Kentucky* (Moore 1995). Values cited as reference or background values in these reports were derived as follows:

- *Baseline Risk Assessment and Technical Investigation Report for the Northwest Dissolved Phase Plume, Paducah Gaseous Diffusion Plant* (DOE 1994a). In this report, groundwater data were from six wells completed in the RGA. These wells were MW103, MW106, MW141, MW142, MW150, and MW199. (Note that these are the same wells used as background RGA wells in the current report. See Fig. 2.1 for their location.) The metric selected as the reference concentration was twice each analyte's average concentration.

Table 5.9. Comparison between RGA background concentrations over all observations derived in this report and background concentrations derived in the Tech Report, Site Investigation, and Moore Report or drawn from the open literature

Analyte	Background[a]	Source: Tech Report[b]	Site Investigation[c]	Moore Report[d]	Open Literature[e]	Values Exceeded[f]
Inorganic Chemicals (mg/L)						
Aluminum	2.189	2.19	8.880	NV	NV	None
Aluminum, Dissolved	0.311	NV	0.195	NV	0.0001 to 0.1	c, e
Antimony	0.060 †	0.111	ND	0.050	NV	None
Antimony, Dissolved	0.060 †	NV	0.027	NV	0.0001 to 0.1	c
Arsenic	0.005 †	0.011	ND	0.023	NV	None
Arsenic, Dissolved	0.005 †	NV	ND	NV	0.0001 to 0.1	None
Barium	0.235	0.286	0.210	0.15	NV	c, d
Barium, Dissolved	0.200	NV	0.195	NV	0.0001 to 0.1	c, e
Beryllium	0.004 †	0.009	ND	0.003	NV	d
Beryllium, Dissolved	0.004 †	NV	ND	NV	<0.001	e
Cadmium	0.010 †	0.021	ND	0.005	NV	None
Cadmium, Dissolved	0.010 †	NV	ND	NV	0.0001 to 0.1	None
Calcium	41.238	44.2	38.700	NV	NV	c
Calcium, Dissolved	38.166	NV	38.100	NV	1.0 to 1000	c
Chloride	91.021	68.6	NV	NV	1.0 to 1000	b
Chromium	0.144	0.131	0.031	0.040	NV	b, c, d
Chromium, Dissolved	0.050 †	NV	0.002	NV	0.0001 to 0.1	c
Cobalt	0.045 †	0.096	0.008	0.010	NV	c, d
Cobalt, Dissolved	0.045 †	NV	0.005	NV	0.0001 to 0.1	c
Copper	0.036	0.022	0.012	0.090	NV	b, c
Copper, Dissolved	0.020	NV	ND	NV	0.0001 to 0.1	c
Fluoride	0.270	0.354	NV	NV	0.01 to 10.0	None
Iron	5.030	5.06	16.400	NV	NV	None
Iron, Dissolved	0.267	NV	2.04	NV	0.01 to 10.0	None
Lead	0.129	0.104	0.004	0.015	NV	b, c, d
Lead, Dissolved	0.098	NV	ND	NV	0.0001 to 0.1	None
Magnesium	16.262	16.7	15.200	NV	NV	c
Magnesium, Dissolved	16.215	NV	15.0	NV	1.0 to 1000	c
Manganese	0.119	0.159	0.335	NV	NV	None
Manganese, Dissolved	0.068	NV	0.264	NV	0.0001 to 0.1	None
Mercury	0.0002 †	0.0004	ND	0.0002	NV	None
Mercury, Dissolved	0.0002 †	NV	ND	NV	NV	None
Molybdenum	0.050 †	0.100	NV	NV	NV	None
Molybdenum, Dissolved	0.050 †	NV	NV	NV	0.0001 to 0.1	None
Nickel	0.682	0.062	0.010	0.009	NV	b, c, d
Nickel, Dissolved	0.305	NV	0.005	NV	0.0001 to 0.1	c, e
Nitrate as Nitrogen	15.561	6.13	NV	NV	0.01 to 10.0	b, e
Potassium	5.195	6.18	8.510	NV	NV	None
Potassium, Dissolved	4.096	NV	8.850	NV	0.01 to 10.0	None
Selenium	0.005 †	0.009	0.003	0.001	NV	c, d
Selenium, Dissolved	0.005 †	NV	0.003	NV	0.0001 to 0.1	c
Silica	26.401	39.3	NV	NV	NV	None
Silver	0.011 †	0.004	ND	0.010	NV	b, d
Silver, Dissolved	0.060 †	NV	ND	NV	<0.001	e
Sodium	59.450	60.2	97.600	200	NV	None
Sodium, Dissolved	60.433	NV	98.300	NV	1.0 to 1000	None
Sulfate	19.947	19.9	NV	NV	1.0 to 1000	None
Thallium	0.056 †	0.108	ND	0.012	NV	d

Table 5.9. Comparison between RGA background concentrations over all observations derived in this report and background concentrations derived in the Tech Report, Site Investigation, and Moore Report or drawn from the open literature (continued)

Analyte	Background[a]	Source: Tech Report[b]	Site Investigation[c]	Moore Report[d]	Open Literature[e]	Values Exceeded[f]
Inorganic Chemicals (mg/L) (continued)						
Thallium, Dissolved	0.056 †	NV	ND	NV	<0.001	e
Uranium	0.002 †	0.002	NV	NV	NV	None
Uranium, Dissolved	0.002 †	NV	NV	NV	0.0001 to 0.1	None
Vanadium	0.134	0.137	0.005	0.010	NV	c, d
Vanadium, Dissolved	0.134	NV	0.001	NV	0.0001 to 0.1	c, e
Zinc	0.054	0.027	0.116	0.6	NV	b
Zinc, Dissolved	0.049	NV	0.049	NV	0.0001 to 0.1	None
Radionuclides (pCi/L)						
Gross Alpha	5.8	NV	ND	NV	NV	c
Gross Beta	13.8	NV	19	NV	NV	None
Neptunium-237	0.8	NV	ND	NV	NV	c
Plutonium-239	0.1	NV	ND	NV	NV	c
Radium-226	0.6	NV	NV	NV	NV	None
Radon-222	626	NV	NV	NV	NV	None
Technetium-99	22.3	NV	ND	NV	NV	c
Thorium-230	1.1	1.41	0.26	NV	NV	c
Total Radium	1.3	0.938	NV	NV	NV	b
Uranium-234	0.7	1.21	0.53	NV	NV	c
Uranium-235	0.3	0.153	ND	NV	NV	b, c
Uranium-238	0.7	1.04	ND	NV	NV	c

Notes:

NV = No value reported.

ND = Value reported as detection limit in CH2M Hill 1992 (Table 4-2 or 4-3).

[a] Background concentrations marked with a dagger (†) were derived qualitatively because they were either never detected or were only detected at concentrations near their detection limit. Therefore, the actual background concentrations may be less than those reported here.

[b] Values from *Baseline Risk Assessment and Technical Investigation Report for the Northwest Dissolved Phase Plume, Paducah Gaseous Diffusion Plant* (DOE 1994a).

[c] Values from Tables 4-2 and 4-3 in *Results of the Site Investigation, Phase II, at the Paducah Gaseous Diffusion Plant* (CH2M Hill 1991).

[d] Values from Table 9 in *Inorganic Soil and Groundwater Chemistry Near Paducah Gaseous Diffusion Plant, Paducah, Kentucky* (Moore 1995). Although presented here as being for samples drawn from the RGA, Moore states that these background values are "maximum background concentrations in groundwater" at the PGDP.

[e] Values from lists presented in Table 4.2 in *Hydrogeology* (Davis and DeWiest 1966). Note, only dissolved concentrations are presented because total concentrations are highly dependent on methods of sample collection and sample preservation.

[f] Footnote labels attached to previous columns are used to identify values exceeded.

Table 5.10. Comparison between RGA background concentrations over averages within wells derived in this report and background concentrations derived in the Tech Report, Site Investigation, and Moore Report or drawn from the open literature

Analyte	Background[a]	Source: Tech Report[b]	Site Investigation[c]	Moore Report[d]	Open Literature[e]	Values Exceeded[f]
Inorganic Chemicals (mg/L)						
Aluminum	1.64	2.19	8.880	NV	NV	None
Aluminum, Dissolved	0.201	NV	0.195	NV	0.0001 to 0.1	c, e
Antimony	0.060 †	0.111	ND	0.050	NV	d
Antimony, Dissolved	0.060 †	NV	0.027	NV	0.0001 to 0.1	c
Arsenic	0.005 †	0.011	ND	0.023	NV	None
Arsenic, Dissolved	0.005 †	NV	ND	NV	0.0001 to 0.1	None
Barium	0.202	0.286	0.210	0.15	NV	d
Barium, Dissolved	0.179	NV	0.195	NV	0.0001 to 0.1	e
Beryllium	0.004 †	0.009	ND	0.003	NV	d
Beryllium, Dissolved	0.004 †	NV	ND	NV	<0.001	e
Cadmium	0.010 †	0.021	ND	0.005	NV	d
Cadmium, Dissolved	0.010 †	NV	ND	NV	0.0001 to 0.1	None
Calcium	40.0	44.2	38.700	NV	NV	c
Calcium, Dissolved	35.8	NV	38.100	NV	1.0 to 1000	None
Chloride	89.2	68.6	NV	NV	1.0 to 1000	b
Chromium	0.134	0.131	0.031	0.040	NV	b, c, d
Chromium, Dissolved	0.050 †	NV	0.002	NV	0.0001 to 0.1	c
Cobalt	0.045 †	0.096	0.008	0.010	NV	c, d
Cobalt, Dissolved	0.045 †	NV	0.005	NV	0.0001 to 0.1	c
Copper	0.034	0.022	0.012	0.090	NV	b, c
Copper, Dissolved	0.018	NV	ND	NV	0.0001 to 0.1	c
Fluoride	0.245	0.354	NV	NV	0.01 to 10.0	None
Iron	3.72	5.06	16.400	NV	NV	None
Iron, Dissolved	0.164	NV	2.04	NV	0.01 to 10.0	None
Lead	0.250	0.104	0.004	0.015	NV	b, c, d
Lead, Dissolved	0.250	NV	ND	NV	0.0001 to 0.1	c, e
Magnesium	15.7	16.7	15.200	NV	NV	c
Magnesium, Dissolved	15.4	NV	15.0	NV	1.0 to 1000	c
Manganese	0.082	0.159	0.335	NV	NV	None
Manganese, Dissolved	0.048	NV	0.264	NV	0.0001 to 0.1	None
Mercury	0.0002 †	0.0004	ND	0.0002	NV	None
Mercury, Dissolved	0.0002 †	NV	ND	NV	NV	None
Molybdenum	0.050 †	0.100	NV	NV	NV	None
Molybdenum, Dissolved	0.050 †	NV	NV	NV	0.0001 to 0.1	None
Nickel	0.682	0.062	0.010	0.009	NV	b, c, d
Nickel, Dissolved	0.305	NV	0.005	NV	0.0001 to 0.1	c, e
Nitrate as Nitrogen	13.5	6.13	NV	NV	0.01 to 10.0	b, e
Potassium	4.47	6.18	8.510	NV	NV	None
Potassium, Dissolved	3.70	NV	8.850	NV	0.01 to 10.0	None
Selenium	0.005 †	0.009	0.003	0.001	NV	c, d
Selenium, Dissolved	0.005 †	NV	0.003	NV	0.0001 to 0.1	c
Silica	21.1	39.3	NV	NV	NV	None
Silver	0.011 †	0.004	ND	0.010	NV	b, d
Silver, Dissolved	0.060 †	NV	ND	NV	<0.001	e
Sodium	63.5	60.2	97.600	200	NV	b
Sodium, Dissolved	65.7	NV	98.300	NV	1.0 to 1000	None
Sulfate	19.1	19.9	NV	NV	1.0 to 1000	None
Thallium	0.056 †	0.108	ND	0.012	NV	d

Table 5.10. Comparison between RGA background concentrations over averages within wells derived in this report and background concentrations derived in the Tech Report, Site Investigation, and Moore Report or drawn from the open literature (continued)

Analyte	Background[a]	Source: Tech Report[b]	Source: Site Investigation[c]	Source: Moore Report[d]	Source: Open Literature[e]	Values Exceeded[f]
Inorganic Chemicals (mg/L) (continued)						
Thallium, Dissolved	0.056 †	NV	ND	NV	<0.001	e
Uranium	0.002 †	0.002	NV	NV	NV	None
Uranium, Dissolved	0.002 †	NV	NV	NV	0.0001 to 0.1	None
Vanadium	0.139	0.137	0.005	0.010	NV	b, c, d
Vanadium, Dissolved	0.131	NV	0.001	NV	0.0001 to 0.1	c, e
Zinc	0.025	0.027	0.116	0.6	NV	None
Zinc, Dissolved	0.026	NV	0.049	NV	0.0001 to 0.1	None
Radionuclides (pCi/L)						
Gross Alpha	2.36	NV	ND	NV	NV	c
Gross Beta	7.3	NV	19	NV	NV	None
Neptunium-237	0.21	NV	ND	NV	NV	c
Plutonium-239	0.03	NV	ND	NV	NV	c
Radium-226	0.10	NV	NV	NV	NV	None
Radon-222	555.3	NV	NV	NV	NV	None
Technetium-99	10.8	NV	ND	NV	NV	c
Thorium-230	0.54	1.41	0.26	NV	NV	c
Total Radium	0.46	0.938	NV	NV	NV	None
Uranium-234	0.7	1.21	0.53	NV	NV	c
Uranium-235	0.3	0.153	ND	NV	NV	b, c
Uranium-238	0.7	1.04	ND	NV	NV	c

Notes:

NV = No value reported.

ND = Value reported as detection limit in CH2M Hill 1992 (Table 4-2 or 4-3).

[a] Background concentrations marked with a dagger (†) were derived qualitatively because they were either never detected or were only detected at concentrations near their detection limit. Therefore, the actual background concentrations may be less than those reported here.

[b] Values from *Baseline Risk Assessment and Technical Investigation Report for the Northwest Dissolved Phase Plume, Paducah Gaseous Diffusion Plant* (DOE 1994a).

[c] Values from Tables 4-2 and 4-3 in *Results of the Site Investigation, Phase II, at the Paducah Gaseous Diffusion Plant* (CH2M Hill 1991).

[d] Values from Table 9 in *Inorganic Soil and Groundwater Chemistry Near Paducah Gaseous Diffusion Plant, Paducah, Kentucky* (Moore 1995). Although presented here as being for samples drawn from the RGA, Moore states that these background values are "maximum background concentrations in groundwater" at the PGDP.

[e] Values from lists presented in Table 4.2 in *Hydrogeology* (Davis and DeWiest 1966). Note, only dissolved concentrations are presented because total concentrations are highly dependent on methods of sample collection and sample preservation.

[f] Footnote labels attached to previous columns are used to identify values exceeded.

Table 5.11. Comparison between McNairy Formation background concentrations over all observations derived in this report and background concentrations drawn from the open literature

Analyte	Background[a]	Open Literature[b]	Values Exceeded?
	Inorganic Chemicals (mg/L)		
Aluminum	0.687	NV	No
Aluminum, Dissolved	0.579	0.0001 to 0.1	Yes
Antimony	0.060 †	NV	No
Antimony, Dissolved	0.060 †	0.0001 to 0.1	No
Arsenic	0.005 †	NV	No
Arsenic, Dissolved	0.005 †	0.0001 to 0.1	No
Barium	0.296	NV	No
Barium, Dissolved	0.268	0.0001 to 0.1	Yes
Beryllium	0.017 †	NV	No
Beryllium, Dissolved	0.004 †	<0.001	Yes
Cadmium	0.010 †	NV	No
Cadmium, Dissolved	0.010 †	0.0001 to 0.1	No
Calcium	38.858	NV	No
Calcium, Dissolved	38.829	1.0 to 1000	No
Chloride	19.708	1.0 to 1000	No
Chromium	0.060 †	NV	No
Chromium, Dissolved	0.050 †	0.0001 to 0.1	No
Cobalt	0.096	NV	No
Cobalt, Dissolved	0.045 †	0.0001 to 0.1	No
Copper	0.057	NV	No
Copper, Dissolved	0.013 †	0.0001 to 0.1	No
Fluoride	0.330	0.01 to 10.0	No
Iron	18.360	NV	No
Iron, Dissolved	12.372	0.01 to 10.0	Yes
Lead	0.050 †	NV	No
Lead, Dissolved	0.050 †	0.0001 to 0.1	No
Magnesium	13.418	NV	No
Magnesium, Dissolved	14.171	1.0 to 1000	No
Manganese	0.941	NV	No
Manganese, Dissolved	0.894	0.0001 to 0.1	Yes
Mercury	0.0002 †	NV	No
Mercury, Dissolved	0.0002 †	NV	No
Molybdenum	0.050 †	NV	No
Molybdenum, Dissolved	0.050 †	0.0001 to 0.1	No
Nickel	0.109 †	NV	No
Nickel, Dissolved	0.050 †	0.0001 to 0.1	No
Nitrate as Nitrogen	1.474	0.01 to 10.0	No
Potassium	55.752	NV	No
Potassium, Dissolved	51.205	0.01 to 10.0	Yes
Selenium	0.005 †	NV	No
Selenium, Dissolved	0.005 †	0.0001 to 0.1	No
Silica	36.0	NV	No
Silver	0.050 †	NV	No
Silver, Dissolved	0.050 †	<0.001	Yes
Sodium	29.2	NV	No
Sodium, Dissolved	27.98	1.0 to 1000	No
Sulfate	28.9	1.0 to 1000	No
Thallium	0.644	NV	No
Thallium, Dissolved	0.056 †	<0.001	Yes
Uranium	0.001 †	NV	No
Uranium, Dissolved	0.001	0.0001 to 0.1	No

Table 5.11. Comparison between McNairy Formation background concentrations over all observations derived in this report and background concentrations drawn from the open literature (continued)

Analyte	Background[a]	Open Literature[b]	Values Exceeded?
	Inorganic Chemicals (mg/L) (continued)		
Vanadium	0.126	NV	No
Vanadium, Dissolved	0.126	0.0001 to 0.1	Yes
Zinc	0.142	NV	No
Zinc, Dissolved	0.116	0.0001 to 0.1	Yes
Radionuclides (pCi/L)			
Gross Alpha	11.9	NV	No
Gross Beta	144.5	NV	No
Neptunium-237	0.5	NV	No
Plutonium-239	0.2	NV	No
Radium-226	1.2	NV	No
Radon-222	295	NV	No
Technetium-99	20.6	NV	No
Thorium-230	1.5	NV	No
Total Radium	0.7	NV	No
Uranium-234	0.3	NV	No
Uranium-235	0.2	NV	No
Uranium-238	0.3	NV	No

Notes:

NV = No value reported.

[a] Background concentrations marked with a dagger (†) were derived qualitatively because they were either never detected or were only detected at concentrations near their detection limit. Therefore, the actual background concentrations may be less than those reported here.

[b] Values from lists presented in Table 4.2 in *Hydrogeology* (Davis and DeWiest 1966). Note, only dissolved concentrations are presented because total concentrations are highly dependent on methods of sample collection and sample preservation.

Table 5.12. Comparison between McNairy Formation background concentrations over averages within wells derived in this report and background concentrations drawn from the open literature

Analyte	Background[a]	Open Literature[b]	Values Exceeded?
	Inorganic Chemicals (mg/L)		
Aluminum	0.75	NV	No
Aluminum, Dissolved	0.587	0.0001 to 0.1	Yes
Antimony	0.060 †	NV	No
Antimony, Dissolved	0.060 †	0.0001 to 0.1	No
Arsenic	0.005 †	NV	No
Arsenic, Dissolved	0.005 †	0.0001 to 0.1	No
Barium	0.265	NV	No
Barium, Dissolved	0.266	0.0001 to 0.1	Yes
Beryllium	0.017 †	NV	No
Beryllium, Dissolved	0.004 †	<0.001	Yes
Cadmium	0.010 †	NV	No
Cadmium, Dissolved	0.010 †	0.0001 to 0.1	No
Calcium	39.47	NV	No
Calcium, Dissolved	40.27	1.0 to 1000	No
Chloride	20.23	1.0 to 1000	No
Chromium	0.060 †	NV	No
Chromium, Dissolved	0.050 †	0.0001 to 0.1	No
Cobalt	0.072	NV	No
Cobalt, Dissolved	0.045 †	0.0001 to 0.1	No
Copper	0.033	NV	No
Copper, Dissolved	0.013 †	0.0001 to 0.1	No
Fluoride	0.298	0.01 to 10.0	No
Iron	15.83	NV	No
Iron, Dissolved	9.446	0.01 to 10.0	No
Lead	0.050 †	NV	No
Lead, Dissolved	0.050 †	0.0001 to 0.1	No
Magnesium	16.457	NV	No
Magnesium, Dissolved	14.533	1.0 to 1000	No
Manganese	0.729	NV	No
Manganese, Dissolved	0.682	0.0001 to 0.1	Yes
Mercury	0.0002 †	NV	No
Mercury, Dissolved	0.0002 †	NV	No
Molybdenum	0.050 †	NV	No
Molybdenum, Dissolved	0.050 †	0.0001 to 0.1	No
Nickel	0.109 †	NV	No
Nickel, Dissolved	0.050 †	0.0001 to 0.1	No
Nitrate as Nitrogen	1.43	0.01 to 10.0	No
Potassium	64.080	NV	No
Potassium, Dissolved	58.750	0.01 to 10.0	Yes
Selenium	0.005 †	NV	No
Selenium, Dissolved	0.005 †	0.0001 to 0.1	No
Silica	29.4	NV	No
Silver	0.050 †	NV	No
Silver, Dissolved	0.050 †	<0.001	Yes
Sodium	24.92	NV	No
Sodium, Dissolved	25.90	1.0 to 1000	No
Sulfate	27.27	1.0 to 1000	No
Thallium	0.255	NV	No
Thallium, Dissolved	0.056 †	<0.001	Yes
Uranium	0.001 †	NV	No
Uranium, Dissolved	0.001	0.0001 to 0.1	No

Table 5.12. Comparison between McNairy Formation background concentrations over averages within wells derived in this report and background concentrations drawn from the open literature (continued)

Analyte	Background[a]	Open Literature[b]	Values Exceeded?
	Inorganic Chemicals (mg/L) (continued)		
Vanadium	0.119	NV	No
Vanadium, Dissolved	0.107	0.0001 to 0.1	Yes
Zinc	0.104	NV	No
Zinc, Dissolved	0.080	0.0001 to 0.1	No
	Radionuclides (pCi/L)		
Gross Alpha	5.3	NV	No
Gross Beta	125.4	NV	No
Neptunium-237	0.13	NV	No
Plutonium-239	0.04	NV	No
Radium-226	0.29	NV	No
Radon-222	228.3	NV	No
Technetium-99	7.8	NV	No
Thorium-230	0.40	NV	No
Total Radium	0.36	NV	No
Uranium-234	0.3	NV	No
Uranium-235	0.2	NV	No
Uranium-238	0.3	NV	No

Notes:

NV = No value reported.

[a] Background concentrations marked with a dagger (†) were derived qualitatively because they were either never detected or were only detected at concentrations near their detection limit. Therefore, the actual background concentrations may be less than those reported here.

[b] Values from lists presented in Table 4.2 in *Hydrogeology* (Davis and DeWiest 1966). Note, only dissolved concentrations are presented because total concentrations are highly dependent on methods of sample collection and sample preservation.

- *Results of the Site Investigation, Phase II, at the Paducah Gaseous Diffusion Plant* (CH2M Hill 1991). In this report, groundwater data were from six wells completed in both the RGA and the McNairy Formation. These wells were MW120, MW129, MW130, MW131, MW150, and MW196. (Note that MW120 is used as a McNairy Formation background well in the current report and that MW150 is used as a RGA background well in the current report. See Fig. 2.1 for their location. MW129, MW130, and MW131 are located in the same general area as MW120. However, these wells are completed in what is termed Terrace Gravels and not in either the RGA or McNairy Formation. Similarly, MW196 is completed in the Terrace Gravels. This well is located to the south of the plant.) The metric selected as the reference concentration was each analyte's maximum detected concentration.

- *Inorganic Soil and Groundwater Chemistry Near Paducah Gaseous Diffusion Plant, Paducah, Kentucky* (Moore 1995). In this report, all RGA groundwater data previously collected at the PGDP were compiled and density plots were created. The values selected as the maximum background concentration in groundwater were determined from these plots.

5.2.1 Aluminum

RGA. When summarized over all observations and over averages within wells, the background concentrations for aluminum in water drawn from the RGA (2.189 and 1.64 mg/l, respectively) are less than the values reported earlier (Tech Report, 2.19 mg/l; Site Investigation, 8.880 mg/l). A value for aluminum is not available in the Moore Report, and, as discussed in Chapt. 4, because inorganic chemical concentrations in unfiltered samples (i.e., total samples) are highly dependent upon sampling method and sample preparation, values from the open literature are not available for aluminum in total samples.

McNairy Formation. When summarized over all observations and over averages within wells, the background concentrations for aluminum in water drawn from the McNairy Formation are 0.687 and 0.75 mg/l, respectively. As noted above, no values are available for comparison.

5.2.2 Aluminum, Dissolved

RGA. When summarized over all observations and over averages within wells, the background concentrations for aluminum, dissolved in water drawn from the RGA (0.311 and 0.201 mg/l, respectively) exceed value reported earlier in the Site Investigation (0.195 mg/l) and exceed the background range found in the open literature (0.0001 to 0.1 mg/l, respectively). Values for aluminum, dissolved are not available in the Tech Report and the Moore Report.

McNairy Formation. When summarized over all observations and over averages within wells, the background concentrations for aluminum, dissolved in water drawn from the McNairy Formation (0.579 and 0.587 mg/l, respectively) exceed the background range found in the open literature (0.0001 and 0.1 mg/l). As noted earlier, no other values are available for comparison.

5.2.3 Antimony

RGA. When summarized over all observations and over averages within wells, the qualitatively determined background concentrations for antimony in water drawn from the RGA (0.060 mg/l for both) are less than the value reported earlier in the Tech Report (0.111 mg/l) but greater than the value reported in the Moore Report (0.050 mg/l). Like the result derived here which is based upon a detection limit, the result for antimony was reported as a nondetect in the Site Investigation. Also, as discussed in Chapt. 4, because inorganic chemical concentrations in unfiltered samples (i.e., total samples) are highly dependent upon sampling method and sample preparation, values from the open literature are not reported for antimony in total samples.

McNairy Formation. When summarized over all observations and over averages within wells, the background concentrations for antimony in water drawn from the McNairy Formation are 0.060 mg/l for both. As noted above, no values are available for comparison.

5.2.4 Antimony, Dissolved

RGA. When summarized over all observations and over averages within wells, the qualitatively determined background concentrations for antimony, dissolved in water drawn from the RGA (0.060 mg/l for both) exceed the value reported earlier in the Site Investigation (0.027 mg/l) but are within the range found in the open literature (0.0001 to 0.1 mg/l). Values for antimony, dissolved are not available in the Tech Report and the Moore Report.

McNairy Formation. When summarized over all observations and over averages within wells, the qualitatively determined background concentrations for antimony, dissolved in water drawn from the McNairy Formation (0.060 mg/l for both) falls within the background range found in the open literature (0.0001 and 0.1 mg/l). As noted earlier, no other values are available for comparison.

5.2.5 Arsenic

RGA. When summarized over all observations and over averages within wells, the qualitatively determined background concentrations for arsenic in water drawn from the RGA (0.005 mg/l for both) are less than the values reported earlier in the Tech Report and the Moore Report (0.011 and 0.023 mg/l, respectively). Like the background result derived here which is based on a detection limit, the result for arsenic was reported as a nondetect in the Site Investigation. Also, as discussed in Chapt. 4, because inorganic chemical concentrations in unfiltered samples (i.e., total samples) are highly dependent upon sampling method and sample preparation, values from the open literature are not available for arsenic in total samples.

McNairy Formation. When summarized over all observations and over averages within wells, the qualitatively determined background concentrations for arsenic in water drawn from the McNairy Formation are 0.005 mg/l for both. As noted above, no values are available for comparison.

5.2.6 Arsenic, Dissolved

RGA. When summarized over all observations and over averages within wells, the qualitatively determined background concentrations for arsenic, dissolved in water drawn from the RGA (0.005 mg/l for both) are within the range found in the open literature (0.0001 to 0.1 mg/l) and, similar to the result in the Site Investigation, are set at the detection limit. Values for arsenic, dissolved are not available in the Tech Report and the Moore Report.

McNairy Formation. When summarized over all observations and over averages within wells, the qualitatively determined background concentrations for arsenic, dissolved in water drawn from the McNairy Formation (0.005 mg/l for both) fall within the background range found in the open literature (0.0001 and 0.1 mg/l). As noted earlier, no other values are available for comparison.

5.2.7 Barium

RGA. When summarized over all observations, the background concentration for barium in water drawn from the RGA (0.235 mg/l) is less than the value reported earlier in the Tech Report (0.286 mg/l) but is greater than the values reported in the Site Investigation and Moore Report (0.210 and 0.15 mg/l, respectively). However, when summarized over averages within wells, the background concentration for barium in water drawn from the RGA (0.202 mg/l) is less than the values reported in the Tech Report and the

Site Investigation (0.286 and 0.210 mg/l, respectively) but is greater than the value reported in the Moore Report (0.15 mg/l). As discussed in Chapt. 4, because inorganic chemical concentrations in unfiltered samples (i.e., total samples) are highly dependent upon sampling method and sample preparation, values from the open literature are not available for barium in total samples.

McNairy Formation. When summarized over all observations and over averages within wells, the background concentrations for barium in water drawn from the McNairy Formation are 0.296 and 0.265 mg/l, respectively. As noted above, no values are available for comparison.

5.2.8 Barium, Dissolved

RGA. When summarized over all observations, the background concentration for barium, dissolved in water drawn from the RGA (0.200 mg/l) is similar to the value in the Site Investigation (0.195 mg/l) and exceeds the range found in the open literature (0.0001 to 0.1 mg/l). When summarized over averages within wells, the background concentration for barium, dissolved in water drawn from the RGA (0.179 mg/l) is less than the value in the Site Investigation (0.195 mg/l) and exceeds the range found in the open literature (0.0001 to 0.1 mg/l). Values for barium, dissolved are not available in the Tech Report and the Moore Report.

McNairy Formation. When summarized over all observations and over averages within wells, the background concentrations for barium, dissolved in water drawn from the McNairy Formation (0.296 and 0.266 mg/l, respectively) exceed the background range found in the open literature (0.0001 and 0.1 mg/l). As noted earlier, no other values are available for comparison.

5.2.9 Beryllium

RGA. When summarized over all observations and over averages within wells, the qualitatively determined background concentrations for beryllium in water drawn from the RGA (0.0.004 mg/l for both) are less than the value reported earlier in the Tech Report (0.009 mg/l) but are greater than the value reported in the Moore Report (0.003 mg/l). Also, similar to the result in the Site Investigation which reported the background concentration as a nondetect, the background value derived here is set at the detection limit. As discussed in Chapt. 4, because inorganic chemical concentrations in unfiltered samples (i.e., total samples) are highly dependent upon sampling method and sample preparation, values from the open literature are not available for beryllium in total samples.

McNairy Formation. When summarized over all observations and over averages within wells, the qualitatively determined background concentrations for beryllium in water drawn from the McNairy Formation are 0.017 and 0.004 mg/l, respectively. As noted above, no values are available for comparison.

5.2.10 Beryllium, Dissolved

RGA. When summarized over all observations and over averages within wells, the qualitatively determined background concentrations for beryllium, dissolved in water drawn from the RGA (0.004 mg/l for both) are similar to the value in the Site Investigation (i.e., "ND" or nondetect) in that the values derived here are based on a detection limit. However, the background concentrations are greater than the value reported in the open literature (<0.001 mg/l). Values for beryllium, dissolved are not available in the Tech Report and the Moore Report.

McNairy Formation. When summarized over all observations and over averages within wells, the qualitatively determined background concentrations for beryllium, dissolved in water drawn from the McNairy Formation (0.017 and 0.004 mg/l, respectively) exceed the background value found in the open literature (<0.001 mg/l). As noted earlier, no other values are available for comparison.

5.2.11 Cadmium

RGA. When summarized over all observations and over averages within wells, the qualitatively determined background concentrations for cadmium in water drawn from the RGA (0.010 mg/l for both) are less than the value reported earlier in the Tech Report (0.0021 mg/l) but are greater than the value reported in the Moore Report (0.005 mg/l). Also, similar to the result in the Site Investigation which reported the background concentration as a nondetect, the background value derived here is set at the detection limit. As discussed in Chapt. 4, because inorganic chemical concentrations in unfiltered samples (i.e., total samples) are highly dependent upon sampling method and sample preparation, values from the open literature are not available for cadmium in total samples.

McNairy Formation. When summarized over all observations and over averages within wells, the qualitatively determined background concentrations for cadmium in water drawn from the McNairy Formation are 0.010 mg/l for both. As noted above, no values are available for comparison.

5.2.12 Cadmium, Dissolved

RGA. When summarized over all observations and over averages within wells, the qualitatively determined background concentrations for cadmium, dissolved in water drawn from the RGA (0.010 mg/l for both) are similar to the value in the Site Investigation (i.e., "ND" or nondetect) in that the values derived here are based on a detection limit. Also, the background concentrations are within the range of the values reported in the open literature (0.0001 to 0.1 mg/l). Values for cadmium, dissolved are not available in the Tech Report and the Moore Report.

McNairy Formation. When summarized over all observations and over averages within wells, the qualitatively determined background concentrations for cadmium, dissolved in water drawn from the McNairy Formation (0.010 mg/l for both) are within the background range found in the open literature (0.0001 to 0.1 mg/l). As noted earlier, no other values are available for comparison.

5.2.13 Calcium

RGA. When summarized over all observations and over averages within wells, the background concentrations for calcium in water drawn from the RGA (41.238 and 40.0 mg/l, respectively) are less than the value reported earlier in the Tech Report (44.2 mg/l) but are greater than the value reported in the Site Investigation (38.700 mg/l). A value is not available from the Moore Report. As discussed in Chapt. 4, because inorganic chemical concentrations in unfiltered samples (i.e., total samples) are highly dependent upon sampling method and sample preparation, values from the open literature are not available for calcium in total samples.

McNairy Formation. When summarized over all observations and over averages within wells, the background concentrations for calcium in water drawn from the McNairy Formation are 38.858 and 39.47 mg/l, respectively. As noted above, no values are available for comparison.

5.2.14 Calcium, Dissolved

RGA. When summarized over all observations and over averages within wells, the background concentrations for calcium, dissolved in water drawn from the RGA (38.166 and 35.8 mg/l, respectively) are similar to the value in the Site Investigation (38.100 mg/l). Also, the background concentrations are within the range of the values reported in the open literature (1.0 to 1000 mg/l). Values for calcium, dissolved are not available in the Tech Report and the Moore Report.

McNairy Formation. When summarized over all observations and over averages within wells, the background concentrations for calcium, dissolved in water drawn from the McNairy Formation (38.829 and 40.27 mg/l, respectively) fall within the range of values reported in the open literature (1.0 to 1000 mg/l). As noted earlier, no other values are available for comparison.

5.2.15 Chloride

RGA. When summarized over all observations and over averages within wells, the background concentrations for chloride in water drawn from the RGA (91.021 and 89.2 mg/l, respectively) are greater than the value reported earlier in the Tech Report (68.6 mg/l) but fall within the range of values reported in the open literature (1.0 to 1000 mg/l). Values are not available from the Site Investigation and the Moore Report.

McNairy Formation. When summarized over all observations and over averages within wells, the background concentrations for chloride in water drawn from the McNairy Formation (19.708 and 20.23 mg/l, respectively) fall within the range of values found in the open literature (1.0 to 1000 mg/l). As noted above, no other values are available for comparison.

5.2.16 Chromium

RGA. When summarized over all observations and over averages within wells, the background concentrations for chromium in water drawn from the RGA (0.144 and 0.134 mg/l, respectively) are greater than the values found in earlier reports (Tech Report, 0.131 mg/l; Site Investigation 0.031 mg/l; Moore Report 0.040 mg/l). As discussed in Chapt. 4, because inorganic chemical concentrations in unfiltered samples (i.e., total samples) are highly dependent upon sampling method and sample preparation, values from the open literature are not available for chromium in total samples.

McNairy Formation. When summarized over all observations and over averages within wells, the qualitatively determined background concentrations for chromium in water drawn from the McNairy Formation are 0.060 mg/l for both. As noted above, no values are available for comparison.

5.2.17 Chromium, Dissolved

RGA. When summarized over all observations and over averages within wells, the qualitatively determined background concentrations for chromium, dissolved in water drawn from the RGA (0.050 mg/l for both) are greater than the value in the Site Investigation (0.002 mg/l). However, the background concentrations are within the range of the values reported in the open literature (0.0001 to 0.1 mg/l). Values for chromium, dissolved are not available in the Tech Report and the Moore Report.

McNairy Formation. When summarized over all observations and over averages within wells, the qualitatively determined background concentrations for chromium, dissolved in water drawn from the McNairy Formation (0.050 mg/l for both) fall within the range of values reported in the open literature (0.0001 to 0.1 mg/l). As noted earlier, no other values are available for comparison.

5.2.18 Cobalt

RGA. When summarized over all observations and over averages within wells, the qualitatively determined background concentrations for cobalt in water drawn from the RGA (0.045 mg/l for both) are less than the value found in the Tech Report (0.096 mg/l) but are greater than the values found in the Site Investigation and the Moore Report (0.008 and 0.010 mg/l, respectively). As discussed in Chapt. 4, because inorganic chemical concentrations in unfiltered samples (i.e., total samples) are highly dependent upon sampling method and sample preparation, values from the open literature are not available for cobalt in total samples.

McNairy Formation. When summarized over all observations and over averages within wells, the background concentrations for cobalt in water drawn from the McNairy Formation are 0.096 and 0.072 mg/l, respectively. As noted above, no values are available for comparison.

5.2.19 Cobalt, Dissolved

RGA. When summarized over all observations and over averages within wells, the qualitatively determined background concentrations for cobalt, dissolved in water drawn from the RGA (0.045 mg/l for both) are greater than the value in the Site Investigation (0.005 mg/l). However, the background concentrations are within the range of the values reported in the open literature (0.0001 to 0.1 mg/l). Values for cobalt, dissolved are not available in the Tech Report and the Moore Report.

McNairy Formation. When summarized over all observations and over averages within wells, the qualitatively determined background concentrations for cobalt, dissolved in water drawn from the McNairy Formation (0.045 mg/l for both) fall within the range of values reported in the open literature (0.0001 to 0.1 mg/l). As noted earlier, no other values are available for comparison.

5.2.20 Copper

RGA. When summarized over all observations and over averages within wells, the background concentrations for copper in water drawn from the RGA (0.036 and 0.034 mg/l, respectively) are greater than the values found in the Tech Report and Site Investigation (0.022 and 0.012 mg/l, respectively) but are less than the value found in the Moore Report (0.090 mg/l, respectively). As discussed in Chapt. 4, because inorganic chemical concentrations in unfiltered samples (i.e., total samples) are highly dependent upon sampling method and sample preparation, values from the open literature are not available for copper in total samples.

McNairy Formation. When summarized over all observations and over averages within wells, the background concentrations for copper in water drawn from the McNairy Formation are 0.057 and 0.033 mg/l, respectively. As noted above, no values are available for comparison.

5.2.21 Copper, Dissolved

RGA. When summarized over all observations and over averages within wells, the background concentrations for copper, dissolved in water drawn from the RGA (0.020 and 0.018 mg/l, respectively) differ from the value in the Site Investigation ("ND" or nondetect) in that the background concentrations derived here are not based upon the detection limit. However, the background concentrations are within the range of the values reported in the open literature (0.0001 to 0.1 mg/l). Values for copper, dissolved are not available in the Tech Report and the Moore Report.

McNairy Formation. When summarized over all observations and over averages within wells, the qualitatively determined background concentrations for copper, dissolved in water drawn from the McNairy Formation (0.013 mg/l for both) fall within the range of values reported in the open literature (0.0001 to 0.1 mg/l). As noted earlier, no other values are available for comparison.

5.2.22 Fluoride

RGA. When summarized over all observations and over averages within wells, the background concentrations for fluoride in water drawn from the RGA (0.270 and 0.245 mg/l, respectively) are less than the value reported earlier in the Tech Report (0.354 mg/l) but fall within the range of values reported

in the open literature (0.01 to 10.0 mg/l). Values are not available from the Site Investigation and the Moore Report.

McNairy Formation. When summarized over all observations and over averages within wells, the background concentrations for fluoride in water drawn from the McNairy Formation (0.330 and 0.298 mg/l, respectively) fall within the range of values found in the open literature (0.01 to 10.0 mg/l). As noted above, no other values are available for comparison.

5.2.23 Iron

RGA. When summarized over all observations and over averages within wells, the background concentrations for iron in water drawn from the RGA (5.030 and 3.72 mg/l, respectively) are less than the values found in the Tech Report and Site Investigation (5.06 and 16.400 mg/l, respectively). A value is not available in the Moore Report. As discussed in Chapt. 4, because inorganic chemical concentrations in unfiltered samples (i.e., total samples) are highly dependent upon sampling method and sample preparation, values from the open literature are not available for iron in total samples.

McNairy Formation. When summarized over all observations and over averages within wells, the background concentrations for iron in water drawn from the McNairy Formation are 18.360 and 15.83 mg/l, respectively. As noted above, no values are available for comparison.

5.2.24 Iron, Dissolved

RGA. When summarized over all observations and over averages within wells, the background concentrations for iron, dissolved in water drawn from the RGA (0.267 and 0.164 mg/l, respectively) are less than the value in the Site Investigation (2.04 mg/l). Also, the background concentrations are within the range of the values reported in the open literature (0.01 to 10.0 mg/l). Values for iron, dissolved are not available in the Tech Report and the Moore Report.

McNairy Formation. When summarized over all observations and over averages within wells, the background concentrations for iron, dissolved in water drawn from the McNairy Formation (12.372 and 9.446 mg/l, respectively) are near the upper end of the range of values reported in the open literature (0.01 to 10.0 mg/l). As noted earlier, no other values are available for comparison.

5.2.25 Lead

RGA. When summarized over all observations and over averages within wells, the background concentrations for lead in water drawn from the RGA (0.129 and 0.250 mg/l, respectively) are greater than the values found in earlier reports (Tech Report, 0.104 mg/l; Site Investigation, 0.004; Moore Report 0.015 mg/l). As discussed in Chapt. 4, because inorganic chemical concentrations in unfiltered samples (i.e., total samples) are highly dependent upon sampling method and sample preparation, values from the open literature are not available for lead in total samples.

McNairy Formation. When summarized over all observations and over averages within wells, the qualitatively determined background concentrations for lead in water drawn from the McNairy Formation are 0.050 mg/l for both. As noted above, no values are available for comparison.

5.2.26 Lead, Dissolved

RGA. When summarized over all observations and over averages within wells, the background concentrations for lead, dissolved in water drawn from the RGA (0.098 and 0.250 mg/l, respectively) and

unlike those reported in the Site Investigation ("ND" or nondetect) are not based upon a detection limit. The background level derived over all observations (0.098 mg/l) is similar to the upper end of the range of values found in the open literature (0.0001 to 0.1 mg/l), but the background level derived over averages within wells (0.250 mg/l) exceeds this range. Values for lead, dissolved are not available in the Tech Report and the Moore Report.

McNairy Formation. When summarized over all observations and over averages within wells, the qualitatively determined background concentrations for lead, dissolved in water drawn from the McNairy Formation (0.050 mg/l for both) are within the range of values reported in the open literature (0.0001 to 0.1 mg/l). As noted earlier, no other values are available for comparison.

5.2.27 Magnesium

RGA. When summarized over all observations and over averages within wells, the background concentrations for magnesium in water drawn from the RGA (16.262 and 15.7 mg/l, respectively) are similar to values found in the Tech Report and Site Investigation (16.7 and 15.200 mg/l, respectively). A value was not available in the Moore Report. As discussed in Chapt. 4, because inorganic chemical concentrations in unfiltered samples (i.e., total samples) are highly dependent upon sampling method and sample preparation, values from the open literature are not available for magnesium in total samples.

McNairy Formation. When summarized over all observations and over averages within wells, the background concentrations for magnesium in water drawn from the McNairy Formation are 13.418 and 16.457 mg/l, respectively. As noted above, no values are available for comparison.

5.2.28 Magnesium, Dissolved

RGA. When summarized over all observations and over averages within wells, the background concentrations for magnesium, dissolved in water drawn from the RGA (16.215 and 15.4 mg/l, respectively) are similar to but greater than the value in the Site Investigation (15.0 mg/l). The background concentrations are within the range of the values reported in the open literature (1.0 to 1000 mg/l). Values for magnesium, dissolved are not available in the Tech Report and the Moore Report.

McNairy Formation. When summarized over all observations and over averages within wells, the background concentrations for magnesium, dissolved in water drawn from the McNairy Formation (14.171 and 14.533 mg/l for both) are within the range of values reported in the open literature (1.0 to 1000 mg/l). As noted earlier, no other values are available for comparison.

5.2.29 Manganese

RGA. When summarized over all observations and over averages within wells, the background concentrations for manganese in water drawn from the RGA (0.119 and 0.082 mg/l, respectively) are less than values found in the Tech Report and Site Investigation (0.159 and 0.335 mg/l, respectively). A value was not available in the Moore Report. As discussed in Chapt. 4, because inorganic chemical concentrations in unfiltered samples (i.e., total samples) are highly dependent upon sampling method and sample preparation, values from the open literature are not available for manganese in total samples.

McNairy Formation. When summarized over all observations and over averages within wells, the background concentrations for manganese in water drawn from the McNairy Formation are 0.941 and 0.729 mg/l, respectively. As noted above, no values are available for comparison.

5.2.30 Manganese, Dissolved

RGA. When summarized over all observations and over averages within wells, the background concentrations for manganese, dissolved in water drawn from the RGA (0.068 and 0.048 mg/l, respectively) are less than the value in the Site Investigation (0.264 mg/l). The background concentrations are within the range of the values reported in the open literature (0.0001 to 0.1 mg/l). Values for manganese, dissolved are not available in the Tech Report and the Moore Report.

McNairy Formation. When summarized over all observations and over averages within wells, the background concentrations for manganese, dissolved in water drawn from the McNairy Formation (0.894 and 0.682 mg/l, respectively) fall outside the range of values reported in the open literature (0.0001 to 0.1 mg/l). As noted earlier, no other values are available for comparison.

5.2.31 Mercury

RGA. When summarized over all observations and over averages within wells, the qualitatively determined background concentrations for mercury in water drawn from the RGA (0.0002 mg/l for both) are less than value found in the Tech Report (0.004 mg/l) and equal to the value in the Moore Report (0.0002 mg/l). Also, like the value in the Site Investigation ("ND" or nondetect), the background concentrations derived here are based upon the detection limit. As discussed in Chapt. 4, because inorganic chemical concentrations in unfiltered samples (i.e., total samples) are highly dependent upon sampling method and sample preparation, values from the open literature are not available for mercury in total samples.

McNairy Formation. When summarized over all observations and over averages within wells, the qualitatively determined background concentrations for mercury in water drawn from the McNairy Formation are 0.0002 mg/l for both. As noted above, no values are available for comparison.

5.2.32 Mercury, Dissolved

RGA. When summarized over all observations and over averages within wells, the qualitatively determined background concentrations for mercury, dissolved in water drawn from the RGA (0.0002 mg/l for both), like that in the Site Investigation ("ND" or nondetect), are based upon a detection limit. Values for mercury, dissolved are not available for comparison in the Tech Report, the Moore Report, or open literature.

McNairy Formation. When summarized over all observations and over averages within wells, the qualitatively determined background concentrations for mercury, dissolved in water drawn from the McNairy Formation are 0.0002 mg/l for both. A value from the open literature was not available for comparison.

5.2.33 Molybdenum

RGA. When summarized over all observations and over averages within wells, the qualitatively determined background concentrations for molybdenum in water drawn from the RGA (0.50 mg/l for both) are less than value found in the Tech Report (0.100 mg/l). Values are not available in the Site Investigation and the Moore Report. Also, as discussed in Chapt. 4, because inorganic chemical concentrations in unfiltered samples (i.e., total samples) are highly dependent upon sampling method and sample preparation, values from the open literature are not available for molybdenum in total samples.

McNairy Formation. When summarized over all observations and over averages within wells, the qualitatively determined background concentrations for molybdenum in water drawn from the McNairy Formation are 0.050 mg/l for both. As noted above, no values are available for comparison.

5.2.34 Molybdenum, Dissolved

RGA. When summarized over all observations and over averages within wells, the qualitatively determined background concentrations for molybdenum, dissolved in water drawn from the RGA (0.050 mg/l for both) are within the range of values found in the open literature (0.0001 to 0.1 mg/l). Values for molybdenum, dissolved are not available in earlier reports.

McNairy Formation. When summarized over all observations and over averages within wells, the qualitatively determined background concentrations for molybdenum, dissolved in water drawn from the McNairy Formation (0.050 mg/l for both) are within the range of values reported in the open literature (0.0001 to 0.1 mg/l). As noted earlier, no other values are available for comparison.

5.2.35 Nickel

RGA. When summarized over all observations and over averages within wells, the background concentrations for nickel in water drawn from the RGA (0.682 mg/l for both) are greater than the values found in earlier reports (Tech Report, 0.062 mg/l; Site Investigation, 0.010 mg/l; Moore Report, 0.009 mg/l). As discussed in Chapt. 4, because inorganic chemical concentrations in unfiltered samples (i.e., total samples) are highly dependent upon sampling method and sample preparation, values from the open literature are not available for nickel in total samples.

McNairy Formation. When summarized over all observations and over averages within wells, the qualitatively determined background concentrations for nickel in water drawn from the McNairy Formation are 0.109 mg/l for both. As noted above, no values are available for comparison.

5.2.36 Nickel, Dissolved

RGA. When summarized over all observations and over averages within wells, the background concentrations for nickel, dissolved in water drawn from the RGA (0.305 mg/l for both) are greater than the value reported in the Site Investigation (0.005 mg/l) and outside the range of values found in the open literature (0.0001 to 0.1 mg/l). Values for nickel, dissolved are not available in the Tech Report and the Moore Report.

McNairy Formation. When summarized over all observations and over averages within wells, the qualitatively determined background concentrations for nickel, dissolved in water drawn from the McNairy Formation (0.050 mg/l for both) are within the range of values reported in the open literature (0.0001 to 0.1 mg/l). As noted earlier, no other values are available for comparison.

5.2.37 Nitrate as Nitrogen

RGA. When summarized over all observations and over averages within wells, the background concentrations for nitrate as nitrogen in water drawn from the RGA (15.561 and 13.5 mg/l, respectively) are greater than the value reported earlier in the Tech Report (6.13 mg/l) and fall outside the range of values reported in the open literature (0.01 to 10.0 mg/l). Values are not available from the Site Investigation and the Moore Report.

McNairy Formation. When summarized over all observations and over averages within wells, the background concentrations for nitrate as nitrogen in water drawn from the McNairy Formation (1.474 and 1.43 mg/l, respectively) fall within the range of values found in the open literature (0.01 to 10.0 mg/l). As noted above, no other values are available for comparison.

5.2.38 Potassium

RGA. When summarized over all observations and over averages within wells, the background concentrations for potassium in water drawn from the RGA (5.195 and 4.47 mg/l, respectively) are less than the values found in the Tech Report and Site Investigation (6.18 and 8.510 mg/l, respectively). As discussed in Chapt. 4, because inorganic chemical concentrations in unfiltered samples (i.e., total samples) are highly dependent upon sampling method and sample preparation, values from the open literature are not available for potassium in total samples.

McNairy Formation. When summarized over all observations and over averages within wells, the background concentrations for potassium in water drawn from the McNairy Formation are 55.752 and 64.080 mg/l, respectively. As noted above, no values are available for comparison.

5.2.39 Potassium, Dissolved

RGA. When summarized over all observations and over averages within wells, the background concentrations for potassium, dissolved in water drawn from the RGA (4.096 and 3.70 mg/l, respectively) are less than the value reported in the Site Investigation (8.850 mg/l) and within the range of values found in the open literature (0.01 to 10.0 mg/l). Values for potassium, dissolved are not available in the Tech Report and the Moore Report.

McNairy Formation. When summarized over all observations and over averages within wells, the background concentrations for potassium, dissolved in water drawn from the McNairy Formation (51.205 and 58.750, respectively) fall outside the range of values reported in the open literature (0.01 to 10.0 mg/l). As noted earlier, no other values are available for comparison.

5.2.40 Selenium

RGA. When summarized over all observations and over averages within wells, the qualitatively determined background concentrations for selenium in water drawn from the RGA (0.005 mg/l for both) are less than the value found in the Tech Report (0.009 mg/l) but greater than the values found in the Site Investigation and Moore Report (0.003 and 0.001 mg/l, respectively). As discussed in Chapt. 4, because inorganic chemical concentrations in unfiltered samples (i.e., total samples) are highly dependent upon sampling method and sample preparation, values from the open literature are not available for selenium in total samples.

McNairy Formation. When summarized over all observations and over averages within wells, the qualitatively determined background concentrations for selenium in water drawn from the McNairy Formation are 0.005 mg/l for both. As noted above, no other values are available for comparison.

5.2.41 Selenium, Dissolved

RGA. When summarized over all observations and over averages within wells, the qualitatively determined background concentrations for selenium, dissolved in water drawn from the RGA (0.005 mg/l for both) are greater than the value reported in the Site Investigation (0.003 mg/l) but within the range of values found in the open literature (0.0001 to 0.1 mg/l). Values for selenium, dissolved are not available in the Tech Report and the Moore Report.

McNairy Formation. When summarized over all observations and over averages within wells, the qualitatively determined background concentrations for selenium, dissolved in water drawn from the

McNairy Formation (0.050 mg/l for both) are within the range of values reported in the open literature (0.0001 to 0.1 mg/l). As noted earlier, no other values are available for comparison.

5.2.42 Silica

RGA. When summarized over all observations and over averages within wells, the background concentrations for silica in water drawn from the RGA (26.401 and 21.1 mg/l, respectively) are less than the value reported earlier in the Tech Report (39.3 mg/l). Values are not available from the Site Investigation, the Moore Report, or the open literature.

McNairy Formation. When summarized over all observations and over averages within wells, the background concentrations for silica in water drawn from the McNairy Formation are 36.0 and 29.4 mg/l, respectively. No values are available for comparison.

5.2.43 Silver

RGA. When summarized over all observations and over averages within wells, the qualitatively determined background concentrations for silver in water drawn from the RGA (0.011 mg/l for both) are greater than the values found in the Tech Report and Moore Report (0.004 and 0.010 mg/l, respectively). The value in the Site Investigation is reported as "ND" or nondetect. As discussed in Chapt. 4, because inorganic chemical concentrations in unfiltered samples (i.e., total samples) are highly dependent upon sampling method and sample preparation, values from the open literature are not available for selenium in total samples.

McNairy Formation. When summarized over all observations and over averages within wells, the qualitatively determined background concentrations for silver in water drawn from the McNairy Formation are 0.050 mg/l for both. As noted above, no values are available for comparison.

5.2.44 Silver, Dissolved

RGA. When summarized over all observations and over averages within wells, the qualitatively determined background concentrations for silver, dissolved in water drawn from the RGA (0.060 mg/l for both) are similar to the value reported in the Site Investigation ("ND" or nondetect) in that the value derived here is also based upon a detection limit. The background concentrations fall outside the range of values found in the open literature (<0.001 mg/l). Values for silver, dissolved are not available in the Tech Report and the Moore Report.

McNairy Formation. When summarized over all observations and over averages within wells, the qualitatively determined background concentrations for silver, dissolved in water drawn from the McNairy Formation (0.060 mg/l for both) fall outside the range of values reported in the open literature (<0.001 mg/l). As noted earlier, no other values are available for comparison.

5.2.45 Sodium

RGA. When summarized over all observations and over averages within wells, the background concentrations for sodium in water drawn from the RGA (59.450 and 63.5 mg/l, respectively) are similar to the value found in the Tech Report (60.2 mg/l) but less than the values found in the Site Investigation and Moore Report (97.600 and 200 mg/l, respectively). As discussed in Chapt. 4, because inorganic chemical concentrations in unfiltered samples (i.e., total samples) are highly dependent upon sampling method and sample preparation, values from the open literature are not available for sodium in total samples.

McNairy Formation. When summarized over all observations and over averages within wells, the background concentrations for sodium in water drawn from the McNairy Formation are 29.2 and 24.92 mg/l, respectively. As noted above, no values are available for comparison.

5.2.46 Sodium, Dissolved

RGA. When summarized over all observations and over averages within wells, the background concentrations for sodium, dissolved in water drawn from the RGA (60.433 and 65.7 mg/l, respectively) are less than the value reported in the Site Investigation (98.300 mg/l). The background concentrations are within the range of values found in the open literature (1.0 to 1000 mg/l). Values for sodium, dissolved are not available in either the Tech Report or the Moore Report.

McNairy Formation. When summarized over all observations and over averages within wells, the background concentrations for sodium, dissolved in water drawn from the McNairy Formation (27.98 and 25.90 mg/l, respectively) are within the range of values reported in the open literature (1.0 to 1000 mg/l). As noted earlier, no other values are available for comparison.

5.2.47 Sulfate

RGA. When summarized over all observations and over averages within wells, the background concentrations for sulfate in water drawn from the RGA (19.947 and 19.1 mg/l, respectively) are similar to the value reported in the Tech Report (19.9 mg/l) and within the range of values found in the open literature (1.0 to 1000 mg/l). Values are not available from the Site Investigation or the Moore Report.

McNairy Formation. When summarized over all observations and over averages within wells, the background concentrations for sulfate in water drawn from the McNairy Formation are 28.9 and 27.27 mg/l, respectively. These values are within the range of values reported in the open literature (1.0 to 1000 mg/l). No other values are available for comparison.

5.2.48 Thallium

RGA. When summarized over all observations and over averages within wells, the qualitatively determined background concentrations for thallium in water drawn from the RGA (0.056 mg/l for both) are less than the value found in the Tech Report (0.108 mg/l) but greater than the value reported in the Moore Report (0.012 mg/l). The background values are similar to those in the Site Investigation ("ND" or nondetect) in that the values derived here are also based upon a detection limit. As discussed in Chapt. 4, because inorganic chemical concentrations in unfiltered samples (i.e., total samples) are highly dependent upon sampling method and sample preparation, values from the open literature are not available for thallium in total samples.

McNairy Formation. When summarized over all observations and over averages within wells, the background concentrations for thallium in water drawn from the McNairy Formation are 0.644 and 0.255 mg/l, respectively. As noted above, no values are available for comparison.

5.2.49 Thallium, Dissolved

RGA. When summarized over all observations and over averages within wells, the qualitatively determined background concentrations for thallium, dissolved in water drawn from the RGA (0.056 mg/l for both) are similar to the value reported in the Site Investigation ("ND" or nondetect) in that these values are also based upon a detection limit. The background concentrations fall outside the range of

values found in the open literature (<0.001 mg/l). Values for thallium, dissolved are not available in either the Tech Report or the Moore Report.

McNairy Formation. When summarized over all observations and over averages within wells, the background concentrations for thallium, dissolved in water drawn from the McNairy Formation (0.056 mg/l for both) fall outside the range of values reported in the open literature (<0.001 mg/l). As noted earlier, no other values are available for comparison.

5.2.50 Uranium

RGA. When summarized over all observations and over averages within wells, the qualitatively determined background concentrations for uranium in water drawn from the RGA (0.002 mg/l for both) are equal to the value found in the Tech Report (0.002 mg/l). Values are not available in either the Site Investigation or the Moore Report. Additionally, as discussed in Chapt. 4, because inorganic chemical concentrations in unfiltered samples (i.e., total samples) are highly dependent upon sampling method and sample preparation, values from the open literature are not available for uranium in total samples.

McNairy Formation. When summarized over all observations and over averages within wells, the qualitatively determined background concentrations for uranium in water drawn from the McNairy Formation are 0.001 mg/l for both. As noted above, no values are available for comparison.

5.2.51 Uranium, Dissolved

RGA. When summarized over all observations and over averages within wells, the qualitatively determined background concentrations for uranium, dissolved in water drawn from the RGA (0.002 mg/l for both) fall within the range of values found in the open literature (0.0001 to 0.1 mg/l). Other values for uranium, dissolved are not available for comparison.

McNairy Formation. When summarized over all observations and over averages within wells, the qualitatively determined background concentrations for uranium, dissolved in water drawn from the McNairy Formation (0.001 mg/l for both) fall within the range of values reported in the open literature (0.0001 to 0.1 mg/l). As noted earlier, no other values are available for comparison.

5.2.52 Vanadium

RGA. When summarized over all observations and over averages within wells, the background concentrations for vanadium in water drawn from the RGA (0.134 and 0.139 mg/l, respectively) are similar to the value found in the Tech Report (0.137 mg/l) but exceed the values found in the Site Investigation and the Moore Report (0.005 and 0.010 mg/l, respectively). As discussed in Chapt. 4, because inorganic chemical concentrations in unfiltered samples (i.e., total samples) are highly dependent upon sampling method and sample preparation, values from the open literature are not available for vanadium in total samples.

McNairy Formation. When summarized over all observations and over averages within wells, the background concentrations for vanadium in water drawn from the McNairy Formation are 0.126 and 0.119 mg/l, respectively. As noted above, no values are available for comparison.

5.2.53 Vanadium, Dissolved

RGA. When summarized over all observations and over averages within wells, the background concentrations for vanadium, dissolved in water drawn from the RGA (0.134 and 0.131 mg/l, respectively) are greater than the value found in the Site Investigation (0.001 mg/l) and fall outside the range of values

found in the open literature (0.0001 to 0.1 mg/l). Other values for vanadium, dissolved are not available for comparison.

McNairy Formation. When summarized over all observations and over averages within wells, the background concentrations for vanadium, dissolved in water drawn from the McNairy Formation (0.126 and 0.107 mg/l, respectively) fall outside the range of values reported in the open literature (0.0001 to 0.1 mg/l). As noted earlier, no other values are available for comparison.

5.2.54 Zinc

RGA. When summarized over all observations and over averages within wells, the background concentrations for zinc in water drawn from the RGA (0.054 and 0.025 mg/l, respectively) are less than the values found in the Site Investigation and the Moore Report (0.116 and 0.6 mg/l, respectively). However, the background concentration derived over all observations (0.054 mg/l) is greater than the value reported in the Tech Report (0.027 mg/l), and the background concentration derived over averages within wells (0.025 mg/l) is less than the value reported in the Tech Report. As discussed in Chapt. 4, because inorganic chemical concentrations in unfiltered samples (i.e., total samples) are highly dependent upon sampling method and sample preparation, values from the open literature are not available for zinc in total samples.

McNairy Formation. When summarized over all observations and over averages within wells, the background concentrations for zinc in water drawn from the McNairy Formation are 0.142 and 0.104 mg/l, respectively. As noted above, no values are available for comparison.

5.2.55 Zinc, Dissolved

RGA. When summarized over all observations and over averages within wells, the background concentrations for zinc, dissolved in water drawn from the RGA (0.049 and 0.026 mg/l, respectively) are equal to and less than the value found in the Site Investigation (0.049 mg/l). The background concentrations are within the range of values found in the open literature (0.0001 to 0.1 mg/l). Other values for zinc, dissolved are not available for comparison.

McNairy Formation. When summarized over all observations and over averages within wells, the background concentrations for zinc, dissolved in water drawn from the McNairy Formation (0.116 and 0.080 mg/l, respectively) are near the upper end of the range of values reported in the open literature (0.0001 to 0.1 mg/l). As noted earlier, no other values are available for comparison.

5.2.56 Gross Alpha

RGA. When summarized over all observations and over averages within wells, the background concentrations for gross alpha (5.8 and 2.36 pCi/l) differ from the value found in the Site Investigation ("ND" or nondetect). No other values are available for comparison.

McNairy Formation. When summarized over all observations and over averages within wells, the background concentrations for gross alpha are 11.9 and 5.3 pCi/l, respectively. No values are available for comparison.

5.2.57 Gross Beta

RGA. When summarized over all observations and over averages within wells, the background concentrations for gross beta (13.8 and 7.3 pCi/l) are less than the value found in the Site Investigation (19 pCi/l). No other values are available for comparison.

McNairy Formation. When summarized over all observations and over averages within wells, the background concentrations for gross beta are 144.5 and 125.4 pCi/l, respectively. No values are available for comparison.

5.2.58 Neptunium-237

RGA. When summarized over all observations and over averages within wells, the background concentrations for neptunium-237 (0.8 and 0.21 pCi/l) differ from that reported in the Site Investigation ("ND" or nondetect). No other values are available for comparison.

McNairy Formation. When summarized over all observations and over averages within wells, the background concentrations for neptunium-237 are 0.5 and 0.13 pCi/l, respectively. No values are available for comparison.

5.2.59 Plutonium-239

RGA. When summarized over all observations and over averages within wells, the background concentrations for plutonium-239 (0.1 and 0.03 pCi/l) differ from that reported in the Site Investigation ("ND" or nondetect). No other values are available for comparison.

McNairy Formation. When summarized over all observations and over averages within wells, the background concentrations for plutonium-239 are 0.2 and 0.04 pCi/l, respectively. No values are available for comparison.

5.2.60 Radium-226

RGA. When summarized over all observations and over averages within wells, the background concentrations for radium-226 are 0.6 and 0.10 pCi/l. No values are available for comparison.

McNairy Formation. When summarized over all observations and over averages within wells, the background concentrations for radium-226 are 1.2 and 0.29 pCi/l, respectively. No values are available for comparison.

5.2.61 Radon-222

RGA. When summarized over all observations and over averages within wells, the background concentrations for radon-222 are 626 and 555.3 pCi/l. No values are available for comparison.

McNairy Formation. When summarized over all observations and over averages within wells, the background concentrations for radon-222 are 295 and 228.3 pCi/l, respectively. No values are available for comparison.

5.2.62 Technetium-99

RGA. When summarized over all observations and over averages within wells, the background concentrations for technetium-99 (22.3 and 10.8 pCi/l) differ from that reported in the Site Investigation ("ND" or nondetect). No other values are available for comparison.

McNairy Formation. When summarized over all observations and over averages within wells, the background concentrations for technetium-99 are 20.6 and 7.8 pCi/l, respectively. No values are available for comparison.

5.2.63 Thorium-230

RGA. When summarized over all observations and over averages within wells, the background concentrations for thorium-230 (1.1 and 0.54 pCi/l) are similar to the small values reported in the Tech Report and the Site Investigation (1.41 and 0.26 pCi/l, respectively). No other values are available for comparison.

McNairy Formation. When summarized over all observations and over averages within wells, the background concentrations for thorium-230 are 1.5 and 0.40 pCi/l, respectively. No values are available for comparison.

5.2.64 Total Radium

RGA. When summarized over all observations and over averages within wells, the background concentrations for total radium (1.3 and 0.46 pCi/l) are similar to the small value reported in the Tech Report (0.938 pCi/l). No other values are available for comparison.

McNairy Formation. When summarized over all observations and over averages within wells, the background concentrations for total radium are 0.7 and 0.36 pCi/l, respectively. No values are available for comparison.

5.2.65 Uranium-234

RGA. When summarized over all observations and over averages within wells, the background concentrations for uranium-234 (0.7 pCi/l for both) are similar to the small values reported in the Tech Report and the Site Investigation (1.21 and 0.53 pCi/l, respectively). No other values are available for comparison.

McNairy Formation. When summarized over all observations and over averages within wells, the background concentrations for uranium-234 are 0.3 pCi/l for both. No values are available for comparison.

5.2.66 Uranium-235

RGA. When summarized over all observations and over averages within wells, the background concentrations for uranium-235 (0.3 pCi/l for both) are similar to the small values reported in the Tech Report and the Site Investigation (0.153 pCi/l and "ND" or nondetect, respectively). No other values are available for comparison.

McNairy Formation. When summarized over all observations and over averages within wells, the background concentrations for uranium-235 are 0.2 pCi/l for both. No values are available for comparison.

5.2.67 Uranium-238

RGA. When summarized over all observations and over averages within wells, the background concentrations for uranium-238 (0.7 pCi/l for both) are similar to the small values reported in the Tech Report and the Site Investigation (1.04 pCi/l and "ND" or nondetect, respectively). No other values are available for comparison.

McNairy Formation. When summarized over all observations and over averages within wells, the background concentrations for uranium-238 are 0.3 pCi/l for both. No values are available for comparison.

5.2.68 Summary of Comparisons Between Background Concentrations and Values Found in Earlier Reports and the Open Literature

Generally, the background values derived for this report are similar to those presented in the three reports released earlier by PGDP. Additionally, most background values derived for this report are within the ranges of values found in the open literature.

5.2.68.1 Summary of comparisons to values found in earlier reports

As discussed earlier, only RGA background concentrations are available in earlier reports. Therefore, only the RGA background concentrations are discussed in this section.

As shown in Table 5.9, for RGA background concentrations derived over all observations, 36 of the 67 background concentrations exceed one or more of the values found in earlier reports. Of the 36 values that exceed one or more values, 9 were derived qualitatively, and 27 were derived quantitatively. The analytes that exceed the values found in the earlier reports and their factors of difference are listed by report in the following. In these lists, those analytes with background concentrations derived qualitatively are labeled with a "†".

- Analytes with RGA background values that exceed the values listed in the Tech Report–chloride (1.3); chromium (1.1); copper (1.6); lead (1.2); **nickel (11)**; nitrate as nitrogen (2.5); silver† (2.75); zinc (2); total radium (1.4); and uranium-235 (2.0).

- Analytes with RGA background values that exceed the values listed in the Site Investigation–aluminum, dissolved (1.6); antimony, dissolved † (2.2); barium (1.1); barium, dissolved (1.0); calcium (1.1); calcium, dissolved (1.0); chromium (4.6); **chromium, dissolved† (25)**; cobalt † (5.6); cobalt, dissolved† (9); copper (3); copper, dissolved† (–); **lead (32)**; magnesium (1.1); magnesium, dissolved (1.1); **nickel (68)**; **nickel, dissolved (61)**; selenium† (1.7); selenium, dissolved† (1.7); **vanadium (26.8)**; ***vanadium, dissolved (130)***; gross alpha (–); neptunium-237 (–); plutonium-239 (–); technetium-99 (–); thorium-230 (4.2); uranium-234 (1.3); uranium-235 (–) ; and uranium-238 (–). (Factors of difference marked with a dash could not be calculated because these values as listed as "ND" in the Site Investigation.)

- Analytes with RGA background values that exceed the values listed in the Moore Report–barium (1.6); beryllium† (1.3); chromium (3.6); cobalt (4.5); lead (8.6); **nickel (68.2)**; selenium† (5); silver† (1.1); thallium† (4.7); and **vanadium (13.4)**.

As shown in Table 5.10, for RGA background concentrations derived over averages within well, 36 of the 67 background concentrations exceed one or more of the values found in earlier reports. Of the 36 values that exceed one or more values, 11 were derived qualitatively, and 25 were derived quantitatively. The analytes that exceed the values found in the earlier reports and their factors of difference are listed by report in the following. In these lists, those analytes with background concentrations derived qualitatively are labeled with a "†".

- Analytes with RGA background values that exceed the values listed in the Tech Report–chloride (1.3); chromium (1.0); copper (1.5); lead (2.4); **nickel (11)**; nitrate as nitrogen (2.2); silver† (2.8); sodium (1.1); vanadium (1.0); and uranium-235 (2.0).

- Analytes with RGA background values that exceed the values listed in the Site Investigation–aluminum, dissolved (1.0); antimony, dissolved† (2.2); calcium (1.0); chromium (4.3); **chromium, dissolved† (25)**; cobalt† (5.6); cobalt, dissolved† (9); copper (2.8); copper, dissolved (–); **lead (63)**; lead, dissolved (–); magnesium (1.0); magnesium, dissolved (1.0); **nickel (68.2)**; **nickel, dissolved (61)**; selenium†

(1.7); selenium, dissolved† (1.7); **vanadium (28)**; ***vanadium, dissolved (130)***; gross alpha (–); neptunium-237 (–); plutonium-239 (–); technetium-99 (–); thorium-230 (2.1); uranium-234 (1.3); uranium-235 (–); and uranium-238 (–). (Factors of difference marked with a dash could not be calculated because these values as listed as "ND" in the Site Investigation.)

- Analytes with RGA background values that exceed the values listed in the Moore Report–antimony† (1.2); barium (1.3); beryllium† (1.3); cadmium† (2); chromium (3.4); cobalt† (4.5); **lead (17)**; **nickel (75.8)**; selenium† (5); silver† (1.1); thallium† (4.7); and vanadium (14).

5.2.68.2 Summary of comparisons to values found in the open literature

As shown on Tables 5.9 and 5.10, the analytes with RGA background concentrations that exceed values from the open literature are similar over method of calculation. When calculated over all observations, 8 analytes have RGA background concentrations that exceed their open literature values. Of these, 3 were derived qualitatively, and 5 were derived quantitatively. When calculated over averages within wells, 9 analytes have RGA background concentrations that exceed their literature values. Of these, 3 were derived qualitatively, and 6 were derived quantitatively. The analytes with background concentrations that exceed their open literature values and their factor of difference are listed below. Note, the factor of difference for background concentrations calculated over all observations are listed first, and the factor of difference for background concentrations calculated over averages within wells are listed second.

- RGA background concentrations that were derived qualitatively that exceed their open literature values and their factor of difference–beryllium, dissolved (4; 4); silver, dissolved (60; 60); and thallium, dissolved (56; 56).

- RGA Formation background concentrations that were derived quantitatively that exceed their open literature values and their factor of difference–aluminum, dissolved (3.1; 2.0); barium, dissolved (2.0; 1.8); lead, dissolved (<1; 2.5); nickel, dissolved (3.1; 3.1); nitrate as nitrogen (1.6; 1.4); and vanadium, dissolved (1.3; 1.3).

As shown in Tables 5.11 and 5.12, the analytes with McNairy Formation background concentrations that exceed the values from the open literature are similar over method of calculation. When calculated over all observations, 10 analytes have McNairy background concentrations that exceed their open literature values. Of these, 3 were derived qualitatively, and 7 were derived quantitatively. When calculated over averages within wells, 8 analytes have McNairy background concentrations that exceed their open literature values. Of these, 3 were derived qualitatively, and 5 were derived quantitatively. The analytes with background concentrations that exceed their open literature values and their factor of difference are listed below. Note, the factor of difference for background concentrations calculated over all observations are listed first, and the factor of difference with background concentrations calculated over averages within wells are listed second.

- McNairy Formation background concentrations that were derived qualitatively that exceed their open literature values and their factor of difference–beryllium, dissolved (4; 4); silver, dissolved (50; 50); and thallium, dissolved (56; 56).

- McNairy Formation background concentrations that were derived quantitatively that exceed their open literature values and their factor of difference–aluminum, dissolved (5.8; 5.9); barium, dissolved (2.7; 2.7); iron, dissolved (1.2; <1); manganese, dissolved (8.9; 6.8); potassium, dissolved (5.1; 5.9); vanadium, dissolved (1.3; 1.1); and zinc, dissolved (1.2; <1).

5.3 UNCERTAINTIES AFFECTING BACKGROUND CONCENTRATIONS

This section presents issues of importance that users of the background concentrations should consider when applying the background concentrations derived in this report to site investigation samples. Lack of consideration of these issues (i.e., uncertainties) may lead to erroneous conclusions regarding the nature and extent of contamination found at the PGDP.

5.3.1 Data Set Uncertainties

Uncertainties with the data set that may have significant effects upon the background concentrations are primarily associated with the source and evaluation of the data. Specific uncertainties concerning the source of data are the selection of background wells, the methods of sample collection, and the methods of laboratory analysis. Specific uncertainties concerning the evaluation of the data are use of qualified data and adjustment of results to address anomalous values.

5.3.1.1 Selection of background wells

Wells providing data for the calculation of the background concentrations were selected from all monitoring wells at the PGDP by a group of experts that are familiar with the geology and hydrogeology at the PGDP. Each expert in the group had at least five years experience collecting and evaluating groundwater information at the PGDP, including information concerning contaminant release and migration. Criteria used by the group when selecting wells were distance from any known contaminant plumes, potential hydrological isolation (due to depth of well), and qualitative knowledge of past sampling results. Therefore, there is little uncertainty in the adequacy of the initial list of wells that were selected as background wells.

The uncertainty in the selection of background wells was further reduced by examining the data collected from each well to determine if the well had yielded groundwater samples containing site-related contaminants. In this evaluation, the contaminants that were deemed site-related were all organic compounds and technetium-99. Through this evaluation each of the seven RGA wells and seven of the nine McNairy Formation wells selected by the group of experts were determined to not be impacted by contaminant releases from the PGDP.

Some uncertainty also remains in the selection of the background wells because of the potential loss in well integrity over time. As was discussed earlier, several of the wells were installed in the late 1980s and early 1990s. However, all data used in deriving the background concentrations were taken from samples collected after January 1, 1993. There is a possibility that some loss in well integrity occurred over time due to physical degradation of the well structure, which may have led to greater concentrations of some inorganic chemicals in later samples. This uncertainty is especially important because significant well corrosion has recently been found in the liners of some wells installed within the same time period.

5.3.1.2 Methods of sample collection

As discussed in Chapt. 1, a primary reason for this study was to address a concern expressed by the regulatory community regarding the fact that previous lists of background concentrations had been determined using data from samples collected using methods not consistent with methods currently used in remedial investigations at the PGDP. To address this concern, all data used in this report were collected after January 1993; the date after which the method of sample collection from the background wells became consistent with the methods of sample collection currently used in remedial investigations. Therefore, there is little uncertainty in the methods of sample collection in regards to data comparability to ongoing projects. However, as demonstrated earlier in this chapter and in Appendix C, there is some uncertainty in regards to the effect of turbidity upon sample results. As shown, the concentrations of

several naturally occurring inorganic chemicals in groundwater samples are significantly related to the levels of turbidity and dissolved solids in the samples. The inorganic chemicals showing a significant relationship to turbidity and dissolved solids vary by aquifer and are as follows.

- Inorganic chemicals in the RGA showing a significant relationship ($r > 0.50$) to turbidity– aluminum, calcium, iron, manganese, and vanadium.

- Inorganic chemicals in the RGA showing a significant relationship ($r > 0.50$) to dissolved solids–barium, calcium, chloride, magnesium, manganese, nitrate as nitrogen, sodium, sulfate, and vanadium.

- Inorganic chemicals in the McNairy Formation showing a significant relationship ($r > 0.50$) to turbidity–iron.

- Inorganic chemicals in the McNairy Formation showing a significant relationship ($r > 0.50$) to dissolved solids–calcium, chloride, magnesium.

These results indicate that it is important to consider the levels of turbidity and dissolved solids when using the background concentrations derived here with results from site samples. If this is done, then the level of uncertainty can be reduced significantly. Additionally, in an issue unrelated to the level of uncertainty in the background concentrations, these results indicate that results from filtered samples should be used in addition to results from total samples when interpreting the nature and extent of contamination in groundwater at the PGDP.

5.3.1.3 Methods of laboratory analysis

The methods used for laboratory analysis of groundwater samples used to derive the background concentrations are consistent with approved EPA procedures (SW 846) and consistent with procedures used for samples collected during remedial investigations. Therefore, there is little uncertainty due to the methods of analysis when using the background results with results from site samples. However, as discussed in Chapt. 3, there is an unknown level of uncertainty for those inorganic chemicals that had their background concentration determined qualitatively (i.e., Group 1 analytes). Generally, this uncertainty arises from having detection limits that exceed the concentration of chemicals found in any sample and using the minimum detection limit as the surrogate for the background concentration. These chemicals, listed by aquifer, are presented below.

- Inorganic chemicals in samples from the RGA that had their background concentrations determined qualitatively by selecting the minimum detection limit–antimony; antimony, dissolved; arsenic, dissolved; beryllium; beryllium, dissolved; cadmium, dissolved; cobalt; cobalt, dissolved; mercury; mercury, dissolved; molybdenum; molybdenum, dissolved; selenium; selenium, dissolved; silver; silver, dissolved; thallium; and uranium, dissolved.

- Inorganic chemicals in samples from the McNairy Formation that had their background concentrations determined qualitatively by selecting the minimum detection limit–antimony; antimony, dissolved; arsenic, dissolved; beryllium, dissolved; cadmium; cadmium, dissolved; chromium, dissolved; cobalt, dissolved; lead; lead, dissolved; mercury, dissolved; molybdenum; molybdenum, dissolved; nickel, dissolved; selenium; selenium, dissolved; silver, silver, dissolved; thallium, dissolved; and uranium, dissolved.

For these chemicals, it can be argued that any detection in a site sample, even one below the background concentrations selected in this report, should be considered a result above the background concentration. Such an approach would be consistent with that in the Site Investigation (CH2M Hill 1992) and would

ensure that chemicals are not erroneously dismissed from the list of site-related contaminants. However, such an approach may also cause attention to be diverted from important site issues. In any case, there is considerable uncertainty in the background concentrations for the inorganic chemicals listed above, and this uncertainty should be considered when using the background concentrations derived in this report.

5.3.1.4 Use of qualified data

The approach used for qualified data in the derivation of the background concentrations is consistent with that used for data collected as part of remedial investigations and used to determine the nature and extent of contamination and the risk posed to human health and the environment by contamination at the PGDP. Therefore, there is little uncertainty in the use of the background concentrations to screen site samples because comparable approaches were used. However, the background concentrations derived here may be greater than those that are actually present in the environment because results reported for some samples may be higher than those actually present. This is especially true for all "Q" qualified results. (See Chapts. 2 and 3.) Generally, the use of such data yields results that are useful for remedial investigations at the PGDP but of limited use elsewhere. That is, as long as the background concentrations are used at the PGDP, the uncertainty due to the use of qualified data is not significant; however, if used elsewhere, the impact of this uncertainty could be significant.

5.3.1.5 Adjustment of results to address anomalous values

As discussed in Chapt. 2, data were evaluated to correct anomalous results and provide a data set that could be used to derive background concentrations that are representative of the RGA and McNairy Formation at the PGDP. Please see the material in Chapt. 2 for a full description of the reasons for and estimated effects of data adjustment. Overall, the net effect of the various adjustments was to produce a background data set with a range of values that is unlikely to exceed the range of values that may occur naturally. Therefore, the adjustments may have yielded data sets that do not encompass the upper end of all possible naturally occurring values and, ultimately, background concentrations that are underestimates of the real value. Generally, the uncertainty due to the adjustment of results to address anomalous values is insignificant if the concern is erroneously dismissing contamination but may be significant if the concern is erroneously declaring contamination when none is present. (Please see the discussion under Methods of Analysis in this subsection for a possible exception to this conclusion for analytes that were never detected.)

5.3.2 Method of Calculation

Uncertainties associated with the method of calculation that may have significant effects upon the background concentrations are primarily concerned with the consideration of the correlations between results, distribution assumptions, and use of the upper tolerance limit. Each of these are discussed in the following material.

5.3.2.1 Consideration of correlations between results

Like all environmental data, the groundwater data used in this report may be correlated both over time (temporal correlation) and over space (spatial correlation). Because data for analytes with quantitatively derived background concentrations were not sufficient to derive the correlation coefficients that are necessary to address these concerns, correlation effects were not considered when deriving the background values. However, the net effect of not considering temporal and spatial correlation is that the background concentrations derived here are unlikely to exceed the real concentrations in the environment. (See Gilbert 1987, page 35). Therefore, as with adjustments to address anomalous values, the uncertainty due to the lack of consideration of temporal and spatial correlation is insignificant if the concern is erroneously

dismissing contamination but may be significant if the concern is erroneously declaring contamination when none is present. (Note, this concern is not important for background concentrations determined qualitatively.)

5.3.2.2 Distribution assumptions

For this work, the data set for each analyte with a quantitatively derived background value was assumed to be normally distributed, and no attempt was made to transform data. Generally, transformations were not made to simplify the calculations performed in this report and to increase the likelihood that the background concentrations are unlikely to exceed the real concentrations in the environment. (For example, if data are assumed to log normally distributed, then the background concentrations derived quantitatively would be greater.) Therefore, as with adjustments to address anomalous values and consideration of correlations between results, the uncertainty due to distribution assumptions is insignificant if the concern is erroneously dismissing contamination but may be significant if the concern is erroneously declaring contamination when none is present. Please note that this concern is not as great for the background concentrations derived quantitatively over averages within wells as it is for background concentrations derived over all observations. This is because as data are summarized over wells, the resulting averages are more likely to follow the normal distribution. (See discussion of the Central Limit Theorem in Gilbert 1987.) Additionally, note that this concern does not apply to background concentrations determined qualitatively.

5.3.2.3 Use of the upper tolerance limit

The background concentrations for analytes with quantitatively derived values in this report are the lesser of the 95% upper tolerance limit (95% UTL) and the maximum detected value. (See Chapt. 3.) The lesser of these parameters was selected as the background concentration to ensure that the value derived here is consistent with values derived in other background reports prepared for the PGDP (DOE 1996b and 1997) and to ensure that the background concentration is near the upper end of the range of naturally occurring values in the RGA and McNairy Formation at the PGDP. However, because the value selected as the background concentration for each analyte is near the upper end of the range of all possible background concentrations, some background concentrations exceed one or more comparison criteria. This observation makes it appear as if the data sets used to derive the background concentrations are not representative of the real background distributions or as if the background concentrations at the PGDP are high. To further examine this uncertainty, Tables 5.13 and 5.14 were prepared.

In Table 5.13, both the selected background value (i.e. "Background") derived over all observations and the average (i.e., "Mean") of the distribution of all RGA observations are compared to the RBC, MCL, KDEP risk-based screening value, and values from the open literature. As shown there, 9 of 32 quantitatively derived averages exceed their RBC versus 15 of 32 quantitatively derived background values, 6 of 32 averages exceed their MCL versus 11 of 32 background values, 2 of 32 averages and background values exceed their KDEP risk-based screening value, and 4 of 32 averages exceed their open literature value versus 12 of 32 background values. Therefore, the average values of the RGA background distributions are a better "fit" when compared to the various risk-based comparison criteria and to the open literature values.

In Table 5.14, both the selected background value (i.e., "Background") derived over all observations and the average (i.e., "Mean") of the distribution of all McNairy Formation observations are compared to the RBC, MCL, KDEP risk-based screening value, and values from the open literature. As shown there, 10 of 28 quantitatively derived average and background values exceed their RBC, 7 of 28 averages and background values exceed their MCL, 2 of 28 averages and background values exceed their KDEP risk-based screening value, and 9 of 28 averages versus 15 of 28 background values exceed their open literature values. Therefore, the average values of the McNairy Formation background distributions are a better "fit" when compared to the open literature values but not when compared to the other comparison criteria.

The results from Tables 5.13 and 5.14 indicate that the concentrations of the naturally occurring inorganic chemicals in background wells may, in fact, be elevated. Therefore, the following actions should be considered when applying the background concentrations to site concentrations.

- When preparing baseline risk assessments, the risk from the background concentrations (i.e., "background risk") should be presented in the risk assessment as the background risk may affect cleanup decisions; however, the risks from the naturally occurring substances should be calculated separately (EPA 1989a and 1992).

- When determining cleanup levels, the PGDP should consider (EPA 1992):

  1) Statutory limitations on addressing naturally occurring substances;
  2) Technical impracticability of cleaning up beyond background levels;
  3) Consideration of site use;
  4) Availability of alternative methods of protection; and
  5) Consistency with other regulatory programs.

Therefore, although there is some uncertainty in using the lesser of the maximum detected value and the 95% UTL as the background value, this uncertainty is overshadowed by the high background for some inorganic chemicals at the PGDP.

Table 5.13. Comparison of mean inorganic chemical concentrations derived over all observations from RGA background data against RBCs, MCLs, Commonwealth of Kentucky risk-based screening values, and open literature values

			Criteria[c]			
Analyte	Background[a]	Mean[b]	RBC	MCL	KDEP	Open Literature
Aluminum	2.189	0.638	1.5[HI]	0.050 - 0.200	37	0.0001 - 0.1
Aluminum, Dissolved	0.311	0.166				
Barium	0.235	0.235	0.10[HI]	2.000	2.6	0.0001 - 0.1
Barium. Dissolved	0.200	0.200				
Calcium	41.238	21.7	NV	NV	NV	1.0 - 1000
Calcium, Dissolved	38.166	21.6				
Chloride	91.021	37.1	NV	250	NV	1.0 - 1000
Chromium	0.144	0.069	0.0071[HI]	0.100	0.18	0.0001 - 0.1
Chromium, Dissolved	NA	NA				
Copper	0.036	0.017	0.060[HI]	1.3	1.4	0.0001 - 0.1
Copper, Dissolved	0.020	0.013				
Fluoride	0.270	0.163	0.091[HI]	4.0	2.2	0.01 - 10.0
Iron	5.030	1.33	0.45[HI]	0.3	NV	0.01 - 10.0
Iron, Dissolved	0.267	0.080				
Lead	0.129	0.088	0.00000015[HI]	0.015	0.004	0.0001 - 0.1
Lead, Dissolved	0.098	0.097				
Magnesium	16.262	8.22	NV	NV	NV	1.0 - 1000
Magnesium, Dissolved	16.215	8.5				
Manganese	0.119	0.037	0.067[HI]	0.050	0.18	0.0001 - 0.1
Manganese, Dissolved	0.068	0.019				
Nickel	0.682	0.147	0.030[HI]	0.100	0.730	0.0001 - 0.1
Nickel, Dissolved	0.305	0.102				
Nitrate as Nitrogen	15.561	3.59	2.40[HI]	10	58	0.01 - 10.0
Potassium	5.195	2.96	NV	NV	NV	0.01 - 10.0
Potassium, Dissolved	4.096	2.54				
Silica	26.401	19.0	NV	NV	NV	NV
Sodium	59.450	29.3	NV	NV	NV	1.0 - 1000
Sodium, Dissolved	60.433	29.4				
Sulfate	19.947	9.9	NV	500	NV	1.0 - 1000
Vanadium	0.134	0.065	0.0092[HI]	NV	NV	0.0001 - 0.1
Vanadium, Dissolved	0.134	0.064				
Zinc	0.054	0.021	0.45[HI]	5.0	11	0.0001 - 0.1
Zinc, Dissolved	0.049	0.017				

Notes:

Only analytes with background values that were derived quantitatively are listed.

Criteria are listed once for each analyte type (e.g., once for both aluminum and aluminum, dissolved) because the same criteria apply to both.

NA indicates that the comparison is not applicable because the background value was derived qualitatively.

NV indicates that a value was not available for this analyte.

[a] Only background values that were derived quantitatively are listed.

[b] Mean values taken from Table 2.2.

[c] RBCs, MCLs, and KDEP risk-based screening values taken from Table 4.1. Open literature values taken from Table 4.2.

Table 5.14. Comparison of mean inorganic chemical concentrations derived over all observations from McNairy Formation background data against RBCs, MCLs, Commonwealth of Kentucky risk-based screening values, and open literature values

			Criteria[c]			
Analyte	Background[a]	Mean[b]	RBC	MCL	KDEP	Open Literature
Aluminum	0.687	0.284	1.5[HI]	0.050 - 0.200	37	0.0001 - 0.1
Aluminum, Dissolved	0.579	0.209				
Barium	0.296	0.155	0.10[HI]	2.000	2.6	0.0001 - 0.1
Barium. Dissolved	0.268	0.143				
Calcium	38.858	22.6	NV	NV	NV	1.0 - 1000
Calcium, Dissolved	38.829	21.8				
Chloride	19.708	10.0	NV	250	NV	1.0 - 1000
Cobalt	0.096	0.055	0.0071[HI]	0.100	0.18	0.0001 - 0.1
Cobalt, Dissolved	NA	NA				
Copper	0.057	0.019	0.060[HI]	1.3	1.4	0.0001 - 0.1
Copper, Dissolved	NA	NA				
Fluoride	0.330	0.224	0.091[HI]	4.0	2.2	0.01 - 10.0
Iron	18.360	7.37	0.45[HI]	0.3	NV	0.01 - 10.0
Iron, Dissolved	12.372	5.05				
Magnesium	13.418	7.36	NV	NV	NV	1.0 - 1000
Magnesium, Dissolved	14.171	7.55				
Manganese	0.941	0.428	0.067[HI]	0.050	0.18	0.0001 - 0.1
Manganese, Dissolved	0.894	0.399				
Nitrate as Nitrogen	1.474	1.04	2.40[HI]	10	58	0.01 - 10.0
Potassium	55.752	16.07	NV	NV	NV	0.01 - 10.0
Potassium, Dissolved	51.205	13.2				
Silica	26.0	24.9	NV	NV	NV	NV
Sodium	29.2	20.6	NV	NV	NV	1.0 - 1000
Sodium, Dissolved	27.98	20.4				
Sulfate	28.9	15.67	NV	500	NV	1.0 - 1000
Thallium	0.644	0.143	NV	0.002	NV	<0.001
Thallium, Dissolved	NA	NA				
Vanadium	0.126	0.063	0.0092[HI]	NV	NV	0.0001 - 0.1
Vanadium, Dissolved	0.126	0.065				
Zinc	0.142	0.043	0.45[HI]	5.0	11	0.0001 - 0.1
Zinc, Dissolved	0.116	0.032				

Notes:

Only analytes with background values that were derived quantitatively are listed.

Criteria are listed once for each analyte type (e.g., once for both aluminum and aluminum, dissolved) because the same criteria apply to both.

NA indicates that the comparison is not applicable because the background value was derived qualitatively.

NV indicates that a value was not available for this analyte.

[a] Only background values that were derived quantitatively are listed.

[b] Mean values taken from Table 2.2.

[c] RBCs, MCLs, and KDEP risk-based screening values taken from Table 4.1. Open literature values taken from Table 4.2.

6. BIBLIOGRAPHY

Allen, H. E., E. M. Perdue, and D. S. Brown. 1993. *Metals in Groundwater*. Lewis Publishers, Chelsea, MI.

Canter, L. W., R. C. Knox, and D. M. Fairchild. 1987. *Ground Water Quality Protection*. Lewis Publishers, Chelsea, MI.

CH2M Hill. 1991. *Results of the Site Investigation, Phase II, at the Paducah Gaseous Diffusion Plant*. KY/SUB/13B-97777C P-03/1991/1.

CH2M Hill. 1992. *Public Health and Ecological Assessment for the Paducah Gaseous Diffusion Plant*. Volume 6 of *Results of the Site Investigation, Phase II, at the Paducah Gaseous Diffusion Plant*. KY/SUB/13B-97777C P-03/1991/1.

Davis, S. N., and R. J. M. DeWiest. 1966. *Hydrogeology*. John Wiley and Sons, New York.

DOE (Department of Energy). 1994. *Baseline Risk Assessment and Technical Investigation Report for the Northwest Dissolved Phase Plume, Paducah Gaseous Diffusion Plant*. DOE/OR/07-1286&D1.

DOE. 1996a. *Methods for Conducting Human Health Risk Assessments and Risk Evaluations at the Paducah Gaseous Diffusion Plant*. DOE/OR/07-1506&D1.

DOE. 1996b. *Background Concentrations and Human Health Risk-based Screening Criteria for Metals in Soil at the Paducah Gaseous Diffusion Plant, Paducah, Kentucky*. DOE/OR/07-1417&D2.

DOE. 1997. *Background Levels of Selected Radionuclides and Metals in Soils and Geologic Media at the Paducah Gaseous Diffusion Plant, Paducah, Kentucky*. DOE/OR/07-1586&D2.

DOE. 1999. *Federal and State Guideline Values. Risk Assessment Information System* @ http://risk.lsd.ornl.gov/cgi-bin/guide/GUID_9709. Accessed September 1999.

EPA (Environmental Protection Agency). 1988. *Guidance for Conducting Remedial Investigations and Feasibility Studies under CERCLA*, EPA/540/G-89/004, Office of Emergency and Remedial Response, Washington, D.C.

EPA. 1989a. *Risk Assessment Guidance for Superfund, Volume I: Human Health Evaluation Manual, Part A, Baseline Risk Assessment*, OSWER Directive 9285.7-01a, Office of Emergency and Remedial Response, Washington, D.C.

EPA. 1991a. *Risk Assessment Guidance for Superfund, Volume I: Human Health Evaluation Manual, Part B, Development of Risk-based Preliminary Remediation Goals*, OSWER Directive 9285.7-01b, Office of Emergency and Remedial Response, Washington, D.C.

EPA. 1991b. *Risk Assessment Guidance for Superfund, Volume I: Human Health Evaluation Manual, Part C, Risk Evaluation of Remedial Alternatives*, OSWER Directive 9285.7-01c, Office of Emergency and Remedial Response, Washington, D.C.

EPA. 1992. *Options for Addressing High Background Levels of Hazardous Substances at CERCLA Sites. Draft Final Issue Paper*. Offices of Program Management and Emergency and Remedial Response, Washington, D.C. January 1992.

EPA. 1995a. *Supplemental Guidance to RAGS: Region 4 Bulletins, Human Health Risk Assessment*, Interim Guidance, Office of Health Assessment, Atlanta, GA, November 1995.

Gilbert. 1987. *Statistical Methods for Environmental Pollution Monitoring*. Van Nostrand Reinhold, New York.

KDEP. 1995. *Risk Assessment Guidance*. 401 KAR 100:050, October.

Matthess, G., and J. C. Harvey. 1982. *The Properties of Groundwater*. John Woley & Sons, New York.

Moore, G. K., 1995. *Inorganic Soil and Groundwater Chemistry Near Paducah Gaseous Diffusion Plant, Paducah, Kentucky*. ORNL/TM-12897.

APPENDIX A

WELL SUMMARY INFORMATION

THIS PAGE INTENTIONALLY LEFT BLANK

Well Summary Information

This appendix presents, by well, the information used to verify the selection of the background wells used to derive the background concentrations for the Regional Gravel Aquifer and McNairy Formation. Table A.1 presents a summary of the information contained in the following portions of this appendix. Table A.2 is a directory that can be used to find this information.

Table A.1. Well information contained in Appendix A

Monitoring Well	Detail Sheet	Large Location Map	Construction Detail	Boring Log	Detail Location Map
			RGA Wells		
MW 103	X	X	X	X	NA
MW 106	X	X	X	X	NA
MW 141	X	X	X	X[a]	X
MW 142	X	X	X	X[a]	X
MW 150	X	X	X	X	NA
MW 199	X	X	X	X	X
			McNairy Wells		
MW 102	X	NA	X	X	NA
MW 120	X	X	X	X	X
MW 121	X	X	X	X	X
MW 122	X	X	X	X	X
MW 133	X	X	X	X	X
MW 140	X	X	X	X	X
MW 239	X	NA	NA	NA	NA
MW 247	X	NA	NA	NA	NA

Notes:
"X's" indicate that information is presented in Appendix A.
"NA" indicate that information was not available and is not presented in the appendix.

[a] Boring logs for MW141 and 142 were not available. However, a boring log for an adjacent deep well, MW140, was available. Therefore, the boring log for MW140 is presented in this appendix.

The following defines in more detail the information included for each well.

- Detail sheet–A concise summary that presents the well's location, installation date, screen depth, sampling dates, and construction information reference. In addition, a table of the potential plant-related chemical (organic compounds) and radionuclide contaminants (technetium-99 only) detected in the well is presented on each well's detail sheet. (Note, these detail sheets are also presented earlier in this document.)

- Large location map–A map presenting the location of the well in relation to the plant.

- Construction detail–A schematic presenting the details of the well's construction.

- Boring log–The soil boring log prepared during well installation.

- Detail location map–A map presenting the location of the well in relation to other wells (if the well is part of a well cluster) and other surface features.

Table A.2. Table of Contents for Appendix A

Description	Pages
Well Summary Information	A-3
Summary of Sampling Times for RGA Background Wells	A-5 through A-8
Summary of Sampling Times for McNairy Background Wells	A-9 through A-16
Summary for MW 103	A-17 through A-26
Summary for MW 106	A-27 through A-34
Summary for MW 141	A-35 through A-44
Summary for MW 142	A-45 through A-54
Summary for MW 150	A-55 through A-62
Summary for MW 199	A-63 through A-70
Summary for MW 102	A-71 and A-72
Summary for MW 120	A-73 through A-82
Summary for MW 121	A-83 through A-94
Summary for MW 122	A-95 through A-104
Summary for MW 133	A-105 through A-112
Summary for MW 140	A-113 through A-122
Summary for MW 239	A-123 and A-124
Summary for MW 240	A-125 and A-126

Summary of Sampling Times for RGA Background Wells Over All Analyte Types

Sampling Dates	RGA Sampling Locations					
	MW 103	MW 106	MW 141	MW 142	MW 150	MW 199
1990, Q2			4/27/90	5/2/90	6/6/90	
1990, Q3			8/16/90	8/16/90	9/6/90	
1990, Q4						
1991, Q1			3/13/91	3/14/91	3/21/91	
1991, Q2						5/14/91 5/21/91
1991, Q3						
1991, Q4						
1992, Q1	2/28/92	2/14/92				
1992, Q2						
1992, Q3						
1992, Q4						
1993, Q1						
1993, Q2	5/26/93	6/7/93	5/26/93	5/26/93	6/23/93	5/27/93
1993, Q3	7/26/93	9/14/93	7/13/93	7/13/93	9/21/93	7/26/93
1993, Q4	10/14/93	12/6/93	10/21/93	10/21/93	12/15/93	10/25/93
1994, Q1	1/24/94	3/14/94	1/11/94	1/11/94	3/8/94	1/24/94
1994, Q2	4/20/94	6/20/94	4/27/94	4/27/94	6/13/94	4/25/94
1994, Q3	7/27/94	9/6/94	7/20/94	7/20/94	9/19/94	7/27/94
1994, Q4	10/5/94	10/10/94 12/12/94	10/10/94	10/10/94	12/15/94	10/11/94
1995, Q1	2/13/95	2/6/95		2/6/95	2/8/95	
1995, Q2						
1995, Q3						
1995, Q4						
1996, Q1	2/8/96	2/8/96		2/12/96	2/13/96	
1996, Q2						
1996, Q3						
1996, Q4						
1997, Q1	2/6/97	2/4/97		2/6/97	2/6/97	
1997, Q2	5/13/97					
1997, Q3						8/6/97
1997, Q4		11/12/97		11/6/97		

Note: Analyte list varies between samples.
Quarters when samples were not collected are left blank.

Summary of Sampling Times for RGA Background Wells when Analyses for One or More Inorganic Chemicals Were Performed

Sampling Dates	RGA Sampling Locations					
	MW 103	MW 106	MW 141	MW 142	MW 150	MW 199
1990, Q2			4/27/90	5/2/90		
1990, Q3						
1990, Q4						
1991, Q1			3/13/91	3/14/91	3/21/91	
1991, Q2						5/14/91
1991, Q3						
1991, Q4						
1992, Q1						
1992, Q2						
1992, Q3						
1992, Q4						
1993, Q1						
1993, Q2	5/26/93	6/7/93	5/26/93	5/26/93	6/23/93	5/27/93
1993, Q3	7/26/93		7/13/93	7/13/93		7/26/93
1993, Q4	10/14/93		10/21/93	10/21/93		10/25/93
1994, Q1	1/24/94	3/14/94	1/11/94	1/11/94	3/8/94	1/24/94
1994, Q2	4/20/94		4/27/94	4/27/94		4/25/94
1994, Q3	7/27/94		7/20/94	7/20/94		7/27/94
1994, Q4	10/5/94	12/12/94	10/10/94	10/10/94		10/11/94
1995, Q1	2/13/95	2/6/95		2/6/95	2/8/95	
1995, Q2						
1995, Q3						
1995, Q4						
1996, Q1	2/8/96	2/8/96		2/12/96	2/13/96	
1996, Q2						
1996, Q3						
1996, Q4						
1997, Q1	2/6/97	2/4/97		2/6/97	2/6/97	
1997, Q2						
1997, Q3						8/6/97
1997, Q4		11/12/97		11/6/97		

Note: Analyte list varies between samples.
Quarters when samples were not collected are left blank.

Summary of Sampling Times for RGA Background Wells when Analyses for One or More Organic Compounds Were Performed

Sampling Dates	RGA Sampling Locations					
	MW 103	MW 106	MW 141	MW 142	MW 150	MW 199
1990, Q2			4/27/90	5/2/90	6/6/90	
1990, Q3			8/16/90	8/16/90	9/6/90	
1990, Q4						
1991, Q1			3/13/91	3/14/91	3/21/91	
1991, Q2						5/14/97 5/21/91
1991, Q3						
1991, Q4						
1992, Q1	2/28/92	2/14/92				
1992, Q2						
1992, Q3						
1992, Q4						
1993, Q1						
1993, Q2	5/26/93	6/7/93	5/26/93	5/26/93	6/23/93	5/27/93
1993, Q3	7/26/93	9/14/93	7/13/93	7/13/93	9/21/93	7/26/93
1993, Q4	10/14/93	12/6/93	10/21/93	10/21/93	12/15/93	10/25/93
1994, Q1	1/24/94	3/14/94	1/11/94	1/11/94	3/8/94	1/24/94
1994, Q2		6/20/94	4/27/94	4/27/94	6/13/94	4/25/94
1994, Q3	7/27/94	9/6/94	7/20/94	7/20/94	9/19/94	7/27/94
1994, Q4	10/5/94	10/10/94 12/12/94	10/10/94	10/10/94	12/15/94	10/11/94
1995, Q1	2/13/95	2/6/95		2/6/95	2/8/95	
1995, Q2						
1995, Q3						
1995, Q4						
1996, Q1	2/8/96	2/8/96		2/12/96	2/13/96	
1996, Q2						
1996, Q3						
1996, Q4						
1997, Q1	2/6/97	2/4/97		2/6/97	2/6/97	
1997, Q2	5/13/97					
1997, Q3						8/6/97
1997, Q4		11/12/97		11/6/97		

Note: Analyte list varies between samples.
Quarters when samples were not collected are left blank.

Summary of Sampling Times for RGA Background Wells when Analyses for One or More Radionuclides Were Performed

Sampling Dates	RGA Sampling Locations					
	MW 103	MW 106	MW 141	MW 142	MW 150	MW 199
1990, Q2			4/27/90	5/2/90	6/6/90	
1990, Q3			8/16/90	8/16/90	9/6/90	
1990, Q4						
1991, Q1			3/13/91	3/14/91	3/21/91	
1991, Q2						5/14/91 5/21/91
1991, Q3						
1991, Q4						
1992, Q1	2/28/92	2/14/92				
1992, Q2						
1992, Q3						
1992, Q4						
1993, Q1						
1993, Q2	5/26/93	6/7/93	5/26/93	5/26/93	6/23/93	5/27/93
1993, Q3	7/26/93	9/14/93	7/13/93	7/13/93	9/21/93	7/26/93
1993, Q4	10/14/93	12/6/93	10/21/93	10/21/93	12/15/93	10/25/93
1994, Q1	1/24/94	3/14/94	1/11/94	1/11/94	3/8/94	1/24/94
1994, Q2	4/20/94	6/20/94	4/27/94	4/27/94	6/13/94	4/25/94
1994, Q3	7/27/94	9/6/94	7/20/94	7/20/94	9/19/94	7/27/94
1994, Q4	10/5/94	10/10/94 12/12/94	10/10/94	10/10/94	12/15/94	10/11/94
1995, Q1	2/13/95	2/6/95		2/6/95	2/8/95	
1995, Q2						
1995, Q3						
1995, Q4						
1996, Q1	2/8/96	2/8/96		2/12/96	2/13/96	
1996, Q2						
1996, Q3						
1996, Q4						
1997, Q1	2/6/97	2/4/97		2/6/97	2/6/97	
1997, Q2	5/13/97					
1997, Q3						8/6/97
1997, Q4		11/12/97		11/6/97		

Note: Analyte list varies between samples.
Quarters when samples were not collected are left blank.

Summary of Sampling Times for McNairy Background Wells over All Analyte Types

Sampling Dates	McNairy Sampling Locations							
	102	120	121	122	133	140	239	247
1989, Q4			12/1/89					
1990, Q1		2/27/90	2/24/90	2/21/90 2/22/90				
1990, Q2		4/20/90	4/19/90	4/30/90	5/3/90	5/2/90		
1990, Q3		8/20/90	8/14/90	8/15/90	8/15/90	8/17/90		
1990, Q4								
1991, Q1		2/28/91	3/25/91	3/11/91	3/1/91	3/14/91		
1991, Q2			4/30/91					
1991, Q3								
1991, Q4								
1992, Q1	2/28/92							
1992, Q2								
1992, Q3								
1992, Q4								
1993, Q1								
1993, Q2	5/26/93	5/25/93	6/3/93	6/1/93	6/2/93	5/26/93		
1993, Q3	7/26/93	7/12/93	9/21/93	9/20/93	9/13/93	7/13/93		
1993, Q4	10/14/93	10/26/93	12/27/93	12/7/93	12/16/93	10/21/93		
1994, Q1	1/24/94	1/25/94	3/29/94	3/21/94	3/2/94	1/11/94		
1994, Q2	4/26/94	4/20/94	6/8/94	6/8/94	6/7/94	4/27/94		
1994, Q3	7/28/94	7/19/94	9/7/94	9/21/94	9/12/94	7/20/94		
1994, Q4	10/5/94	10/24/94	12/1/94	12/5/94	12/19/94	10/10/94		
1995, Q1	3/21/95	2/8/95	2/9/95	2/9/95	3/27/95		3/29/95	3/27/95
1995, Q2	6/14/95			6/5/95			4/13/95 5/3/95 6/6/95	4/19/95 6/20/95
1995, Q3	9/18/95						7/24/95 8/9/95 9/26/95	7/19/95 8/22/95 9/20/95
1995, Q4	12/19/95						10/18/95 11/8/95 12/19/95	10/23/95 11/28/95 12/13/95
1996, Q1	2/8/96	2/22/96	2/22/96	2/8/96	2/12/96	2/12/96	1/23/96 2/15/96 3/20/96	1/22/96 2/22/96 3/25/96
1996, Q2							4/18/96 5/21/96 6/13/96	4/18/96 5/28/96 6/18/96

Summary of Sampling Times for McNairy Background Wells over All Analyte Types (Cont.)

Sampling Dates	McNairy Sampling Locations							
	102	120	121	122	133	140	239	247
1996, Q3							7/25/96 8/6/96 9/10/96	7/18/96 8/13/96 9/17/96
1996, Q4							10/31/96 11/20/96 12/11/96	10/2/96 11/12/96 12/10/96
1997, Q1	2/6/97	2/6/97	2/6/97	2/6/97	2/10/97	2/6/97	1/23/97 2/17/97 3/18/97	1/24/97 2/17/97 3/20/97
1997, Q2							4/15/97 5/20/97 6/12/97	4/10/97 5/20/97 6/18/97
1997, Q3							7/10/97 8/14/97 9/15/97	7/24/97 8/11/97 9/17/97
1997, Q4		11/11/97	11/11/97	11/11/97	11/12/97	11/6/97	10/16/97	10/23/97 11/25/97

Notes: Analyte list varies between samples.
Quarters when samples were not collected are left blank.

Summary of Sampling Times for McNairy background Wells when Analyses for One or More Inorganic Chemicals Were Performed

Sampling Dates	McNairy Sampling Locations							
	102	120	121	122	133	140	239	247
1989, Q4								
1990, Q1		2/27/90	2/24/90	2/21/90 2/22/90				
1990, Q2		4/20/90	4/19/90	4/30/90	5/3/90	5/2/90		
1990, Q3		8/20/90	8/14/90	8/15/90		8/17/90		
1990, Q4								
1991, Q1		2/28/91	3/25/91	3/11/91	3/1/91	3/14/91		
1991, Q2								
1991, Q3								
1991, Q4								
1992, Q1								
1992, Q2								
1992, Q3								
1992, Q4								
1993, Q1								
1993, Q2	5/26/93	5/25/93	6/3/93	6/1/93	6/2/93	5/26/93		
1993, Q3	7/26/93	7/12/93				7/13/93		
1993, Q4	10/14/93	10/26/93				10/21/93		
1994, Q1	1/24/94	1/25/94	3/29/94	3/21/94	3/2/94	1/11/94		
1994, Q2	4/26/94	4/20/94				4/27/94		
1994, Q3	7/28/94	7/19/94				7/20/94		
1994, Q4	10/5/94	10/24/94				10/10/94		
1995, Q1	3/21/95	2/8/95	2/9/95	2/9/95	3/27/95		3/29/95	3/27/95
1995, Q2	6/14/95			6/5/95			4/13/95 5/3/95 6/6/95	4/19/95 6/20/95
1995, Q3	9/18/95						7/24/95 8/9/95 9/26/95	7/19/95 8/22/95 9/20/95
1995, Q4	12/19/95						10/18/95 11/8/95 12/19/95	10/23/95 11/28/95 12/13/95
1996, Q1	2/8/96	2/22/96	2/22/96	2/8/96	2/12/96	2/12/96	1/23/96 2/15/96 3/20/96	1/22/96 2/22/96 3/25/96
1996, Q2							4/18/96 5/21/96 6/13/96	4/18/96 5/28/96 6/18/96

Summary of Sampling Times for McNairy background Wells when Analyses for One or More Inorganic Chemicals Were Performed (Cont.)

Sampling Dates	McNairy Sampling Locations							
	102	120	121	122	133	140	239	247
1996, Q3							7/25/96 8/6/96 9/10/96	7/18/96 8/13/96 9/17/96
1996, Q4							10/31/96 11/20/96 12/11/96	10/2/96 11/12/96 12/10/96
1997, Q1	2/6/97	2/6/97	2/6/97	2/6/97	2/10/97	2/6/97	1/23/97 2/17/97 3/18/97	1/24/97 2/17/97 3/20/97
1997, Q2							4/15/97 5/20/97 6/12/97	4/10/97 5/20/97 6/18/97
1997, Q3							7/10/97 8/14/97 9/15/97	7/24/97 8/11/97 9/17/97
1997, Q4		11/11/97	11/11/97	11/11/97	11/12/97	11/6/97	10/16/97	10/23/97

Notes: Analyte list varies between samples.
Quarters when samples were not collected are left blank.

Summary of Sampling Times for McNairy Background Wells when Analyses for One or More Organic Compounds Were Performed

Sampling Dates	McNairy Sampling Locations							
	102	120	121	122	133	140	239	247
1989, Q4								
1990, Q1		2/27/90	2/24/90	2/21/90 2/22/90				
1990, Q2		4/20/90	4/19/90	4/30/90	5/3/90	5/2/90		
1990, Q3		8/20/90	8/14/90	8/15/90	8/15/90	8/17/90		
1990, Q4								
1991, Q1		2/28/91	3/25/91	3/11/91	3/1/91	3/14/91		
1991, Q2			4/30/91					
1991, Q3								
1991, Q4								
1992, Q1	2/28/92							
1992, Q2								
1992, Q3								
1992, Q4								
1993, Q1								
1993, Q2	5/26/93	5/25/93		6/1/93	6/2/93	5/26/93		
1993, Q3	7/26/93	7/12/93	9/21/93	9/20/93	9/13/93	7/13/93		
1993, Q4	10/14/93	10/26/93	12/27/93	12/7/93		10/21/93		
1994, Q1	1/24/94	1/25/94	3/29/94	3/21/94	3/2/94	1/11/94		
1994, Q2	4/26/94	4/20/94	6/8/94	6/8/94	6/7/94	4/27/94		
1994, Q3	7/28/94	7/19/94	9/7/94	9/21/94	9/12/94	7/20/94		
1994, Q4	10/5/94	10/24/94	12/1/94	12/5/94		10/10/94		
1995, Q1	3/21/95	2/8/95	2/9/95	2/9/95	3/27/95		3/29/95	3/27/95
1995, Q2	6/14/95			6/5/95			4/13/95 5/3/95 6/6/95	4/19/95 6/20/95
1995, Q3	9/18/95						7/24/95 8/9/95 9/26/95	7/19/95 8/22/95 9/20/95
1995, Q4	12/19/95						10/18/95 11/8/95 12/19/95	10/23/95 11/28/95 12/13/95
1996, Q1	2/8/96	2/22/96	2/22/96	2/8/96	2/12/96	2/12/96	1/23/96 2/15/96 3/20/96	1/22/96 2/22/96 3/25/96
1996, Q2							4/18/96 5/21/96 6/13/96	4/18/96 5/28/96 6/18/96

Summary of Sampling Times for McNairy Background Wells when Analyses for One or More Organic Compounds Were Performed (Cont.)

Sampling Dates	McNairy Sampling Locations							
	102	120	121	122	133	140	239	247
1996, Q3							7/25/96 8/6/96 9/10/96	7/18/96 8/13/96 9/17/96
1996, Q4							10/31/96 12/11/96	10/2/96 11/12/96 12/10/96
1997, Q1	2/6/97	2/6/97	2/6/97	2/6/97	2/10/97	2/6/97	1/23/97 2/17/97 3/18/97	1/24/97 2/17/97 3/20/97
1997, Q2							4/15/97 5/20/97 6/12/97	4/10/97 5/20/97 6/18/97
1997, Q3							7/10/97 8/14/97 9/15/97	7/24/97 8/11/97 9/17/97
1997, Q4		11/11/97	11/11/97	11/11/97	11/12/97	11/6/97	10/16/97	10/23/97 11/25/97

Notes: Analyte list varies between samples.
Quarters when samples were not collected are left blank.

Summary of Sampling Times for McNairy Background Wells when Analyses for One or More Radionuclides Were Performed

Sampling Dates	McNairy Sampling Locations							
	102	120	121	122	133	140	239	247
1989, Q4			12/1/89					
1990, Q1		2/27/90	2/24/90	2/22/90				
1990, Q2		4/20/90	4/19/90	4/30/90	5/3/90	5/2/90		
1990, Q3		8/20/90	8/14/90	8/15/90	8/15/90	8/17/90		
1990, Q4								
1991, Q1		2/28/91	3/25/91	3/11/91	3/1/91	3/14/91		
1991, Q2			4/30/91					
1991, Q3								
1991, Q4								
1992, Q1	2/28/92							
1992, Q2								
1992, Q3								
1992, Q4								
1993, Q1								
1993, Q2	5/26/93	5/25/93		6/1/93	6/2/93	5/26/93		
1993, Q3	7/26/93	7/12/93	9/21/93	9/20/93	9/13/93	7/13/93		
1993, Q4	10/14/93	10/26/93	12/27/93	12/7/93		10/21/93		
1994, Q1	1/24/94	1/25/94	3/29/94	3/21/94	3/2/94	1/11/94		
1994, Q2	4/26/94	4/20/94	6/8/94	6/8/94	6/7/94	4/27/94		
1994, Q3	7/28/94	7/19/94	9/7/94	9/21/94	9/12/94	7/20/94		
1994, Q4	10/5/94	10/24/94	12/1/94	12/5/94		10/10/94		
1995, Q1	3/21/95	2/8/95	2/9/95	2/9/95	3/27/95		3/29/95	3/27/95
1995, Q2	6/14/95			6/5/95			4/13/95 5/3/95 6/6/95	4/19/95 6/20/95
1995, Q3	9/18/95						7/24/95 8/9/95 9/26/95	7/19/95 8/22/95 9/20/95
1995, Q4	12/19/95						10/18/95 11/8/95 12/19/95	10/23/95 11/28/95 12/13/95
1996, Q1	2/8/96	2/22/96	2/22/96	2/8/96	2/12/96	2/12/96	1/23/96 2/15/96 3/20/96	1/22/96 2/22/96 3/25/96
1996, Q2							4/18/96 5/21/96 6/13/96	4/18/96 5/28/96 6/18/96

Summary of Sampling Times for McNairy Background Wells when Analyses for One or More Radionuclides Were Performed (Cont.)

Sampling Dates	McNairy Sampling Locations							
	102	120	121	122	133	140	239	247
1996, Q3							7/25/96 8/6/96 9/10/96	7/18/96 8/13/96 9/17/96
1996, Q4							10/31/96 12/11/96	10/2/96 11/12/96 12/10/96
1997, Q1	2/6/97	2/6/97	2/6/97	2/6/97	2/10/97	2/6/97	1/23/97 2/17/97 3/18/97	1/24/97 2/17/97 3/20/97
1997, Q2							4/15/97 5/20/97 6/12/97	4/10/97 5/20/97 6/18/97
1997, Q3							7/10/97 8/14/97 9/15/97	7/24/97 8/11/97 9/17/97
1997, Q4		11/11/97	11/11/97	11/11/97	11/12/97	11/6/97	10/16/97	10/23/97 11/25/97

Notes: Analyte list varies between samples.
Quarters when samples were not collected are left blank.

Summary of RGA Background Wells

MW 103

Location - South of Plant; South of C-743 parking lot
N (-3500.84) E (-6252.14)
Date Installed - November 19, 1991
Screened Depth - Deep RGA
Top - 79.5 ft bgs
Bottom - 90 ft bgs
Dates Sampled (Data available) - Q1 92; Q2 93; Q3 93; Q4 93; Q1 94; Q2 94; Q3 94; Q4 94; Q1 95; Q1 96; Q1 97; Q2 97
Construction Information Reference - Groundwater Monitoring Phase III
Potential Contaminant Summary -

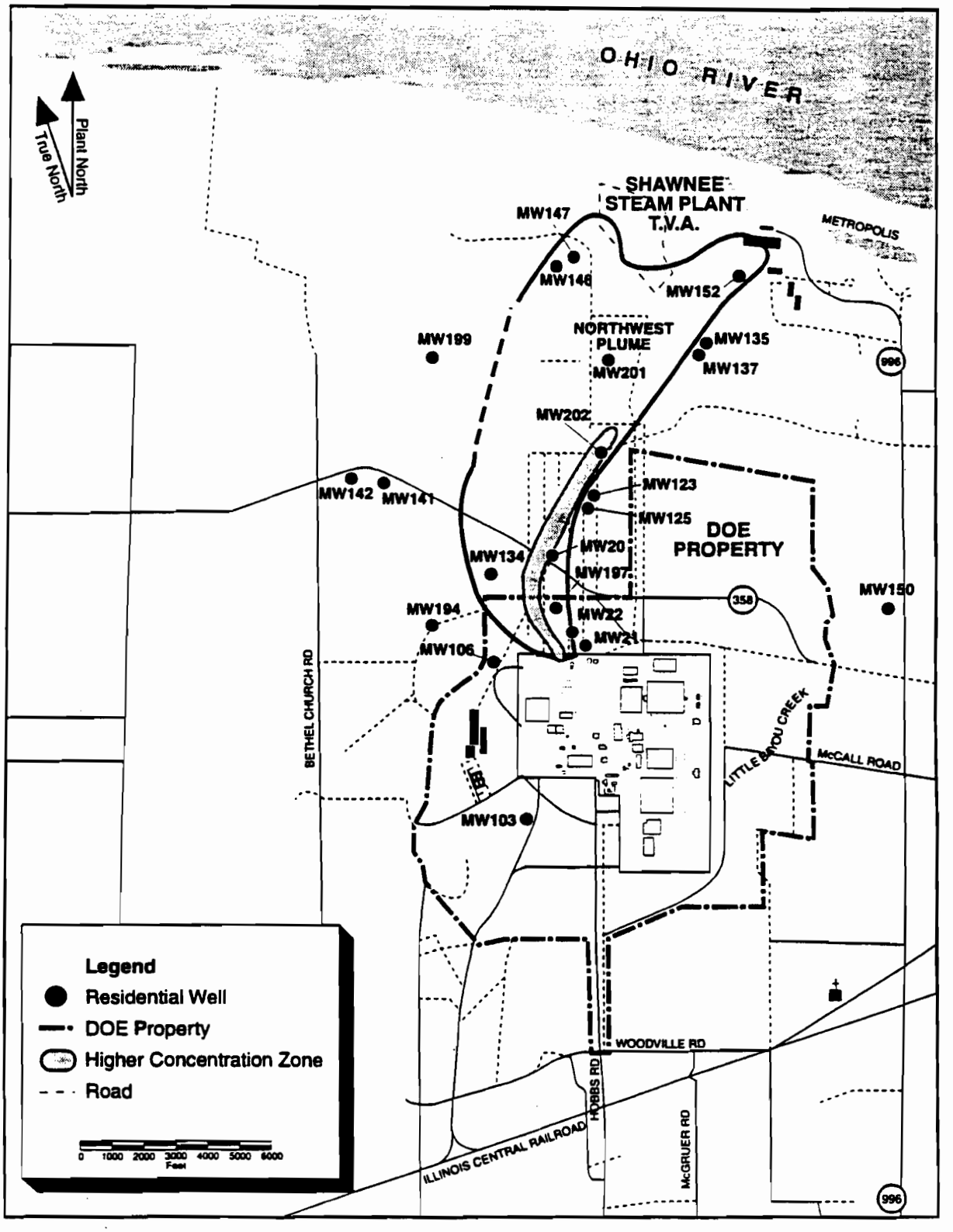
Compound	Detected Concentration	Detection Error (Rad only)	Date of Collection	Sample ID
Organic Compounds (all; µg/l)				
cis-1,2-dichloroethene	1.8	NA	5/13/97	5327-97
Radionuclides (^{99}Tc only; pCi/l; unfiltered samples; ordered by date of collection)				
^{99}Tc	5	93	5/26/93	5178-93
^{99}Tc	13	34	7/26/93	5944-93
^{99}Tc	12	19	10/14/93	7299-93
^{99}Tc	10	45	1/24/94	4272-94
^{99}Tc	20	18	7/27/94	6026-94
^{99}Tc	18	20	10/5/94	6774-94
^{99}Tc	13	10	2/8/96	5285-96
Radionuclides (^{99}Tc only; pCi/l; filtered samples; ordered by date of collection)				
None	NA	NA	NA	NA

Notes: NA = Entry not applicable or not available.

Physical Data Summary -

Parameter	Number of Observations	Arithmetic Average of Results	Range of Results	Units
Alkalinity	10	75.5	67 - 104	mg/L
Depth to Water	12	55.81	50.78 - 60.65	feet
Dissolved Organic Carbon	1	<1	NA	mg/L
Dissolved Oxygen	11	2.96	1.97 - 4.02	mg/L
Dissolved Solids	10	104.2	75 - 136	mg/L
pH	39	6.0	5.6 - 6.4	SU
Specific Conductance	36	167.1	155 - 209	umhos/cm
Temperature	12	59.0	56 - 62	F
Total Organic Carbon	30	<1	< 1 - < 1	mg/L
Total Suspended Solids	2	<4	< 4 - < 4	mg/L
Turbidity	9	2.5	0.35 - 5	NTU

Notes: NA = Entry not applicable or not available.


OHIO RIVER
Plant North
True North
SHAWNEE STEAM PLANT T.V.A.
METROPOLIS
MW147
MW146
MW152
MW199
NORTHWEST PLUME
MW135
MW137
MW201
996
MW202
MW123
MW125
MW142
MW141
DOE PROPERTY
MW134
MW20
MW197
358
MW150
MW194
MW22
MW21
MW106
BETHEL CHURCH RD
LITTLE BAYOU CREEK
McCALL ROAD
MW103
Legend
Residential Well
DOE Property
Higher Concentration Zone
Road
0 1000 2000 3000 4000 5000 6000
Feet
WOODVILLE RD
HOBBS RD
McGRUER RD
ILLINOIS CENTRAL RAILROAD
996

MONITORING WELL NO. 103

MONITORING WELL COORDINATES S3500.84,W6252.14

INSTALLATION DATE 11-19-91

MATERIAL SPECIFICATIONS

A. STAINLESS STEEL CASING:

2-INCH DIAMETER,TYPE 316,SCHEDULE 5S STAINLESS STEEL PIPE,IN ACCORDANCE WITH ASTM A-312. THREADED,FLUSH JOINTS.

B. PROTECTIVE CASING:

6-INCH DIAMETER,SEAMLESS SCHEDULE 40, ASTM A-53 CARBON STEEL PIPE.

C. BENTONITE PELLET SEAL:

FREE FLOWING,HIGH-SWELLING,SODIUM-BASED, WYOMING-TYPE BENTONITE.

D. GRAVEL FILTER PACK:

100% BY WEIGHT PASSING A No.4 US STANDARD SIEVE AND NO MORE THAN 5% BY WEIGHT PASSING A No.50 US STANDARD SIEVE, WITH A UNIFORMITY COEFFICIENT OF TWO OR LESS.

E. WELL SCREEN:

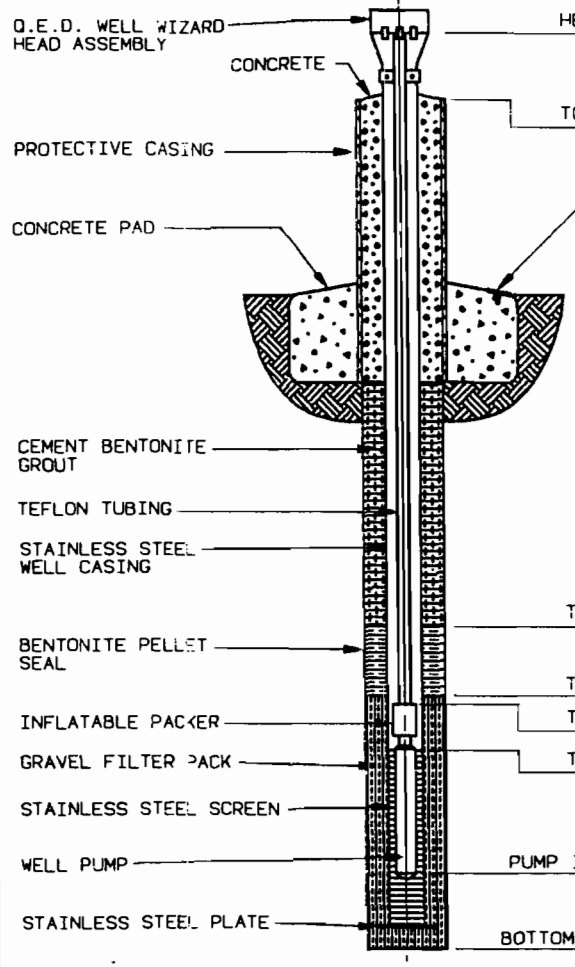
2-INCH DIAMETER, 10-FEET LONG, TYPE 316 STAINLESS STEEL. WIRE WOUND, WITH A 0.010-SLOT SIZE.

F. INFLATABLE PACKER:

Q.E.D. ENVIRONMENTAL SYSTEMS, INC., "PURGE MISER" MODEL 4200.

G. WELL PUMP:

Q.E.D. ENVIRONMENTAL SYSTEMS, INC., "WELL WIZARD" MODEL T-1200.



	± VERTICAL	ELEVATION
HEAD PLATE	2.80	385.22
TOP OF PROTECTIVE CASING	2.06	384.48
DOMED SURVEY MARKER		
GROUND SURFACE	0.0	382.42
TOP OF BENTONITE PELLET SEAL	-75.0	307.4
TOP OF GRAVEL FILTER PACK	-77.0	305.4
TOP OF INFLATABLE PACKER	-77.0	305.4
TOP OF 10' S.S. SCREEN	-79.5	302.9
PUMP INTAKE	-84.0	298.4
BOTTOM OF GRAVEL FILTER PACK	-90.0	292.4

NOT TO SCALE

A-19

REV. NO.	ISSUE / REVISION DESCRIPTION	DRW	CHK	SECT	DEPT	PE	RED	CA	SAFETY	SECURITY	FIRE	H PHY	ENG MT	ENVIR	OE	PJ MGR	DRAWING APPROVALS	DATE
0	ORIGINAL ISSUE/FOR ESO 16905	X	X	X	X	X	X	X								X	A-E	
	CHANGE CONTROL PROCEDURE EP-C-18	REVISION OR ISSUE APPROVALS															DOE	

DRW
RED K.L. Hall 11/92
CHK
SECT
DEPT
PE
PEDH
PJ/MMES
REQUESTER

MARTIN MARIETTA — MARTIN MARIETTA ENERGY SYSTEMS, INC.
operated for the DEPARTMENT OF ENERGY under U.S. GOVERNMENT contract DE-AC-05-84OR21400
Oak Ridge, Tennessee • Paducah, Kentucky

GROUNDWATER MONITORING PHASE III, AS BUILT, MONITORING WELL NO. 103

1	48	49	50	PLANT	BLDG	FL	SHEET	OF
3	C	G	N	PGDP	.	.	.	.

SCALE N.T.S. | ID 16905 | C5B-16905 SK17

TYP S CLA U RE C

[Page left blank]

BORING NO.: S-18	PAGE 1 OF 5

SUBSURFACE BORING LOG

PROJECT: AZ-054, GW Monitoring Phase 3 LOCATION: EAST: -6258 NORTH: -3489.1
SURF. ELEV.: 382.7 DRILLING SUBCONTRACTOR: Campbell Well Drilling
DRILLING METHOD AND EQUIP.: CME-55, HSA, Continuous sampling to 85' and 3" SS (5' center) to 142'
DATE STARTED: 10/16/91 DATE FINISHED: 10/18/91 LOGGER: B.E. Phillips

DEPTH (FT)	SAMPLE INTERVAL	SAMPLE NO.	RECOVERY (FT)	SPT BLOWS (N)	GRAIN SIZE PLOT	SECTION PROFILE	LITHOLOGIC DESCRIPTION / COMMENTS
0.0							SILT: occ pbl, tr cl, yelsh-br (10YR 5/4) (Fill)
		S-18-1	2.7	NA			
-5.0	5.0						
		S-18-2	5.0	NA			SILT: cly to tr cl, tr woody material, lgt gr (10YR 6/1) to gr (10YR 5/1) (Fill)
-10.0	10.0						
		S-18-3	1.6	NA			
-15.0	15.0						
		S-18-4	3.7	NA			
							SILT: tr cl, moist-wet, br (10YR 5/3) (Fill??)
-20.0	20.0						
		S-18-5	3.9	NA			SILT: dk br (10YR 3/3) w/ abund blk (poss carb) material, lower contact is sharp (Fill??)
							SILT: tr cl, yelsh-br (10YR 5/6), occ pbl
-25.0	25.0						SAND: (85%), f-m, mod srtd, rndd, slty, yelsh-rd (5YR 5/8) and gr (5YR 7/1), sl gvly at bottom
		S-18-6	4.5	NA			GRAVEL: (50%) well rndd, cly, rdsh-br (5YR 4/4)
							GRAVEL: (60%), poorly srtd, well rndd, sdy (20%), f, slty, tr cl, yelsh-rd (5YR 5/8)
-30.0	30.0						

BORING NO.: S-18	PAGE 2 OF 5

SUBSURFACE BORING LOG

PROJECT: AZ-054, GW Monitoring Phase 3 LOCATION: EAST: -6258 NORTH: -3489.1
SURF. ELEV.: 382.7 DRILLING SUBCONTRACTOR: Campbell Well Drilling
DRILLING METHOD AND EQUIP.: CME-55, HSA, Continuous sampling to 85' and 3" SS (5' center) to 142'
DATE STARTED: 10/16/91 DATE FINISHED: 10/18/91 LOGGER: B.E. Phillips

DEPTH (FT)	SAMPLE INTERVAL	SAMPLE NO.	RECOVERY (FT)	SPT BLOWS (N)	GRAIN SIZE PLOT	SECTION PROFILE	LITHOLOGIC DESCRIPTION / COMMENTS
-30.0	30.0						SAND: (85%), m-c, well rndd, mod well srtd, sl gvly (10%), tr slt, yelsh-rd (5YR 5/8)
		S-18-7	3.6	NA			SAND: (60%), m-c, rndd, mod well srtd, gvly (35%), hematite and poss manganese oxide stn, tr slt, rdsh-br (2.5YR 4/4)
-35.0	35.0						SILT: sdy (40%), f, tr cl, br (7.5YR 5/6)
		S-18-8	5.0	NA			
							GRAVEL: (40%), rndd, sdy (30%), m-c, poorly srtd, slty, cly, br (7.5YR 5/4)
-40.0	40.0						SAND: (60%), m-c, mod well srtd, gvly (35%), tr slt, moist, rd (2.5YR 4/6), sharp lower contact
							SAND: (80%), f, well srtd, slty, cly, moist, rd (2.5 YR 4/6)
		S-18-9	4.0	NA			CLAYEY SILT: sl sdy (15%), vf, br (7.5YR 5/6) w/ strks of lgt gr (7.5YR 7/1)
-45.0	45.0						SAND: (50%), vf-f, qtz, mod well srtd, slty, cly, occ pbl, moist to wet, sm blk carb material from 49'-50', predom brsh-yel (10YR 6/6) w/ sm lgt gr (10YR 7/2)
		S-18-10	5.0	NA			
-50.0	50.0						
		S-18-11	5.0	NA			CLAYEY SILT: sdy (20-40%), vf-f, occ pbl, moist-wet, predom brsh-yel (10YR 6/8) w/ strks of lgt gr (10YR 7/1), tr org material
-55.0	55.0						
		S-18-12	5.0	NA			
-60.0	60.0						

BORING NO.: S-18	PAGE 3 OF 5

SUBSURFACE BORING LOG

PROJECT: AZ-054, GW Monitoring Phase 3 LOCATION: EAST: -6258 NORTH: -3489.1
SURF. ELEV.: 382.7 DRILLING SUBCONTRACTOR: Campbell Well Drilling
DRILLING METHOD AND EQUIP.: CME-55, HSA, Continuous sampling to 85' and 3" SS (5' center) to 142'
DATE STARTED: 10/16/91 DATE FINISHED: 10/18/91 LOGGER: B E Phillips

DEPTH (FT)	SAMPLE INTERVAL	SAMPLE NO.	RECOVERY (FT)	SPT BLOWS (N)	GRAIN SIZE PLOT	SECTION PROFILE	LITHOLOGIC DESCRIPTION / COMMENTS
-60.0	60.0						
		S-18-13	5.0	NA			do
							SAND: (50%), vf-m, poorly srtd, v cly, slty, tr gvl, dk yelsh-br (10YR 4/6) and gr (10YR 6/1)
-65.0	65.0						SAND: (85%), m-c, well srtd, slty, interbedded w/ silt, cly, sdy(30%) f-m, yelsh-br (10YR 5/8) w/ sm gr
		S-18-14	5.0	NA			SILTY CLAY sdy (30%), vf-m, poorly srtd, predom gr (10YR 6/1) w/ sm yelsh-br, tr blk carb material
-70.0	70.0						SAND: (50%) vf-f, well srtd, slty, cly, yelsh-br (10YR 5/6) and gr (10YR 7/1)
		S-18-15	5.0	NA			CLAYEY SILT tr sd (5%), f, yelsh-br (10YR 5/6) mott gr (10YR 7/1), stiff
-75.0	75.0						SAND: (90%) f, well srtd, slty, yelsh-br (10YR 5/6) and gr (10YR 7/1)
		S-18-16	4.6	NA			CLAYEY SILT: sl sdy (10%), vf-f, lgt gr (10YR 7/1), occ pbl
							SAND: (80%), vf-f, wll srtd, sl slty, tr gvl, yelsh-br (10YR 5/6) and gr (10YR 7/1)
-80.0	80.0						GRAVEL: (50%), sdy (30%), f-c, poorly srtd, sl slty, gr (10YR 7/1), wet
		S-18-17	1.2	NA			GRAVEL: (60%) poorly srtd, sub rndd, abund cht and sltst frags, sdy (35%), mstly c, sm m-vc, sub rndd, mod srtd, tr slt, br (7.5YR 5/4), sm rd (hematite?) stn, wet
	82.5						
-85.0	85.0						SAND: (50%) mostly c, sm m-vc, sub ang to sub rndd, gvly (45%), poorly srtd, tr slt, yelsh-br (10YR 5/6), sm rdsh stn, tr blk (poss org) material, wet
		S-18-18	1.4	33-45-36-29 (81)			
	87.0						
-90.0	90.0						SILTY CLAY: tr blk (poss carb) material, predom gr (10YR 5/1) w/ brsh-yel (10YR 6/8) slt along fract, dry, v stiff

BORING NO.: S-18	PAGE 4 OF 5

SUBSURFACE BORING LOG

PROJECT: AZ-059, GW Monitoring Phase 3 LOCATION: EAST: -6258 NORTH: -3489.1
SURF. ELEV.: 382.7 DRILLING SUBCONTRACTOR: Campbell Well Drilling
DRILLING METHOD AND EQUIP.: CME-55, HSA, Continuous sampling to 85' and 3" SS (5' centerl to 142'
DATE STARTED: 10/16/91 DATE FINISHED: 10/18/91 LOGGER: B.E. Phillips

DEPTH (FT)	SAMPLE INTERVAL	SAMPLE NO.	RECOVERY (FT)	SPT BLOWS (N)	GRAIN SIZE PLOT (CLAY SILT SAND GRAVEL COBBLES)	SECTION PROFILE	LITHOLOGIC DESCRIPTION / COMMENTS
-90.0	90.0–92.0	S-18-19	2.0	5-14-15-22 (29)			do
-95.0							
-100.0	100.0–102.0	S-18-20	2.0	14-16-23-27 (39)			CLAY: sl slty, mic, blk (2.5Y 2/0), stiff to v stiff
-105.0							
-110.0	110.0–112.0	S-18-21	2.0	9-17-23-26 (40)			CLAY: sl slty, sl mic, dry to moist, blk (5Y 2.5/1), poss glauc, v stiff
-115.0							
-120.0	120.0						

BORING NO.: S-18	PAGE 5 OF 5

SUBSURFACE BORING LOG

PROJECT: AZ-054, GW Monitoring Phase 3 LOCATION: EAST: -6258 NORTH: -3489.1
SURF. ELEV.: 382.7 DRILLING SUBCONTRACTOR: Campbell Well Drilling
DRILLING METHOD AND EQUIP.: CME-55, HSA, Continuous sampling to 85' and 3" SS (5' center) to 142'
DATE STARTED: 10/16/91 DATE FINISHED: 10/18/91 LOGGER: B.E. Phillips

DEPTH (FT)	SAMPLE INTERVAL	SAMPLE NO.	RECOVERY (FT)	SPT BLOWS (N)	GRAIN SIZE PLOT	SECTION PROFILE	LITHOLOGIC DESCRIPTION / COMMENTS
-120.0	120.0–122.0	S-18-22	2.0	12-24-25-31 (49)			do
-125.0							SILTY CLAY: mic, glau, blk (5Y 2.5/1), v stiff, w/ thin partings of sd, vf-f, well srtd, sub rndd, tr glauc, mic, sm pyr cmt, sd is lgt gr (5Y 7/1)
-130.0	130.0–132.0	S-18-23	2.0	15-21-27-83 (48)			
-135.0							SAND: (90-95%), f, sub rndd, well srtd, tr slt, tr mic, gr (2.5Y 5/0) to dk gr (2.5Y 4/0), mass, predom qtz, wet
-140.0	140.0–142.0	S-18-24	2.0	8-13-36-REF (49)			
							TD = 142'
-145.0							
-150.0							

[Page left blank]

Summary of RGA Background Wells

MW 106

Location - Northwest corner of plant
N (-8438.90) E (990.93)
Date Installed - November 13, 1991
Screened Depth - Middle RGA
Top - 62 ft bgs
Bottom - 75 ft bgs
Dates Sampled (Data available) - Q1 92; Q2 93; Q3 93; Q4 93; Q1 94; Q2 94; Q3 94; Q4 94 (2); Q1 95; Q1 96; Q1 97; Q4 97
Construction Information Reference - Groundwater Monitoring Phase III
Potential Contaminant Information -

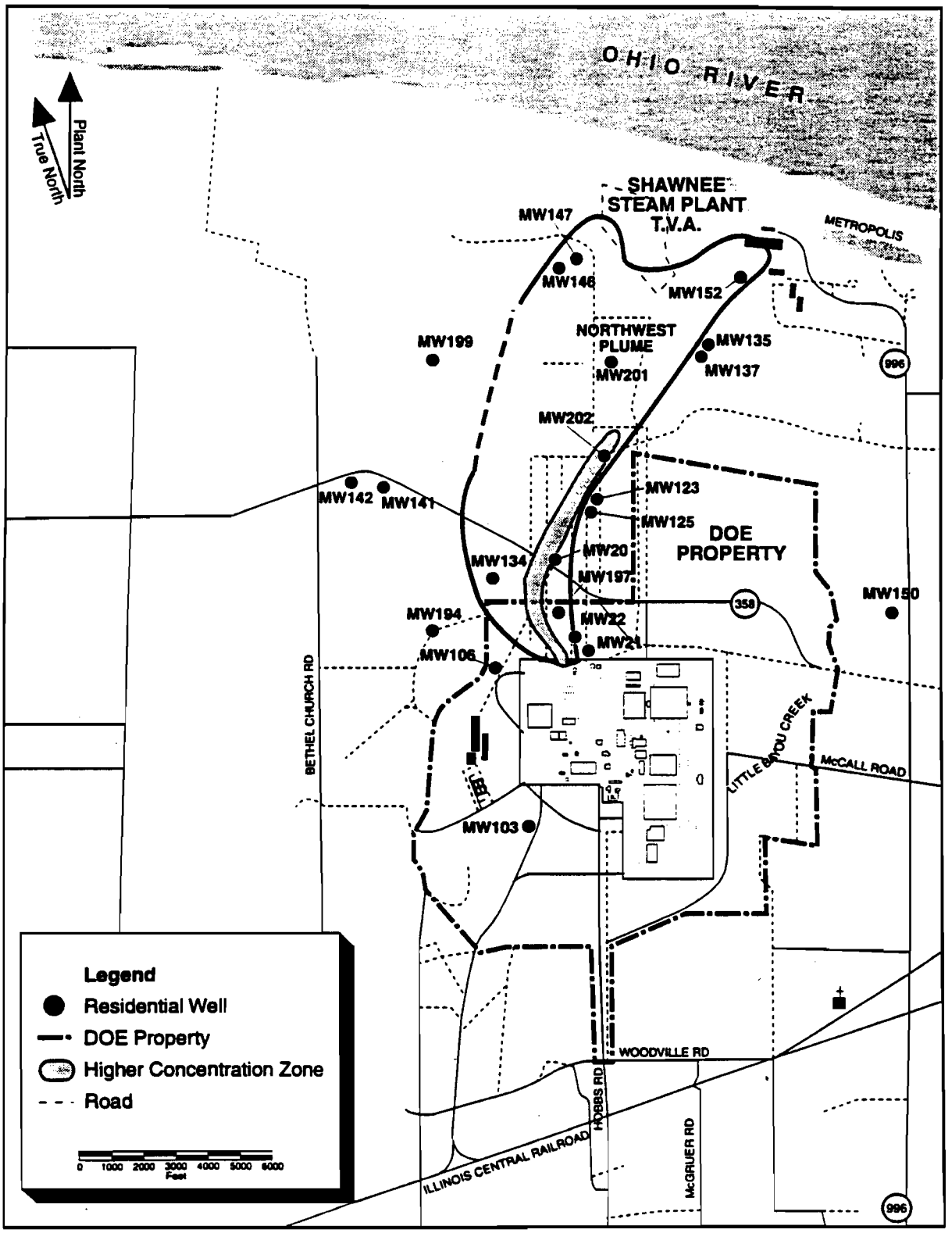
Compound	Detected Concentration	Detection Error (Rad only)	Date of Collection	Sample ID
Organic Compounds (all; µg/l)				
Trichloroethene	1 XJX	NA	3/14/94	4697-94
Radionuclides (^{99}Tc only; pCi/l; unfiltered samples; ordered by date of collection)				
^{99}Tc	12	21	2/14/92	4477-92
^{99}Tc	29	23	6/7/93	5322-93
^{99}Tc	25	19	9/14/93	6579-93
^{99}Tc	10	24	12/6/93	7862-93
^{99}Tc	3	6	3/14/94	4697-94
^{99}Tc	11	21	6/20/94	5513-94
^{99}Tc	1	2	9/6/94	6640-94
^{99}Tc	5	17	10/10/94	6782-94
^{99}Tc	7	6	12/12/94	7272-94
^{99}Tc	5	7	2/6/95	5444-95
^{99}Tc	1	10	2/8/96	5289-96
^{99}Tc	5	11	2/4/97	5138-97
^{99}Tc	6	12	11/12/97	5788-97
Radionuclides (^{99}Tc only; pCi/l; filtered samples; ordered by date of collection)				
None	NA	NA	NA	NA

Notes: NA = Entry not applicable or not available.

Physical Data Summary -

Parameter	Number of Observations	Arithmetic Average of Results	Range of Results	Units
Alkalinity	3	86.3	77 - 100	mg/L
Depth to Water	12	41.99	36.39 - 49.61	feet
Dissolved Oxygen	12	5.38	3.49 - 6.37	mg/L
Dissolved Solids	3	157	145 - 171	mg/L
pH	42	6.1	5.9 - 6.5	SU
Specific Conductance	42	287.8	278 - 310	umhos/cm
Temperature	12	58.6	57.3 - 60.4	F
Total Organic Carbon	12	< 1	< 1 - < 1	mg/L
Turbidity	10	39.3	5.3 - 200	NTU

Notes: NA = Entry not applicable or not available.


OHIO RIVER
Plant North
True North
SHAWNEE STEAM PLANT T.V.A.
METROPOLIS
MW147
MW146
MW152
MW199
NORTHWEST PLUME
MW201
MW135
MW137
996
MW202
MW123
MW125
MW142
MW141
DOE PROPERTY
MW20
MW134
MW197
MW150
358
MW194
MW22
MW21
MW106
BETHEL CHURCH RD
LITTLE BAYOU CREEK
McCALL ROAD
MW103
Legend
Residential Well
DOE Property
Higher Concentration Zone
Road
0 1000 2000 3000 4000 5000 6000
Feet
WOODVILLE RD
HOBBS RD
McGRUER RD
ILLINOIS CENTRAL RAILROAD
996

MONITORING WELL NO. 106

MONITORING WELL COORDINATES N990.93, W8438.90

INSTALLATION DATE 11-13-91

MATERIAL SPECIFICATIONS

A. STAINLESS STEEL CASING:

2-INCH DIAMETER, TYPE 316, SCHEDULE 5S STAINLESS STEEL PIPE, IN ACCORDANCE WITH ASTM A-312. THREADED, FLUSH JOINTS.

B. PROTECTIVE CASING:

6-INCH DIAMETER, SEAMLESS SCHEDULE 40, ASTM A-53 CARBON STEEL PIPE.

C. BENTONITE PELLET SEAL:

FREE FLOWING, HIGH-SWELLING, SODIUM-BASED, WYOMING-TYPE BENTONITE.

D. GRAVEL FILTER PACK:

100% BY WEIGHT PASSING A No.4 US STANDARD SIEVE AND NO MORE THAN 5% BY WEIGHT PASSING A No.50 US STANDARD SIEVE, WITH A UNIFORMITY COEFFICIENT OF TWO OR LESS.

E. WELL SCREEN:

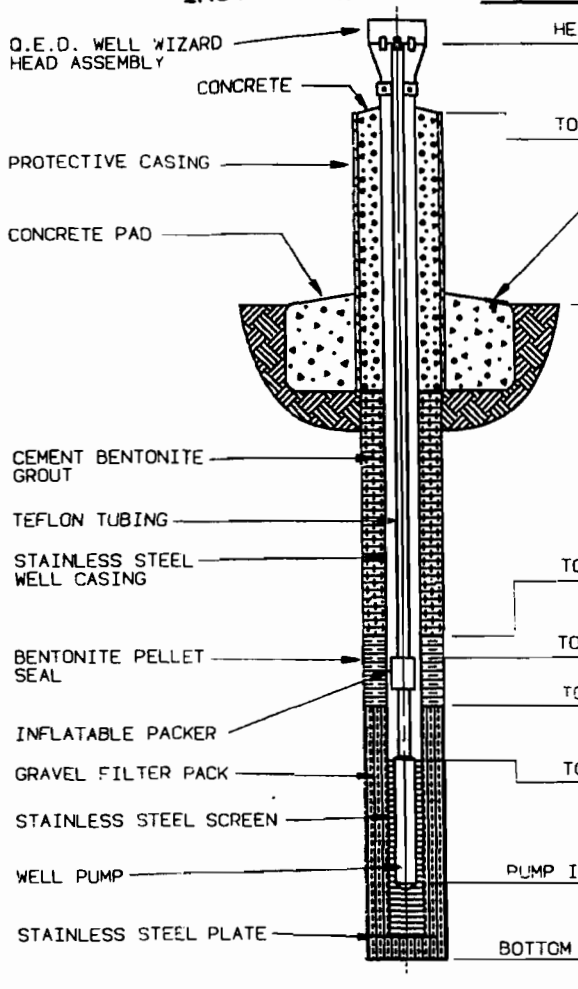
2-INCH DIAMETER, 10-FEET LONG, TYPE 316 STAINLESS STEEL, WIRE WOUND, WITH A 0.010-SLOT SIZE.

F. INFLATABLE PACKER:

Q.E.D. ENVIRONMENTAL SYSTEMS, INC., "PURGE MISER" MODEL 4200.

G. WELL PUMP:

Q.E.D. ENVIRONMENTAL SYSTEMS, INC., "WELL WIZARD" MODEL T-1200.



	± VERTICAL	ELEVATION
HEAD PLATE	3.06	369.35
TOP OF PROTECTIVE CASING	2.42	368.71
DOMED SURVEY MARKER		
GROUND SURFACE	0.0	366.29
TOP OF BENTONITE PELLET SEAL	-58.0	308.3
TOP OF INFLATABLE PACKER	-59.5	306.8
TOP OF GRAVEL FILTER PACK	-61.5	304.8
TOP OF 10' S.S. SCREEN	-62.0	304.3
PUMP INTAKE	-66.5	299.8
BOTTOM OF GRAVEL FILTER PACK	-75.0	291.3

NOT TO SCALE

A-29

REV. NO.	ISSUE / REVISION DESCRIPTION	DRW	CHK	SECT	DEPT	PE	RED	SA	SAFETY	SECURITY	FIRE	h PAY	IAD MT	OWER	CE	PJ MMES	DRAWING APPROVALS	DATE
0	ORIGINAL ISSUE/FOR ESO 16905	X	X	X	X	X	X									X	A-E	
																	DOE	

CHANGE CONTROL PROCEDURE EP-C-18 — REVISION OR ISSUE APPROVALS

DRW
RED 11/92
CHK
SECT
DEPT
PE
PEDH
PJ/MMES
REQUESTER

MARTIN MARIETTA — MARTIN MARIETTA ENERGY SYSTEMS, INC.
operated for the DEPARTMENT OF ENERGY under U.S. GOVERNMENT contract DE-AC-05-84OR21400
Oak Ridge, Tennessee • Paducah, Kentucky

GROUNDWATER MONITORING PHASE III, AS BUILT, MONITORING WELL NO. 106

1	48	49	50	PLANT	BLDG	FL	SHEET	OF	TYPE
3	C	G	N	PGDP	.	.	.	.	S

SCALE N.T.S. — ID 16905 — C5B-16905 — SK19 — CLASS U — REV 0

[Page left blank]

BORING NO.: S-22	PAGE 1 OF 3

SUBSURFACE BORING LOG

PROJECT: AZ-054, GW Monitoring Phase 3 LOCATION: EAST: -8437.7 NORTH: 980.6
SURF. ELEV.: 366.4 DRILLING SUBCONTRACTOR: Campbell Well Drilling
DRILLING METHOD AND EQUIP.: CME-55, HSA to 60' and mud rotary to 85'
DATE STARTED: 10/29/91 DATE FINISHED: 10/31/91 LOGGER: J.L. Clausen

DEPTH (FT)	SAMPLE INTERVAL	SAMPLE NO.	RECOVERY (FT)	SPT BLOWS (N)	GRAIN SIZE PLOT	SECTION PROFILE	LITHOLOGIC DESCRIPTION / COMMENTS
0.0							SILT: root, organic, occ pbl, br (10YR 2/2)
							SILT: sl cly, root struct, v stiff, lgt buff mott yel (10YR 7/2)
		S-22-1	4.0	NA			
-5.0	5.0						
		S-22-2	3.5	NA			
-10.0	10.0						
		S-22-3	5.0	NA			SILT: sl cly, sl sdy (10%) vf, occ pbl, tan (2.5YR 7/2)
-15.0	15.0						
		S-22-4	4.2	NA			SAND: (50%), m-c, rndd, mod srtd, slty, sl gvly (10%), brn to tan (7.5YR 5/4)
-20.0	20.0						GRAVEL: (80%), sl sdy (20%), buff mott orsh-rd (7.5YR 7/3)
							SILT: sdy (45%) f-m, rndd, tr pbl (5%), buff mott orsh-rd (7.5YR 7/3)
		S-22-5	4.7	NA			
-25.0	25.0						SILT: sdy (40%) f, rnd, mod srtd, occ pbl, stiff, lgt buff, mott orsh-rd (5YR 7/1)
		S-22-6	5.0	NA			CLAY: sl slty, sl sdy (10%) vf, rndd, well srtd, stiff, tan to gr mott yel (5YR 7/1)
-30.0	30.0						

BORING NO.: S-22	PAGE 2 OF 3

SUBSURFACE BORING LOG

PROJECT: AZ-054, GW Monitoring Phase 3 LOCATION: EAST: -8437.7 NORTH: 980.6
SURF. ELEV.: 366.4 DRILLING SUBCONTRACTOR: Campbell Well Drilling
DRILLING METHOD AND EQUIP.: CME-55, HSA to 60' and mud rotary to 85'
DATE STARTED: 10/29/91 DATE FINISHED: 10/31/91 LOGGER: J.L. Clausen

DEPTH (FT)	SAMPLE INTERVAL	SAMPLE NO.	RECOVERY (FT)	SPT BLOWS (N)	GRAIN SIZE PLOT (CLAY / SILT / FINE / MEDIUM / COARSE / GRAVEL)	SECTION PROFILE	LITHOLOGIC DESCRIPTION / COMMENTS
-30.0	30.0						
		S-22-7	5.0	NA			do
-35.0	35.0						CLAY: sl silty, sl sdy (20%) vf, rnd, well srtd, stiff, lgt mott orsh-rd (10YR 7/2)
		S-22-8	5.0	NA			
-40.0	40.0						
		S-22-9	5.0	NA			CLAY: sl silty, tr pbl, stiff, sl sdy (20%) f from 45'-47,' lam, orsh-rd w/ gr (7.5YR 6/8)
-45.0	45.0						
		S-22-10	5.0	NA			
-50.0	50.0						SAND: (60-90%) vf-m, mod srtd, subang, sl silty to silty, tr mic, soft, occ pbl, lgt gr (10YR 8/1) to brsh-yel to rdsh-yel w/ wht lam (7.5YR 7/8)
		S-22-11	5.0	NA			
-55.0	55.0						
		S-22-12	3.2	NA			
-60.0	60.0						

BORING NO.: S-22	PAGE 3 OF 3

SUBSURFACE BORING LOG

PROJECT: AZ-054, GW Monitoring Phase 3 LOCATION: EAST: -8437.7 NORTH: 980.6
SURF. ELEV.: 366.4 DRILLING SUBCONTRACTOR: Campbell Well Drilling
DRILLING METHOD AND EQUIP.: CME-55, HSA to 60' and mud rotary to 85'
DATE STARTED: 10/29/91 DATE FINISHED: 10/31/91 LOGGER: J.L. Clausen

DEPTH (FT)	SAMPLE INTERVAL	SAMPLE NO.	RECOVERY (FT)	SPT BLOWS (N)	GRAIN SIZE PLOT	SECTION PROFILE	LITHOLOGIC DESCRIPTION / COMMENTS
-60.0	60.0–62.0	S-22-13	1.8	21-58-72-79 (130)			GRAVEL: (80%) sl sdy (20%) vc, rndd, well srtd, rdsh-br (7.5YR 5/8)
-65.0	65.0–67.0	S-22-14	1.6	36-58-74-96 (132)			
-70.0	70.0–72.0	S-22-15	1.3	27-39-25-31 (64)			
-75.0	75.0–77.0	S-22-16	0.3	29-REF			
-80.0	80.0–82.0	S-22-17	1.8	16-54-43-45 (97)			SAND: (80%) vf, tr slt, sl cly, ang, well srtd, lgt gr (10YR 7/1), sm or (2.5YR 8/3) sd lyrs, interbedded w/ clay, br
-85.0	85.0–87.0	S-22-18	1.5	12-40-47-41 (87)			TD = 87'
-90.0							

[Page left blank]

Summary of RGA Background Wells

MW 141

Location - Northwest of Plant; Private property near Ogden Landing Road and Big Bayou Creek; Well Cluster 4
N (6544.69) E (-12173.02)

Date Installed - April 9 to 11, 1990

Screened Depth - Deep RGA
Top - 79 ft bgs
Bottom - 80 ft bgs

Dates Sampled (Data available) - Q2 90; Q3 90; Q1 91; Q2 93; Q3 93; Q4 93; Q1 94; Q2 94; Q3 94; Q4 94

Construction Information Reference - Technical Memorandum No. 5 in *Results of the Site Investigation, Phase I at the Paducah Gaseous Diffusion Plant, Paducah, Kentucky* (KY/ER-4; March 1991)

Potential Contaminant Information -

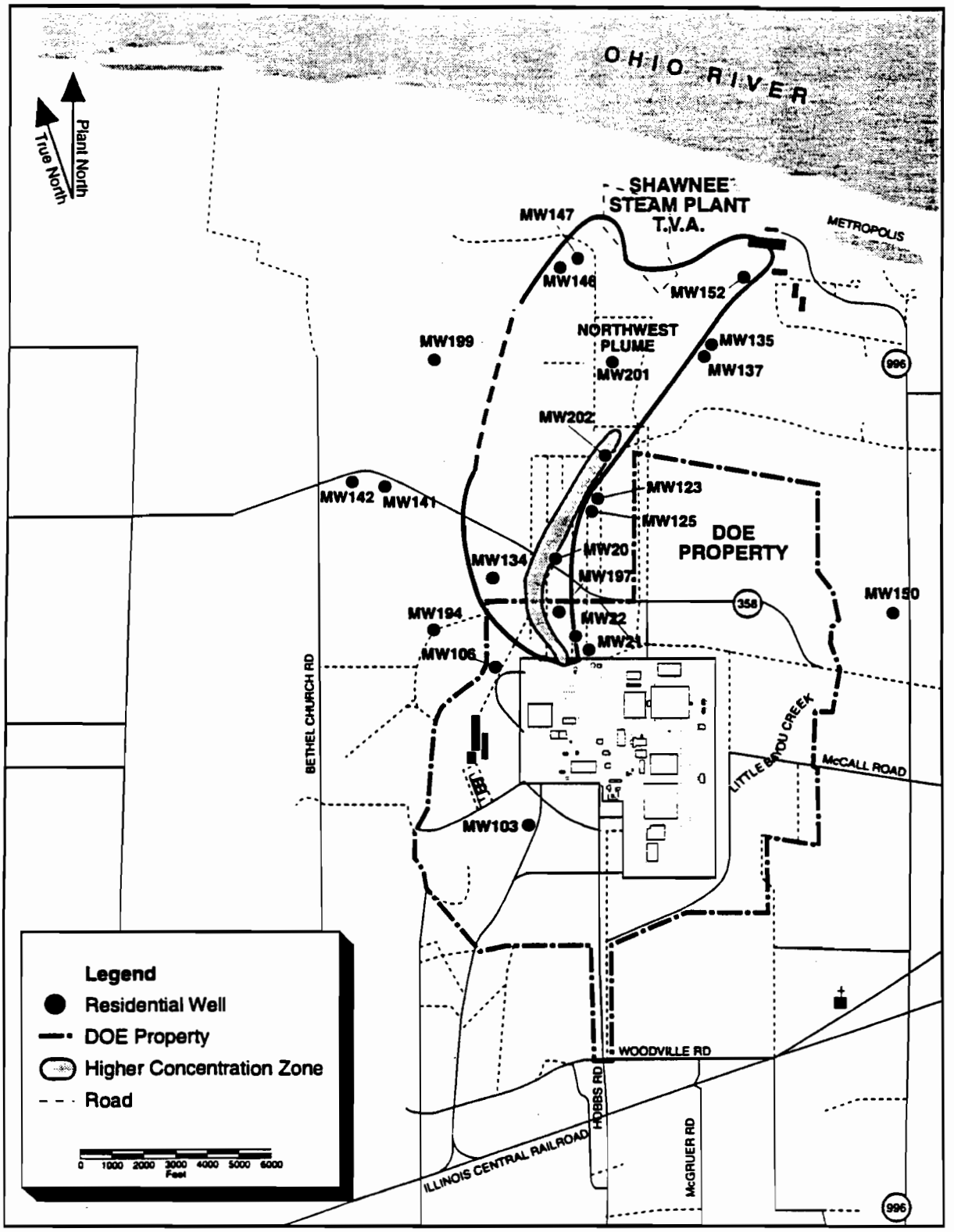
Compound	Detected Concentration	Detection Error (Rad only)	Date of Collection	Sample ID
Organic Compounds (all; µg/l)				
bis(2-ethylhexyl)phthalate	5 J	NA	4/27/90	CH200429-00000
Pyrene	3 J	NA	3/13/91	CH210011-00000
Radionuclides (^{99}Tc only; pCi/l; unfiltered samples; ordered by date of collection)				
^{99}Tc	-0.23	1.49	3/13/91	CH210011-00000
^{99}Tc	8	35	5/26/93	6080-93
^{99}Tc	1	3	7/13/93	6092-93
^{99}Tc	7	33	10/21/93	7085-93
^{99}Tc	15	20	1/11/94	4229-94
^{99}Tc	0	14	7/20/94	6054-94
^{99}Tc	8	24	10/10/94	6868-94
Radionuclides (^{99}Tc only; pCi/l; filtered samples; ordered by date of collection)				
None	NA	NA	NA	NA

Notes: NA = Entry not applicable or not available.

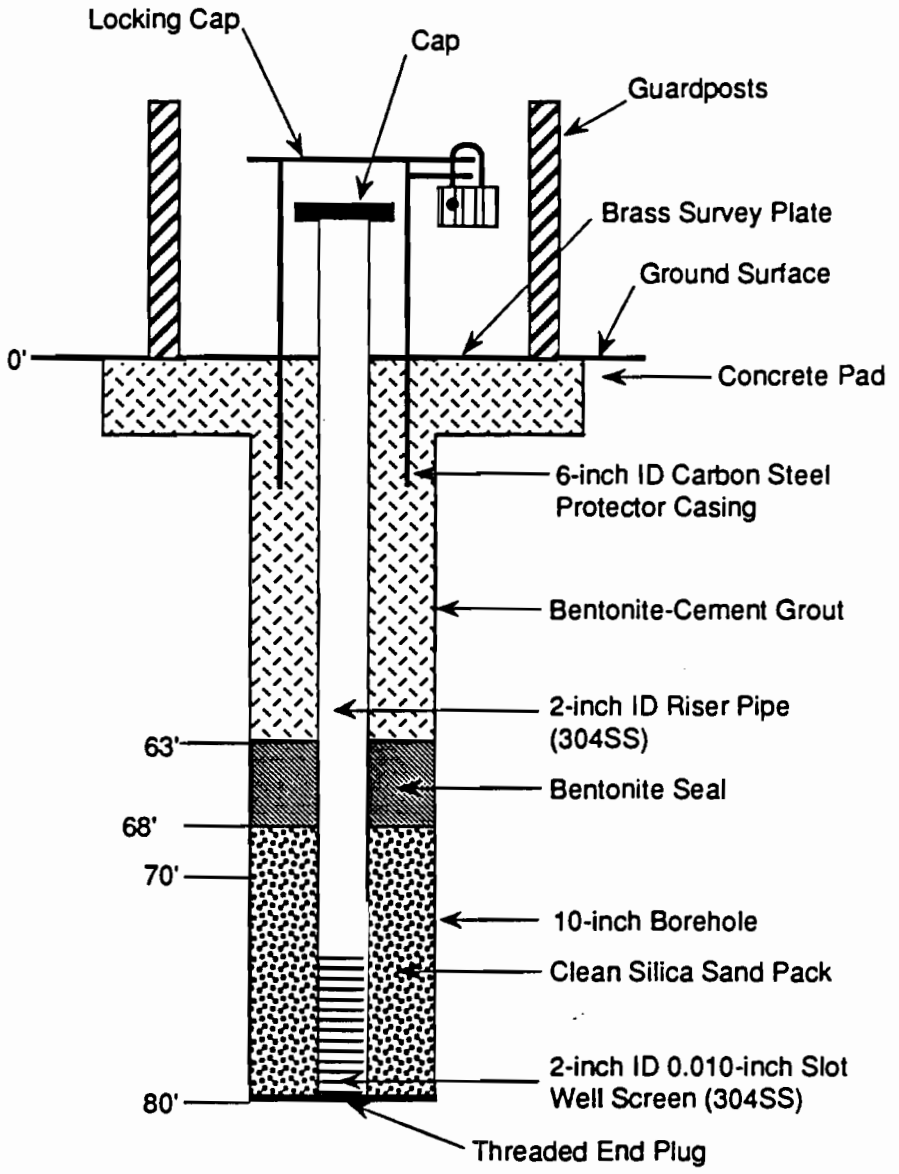
Physical Data Summary -

Parameter	Number of Observations	Arithmetic Average of Results	Range of Results	Units
Alkalinity	7	92.6	88 - 104	mg/L
Depth to Water	7	16.5	10.64 - 20.75	feet
Dissolved Oxygen	7	4.65	3.95 - 5.35	mg/L
Dissolved Solids	7	196.1	186 - 217	mg/L
Hardness as CaCO3, Dissolved	1	109	NA	g/L CaCO
pH	28	6.1	6 - 6.2	SU
Specific Conductance	28	356.0	346 - 374	umhos/cm
Temperature	7	58.6	58 - 59	F
Total Organic Carbon	25	< 1	< 1 - 1	mg/L
Turbidity	7	15.4	2.9 - 35	NTU

Notes: NA = Entry not applicable or not available.


OHIO RIVER
Plant North
True North
SHAWNEE STEAM PLANT T.V.A.
METROPOLIS
MW147
MW146
MW152
MW199
NORTHWEST PLUME
MW135
MW137
MW201
996
MW202
MW123
MW125
MW142
MW141
DOE PROPERTY
MW20
MW134
MW197
MW150
358
MW194
MW22
MW21
MW106
BETHEL CHURCH RD
LITTLE BAYOU CREEK
McCALL ROAD
MW103
Legend
Residential Well
DOE Property
Higher Concentration Zone
Road
0 1000 2000 3000 4000 5000 6000
Feet
WOODVILLE RD
HOBBS RD
McGRUER RD
ILLINOIS CENTRAL RAILROAD
996

Well 141
Well without
Isolation Casing



Well 141 Construction Details

CH2M HILL

PROJECT NUMBER	BORING NUMBER
SED28178.FS	Well 140 SHEET 1 OF 5

SOIL BORING LOG

PROJECT PGDP Phase I Site Investigation LOCATION WC-4; NW of Plant, Big Bayou Cr. at Ogden Landing Rd
ELEVATION DRILLING CONTRACTOR Geotek Engineering
DRILLING METHOD AND EQUIPMENT Hollow Stem Augers/Split Spoon Sampler
WATER LEVEL AND DATE START 3/20/90 FINISH 4/6/90 LOGGER B. Cocke

DEPTH BELOW SURFACE (FT)	SAMPLE INTERVAL	SAMPLE TYPE AND NUMBER	SAMPLE RECOVERY (FT)	STANDARD PENETRATION TEST RESULTS 6" -6" -6" (N)	SOIL DESCRIPTION: SOIL NAME, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY, USCS GROUP SYMBOL	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS AND INSTRUMENTATION
0	0-2		2.0'	3-3-4-5 (7)	SILT, YELLOWISH GRAY (10 YR 4/2), BROWN, MOIST, FIRM, MOTTLED (BLACK ORGANIC SPOTS), LOW PLASTICITY, (ML)	BACKGROUND= HNU=0 PPM RAD=52 CPM HNU=0 PPM RAD=44 CPM
2	2-4	4157	2.0'	3-3-3-3 (6)	SILT, SAME AS ABOVE, DAMP, (ML)	START DRILLING 1100 HNU=0 PPM RAD=34 CPM
4	4-6		1.75'	2-2-2-2 (4)	SILT, SAME AS ABOVE, (ML), CHANGING TO SILTY SAND, YELLOWISH BROWN (10 YR 4/2), DAMP, VERY LOOSE, FINE-MEDIUM, WELL GRADED, (SM)	HNU=0 PPM RAD=46 CPM
6	6-8		1.75'	2-2-2-2 (4)	POORLY GRADED SAND WITH SILT, DARK YELLOWISH BROWN (10 YR 4/2), MOIST, VERY LOOSE, MEDIUM SUBROUNDED GRAINS, MOSTLY QUARTZ, (SP-SM)	HNU=0 PPM RAD=36 CPM
8	8-10	4158	0'		NO SAMPLE, EXTREMELY LOOSE	HNU=0 PPM RAD=38 CPM
10	10-12			3-10-20-18 (30)	WELL GRADED GRAVEL WITH SILT AND SAND, MODERATE REDDISH BROWN (10 R 4/6), WET, MEDIUM DENSE, SUBANGULAR GRAINS, (GW-GM)	HNU=0 PPM RAD=40 CPM
12	12-14		2.0'	12-16-18-13 (34)	WELL GRADED GRAVEL WITH SAND, MODERATE REDDISH BROWN (10 F 4/6), STREAKS OF GRAY (N7), WET, DENSE, SUBANGULAR TO SUBROUNDED GRAINS, (GW)	HNU=0 PPM RAD=38 CPM
14	14-16	4159	1.8'	2-3-4-9 (7)	WELL GRADED GRAVEL WITH SAND AS ABOVE, CHANGING TO FAT CLAY, GREENISH GRAY (5 GY 6/1), MOIST, STIFF, PLASTIC, (CH)	HNU=0 PPM RAD=60 CPM
16	16-18		1.8'	7-10-14-22 (24)	FAT CLAY, GREENISH GRAY (5 GY 6/1), WITH MODERATE REDDISH BROWN STREAKS, DAMP, VERY STIFF, CHANGING TO GRAVEL, (CH)	HNU=0 PPM RAD=42 CPM
18	18-20		2.0'	6-12-15-14 (27)	FAT CLAY, GREENISH GRAY (5 GY 6/1), CHANGING TO SILTY CLAY (DARK YELLOWISH BROWN (10 YR 4/2), DAMP, VERY STIFF, (CL-ML)	HNU=0 PPM RAD=44 CPM
20	20-22	4160	1.8'	5-7-10-12 (17)	SILTY CLAY WITH SAND, MODERATE REDDISH BROWN (10 YR 4/6) WITH GRAY (N7) STREAKS, DAMP, VERY STIFF, GRAINS OF DARK MINERALS, QUARTZ, SOME PEBBLES, (CL-ML)	HNU=0 PPM RAD=60 CPM
22	22-24		2.0'	5-12-13-17 (25)	FAT CLAY, DARK YELLOWISH BROWN (10 YR 4/2), MOIST, VERY STIFF, PLASTIC WITH STREAKS OF SILTY CLAY WITH SAND, LIGHT GRAY (N8), (CH)	HNU=0 PPM RAD=42 CPM
24	24-26		1.75'	9-10-25-29 (35)	SILTY CLAY, MODERATE REDDISH BROWN, MOIST, STIFF, (CL-ML); CHANGING TO SILTY SAND, LIGHT GRAY (N8) MOTTLED ORGANIC STAINING (BLACK), DAMP, DENSE, IRON OXIDE, FINE, POORLY GRADED, (SW-SM)	HNU=0 PPM RAD=52 CPM
26	26-28	4161	1.75'	5-12-11-16 (23)	SILTY SAND, SAME AS ABOVE, (SW-SM), CHANGING TO SANDY SILTY CLAY, MOTTLED AS ABOVE, DAMP, VERY STIFF, (CL-ML)	HNU=0 PPM RAD=34 CPM
28	28-30			9-22-22-25 (44)	SILTY SAND WITH CLAY, MODERATE REDDISH BROWN (10 YR 4/6) MOTTLED, MOIST, DENSE, FINE-MEDIUM, (SP-SM), CHANGING TO SAND, LIGHT GRAY (N8) MOTTLED, MOIST, IRON OXIDE, ORGANIC, (SW)	HNU=0 PPM RAD=32 CPM STOP DRILLING 1620 3/20/90
30						

PROJECT NUMBER	BORING NUMBER
SED28178.FS	Well 140 SHEET 2 OF 5

SOIL BORING LOG

PROJECT PGDP Phase I Site Investigation LOCATION WC-4; NW of Plant, Big Bayou Cr. at Ogden Landing Rd
ELEVATION _____ DRILLING CONTRACTOR Geotek Engineering
DRILLING METHOD AND EQUIPMENT Hollow Stem Augers/Split Spoon Sampler
WATER LEVEL AND DATE _____ START 3/20/90 FINISH 4/6/90 LOGGER B. Cocke

DEPTH BELOW SURFACE (FT)	SAMPLE INTERVAL	SAMPLE TYPE AND NUMBER	SAMPLE RECOVERY (FT)	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION: SOIL NAME, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY, USCS GROUP SYMBOL	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS AND INSTRUMENTATION
30	30-32		1.0'	15-16-12-17 (28)	WELL GRADED GRAVEL WITH SAND, LIGHT GRAY (N7), AND MODERATE RED BROWN (10 YR 4/6) MOIST, MEDIUM DENSE, (GW), CHANGING TO SANDY SILT, LIGHT GRAY, DAMP, VERY STIFF, (ML)	RESUME DRILLING 3/21/90, 0800 HNU=0 PPM RAD=28 CPM
32	32-34	4164	2.0'	25-72-107-180 (179)	WELL GRADED GRAVEL WITH SAND, LIGHT GRAY AND MODERATE RED BROWN, MOIST, VERY DENSE, COARSE, (GW)	HNU=0 PPM RAD=34 CPM
34	34-36		1.8'	22-18-63-80 (81)	SAME AS ABOVE, (GW)	HNU=0 PPM RAD=22 CPM
36	36-38		1.2'	38-81-51-52 (112)	POORLY GRADED SAND WITH CLAY, DARK YELLOW ORANGE (10 YR 6/6), WET, VERY DENSE, MEDIUM-VERY COARSE; TOP 4": WITH VERY FINE-COARSE GRAVEL, 4-14": WITH SOME CLAY, (SP-SC)	HNU=0 PPM RAD=32 CPM
38	38-40	4165	1.8'	12-15-38-39 (53)	SAME AS ABOVE, LESS CLAY, SUBROUNDED TO SUBANGULAR, QUARTZ, TRACE MICA AND FERRO-MAGNESIUM MINERALS, (SP-SC)	0905 HNU=0 PPM RAD=20 CPM
40	40-42		1.8'	15-16-26-29 (42)	SAME AS ABOVE, SOME CLAYEY SAND IN LOWER 4", (SP-SC)	0912 HNU=0 PPM RAD=40 CPM
42	42-44		1.8'	12-34-40-50 (74)	SAME AS ABOVE, BOTTOM 6": FINE-COARSE GRAVEL, (SP-SC)	0922 HNU=8 PPM RAD=40 CPM
44	44-46	4166	1.7'	19-24-32-38 (56)	TOP 12": SAME AS ABOVE; BOTTOM 8": WELL GRADED GRAVEL WITH SAND, DARK YELLOW ORANGE (10 YR 6/6), WET, VERY DENSE, VERY COARSE SAND, MOSTLY FINE-MEDIUM GRAVEL, SUBANGULAR-SUBROUNDED, (GP)	1016 HNU=0 PPM RAD=26 CPM
46	46-48		2.0'	12-27-27-29 (54)	WELL GRADED SAND, DARK YELLOWISH ORANGE (10 YR 6/6), WET, VERY DENSE, MEDIUM-COARSE, SUBANGULAR-SUBROUNDED, (SW)	1028 HNU=0 PPM RAD=20 CPM
48	48-50		2.0'	23-29-31-41 (60)	SAME AS ABOVE; BOTTOM 4" GRADED TO VERY FINE GRAVEL, (SW)	1040 HNU=0 PPM RAD=36 CPM
50	50-52	4167	2.0'	15-27-26-33 (55)	SAME AS ABOVE	1107 HNU=0 PPM RAD=28 CPM
52	52-54		2.0'	33-65-55-50 (120)	SAME AS ABOVE, TOP 12": WITH VERY FINE GRAVEL, (SW)	1115 HNU=0 PPM RAD=24 CPM
54	54-56		2.0'	26-34-41-40 (75)	SAME AS ABOVE, (SW)	HNU=0 PPM RAD=36 CPM
56	56-58	4168	1.5'	24-40-12-11 (52)	TOP 6" SAME AS ABOVE; BOTTOM 12": POORLY GRADED GRAVEL AND SAND, SAME COLOR, WET, MEDIUM-VERY COARSE SAND, SUBANGULAR-SUBROUNDED, SOME SILT, (GP)	1405 HNU=0 PPM RAD=32 CPM
58	58-60			13-16-10-11 (26)	NO RECOVERY	
60						

PROJECT NUMBER	BORING NUMBER
SED28178.FS	Well 140 SHEET 3 OF 5

SOIL BORING LOG

PROJECT PGDP Phase I Site Investigation LOCATION WC-4; NW of Plant, Big Bayou Cr. at Ogden Landing Rd
ELEVATION DRILLING CONTRACTOR Geotek Engineering
DRILLING METHOD AND EQUIPMENT Hollow Stem Augers/Split Spoon Sampler
WATER LEVEL AND DATE START 3/20/90 FINISH 4/6/90 LOGGER B. Cocke

DEPTH BELOW SURFACE (FT)	SAMPLE INTERVAL	SAMPLE TYPE AND NUMBER	SAMPLE RECOVERY (FT)	STANDARD PENETRATION TEST RESULTS 6" -6" -6" (N)	SOIL DESCRIPTION: SOIL NAME, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY, USCS GROUP SYMBOL	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS AND INSTRUMENTATION
60	60-62		0'	13-28-65-60 (91)	NO RECOVERY	NEW LOGGER: B. COCKE
62	62-64	4169	1.8'	330/6"	POORLY GRADED SAND WITH GRAVEL, DARK YELLOW ORANGE (10 YR 6/6) AND LIGHT GRAY (N8), MOIST, VERY DENSE, SUBANGULAR-SUBROUNDED, MEDIUM-ROUNDED GRAVEL, (SP)	HNU=0 PPM RAD=32 CPM * NOTE: CHANGE TO 300# HAMMER
64	64-66		2.0'	20-14-15-30 (29)	SAME AS ABOVE, DENSE, (SP)	HNU=0 PPM RAD=22 CPM STOP DRILLING 1600
66	66-68		2.0'	20-13-15-52 (28)	WELL GRADED SAND, GRAYISH ORANGE (10 YR 7/4), WET, MEDIUM DENSE, FINE-MEDIUM, SUBANGULAR, (SW)	0822 HNU=0 PPM RAD=28 CPM RESUME DRILLING 3/22/90
68	68-70	4171	2.0'	48-41-19-35 (60)	SAME AS ABOVE, BOTTOM 6": FINER SAND, (SW)	0846 HNU=0 PPM RAD=30 CPM
70	70-72			20-13-18-33 (31)	SAME AS ABOVE, (SW)	0910 HNU=0 PPM RAD=36 CPM OBTAIN SAMPLE
72	72-74		2.0'	37-47-60-50 (107)	SAME AS ABOVE, (SW)	0925 HNU=0 PPM RAD=26 CPM DRILLER CONDITION THE BOREHOLE BY RUNNING AUGER UP AND DOWN
74	74-76	4172	2.0'	20-19-16-20 (35)	SAME AS ABOVE, (SW)	1035 HNU=0 PPM RAD=32 CPM
76	76-78			4-6-7-7 (13)	SAME AS ABOVE, MEDIUM DENSE, (SW)	1410 HNU=0 PPM RAD=36 CPM NEW LOGGER B. COCKE OBTAIN SAMPLE 4172 & DUPLICATE 4173
78	78-80			2-3-5-7 (8)	ELASTIC SILT, LIGHT GRAY (N7), MOIST, FIRM, PLASTIC, STREAKS OF MODERATE REDDISH BROWN (10 R 4/6), IRON OXIDES, (MH)	1445 HNU=0 PPM RAD=46 CPM
80	80-82	4174		3-5-7-7 (12)	SAME AS ABOVE, STIFF, SMALL INTERBEDDED LAYERS OF GRAVEL, WELL-GRADED, DARK REDDISH BROWN, (MH)	1530 HNU=0 PPM RAD=50 CPM
82	82-84			4-3-3-5 (6)	SAME AS ABOVE, (MH)	1558 HNU=0 PPM RAD=
84	84-86		1.8'	3-4-5-5 (9)	SAME AS ABOVE, (MH)	0834 HNU=0 PPM RAD=44 CPM RESUME DRILLING/SAMPLING 3/25/90, 0800
86	86-88	4176	2.0'	4-4-3-5 (7)	ELASTIC SILT, SAME AS ABOVE, WITH THIN INTERBEDDED SAND WITH SILT, GRAYISH ORANGE (10 YR 7/4), MEDIUM, POORLY GRADED, WET, SUBANGULAR-ANGULAR GRAINS, <10% DARK, MINERALS, MOSTLY QUARTZ	0850 HNU=0 PPM RAD=58 CPM
88	88-90		2.0'	3-3-2-3 (5)	ELASTIC SILT, LIGHT GRAY (N7) STREAKED WITH MEDIUM GRAY (N5), MOIST, FIRM, PLASTIC, WITH INTERBEDDED SAND, GRAYISH ORANGE (10 YR 7/4) AS ABOVE, (MH)	0912 HNU=0 PPM RAD=38 CPM SAMPLE COMPOSITED 0918
90						

PROJECT NUMBER	BORING NUMBER
SED28178.FS	Well 140 SHEET 4 OF 5

SOIL BORING LOG

PROJECT PGDP Phase I Site Investigation LOCATION WC-4; NW of Plant, Big Bayou Cr. at Ogden Landing Rd
ELEVATION DRILLING CONTRACTOR Geotek Engineering
DRILLING METHOD AND EQUIPMENT Hollow Stem Augers/Split Spoon Sampler
WATER LEVEL AND DATE START 3/20/90 FINISH 4/6/90 LOGGER B. Cocke

DEPTH BELOW SURFACE (FT)	SAMPLE INTERVAL	SAMPLE TYPE AND NUMBER	SAMPLE RECOVERY (FT)	STANDARD PENETRATION TEST RESULTS 6" -6" -6" (N)	SOIL DESCRIPTION: SOIL NAME, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY, USCS GROUP SYMBOL	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS AND INSTRUMENTATION
90	90-92		2.0'	4-4-8-10 (12)	SAME AS ABOVE, CHANGING TO FAT CLAY WITH SILT, MEDIUM GRAY (N5), MOIST, STIFF, INTERBEDDED COARSE SAND AND GRAVEL, GRAYISH ORANGE, (CH-MH)	1020 HNU=0 PPM RAD=36 CPM
92	92-94	4177	1.9'	4-4-5-4 (9)	FAT CLAY WITH SILT, SAME AS ABOVE, (CH-MH), CHANGING TO FAT CLAY, BROWNISH BLACK (5 YR 2/1), MOIST, STIFF, (CH)	1035 HNU=0 PPM RAD=34 CPM
94	94-96			4-4-5-6 (9)	SAME AS ABOVE, (CH)	1103 HNU=0 PPM RAD= STOP DRILLING 1145, SAMPLE COMPOSITED 1110
96	96-97.6					CASING SET @ 97' RESUMED SAMPLING 4/5/90, 1010 HNU=0 PPM RAD=136 CPM SAMPLE 4178=SHELBY TUBE SAMPLE
98	97.6-99.6	4178	2.0'	N/A	WELL GRADED SAND, MEDIUM-COARSE, CHERTY, (SW)	
00	99.6-101					
102	101-103	4179		5-7-10-11 (17)	ELASTIC SILT, MEDIUM DARK GRAY (N4), DAMP, MICACEOUS, VERY STIFF, (MH)	1050 HNU=0 PPM RAD=40 CPM 300# HAMMER
104	103-106					
106	106-108	4180		8-20-17-28 (37)	WELL GRADED SAND, LIGHT GRAY (N7), MOIST, DENSE, FINE-MEDIUM, SUBANGULAR, <5% DARK MINERALS, <1% MICACEOUS; (SW); CHANGING TO FAT CLAY, BROWNISH BLACK (5 YR 2/1), DAMP, HARD, (CH)	1405 HNU=0 PPM RAD=32 CPM
108	108-111					
110						
112	111-113	4181	1.75'	8-18-12-29 (30)	WELL GRADED SAND, LIGHT GRAY (N7) TO MEDIUM GRAY (N8), MOIST, MEDIUM DENSE, VERY FINE-MEDIUM, <5%, DARK RED, 5-10% MICA, SUBANGULAR, (SW)	1450 HNU=0 PPM RAD=48 CPM
114	113-116					
116	116-118	4182	2.0'	3-7-8-18 (15)	SILTY SAND, LIGHT TO MEDIUM GRAY (N7-N4), MOIST TO DAMP, MEDIUM DENSE, FINE TO MEDIUM, MANY THIN LAYERS, 15-40% SILT, 5-10% MICA, (SM)	1530 HNU=0 PPM RAD=28 CPM
118						
120						

PROJECT NUMBER	BORING NUMBER
SED28178.FS	Well 140 SHEET 5 OF 5

SOIL BORING LOG

PROJECT PGDP Phase I Site Investigation LOCATION WC-4; NW of Plant, Big Bayou Cr. at Ogden Landing Rd
ELEVATION _____ DRILLING CONTRACTOR Geotek Engineering
DRILLING METHOD AND EQUIPMENT Hollow Stem Augers/Split Spoon Sampler
WATER LEVEL AND DATE _____ START 3/20/90 FINISH 4/6/90 LOGGER B. Cocke

DEPTH BELOW SURFACE (FT)	SAMPLE INTERVAL	SAMPLE TYPE AND NUMBER	SAMPLE RECOVERY (FT)	STANDARD PENETRATION TEST RESULTS 6" -6" -6" (N)	SOIL DESCRIPTION: SOIL NAME, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY, USCS GROUP SYMBOL	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS AND INSTRUMENTATION
120						
122	121-123	4183	2.0'	17-8-10-17 (18)	SILTY SAND, SAME AS ABOVE, 10-25% SILT (SM); CHANGING TO WELL GRADED SAND WITH SILT, , LIGHT GRAY (N7), MOIST, MEDIUM DENSE, VERY FINE TO MEDIUM, MICACEOUS, 5% SILT, (SW-SM)	HNU=0 PPM RAD=40 CPM STOPPED DRILLING 1620
124						
126	126-128	4185	1.5'	8-21-18-20 (39)	POORLY GRADED SAND, MEDIUM LIGHT GRAY (N6), MOIST-WET, DENSE, FINE, 3% DARK MINERALS, 3% MICA, (SP)	RESUMED SAMPLING 4/6/90, 0830, 300# HAMMER HNU=0 PPM RAD=39 CPM 0900
128						
30						
132	131-133	4186	1.75'	8-17-35-96 (52)	SAME AS ABOVE, FINE-MEDIUM, (SP); CHANGING TO FAT CLAY, VERY HARD, MICACEOUS, BROWNISH BLACK @ 133.5', (CH)	1020 HNU=0 PPM RAD=
134						
136	136-138	4187	2.0'	10-9-15-16 (24)	POORLY GRADED SAND, SAME AS ABOVE, MEDIUM DENSE, CONTAINS TWO 4" SEAMS OF FAT CLAY AS ABOVE, (SP)	1100 HNU=0 PPM RAD=40 CPM
138						
140						
142	141-143	4188		4-10-21-23 (31)	FAT CLAY, BROWNISH BLACK (5 YR 2/1), MOIST, VERY STIFF, MICACEOUS, (CH); CHANGING TO POORLY GRADED SAND, SAME AS ABOVE, (SP)	1530 HNU=0 PPM RAD=48 CPM STOPPED DRILLING 1535 TD OF BORING 143'

SAT28178.TM

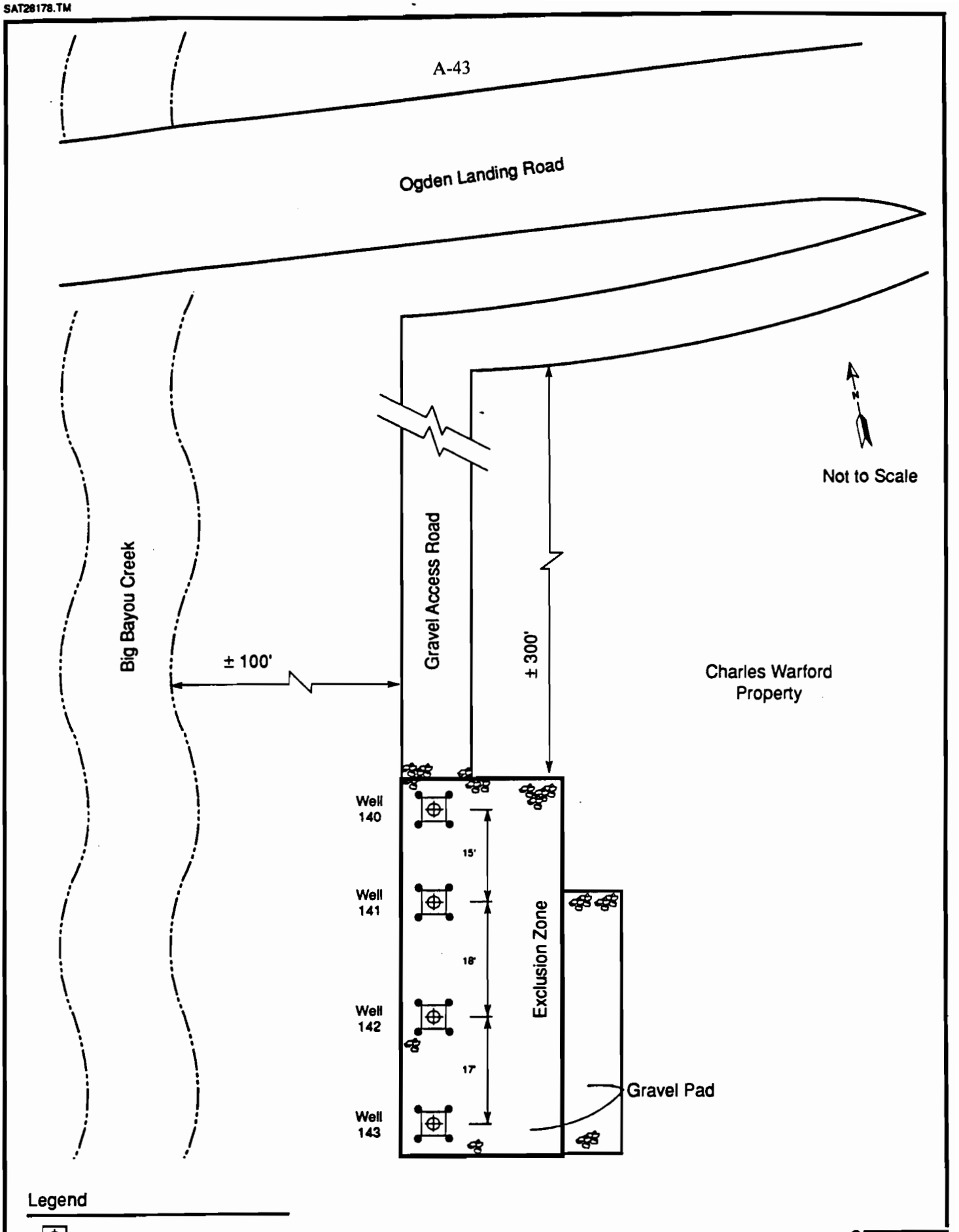


Figure 5-2
Well Cluster 4
Well Layout Sketch

CH2M HILL

[Page left blank]

Summary of RGA Background Wells

MW 142

Location - Northwest of Plant; Private property near Ogden Landing Road and Big Bayou Creek; Well Cluster 4
N (6529.75) E (-12162.411)

Date Installed - April 16 to 17, 1990

Screened Depth - Shallow RGA
Top - 42.5 ft bgs
Bottom - 52.5 ft bgs

Dates Sampled (Data available) - Q2 90; Q3 90; Q1 91; Q2 93; Q3 93; Q4 93; Q1 94; Q2 94; Q3 94; Q4 94; Q1 95; Q1 96; Q1 97; Q4 97

Construction Information Reference - Technical Memorandum No. 5 in *Results of the Site Investigation, Phase I at the Paducah Gaseous Diffusion Plant, Paducah, Kentucky* (KY/ER-4; March 1991)

Potential Contaminant Information -

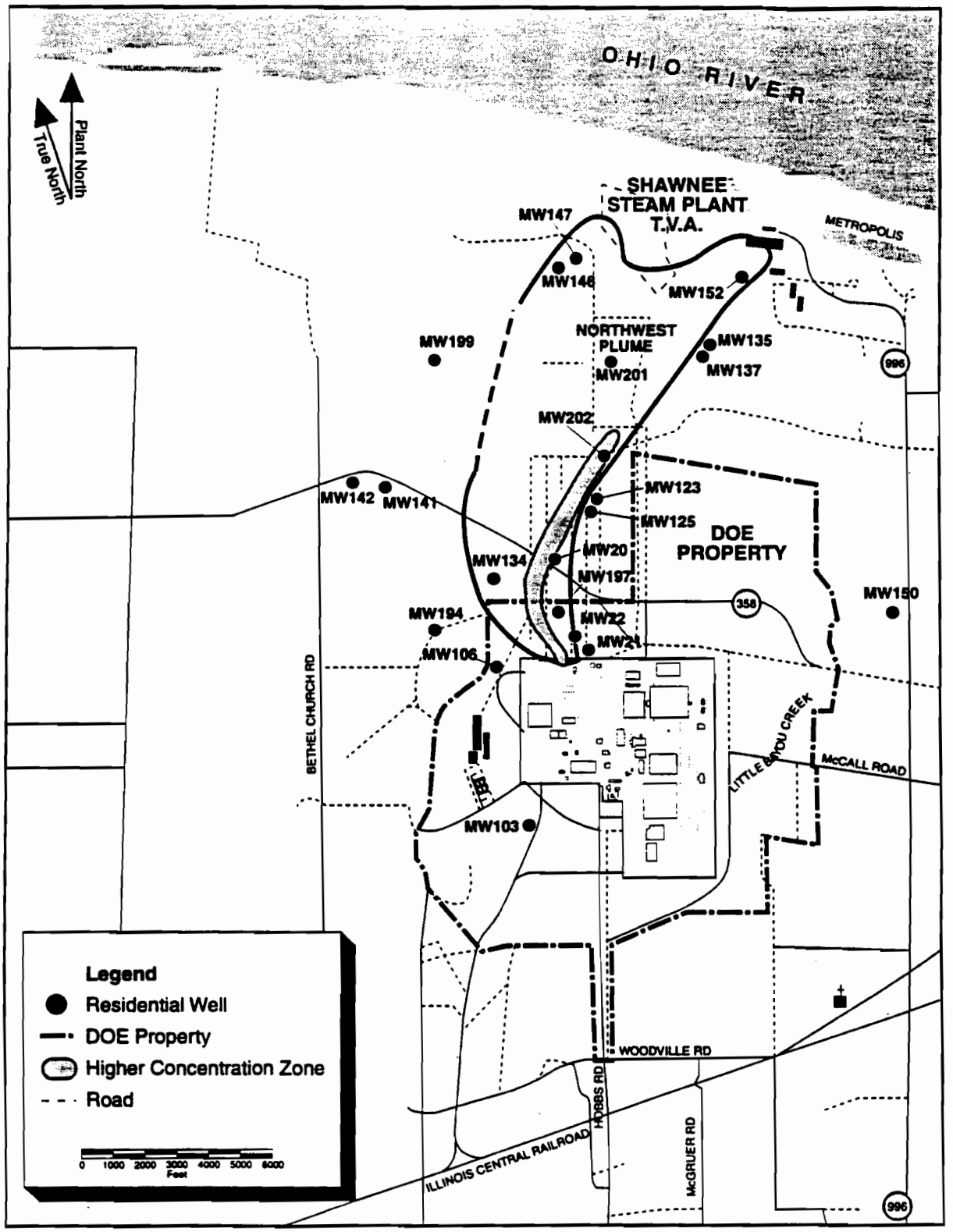
Compound	Detected Concentration	Detection Error (Rad only)	Date of Collection	Sample ID
Organic Compounds (all; µg/l)				
Toluene	1 J	NA	8/16/90	CH200674-00000
Radionuclides (^{99}Tc only; pCi/l; unfiltered samples; ordered by date of collection)				
^{99}Tc	-1.6	1.59	3/14/91	CH210012-00000
^{99}Tc	9	6	5/26/93	6084-93
^{99}Tc	0	16	7/13/93	6096-93
^{99}Tc	0	13	10/21/93	7089-93
^{99}Tc	10	19	1/11/94	4233-94
^{99}Tc	1	1	7/20/94	6058-94
^{99}Tc	8	17	10/10/94	6872-94
^{99}Tc	16	19	2/6/95	5464-95
^{99}Tc	3	10	2/12/96	5317-96
^{99}Tc	10	12	11/6/97	5797-97
Radionuclides (^{99}Tc only; pCi/l; filtered samples; ordered by date of collection)				
^{99}Tc	-0.2	1.49	3/14/91	CH210012-DIS

Notes: NA = Entry not applicable or not available.

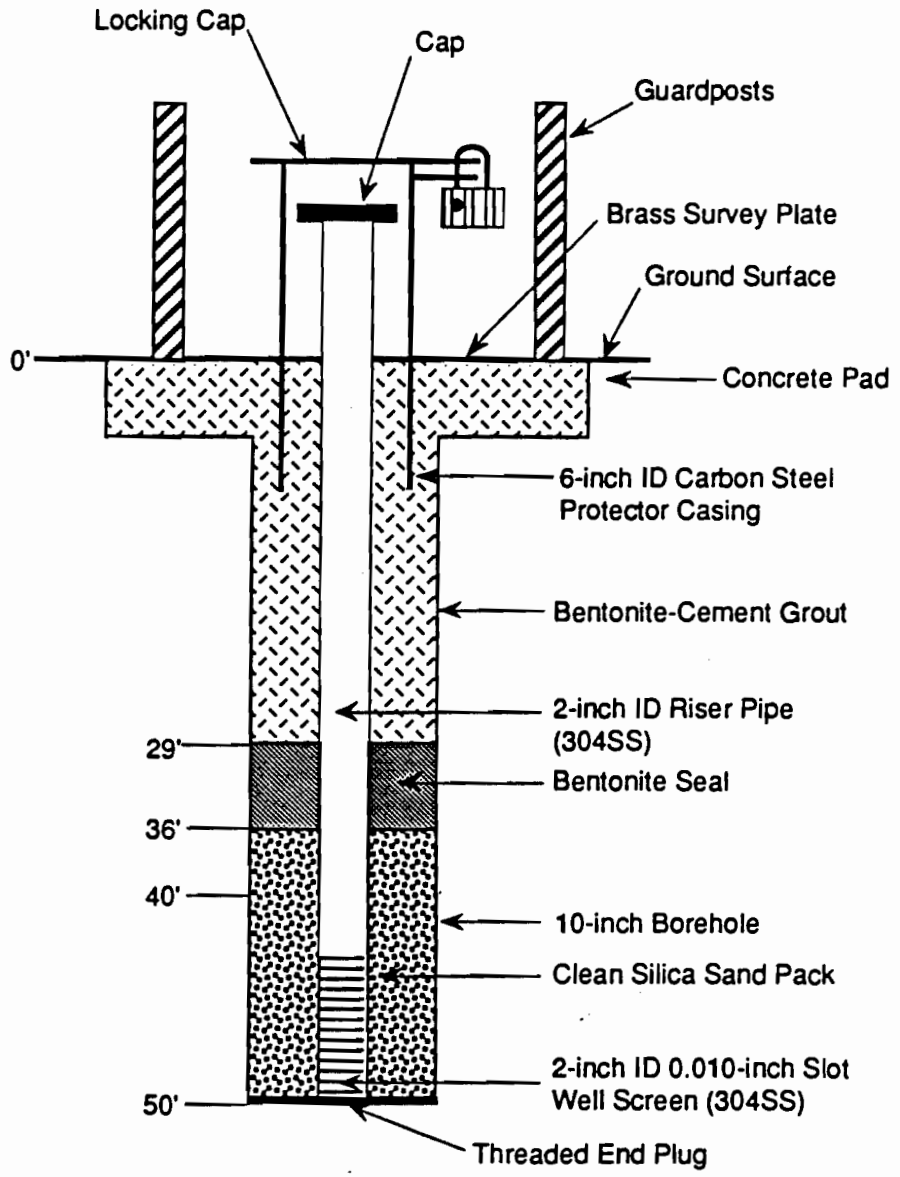
Physical Data Summary -

Parameter	Number of Observations	Arithmetic Average of Results	Range of Results	Units
Alkalinity	10	78.4	74 - 83	mg/L
Depth to Water	11	17.8	10.8 - 22.24	feet
Dissolved Oxygen	11	5.66	4.2 - 6.91	mg/L
Dissolved Solids	10	199.6	155 - 221	mg/L
Hardness as CaCO3, Dissolved	1	85.2	NA	g/L CaCO
pH	38	5.93	5.8 - 6	SU
Specific Conductance	38	372	352 - 383	umhos/cm
Temperature	11	58.3	57 - 60	F
Total Organic Carbon	33	< 1	< 1 - 1	mg/L
Total Suspended Solids	2	4.5	4 - 5	mg/L
Turbidity	9	5.73	1.6 - 18	NTU

Notes: NA = Entry not applicable or not available.


OHIO RIVER
Plant North
True North
SHAWNEE STEAM PLANT T.V.A.
METROPOLIS
MW147
MW148
MW152
NORTHWEST PLUME
MW199
MW135
MW137
MW201
996
MW202
MW123
MW125
MW142
MW141
DOE PROPERTY
MW20
MW134
MW197
358
MW150
MW194
MW22
MW21
MW106
BETHEL CHURCH RD
LITTLE BAYOU CREEK
McCALL ROAD
MW103
Legend
Residential Well
DOE Property
Higher Concentration Zone
Road
0 1000 2000 3000 4000 5000 6000
Feet
WOODVILLE RD
HOBBS RD
McGRUER RD
ILLINOIS CENTRAL RAILROAD
996

Well 142
Well without
Isolation Casing



Well 142 Construction Details

CH2M HILL

PROJECT NUMBER	BORING NUMBER
SED28178.FS	Well 140 SHEET 1 OF 5

SOIL BORING LOG

PROJECT PGDP Phase I Site Investigation LOCATION WC-4; NW of Plant, Big Bayou Cr. at Ogden Landing Rd
ELEVATION DRILLING CONTRACTOR Geotek Engineering
DRILLING METHOD AND EQUIPMENT Hollow Stem Augers/Split Spoon Sampler
WATER LEVEL AND DATE START 3/20/90 FINISH 4/6/90 LOGGER B. Cocke

DEPTH BELOW SURFACE (FT)	SAMPLE INTERVAL	SAMPLE TYPE AND NUMBER	SAMPLE RECOVERY (FT)	STANDARD PENETRATION TEST RESULTS 6" -6" -6" (N)	SOIL DESCRIPTION: SOIL NAME, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY, USCS GROUP SYMBOL	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS AND INSTRUMENTATION
0	0-2		2.0'	3-3-4-5 (7)	SILT, YELLOWISH GRAY (10 YR 4/2), BROWN, MOIST, FIRM, MOTTLED (BLACK ORGANIC SPOTS), LOW PLASTICITY, (ML)	BACKGROUND= HNU=0 PPM RAD=52 CPM HNU=0 PPM RAD=44 CPM
2	2-4	4157	2.0'	3-3-3-3 (6)	SILT, SAME AS ABOVE, DAMP, (ML)	START DRILLING 1100 HNU=0 PPM RAD=34 CPM
4	4-6		1.75'	2-2-2-2 (4)	SILT, SAME AS ABOVE, (ML), CHANGING TO SILTY SAND, YELLOWISH BROWN (10 YR 4/2), DAMP, VERY LOOSE, FINE-MEDIUM, WELL GRADED, (SM)	HNU=0 PPM RAD=46 CPM
6	6-8		1.75'	2-2-2-2 (4)	POORLY GRADED SAND WITH SILT, DARK YELLOWISH BROWN (10 YR 4/2), MOIST, VERY LOOSE, MEDIUM SUBROUNDED GRAINS, MOSTLY QUARTZ, (SP-SM)	HNU=0 PPM RAD=36 CPM
8	8-10	4158	0'		NO SAMPLE, EXTREMELY LOOSE	HNU=0 PPM RAD=38 CPM
10	10-12			3-10-20-18 (30)	WELL GRADED GRAVEL WITH SILT AND SAND, MODERATE REDDISH BROWN (10 R 4/6), WET, MEDIUM DENSE, SUBANGULAR GRAINS, (GW-GM)	HNU=0 PPM RAD=40 CPM
12	12-14		2.0'	12-16-18-13 (34)	WELL GRADED GRAVEL WITH SAND, MODERATE REDDISH BROWN (10 F 4/6), STREAKS OF GRAY (N7), WET, DENSE, SUBANGULAR TO SUBROUNDED GRAINS, (GW)	HNU=0 PPM RAD=38 CPM
14	14-16	4159	1.8'	2-3-4-9 (7)	WELL GRADED GRAVEL WITH SAND AS ABOVE, CHANGING TO FAT CLAY, GREENISH GRAY (5 GY 6/1), MOIST, STIFF, PLASTIC, (CH)	HNU=0 PPM RAD=60 CPM
16	16-18		1.8'	7-10-14-22 (24)	FAT CLAY, GREENISH GRAY (5 GY 6/1), WITH MODERATE REDDISH BROWN STREAKS, DAMP, VERY STIFF, CHANGING TO GRAVEL, (CH)	HNU=0 PPM RAD=42 CPM
18	18-20		2.0'	6-12-15-14 (27)	FAT CLAY, GREENISH GRAY (5 GY 6/1), CHANGING TO SILTY CLAY (DARK YELLOWISH BROWN (10 YR 4/2), DAMP, VERY STIFF, (CL-ML)	HNU=0 PPM RAD=44 CPM
20	20-22	4160	1.8'	5-7-10-12 (17)	SILTY CLAY WITH SAND, MODERATE REDDISH BROWN (10 YR 4/6) WITH GRAY (N7) STREAKS, DAMP, VERY STIFF, GRAINS OF DARK MINERALS, QUARTZ, SOME PEBBLES, (CL-ML)	HNU=0 PPM RAD=60 CPM
22	22-24		2.0'	5-12-13-17 (25)	FAT CLAY, DARK YELLOWISH BROWN (10 YR 4/2), MOIST, VERY STIFF, PLASTIC WITH STREAKS OF SILTY CLAY WITH SAND, LIGHT GRAY (N8), (CH)	HNU=0 PPM RAD=42 CPM
24	24-26		1.75'	9-10-25-29 (35)	SILTY CLAY, MODERATE REDDISH BROWN, MOIST, STIFF, (CL-ML); CHANGING TO SILTY SAND, LIGHT GRAY (N8) MOTTLED ORGANIC STAINING (BLACK), DAMP, DENSE, IRON OXIDE, FINE, POORLY GRADED, (SW-SM)	HNU=0 PPM RAD=52 CPM
26	26-28	4161	1.75'	5-12-11-16 (23)	SILTY SAND, SAME AS ABOVE, (SW-SM), CHANGING TO SANDY SILTY CLAY, MOTTLED AS ABOVE, DAMP, VERY STIFF, (CL-ML)	HNU=0 PPM RAD=34 CPM
28	28-30			9-22-22-25 (44)	SILTY SAND WITH CLAY, MODERATE REDDISH BROWN (10 YR 4/6) MOTTLED, MOIST, DENSE, FINE-MEDIUM, (SP-SM), CHANGING TO SAND, LIGHT GRAY (N8) MOTTLED, MOIST, IRON OXIDE, ORGANIC, (SW)	HNU=0 PPM RAD=32 CPM STOP DRILLING 1620 3/20/90
30						

PROJECT NUMBER	BORING NUMBER
SED28178.FS	Well 140 SHEET 2 OF 5

SOIL BORING LOG

PROJECT PGDP Phase I Site Investigation LOCATION WC-4; NW of Plant, Big Bayou Cr. at Ogden Landing Rd
ELEVATION DRILLING CONTRACTOR Geotek Engineering
DRILLING METHOD AND EQUIPMENT Hollow Stem Augers/Split Spoon Sampler
WATER LEVEL AND DATE START 3/20/90 FINISH 4/6/90 LOGGER B. Cocke

DEPTH BELOW SURFACE (FT)	SAMPLE INTERVAL	SAMPLE TYPE AND NUMBER	SAMPLE RECOVERY (FT)	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION: SOIL NAME, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY, USCS GROUP SYMBOL	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS AND INSTRUMENTATION
30	30-32		1.0'	15-16-12-17 (28)	WELL GRADED GRAVEL WITH SAND, LIGHT GRAY (N7), AND MODERATE RED BROWN (10 YR 4/6) MOIST, MEDIUM DENSE, (GW), CHANGING TO SANDY SILT, LIGHT GRAY, DAMP, VERY STIFF, (ML)	RESUME DRILLING 3/21/90, 0800 HNU=0 PPM RAD=28 CPM
32	32-34	4164	2.0'	25-72-107-180 (179)	WELL GRADED GRAVEL WITH SAND, LIGHT GRAY AND MODERATE RED BROWN, MOIST, VERY DENSE, COARSE, (GW)	HNU=0 PPM RAD=34 CPM
34	34-36		1.8'	22-18-63-80 (81)	SAME AS ABOVE, (GW)	HNU=0 PPM RAD=22 CPM
36	36-38		1.2'	38-61-51-52 (112)	POORLY GRADED SAND WITH CLAY, DARK YELLOW ORANGE (10 YR 6/6), WET, VERY DENSE, MEDIUM-VERY COARSE; TOP 4": WITH VERY FINE-COARSE GRAVEL, 4-14": WITH SOME CLAY, (SP-SC)	HNU=0 PPM RAD=32 CPM
38	38-40	4165	1.8'	12-15-38-39 (53)	SAME AS ABOVE, LESS CLAY, SUBROUNDED TO SUBANGULAR, QUARTZ, TRACE MICA AND FERRO-MAGNESIUM MINERALS, (SP-SC)	0905 HNU=0 PPM RAD=20 CPM
40	40-42		1.8'	15-16-26-29 (42)	SAME AS ABOVE, SOME CLAYEY SAND IN LOWER 4", (SP-SC)	0912 HNU=0 PPM RAD=40 CPM
42	42-44		1.8'	12-34-40-50 (74)	SAME AS ABOVE, BOTTOM 6": FINE-COARSE GRAVEL, (SP-SC)	0922 HNU=8 PPM RAD=40 CPM
44	44-46	4166	1.7'	19-24-32-38 (56)	TOP 12": SAME AS ABOVE; BOTTOM 8": WELL GRADED GRAVEL WITH SAND, DARK YELLOW ORANGE (10 YR 6/6), WET, VERY DENSE, VERY COARSE SAND, MOSTLY FINE-MEDIUM GRAVEL, SUBANGULAR-SUBROUNDED, (GP)	1016 HNU=0 PPM RAD=26 CPM
46	46-48		2.0'	12-27-27-29 (54)	WELL GRADED SAND, DARK YELLOWISH ORANGE (10 YR 6/6), WET, VERY DENSE, MEDIUM-COARSE, SUBANGULAR-SUBROUNDED, (SW)	1028 HNU=0 PPM RAD=20 CPM
48	48-50		2.0'	23-29-31-41 (60)	SAME AS ABOVE; BOTTOM 4" GRADED TO VERY FINE GRAVEL, (SW)	1040 HNU=0 PPM RAD=36 CPM
50	50-52	4167	2.0'	15-27-28-33 (55)	SAME AS ABOVE	1107 HNU=0 PPM RAD=28 CPM
52	52-54		2.0'	33-65-55-50 (120)	SAME AS ABOVE, TOP 12": WITH VERY FINE GRAVEL, (SW)	1115 HNU=0 PPM RAD=24 CPM
54	54-56		2.0'	26-34-41-40 (75)	SAME AS ABOVE, (SW)	HNU=0 PPM RAD=36 CPM
56	56-58	4168	1.5'	24-40-12-11 (52)	TOP 6" SAME AS ABOVE; BOTTOM 12": POORLY GRADED GRAVEL AND SAND, SAME COLOR, WET, MEDIUM-VERY COARSE SAND, SUBANGULAR-SUBROUNDED, SOME SILT, (GP)	1405 HNU=0 PPM RAD=32 CPM
58	58-60			13-16-10-11 (26)	NO RECOVERY	
60						

PROJECT NUMBER	BORING NUMBER
SED28178.FS	Well 140 SHEET 3 OF 5

SOIL BORING LOG

PROJECT PGDP Phase I Site Investigation LOCATION WC-4; NW of Plant, Big Bayou Cr. at Ogden Landing Rd
ELEVATION DRILLING CONTRACTOR Geotek Engineering
DRILLING METHOD AND EQUIPMENT Hollow Stem Augers/Split Spoon Sampler
WATER LEVEL AND DATE START 3/20/90 FINISH 4/6/90 LOGGER B. Cocke

DEPTH BELOW SURFACE (FT)	SAMPLE INTERVAL	SAMPLE TYPE AND NUMBER	SAMPLE RECOVERY (FT)	STANDARD PENETRATION TEST RESULTS 6" -6" -6" (N)	SOIL DESCRIPTION: SOIL NAME, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY, USCS GROUP SYMBOL	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS AND INSTRUMENTATION
60	60-62		0'	13-26-65-60 (91)	NO RECOVERY	NEW LOGGER: B. COCKE
62	62-64	4169	1.8'	330/6"	POORLY GRADED SAND WITH GRAVEL, DARK YELLOW ORANGE (10 YR 6/6) AND LIGHT GRAY (N8), MOIST, VERY DENSE, SUBANGULAR-SUBROUNDED, MEDIUM-ROUNDED GRAVEL, (SP)	HNU=0 PPM RAD=32 CPM * NOTE: CHANGE TO 300# HAMMER
64	64-66		2.0'	20-14-15-30 (29)	SAME AS ABOVE, DENSE, (SP)	HNU=0 PPM RAD=22 CPM STOP DRILLING 1600
66	66-68		2.0'	20-13-15-52 (28)	WELL GRADED SAND, GRAYISH ORANGE (10 YR 7/4), WET, MEDIUM DENSE, FINE-MEDIUM, SUBANGULAR, (SW)	0822 HNU=0 PPM RAD=28 CPM RESUME DRILLING 3/22/90
68	68-70	4171	2.0'	48-41-19-35 (60)	SAME AS ABOVE, BOTTOM 6": FINER SAND, (SW)	0846 HNU=0 PPM RAD=30 CPM
70	70-72			20-13-18-33 (31)	SAME AS ABOVE, (SW)	0910 HNU=0 PPM RAD=36 CPM OBTAIN SAMPLE
72	72-74		2.0'	37-47-60-50 (107)	SAME AS ABOVE, (SW)	0925 HNU=0 PPM RAD=26 CPM DRILLER CONDITION THE BOREHOLE BY RUNNING AUGER UP AND DOWN
74	74-76	4172	2.0'	20-19-16-20 (35)	SAME AS ABOVE, (SW)	1035 HNU=0 PPM RAD=32 CPM
76	76-78			4-6-7-7 (13)	SAME AS ABOVE, MEDIUM DENSE, (SW)	1410 HNU=0 PPM RAD=36 CPM NEW LOGGER B. COCKE OBTAIN SAMPLE 4172 & DUPLICATE 4173
78	78-80			2-3-5-7 (8)	ELASTIC SILT, LIGHT GRAY (N7), MOIST, FIRM, PLASTIC, STREAKS OF MODERATE REDDISH BROWN (10 R 4/6), IRON OXIDES, (MH)	1445 HNU=0 PPM RAD=46 CPM
80	80-82	4174		3-5-7-7 (12)	SAME AS ABOVE, STIFF, SMALL INTERBEDDED LAYERS OF GRAVEL, WELL-GRADED, DARK REDDISH BROWN, (MH)	1530 HNU=0 PPM RAD=50 CPM
82	82-84			4-3-3-5 (6)	SAME AS ABOVE, (MH)	1558 HNU=0 PPM RAD=
84	84-86		1.8'	3-4-5-5 (9)	SAME AS ABOVE, (MH)	0834 HNU=0 PPM RAD=44 CPM RESUME DRILLING/SAMPLING 3/25/90, 0800
86	86-88	4176	2.0'	4-4-3-5 (7)	ELASTIC SILT, SAME AS ABOVE, WITH THIN INTERBEDDED SAND WITH SILT, GRAYISH ORANGE (10 YR 7/4), MEDIUM, POORLY GRADED, WET, SUBANGULAR-ANGULAR GRAINS, <10% DARK, MINERALS, MOSTLY QUARTZ	0850 HNU=0 PPM RAD=58 CPM
88	88-90		2.0'	3-3-2-3 (5)	ELASTIC SILT, LIGHT GRAY (N7) STREAKED WITH MEDIUM GRAY (N5), MOIST, FIRM, PLASTIC, WITH INTERBEDDED SAND, GRAYISH ORANGE (10 YR 7/4) AS ABOVE, (MH)	0912 HNU=0 PPM RAD=38 CPM SAMPLE COMPOSITED 0918
90						

PROJECT NUMBER	BORING NUMBER
SED28178.FS	Well 140 SHEET 4 OF 5

SOIL BORING LOG

PROJECT PGDP Phase I Site Investigation LOCATION WC-4; NW of Plant, Big Bayou Cr. at Ogden Landing Rd
ELEVATION DRILLING CONTRACTOR Geotek Engineering
DRILLING METHOD AND EQUIPMENT Hollow Stem Augers/Split Spoon Sampler
WATER LEVEL AND DATE START 3/20/90 FINISH 4/6/90 LOGGER B. Cocke

DEPTH BELOW SURFACE (FT)	SAMPLE INTERVAL	SAMPLE TYPE AND NUMBER	SAMPLE RECOVERY (FT)	STANDARD PENETRATION TEST RESULTS 6" -6" -6" (N)	SOIL DESCRIPTION: SOIL NAME, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY, USCS GROUP SYMBOL	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS AND INSTRUMENTATION
90	90-92		2.0'	4-4-8-10 (12)	SAME AS ABOVE, CHANGING TO FAT CLAY WITH SILT, MEDIUM GRAY (N5), MOIST, STIFF, INTERBEDDED COARSE SAND AND GRAVEL, GRAYISH ORANGE, (CH-MH)	1020 HNU=0 PPM RAD=36 CPM
92	92-94	4177	1.9'	4-4-5-4 (9)	FAT CLAY WITH SILT, SAME AS ABOVE, (CH-MH), CHANGING TO FAT CLAY, BROWNISH BLACK (5 YR 2/1), MOIST, STIFF, (CH)	1035 HNU=0 PPM RAD=34 CPM
94	94-96			4-4-5-6 (9)	SAME AS ABOVE, (CH)	1103 HNU=0 PPM RAD= STOP DRILLING 1145, SAMPLE COMPOSITED 1110
96	96-97.6					CASING SET @ 97 RESUMED SAMPLING 4/5/90, 1010 HNU=0 PPM RAD=136 CPM SAMPLE 4178=SHELBY TUBE SAMPLE
98	97.6-99.6	4178	2.0'	N/A	WELL GRADED SAND, MEDIUM-COARSE, CHERTY, (SW)	
00	99.6-101					
102	101-103	4179		5-7-10-11 (17)	ELASTIC SILT, MEDIUM DARK GRAY (N4), DAMP, MICACEOUS, VERY STIFF, (MH)	1050 HNU=0 PPM RAD=40 CPM 300# HAMMER
104	103-106					
106	106-108	4180		8-20-17-28 (37)	WELL GRADED SAND, LIGHT GRAY (N7), MOIST, DENSE, FINE-MEDIUM, SUBANGULAR, <5% DARK MINERALS, <1% MICACEOUS; (SW); CHANGING TO FAT CLAY, BROWNISH BLACK (5 YR 2/1), DAMP, HARD, (CH)	1405 HNU=0 PPM RAD=32 CPM
108	108-111					
110						
112	111-113	4181	1.75'	8-18-12-29 (30)	WELL GRADED SAND, LIGHT GRAY (N7) TO MEDIUM GRAY (N8), MOIST, MEDIUM DENSE, VERY FINE-MEDIUM, <5%, DARK RED, 5-10% MICA, SUBANGULAR, (SW)	1450 HNU=0 PPM RAD=48 CPM
114	113-116					
116	116-118	4182	2.0'	3-7-8-16 (15)	SILTY SAND, LIGHT TO MEDIUM GRAY (N7-N4), MOIST TO DAMP, MEDIUM DENSE, FINE TO MEDIUM, MANY THIN LAYERS, 15-40% SILT, 5-10% MICA, (SM)	1530 HNU=0 PPM RAD=28 CPM
118						
120						

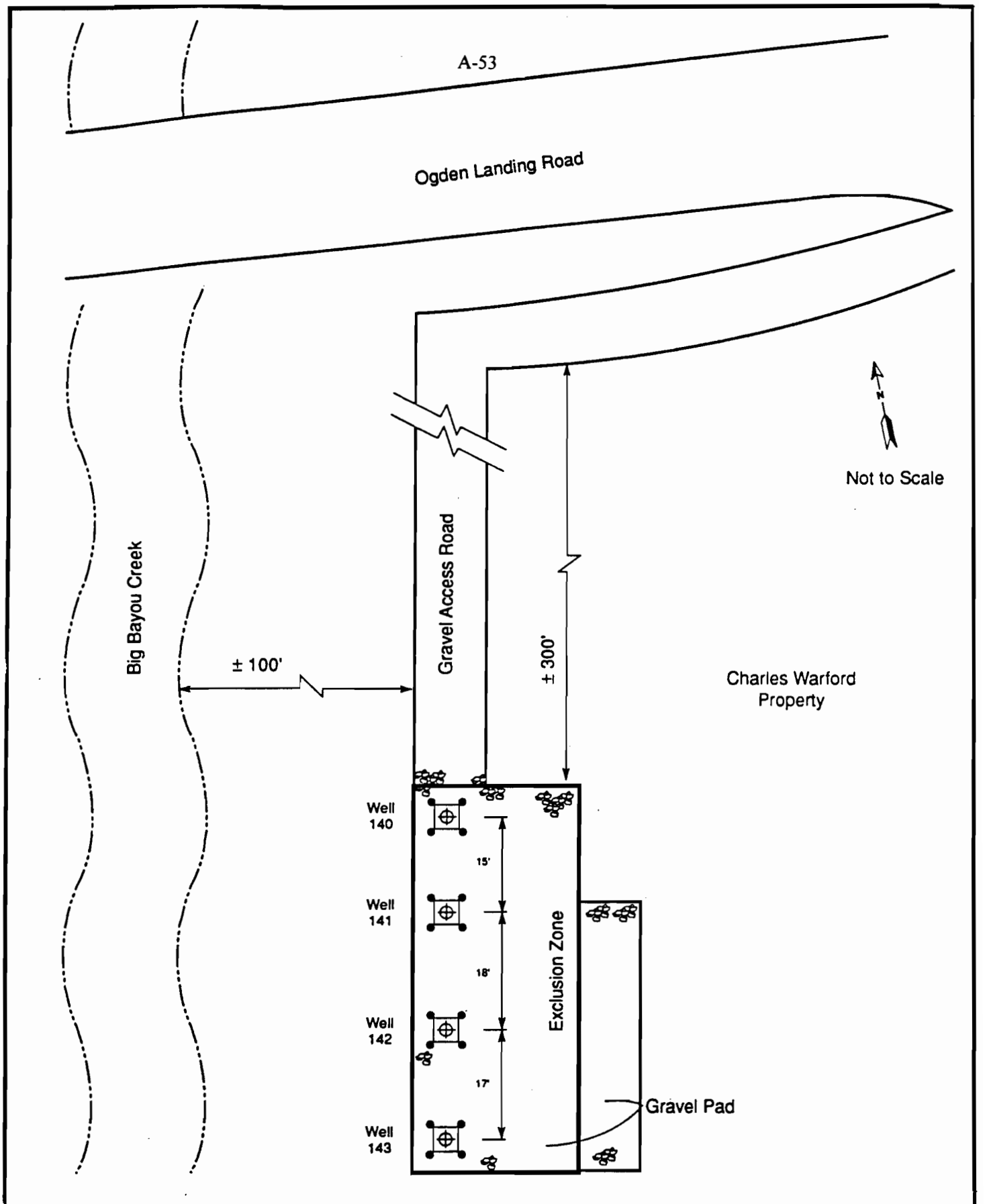
PROJECT NUMBER	BORING NUMBER
SED28178.FS	Well 140 SHEET 5 OF 5

SOIL BORING LOG

PROJECT PGDP Phase I Site Investigation LOCATION WC-4; NW of Plant, Big Bayou Cr. at Ogden Landing Rd
ELEVATION DRILLING CONTRACTOR Geotek Engineering
DRILLING METHOD AND EQUIPMENT Hollow Stem Augers/Split Spoon Sampler
WATER LEVEL AND DATE START 3/20/90 FINISH 4/6/90 LOGGER B. Cocke

DEPTH BELOW SURFACE (FT)	SAMPLE INTERVAL	SAMPLE TYPE AND NUMBER	SAMPLE RECOVERY (FT)	STANDARD PENETRATION TEST RESULTS 6" -6" -6" (N)	SOIL DESCRIPTION: SOIL NAME, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY, USCS GROUP SYMBOL	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS AND INSTRUMENTATION
120						
122	121-123	4183	2.0'	17-8-10-17 (18)	SILTY SAND, SAME AS ABOVE, 10-25% SILT (SM); CHANGING TO WELL GRADED SAND WITH SILT, , LIGHT GRAY (N7), MOIST, MEDIUM DENSE, VERY FINE TO MEDIUM, MICACEOUS, 5% SILT, (SW-SM)	HNU=0 PPM RAD=40 CPM STOPPED DRILLING 1620
124						
126	126-128	4185	1.5'	8-21-18-20 (39)	POORLY GRADED SAND, MEDIUM LIGHT GRAY (N6), MOIST-WET, DENSE, FINE, 3% DARK MINERALS, 3% MICA, (SP)	RESUMED SAMPLING 4/6/90, 0830, 300# HAMMER HNU=0 PPM RAD=39 CPM 0900
128						
30						
132	131-133	4186	1.75'	8-17-35-96 (52)	SAME AS ABOVE, FINE-MEDIUM, (SP); CHANGING TO FAT CLAY, VERY HARD, MICACEOUS, BROWNISH BLACK @ 133.5', (CH)	1020 HNU=0 PPM RAD=
134						
136	136-138	4187	2.0'	10-9-15-16 (24)	POORLY GRADED SAND, SAME AS ABOVE, MEDIUM DENSE, CONTAINS TWO 4" SEAMS OF FAT CLAY AS ABOVE, (SP)	1100 HNU=0 PPM RAD=40 CPM
138						
140						
142	141-143	4188		4-10-21-23 (31)	FAT CLAY, BROWNISH BLACK (5 YR 2/1), MOIST, VERY STIFF, MICACEOUS, (CH); CHANGING TO POORLY GRADED SAND, SAME AS ABOVE, (SP)	1530 HNU=0 PPM RAD=48 CPM STOPPED DRILLING 1535 TD OF BORING 143'

SAT28178.TM



Legend

Well with Concrete Pad

Guardpost

Figure 5-2
Well Cluster 4
Well Layout Sketch

CH2M HILL

[Page left blank]

Summary of RGA Background Wells

MW 150

Location - East of Plant; Private property near Metropolis Lake Road; Well Cluster 10 (?)
N (2239.80) E (-4652.86)

Date Installed - 8/10/90

Screened Depth - Deep RGA
Top - 66 ft bgs
Bottom - 96 ft bgs

Dates Sampled (Data available) - Q2 90; Q3 90; Q1 91; Q2 93; Q3 93; Q4 93; Q1 94; Q2 94; Q3 94; Q4 94; Q1 95; Q1 96; Q1 97

Construction Information Reference - Technical Memorandum No. 5 in *Results of the Site Investigation, Phase I at the Paducah Gaseous Diffusion Plant, Paducah, Kentucky* (KY/ER-4; March 1991)

Potential Contaminant Information -

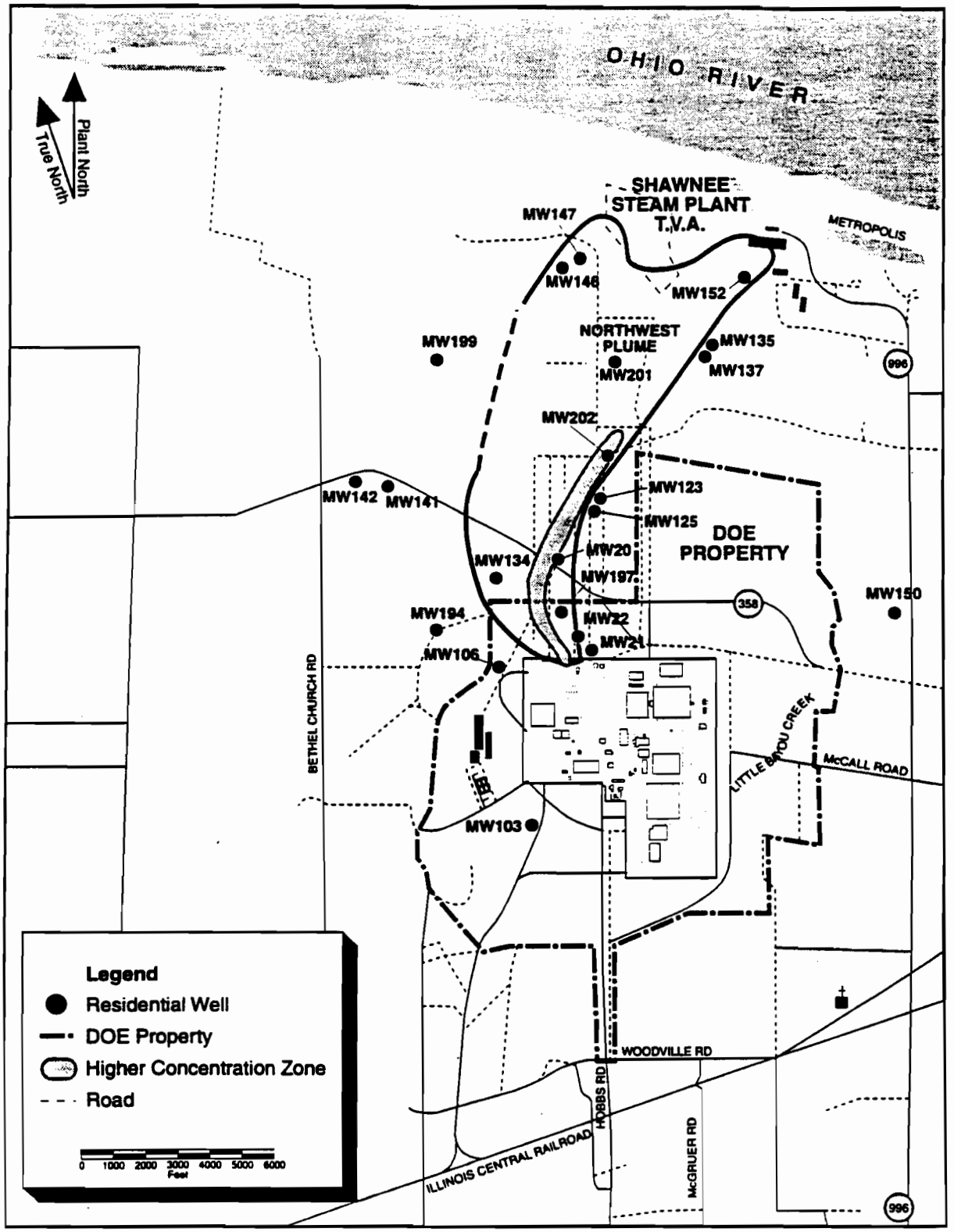
Compound	Detected Concentration	Detection Error (Rad only)	Date of Collection	Sample ID
Organic Compounds (all; µg/l)				
Toluene	23	NA	9/6/90	CH200691-00000
Toluene	12	NA	9/6/90	CH200692-00000
Radionuclides (^{99}Tc only; pCi/l; unfiltered samples; ordered by date of collection)				
^{99}Tc	0.9	2.12	3/21/91	CH210030-00000
^{99}Tc	19	20	6/23/93	5650-93
^{99}Tc	18	19	9/21/93	6764-93
^{99}Tc	10	18	12/15/93	7724-93
^{99}Tc	2	4	3/8/94	4789-94
^{99}Tc	8	42	6/13/94	5578-94
^{99}Tc	4	6	9/19/94	6501-94
^{99}Tc	15	21	12/15/94	7366-94
^{99}Tc	22	19	2/8/95	5468-95
^{99}Tc	6	10	2/13/96	5321-96
^{99}Tc	4	11	2/6/97	5148-97
Radionuclides (^{99}Tc only; pCi/l; filtered samples; ordered by date of collection)				
^{99}Tc	-0.77	1.97	3/21/91	CH210030-DIS

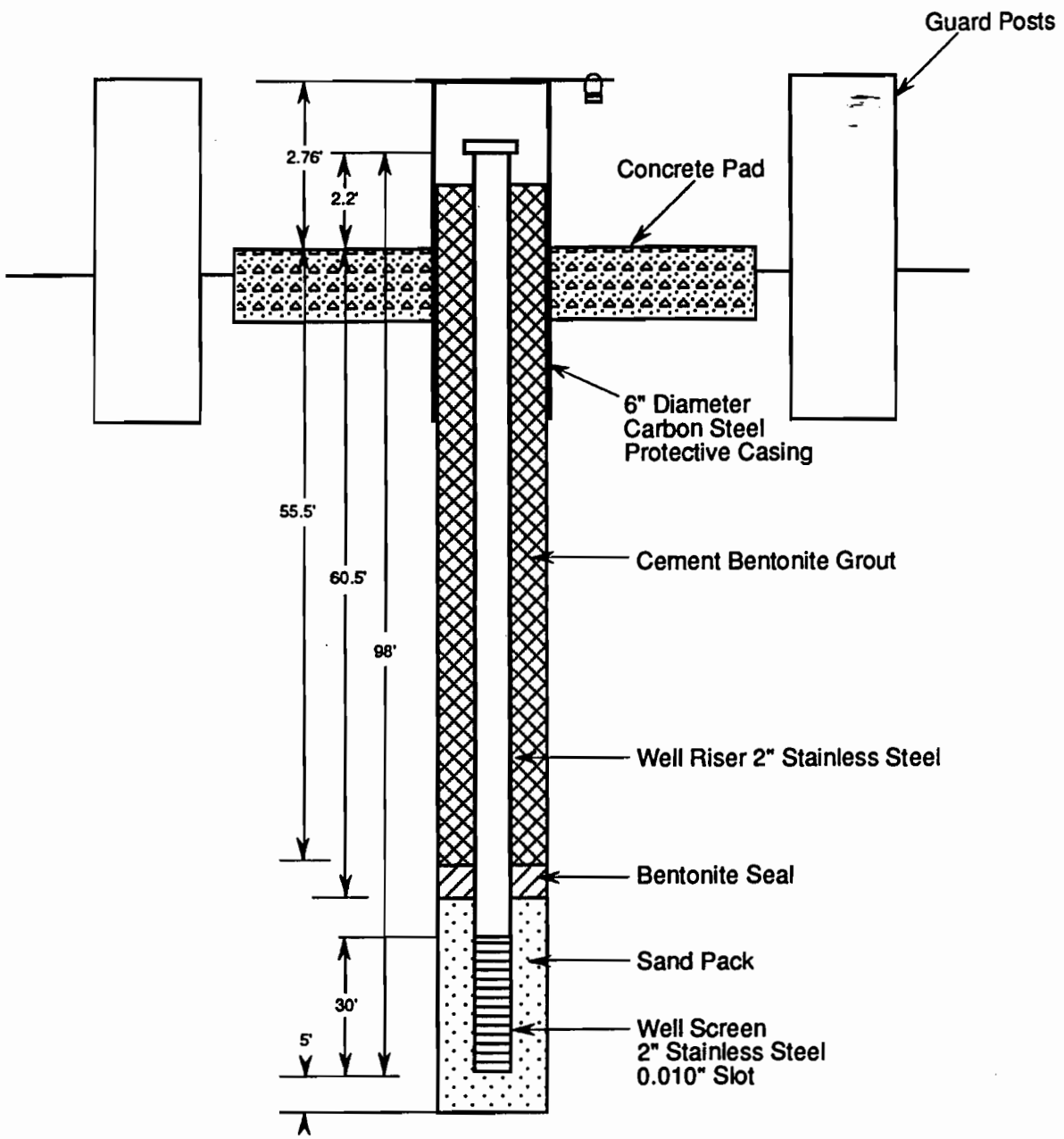
Notes: NA = Entry not applicable or not available.

Physical Data Summary -

Parameter	Number of Observations	Arithmetic Average of Results	Range of Results	Units
Alkalinity	5	138.6	128 - 157	mg/L
Depth to Water	10	48.86	44.09 - 53.34	feet
Dissolved Oxygen	10	2.55	1.6 - 4.46	mg/L
Dissolved Solids	5	374.2	358 - 385	mg/L
pH	38	6.0	5.9 - 6.2	SU
Specific Conductance	38	641.8	344 - 719	umhos/cm
Temperature	10	57.9	56 - 59	F
Total Organic Carbon	17	< 1	< 1 - 1	mg/L
Total Suspended Solids	2	65.5	12 - 119	mg/L
Turbidity	9	16.1	5 - 40	NTU

Notes: NA = Entry not applicable or not available.


OHIO RIVER
Plant North
True North
SHAWNEE STEAM PLANT T.V.A.
METROPOLIS
MW147
MW146
MW152
MW199
NORTHWEST PLUME
MW201
MW135
MW137
996
MW202
MW123
MW125
MW142
MW141
DOE PROPERTY
MW134
MW20
MW197
358
MW150
MW194
MW22
MW21
MW106
BETHEL CHURCH RD
LITTLE BAYOU CREEK
McCALL ROAD
MW103
Legend
Residential Well
DOE Property
Higher Concentration Zone
Road
0 1000 2000 3000 4000 5000 6000
Feet
WOODVILLE RD
HOBBS RD
ILLINOIS CENTRAL RAILROAD
McGRUER RD
996



Note: Not to Scale

MW-150 Construction Diagram

CH2M HILL

PROJECT NUMBER	BORING NUMBER
SED 28178.FI	W 150 SHEET 1 OF 4

SOIL BORING LOG

PROJECT PGDP Phase I Site Investigation LOCATION WC-10, Back of Jone's Property
ELEVATION — DRILLING CONTRACTOR Geotek Engineering
DRILLING METHOD AND EQUIPMENT Mobile B-57 ATV Rig; Hollow Stem Auger 4-1/2" ID
WATER LEVEL AND DATE _____ START 8/10/90 FINISH 8/10/90 LOGGER R. Johns

DEPTH BELOW SURFACE (FT)	SAMPLE INTERVAL	SAMPLE TYPE AND NUMBER	SAMPLE RECOVERY (FT)	STANDARD PENETRATION TEST RESULTS 6" -6" -6" (N)	SOIL DESCRIPTION: SOIL NAME, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY, USCS GROUP SYMBOL	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS AND INSTRUMENTATION
0						BEGAN DRILLING @ 0710
	5.0					
5	7.0	S-1	0.8	11-15-14-20 (29)	LEAN CLAY, (CL), SILTY, TRACE FINE SAND, TAN TO BURNT ORANGE MOTTLED, DRY, VERY STIFF	HNU = <1 PPM RAD = 30-40 CPM = BKGD SAMPLE NO.4468
	10.0					
10	12.0	S-2	1.5	6-10-10-18 (20)	LEAN CLAY, (CL), SAME AS ABOVE , BURNT RED MOTTLING	HNU = BKGD RAD = BKGD SAMPLE NO.4469
	15.0					
15	17.0	S-3	1.8	8-14-16-16 (30)	LEAN CLAY, (CL), SAME AS ABOVE, GRAY WITH BURNT ORANGE MOTTLING	HNU = BKGD RAD = BKGD SAMPLE NO.4470
	20.0					
20	22.0	S-4	2.0	6-12-16-25 (28)	SILT, (ML), LIGHT GRAY WITH BURNT ORANGE MOTTLE, DRY, VERY STIFF	HNU = BKGD RAD = BKGD SAMPLE NO.4471
	25.0					
25	27.0	S-5	2.0	9-12-17-14 (29)	LEAN CLAY, (CL), ZONES OF SILTY SAND, (SM), LIGHT BROWN AND GRAY WITH BURNT ORANGE MOTTLED, DRY, VERY STIFF	HNU = BKGD RAD = BKGD SAMPLE NO.4472
30						

PROJECT NUMBER	BORING NUMBER
SED 28178.FI	W 150 SHEET 2 OF 4

SOIL BORING LOG

PROJECT PGDP Phase I Site Investigation LOCATION WC-10, Back of Jone's Property
ELEVATION — DRILLING CONTRACTOR Geotek Engineering
DRILLING METHOD AND EQUIPMENT Mobile B-57 ATV Rig; Hollow Stem Auger 4-1/2" ID
WATER LEVEL AND DATE START 8/10/90 FINISH 8/10/90 LOGGER R. Johns

DEPTH BELOW SURFACE (FT)	SAMPLE INTERVAL	SAMPLE TYPE AND NUMBER	SAMPLE RECOVERY (FT)	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION: SOIL NAME, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY, USCS GROUP SYMBOL	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS AND INSTRUMENTATION
30	32.0	S-6	2.0	7-13-18-15 (31)	SILT, (ML), SOME FINE SAND, SOME CLAY, LIGHT GRAY/TAN WITH BURNT ORANGE MOTTLE, DRY, VERY STIFF	HNU = BKGD RAD = BKGD SAMPLE NO.4473
	35.0					
35	37.0	S-7	1.8	9-15-19-20 (34)	LEAN CLAY, (CL), TRACE FINE SAND, LIGHT BROWN WITH BURNT ORANGE MOTTLE, DRY, HARD	HNU = BKGD RAD = BKGD SAMPLE NO.4474
	40.0					39' GRINDING AUGERS, SMOKE COMING OUT OF HOLE
40	42.0	S-8	1.0	19-100/6"	TOP 0.8': LEAN CLAY, (CL), SAME AS ABOVE BOTTOM 0.2': SILT, (ML), LIGHT BROWN, TRACE FINE SAND, DRY, HARD	HNU = BKGD RAD = BKGD SAMPLE NO.4475
	45.0					
45	47.0	S-9	2.0	9-13-13-15 (26)	LEAN CLAY, (CL), TRACE FINE SAND, FEW PIECES OF 1/8" ROUNDED GRAVEL, LIGHT BROWN WITH BURNT ORANGE MOTTLE, MOIST, VERY STIFF	HNU = BKGD RAD = BKGD SAMPLE NO.4476
	50.0					49' SMOKE FROM HOLE
50	52.0	S-10	2.0	11-15-13-9 (28)	TOP 0.5': SILT WITH GRAVEL, (ML), GRAVEL IS ROUNDED LIGHT BROWN WITH ORANGE MOTTLE, MOIST, MEDIUM DENSE, MIDDLE 0.8': SILTY SAND, (SM), LIGHT BROWN, MOIST, MEDIUM DENSE BOTTOM: LEAN CLAY, (CL), MODERATE PLASTICITY, LIGHT GRAY/BROWN, MOIST, STIFF	HNU = BKGD RAD = BKGD SAMPLE NO.4477
	55.0					
55	57.0	S-11	2.0	7-10-19-29 (29)	TOP 0.7': LEAN CLAY, (CL), MODERATE PLASTICITY, LIGHT BROWN, MOIST, MEDIUM STIFF BOTTOM 1.3': POORLY GRADED SAND, (SP), TRACE SILT, FINE, LIGHT BROWN, MOIST, MEDIUM DENSE	HNU = BKGD RAD = BKGD SAMPLE NO.4478
60						

PROJECT NUMBER	BORING NUMBER
SED 28178.FI	W 150 SHEET 3 OF 4

SOIL BORING LOG

PROJECT PGDP Phase I Site Investigation LOCATION WC-10, Back of Jones' Property
ELEVATION — DRILLING CONTRACTOR Geotek Engineering
DRILLING METHOD AND EQUIPMENT Mobile B-57 ATV Rig; Hollow Stem Auger 4-1/2" ID
WATER LEVEL AND DATE START 8/10/90 FINISH 8/10/90 LOGGER R. Johns

DEPTH BELOW SURFACE (FT)	SAMPLE INTERVAL	SAMPLE TYPE AND NUMBER	SAMPLE RECOVERY (FT)	STANDARD PENETRATION TEST RESULTS 6" -6" -6" (N)	SOIL DESCRIPTION: SOIL NAME, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY, USCS GROUP SYMBOL	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS AND INSTRUMENTATION
60	62.0	S-12	0.6	1-12-15-50/5"	POORLY GRADED SAND, (SP), MEDIUM TO COARSE, LIGHT BROWN, WET, MEDIUM DENSE TIP OF SPOON: POORLY GRADED GRAVEL, (GP), SUBANGULAR, 1/8", LIGHT BROWN, WET, MEDIUM DENSE	HNU = BKGD RAD = BKGD SAMPLE NO.4479
	65.0					
65	67.0	S-13	1.5	15-29-10-35 (39)	POORLY GRADED GRAVEL, (GP), SOME FINES, 1/16" TO 1/4" GRAVEL, LIGHT BROWN, WET, DENSE	HNU = BKGD RAD = BKGD SAMPLE NO.4480
	70.0					
70	72.0	S-14	1.8	17-24-42-39 (66)	POORLY GRADED GRAVEL, (GP)	HNU = BKGD RAD = BKGD SAMPLE NO.4481
	75.0					
75	77.0	S-15	1.2	15-47-44-40 (91)		HNU = BKGD RAD = BKGD SAMPLE NO.4482
	80.0					
80	82.0	S-16	1.0	24-49-68-71 (117)		HNU = BKGD RAD = BKGD SAMPLE NO.4483
	85.0					
85	87.0	S-17	1.0	6-14-21-36 (35)	TOP 0.5': POORLY GRADED SAND, (SP), MEDIUM, SOME SILT, LIGHT BROWN, WET, MEDIUM DENSE BOTTOM: POORLY GRADED GRAVEL, (GP), GRAVEL IS ANGULAR, FROM 1/16" TO 3/4", BROWN, WET, MEDIUM DENSE	HNU = BKGD RAD = BKGD SAMPLE NO.4484
90						

PROJECT NUMBER	BORING NUMBER
SED 28178.FI	W 150 SHEET 4 OF 4

SOIL BORING LOG

PROJECT PGDP Phase I Site Investigation LOCATION WC-10, Back of Jones' Property
ELEVATION — DRILLING CONTRACTOR Geotek Engineering
DRILLING METHOD AND EQUIPMENT Mobile B-57 ATV Rig; Hollow Stem Auger 4-1/2" ID
WATER LEVEL AND DATE START 8/10/90 FINISH 8/10/90 LOGGER R. Johns

DEPTH BELOW SURFACE (FT)	SAMPLE INTERVAL	SAMPLE TYPE AND NUMBER	SAMPLE RECOVERY (FT)	STANDARD PENETRATION TEST RESULTS 6" -6" -6" (N)	SOIL DESCRIPTION: SOIL NAME, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY, USCS GROUP SYMBOL	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS AND INSTRUMENTATION
90	92.0	S-18	1.0	13-11-45-33 (56)	TOP 0.5': POORLY GRADED GRAVEL, (GP), SOME CLAY, GRAVEL IS ANGULAR = 1/2" MAXIMUM SIZE, DARK BROWN, WET, VERY DENSE BOTTOM: POORLY GRADED GRAVEL WITH SAND, (GP), GRAVEL IS SAME AS ABOVE, SAND IS MEDIUM TO FINE, LIGHT BROWN, WET, VERY DENSE	HNU = BKGD RAD = BKGD SAMPLE NO.4485
95	95.0					
	97.0	S-19	1.5	8-32-38-44 (70)	TOP 0.8': POORLY GRADED GRAVEL WITH SAND, (GP),MEDIUM BROWN, GRAVEL UP TO 1", ANGULAR, WET, VERY DENSE BOTTOM: POORLY GRADED SAND WITH GRAVEL, (SP), LIGHT BROWN, WET, VERY DENSE, COARSE	HNU = BKGD RAD = BKGD SAMPLE NO.4486
	100.0					
100	102.0	S-20	1.0	22-20-32-51 (52)	TOP 0.5': SILTY SAND, (SM), MEDIUM, LIGHT BROWN, WET, MEDIUM DENSE BOTTOM 0.5': LEAN CLAY, (CL), DARK GRAY, MODERATELY PLASTIC, MOIST, STIFF	HNU = BKGD RAD = BKGD SAMPLE NO.4487
						END OF BORING @ 102'

[Page left blank]

Summary of RGA Background Wells

MW 199

Location -Northwest of Plant; North of Ogden Landing Road; Well Cluster 19
N (10090.1) E (-10076.6)

Date Installed - May 8, 1991

Screened Depth - Shallow RGA
Top - 57 ft bgs
Bottom - 62 ft bgs

Dates Sampled (Dates available) - Q2 91; Q2 93; Q3 93; Q4 93; Q1 94; Q2 94; Q3 94; Q4 94; Q3 97

Construction Information Reference - Technical Memorandum No. 5 in *Results of the Site Investigation, Phase II at the Paducah Gaseous Diffusion Plant, Paducah, Kentucky* (KY/SUB/13B-97777C P-03/1991/1; April 1992)

Potential Contaminant Information -

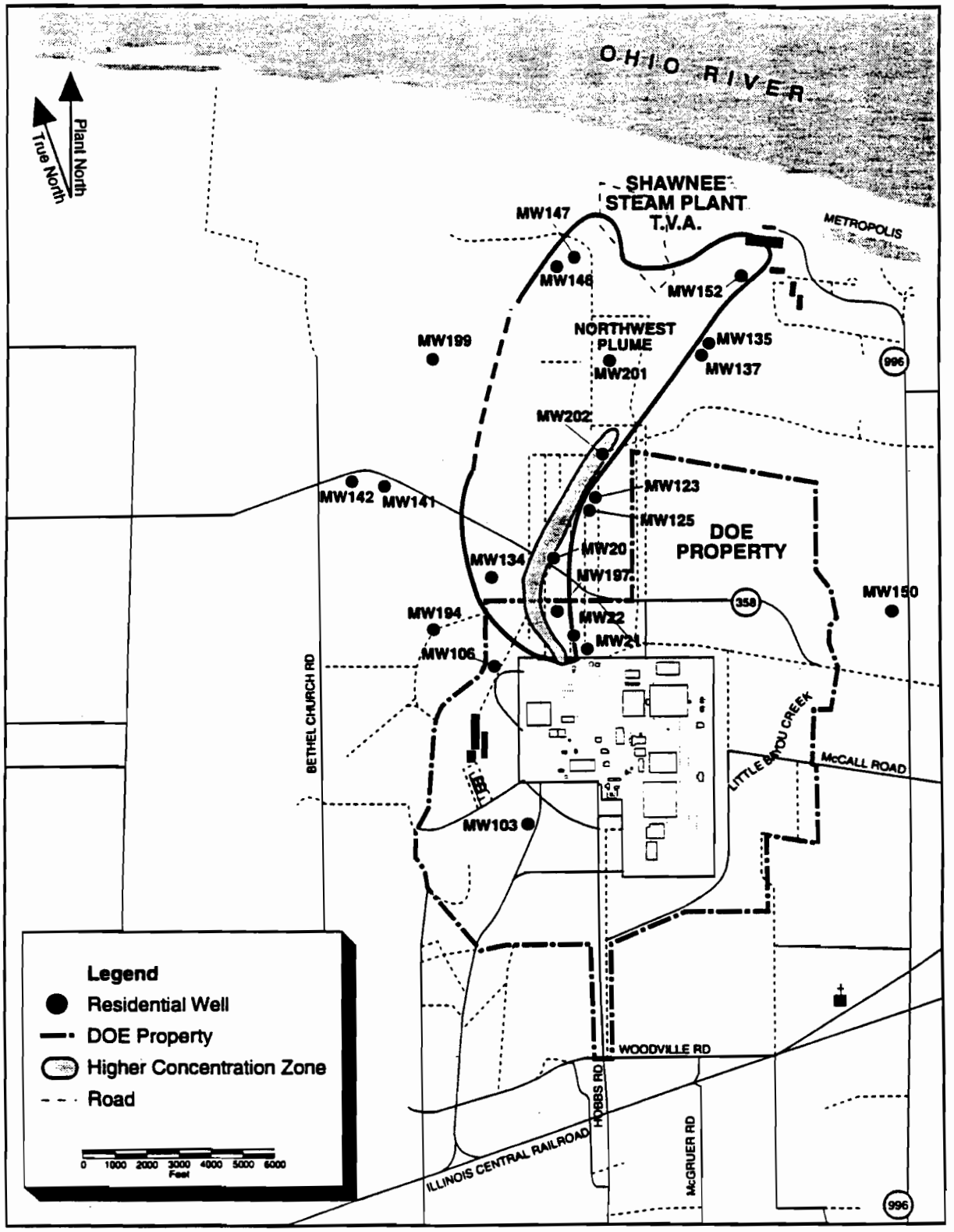
Compound	Detected Concentration	Detection Error (Rad only)	Date of Collection	Sample ID
Organic Compounds (all; µg/l)				
bis(2-ethylhexyl)phthalate	6 J	NA	5/14/91	CH210240-00000
Radionuclides (^{99}Tc only; pCi/l; unfiltered samples; ordered by date of collection)				
^{99}Tc	-2.3	3.1	5/14/91	CH210240-00000
^{99}Tc	4	6	5/27/93	5170-93
^{99}Tc	0	14	7/26/93	5984-93
^{99}Tc	7	20	10/25/93	7311-93
^{99}Tc	4	21	4/25/94	5260-94
^{99}Tc	24	20	7/27/94	6074-94
^{99}Tc	10	18	10/11/94	6888-94
^{99}Tc	3	12	8/6/97	5558-97
Radionuclides (^{99}Tc only; pCi/l; filtered samples; ordered by date of collection)				
^{99}Tc	0.4	1.2	5/14/91	CH210240-DIS
^{99}Tc	-1.3	2.06	5/21/91	CH210250-DIS

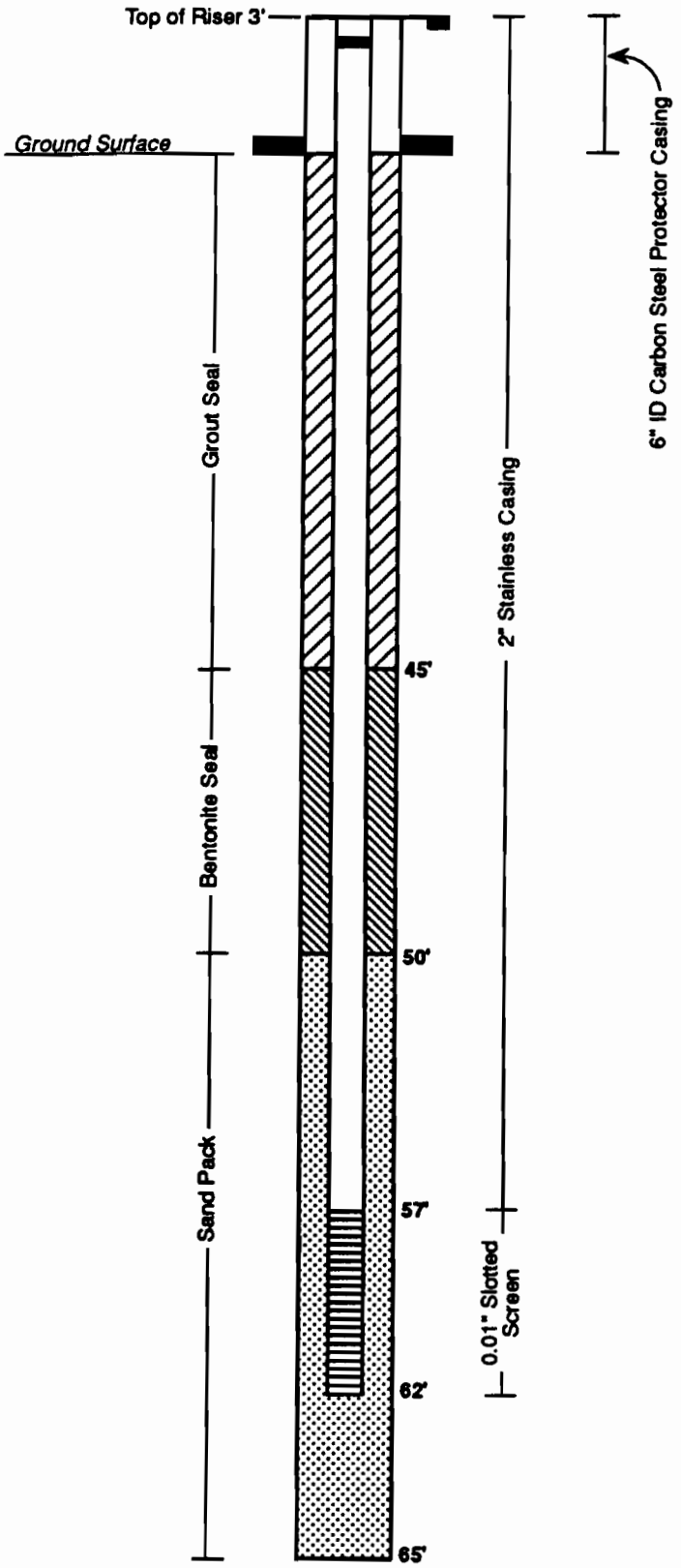
Notes: NA = Entry not applicable or not available.

Physical Data Summary -

Parameter	Number of Observations	Arithmetic Average of Results	Range of Results	Units
Alkalinity	8	117.1	111 - 123	mg/L
Depth to Water	8	29.7	23.3 - 34.07	feet
Dissolved Oxygen	8	4.91	4.2 - 6.92	mg/L
Dissolved Solids	8	217.9	175 - 233	mg/L
pH	29	6.24	6.1 - 6.4	SU
Specific Conductance	29	388.7	379 - 402	umhos/cm
Temperature	8	58.8	57 - 64.5	F
Total Organic Carbon	25	< 1	< 1 - 1	mg/L
Total Suspended Solids	1	119	NA	mg/L
Turbidity	7	43.0	8.3 - 172	NTU

Notes: NA = Entry not applicable or not available.


OHIO RIVER
Plant North
True North
SHAWNEE STEAM PLANT T.V.A.
METROPOLIS
MW147
MW146
MW152
MW199
NORTHWEST PLUME
MW135
MW137
MW201
996
MW202
MW123
MW125
MW142
MW141
DOE PROPERTY
MW20
MW134
MW197
358
MW150
MW194
MW22
MW21
MW106
BETHEL CHURCH RD
LITTLE BAYOU CREEK
McCALL ROAD
MW103
Legend
Residential Well
DOE Property
Higher Concentration Zone
Road
0 1000 2000 3000 4000 5000 6000
Feet
WOODVILLE RD
HOBBS RD
McGRUER RD
ILLINOIS CENTRAL RAILROAD
996



WELL CONSTRUCTION DETAILS
MW199

PADUCAH GASEOUS DIFFUSION PLANT
PADUCAH, KY
PHASE II SITE INVESTIGATION

CH2M HILL

PROJECT NUMBER	BORING NUMBER	
ORO30888.B1	MW199	SHEET 1 OF 3

SOIL BORING LOG

PROJECT PGDP Phase II Site Investigation LOCATION North of Ogden Landing Road

ELEVATION 353.87 NGVD DRILLING CONTRACTOR Brotcke Engineering Co., Inc.

DRILLING METHOD AND EQUIPMENT CME 75 Rig: 7-3/4" OD CME Augers: 3"x5' CME Stainless Steel Sampler

WATER LEVEL AND DATE N/A START 5/8/91 FINISH 5/8/91 LOGGER G.Schaefer

DEPTH BELOW SURFACE (FT)	SAMPLE INTERVAL	SAMPLE TYPE AND NUMBER	SAMPLE RECOVERY (FT)	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION: SOIL NAME, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY, USCS GROUP SYMBOL	SYMBOLIC LOG	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS AND INSTRUMENTATION
					GRAVEL PAD (= 0.3')		Bkgd: HNu=0 ppm; Rad=30 cpm
	0-5	5' Continuous	1.3	N/A	LEAN CLAY (CL), light brown (5 YR 6/4) with light gray (N7), mottling, moist, very stiff		HNu = 0 ppm Rad = 30 cpm Pocket Pen (P.P.) = 4.0 kg/cm^2
5	5-10	5' Continuous	5.0	N/A	LEAN CLAY (CL), grayish orange pink (5 YR 7/2) with light gray (N7), mottling and black (N1) streaking, moist, very stiff		HNu = 0 ppm Rad = 30 cpm P.P. = 3.75 kg/cm^2
10	10-15	5' Continuous	5.0	N/A	LEAN CLAY (CL), same as above		HNu = 0 ppm Rad = 30 cpm P.P. = 2.5 kg/cm2
15	15-20	5' Continuous	5.0	N/A	2.6' : LEAN CLAY (CL), same as above 1.5' : WELL SORTED SAND (SW), moderate red (5 R 5/4), moist 0.9' : LEAN CLAY W/SAND (CL), light brown (5 YR 6/4), moist, very stiff		HNu = 0 ppm Rad = 30 cpm P.P. = 2.5 kg/cm^2 for CL
20	20-25	5' Continuous	5.0	N/A	1.9' : LEAN CLAY W/SAND (CL), same as above 3.1' : LEAN CLAY (CL), light brown (5 YR 6/4), moist, very stiff, light gray (N7) mottling		HNu = 0 ppm Rad = 30 cpm P.P. = 4.0 kg/cm^2 for lower CL
25	25-30	5' Continuous	4.3	N/A	LEAN CLAY (CL), same as above except stiff		HNu = 0 ppm Rad = 30 cpm P.P. = 1.75 kg/cm2
30							

CH2MHILL

PROJECT NUMBER	BORING NUMBER	
ORO30888.B1	MW199	SHEET 2 OF 3

SOIL BORING LOG

PROJECT PGDP Phase II Site Investigation LOCATION North of Ogden Landing Road

ELEVATION 353.87 NGVD DRILLING CONTRACTOR Brotcke Engineering Co., Inc.

DRILLING METHOD AND EQUIPMENT CME 75 Rig; 7-3/4" OD CME Augers; 3"x5' CME Stainless Steel Sampler

WATER LEVEL AND DATE N/A START 5/8/91 FINISH 5/8/91 LOGGER G.Schaefer

DEPTH BELOW SURFACE (FT)	SAMPLE INTERVAL	SAMPLE TYPE AND NUMBER	SAMPLE RECOVERY (FT)	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION: SOIL NAME, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY, USCS GROUP SYMBOL	SYMBOLIC LOG	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS AND INSTRUMENTATION
	30-35	5' Continuous	3.5	N/A	1.0' : LEAN CLAY (CL), moderate brown (5 YR 4/4), moist, very stiff 2.5' : LEAN CLAY (CL), light brown (5 YR 6/4) with moderate red (5 R 4/6) and light gray (N7) mottling, moist hard		HNu = 0 ppm Rad = 30 cpm P.P. = 2.5 kg/cm^2 (top) P.P. = >4.5 kg/cm^2 (bottom)
35	35-40	5' Continuous	4.3	N/A	LEAN CLAY (CL), same as above. Small percent of gravel at bottom 0.4'; well rounded chert		HNu = 0 ppm Rad = 30 cpm P.P. = >4.5 kg/cm^2
40	40-45	5' Continuous	1.7	N/A	WELL SORTED SAND W/GRAVEL (SW), light brown (5 YR 5/6) with moderate red (5 R 4/6) mottling, moist, subangular gravel, medium to coarse grained sand		HNu = 0 ppm Rad = 30 cpm P.P. = N/A Sampler wet out of hole
45	45-50	5' Continuous	3.9	N/A	WELL SORTED SAND (SW), moderate red (5 R 5/4), wet, medium to fine grained sand		HNu = 0 ppm Rad = 30 cpm P.P. = N/A Sampler wet out of hole
50	50-55	5' Continuous	4.7	N/A	Top 3' : WELL SORTED SAND (SW), same as above WELL GRADED GRAVEL (GW), medium brown (5 YR 4/4), wet, well rounded chert gravel		HNu = 0 ppm Rad = 30 cpm P.P. = N/A Sampler wet out of hole
55	55-60	5' Continuous	1.4	N/A	WELL GRADED GRAVEL (GW), same as above		HNu = 0 ppm Rad = 30 cpm P.P. = N/A Sampler wet out of hole
60							

CH2MHILL

PROJECT NUMBER	BORING NUMBER	
ORO30888.B1	MW199	SHEET 3 OF 3

SOIL BORING LOG

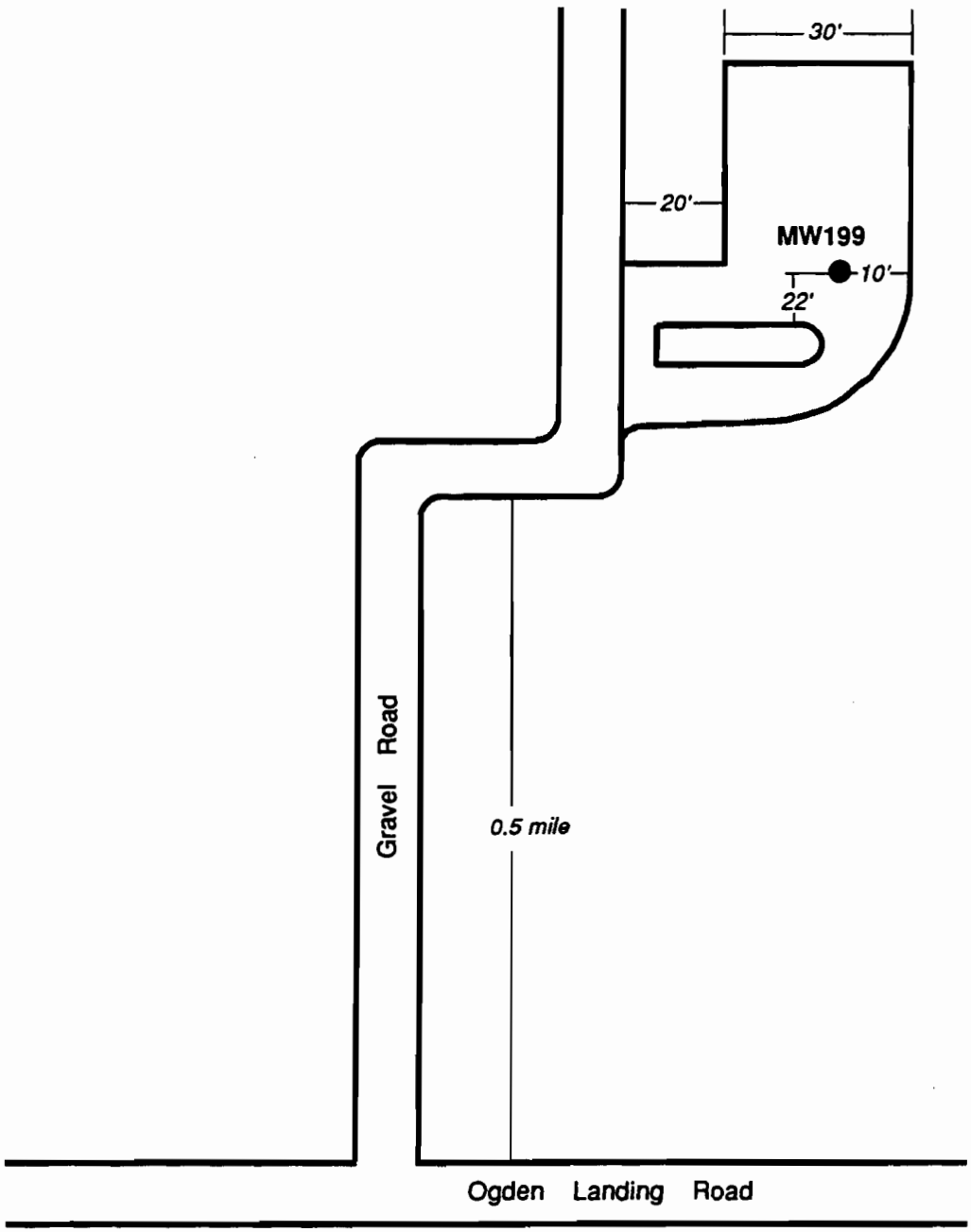
PROJECT PGDP Phase II Site Investigation LOCATION North of Ogden Landing Road

ELEVATION 353.87 NGVD DRILLING CONTRACTOR Brotcke Engineering Co., Inc.

DRILLING METHOD AND EQUIPMENT CME 75 Rig: 7-3/4" OD CME Augers: 3"x5' CME Stainless Steel Sampler

WATER LEVEL AND DATE N/A START 5/8/91 FINISH 5/8/91 LOGGER G.Schaefer

DEPTH BELOW SURFACE (FT)	SAMPLE INTERVAL	SAMPLE TYPE AND NUMBER	SAMPLE RECOVERY (FT)	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION: SOIL NAME, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY, USCS GROUP SYMBOL	SYMBOLIC LOG	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS AND INSTRUMENTATION
	60-65	5' Continuous	0.0	N/A	No Recovery		HNu = 0 ppm Rad = 30 cpm P.P. = N/A No recovery due to large gravel
65					End of Boring		



N

Not to Scale

DIAGRAM OF MW199

PADUCAH GASEOUS DIFFUSION PLANT

PADUCAH, KY

PHASE II SITE INVESTIGATION

[Page left blank]

Summary of McNairy Background Wells

MW 102

Location - South of Plant; South of C-743 parking lot
N (-3502.5), E (-6267.3)

Date Installed - Dec. 12, 1991

Screened Depth - Upper McNairy
Top - 136 ft bgs
Bottom - 146 ft bgs

Dates Sampled (Data available) - Q 1 92; Q 2 93; Q3 93; Q4 93; Q1 94; Q2 94; Q3 94; Q4 94; Q1 95 Q2 95; Q3 95; Q4 95; Q1 96; Q1 97

Construction Information Reference - Groundwater Monitoring Phase III

Potential Contaminant Information -

Compound	Detected Concentration	Detection Error (Rad only)	Date of Collection	Sample ID
Organic Compounds (all; µg/l)				
NONE	NA	NA	NA	NA
Radionuclides (^{99}Tc only; pCi/l; unfiltered samples; ordered by date of collection)				
^{99}Tc	9	18	5/26/93	5174-93
^{99}Tc	9	27	7/26/93	5940-93
^{99}Tc	9	37	10/14/93	7295-93
^{99}Tc	6	37	1/24/94	4268-94
^{99}Tc	23	19	4/26/94	5183-94
^{99}Tc	17	21	10/5/94	6770-94
^{99}Tc	4	22	3/21/95	5619-95
^{99}Tc	10	10	6/14/95	6592-95
^{99}Tc	2	10	9/18/95	7467-95
^{99}Tc	5	10	2/8/96	5281-96
Radionuclides (^{99}Tc only; pCi/l; filtered samples; ordered by date of collection)				
NONE	NA	NA	NA	NA

Notes: NA = Entry not applicable or not available.

Physical Data Summary -

Parameter	Number of Observations	Arithmetic Average of Results	Range of Results	Units
Alkalinity	13	94	71 - 102	mg/L
Depth to Water	14	55.38	50.95 - 59.95	feet
Dissolved Oxygen	13	0.97	0.17 - 2.94	mg/L
Dissolved Solids	13	157	32 - 185	mg/L
pH	50	6.1	5.9 - 6.3	SU
Specific Conductance	49	276	251 - 295	umhos/cm
Temperature	14	59.1	56 - 61	F
Total Organic Carbon	45	< 1	< 1 - 1	mg/L
Total Suspended Solids	2	13	4 - 21	mg/L
Turbidity	12	19.7	3.4 - 38	NTU

Notes: NA = Entry not applicable or not available.

[Page left blank]

Summary of McNairy Background Wells

MW 120

Location - Southeast of Plant; Well Cluster 1
N(-5880.16), E (-1489.08)

Date Installed - November 13, 1989

Screened Depth - Deep McNairy
Top - 160 ft bgs
Bottom - 170 ft bgs

Dates Sampled (Data available) - Q1 90; Q2 90; Q3 90; Q1 91; Q2 93; Q3 93; Q4 93; Q1 94; Q2 94; Q3 94; Q4 94; Q1 95; Q1 96; Q1 97; Q4 97

Construction Information Reference - Technical Memorandum No. 4 in *Results of the Site Investigation, Phase I at the Paducah Gaseous Diffusion Plant, Paducah, Kentucky* (KY/ER-4; March 1991)

Contaminant Information -

Compound	Detected Concentration	Detection Error (Rad only)	Date of Collection	Sample ID
Organic Compounds (all; µg/l)				
bis(2-ethylhexyl)phthalate	210	NA	2/27/90	CH200300-00000
Ethylbenzene	2 J	NA	4/20/90	CH200414-00000
Toluene	5	NA	4/20/90	CH200414-00000
Xylene	12	NA	4/20/90	CH200414-00000
Radionuclides (^{99}Tc only; pCi/l; unfiltered samples; ordered by date of collection)				
^{99}Tc	11	NR	2/27/90	732-90
^{99}Tc	3	7	2/27/90	CH200300-00000
^{99}Tc	11	14	4/20/90	CH200414-00000
^{99}Tc	2.6	2.03	2/28/91	CH210107-00000
^{99}Tc	5	40	5/25/93	5088-93
^{99}Tc	8	28	7/12/93	5900-93
^{99}Tc	12	21	10/26/93	7065-93
^{99}Tc	3	18	4/20/94	4991-94
^{99}Tc	4	19	7/19/94	6034-94
^{99}Tc	21	20	2/8/95	5448-95
^{99}Tc	11	11	2/6/97	5143-97
^{99}Tc	1	12	11/11/97	5793-97
Radionuclides (^{99}Tc only; pCi/l; filtered samples; ordered by date of collection)				
^{99}Tc	NONE	NA	NA	NA

Notes: NA = Entry not applicable or not available; NR = Value not reported in data set.

Physical Data Summary -

Parameter	Number of Observations	Arithmetic Average of Results	Range of Results	Units
Alkalinity	10	122	73 - 142	mg/L
Depth to Water	11	58.66	55.62 - 61.31	feet
Dissolved Oxygen	11	1.38	0.29 - 5.53	mg/L
Dissolved Solids	10	188	163 - 222	mg/L
Hardness as CaCO3	1	196	NA	g/L CaCO
Hardness as CaCO3, Dissolved	1	126	NA	g/L CaCO
pH	38	6.7	6.5 - 6.9	SU
Specific Conductance	38	307	290 - 327	umhos/cm
Temperature	11	60.3	57 - 65	F
Total Organic Carbon	30	< 1	< 1 - 1	mg/L
Total Suspended Solids	2	25	14 - 35	mg/L
Turbidity	8	10.9	5 - 20	NTU

Notes: NA = Entry not applicable or not available.

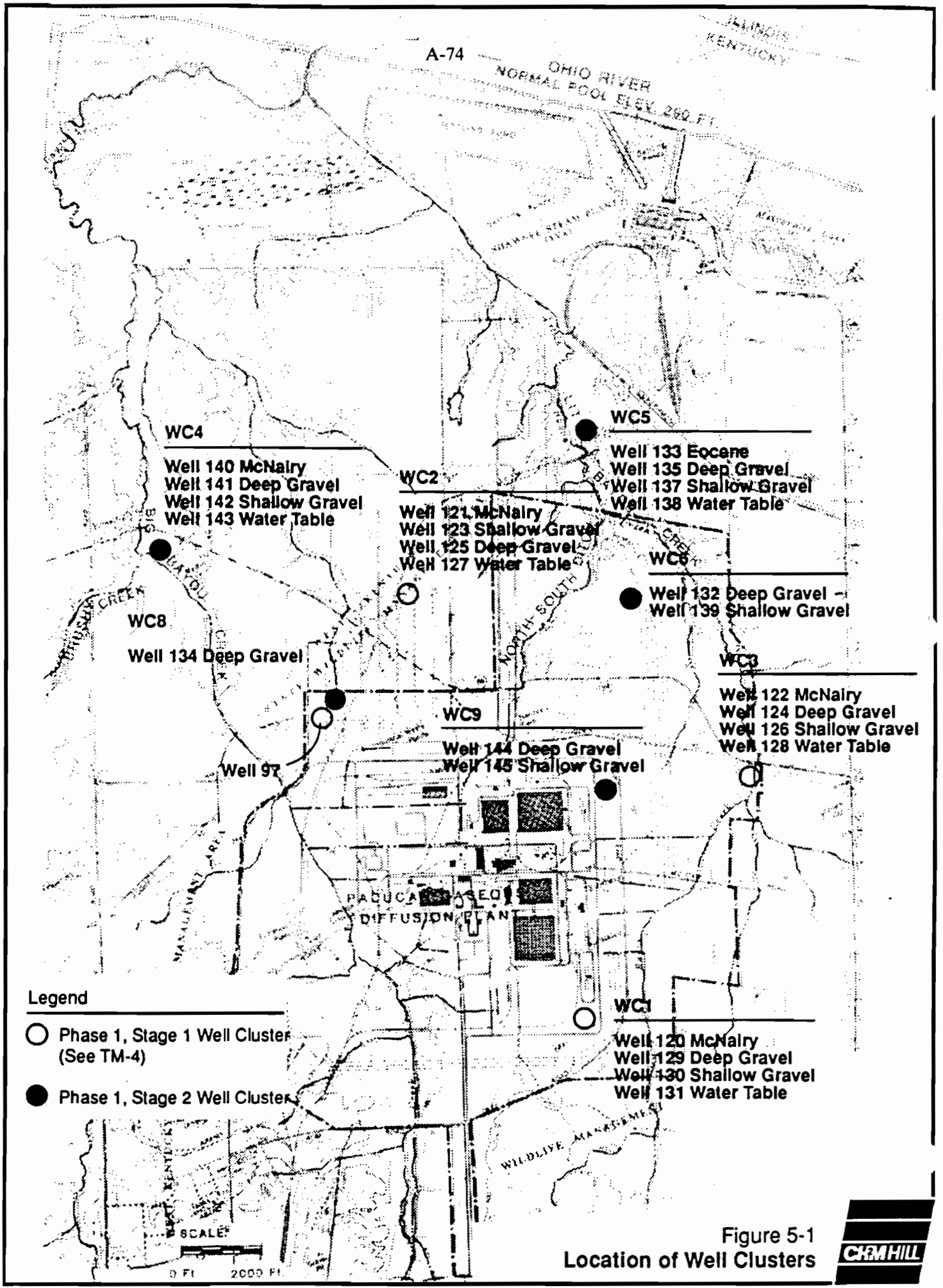
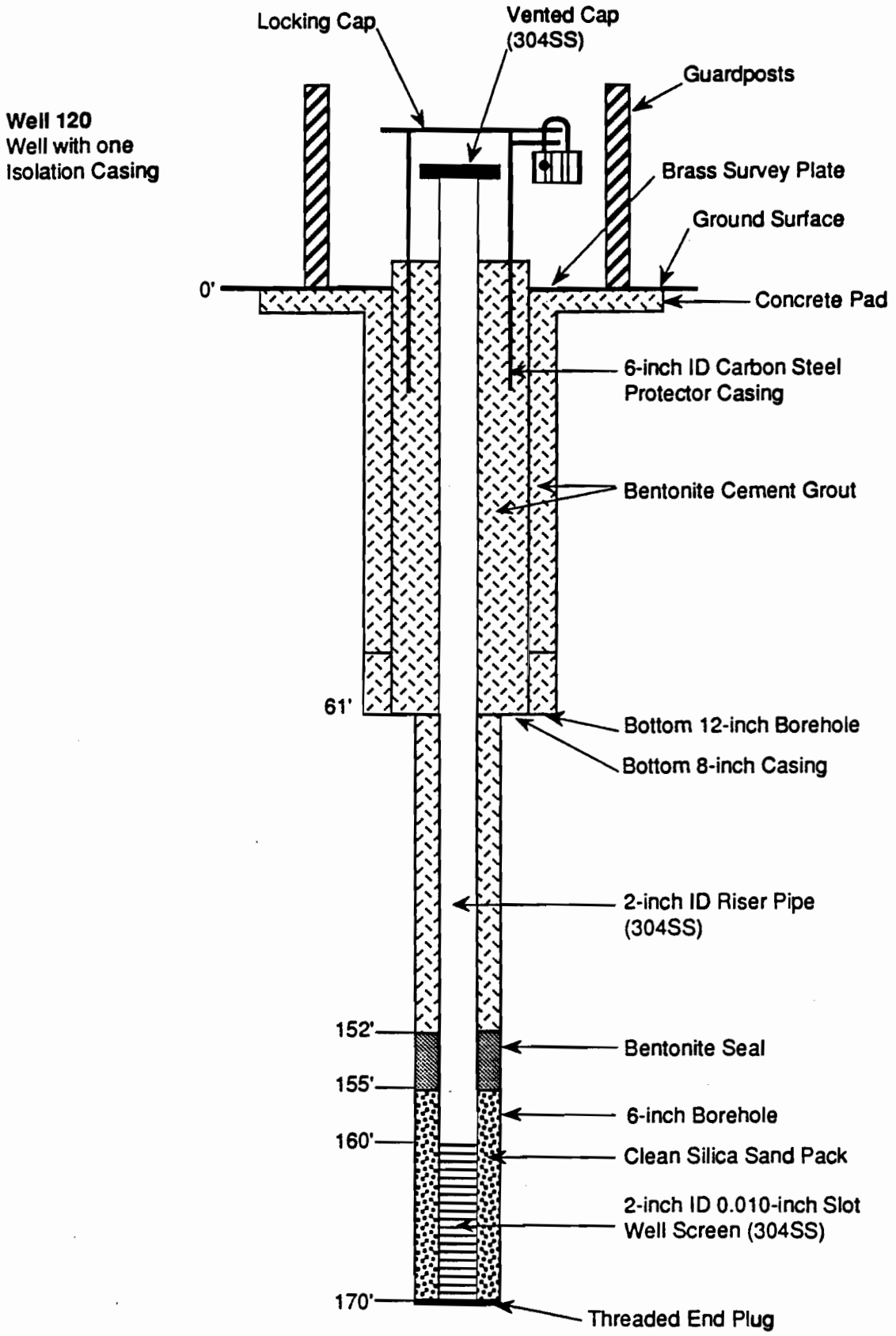


Figure 5-1
Location of Well Clusters

CH2M HILL

SED28178.F1



Well 120 Construction Details

Paducah GDP, Kentucky

CH2M HILL

PROJECT NUMBER	BORING NUMBER
SED28178.FI	Well 120 SHEET 1 OF 6

SOIL BORING LOG

PROJECT PGDP Phase I Site Investigation LOCATION Well Cluster WC1, Southeast Corner of Plant
ELEVATION _____ DRILLING CONTRACTOR Geotek Engineering
DRILLING METHOD AND EQUIPMENT B-53 Mobile Drill, 6-inch ID Hollow Stem
WATER LEVEL AND DATE Static—26 Ft. START 11/18/89 FINISH 1/23/90 LOGGER M. Henry

DEPTH BELOW SURFACE (FT)	SAMPLE INTERVAL	SAMPLE TYPE AND NUMBER	SAMPLE RECOVERY (FT)	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION: SOIL NAME, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY, USCS GROUP SYMBOL	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS AND INSTRUMENTATION
0	0-2		1.6'	3-5-9-10 (14)	CLAYEY SILT, LIGHT BROWN-GRAY, (5 YR 6/4), DAMP, STIFF, WITH ROOT TRACES THROUGHOUT SAMPLE	USING 140 LB. HAMMER WITH HOIST
2	2-4	4010	1.8'	10-20-20-25 (40)	SILTY CLAY, GRAY (N7), WITH RUST AND BLACK MOTTLING, DAMP, HARD, WITH ROOT TRACES	HEADSPACE #4010—NOT ABOVE BACKGROUND
4	4-6		1.8'	15-15-15-20 (30)	SAME AS ABOVE, ALSO PLASTIC	TIME 15:30
6	6-8		2.0'	8-10-15-15 (25)	SAME AS ABOVE, VERY STIFF	
8	8-10	4011	2.0'	15-15-18-19 (33)	SAME, VERY FINE SAND 0-5% VISIBLE IN SUNLIGHT	HEADSPACE #4011—NOT ABOVE BACKGROUND
10	10-12		2.0'	7-9-8-13 (17)	SILTY CLAY, GREENISH GRAY, (5 YR 6/4), MOIST, VERY STIFF, PLASTIC, WITH RUST MOTTLING AND BLACK ORGANIC NODULES	COLLECTED RAD SCREEN OVER FIRST FIRST 12 FT. 16:00
12	12-14		1.5'	16-16-21-18 (37)	SILTY CLAY, GRAY, (N7), DAMP, HARD, PLASTIC, WITH RUST MOTTLING, A ONE-INCH LAYER OF ORGANIC MATERIAL IN SAMPLE	11/19/89 09:35
14	14-16	4012	2.0'	16-13-16-19 (29)	SAME AS ABOVE, VERY STIFF	HEADSPACE #4012—NOT ABOVE BACKGROUND
16	16-18		2.0'	6-11-17-26 (28)	SILTY SAND, GRAY, MEDIUM DENSE, WITH SOME RUST MOTTLING, SAND IS FINE TO VERY FINE WITH ~ 5% PEA-SIZED GRAVEL	INTO UPPER CONTINENTAL DEPOSITS 10:20
18	18-20		2.0'	12-22-30-33 (52)	SAND, GRAY, (N7), MOIST, VERY DENSE, SLIGHTLY SILTY, WELL SORTED 60% VERY FINE—10% MEDIUM SANDS ~ 5% GRAVEL	
20	20-22	4013	2.0'	5-10-15-22 (25)	SAND, GRAY, (N7), MEDIUM DENSE WITH LITTLE RUST MOTTLING, SLIGHTLY SILTY, SAND IS FINE, 5% PEA-SIZED GRAVEL	HEADSPACE #4013—NOT ABOVE BACKGROUND
22	22-23		1.0'	16-50/5	SAND AND SILT, GRAY, (N7), DAMP, VERY DENSE, FINE SAND WITH BLUE AND PINK INCLUSIONS OF SILT	RIG CHATTERING BETWEEN 22 AND 24 FT. 11:10
24	24-26		1.5'	42-43-47-42 (90)	FINE SAND, GRAY, (N7), MOIST, VERY DENSE, SLIGHTLY SILTY, 10% SAND IS MEDIUM GRAINED, PINK SILTY INCLUSIONS	WET SPOON AT ~26 FT.
26	26-28	4014	2.0'	11-13-13-16 (26)	FINE SAND, BROWN, (5 YR 4/4), MOIST, MEDIUM DENSE, SLIGHTLY SILTY WITH STREAKS OF REDDISH, PLASTIC SANDY SILTS	HEADSPACE #4014—NOT ABOVE BACKGROUND WATER LEVEL AT 22 FT. AFTER SAMPLING TO 30 FT.
28	28-30		1.7'	9-17-28-29 (45)	FINE SAND, BROWN, (5 YR 4/4), MOIST, DENSE, WITH STREAKS OF RED AND GRAY SANDY SILTS GRADING INTO SILTY SAND	ISOLATED GRAVEL—VERY DRY AND CHALKY, VERY HARD
30						

PROJECT NUMBER	BORING NUMBER
SED28178.FI	Well 120 SHEET 2 OF 6

SOIL BORING LOG

PROJECT PGDP Phase I Site Investigation LOCATION Well Cluster WC1, Southeast Corner of Plant
ELEVATION _____ DRILLING CONTRACTOR Geotek Engineering
DRILLING METHOD AND EQUIPMENT B-53 Mobile Drill, 6-inch ID Hollow Stem
WATER LEVEL AND DATE Static—16 Ft., after hitting gravels START 11/18/89 FINISH 1/23/90 LOGGER M. Henry

DEPTH BELOW SURFACE (FT)	SAMPLE INTERVAL	SAMPLE TYPE AND NUMBER	SAMPLE RECOVERY (FT)	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION: SOIL NAME, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY, USCS GROUP SYMBOL	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS AND INSTRUMENTATION
30						
	30-32		1.6'	13-17-17-21 (34)	SANDY SILT, LIGHT GRAY, MOIST, HARD, SAND IS FINE TO MEDIUM GRAINED (<5%)	HEADSPACE #4015—NOT ABOVE BACKGROUND
32	32-34	4015	2.0'	17-15-21-24 (36)	SAME AS ABOVE, WITH RED STREAKS; OVER 0.4 FT. SAND, WET, DENSE, FINE TO VERY FINE	16:10 11/19/89
34	34-34.5		0.4'	50/5	SAND, BROWN, (5 YR. 5/6), WET, VERY DENSE, FINE	DRILLER FELT HE WAS BANGING ON A ROCK
						LOWER CONTINENTAL DEPOSITS
36	36-38		1.9'	21-27-20-50 (47)	SAND AND GRAVEL, BROWN, (5 YR. 5/6), WET, DENSE, WELL SORTED SAND, MEDIUM-COARSE GRAINED WITH 20% GRAVEL TO 3/4-INCH	
38	38-40	4017	1.6'	42-50-5-6 (55)	GRAVEL AND SAND, BROWN, (10R 4/0), VERY DENSE, COARSE SAND WITH GRAVEL UP TO 1-INCH; OVER 0.5 FT. CLAYEY SAND AND GRAVEL, REDDISH, MEDIUM DENSE	COBBLE 3½-INCH IN DIAMETER AND ½-INCH THICK BROUGHT TO SURFACE
40	40-42		2.0	21-33-38-50/5 (71)	CLAYEY SAND AND GRAVEL (N9), AS ABOVE; OVER 1.2 FT. SAND WHITE, VERY DENSE, POORLY SORTED, MEDIUM GRAINED, WITH 5% GRAVEL TO 1/2-INCH	HEADSPACE #4017—NOT ABOVE BACKGROUND 09:50 11/20/89
42						*SMOOTH DRILLING WITH SOME CHATTERING AT 42 TO 44 FT. PROBABLY IN SANDS
44						TRYING TO GET THROUGH RGA TODAY
46	46-48	4018	2.0'	19-50-41-38 (91)	GRAVEL AND SAND, BROWN, (5 YR. 4/4), VERY DENSE, GRAVEL TO 1-INCH WITH MEDIUM TO COARSE GRAINED SANDS	HEADSPACE #4018—NOT ABOVE BACKGROUND
48						10:40 ROUGH DRILLING! CENTER PLUG IS STUCK IN AUGERS AS SANDS ARE HEAVING
50	50-52	NONE	0.4'	25-21-19-17 (40)	GRAVEL AND SAND, DENSE, WELL SORTED, 70% GRAVEL AND 30% MEDIUM TO COARSE GRAINED SAND, 1½-INCH GRAVEL STUCK IN SAMPLER-EASY DRILLING	15:45 12/5/89 USING ROTARY WASH DRILLING AT ~51½ FT., PROBABLY OUT OF GRAVEL
52						
54	54-56		2.0'	6-8-27-50 (35)	CLAYEY SILT, GRAY, (N6), DAMP, STIFF TO HARD, WITH ORANGE MOTTLING, FRACTURES EASILY	
56		4021				HEADSPACE #4021—NOT ABOVE BACKGROUND
58	58-59.5		1.4'	24-42-50/5	CLAYEY SILT, GRAYISH BLACK, (N2), HARD, MICACEOUS, FRACTURES IN CONCHOIDAL PATTERNS	10:00 12/6/89
60						

PROJECT NUMBER	BORING NUMBER
SED28178.FI	Well 120 SHEET 3 OF 6

SOIL BORING LOG

PROJECT PGDP Phase I Site Investigation LOCATION Well Cluster WC1, Southeast Corner of Plant
ELEVATION DRILLING CONTRACTOR Geotek Engineering
DRILLING METHOD AND EQUIPMENT Longyear 44, Rotary Drilling With 8-inch Paddle Bit
WATER LEVEL AND DATE START 11/18/89 FINISH 1/23/90 LOGGER M. Henry

DEPTH BELOW SURFACE (FT)	SAMPLE INTERVAL	SAMPLE TYPE AND NUMBER	SAMPLE RECOVERY (FT)	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION: SOIL NAME, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY, USCS GROUP SYMBOL	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS AND INSTRUMENTATION
60						MOVE LONGYEAR 44 RIG ONTO SITE, SET SURFACE CASING TO 61 FT.
63	63-65		1.5'		CLAY, DARK GRAY, (N3) TO BLUISH, (5 Pb 3/2), DRY, MICACEOUS, VERY STICKY	DROVE SHELBY TUBE 1/16/90
65						
68	68-70	4022	2.0'	3-2-1-5 (3)	SAME AS ABOVE, SOFT	USING 300 LIB. HAMMER ON A SAND LINE 15:15 1/16/90
70						
73	73-75	4023	1.9'	7-10-12-14 (22)	SAME AS ABOVE, VERY STIFF, WITH 2-INCH INTERVAL OF VERY FINE SAND THAT WAS DRY	08:15 1/17/90
75						SLOW DRILLING, DRILLING MUD, THICKENS EASILY AND MUST BE DILUTED ABOUT EVERY 10 FT.
78	78-80	4025 4026	1.9'	1-5-10-16 (15)	CLAY, DARK GRAY, (N3), DRY, STIFF, SLIGHTLY SILTY, STICKY, MICACEOUS	10:00
80						
83	83-85	4027	1.6'	8-10-12 (22)	SAME AS ABOVE, VERY STIFF	NO HEADSPACE ANALYSIS DONE 11:00
85						
88	88-90	4028	2.0'	2-8-12-14 (20)	SAME AS ABOVE, WITH SEVERAL VERY THIN (1/8-INCH) INTERVALS OF GRAY VERY FINE SANDS	14:00 1/17/90
90						

PROJECT NUMBER	BORING NUMBER
SED28178.FI	Well 120 SHEET 4 OF 6

SOIL BORING LOG

PROJECT PGDP Phase I Site Investigation LOCATION Well Cluster WC1, Southeast Corner of Plant
ELEVATION DRILLING CONTRACTOR Geotek Engineering
DRILLING METHOD AND EQUIPMENT Longyear 44, Rotary Drilling With 8-inch Paddle Bit
WATER LEVEL AND DATE START 11/18/89 FINISH 1/23/90 LOGGER M. Henry

DEPTH BELOW SURFACE (FT)	SAMPLE INTERVAL	SAMPLE TYPE AND NUMBER	SAMPLE RECOVERY (FT)	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION: SOIL NAME, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY, USCS GROUP SYMBOL	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS AND INSTRUMENTATION
90						
93	93-95	4024	1.3'	1-2-6-8 (8)	SILTY CLAY, GRAY, (N7), DRY, FIRM, SIMILAR TO ABOVE CLAY, SLIGHTLY MICACEOUS	08:10 1/18/90
95						
98	98-100	4031	1.9'	6-9-9 (18)	SAME AS ABOVE, VERY STIFF, WITH GREATER % OF MICA	11:00 WEIGHT OF RODS ALLOWING SPOON TO ONLY BE DRIVEN 18 FT.
100						
103	103-105	4032	0.9'	3-4-12-14 (16)	SAME AS ABOVE, WITH VARYING AMOUNTS OF MICA	14:15 DRILLING MUD, IS THICKENING VERY FAST, EVERY 5-10 FT.
105						
108	108-110	4033	2.0'	2-2-4-7 (6)	SAME AS ABOVE, FIRM	15:45
110						
113	113-115	4034	1.8'	4-11-16 (27)	SAME AS ABOVE, VERY STIFF	10:45 1/19/90
115						
118	118-120	4035	2.0'	8-16-18 (34)	SAME AS ABOVE, HARD	14:40
120						

PROJECT NUMBER	BORING NUMBER
SED28178.FI	Well 120 SHEET 5 OF 6

SOIL BORING LOG

PROJECT PGDP Phase I Site Investigation LOCATION Well Cluster WC1, Southeast Corner of Plant
ELEVATION _____ DRILLING CONTRACTOR Geotek Engineering
DRILLING METHOD AND EQUIPMENT Longyear 44, Rotary Drilling With 8-inch Paddle Bit
WATER LEVEL AND DATE _____ START 11/18/89 FINISH 1/23/90 LOGGER M. Henry

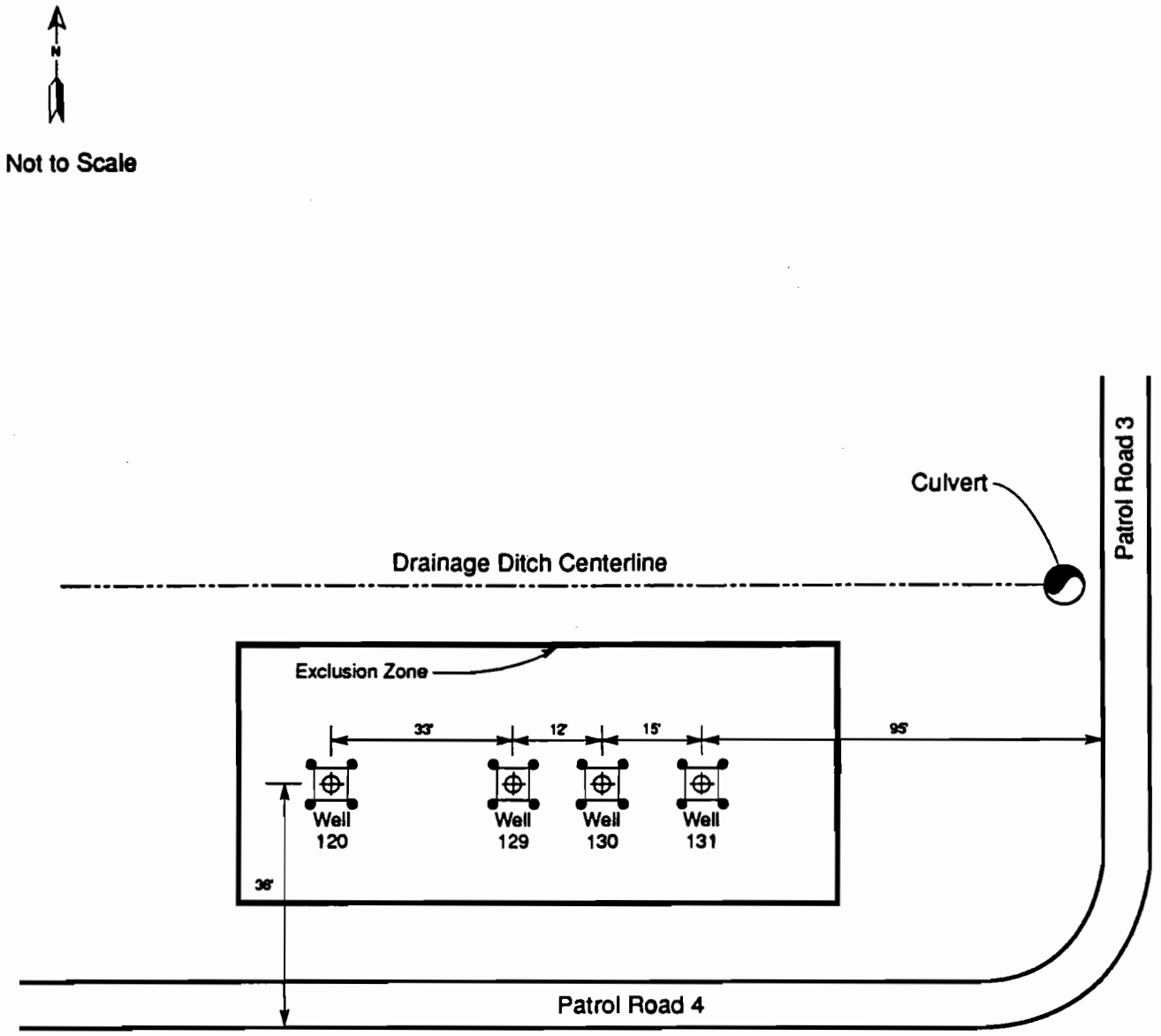
DEPTH BELOW SURFACE (FT)	SAMPLE INTERVAL	SAMPLE TYPE AND NUMBER	SAMPLE RECOVERY (FT)	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION: SOIL NAME, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY, USCS GROUP SYMBOL	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS AND INSTRUMENTATION
120						
123	123-125	4036	2.0'	4-11-12 (33)	SILTY CLAY, GRAY, (N7), DRY, HARD, MICACEOUS	16:00 1/19/90
125						
128	128-130	4038	1.8'	6-7-14 (21)	SAME AS ABOVE, DRY, VERY STIFF, WITH OCCASIONAL LENSES OF VERY FINE GRAY SAND, ~1/8-INCH THICK	0:900 1/20/90
130						
133	133-135	4039	1.9'	2-3-22 (25)	SILTY CLAY, GRAY, (N7), DRY, VERY STIFF, MICACEOUS	10:15
135						
138	138-140	4040 4041	2.0'	4-9-17 (26)	SAME AS ABOVE	13:45
140						
143	143-145	4042	1.8'	5-7-13 (21)	SILTY CLAY, GRAY, (N7), STIFF TO VERY STIFF, OVER 0.5 FT, SANDY CLAY WITH 15-25% VERY FINE SAND IN THE SAME SILTY CLAY MATRIX	15:15 DRILLER NOTES CHANGE IN DRILLING BEHAVIOR
145						RAD SCREENING
148	148-150	4043	1.9'	6-9-11 (20)	SILTY CLAY, GRAY, (N7), VERY STIFF, WITH VERTICAL FRACTURES (SECONDARY) WITH WHITE FILLINGS, MICACEOUS	16:00 30 PPM ABOVE BACKGROUND
150						

PROJECT NUMBER	BORING NUMBER
SED28178.FI	Well 120 SHEET 6 OF 6

SOIL BORING LOG

PROJECT PGDP Phase I Site Investigation LOCATION Well Cluster WC1, Southeast Corner of Plant
ELEVATION _____ DRILLING CONTRACTOR Geotek Engineering
DRILLING METHOD AND EQUIPMENT Longyear 44, Rotary Drilling With 8-inch Paddle Bit
WATER LEVEL AND DATE _____ START 11/18/89 FINISH 1/23/90 LOGGER M. Henry

DEPTH BELOW SURFACE (FT)	SAMPLE INTERVAL	SAMPLE TYPE AND NUMBER	SAMPLE RECOVERY (FT)	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION: SOIL NAME, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY, USCS GROUP SYMBOL	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS AND INSTRUMENTATION
150						
153	153-155	4045	2.0'	1-2-6-8 (8)	SAME AS ABOVE, SLIGHTLY MOIST, FIRM, LESS MICA THAN ABOVE	11:20 1/21/90
155						DRILLER NOTES CHANGE IN RIG'S BEHAVIOR
158	158-160	4046	1.8'	6-9-9 (18)	SILTY CLAY, DARK GRAY, (N3), VERY STIFF, (NO MICA), WITH LENSES OF LIGHT GRAY-WHITE, VERY FINE, POORLY SORTED SAND; SANDS ARE MOIST	08:15 1/22/90
160						
163	163-164	4047	0.6'	50-50/2	SAND, SALT AND PEPPER COLORED, MOIST TO WET, VERY DENSE, FINE, POORLY SORTED, WITH ~5-10% GLAUCONITE	10:15
164						
168	168-169		0.6'	45-50/3	SAME AS ABOVE	13:30
169						TD OF BORING
172					FOUR WELLS SET AT THIS SITE SCREENED INTERVALS 160-170 44½-49½ 34½-39½ 20-30	



Legend

- Well
- Guardpost

Figure 4-2
Well Cluster 1
Well Layout Sketch

CH2M HILL

Summary of McNairy Background Wells

MW 121

Location - Northwest of Plant; Well Cluster 2
N (6161.5), E (-5677.7)

Date Installed - November 14, 1989

Screened Depth - Deep McNairy
Top - 200 ft bgs
Bottom - 210 ft bgs

Dates Sampled (Data available) - Q4 89; Q1 90; Q2 90; Q3 90; Q1 91; Q2 91; Q2 93; Q3 93; Q4 93; Q1 94 Q2 94; Q3 94; Q4 94; Q1 95; Q1 96; Q1 97; Q4 97

Construction Information Reference - Technical Memorandum No. 4 in *Results of the Site Investigation, Phase I at the Paducah Gaseous Diffusion Plant, Paducah, Kentucky* (KY/ER-4; March 1991)

Potential Contaminant Information -

Compound	Detected Concentration	Detection Error (Rad only)	Date of Collection	Sample ID
Organic Compounds (all; µg/l)				
4-Nitrophenol	15 J	NA	2/24/90	CH200304-00000
Acetone	320 BEJ	NA	4/19/90	CH200419-00000
bis(2-ethylhexyl)phthalate	300 BJ	NA	2/24/90	CH200304-00000
bis(2-ethylhexyl)phthalate	170 BJ	NA	4/19/90	CH200304-00000
Di-n-butylphthalate	2 J	NA	2/24/90	CH200304-00000
Trichloroethene	2	NA	3/29/94	4864-94
Radionuclides (^{99}Tc only; pCi/l; unfiltered samples; ordered by date of collection)				
^{99}Tc	2	NR	2/24/90	719-90
^{99}Tc	3.1	1.4	3/25/91	CH210001-00000
^{99}Tc	4	10	9/21/93	6658-93
^{99}Tc	15	20	12/27/93	7782-93
^{99}Tc	9	33	3/29/94	4864-94
^{99}Tc	27	23	6/8/94	5517-94
^{99}Tc	8	21	9/7/94	6453-94
^{99}Tc	7	18	2/9/95	5452-95
Radionuclides (^{99}Tc only; pCi/l; filtered samples; ordered by date of collection)				
^{99}Tc	0.64	1.41	4/30/91	CH210180-DIS

Notes: NA = Entry not applicable or not available.
NR = Value not reported in data set.

Physical Data Summary -

Parameter	Number of Observations	Arithmetic Average of Results	Range of Results	Units
Alkalinity	4	124	78 - 155	mg/L
Depth to Water	9	51.57	48.39 - 53.75	feet
Dissolved Oxygen	9	1.30	0.35 - 3.5	mg/L
Dissolved Solids	4	196.25	163 - 251	mg/L
Hardness as CaCO3	2	64.5	51 - 78	g/L CaCO
Hardness as CaCO3, Dissolved	1	103	NA	g/L CaCO
pH	30	9.03	6.4 - 11.3	SU
Specific Conductance	34	548.4	301 - 1058	umhos/cm
Temperature	9	58.3	54 - 62	F
Total Organic Carbon	12	< 1	< 1 - 1	mg/L
Total Suspended Solids	2	137.5	21 - 254	mg/L
Turbidity	8	109.6	22 - 184	NTU

Notes: NA = Entry not applicable or not available.

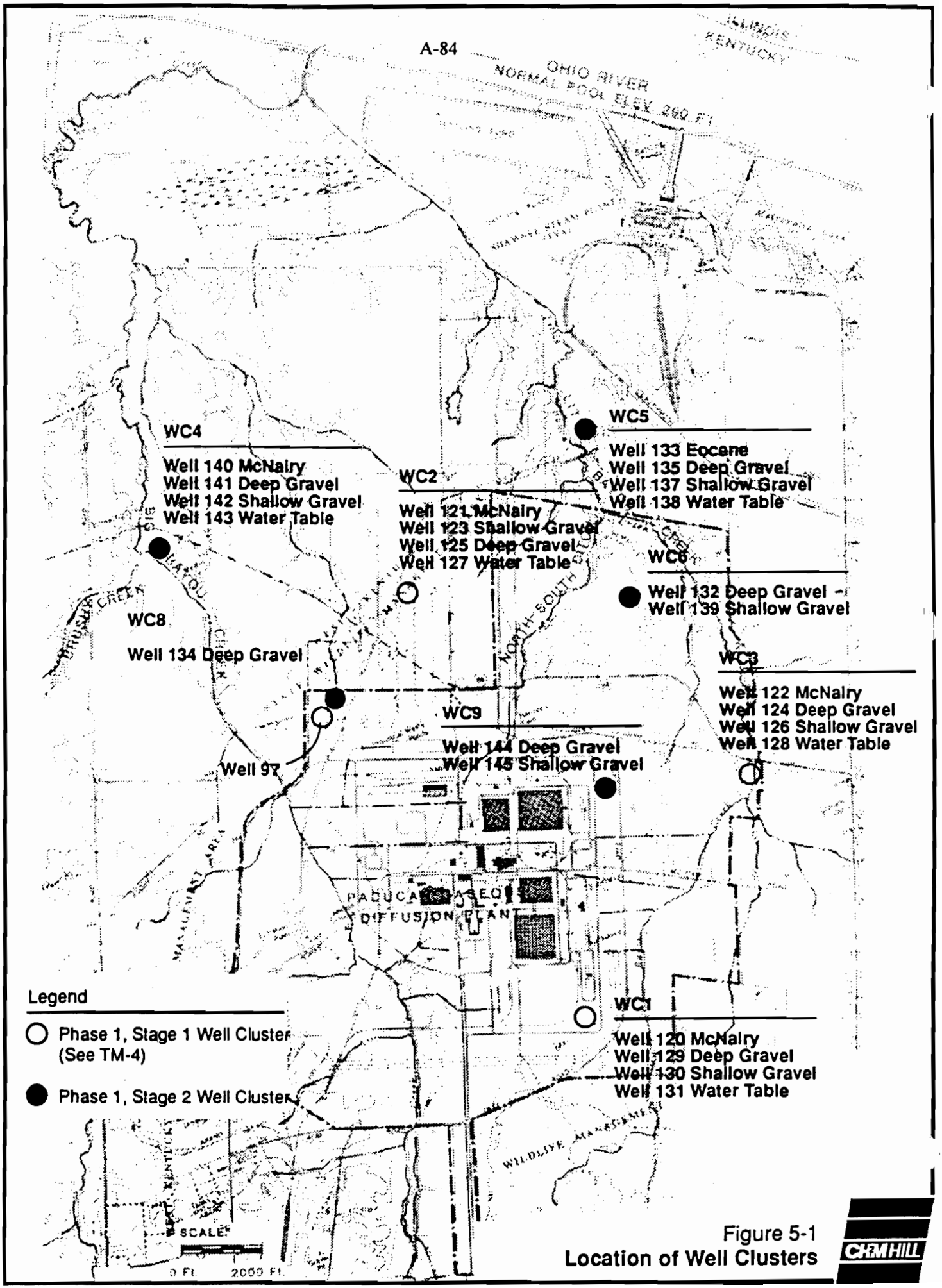
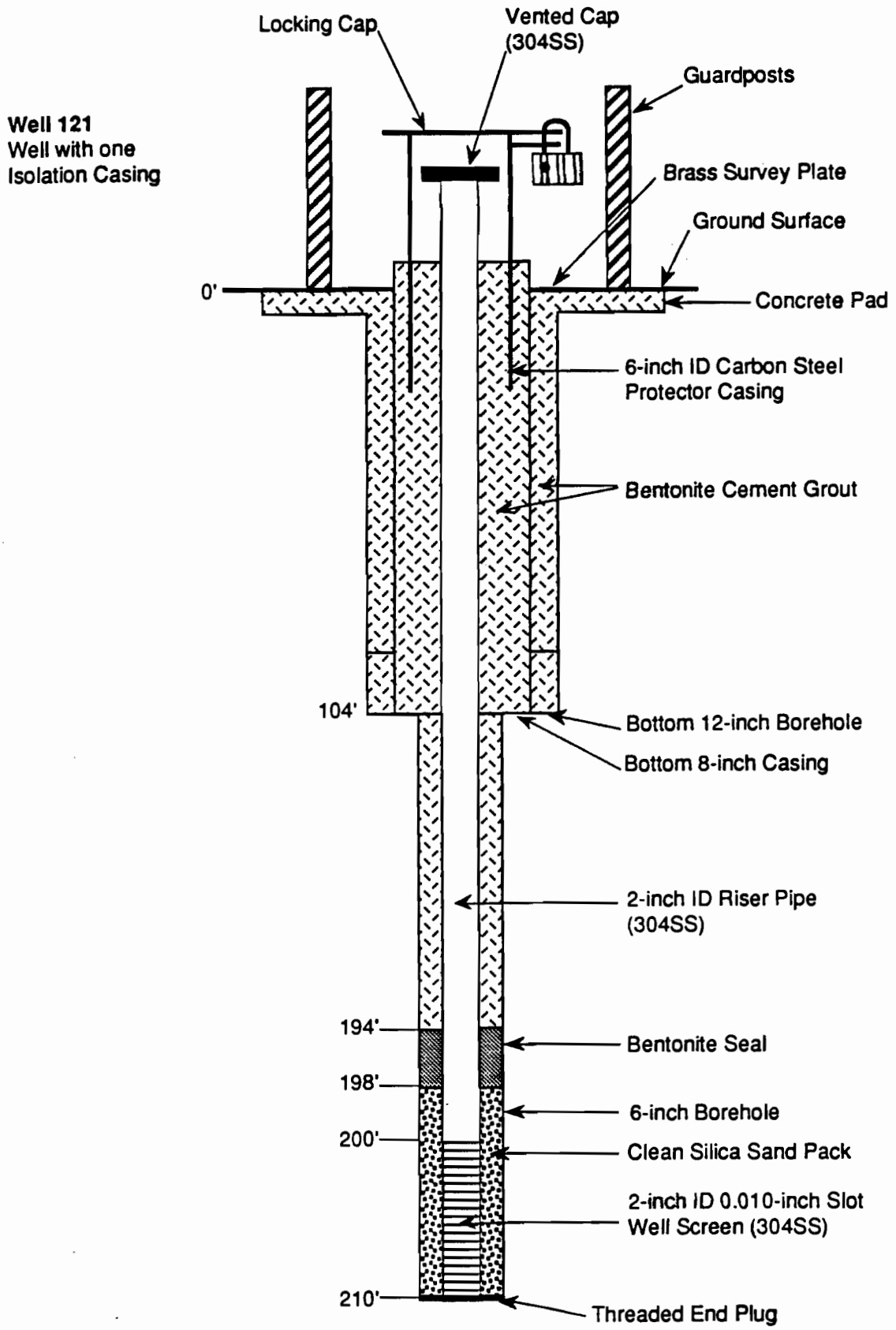


Figure 5-1
Location of Well Clusters

CH2M HILL

SED28178.F1



Well 121 Construction Details

Paducah GDP, Kentucky

CH2M HILL

PROJECT NUMBER	BORING NUMBER
SED28178.FI	Well 121 SHEET 1 OF 7

SOIL BORING LOG

PROJECT PGDP Phase I Site Investigation LOCATION Well Cluster WC2, Northwest of Plant
ELEVATION _____ DRILLING CONTRACTOR Geotek Engineering
DRILLING METHOD AND EQUIPMENT Hollow Stem Auger (8-inch O.D.) B-57 ATV
WATER LEVEL AND DATE _____ START 11/14/89 FINISH 1/6/90 LOGGER J. Mitchell

DEPTH BELOW SURFACE (FT)	SAMPLE INTERVAL	SAMPLE TYPE AND NUMBER	SAMPLE RECOVERY (FT)	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION: SOIL NAME, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY, USCS GROUP SYMBOL	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS AND INSTRUMENTATION
0	0-2		1.1'	1-3-4-5 (7)	SANDY CLAY, PINK YELLOWISH BROWN, (10 YR. 6/2), DAMP, FIRM, MEDIUM TO COARSE SAND SIZE, ROOTS AT TOP	BEGIN DRILLING 11/14/89 AT 13:22
2	2-4	4050	1.6'	4-5-7-7 (12)	SAME AS ABOVE, STIFF, INCREASED SAND VERSUS CLAY, (40% SAND)	HNU = 0.0 PPM
4	4-6		1.2'	6-8-10-10 (18)	FAT CLAY WITH SAND, MODERATE YELLOWISH BROWN TO DARK YELLOWISH BROWN, (10YR. 5/4), VERY STIFF, (CH)	MINOR IRON STAINING OF CLAY DRILLING RATE SMOOTH
6	6-8		1.3'	3-7-9-11 (16)	SAME AS ABOVE	
8	8-10	4051	1.7'	8-9-10-11 (19)	SILTY CLAY, DARK YELLOWISH ORANGE, (10 YR. 6/6), MOIST, VERY STIFF, TRACE SAND (10%), PLASTIC, (CH)	HNU = 0.0 PPM
10	10-12		1.7'	2-5-6-8 (11)	CLAYEY SAND, DARK YELLOWISH BROWN, (10YR. 4/2), MOIST, MEDIUM DENSE, (50%/50%),ORGANIC STAINING, ROOTS, TRACE SILT, (SC)	MINOR ORGANIC MATERIAL
12	12-14		1.8'	8-10-10-11 (20)	SANDY CLAY, LIGHT BROWN TO PALE YELLOWISH BROWN, (5 YR. 5/6), VERY STIFF, TRACE SILT, (CL)	
14	14-16	4052	1.2'	11-13-12-12 (25)	SILTY CLAY, LIGHT BROWN TO PALE YELLOWISH BROWN, (5 YR. 5/6) TO (10 YR. 6/2), VERY STIFF, TRACE SAND, (CL)	
16	16-18		1.9'	4-7-10-11 (17)	SAME AS ABOVE	ENDED DRILLING AT 16:40
18	18-20		1.1'	4-6-10-12 (16)	SAME AS ABOVE, INCREASING SAND CONTENT	RESUMED DRILLING 11/15/89 AT 08:19
20	20-22	4053	1.8'	2-5-7-9 (12)	SILTY CLAY, PALE YELLOWISH BROWN, (10 YR. 6/2), STIFF, TRACE MEDIUM SAND	IRON STAINING IN SANDS
22	22-24		2.0'	10-11-12-15 (23)	SAME AS ABOVE, MOIST, VERY STIFF, MORE PLIABLE	
24	24-26		1.2'	15-13-16-17 (29)	SAME AS ABOVE, VERY STIFF, NOT PLIABLE	END DRILLING AT 10:56
26	26-28	4054	2.0'	3-7-9-17 (16)	SILTY CLAY, GRAYISH ORANGE PINK TO YELLOWISH GRAY, (5 YR. 7/2), MOIST TO WET, VERY STIFF	RESUMED DRILLING 11/16/89 AT 08:14 ENCOUNTERED WATER TABLE AT 26 TO 28 FT.
28	28-30		2.0'	4-15-15-18 (30)	SAME AS ABOVE, WET, HARD, TRACE SAND LENSES	
30						

PROJECT NUMBER	BORING NUMBER
SED28178.FI	Well 121 SHEET 2 OF 7

SOIL BORING LOG

PROJECT PGDP Phase I Site Investigation LOCATION Well Cluster WC2, Northwest of Plant
ELEVATION DRILLING CONTRACTOR Geotek Engineering
DRILLING METHOD AND EQUIPMENT Hollow Stem Auger (8-inch O.D.) B-57ATV
WATER LEVEL AND DATE START 11/14/89 FINISH 1/6/90 LOGGER J. Mitchell

DEPTH BELOW SURFACE (FT)	SAMPLE INTERVAL	SAMPLE TYPE AND NUMBER	SAMPLE RECOVERY (FT)	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION: SOIL NAME, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY, USCS GROUP SYMBOL	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS AND INSTRUMENTATION
30	30-32	4054	2.0'	3-4-7-9 (11)	SAME AS ABOVE, WET, STIFF, TOP 0.3 FT. BLACK ORGANIC STAINING	HNU = 0.0 PPM
32						UPPER CONTINENTAL DEPOSITS
	32-34		1.6'	12-14-17-17 (31)	SILTY CLAY, MODERATE REDDISH BROWN, (10 R 3/4), HARD, TRACE SAND	
34	34-36	4055	1.9'	14-15-16-16 (31)	SAME AS ABOVE, LAYERED COLOR CHANGES BETWEEN PALE YELLOWISH BROWN AND REDDISH BROWN	ISOLATED BLACK ORGANIC SEAMS
36	36-38		1.8'	4-8-16-22 (24)	SAME AS ABOVE, PALE YELLOWISH BROWN ABOVE REDDISH BROWN, VERY STIFF	
38	38-40		1.4'	10-25-23-27 (48)	SAME AS ABOVE, HARD, ISOLATED COBBLE	
40	40-42	4056	2.0	3-7-9-10 (16)	SAME AS ABOVE, VERY STIFF, ISOLATED COBBLE	HNU = 0.0 PPM
42	42-44	4057	1.5'	12-14-18-18 (32)	SAME AS ABOVE, HARD, NO COBBLE	
44	44-46		1.8'	11-15-14-14 (29)	SAME AS ABOVE, VERY STIFF, POCKETS OF LIGHT GRAY CLAY, WITH TRACE OF MEDIUM SAND	HNU = 0.0 PPM
46	46-48	4058	1.8'	6-8-12-14 (20)	SAME AS ABOVE	
48	48-50		1.7'	10-12-15-17 (27)	SAME AS ABOVE, THIN ORGANIC SEAM	
50	50-52		2.0'	6-8-9-16 (17)	CLAYEY SILT WITH SAND, REDDISH BROWN, (10R 4/6), VERY STIFF, MICACEOUS, ORGANIC SEAMS, (OL)	
52	52-54	4059	1.3'	11-14-15-15 (29)	SAND WITH SILT, REDDISH BROWN, (10R 4/6), MEDIUM DENSE, WELL GRADED, FINE TO COARSE, MICACEOUS, (80-20%) (SM)	HNU = 0.0 PPM
54	54-56		1.5'	15-22-34-23 (56)	SAME AS ABOVE, VERY DENSE, FINE TO MEDIUM SAND SIZE	ENDED DRILLING AT 10:29
56	56-58		1.3'	4-5-13-5 (18)	SANDY CLAY, REDDISH BROWN, (10R 6/4), MOIST, STIFF, PLIABLE; OVER 1.0 FT. SAND, MEDIUM DENSE, MEDIUM COARSE	RESUMED DRILLING 11/17/89 AT 08:14
58	58-60	4060	2.0'	32-50/3"	SAND, REDDISH BROWN, MOIST, VERY DENSE, MICACEOUS; OVER 1.0 FT. GRAVEL, VERY DENSE, MIDDLE; GRAY CLAY LENS	LOWER CONTINENTAL DEPOSITS
60						

PROJECT NUMBER	BORING NUMBER
SED28178.FI	Well 121 SHEET 3 OF 7

SOIL BORING LOG

PROJECT PGDP Phase I Site Investigation LOCATION Well Cluster WC2, Northwest of Plant
ELEVATION DRILLING CONTRACTOR Geotek Engineering
DRILLING METHOD AND EQUIPMENT Hollow Stem Auger (8-inch O.D.) B-57ATV
WATER LEVEL AND DATE START 11/14/89 FINISH 1/6/90 LOGGER J. Mitchell

DEPTH BELOW SURFACE (FT)	SAMPLE INTERVAL	SAMPLE TYPE AND NUMBER	SAMPLE RECOVERY (FT)	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION: SOIL NAME, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY, USCS GROUP SYMBOL	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS AND INSTRUMENTATION
60	60-62	4060	1.9'	7-32-50/5"	SAND, REDDISH BROWN, VERY DENSE, MEDIUM COARSE; OVER 0.4 FT. GRAVEL (1/2-1/4-INCH DIAMETER), MICACEOUS, (75% SAND/25% GR)	
62	62-64	4061	1.7'	5-9-16-18 (25)	0.95 FT. SAND, LIGHT BROWN, (5 YR. 5/6), MEDIUM DENSE, MICACEOUS; OVER GRAVEL, MODERATE BROWN, (5 YR. 4/4), SUBROUNDED	
64	64-66		1.3'	4-12-28-50/5" (40)	SAME AS ABOVE, DENSE, GRAVEL CONTENT INCREASED VERSUS SAND, (60% GRAVEL-40% SAND)	
66	66-68		1.6'	19-23-24-40 (47)	SAME AS ABOVE	ENDED DRILLING AT 15:14
68	68-70	4062	1.3'	11-16-33-24 (49)	SAND, DARK YELLOWISH ORANGE, (10 YR. 6/6), WET, DENSE, MEDIUM COARSE, WELL GRADED	RESUMED DRILLING 11/20/89 AT 10:43
70	70-72		1.4'	8-19-34-36 (53)	SAME AS ABOVE, VERY WET, VERY DENSE; OVER 0.5 FT. GRAVEL (66% SAND/34% GRAVEL)	HNU = 0.0 PPM HP210 = 38 CPM
72	72-74		1.1'	8-17-27-26 (44)	SANDY GRAVEL, DARK YELLOWISH ORANGE, (10 YR. 6/6), DENSE, (1/8-1/2-INCH DIAMETER) (80% GRAVEL/20% SAND)	DRILLING ENDED AT 11:53
74	74-76	4064	1.2'	23-19-50/5"	SAME AS ABOVE, WET, VERY DENSE, SAND CONTENT INCREASING (50% GRAVEL/50% SAND)	DRILLING BEGINNING 11/27/89 AT 07:39
76	76-78		1.1'	9-38-50/5"	SAME AS ABOVE, WET, (80% GRAVEL/20% COARSE SAND)	
78	78-80		2.0'	12-14-25-50/5" (39)	SAME AS ABOVE, DENSE, WITH 0.35 FT. PALE YELLOWISH BROWN, (10 YR. 6/2), CLAYEY SAND LENS AT CENTER	HNU = 0.0 PPM
80	80-82	4065	1.3'	14-25-33-31 (58)	SAME AS ABOVE, VERY DENSE, NO CLAYEY SAND, VERY LARGE (18-IN. TO 1-IN. DIAMETER) COBBLES, GRAVEL	
82	82-84		1.5'	11-18-38-46 (56)	0.60 FT. SAND, DARK YELLOWISH ORANGE, (10 YR. 6/6), MOIST TO WET, VERY DENSE, FINE TO MEDIUM; OVER GRAVEL, CHERT	RED STAINING IN SANDS
84	84-86		1.6'	8-13-27-38 (40)	SANDY GRAVEL, MODERATE YELLOWISH BROWN, (10 YR. 5/4), MOIST, DENSE, MEDIUM TO COARSE, (80% GR/20% SAND)	RED IRON STAINING
86	86-88	4066	2.0'	3-12-43-50/4" (55)	SAME AS ABOVE, VERY DENSE	HNU = 0.0 PPM HP210 = 33 CPM
88	88-90		1.3'	4-12-27-50/5" (39)	CLAY, GRAYISH ORANGE PINK, (5YR. 7/2); AND SILTY SAND, LIGHT BROWN, (5YR. 5/6) TO VERY PALE ORANGE (10YR. 8/2), DENSE, FINE TO MEDIUM	EOCENE SAND AND CLAY RED IRON STAINING
90						

PROJECT NUMBER	BORING NUMBER
SED28178.FI	Well 121 SHEET 4 OF 7

SOIL BORING LOG

PROJECT PGDP Phase I Site Investigation LOCATION Well Cluster WC2, Northwest of Plant
ELEVATION _____ DRILLING CONTRACTOR Geotek Engineering
DRILLING METHOD AND EQUIPMENT Hollow Stem Auger (8-inch O.D.) B-57 ATV
WATER LEVEL AND DATE _____ START 11/14/89 FINISH 1/6/90 LOGGER J. Mitchell

DEPTH BELOW SURFACE (FT)	SAMPLE INTERVAL	SAMPLE TYPE AND NUMBER	SAMPLE RECOVERY (FT)	STANDARD PENETRATION TEST RESULTS 6" -6" -6" (N)	SOIL DESCRIPTION: SOIL NAME, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY, USCS GROUP SYMBOL	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS AND INSTRUMENTATION
90	90-92	4066	1.6'	4-1-5-9 (6)	INTERBEDDED CLAY, PALE BROWN, (5 YR. 5/2) TO GRAYISH ORANGE PINK, (5 YR. 7/2); FIRM AND SAND, LIGHT BROWN, (5 YR. 5/6) TO VERY PALE ORANGE, (10YR. 8/2),LOOSE, MICACEOUS, BELOW GRAVEL	66% SAND/CLAY BELOW 33% GRAVEL
92, 93						AUGERED 92-95 FT. DRILLER DESCRIBES 3 FT. ZONE AS CLAY UNIT
95, 97, 98	95-97	4067	2.0'	2-4-7-10 (11)	SILTY CLAY, YELLOWISH BROWN (10YR. 2/2) TO OLIVE BLACK,MOIST, STIFF, MICACEOUS, WITH INTERBEDDED CLAY AND SAND IN TOP 0.5 FT.	PORTERS CREEK CLAY
100, 102, 103	100-102	4068	2.0'	2-5-13-19 (18)	SILTY CLAY, DUSKY YELLOWISH BROWN, (10 YR. 2/2), VERY STIFF, MICACEOUS	ENDED DRILLING AT 16:25
105	105-107		0.3		SHELBY TUBE WAS COLLAPSED ON THE BOTTOM, COULD NOT GET TO SOIL FOR CLASSIFICATION	12/11/89 RESUMED DRILLING AT 15:10 TOOK SHELBY TUBE SAMPLE AT 15:55 ON 12/11/89. SHELBY WAS PUSHED 2 FT., VERY HARD TO PUSH QUIT FOR THE DAY AT 17:00
107, 109, 110	107-109	4074 1.9'	1.9'	39-27-47-99 (74)	LEAN CLAY WITH SAND, DUSKY YELLOWISH BROWN, (10YR. 2/2), MOIST, HARD, MICACEOUS, 15-20% SAND, (CL)	BEGIN DRILLING AT 11:00 ON 12/13/89 QUIT FOR THE DAY AT 15:30 on 12/13/89 RESUMED DRILLING 12/14/89 AT 13:40
112, 113	110-112	4075	0.9'	39-57-50/3"	CLAYEY SAND, DUSKY YELLOWISH BROWN, (10 YR. 2/2), MOIST, VERY DENSE, SLIGHT PLASTICITY, 20-40% P200, SOME SMALL BLACK WOODCHIPS, (SC)	
115, 117, 118, 120	115-117	4078	0.2	270/5"	POORLY GRADED SAND WITH SILT, DUSKY YELLOWISH BROWN, (10 YR. 2/2), MOIST, VERY DENSE, 5-12% P200, THE VERY TIP OF SPOON HAD LEAN CLAY, STRATIGRAPHY SEEMS TO BE ALTERNATING SAND AND CLAY, (SP-SM)	

PROJECT NUMBER	BORING NUMBER
SED28178.FI	Well 121 SHEET 5 OF 7

SOIL BORING LOG

PROJECT PGDP Phase I Site Investigation LOCATION Well Cluster WC2, Northwest of Plant
ELEVATION DRILLING CONTRACTOR Geotek Engineering
DRILLING METHOD AND EQUIPMENT Mud Rotary (7 3/4-inch O.D.) Longyear 44
WATER LEVEL AND DATE START 11/14/89 FINISH 1/6/90 LOGGER Nielsen

DEPTH BELOW SURFACE (FT)	SAMPLE INTERVAL	SAMPLE TYPE AND NUMBER	SAMPLE RECOVERY (FT)	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION: SOIL NAME, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY, USCS GROUP SYMBOL	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS AND INSTRUMENTATION
120	120-122	4079	1.0'	30-100/16"	POORLY GRADED SAND WITH SILT, LIGHT BLUISH GRAY, (5B 7/1), MOIST, VERY DENSE, QUARTZ SAND, VERY FINE TO FINE, 5-12% P200, (SP-SM)	RESUMED DRILLING 12/18/89 AT 13:45 SWITCHED TO 300 LB. HAMMER AT 120 FT.
125	125-127	4081	0.8'	54-66/6"	SAME AS ABOVE, (SP-SM)	WHILE DRILLING TO 125 FT. DRILLER INDICATED HE LOST SOME CIRCULATION, LOSS WAS VERY MINOR
130	130-132	4082	0.9'	36-46-24 (70)	INTERBEDDED POORLY GRADED SAND AND SANDY CLAY, POORLY GRADED SAND (80%), LIGHT GRAY, (N7), MOIST, VERY DENSE, QUARTZ SAND, FINE, 0-5% P200, (SP) SANDY CLAY (20%), DUSKY YELLOWISH BROWN (10YR 4/2) SLIGHT PLASTICITY, 20-40% SAND (CL)	QUIT FOR DAY AT 126 FT. AT 16:05 ON 12/18/89 RESUMED DRILLING AT 13:40 ON 12/19/89
135	135-137	4084	2.0'	3-6-8-10 (14)	ELASTIC SILT, DUSKY YELLOWISH BROWN, (10YR 2/2), MOIST, STIFF, NON PLASTIC, VERY VERY THIN LENSES OF QUARTZ SAND THROUGHOUT SAMPLE, (ML)	QUIT FOR DAY AT 135 FT. AT 15:45 ON 12/19/89 RESUMED DRILLING AT 11:00 ON 12/20/89 QUIT FOR DAY AT 137 FT. AT 12:30 ON 12/20/89
140	140-142	4085	2.0'	18-21-38-50/3" (59)	ELASTIC SILT, OLIVE BLACK, (5Y 2/1), MOIST, VERY STIFF, SLIGHTLY PLASTIC, VERY THIN LENSES OF QUARTZ SAND THROUGHOUT SAMPLE, (ML)	SWITCHED TO 140 LB. HAMMER AT 140 FT. RESUMED DRILLING AT 09:20 ON 1/3/90
145	145-147	4086	2.0'	23-42-50/4"	ELASTIC SILT, OLIVE BLACK, (5Y 2/1), MOIST, VERY STIFF, MODERATELY PLASTIC, VERY THIN LENSES OF QUARTZ SAND, MICACEOUS, (ML)	SWITCHED BACK TO 300 LB. HAMMER AT 145 FT. AFTER INITIALLY DRILLING WITH 140 LB. HAMMER. FINISHED DRIVING SAMPLE WITH 300 LB.
150						

PROJECT NUMBER	BORING NUMBER
SED28178.FI	Well 121 SHEET 6 OF 7

SOIL BORING LOG

PROJECT PGDP Phase I Site Investigation LOCATION Well Cluster WC2, Northwest of Plant
ELEVATION DRILLING CONTRACTOR Geotek Engineering
DRILLING METHOD AND EQUIPMENT Mud Rotary (7 3/4-inch O.D.) Longyear 44
WATER LEVEL AND DATE START 11/14/89 FINISH 1/6/90 LOGGER Brungard

DEPTH BELOW SURFACE (FT)	SAMPLE INTERVAL	SAMPLE TYPE AND NUMBER	SAMPLE RECOVERY (FT)	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION (SOIL NAME, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY, USCS GROUP SYMBOL)	COMMENTS (DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS AND INSTRUMENTATION)
150	150-152	4087	2.0'	5-8-12-40 (20)	ELASTIC SILT, OLIVE BLACK, (5Y 2/1), MOIST, VERY STIFF, SLIGHTLY PLASTIC, STIFF, HIGHER PERCENTAGE OF THIN SAND SEAMS THAN ABOVE, MICACEOUS, (ML)	USING 300 LB. HAMMER
155	155-157	4088	2.0'	5-11-28-50 (39)	ELASTIC SILT, OLIVE BLACK, (5Y 2/1), MOIST, HARD, SLIGHTLY PLASTIC, HIGHER PERCENTAGE OF THIN SAND SEAMS, UPPER 0.8' SATURATED, DOES NOT HAVE SAND LAMINATIONS, MICACEOUS, (ML)	END DRILLING FOR THE DAY 16:00 1/3/90 RESUME DRILLING 08:00 ON 1/4/90
160	160-162	4089	2.0'	WOR-4-7-15 (11)	ELASTIC SILT, OLIVE BLACK, (5Y 2/1), MOIST, STIFF, SLIGHTLY PLASTIC, HIGH PERCENTAGE OF THIN SAND SEAMS, MICACEOUS, (ML)	
165	165-167	4090	2.0'	WOR-3-9-21 (12)	INTERBEDDED ELASTIC SILT, OLIVE BLACK, (5Y 2/1), MOIST, STIFF, SLIGHTLY PLASTIC, MICACEOUS, (ML); AND POORLY GRADED SAND, WHITE, FINE, LAMINATIONS, 30-40% SAND, (SP)	TOP OF SAMPLE WAS WET, PROBABLY DUE TO DRILLING MUD DRILLER INDICATED A CHANGE IN DRILLING AT 167 FT.
170	170-172	4091	2.0	2-1-5-7 (6)	CLAYEY SILT, OLIVE BLACK, (5Y 2/1), MOIST, FIRM, MODERATELY PLASTIC, (MH)	
175	175-177	4092	2.0'	6-12-17-18 (29)	ELASTIC SILT, OLIVE BLACK, (5Y 2/1), MOIST, VERY STIFF, MODERATELY PLASTIC, MICACEOUS, THIN SEAMS OF WHITE FINE SAND, (ML)	END DRILLING FOR THE DAY 16:10 ON 1/4/90
180						

PROJECT NUMBER	BORING NUMBER
SED28178.FI	Well 121 SHEET 7 OF 7

SOIL BORING LOG

PROJECT PGDP Phase I Site Investigation LOCATION Well Cluster WC2, Northwest of Plant
ELEVATION DRILLING CONTRACTOR Geotek Engineering
DRILLING METHOD AND EQUIPMENT Mud Rotary (7 3/8-inch O.D.) Longyear 44
WATER LEVEL AND DATE START 11/14/89 FINISH 1/6/90 LOGGER Brungard

DEPTH BELOW SURFACE (FT)	SAMPLE INTERVAL	SAMPLE TYPE AND NUMBER	SAMPLE RECOVERY (FT)	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION: SOIL NAME, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY, USCS GROUP SYMBOL	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS AND INSTRUMENTATION
180	180-182	4093	2.0'	WOR-5-8-7 (13)	ELASTIC SILT, OLIVE BLACK, (5Y 2/1), MOIST, STIFF, MODERATELY PLASTIC, THIN SEAMS OF WHITE FINE SAND, (ML)	USING 300 LB. HAMMER
185	185-187	4094	2.0'	WOR-5-7-11 (12)	CLAYEY SILT, OLIVE BLACK, (5Y 2/1), MOIST, STIFF, MODERATELY PLASTIC, THIN SEAMS OF WHITE FINE SAND AT BOTTOM OF SAMPLE, (MH)	
190	190-192	4095	2.0'	WOR-5-7-17 (12)	ELASTIC SILT AND SAND, OLIVE BLACK, (5Y 2/1), MOIST, STIFF, MODERATELY PLASTIC, LARGE NUMBER OF THIN WHITE FINE SAND SEAMS, (ML-SP)	
195	195-197	4096	2.0'	WOR-5-7-15 (12)	ELASTIC SILT, OLIVE BLACK, WET, STIFF, MODERATELY PLASTIC, FEW SEAMS OF SATURATED FINE SAND, MICACEOUS, (ML)	THE SAMPLE FROM 200 TO 202 FT. IS APPARENTLY FROM 198 TO 200 FT. IN ACTUALITY.
200	200-202	4097	2.0'	3-1-3-3 (4)	ELASTIC SILT, OLIVE BLACK, (5Y 2/1), WET, SOFT, MODERATELY PLASTIC, (ML)	THE DRILLER REPORTED ROUGH DRILLING AT ABOUT 200.5 FT. THE DRILLING REPORTEDLY BECAME EASIER WITH DEPTH
205	205-206.2	4098	1.2'	23-75-50/2"	POORLY GRADED SILTY SAND, LIGHT GRAY, (N7), WET, VERY DENSE, VERY FINE, (SP-SM)	
210						TD OF BORING 211.5 FT.

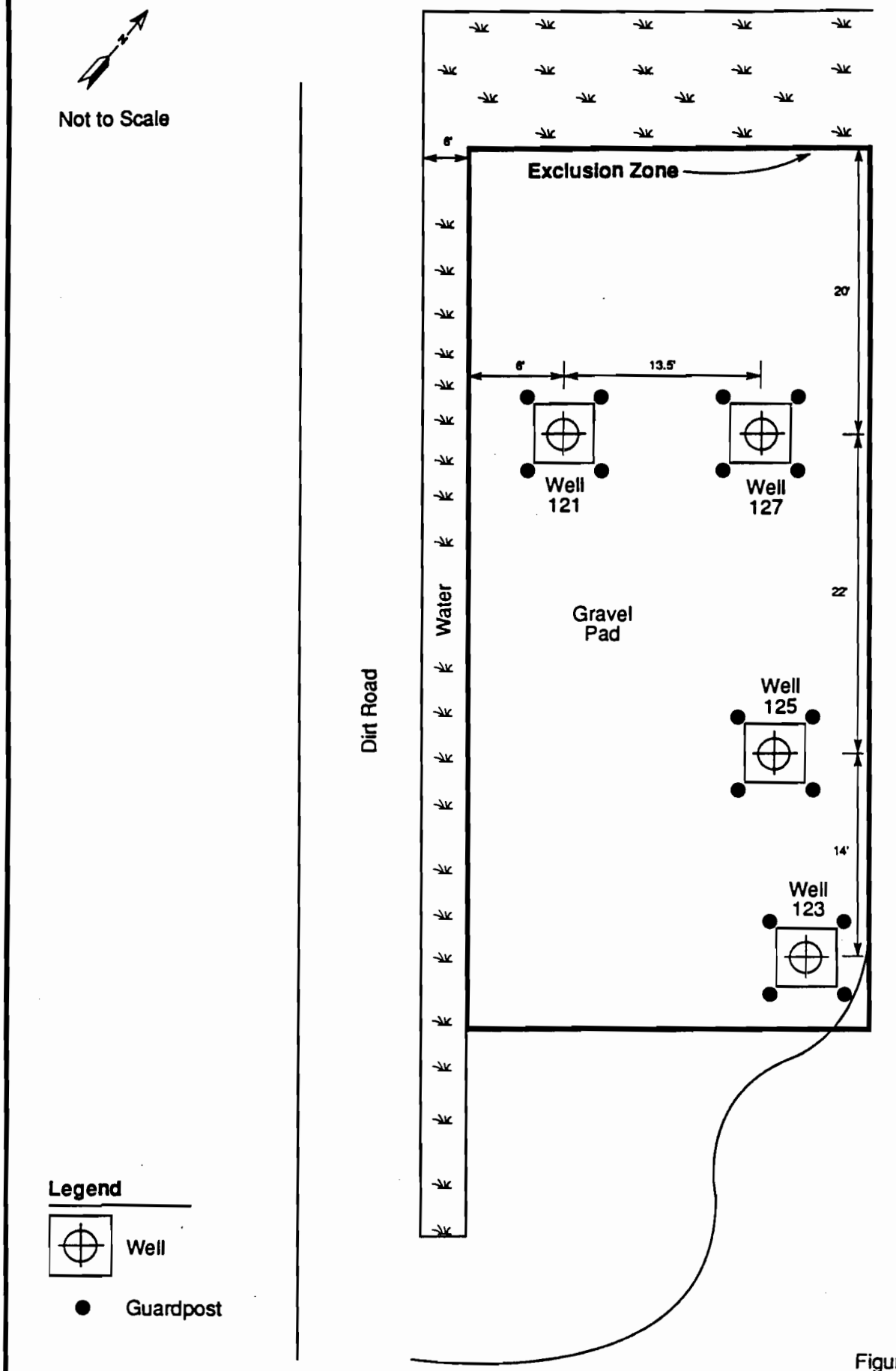


Figure 4-3:
Well Cluster 2
Well Layout Sketch

CH2M HILL

[Page left blank]

Summary of McNairy Background Wells

MW 122

Location - East of Plant; Well Cluster 3
N (717.1), E (1876.2)

Date Installed - November 18, 1989

Screened Depth - Middle McNairy
Top - 148 ft bgs
Bottom - 158 ft bgs

Dates Sampled (Data available) - Q1 90; Q2 90; Q3 90; Q1 91; Q2 93; Q3 93; Q4 93; Q1 94; Q2 94; Q3 94; Q4 94; Q1 95; Q2 95; Q1 96; Q1 97; Q4 97

Construction Information Reference - Technical Memorandum No. 4 in *Results of the Site Investigation, Phase I at the Paducah Gaseous Diffusion Plant, Paducah, Kentucky* (KY/ER-4; March 1991)

Potential Contaminant Information -

Compound	Detected Concentration	Detection Error (Rad only)	Date of Collection	Sample ID
Organic Compounds (all; µg/l)				
bis(2-ethylhexyl)phthalate	189 BJ	NA	4/30/90	CH200423-00000
Radionuclides (^{99}Tc only; pCi/l; unfiltered samples; ordered by date of collection)				
^{99}Tc	8	NR	2/22/90	707-90
^{99}Tc	3	NR	4/30/90	1547-90
^{99}Tc	5.9	3.2	3/11/91	CH210005-00000
^{99}Tc	5	34	6/1/93	5246-93
^{99}Tc	17	19	9/20/93	6662-93
^{99}Tc	15	23	12/7/93	7786-93
^{99}Tc	11	31	6/8/94	5521-94
^{99}Tc	13	17	9/21/94	6457-94
^{99}Tc	20	20	2/9/95	5456-95
^{99}Tc	11	11	6/5/95	6596-95
^{99}Tc	2	10	2/8/96	5301-96
^{99}Tc	1	11	2/6/97	5145-97
Radionuclides (^{99}Tc only; pCi/l; filtered samples; ordered by date of collection)				
^{99}Tc	-0.16	2.23	3/11/91	CH210005-DIS

Notes: NA = Entry not applicable or not available.
NR = Value not reported in data set.

Physical Data Summary -

Parameter	Number of Observations	Arithmetic Average of Results	Range of Results	Units
Alkalinity	6	151	142 - 165	mg/L
Depth to Water	12	38.27	33.46 - 41.18	feet
Dissolved Oxygen	12	2.04	0.4 - 11.31	mg/L
Dissolved Solids	6	192.8	154 - 270	mg/L
Hardness as CaCO3	1	127	NA	g/L CaCO
Hardness as CaCO3, Dissolved	1	147	NA	g/L CaCO
pH	42	6.51	5.7 - 7	SU
Specific Conductance	42	326.8	301 - 422	umhos/cm
Temperature	12	58.2	56 - 60	F
Total Organic Carbon	20	< 1	< 1 - 1	mg/L
Total Suspended Solids	2	14.5	4 - 25	mg/L
Turbidity	9	21.2	6.5 - 61	NTU

Notes: NA = Entry not applicable or not available.

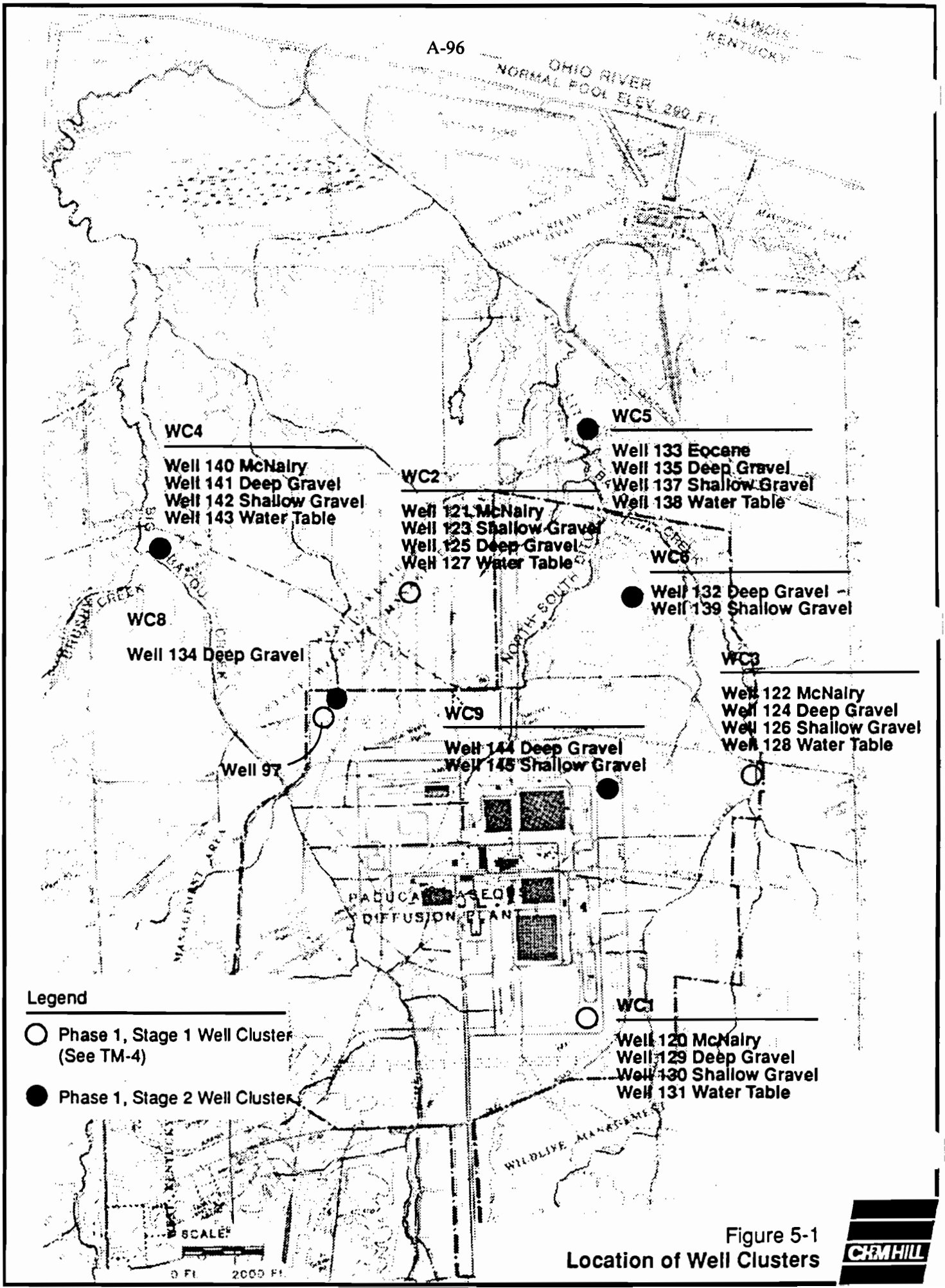
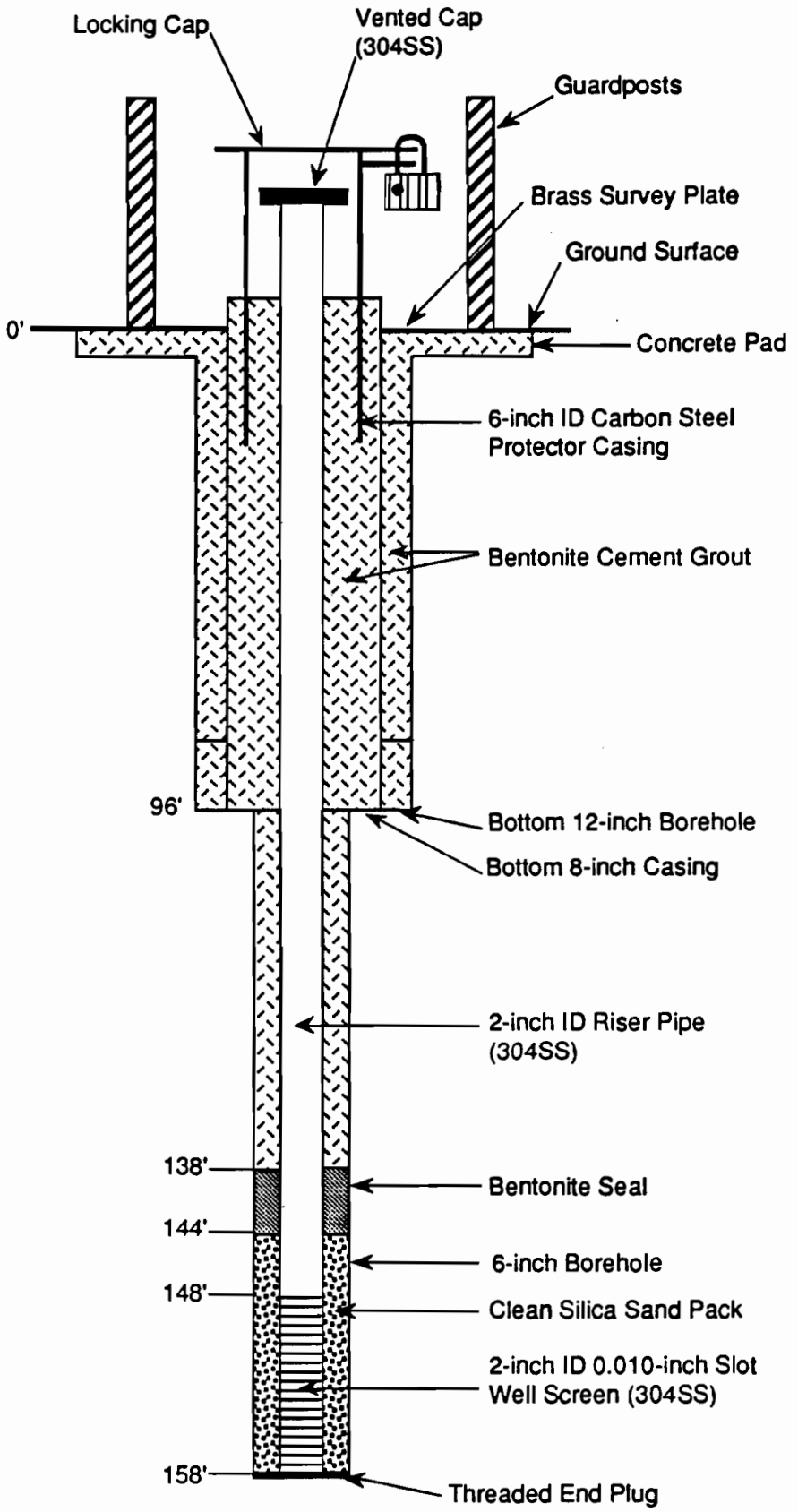


Figure 5-1
Location of Well Clusters

CH2M HILL

SED28178.F1

Well 122
Well with one
Isolation Casing



Well 122 Construction Details
Paducah GDP, Kentucky

CH2M HILL

PROJECT NUMBER	BORING NUMBER
SED28178.FI	Well 122 SHEET 1 OF 6

SOIL BORING LOG

PROJECT PGDP Phase I Site Investigation LOCATION Well Cluster WC3, East of Plant
ELEVATION _____ DRILLING CONTRACTOR Geotek Engineering
DRILLING METHOD AND EQUIPMENT _____
WATER LEVEL AND DATE _____ START 11/18/89 FINISH 1/5/90 LOGGER MK Dwyer

DEPTH BELOW SURFACE (FT)	SAMPLE INTERVAL	SAMPLE TYPE AND NUMBER	SAMPLE RECOVERY (FT)	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION: SOIL NAME, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY, USCS GROUP SYMBOL	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS AND INSTRUMENTATION
0	0-2		1.0'	2-2-3-4 (5)	SILTY CLAY, DARK YELLOWISH BROWN, (10 YR 4/2), MOIST, FIRM, HOMOGENEOUS, SLIGHTLY PLASTIC, (CL)	HNU = 0 PPM HP 260 = BACKGROUND
2	2-4	4100	1.3'	10-12-14-16 (26)	SILTY CLAY, MODERATELY YELLOWISH BROWN, (10 YR 5/4), MOIST, VERY STIFF, SOME MOTTLING, MEDIUM PLASTICITY, (CL)	SAME READINGS
4	4-6		2.0'	7-7-10-13 (17)	SILTY CLAY, PALE YELLOWISH BROWN, (10YR 6/2), MOIST, VERY STIFF, IRON RICH LAYERING, MINOR ORGANICS, LOW PLASTICITY, (CL)	
6	6-8		1.7'	8-8-10-8 (18)	SILTY CLAY, MODERATE YELLOWISH BROWN, (10YR 5/4), AND LIGHT GRAY, (N7), MOIST (7-8) TO WET (6-7), VERY STIFF, IRON RICH LAYERING, LOW PLASTICITY, (CL)	
8	8-10	4101	1.7'	7-7-10-10 (17)	SILTY CLAY, SAME AS ABOVE, HOMOGENEOUS, (8-9), IRON RICH MOTTLING, (9-10), (CL)	HNU = 0 PPM HP 260 = BACKGROUND (30 CPM)
10	10-12		1.5'	12-14-14-15 (28)	SILTY CLAY, SAME AS ABOVE, MOTTLING THROUGHOUT, (CL)	
12	12-14		1.9'	4-7-7-9 (14)	SILTY CLAY, MODERATE YELLOWISH BROWN, (10 YR 5/4), AND GRAY (N7) (13.5-14.0FT), DAMP, STIFF, IRON RICH LAYERS, 20 % FINE SAND 12.5 - 13.5 FT. (CL)	HNU = 0 PPM HP 260 = 30 CPM (BACKGROUND)
14	14-16	4102	2.0'	5-9-13-13 (22)	SILTY CLAY, MODERATE YELLOWISH BROWN, (10 YR 5/4), MOIST, VERY STIFF, HOMOGENEOUS, (CL); OVER SAND, YELLOWISH GRAY, (5Y 5/1), DRY, MEDIUM DENSITY, FINE SAND, TRACE SILT, IRON RICH MOTTLING THROUGHOUT, (SM)	
16	16-18		2.0'	8-9-9-12 (18)	SILTY CLAY, SAME AS (14-15 FT.) FROM 16-16.5FT.; OVER SANDY CLAY, YELLOWISH GRAY, (5Y 6/1), MOIST, VERY STIFF, 20% SAND, IRON RICH MOTTLING THROUGHOUT, (CL)	SAME READINGS
18	18-20		1.6'	8-11-11-12 (22)	SILTY CLAY AND SANDY CLAY, MODERATE YELLOWISH BROWN, (10YR 5/4), 18.4-18.5 FT. AND YELLOWISH GRAY, (5Y 6/1) 18.5-20 FT., MOIST, VERY STIFF, SOME IRON RICH LAYERS, LOW PLASTICITY, 25% FINE SAND, (CL)	HNU = 0 PPM HP 260 = 30 CPM (BACKGROUND)
20	20-22	4103	1.9'	9-10-12-12 (22)	SANDY CLAY, LIGHT GRAY, (N7), DAMP TO MOIST, VERY STIFF, IRON STAINED LAYERING AND INCLUSIONS, LOW PLASTICITY, (40% SAND), WITH 2-4" FINE SAND LAYERS, (CL)	
22	22-24		0.4'	6-6-11-13 (17)	SILTY CLAY, YELLOWISH GRAY, (5Y 6/1), MOIST, VERY STIFF, HOMOGENEOUS, LOW-MEDIUM PLASTICITY, (CL)	16:15 END SAMPLING
24	24-26		2.0'	6-6-8-9 (14)	SILTY CLAY, LIGHT BROWN AND GRAY, (5 YR 5/6), (N7), (15%), MOIST, STIFF, IRON STAINING AND MOTTLING THROUGHOUT, LOW PLASTICITY, SOME FINE SAND, (CL)	SAMPLE #4104 IS EQUIPMENT BLANK TAKEN ON 11/18/89
26	26-28	4105	2.0'	7-10-10-13 (20)	SILTY CLAY, LIGHT BROWN AND GRAY, (5 YR 5/6), (N7), MOIST, MEDIUM DENSITY, VERY STIFF, IRON STAINING AND MOTTLING, LOW PLASTICITY, WITH LAYERS OF WELL SORTED FINE SAND (.2 FT.), (CL)	HNU = 0 PPM HP 260 = 32 CPM (BACKGROUND)
28	28-30		1.6'	8-8-9-11 (17)	SANDY CLAY LIGHT BROWN AND GRAY, (5YR 5/6) (N7), MOIST, VERY STIFF, IRON STAINING AND MOTTLING, TRACE SUBROUNDED PEBBLES, WITH SILT AND FINE SAND (30%), WELL GRADED, (CL)	
30						

PROJECT NUMBER	BORING NUMBER
SED28178.FI	Well 122 SHEET 2 OF 6

SOIL BORING LOG

PROJECT PGDP Phase I Site Investigation LOCATION Well Cluster WC3, East of Plant
ELEVATION DRILLING CONTRACTOR Geotek Engineering
DRILLING METHOD AND EQUIPMENT B-61 Hollow Stem Auger, 7-inch ID, 113/4-inch OD
WATER LEVEL AND DATE START 11/18/89 FINISH 1/5/90 LOGGER MK Dwyer

DEPTH BELOW SURFACE (FT)	SAMPLE INTERVAL	SAMPLE TYPE AND NUMBER	SAMPLE RECOVERY (FT)	STANDARD PENETRATION TEST RESULTS 6" -6" -6" (N)	SOIL DESCRIPTION: SOIL NAME, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY, USCS GROUP SYMBOL	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS AND INSTRUMENTATION
30	30-32		2.0'	8-7-7-9 (14)	SILTY CLAY, PALE YELLOWISH BROWN, (10YR 6/2), STIFF, IRON RICH LAYERING AND MOTTLING, TRACE SUBROUNDED PEBBLES AT 30-30.2 FT., LOW PLASTICITY, TRACE FINE SAND (10%), (CL)	HNU = 0 PPM HP 260 = 32 CPM (BACKGROUND)
32	32-34	4106	1.6'	6-6-8-12 (14)	SILTY CLAY, LIGHT BROWN, (5YR 5/6), AND PALE YELLOWISH BROWN, (10 YR 6/2), MOIST, STIFF, IRON RICH, MOTTLED, THIN PEBBLE LAYERS AT 34 FT., LOW PLASTICITY, SOME FINE SAND, (CL)	
34	34-36		1.9'	14-15-16-16 (31)	SILTY CLAY, SAME AS 32-34 FT., HARD, TRACE SUBROUNDED (1-IN.) PEBBLES	
36	36-38		2.0'	10-7-7-9 (14)	SANDY CLAY, PALE YELLOWISH BROWN (10YR 6/2) AND LIGHT BROWN, (5YR 5/6), MOIST, STIFF, MOTTLED, LOW PLASTICITY, FINE GRAINED SAND (30%), WITH SILT, (CL)	HNU = 0 PPM HP 260 = 32 CPM (BACKGROUND)
38	38-40	4107	1.8'	12-12-14-16 (26)	SANDY CLAY, LIGHT BROWN, (5YR 5/6) AND LIGHT GRAY (N7), MOIST, VERY STIFF, MOTTLED, LOW PLASTICITY, WITH FINE GRAINED SAND (39-39.5 FT.), (CL)	
40	40-42		1.9'	13-14-14-16 (28)	SILTY CLAY, LIGHT BROWN, (5YR 5/6), AND LIGHT GRAY, (N7), MOIST, VERY STIFF, MOTTLED, LOW PLASTICITY, SOME FINE SAND, (30%), (CL)	
42	42-44		1.8'	8-6-6-9 (12)	CLAYEY SILT, LIGHT BROWN, STIFF, OCCASIONAL MOTTLING, (ML); OVER SILTY CLAY, (43-44 FT.), LIGHT GRAY, (N7), (CL)	HNU = 0 PPM HP 260 = BACKGROUND
44	44-46	4108	1.0'	7-5-9-11 (14)	SILTY CLAY, SAME AS ABOVE, 10% FINE SAND, (CL)	
46	46-48		1.7'	5-7-7-12 (14)	CLAYEY SAND, LIGHT BROWN, (5YR 5/6), MOIST TO WET, MEDIUM DENSITY, STIFF, POORLY GRADED, MICACEOUS, FINE GRAINED, 20% CLAY (SC)	
48	48-50		1.8'	6-8-9-14 (17)	SILTY CLAY, LIGHT BROWN (5YR 5/6), MOIST, VERY STIFF, HOMOGENEOUS, MICACEOUS, 10 % FINE SAND, (SC)	SAMPLE #4109 EQUIPMENT BLANK ON BOWL USED TO COMPOSITE #4110
50	50-52	4110	1.0'	7-10-13-15 (23)	SILTY CLAY, SAME AS ABOVE	
52	52-54		1.8'	3-5-5-8 (10)	SANDY CLAY, (15% SILT), LIGHT BROWN, (5YR 5/6), MOIST TO WET, STIFF, HOMOGENEOUS, (10-30%) FINE SAND, (SC)	
54	54-56		1.7'	8-11-14-16 (25)	SILTY SAND, LIGHT BROWN, (5YR 5/6), MOIST TO WET, MEDIUM DENSITY, HOMOGENEOUS, (10-20%) SILT, (SM); OVER 0.5 FT. SILTY GRAVEL, MODERATE BROWN, (5 YR 4/6), (1/4-3/4-IN.) ANGULAR TO SUBANGULAR, (GM)	SAMPLE 56-58 FT: GRAVEL MOSTLY QUARTZ, 1-INCH ANGULAR, MODERATE RED, (5R 4/6), 1/4-INCH SUB-ANGULAR MODERATE RED BROWN, (10R 4/6)
56	56-58	4111	1.8'	16-21-24-26 (45)	SILTY GRAVEL, (40-50%) GRAVEL, LIGHT BROWN, (5YR 5/6), MOIST TO WET, DENSE (20-40%) COARSE TO FINE SAND, (10R 4/6); (10-20%) SILT, (GM)	
58	58-60		1.7'	13-16-21-25 (37)	SILTY GRAVEL, SAME AS ABOVE, (GM)	
60						

PROJECT NUMBER	BORING NUMBER
SED28178.FI	Well 122 SHEET 3 OF 6

SOIL BORING LOG

PROJECT PGDP Phase I Site Investigation LOCATION Well Cluster WC3, East of Plant
ELEVATION DRILLING CONTRACTOR Geotek Engineering
DRILLING METHOD AND EQUIPMENT B-61 Hollow Stem Auger, 7-inch ID, 113/4-inch OD
WATER LEVEL AND DATE START 11/18/89 FINISH 1/5/90 LOGGER Dwyer/Lahoud

DEPTH BELOW SURFACE (FT)	SAMPLE INTERVAL	SAMPLE TYPE AND NUMBER	SAMPLE RECOVERY (FT)	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION: SOIL NAME, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY, USCS GROUP SYMBOL	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS AND INSTRUMENTATION
60	60-62	4112	0.8'	8-10-19-6 (29)	SILTY GRAVEL, SAME AS ABOVE, MEDIUM DENSE, GRADING TO WELL ROUNDED, (GM)	
62	62-64		1.1'	11-16-18-18 (34)	SILTY GRAVEL, SAME AS ABOVE, DENSE, (GM)	
64	64-66		0.7'	9-13-16-21 (29)	SILTY GRAVEL, SAME AS ABOVE, MEDIUM DENSE, (GM)	
66						
68						
70	70-72	4113	1.2'	13-16-18-23 (34)	SILTY GRAVEL, SAME AS ABOVE, DENSE, (GM)	
72	72-74	4114	1.1'	8-11-13-13 (24)	SILTY GRAVEL, SAME AS ABOVE, MEDIUM DENSE, (GM)	
74	74-76		1.0'	7-13-19-30 (32)	GRAVEL WITH SAND, PALE YELLOW ORANGE (10YR 8/6), TO DARK YELLOW ORANGE, (10YR 6/6), DENSE, WELL SORTED, 50-60% COARSE SAND, (GW)	
76	76-78		1.9'	9-12-21-26 (33)	GRAVEL WITH SAND, (50-60%), LOOSE, MODERATE YELLOW BROWN, (10YR 5/4), TO DARK YELLOW ORANGE, (10YR 6/6), DENSE, UP TO 1/4-INCH, POORLY SORTED, 50-60% SAND, (GW)	
78	78-80	4115	1.2'	11-14-19-21 (33)	SAND WITH GRAVEL, SAME AS ABOVE, 70% SAND, (SW); OVER 1-IN. SAND, MEDIUM GRAY, (N5), DENSE, COARSE, (SW-SP)	
80						
82						DRILLER NOTES GRAVEL WITH LARGE COBBLES
84						
86	85-87	4117	0.7'	15-15-24-22 (39)	SAND WITH GRAVEL, AS ABOVE, 40% GRAVEL, 50-55% COARSE, POORLY SORTED SAND, 5-10% FINE SAND/SILT, (SW)	
88	87-89		0.8'	12-12-25-19 (37)	SAND WITH GRAVEL, AS ABOVE, WITH 30% GRAVEL, 60% SAND, AND 10% FINE SAND, (SW)	
90	89-91		0.3'	9-9-39-12	SAND WITH GRAVEL, AS ABOVE, (SW)	

PROJECT NUMBER	BORING NUMBER
SED28178.FI	Well 122 SHEET 4 OF 6

SOIL BORING LOG

PROJECT PGDP Phase I Site Investigation LOCATION Well Cluster WC3, East of Plant
ELEVATION DRILLING CONTRACTOR Geotek Engineering
DRILLING METHOD AND EQUIPMENT B-61 Hollow Stem Auger, 7-inch ID, 113/4-inch OD
WATER LEVEL AND DATE START 11/18/89 FINISH 1/5/90 LOGGER Lahoud

DEPTH BELOW SURFACE (FT)	SAMPLE INTERVAL	SAMPLE TYPE AND NUMBER	SAMPLE RECOVERY (FT)	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION: SOIL NAME, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY, USCS GROUP SYMBOL	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS AND INSTRUMENTATION
90	89-91	4117	0.3'	9-9-39-12 (48)	SAND WITH GRAVEL, SAME AS ABOVE, (SW)	
91						
92						DRILLER REPORTS LITH. CHANGE NO CHATTER AND MORE PRESSURE REQUIRED-CLAY
94						
96	95-97	4118	1.8'	20-20-28-31 (48)	LEAN CLAY, DARK GRAY, (N3), DRY, HARD, LOW PLASTIC, HOMOGENEOUS, FINE LAMINAE STRUCTURE, (CL)	
98						
100	98.5-100.5	4119	1.6'	not Hammered	LEAN CLAY, AS ABOVE, (CL)	SAMPLE TAKEN USING KELLY, NOT HAMMER
102						
104						
106	105.5-107.5	4120	2.0'	12-14-12-16 (26)	LEAN CLAY, AS ABOVE, SLIGHTLY MOIST, VERY STIFF, WITH 5% FINE SAND, SLIGHTLY PLASTIC, (CL)	
108	108-	4121	2.0'	12-18-16-14 (34)	LEAN CLAY, AS ABOVE, HARD, (CL)	
110	110					
112						WATER IN DRILL STRING SAMPLE MOIST
114	113-	4122	2.0'	10-14-11-12 (25)	SANDY CLAY, OLIVE BLACK, (5Y 2/1), 10-15% FINE SAND, DRY TO SLIGHTLY MOIST, VERY STIFF, MEDIUM PLASTIC, MICACEOUS, 10-15% FINE SAND, (CL)	
116	115					
118	118-	4123	2.0'	9-11-12-16 (23)	SANDY CLAY, AS ABOVE, WITH INTERBEDDED SAND, MEDIUM GRAY, (N5), DRY TO MOIST, FINE TO WELL SORTED, (1/16-1/2-IN. LENSES), (CL)	
120	120					

PROJECT NUMBER	BORING NUMBER
SED28178.FI	Well 122 SHEET 5 OF 6

SOIL BORING LOG

PROJECT PGDP Phase I Site Investigation LOCATION Well Cluster WC3, East of Plant
ELEVATION _____ DRILLING CONTRACTOR Geotek Engineering
DRILLING METHOD AND EQUIPMENT B-61 Hollow Stem Auger, 7-inch ID, 113/4-inch OD
WATER LEVEL AND DATE _____ START 11/18/89 FINISH 1/5/90 LOGGER Lahoud

DEPTH BELOW SURFACE (FT)	SAMPLE INTERVAL	SAMPLE TYPE AND NUMBER	SAMPLE RECOVERY (FT)	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION: SOIL NAME, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY, USCS GROUP SYMBOL	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS AND INSTRUMENTATION
120	120-122	4123	2.0'	8-10-10-13 (20)	SANDY CLAY, AS ABOVE, WITH MOIST TO WET 40-50% SAND, LENSES UP TO 1-INCH, (CL)	
122						
124	123-125	4124	1.9'	9-12-16-20 (28)	SANDY CLAY, AS ABOVE, 30-40% SAND, (CL)	
126						
128	128-130	4125	2.0'	11-12-14-16 (26)	SANDY CLAY, AS ABOVE, WITH LAYERS UP TO 1-INCH, (CL)	
130						
132						
134	133-135	4126	1.7'	7-11-14-17 (25)	SANDY CLAY, AS ABOVE, (CL)	
136						
138	138-140	4127	1.9'	8-12-18-23 (30)	SANDY CLAY, AS ABOVE, MOIST, WITH 4-INCH SAND LAYER NEAR 139 FT., (CL)	
140						
142						
144	143-145	4128	1.2'	23-32 Refusal	SAND, MEDIUM GRAY, (N2-N3), WET TO MOIST, VERY DENSE, MEDIUM GRAINED, WELL SORTED, CLEAN, (SP)	REFUSAL AT 144 FT. AUGERED THERE WITH NO PROBLEM
146						
148	148-150	4129	1.3'	9-14-21-33 (35)	SANDY CLAY, AS ABOVE, 138-140 FT., (CL) OVER SAND, AS ABOVE 143-145 FT., MEDIUM DENSE, (SP)	
150						

PROJECT NUMBER	BORING NUMBER
SED28178.FI	Well 122 SHEET 6 OF 6

SOIL BORING LOG

PROJECT PGDP Phase I Site Investigation LOCATION Well Cluster WC3, East of Plant
ELEVATION DRILLING CONTRACTOR Geotek Engineering
DRILLING METHOD AND EQUIPMENT B-61 Hollow Stem Auger, 7-inch ID, 113/4-inch OD
WATER LEVEL AND DATE START 11/18/89 FINISH 1/5/90 LOGGER Lahoud

DEPTH BELOW SURFACE (FT)	SAMPLE INTERVAL	SAMPLE TYPE AND NUMBER	SAMPLE RECOVERY (FT)	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION: SOIL NAME, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY, USCS GROUP SYMBOL	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS AND INSTRUMENTATION
150	150-152	4129	0.1'	5-5-15-15 (20)	SAND, AS ABOVE, (SP)	
152						
154	153-155	4130	2.0'	9-11-18-25 (29)	SANDY CLAY AS ABOVE, (138-140), MOIST, VERY STIFF, (CL)	
156	155-157		1.2'	7-9-12-15 (21)	SAND, AS ABOVE, (143-145), (SP); OVER SANDY CLAY, AS ABOVE, (138-140), (CL)	
158						TD OF BORING 158 FT.
160						

SEF28178.TM

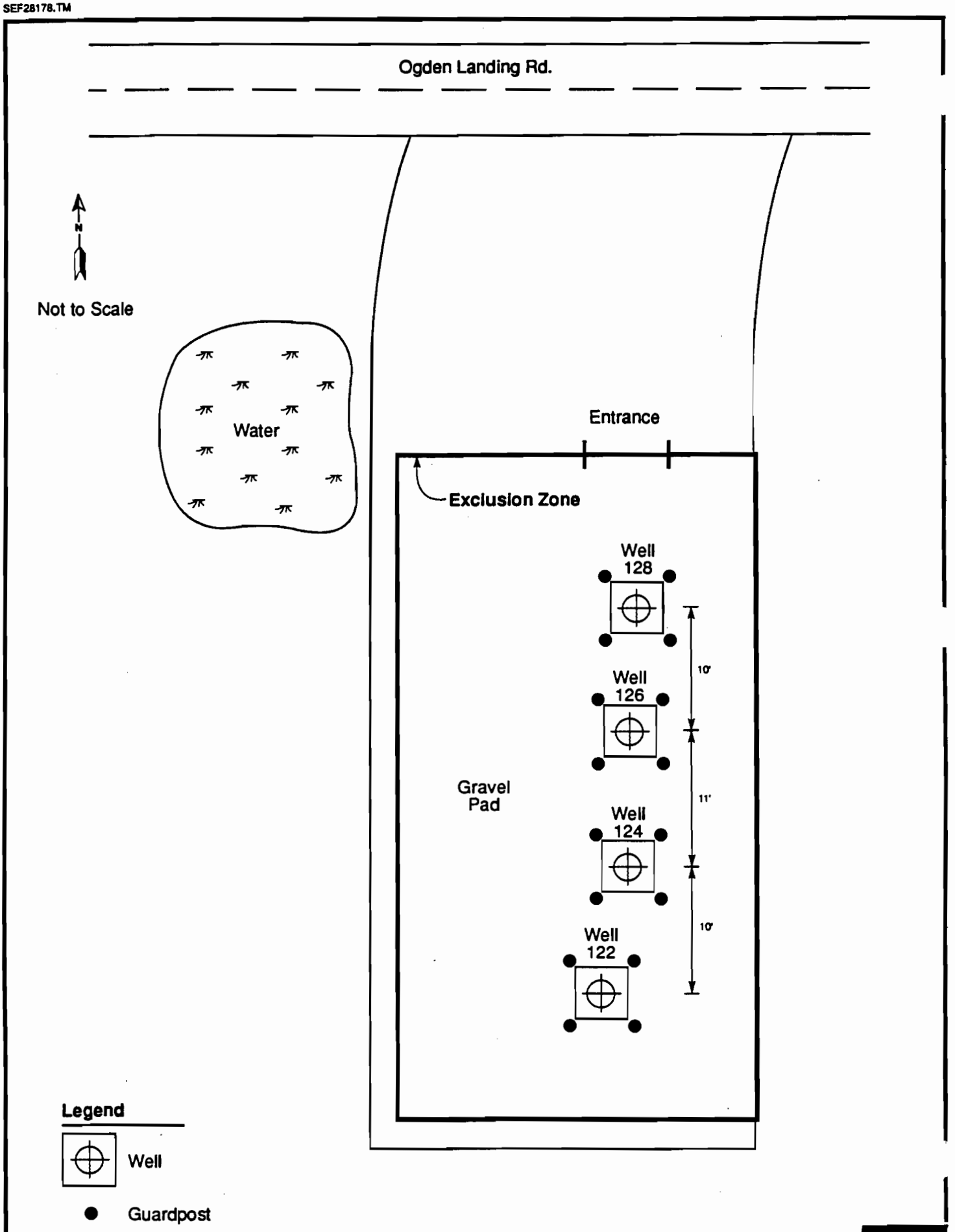


Figure 4-4
Well Cluster 3
Well Layout Sketch

CH2M HILL

Summary of McNairy Background Wells

MW 133

Location - Northeast of Plant; TVA property at Little Bayou Creek; Well Cluster 5
N (9124.7), E (-1715.7)

Date Installed - February 25, 1990

Screened Depth - Shallow McNairy
Top - 80 ft bgs
Bottom - 90 ft bgs

Dates Sampled (Data available) - Q2 90; Q3 90; Q1 91; Q2 93; Q3 93; Q4 93; Q1 94; Q2 94; Q3 94; Q4 94; Q1 95; Q1 96; Q1 97; Q4 97

Construction Information Reference - Technical Memorandum No. 5 in *Results of the Site Investigation, Phase I at the Paducah Gaseous Diffusion Plant, Paducah, Kentucky* (KY/ER-4; March 1991)

Potential Contaminant Information -

Compound	Detected Concentration	Detection Error (Rad only)	Date of Collection	Sample ID
Organic Compounds (all; µg/l)				
bis(2-ethylhexyl)phthalate	230 BJ	NA	5/3/90	CH200432-00000
Carbon disulfide	2 J	NA	8/15/90	CH200676-00000
Chloroform	1 J	NA	5/3/90	CH200432-00000
Radionuclides (^{99}Tc only; pCi/l; unfiltered samples; ordered by date of collection)				
^{99}Tc	1	NR	5/3/90	1549-90
^{99}Tc	9	6	5/3/90	CH200432-00000
^{99}Tc	-1.2	1.86	3/1/91	CH210014-00000
^{99}Tc	4	12	6/2/93	5282-93
^{99}Tc	22	22	9/13/93	6740-93
^{99}Tc	13	26	3/2/94	4761-94
^{99}Tc	9	20	6/7/94	5611-94
^{99}Tc	3	6	9/12/94	6648-94
^{99}Tc	8	25	3/27/95	5460-95
^{99}Tc	3	10	2/12/96	5305-96
^{99}Tc	-2	0	11/12/97	5789-97
Radionuclides (^{99}Tc only; pCi/l; filtered samples; ordered by date of collection)				
NONE	NA	NA	NA	NA

Notes: NA = Entry not applicable or not available.
NR = Value not reported in data set.

Physical Data Summary -

Parameter	Number of Observations	Arithmetic Average of Results	Range of Results	Units
Alkalinity	3	198.7	183 - 208	mg/L
Depth to Water	11	13.28	9.45 - 16.89	feet
Dissolved Oxygen	9	3.06	1.57 - 4.39	mg/L
Dissolved Solids	3	266	258 - 277	mg/L
Hardness as CaCO3, Dissolved	1	178	NA	g/L CaCO
pH	30	6.5	6.3 - 6.7	SU
Specific Conductance	30	452.0	408 - 472	umhos/cm
Temperature	9	59.4	55 - 67.3	F
Total Organic Carbon	12	< 1	< 1 - < 1	mg/L
Turbidity	7	5.9	1.5 - 22	NTU

Notes: NA = Entry not applicable or not available.

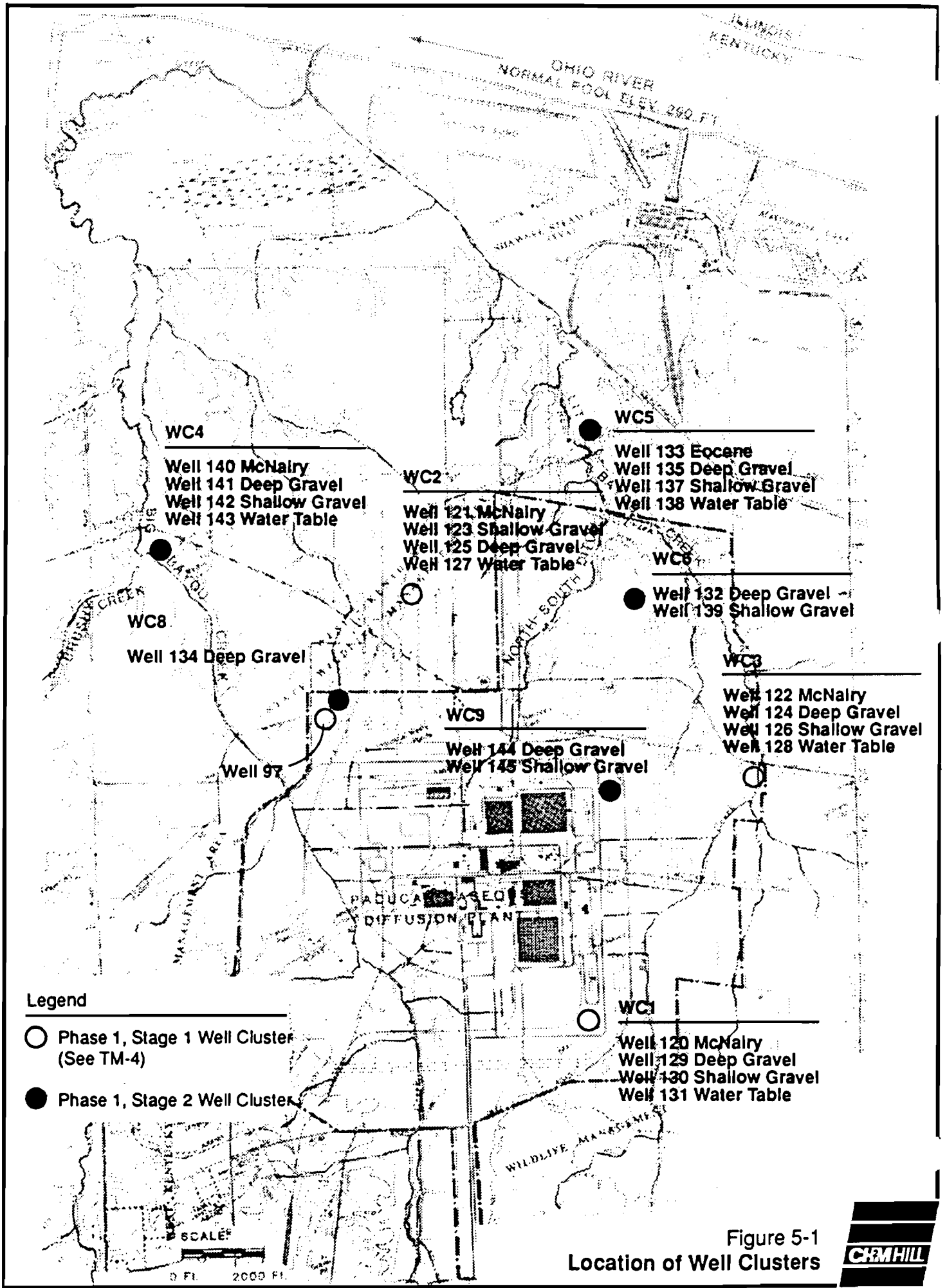
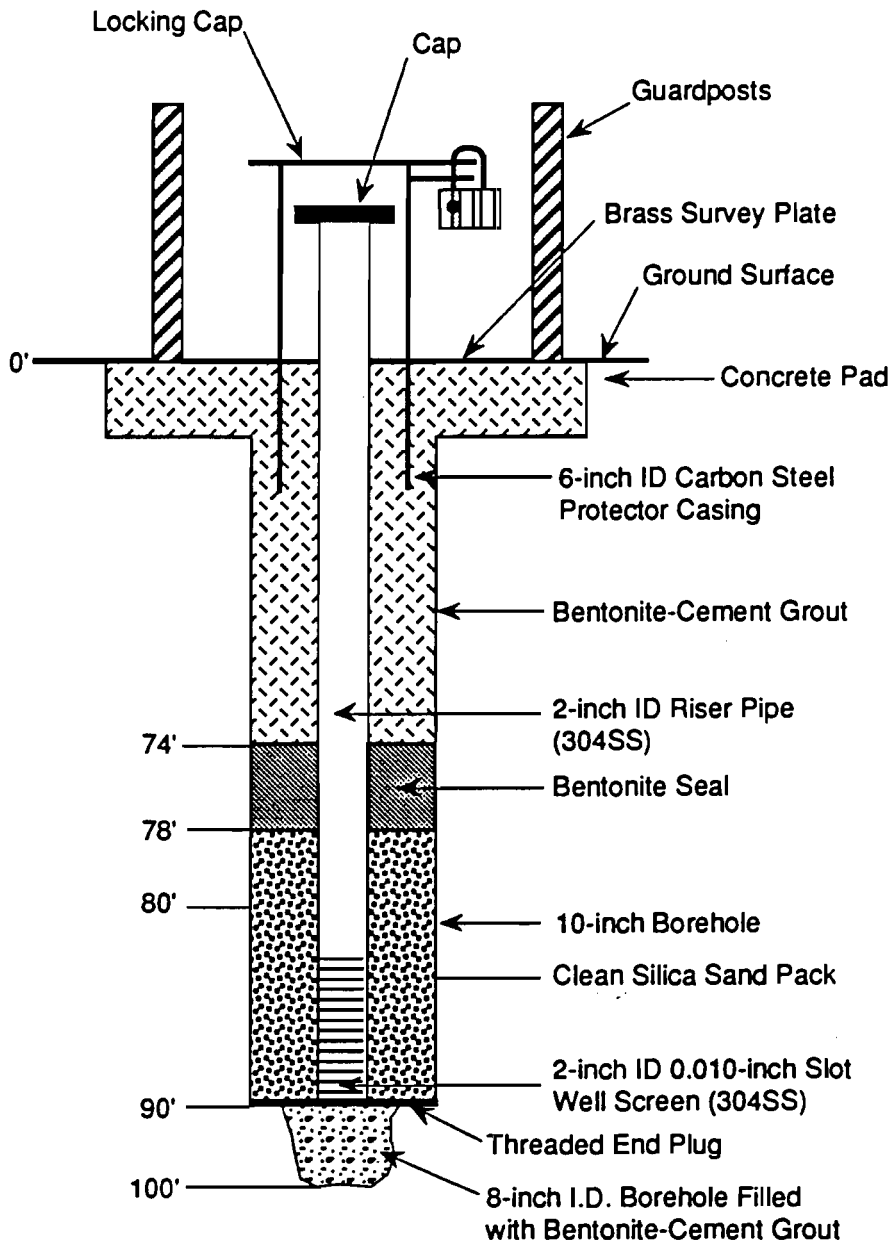


Figure 5-1
Location of Well Clusters

CH2M HILL

Well 133
Well without
Isolation Casing



Well 133 Construction Details

CH2MHILL

PROJECT NUMBER	BORING NUMBER
SED28178.FI	Well 133 SHEET 1 OF 4

SOIL BORING LOG

PROJECT PGDP Phase I Site Investigation LOCATION WC5-NE of Plant; TVA property at Little Bayou C
ELEVATION DRILLING CONTRACTOR Geotek Engineering
DRILLING METHOD AND EQUIPMENT B-61 with 3-1/2" OD Hollow Stem Augers
WATER LEVEL AND DATE START 2/25/90 FINISH 2/28/90 LOGGER T. Rachal

DEPTH BELOW SURFACE (FT)	SAMPLE INTERVAL	SAMPLE TYPE AND NUMBER	SAMPLE RECOVERY (FT)	STANDARD PENETRATION TEST RESULTS 6" -6" -6" (N)	SOIL DESCRIPTION: SOIL NAME, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY, USCS GROUP SYMBOL	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS AND INSTRUMENTATION
0	0-2	4501	1.3'	3-3-3-4 (6)	TOP 0.1': POORLY GRADED SAND, DARK YELLOWISH BROWN (10 YR 4/2), MOIST, MEDIUM-FINE GRAINED, (SP); BOTTOM 1.2': SILT DARK YELLOWISH BROWN, MOIST, FIRM, TRACE WOOD CHUNKS, (ML)	2/25/90 0847 DRILLING BEGINS HNU=0 PPM RAD=56 CPM
2	2-4		1.3'	2-2-2-2 (4)	ELASTIC SILT, MODERATE YELLOWISH BROWN (10 YR 5/4), MOIST, SOFT, APPARENT COHESION, (MH)	0850 HNU=0 PPM RAD=40 CPM
4	4-6		1.55'	6-9-10-8 (19)	SILTY SAND, MODERATE YELLOWISH BROWN (10 YR 5/4), MOIST, MEDIUM DENSE, FINE-GRAINED, POORLY GRADED, (SM)	0850 HNU=0 PPM RAD=52 CPM
6	6-8	4502	1.8'	8-8-10-12 (18)	TOP 0.2': ELASTIC SILT, MODERATE YELLOWISH BROWN (10 YR 5/4), MOIST, SOFT, (MH); BOTTOM 1.8': SILTY SAND, SAME AS ABOVE, MOIST -WET, MEDIUM DENSE, TRACE BLACK (N1) NODULES, (SM)	0854 HNU=0 PPM RAD=46 CPM
8	8-10		2.0'	8-8-10-9 (18)	TOP 1.2': POORLY GRADED SAND, LIGHT BROWN (5 YR 5/4), MOIST, MEDIUM DENSE, FINE GRAINED, TRACE BLACK (N1) STREAKS, TRACE SILT (SP); BOTTOM 0.8': SILT, LIGHT GRAY (N7), MOIST, VERY STIFF, TRACE FINE SAND, (ML)	0858 HNU=0 PPM RAD=50 CPM
10	10-12		1.7'	4-6-9-12 (15)	TOP 0.3': SILT WITH SAND, LIGHT GRAY (N7), MOIST, FIRM, ~15% SAND, POORLY GRADED, TRACE MEDIUM-GRAINED SAND, (ML); BOTTOM 1.4': SILT, LIGHT GRAY (N7), MOIST, STIFF, TRACE LIGHT BROWN (5 YR 5/6) STREAKS, (ML)	0917 HNU=0 PPM RAD=40 CPM
12	12-14	4503	2.0'	14-15-16-18 (31)	TOP 0.8': SILTY SAND, GRAYISH ORANGE (10 YR 5/4), WET, DENSE, FINE-GRAINED, POORLY GRADED (SM); BOTTOM 1.2': SILT, SAME AS ABOVE, 1/4"-1/2" LIGHT BROWN (5 YR 5/6) STREAKS, (ML)	0920 HNU=0 PPM RAD=36 CPM
14	14-16		1.4'	11-11-8-9 (19)	SILT, SAME AS ABOVE, 1/4" LIGHT BROWN (5 YR 5/4) STREAKS, VERY STIFF, (ML)	0934 HNU=0 PPM RAD=36 CPM 0938 DRILLERS STOP TO WRAP UP SPOONS TO GIVE TO BEATTY FOR ?
16	16-18		2.0'	6-6-7-6 (13)	SAME AS ABOVE, 1/4"-2" STREAKS, LIGHT BROWN (5 YR 5/6), STIFF, TRACE FINE-GRAINED SAND, (ML)	0953 DRILLERS CONTINUE 0956 HNU=0 PPM RAD=26 CPM
18	18-20	4504	1.9'	13-15-12-12 (27)	SAME AS ABOVE, VERY STIFF, (ML)	1006 HNU=0 PPM RAD=42 CPM 1013 DRILLERS STOP TO FIX CABLE
20	20-22		2.0'	5-8-10-12 (18)	TOP 0.9': ELASTIC SILT, LIGHT GRAY (N7) WITH 1/4" STREAKS LIGHT BROWN (5 YR 5/6) MOIST-WET, STIFF, (MH); BOTTOM 1.1': SILT WITH SAND, LIGHT GRAY (N7), MOIST, VERY STIFF, ~20% FINE SAND, (ML)	1030 TATUM, WILSON TAKE BREAK; HNU=0 PPM 1035 CABLE FIXED RAD=28 PPM 1059 DRILLING BEGINS 1102 DRILLER REPORTS 5' WATER ON RODS 1104 DRILLERS STOP FOR LUNCH
22	22-24		1.7'	6-7-7-8 (14)	TOP 0.5': SILT WITH SAND, SAME AS ABOVE, MODERATE YELLOWISH BROWN (10 YR 5/4) WITH MOTTLED MEDIUM GRAY (N5), (ML); BOTTOM 1.2': SILT WITH CLAY, FAT, MODERATE YELLOWISH BROWN (10 YR 5/4) WITH MEDIUM GRAY (N5), MOIST, STIFF, (MH)	1315 DRILLING BEGINS 1321 HNU=0 PPM RAD=32 CPM
24	24-26	4505	0.6'	6-6-6-6 (12)	SILT, DARK YELLOWISH ORANGE (10 YR 6/6), VERY WET, STIFF TRACE FINE SAND, (ML)	1328 HNU=0 PPM RAD=32 CPM "GUMBO" (SOUPY) SOIL IN SS
26	26-28		1.9'	7-6-6-10 (12)	ELASTIC SILT, DARK YELLOWISH ORANGE (10 YR 6/6) WITH MOTTLED MEDIUM LIGHT GRAY (N6) AND LIGHT OLIVE GRAY (5 Y 6/1), MOIST, STIFF, (MH)	1340 HNU=0 PPM RAD=34 CPM DRILLER REPORTS OF "GUMBO" SOUPY SOIL IN HOLE
28	28-30		1.75'	7-14-15-13 (29)	TOP .75': ELASTIC SILT, SAME AS ABOVE, (MH); BOTTOM 1.0': SILT WITH SAND, LIGHT GRAY (N7) WITH LIGHT BROWN (5 YR 5/6) STREAKS, MOIST-WET, VERY STIFF, ~15% FINE SAND; BOTTOM 0.1': LIGHT BROWN (5 YR 5/6) WITH MOTTLED DARK YELLOWISH ORANGE (10 YR 6/6), (ML)	1358 HNU=0 PPM RAD=44 CPM
30						

PROJECT NUMBER	BORING NUMBER
SED28178.FI	Well 133 SHEET 2 OF 4

SOIL BORING LOG

ROJECT PGDP Phase I Site Investigation LOCATION WC5-NE of Plant; TVA property at Little Bayou Cr.
ELEVATION _____ DRILLING CONTRACTOR Geotek Engineering
DRILLING METHOD AND EQUIPMENT B-61 with 3-1/2" OD Hollow Stem Augers
WATER LEVEL AND DATE _____ START 2/25/90 FINISH 2/28/90 LOGGER T. Rachal

DEPTH BELOW SURFACE (FT)	SAMPLE INTERVAL	SAMPLE TYPE AND NUMBER	SAMPLE RECOVERY (FT)	STANDARD PENETRATION TEST RESULTS 6" -6" -6" (N)	SOIL DESCRIPTION: SOIL NAME, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY, USCS GROUP SYMBOL	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS AND INSTRUMENTATION
30	30-32		1.8'	10-10-10-4 (20)	TOP 1.0': ELASTIC SILT, SAME AS ABOVE, TRACE, FINE SAND (MH); MIDDLE 0.4': POORLY-GRADED SAND, LIGHT GRAY (N7), MOIST, FINE-GRAINED, ~70% SILT (SP); BOTTOM 0.4' WELL GRADED GRAVEL WITH SILT AND SAND, LIGHT GRAY (N7), WET, ~70% FINE-MEDIUM GRAINED GRAVEL, ANGULAR, ~15% SILT, ~15% FINE-GRAINED SAND, (GW-GM)	1420 HNU-0 PPM RAD-34 CPM BACKGROUND RAD: 42
32	32-34	4506	1.95'	7-15-18-25 (33)	TOP 0.8': SILT, MODERATE YELLOWISH BROWN (10 YR 5/4), MOIST, STIFF, TRACE MEDIUM LIGHT GRAY (N8), STREAKS, (ML); MIDDLE 0.9': POORLY-GRADED SAND, SAME AS ABOVE (SP); BOTTOM 0.45: SILT WITH GRAVEL, MODERATE YELLOWISH BROWN (10 YR 5/4) WITH MEDIUM LIGHT GRAY STREAKS (N8), ~50% SILT, ~30% FINE-MEDIUM GRAVEL, TRACE COARSE SAND, (ML)	1429 HNU-0 PPM RAD-38 CPM
34	34-36		2.0'	7-47-57-50 (104)	TOP 1.05': SILT WITH SAND, DARK YELLOWISH ORANGE (10 YR 6/6), WET, VERY SOFT, ~15% FINE SAND, <10% MEDIUM-GRAINED GRAVEL, SUBANGULAR, (ML); BOTTOM 0.95': WELL-GRADED GRAVEL WITH SILT, MODERATE YELLOW BROWN (10 YR 5/4) WITH MEDIUM LIGHT GRAY (N8), MOIST, ~75% GRAVEL, FINE-MEDIUM GRAINED ANGULAR-SUBROUNDED, ~25% SILT, GRAVEL FRAGMENTS, (GW-GM)	1440 HNU-0 PPM RAD-22 CPM
36	36-38		2.0'	10-15-18-23 (33)	TOP 1.5': SILTY SAND, VERY PALE ORANGE (10 YR 8/2), MOIST, DENSE, FINE-GRAINED, POORLY GRADED, (SM); BOTTOM 0.5': WELL-GRADED GRAVEL WITH SILT, LIGHT BROWN, (5 YR 5/6), MOIST, LOOSE, ~65% GRAVEL, FINE-MEDIUM GRAINED, ANGULAR-SUBANGULAR, ~15% SILT (GW-GM)	1457 HNU-0 PPM RAD-42 CPM
38	38-40	4507	2.0'	8-14-23-20 (37)	TOP 1.3': SILTY SAND, SAME AS ABOVE (SM); BOTTOM 0.7': WELL-GRADED GRAVEL, SAME AS ABOVE, TRACE FINE-GRAINED SAND, (GW-GM)	1530 DRILLING BEGINS 1535 HNU-0 PPM RAD-44 CPM
	40-42		1.35'	20-27-29-25 (56)	WELL-GRADED GRAVEL WITH SILT AND SAND, LIGHT BROWN (5 YR 5/6), MOIST, VERY DENSE, 70% GRAVEL, FINE-COARSE GRADED, VERY ANGULAR-SUBROUNDED, ~15% SILT, ~15% MEDIUM SAND, (GW-GM)	1605 HNU-0 PPM RAD-34 CPM HP SHUT DOWN , RIG LEAKING GASOLINE
42	42-44		2.0'	10-15-18-22 (33)	TOP 1.0': POORLY-GRADED SAND WITH SILT, DARK YELLOWISH ORANGE (10 YR 6/6), MOIST, MEDIUM-DENSE, FINE-GRAINED, ~15% SILT (SP-SM); MIDDLE 0.7': WELL-GRADED SAND WITH SILT, DARK YELLOWISH ORANGE (10 YR 6/6), MOIST, DENSE, MEDIUM-COARSE, ~15% SILT <10% MEDIUM-GRAINED SUBANGULAR GRAVEL (SW-SM), BOTTOM 0.2': WELL-GRADED GRAVEL WITH SILT AND SAND, SAME AS ABOVE, DARK YELLOWISH BROWN (10 YR 4/2), (GW-GM)	2/26/90 0834 DRILLING BEGINS 0852 HNU-0 PPM RAD-44 CPM
44	44-46	4508	2.0'	20-31-25-33 (56)	TOP 1.0': ELASTIC SILT, MODERATE BROWN, (5 YR 4/4) WITH MOTTLED MEDIUM LIGHT GRAY (N8), MOIST, HARD, (MH); BOTTOM 1.0': WELL-GRADED GRAVEL WITH SILT AND SAND, SAME AS ABOVE, DARK YELLOWISH ORANGE (10 YR 6/6), (GW-GM)	0910 HNU-0 PPM RAD-46 CPM
46	46-48		2.0'	10-18-29-38 (47)	TOP 1.2': WELL-GRADED SAND WITH SILT, DARK YELLOWISH ORANGE (10 YR 6/6), MOIST, DENSE, ~15% SILT (SW-SM) FINE-MEDIUM-GRAINED; BOTTOM 0.8': WELL-GRADED GRAVEL WITH SILT AND SAND, SAME AS ABOVE LIGHT BROWN (5 YR 5/6), (GW-GM)	0921 HNU-0 PPM RAD-54 CPM
48	48-50		2.0'	8-7-11-15 (18)	TOP 0.6': WELL-GRADED GRAVEL WITH SILT, DARK YELLOWISH ORANGE (10 YR 6/6), MOIST, SUBROUNDED-SUB ANGULAR, FINE-COARSE GRAINED, (GW-GM); BOTTOM 1.4': FAT CLAY AND SILT, LIGHT GRAY (N7), MEDIUM GRAY (N5) AND LIGHT BROWN (5 YR 5/6) AND WHITE (N9), MOIST, VERY STIFF, ~30% SILT LENSES, (CH-ML)	0921 MECHANIC FIXED GAS TANK 1008 DRILLING BEGINS 1014 HNU-BACKGROUND, 0 PPM RAD-BACKGROUND, 38 CPM
50	50-52	4509	2.0'	13-33-27-25 (60)	SILTY SAND WITH GRAVEL, DARK YELLOWISH ORANGE (10 YR 6/6), MOIST, VERY DENSE, ~75% SAND, POORLY GRADED, FINE-GRAINED, ~15% FINE-MEDIUM GRAVEL, SUBANGULAR-SUBROUNDED, <10% FAT CLAY, MEDIUM LIGHT-MEDIUM GRAY (N6-N7), (SM)	1029 HNU-0 PPM RAD-36 CPM
52	52-54		2.0'	20-21-19-27 (40)	TOP 0.9': FAT CLAY AND SILT, MEDIUM LIGHT GRAY (N6) AND WHITE (N9), MOIST, HARD, ~70% CLAY, ~30% SILT, (CH-ML); BOTTOM 1.5' SILTY SAND, DARK YELLOWISH ORANGE (10 YR 6/6), DAMP, DENSE, FINE-GRAINED, POORLY GRADED, TRACE MEDIUM GRAVEL, LIGHT BROWN, (5 YR 5/6), (SM)	1041 HNU-0 PPM RAD-46 CPM
54	54-56		2.0'	0-13-15-15 (28)	TOP 0.5': SILTY SAND, SAME AS ABOVE, NO GRAVEL, (SM); BOTTOM 1.5': INTERBEDDED SILT AND PLASTIC SILT, MEDIUM LIGHT GRAY (N6) WITH MOTTLED, VERY LIGHT GRAY (N8) AND WHITE (N9), MOIST, VERY STIFF, (ML-MH)	1100 HP SHUT DOWN HOLE DUE TO 15% LEL RDG., CREW WAITING UNTIL HOLE VENTED (34.5'), POSSIBLY METHANE HNU-0 PPM 1121 RDG. 10% (HAS TO BE ? 10%)
56	56-58	4511	2.0'	13-20-30-30 (50)	TOP 1.5': SILTY SAND, SAME AS ABOVE, (SM); BOTTOM 0.5': SILT AND ELASTIC SILT, SAME AS ABOVE, (ML-MH)	1335 DRILLING BEGINS 1343 HNU-0 PPM RAD-38 CPM
58	58-60		1.7'	25-26-18-18 (44)	SILTY SAND, SAME AS ABOVE, TRACE MEDIUM LIGHT GRAY, LENTICULAR SILT, (SM)	1409 HNU-0 PPM RAD-48 CPM 1413 DRILLERS STOP TO DRAIN GAS TANK 1550 DRILLING BEGINS
60						

PROJECT NUMBER	BORING NUMBER
SED28178.FI	Well 133 SHEET 3 OF 4

SOIL BORING LOG

PROJECT PGDP Phase I Site Investigation LOCATION WC5-NE of Plant; TVA property at Little Bayou C.
ELEVATION _____ DRILLING CONTRACTOR Geotek Engineering
DRILLING METHOD AND EQUIPMENT B-61 with 3-1/2" OD Hollow Stem Augers
WATER LEVEL AND DATE _____ START 2/25/90 FINISH 2/28/90 LOGGER T. Rachal

DEPTH BELOW SURFACE (FT)	SAMPLE INTERVAL	SAMPLE TYPE AND NUMBER	SAMPLE RECOVERY (FT)	STANDARD PENETRATION TEST RESULTS 6" -6" -6" (N)	SOIL DESCRIPTION: SOIL NAME, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY, USCS GROUP SYMBOL	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS AND INSTRUMENTATION
60	60-62		2.0'	6-6-7-12 (13)	ELASTIC SILT, MEDIUM LIGHT GRAY (N8) WITH LIGHT BROWN (5 YR 5/6) LAMINAE AND MOTTLING, MOIST, STIFF, TRACE MEDIUM GRAY (N5) CLAY, TRACE COARSE-GRAINED SAND, (MH)	1605 HNU=0 PPM RAD=46 CPM
62	62-64	4512	1.8'	7-7-9-11 (16)	TOP 0.6': SILTY SAND, DARK YELLOWISH ORANGE (10 YR 6/6), MOIST, MEDIUM DENSE, FINE-GRAINED, (SM); BOTTOM 1.2': ELASTIC SILT, SAME AS ABOVE, LIGHT GRAY (N7) WITH LIGHT BROWN (5 YR 6/6) MOTTLING AND LAMINAE, STIFF, (MG)	1616 HNU=0 PPM RAD=52 CPM
64	64-66		2.0'	6-8-8-10 (16)	ELASTIC SILT, SAME AS ABOVE, (MH)	1626 HNU=0 PPM RAD=34 CPM 1635 DRILLING ENDS FOR DAY
66	66-68		2.0'	5-8-8-11 (16)	ELASTIC SILT, SAME AS ABOVE, LIGHT OLIVE GRAY (5 Y 6/1) WITH MOTTLED LIGHT BROWN (5 YR 6/6), (MH)	2/27/90, 0840 DRILLING BEGINS 0853 HNU=0 PPM RAD=40 CPM
68	68-70	4514	1.9'	7-8-8-9 (16)	ELASTIC SILT, SAME AS ABOVE, PALE YELLOWISH BROWN (10 YR 6/2) WITH LIGHT BROWN POCKETS (5 YR 5/6), (MH)	0910 HNU=0 PPM RAD=32 CPM
70	70-72		2.0'	5-6-6-8 (12)	ELASTIC SILT, SAME AS ABOVE, (MH)	0959 HNU=0 PPM RAD=58 CPM
72	72-74		2.0'	7-8-8-11 (16)	ELASTIC SILT, DUSKY YELLOWISH BROWN WITH LIGHT BROWN AND PINKISH (10 YR 2/2) (5 YR 5/6) GRAY (5 YR 8/1) SILT POCKETS, MOIST, STIFF, (MH)	1014 DRILLERS TAKE BREAK (RAIN CONTINUING) 1050 DRILLING BEGINS 1100 HNU=0 PPM RAD=46 CPM
74	74-76	4515	2.0'	7-9-10-14 (19)	ELASTIC SILT, SAME AS ABOVE, MEDIUM DARK GRAY (N4) WITH PINKISH GRAY (5 YR 8/1), SILT POCKETS, TRACE LIGHT BROWN (5 YR 5/6) SILT POCKETS, (MH)	1111 HNU=0 PPM RAD=54 CPM
76	76-78		2.0'	6-6-7-9 (13)	ELASTIC SILT, SAME AS ABOVE, WHITE (N9) AND PINKISH GRAY (5 YR 8/1) LAMINAE, (MH)	1133 HNU=0 PPM RAD=32 CPM 1143 DRILLERS STOP FOR LUNCH
78	78-80		2.0'	12-21-37-52 (58)	ELASTIC SILT, MEDIUM DARK GRAY (N4) GRADING INTO YELLOWISH GRAY (5 Y 8/1) WITH MOTTLED GRAYISH ORANGE (10 YR 7/4), DAMP-MOIST, HARD, (MH)	1348 DRILLING BEGINS 1357 HNU=0 PPM RAD=46 CPM
80	80-82	4516	2.0'	11-16-22-32 (38)	TOP1.1': POORLY GRADED SAND WITH SILT, PALE YELLOWISH ORANGE (10 YR 8/6), MOIST, DENSE, FINE-GRAINED, <=15% SILT (SP-SM); BOTTOM 0.9': ELASTIC SILT AND SILT, MEDIUM DARK GRAY (N4) AND YELLOWISH GRAY (5 Y 8/1) WITH LIGHT BROWN (5 YR 5/6) POCKETS, DAMP-MOIST, HARD, TRACE FINE GRAVEL, SUBROUNDED, (MH-ML)	1419 HNU=0 PPM RAD=46 CPM
82	82-84		1.5'	20-31-27-32 (58)	TOP 0.8': POORLY GRADED SAND WITH SILT, SAME AS ABOVE, (SP-SM); BOTTOM 0.7': ELASTIC SILT AND SILT, SAME AS ABOVE, MODERATE RED (5 YR 4/6) LAMINAE IN BOTTOM 0.2', (MH-ML)	1437 HNU=0 PPM RAD=36 CPM
84	84-85		2.0'	19-28-42-45 (70)	POORLY GRADED SAND WITH SILT, PALE YELLOWISH ORANGE (10 YR 8/6), MOIST, VERY DENSE, <15% SILT, (SP-SM)	1524 HNU=0 PPM RAD=42 CPM
86	86-88	4517	2.0'	14-16-18-39 (34)	SAME AS ABOVE, DENSE, (SP-SM)	1602 HNU=0 PPM RAD=42 CPM DRILLING ENDS FOR DAY
88	88-90	4519	2.0'	50-50-75-95 (125)	SILTY SAND, PALE YELLOWISH ORANGE (10 YR 8/6) WITH VERY LIGHT GRAY (N8) SILT LENSES, ~0.5' THICK, DAMP, HARD, ~30% SILT, (SM)	2/28/90, 0757 DRILLING BEGINS 0827 DRILLERS BEGIN USING 300# HAMMER 0846 HNU=0 PPM RAD=24 CPM
90						

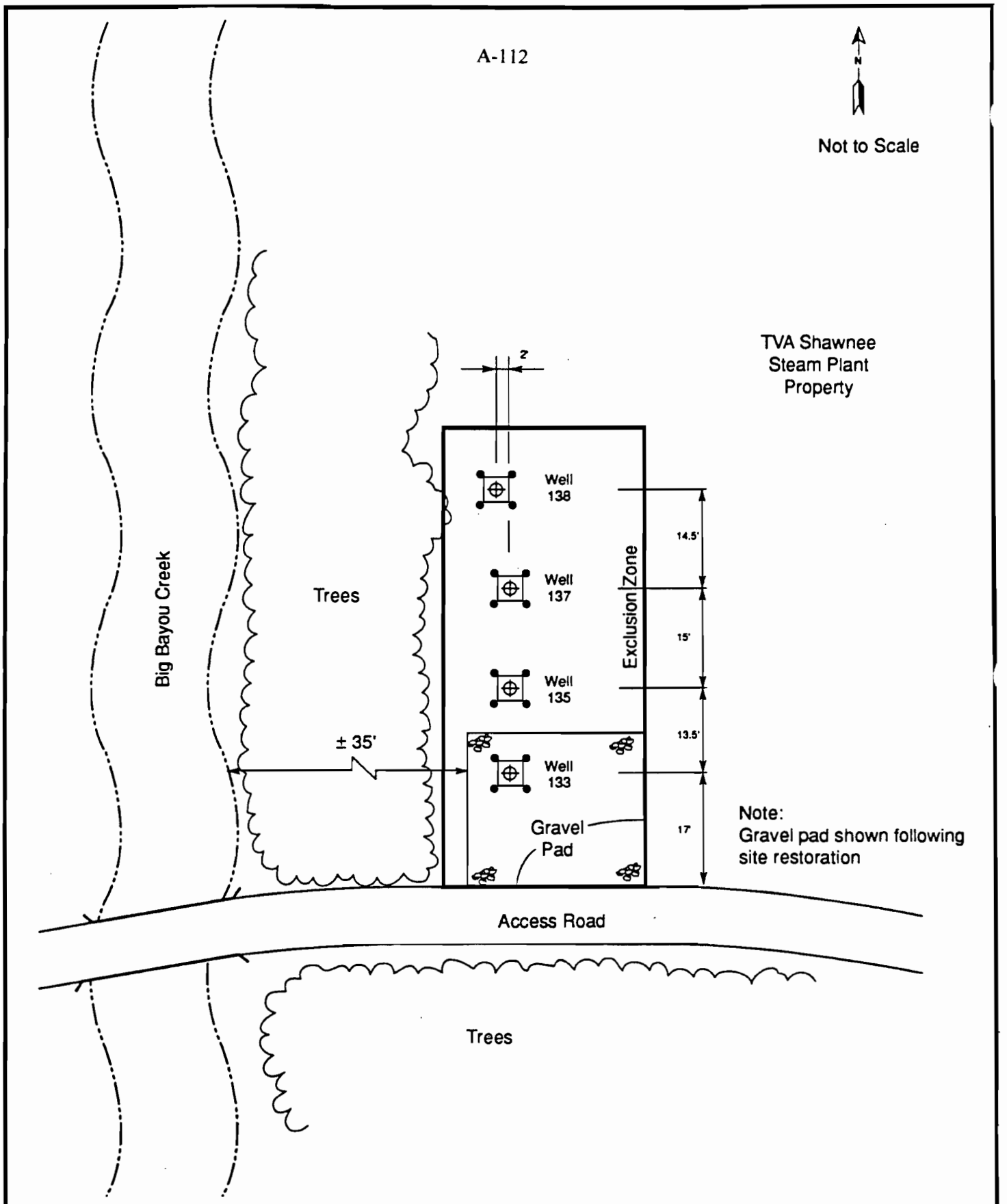
PROJECT NUMBER	BORING NUMBER
SED28178.FI	Well 133 SHEET 4 OF 4

SOIL BORING LOG

PROJECT PGDP Phase I Site Investigation LOCATION WC5-NE of Plant; TVA property at Little Bayou Cr.
ELEVATION _____ DRILLING CONTRACTOR Geotek Engineering
DRILLING METHOD AND EQUIPMENT B-61 with 3-1/2" OD Hollow Stem Augers
WATER LEVEL AND DATE _____ START 2/25/90 FINISH 2/28/90 LOGGER T. Rachal

DEPTH BELOW SURFACE (FT)	SAMPLE INTERVAL	SAMPLE TYPE AND NUMBER	SAMPLE RECOVERY (FT)	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION (SOIL NAME, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY, USCS GROUP SYMBOL)	COMMENTS (DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS AND INSTRUMENTATION)
90	90-92	4519	2.0'	14-31-65-75 (96)	SANDY SILT, DARK YELLOWISH ORANGE (10 YR 6/6) WITH VERY LIGHT GRAY (N8), POCKETS AND MEDIUM LIGHT GRAY, (N6) AND DARK GREENISH GRAY (5 GY 4/1) STREAKS 1/8"-1/4" THICK, MOIST, HARD, ~15% FINE SAND, (ML)	0913 HNU=0 PPM RAD=22 CPM DRILLERS HAVING PROBLEMS PULLING RODS
92	92-94		1.8'	21-22-22-13 (44)	TOP 1.05': SILT, DARK YELLOWISH ORANGE (10 YR 6/6), WITH LIGHT BROWN (5 YR 5/6) POCKETS, DAMP, HARD, (ML); BOTTOM 0.75': SILT, DARK GRAY (N3) WITH VERY LIGHT GRAY (N8) POCKETS, DAMP, HARD, (ML)	0939 HNU=0 PPM RAD=52 CPM 0945 DRILLERS STOP FOR BREAK
94	94-96	4520	2.0'	7-7-9-11 (18)	TOP 1.9': SILT, DARK YELLOWISH ORANGE, (10 YR 6/6) WITH VERY LIGHT GRAY (N8) POCKETS, MOIST, VERY STIFF, TRACE FINE SAND (ML); BOTTOM 0.1': SILT, DARK GRAY (N3) WITH VERY LIGHT GRAY (N8) POCKETS, WET, VERY STIFF, (ML)	1024 DRILLING BEGINS 1047 HNU=0 PPM RAD=32 CPM
96	96-98		1.8'	9-9-9-10 (18)	SAME AS ABOVE, (ML)	1112 HNU=0 PPM RAD=42 CPM
98	98-100		2.0'	4-7-9-12 (16)	TOP 1.2': SILT AND ELASTIC SILT, PALE YELLOWISH ORANGE (10 YR 8/6) WITH DARK YELLOWISH ORANGE (10 YR 6/6) STREAKS AND MEDIUM DARK GRAY (N4), DARK GRAY (N3), MOIST, STIFF, (ML-MH); BOTTOM 0.8': ELASTIC SILT, MEDIUM DARK GRAY (N4), DARK GRAY (N3) WITH MOTTLED LIGHT GRAY (N7), DAMP, VERY STIFF, (MH)	1136 HNU=0 PPM RAD=32 CPM 1142 DRILLERS STOP FOR LUNCH
0						TD OF BORING 100'

SAT28178.TM



Legend

Well with Concrete Pad

Guardpost

Figure 5-3
Well Cluster 5
Well Layout Sketch

CH2M HILL

Summary of McNairy Background Wells

MW 140

Location - Northwest of Plant; Private property near Ogden Landing Road and Big Bayou Creek; Well Cluster 4
N (6558.5), E (-12179.2)

Date Installed - March 20, 1990

Screened Depth - Middle McNairy
Top - 138 ft bgs
Bottom - 148 ft bgs

Dates Sampled (Data available) - Q2 90; Q3 90; Q1 91; Q2 93; Q3 93; Q4 93; Q1 94; Q2 94; Q3 94; Q4 94; Q1 96; Q1 97; Q4 97

Construction Information Reference - Technical Memorandum No. 5 in *Results of the Site Investigation, Phase I at the Paducah Gaseous Diffusion Plant, Paducah, Kentucky* (KY/ER-4; March 1991)

Potential Contaminant Information -

Compound	Detected Concentration	Detection Error (Rad only)	Date of Collection	Sample ID
Organic Compounds (all; µg/l)				
Benzene	1 J	NA	5/2/90	CH200428-00000
Radionuclides (^{99}Tc only; pCi/l; unfiltered samples; ordered by date of collection)				
^{99}Tc	4	NR	5/2/90	1551-90
^{99}Tc	-0.67	1.74	3/14/91	CH210009-00000
^{99}Tc	0.043	1.59	3/14/91	CH210010-DUP
^{99}Tc	10	31	5/26/93	6004-93
^{99}Tc	4	11	7/13/93	6088-93
^{99}Tc	4	9	10/21/93	7081-93
^{99}Tc	5	16	1/11/94	4225-94
^{99}Tc	6	38	10/10/94	6864-94
^{99}Tc	0	11	2/6/97	5146-97
^{99}Tc	13	11	11/6/97	5796-97
Radionuclides (^{99}Tc only; pCi/l; filtered samples; ordered by date of collection)				
^{99}Tc	-0.77	1.37	3/14/91	CH210009-DIS
^{99}Tc	-0.97	1.59	3/14/91	CH210010-DUPDI

Notes: NA = Entry not applicable or not available.
NR = Value not reported in data set.

Physical Data Summary -

Parameter	Number of Observations	Arithmetic Average of Results	Range of Results	Units
Alkalinity	9	123.1	91 - 164	mg/L
Depth to Water	10	20.29	15.63 - 22.67	feet
Dissolved Oxygen	10	0.711	0.14 - 2.2	mg/L
Dissolved Solids	9	157.2	18 - 232	mg/L
Hardness as CaCO3, Dissolved	1	172	NA	g/L CaCO
pH	34	6.3	6.1 - 6.6	SU
Specific Conductance	34	310.8	242 - 390	umhos/cm
Temperature	10	58.7	57 - 62	F
Total Organic Carbon	29	< 1	< 1 - 1	mg/L
Total Suspended Solids	2	17	13 - 21	mg/L
Turbidity	8	45.1	8.4 - 82	NTU

Notes: NA = Entry not applicable or not available.

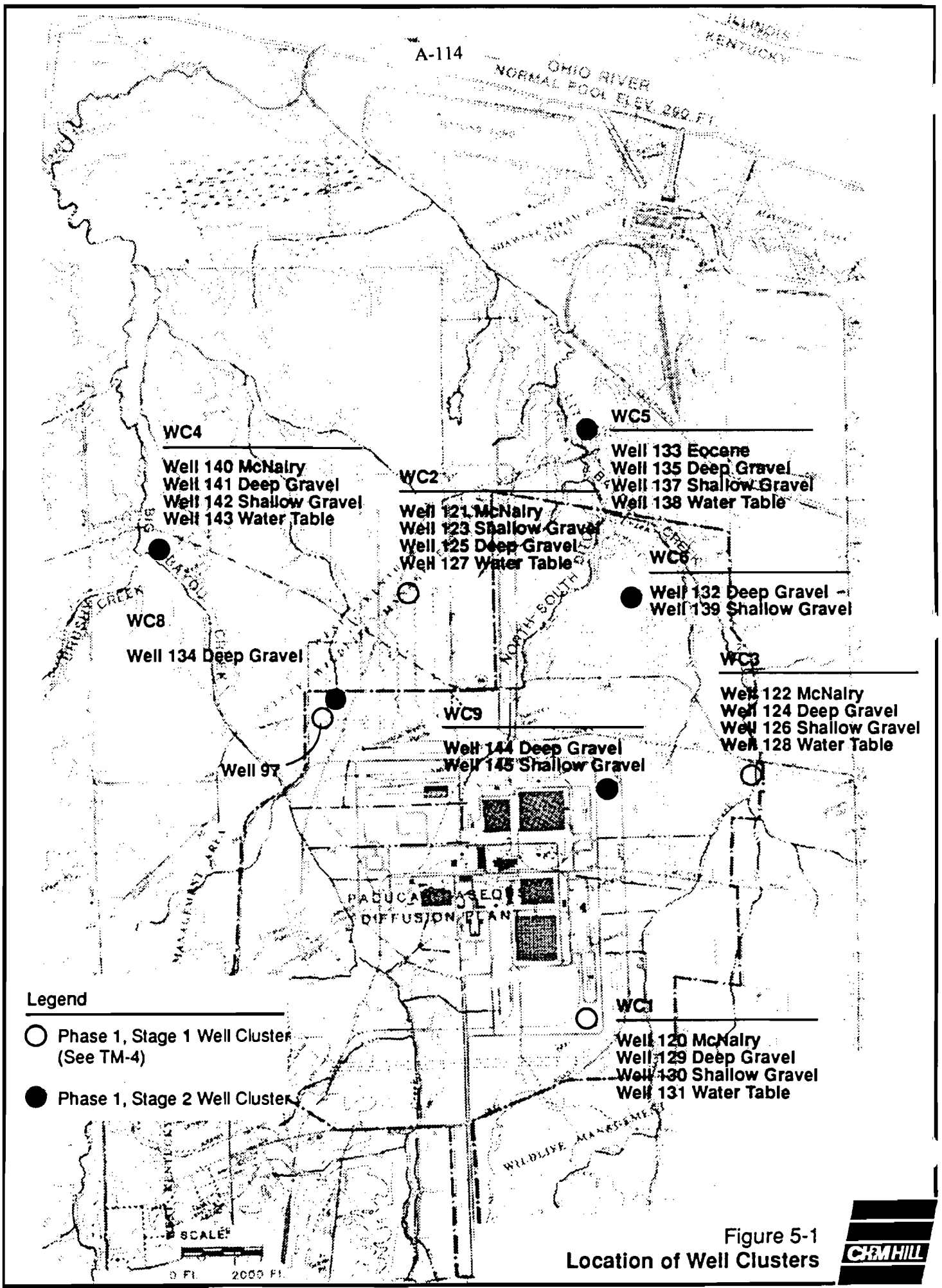
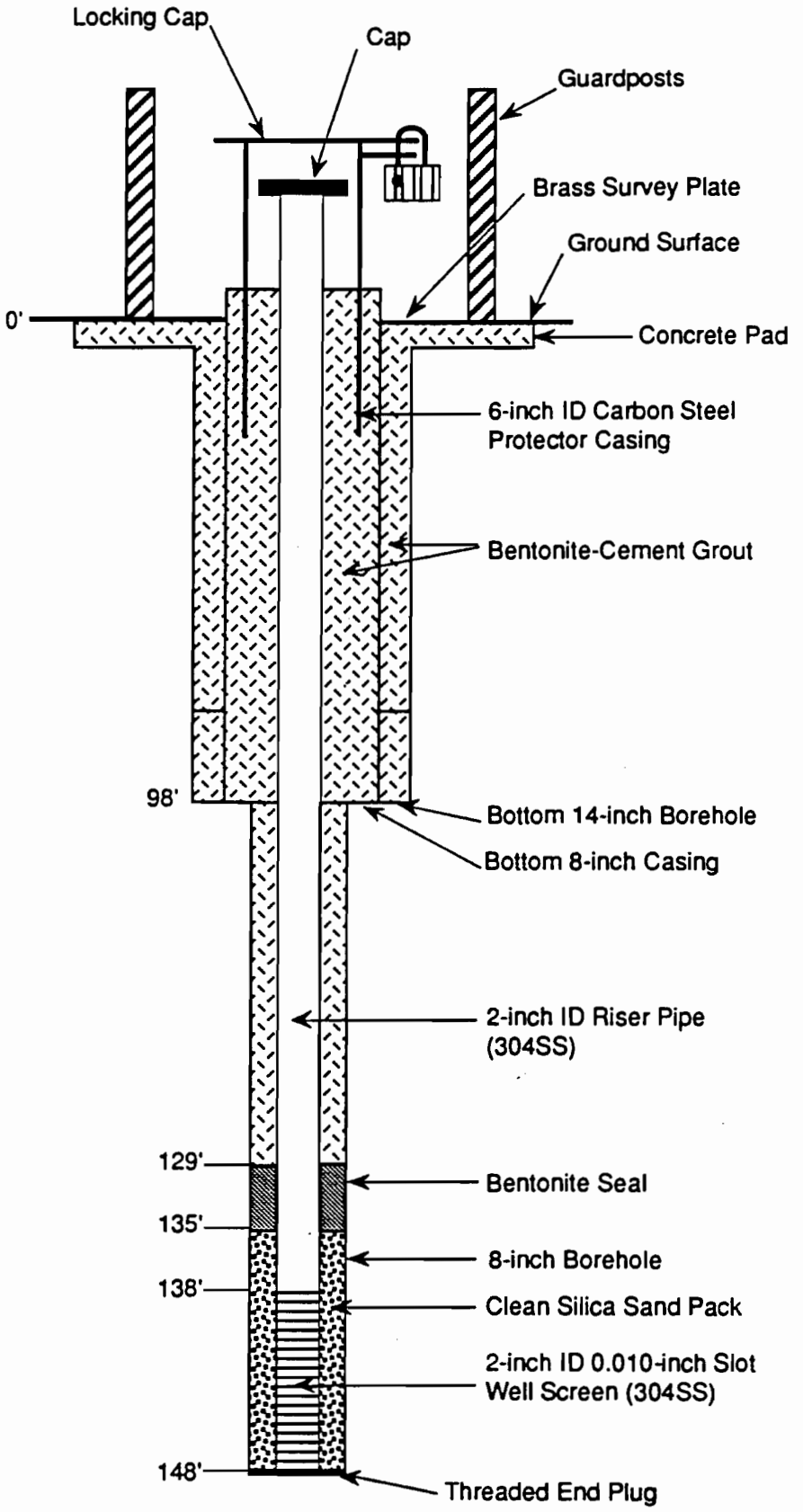


Figure 5-1
Location of Well Clusters

CH2M HILL

Well 140
Well with one
Isolation Casing



Well 140 Construction Details

CH2M HILL

PROJECT NUMBER	BORING NUMBER
SED28178.FS	Well 140 SHEET 1 OF 5

SOIL BORING LOG

PROJECT PGDP Phase I Site Investigation LOCATION WC-4; NW of Plant, Big Bayou Cr. at Ogden Landing Rd
ELEVATION _____ DRILLING CONTRACTOR Geotek Engineering
DRILLING METHOD AND EQUIPMENT Hollow Stem Augers/Split Spoon Sampler
WATER LEVEL AND DATE _____ START 3/20/90 FINISH 4/6/90 LOGGER B. Cocke

DEPTH BELOW SURFACE (FT)	SAMPLE INTERVAL	SAMPLE TYPE AND NUMBER	SAMPLE RECOVERY (FT)	STANDARD PENETRATION TEST RESULTS 6" -6" -6" (N)	SOIL DESCRIPTION: SOIL NAME, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY, USCS GROUP SYMBOL	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS AND INSTRUMENTATION
0	0-2	4157	2.0'	3-3-4-5 (7)	SILT, YELLOWISH GRAY (10 YR 4/2), BROWN, MOIST, FIRM, MOTTLED (BLACK ORGANIC SPOTS), LOW PLASTICITY, (ML)	BACKGROUND= HNU=0 PPM RAD=52 CPM HNU=0 PPM RAD=44 CPM
2	2-4		2.0'	3-3-3-3 (6)	SILT, SAME AS ABOVE, DAMP, (ML)	START DRILLING 1100 HNU=0 PPM RAD=34 CPM
4	4-6		1.75'	2-2-2-2 (4)	SILT, SAME AS ABOVE, (ML), CHANGING TO SILTY SAND, YELLOWISH BROWN (10 YR 4/2), DAMP, VERY LOOSE, FINE-MEDIUM, WELL GRADED, (SM)	HNU=0 PPM RAD=46 CPM
6	6-8	4158	1.75'	2-2-2-2 (4)	POORLY GRADED SAND WITH SILT, DARK YELLOWISH BROWN (10 YR 4/2), MOIST, VERY LOOSE, MEDIUM SUBROUNDED GRAINS, MOSTLY QUARTZ, (SP-SM)	HNU=0 PPM RAD=36 CPM
8	8-10		0'		NO SAMPLE, EXTREMELY LOOSE	HNU=0 PPM RAD=38 CPM
10	10-12			3-10-20-18 (30)	WELL GRADED GRAVEL WITH SILT AND SAND, MODERATE REDDISH BROWN (10 R 4/6), WET, MEDIUM DENSE, SUBANGULAR GRAINS, (GW-GM)	HNU=0 PPM RAD=40 CPM
12	12-14	4159	2.0'	12-16-18-13 (34)	WELL GRADED GRAVEL WITH SAND, MODERATE REDDISH BROWN (10 F 4/6), STREAKS OF GRAY (N7), WET, DENSE, SUBANGULAR TO SUBROUNDED GRAINS, (GW)	HNU=0 PPM RAD=38 CPM
14	14-16		1.8'	2-3-4-9 (7)	WELL GRADED GRAVEL WITH SAND AS ABOVE, CHANGING TO FAT CLAY, GREENISH GRAY (5 GY 6/1), MOIST, STIFF, PLASTIC, (CH)	HNU=0 PPM RAD=60 CPM
16	16-18		1.8'	7-10-14-22 (24)	FAT CLAY, GREENISH GRAY (5 GY 6/1), WITH MODERATE REDDISH BROWN STREAKS, DAMP, VERY STIFF, CHANGING TO GRAVEL, (CH)	HNU=0 PPM RAD=42 CPM
18	18-20	4160	2.0'	6-12-15-14 (27)	FAT CLAY, GREENISH GRAY (5 GY 6/1), CHANGING TO SILTY CLAY (DARK YELLOWISH BROWN (10 YR 4/2), DAMP, VERY STIFF, (CL-ML)	HNU=0 PPM RAD=44 CPM
20	20-22		1.8'	5-7-10-12 (17)	SILTY CLAY WITH SAND, MODERATE REDDISH BROWN (10 YR 4/6) WITH GRAY (N7) STREAKS, DAMP, VERY STIFF, GRAINS OF DARK MINERALS, QUARTZ, SOME PEBBLES, (CL-ML)	HNU=0 PPM RAD=60 CPM
22	22-24		2.0'	5-12-13-17 (25)	FAT CLAY, DARK YELLOWISH BROWN (10 YR 4/2), MOIST, VERY STIFF, PLASTIC WITH STREAKS OF SILTY CLAY WITH SAND, LIGHT GRAY (N8), (CH)	HNU=0 PPM RAD=42 CPM
24	24-26	4161	1.75'	9-10-25-29 (35)	SILTY CLAY, MODERATE REDDISH BROWN, MOIST, STIFF, (CL-ML); CHANGING TO SILTY SAND, LIGHT GRAY (N8) MOTTLED ORGANIC STAINING (BLACK), DAMP, DENSE, IRON OXIDE, FINE, POORLY GRADED, (SW-SM)	HNU=0 PPM RAD=52 CPM
26	26-28		1.75'	5-12-11-16 (23)	SILTY SAND, SAME AS ABOVE, (SW-SM), CHANGING TO SANDY SILTY CLAY, MOTTLED AS ABOVE, DAMP, VERY STIFF, (CL-ML)	HNU=0 PPM RAD=34 CPM
28	28-30			9-22-22-25 (44)	SILTY SAND WITH CLAY, MODERATE REDDISH BROWN (10 YR 4/6) MOTTLED, MOIST, DENSE, FINE-MEDIUM, (SP-SM), CHANGING TO SAND, LIGHT GRAY (N8) MOTTLED, MOIST, IRON OXIDE, ORGANIC, (SW)	HNU=0 PPM RAD=32 CPM STOP DRILLING 1620 3/20/90
30						

PROJECT NUMBER	BORING NUMBER
SED28178.FS	Well 140 SHEET 2 OF 5

SOIL BORING LOG

PROJECT PGDP Phase I Site Investigation LOCATION WC-4; NW of Plant, Big Bayou Cr. at Ogden Landing Rd
ELEVATION _____ DRILLING CONTRACTOR Geotek Engineering
DRILLING METHOD AND EQUIPMENT Hollow Stem Augers/Split Spoon Sampler
WATER LEVEL AND DATE _____ START 3/20/90 FINISH 4/6/90 LOGGER B. Cocke

DEPTH BELOW SURFACE (FT)	SAMPLE INTERVAL	SAMPLE TYPE AND NUMBER	SAMPLE RECOVERY (FT)	STANDARD PENETRATION TEST RESULTS 6" -6" -6" (N)	SOIL DESCRIPTION (SOIL NAME, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY, USCS GROUP SYMBOL)	COMMENTS (DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS AND INSTRUMENTATION)
30	30-32	4164	1.0'	15-16-12-17 (28)	WELL GRADED GRAVEL WITH SAND, LIGHT GRAY (N7), AND MODERATE RED BROWN (10 YR 4/6) MOIST, MEDIUM DENSE, (GW), CHANGING TO SANDY SILT, LIGHT GRAY, DAMP, VERY STIFF, (ML)	RESUME DRILLING 3/21/90, 0800 HNU=0 PPM RAD=28 CPM
32	32-34		2.0'	25-72-107-180 (179)	WELL GRADED GRAVEL WITH SAND, LIGHT GRAY AND MODERATE RED BROWN, MOIST, VERY DENSE, COARSE, (GW)	HNU=0 PPM RAD=34 CPM
34	34-36		1.8'	22-18-63-80 (81)	SAME AS ABOVE, (GW)	HNU=0 PPM RAD=22 CPM
36	36-38	4165	1.2'	38-61-51-52 (112)	POORLY GRADED SAND WITH CLAY, DARK YELLOW ORANGE (10 YR 6/6), WET, VERY DENSE, MEDIUM-VERY COARSE; TOP 4": WITH VERY FINE-COARSE GRAVEL, 4-14": WITH SOME CLAY, (SP-SC)	HNU=0 PPM RAD=32 CPM
38	38-40		1.8'	12-15-38-39 (53)	SAME AS ABOVE, LESS CLAY, SUBROUNDED TO SUBANGULAR, QUARTZ, TRACE MICA AND FERRO-MAGNESIUM MINERALS, (SP-SC)	0905 HNU=0 PPM RAD=20 CPM
40	40-42		1.8'	15-16-26-29 (42)	SAME AS ABOVE, SOME CLAYEY SAND IN LOWER 4", (SP-SC)	0912 HNU=0 PPM RAD=40 CPM
42	42-44	4166	1.8'	12-34-40-50 (74)	SAME AS ABOVE, BOTTOM 6": FINE-COARSE GRAVEL, (SP-SC)	0922 HNU=8 PPM RAD=40 CPM
44	44-46		1.7'	19-24-32-38 (56)	TOP 12": SAME AS ABOVE; BOTTOM 8": WELL GRADED GRAVEL WITH SAND, DARK YELLOW ORANGE (10 YR 6/6), WET, VERY DENSE, VERY COARSE SAND, MOSTLY FINE-MEDIUM GRAVEL, SUBANGULAR-SUBROUNDED, (GP)	1016 HNU=0 PPM RAD=26 CPM
46	46-48		2.0'	12-27-27-29 (54)	WELL GRADED SAND, DARK YELLOWISH ORANGE (10 YR 6/6), WET, VERY DENSE, MEDIUM-COARSE, SUBANGULAR-SUBROUNDED, (SW)	1028 HNU=0 PPM RAD=20 CPM
48	48-50	4167	2.0'	23-29-31-41 (60)	SAME AS ABOVE; BOTTOM 4" GRADED TO VERY FINE GRAVEL, (SW)	1040 HNU=0 PPM RAD=36 CPM
50	50-52		2.0'	15-27-28-33 (55)	SAME AS ABOVE	1107 HNU=0 PPM RAD=28 CPM
52	52-54		2.0'	33-65-55-50 (120)	SAME AS ABOVE, TOP 12": WITH VERY FINE GRAVEL, (SW)	1115 HNU=0 PPM RAD=24 CPM
54	54-56	4168	2.0'	26-34-41-40 (75)	SAME AS ABOVE, (SW)	HNU=0 PPM RAD=36 CPM
56	56-58		1.5'	24-40-12-11 (52)	TOP 6" SAME AS ABOVE; BOTTOM 12": POORLY GRADED GRAVEL AND SAND, SAME COLOR, WET, MEDIUM-VERY COARSE SAND, SUBANGULAR-SUBROUNDED, SOME SILT, (GP)	1405 HNU=0 PPM RAD=32 CPM
58	58-60			13-16-10-11 (26)	NO RECOVERY	
60						

PROJECT NUMBER	BORING NUMBER
SED28178.FS	Well 140 SHEET 3 OF 5

SOIL BORING LOG

PROJECT PGDP Phase I Site Investigation LOCATION WC-4; NW of Plant, Big Bayou Cr. at Ogden Landing Rd
ELEVATION DRILLING CONTRACTOR Geotek Engineering
DRILLING METHOD AND EQUIPMENT Hollow Stem Augers/Split Spoon Sampler
WATER LEVEL AND DATE START 3/20/90 FINISH 4/6/90 LOGGER B. Cocke

DEPTH BELOW SURFACE (FT)	SAMPLE INTERVAL	SAMPLE TYPE AND NUMBER	SAMPLE RECOVERY (FT)	STANDARD PENETRATION TEST RESULTS 6" -6" -6" (N)	SOIL DESCRIPTION: SOIL NAME, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY, USCS GROUP SYMBOL	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS AND INSTRUMENTATION
60	60-62		0'	13-26-65-60 (91)	NO RECOVERY	NEW LOGGER: B. COCKE
62	62-64	4169	1.8'	330/6"	POORLY GRADED SAND WITH GRAVEL, DARK YELLOW ORANGE (10 YR 6/6) AND LIGHT GRAY (N8), MOIST, VERY DENSE, SUBANGULAR-SUBROUNDED, MEDIUM-ROUNDED GRAVEL, (SP)	HNU=0 PPM RAD=32 CPM * NOTE: CHANGE TO 300# HAMMER
64	64-66		2.0'	20-14-15-30 (29)	SAME AS ABOVE, DENSE, (SP)	HNU=0 PPM RAD=22 CPM STOP DRILLING 1600
66	66-68		2.0'	20-13-15-52 (28)	WELL GRADED SAND, GRAYISH ORANGE (10 YR 7/4), WET, MEDIUM DENSE, FINE-MEDIUM, SUBANGULAR, (SW)	0822 HNU=0 PPM RAD=28 CPM RESUME DRILLING 3/22/90
68	68-70	4171	2.0'	48-41-19-35 (60)	SAME AS ABOVE, BOTTOM 6": FINER SAND, (SW)	0846 HNU=0 PPM RAD=30 CPM
70	70-72			20-13-18-33 (31)	SAME AS ABOVE, (SW)	0910 HNU=0 PPM RAD=36 CPM OBTAIN SAMPLE
72	72-74		2.0'	37-47-60-50 (107)	SAME AS ABOVE, (SW)	0925 HNU=0 PPM RAD=26 CPM DRILLER CONDITION THE BOREHOLE BY RUNNING AUGER UP AND DOWN
74	74-76	4172	2.0'	20-19-16-20 (35)	SAME AS ABOVE, (SW)	1035 HNU=0 PPM RAD=32 CPM
76	76-78			4-6-7-7 (13)	SAME AS ABOVE, MEDIUM DENSE, (SW)	1410 HNU=0 PPM RAD=36 CPM NEW LOGGER B. COCKE OBTAIN SAMPLE 4172 & DUPLICATE 4173
78	78-80			2-3-5-7 (8)	ELASTIC SILT, LIGHT GRAY (N7), MOIST, FIRM, PLASTIC, STREAKS OF MODERATE REDDISH BROWN (10 R 4/6), IRON OXIDES, (MH)	1445 HNU=0 PPM RAD=46 CPM
80	80-82	4174		3-5-7-7 (12)	SAME AS ABOVE, STIFF, SMALL INTERBEDDED LAYERS OF GRAVEL, WELL-GRADED, DARK REDDISH BROWN, (MH)	1530 HNU=0 PPM RAD=50 CPM
82	82-84			4-3-3-5 (6)	SAME AS ABOVE, (MH)	1558 HNU=0 PPM RAD=
84	84-86		1.8'	3-4-5-5 (9)	SAME AS ABOVE, (MH)	0834 HNU=0 PPM RAD=44 CPM RESUME DRILLING/SAMPLING 3/25/90, 0800
86	86-88	4176	2.0'	4-4-3-5 (7)	ELASTIC SILT, SAME AS ABOVE, WITH THIN INTERBEDDED SAND WITH SILT, GRAYISH ORANGE (10 YR 7/4), MEDIUM, POORLY GRADED, WET, SUBANGULAR-ANGULAR GRAINS, <10% DARK, MINERALS, MOSTLY QUARTZ	0850 HNU=0 PPM RAD=58 CPM
88	88-90		2.0'	3-3-2-3 (5)	ELASTIC SILT, LIGHT GRAY (N7) STREAKED WITH MEDIUM GRAY (N5), MOIST, FIRM, PLASTIC, WITH INTERBEDDED SAND, GRAYISH ORANGE (10 YR 7/4) AS ABOVE, (MH)	0912 HNU=0 PPM RAD=38 CPM SAMPLE COMPOSITED 0918
90						

PROJECT NUMBER	BORING NUMBER
SED28178.FS	Well 140 SHEET 4 OF 5

SOIL BORING LOG

ROJECT PGDP Phase I Site Investigation LOCATION WC-4; NW of Plant, Big Bayou Cr. at Ogden Landing Rd
ELEVATION _____ DRILLING CONTRACTOR Geotek Engineering
DRILLING METHOD AND EQUIPMENT Hollow Stem Augers/Split Spoon Sampler
WATER LEVEL AND DATE _____ START 3/20/90 FINISH 4/6/90 LOGGER B. Cocke

DEPTH BELOW SURFACE (FT)	SAMPLE INTERVAL	SAMPLE TYPE AND NUMBER	SAMPLE RECOVERY (FT)	STANDARD PENETRATION TEST RESULTS 6" -6" -6" (N)	SOIL DESCRIPTION: SOIL NAME, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY, USCS GROUP SYMBOL	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS AND INSTRUMENTATION
90	90-92		2.0'	4-4-8-10 (12)	SAME AS ABOVE, CHANGING TO FAT CLAY WITH SILT, MEDIUM GRAY (N5), MOIST, STIFF, INTERBEDDED COARSE SAND AND GRAVEL, GRAYISH ORANGE, (CH-MH)	1020 HNU=0 PPM RAD=36 CPM
92	92-94	4177	1.9'	4-4-5-4 (9)	FAT CLAY WITH SILT, SAME AS ABOVE, (CH-MH), CHANGING TO FAT CLAY, BROWNISH BLACK (5 YR 2/1), MOIST, STIFF, (CH)	1035 HNU=0 PPM RAD=34 CPM
94	94-96			4-4-5-6 (9)	SAME AS ABOVE, (CH)	1103 HNU=0 PPM RAD= STOP DRILLING 1145, SAMPLE COMPOSITED 1110
96	96-97.6					CASING SET @ 97' RESUMED SAMPLING 4/5/90, 1010 HNU=0 PPM RAD=136 CPM SAMPLE 4178=SHELBY TUBE SAMPLE
98	97.6-99.6	4178	2.0'	N/A	WELL GRADED SAND, MEDIUM-COARSE, CHERTY, (SW)	
00	99.6-101					
102	101-103	4179		5-7-10-11 (17)	ELASTIC SILT, MEDIUM DARK GRAY (N4), DAMP, MICACEOUS, VERY STIFF, (MH)	1050 HNU=0 PPM RAD=40 CPM 300# HAMMER
104	103-106					
106	106-108	4180		8-20-17-28 (37)	WELL GRADED SAND, LIGHT GRAY (N7), MOIST, DENSE, FINE-MEDIUM, SUBANGULAR, <5% DARK MINERALS, <1% MICACEOUS; (SW); CHANGING TO FAT CLAY, BROWNISH BLACK (5 YR 2/1), DAMP, HARD, (CH)	1405 HNU=0 PPM RAD=32 CPM
108	108-111					
110						
112	111-113	4181	1.75'	8-18-12-29 (30)	WELL GRADED SAND, LIGHT GRAY (N7) TO MEDIUM GRAY (N6), MOIST, MEDIUM DENSE, VERY FINE-MEDIUM, <5%, DARK RED, 5-10% MICA, SUBANGULAR, (SW)	1450 HNU=0 PPM RAD=48 CPM
114	113-116					
116	116-118	4182	2.0'	3-7-8-16 (15)	SILTY SAND, LIGHT TO MEDIUM GRAY (N7-N4), MOIST TO DAMP, MEDIUM DENSE, FINE TO MEDIUM, MANY THIN LAYERS, 15-40% SILT, 5-10% MICA, (SM)	1530 HNU=0 PPM RAD=28 CPM
118						
120						

PROJECT NUMBER	BORING NUMBER
SED28178.FS	Well 140 SHEET 5 OF 5

SOIL BORING LOG

PROJECT PGDP Phase I Site Investigation LOCATION WC-4; NW of Plant, Big Bayou Cr. at Ogden Landing Rd
ELEVATION DRILLING CONTRACTOR Geotek Engineering
DRILLING METHOD AND EQUIPMENT Hollow Stem Augers/Split Spoon Sampler
WATER LEVEL AND DATE START 3/20/90 FINISH 4/6/90 LOGGER B. Cocke

DEPTH BELOW SURFACE (FT)	SAMPLE INTERVAL	SAMPLE TYPE AND NUMBER	SAMPLE RECOVERY (FT)	STANDARD PENETRATION TEST RESULTS 6" -6" -6" (N)	SOIL DESCRIPTION: SOIL NAME, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY, USCS GROUP SYMBOL	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS AND INSTRUMENTATION
120						
122	121-123	4183	2.0'	17-8-10-17 (18)	SILTY SAND, SAME AS ABOVE, 10-25% SILT (SM); CHANGING TO WELL GRADED SAND WITH SILT, LIGHT GRAY (N7), MOIST, MEDIUM DENSE, VERY FINE TO MEDIUM, MICACEOUS, 5% SILT, (SW-SM)	HNU=0 PPM RAD=40 CPM STOPPED DRILLING 1620
124						
126	126-128	4185	1.5'	8-21-18-20 (39)	POORLY GRADED SAND, MEDIUM LIGHT GRAY (N6), MOIST-WET, DENSE, FINE, 3% DARK MINERALS, 3% MICA, (SP)	RESUMED SAMPLING 4/6/90, 0830, 300# HAMMER HNU=0 PPM RAD=39 CPM 0900
128						
30						
132	131-133	4186	1.75'	8-17-35-96 (52)	SAME AS ABOVE, FINE-MEDIUM, (SP); CHANGING TO FAT CLAY, VERY HARD, MICACEOUS, BROWNISH BLACK @ 133.5', (CH)	1020 HNU=0 PPM RAD=
134						
136	136-138	4187	2.0'	10-9-15-16 (24)	POORLY GRADED SAND, SAME AS ABOVE, MEDIUM DENSE, CONTAINS TWO 4" SEAMS OF FAT CLAY AS ABOVE, (SP)	1100 HNU=0 PPM RAD=40 CPM
138						
140						
142	141-143	4188		4-10-21-23 (31)	FAT CLAY, BROWNISH BLACK (5 YR 2/1), MOIST, VERY STIFF, MICACEOUS, (CH); CHANGING TO POORLY GRADED SAND, SAME AS ABOVE, (SP)	1530 HNU=0 PPM RAD=48 CPM STOPPED DRILLING 1535 TD OF BORING 143'

SAT28178.TM

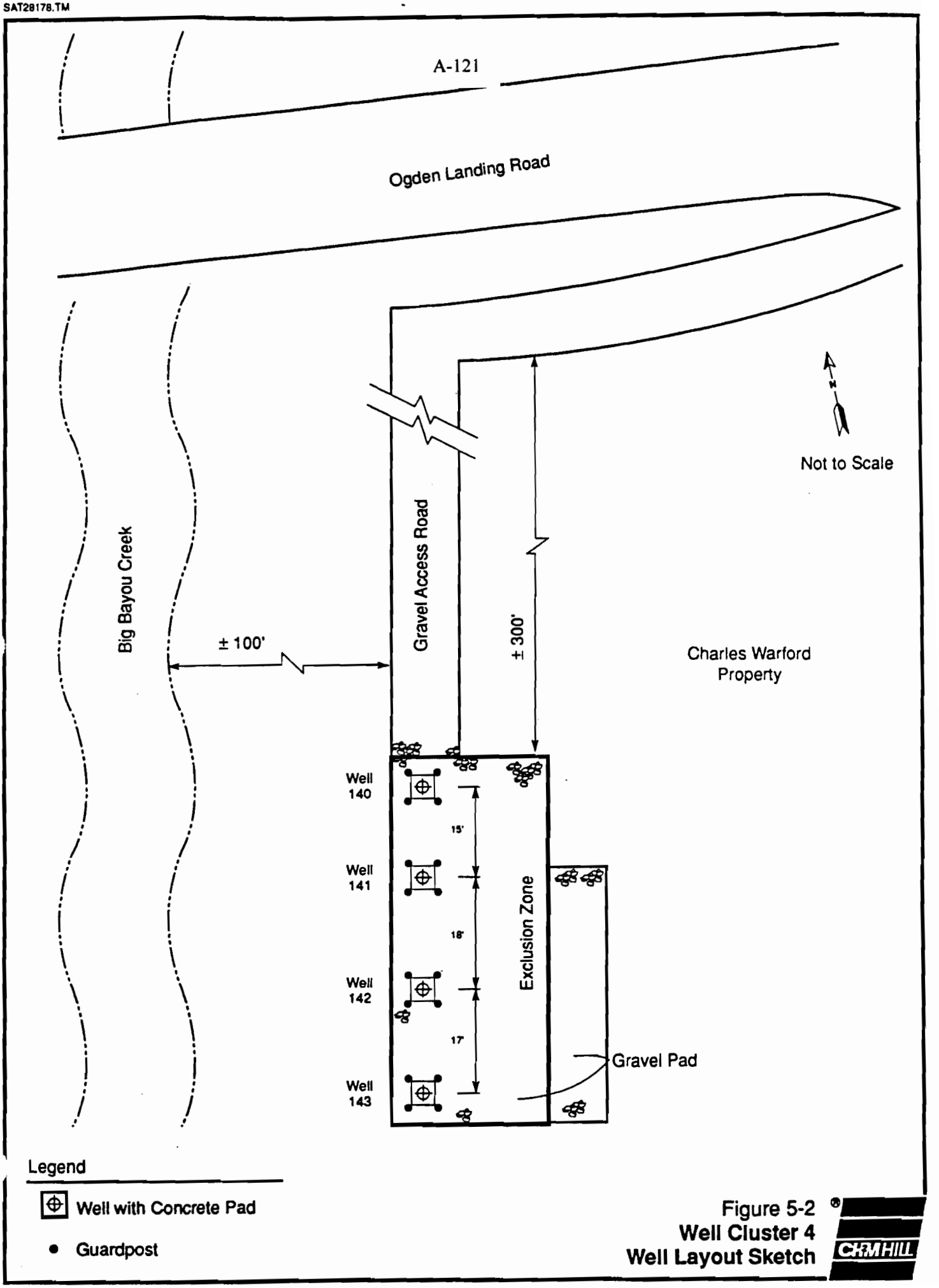


Figure 5-2
Well Cluster 4
Well Layout Sketch

CH2M HILL

[Page left blank]

Summary of McNairy Background Wells

MW 239

Location - Northwest Plume Interim Remedial Action - North Well Field
N (7330), E (-5204)
Date Installed - Sept. 29, 1994
Screened Depth - Middle McNairy
Top - 147 ft bgs
Bottom - 157 ft bgs
Dates Sampled (Data available) - Q1 95; Q2 95 (3); Q3 95 (3); Q4 95 (3); Q1 96 (3); Q2 96 (3); Q3 96 (3); Q4 96 (3); Q1 97 (3); Q2 97 (3); Q 3 97 (3); Q1 94
Construction Information Reference -
Potential Contaminant Information -

Compound	Detected Concentration	Detection Error (Rad only)	Date of Collection	Sample ID
Organic Compounds (all; µg/l)				
Trichloroethene	2	NA	12/11/96	6395-96
Trichloroethene	7	NA	6/12/97	5409-97
Trichloroethene	7	NA	8/14/97	5575-97
Radionuclides (^{99}Tc only; pCi/l; unfiltered samples; ordered by date of collection)				
^{99}Tc	18	19	3/29/95	6043-95
^{99}Tc	20	19	4/13/95	6143-95
^{99}Tc	9	20	5/3/95	6366-95
^{99}Tc	4	11	7/24/95	7106-95
^{99}Tc	1	11	8/9/95	7230-95
^{99}Tc	10	10	9/26/95	7361-95
^{99}Tc	3	10	10/18/95	7920-95
^{99}Tc	7	10	11/8/95	8036-95
^{99}Tc	4	10	12/19/95	8165-95
^{99}Tc	4	10	2/15/96	5384-96
^{99}Tc	14	11	3/20/96	5647-96
^{99}Tc	10	10	4/18/96	5805-96
^{99}Tc	2	11	5/21/96	5862-96
^{99}Tc	2	10	6/13/96	5916-96
^{99}Tc	2	10	7/25/96	6007-96
^{99}Tc	13	11	8/6/96	6042-96
^{99}Tc	13	11	9/10/96	6164-96
^{99}Tc	8	11	12/11/96	6395-96
^{99}Tc	4	11	1/23/97	5040-97
^{99}Tc	3	11	2/17/97	5115-97
^{99}Tc	1	11	3/18/97	5172-97
^{99}Tc	6	10	4/15/97	5265-97
^{99}Tc	4	12	5/20/97	5331-97
^{99}Tc	11	12	6/12/97	5409-97
^{99}Tc	7	11	7/10/97	5516-97
^{99}Tc	10	11	9/15/97	5660-97
^{99}Tc	5	12	10/16/97	5752-97
Radionuclides (^{99}Tc only; pCi/l; filtered samples; ordered by date of collection)				
NONE	NA	NA	NA	NA

Notes: NA = Entry not applicable or not available.

MW 239 (continued)

Physical Data Summary -

Parameter	Number of Observations	Arithmetic Average of Results	Range of Results	Units
Alkalinity	31	62.7	37 - 87	mg/L
Depth to Water	32	43.5	38.5 - 47.75	feet
Dissolved Oxygen	31	1.00	0.23 - 5.8	mg/L
Dissolved Solids	4	151.5	125 - 187	mg/L
pH	70	5.9	5.7 - 6.2	SU
Specific Conductance	70	235.7	180 - 269	umhos/cm
Temperature	72	60.9	56.5 - 72	F
Total Organic Carbon	10	< 1	< 1 - 1	mg/L
Turbidity	31	19.6	2.4 - 140	NTU

Notes: NA = Entry not applicable or not available.

Summary of McNairy Background Wells

MW 247

Location - Northwest Plume Interim Remedial Action - South Well Field
N (1358), E (-7433)

Date Installed - Sept. 26, 1994

Screened Depth - Middle McNairy
Top - 135 ft bgs
Bottom - 145 ft bgs

Dates Sampled (Data available) - Q1 95; Q2 95 (2); Q3 95 (3); Q4 95 (3); Q1 96 (3); Q2 96 (3); Q3 96 (3); Q4 96 (3); Q1 97 (3); Q2 97 (3); Q 3 97 (3); Q1 94 (2)

Construction Information Reference -

Potential Contaminant Information -

Compound	Detected Concentration	Detection Error (Rad only)	Date of Collection	Sample ID
Organic Compounds (all; µg/l)				
Trichloroethene	2	NA	9/20/95	7393-95
Trichloroethene	1	NA	3/20/97	5180-97
Trichloroethene	2	NA	5/20/97	5339-97
Trichloroethene	9,600	NA	7/24/97	5524-97
Radionuclides (^{99}Tc only; pCi/l; unfiltered samples; ordered by date of collection)				
^{99}Tc	10	34	3/27/95	6075-95
^{99}Tc	14	28	4/19/95	6175-95
^{99}Tc	7	11	6/20/95	6508-95
^{99}Tc	11	10	7/19/95	7138-95
^{99}Tc	12	10	8/22/95	7262-95
^{99}Tc	13	10	9/20/95	7393-95
^{99}Tc	2	10	10/23/95	7952-95
^{99}Tc	15	10	11/28/95	8068-95
^{99}Tc	2	11	3/25/96	5679-96
^{99}Tc	7	11	5/28/96	5870-96
^{99}Tc	8	9	6/18/96	5924-96
^{99}Tc	6	11	7/18/96	6015-96
^{99}Tc	8	10	8/13/96	6050-96
^{99}Tc	4	11	9/17/96	6172-96
^{99}Tc	3	10	10/2/96	6260-96
^{99}Tc	2	11	11/12/96	6316-96
^{99}Tc	5	12	12/10/96	6403-96
^{99}Tc	1	15	1/24/97	5048-97
^{99}Tc	13	11	2/17/97	5123-97
^{99}Tc	5	12	4/10/97	5273-97
^{99}Tc	1,953	43	7/24/97	5524-97
^{99}Tc	4	12	8/11/97	5583-97
^{99}Tc	11	12	9/17/97	5668-97
^{99}Tc	11	12	10/23/97	5760-97
^{99}Tc	-12	0	11/25/97	5857-97
Radionuclides (^{99}Tc only; pCi/l; filtered samples; ordered by date of collection)				
NONE	NA	NA	NA	NA

Notes: NA = Entry not applicable or not available.

MW 247 (continued)

Physical Data Summary -

Parameter	Number of Observations	Arithmetic Average of Results	Range of Results	Units
Alkalinity	31	127.4	71 - 164	mg/L
Depth to Water	32	38.60	27.31 - 43.5	feet
Dissolved Oxygen	32	1.74	0.23 - 11.58	mg/L
Dissolved Solids	4	150	103 - 194	mg/L
pH	68	6.5	5.78 - 7.42	SU
Specific Conductance	68	271.4	225 - 393	umhos/cm
Temperature	32	61.0	57 - 69	F
Total Organic Carbon	10	< 1	< 1 - 1	mg/L
Turbidity	31	59.2	3.2 - 131	NTU

Notes: NA = Entry not applicable or not available.

APPENDIX B

DATA SUMMARIES FOR SELECTED BACKGROUND WELLS

THIS PAGE INTENTIONALLY LEFT BLANK

Data Summary

This appendix presents, by analyte within aquifer classification, the original data and modified data used derive the background concentrations for the Regional Gravel Aquifer and McNairy Formation. For each analyte, the original and modified data, a graphic plot of the modified data, and reasons for data modification are presented by well. Table B-1 is a guide that can be used to find the results for individual analytes. For additional explanations concerning the information presented for each analyte, please see page B-5.

Table B-1. Table of Contents for Appendix B

Aquifer/Analyte Class	Pages
Regional Gravel Aquifer/Inorganic Chemicals	B-6 through B-60
McNairy Formation/Inorganic Chemicals	B-61 through B-115
Regional Gravel Aquifer/Radionuclides	B-116 through B-127
McNairy Formation/Radionuclides	B-128 through B-139
Regional Gravel Aquifer/Physical Parameters	B-140 through B-161
McNairy Formation/Physical Parameters	B-162 through B-184

THIS PAGE INTENTIONALLY LEFT BLANK

Summary of RGA Background Well Inorganic Chemical Data

ANALYSIS	RESULT	QUALIFIER	DETECT?	SAMPLE ID	STATION ID	UNITS
Aluminum	0.1	<	NO	5944-93	MW103	mg/L
Aluminum	0.112		YES	5187-94	MW103	mg/L
Aluminum	0.115		YES	4272-94	MW103	mg/L
Aluminum	0.125		YES	7299-93	MW103	mg/L
Aluminum	0.206		YES	6026-94	MW103	mg/L
Aluminum	0.243		YES	5178-93	MW103	mg/L
Aluminum	0.625	<	[illegible]	[illegible]	[illegible]	[illegible]
Aluminum	0.625	N*<				
Aluminum	0.75	<				
Aluminum	0.289		YES	4697-94	MW106	mg/L
Aluminum	0.62	<	NO	7272-94	MW106	mg/L
Aluminum	11		YES	5322-93	MW106	mg/L
Aluminum	0.157		YES	6054-94	MW141	mg/L
Aluminum	[illegible]		[illegible]	[illegible]	[illegible]	[illegible]
Aluminum	[illegible]					L
Aluminum	[illegible]					L
Aluminum	[illegible]					L
Aluminum	[illegible]					L
Aluminum	[illegible]					L
Aluminum	[illegible]					L
Aluminum	[illegible]					L
Aluminum	[illegible]					L
Aluminum	0.169		YES	5203-94	MW142	mg/L
Aluminum	0.267		YES	6096-93	MW142	mg/L
Aluminum	0.267		YES	7089-93	MW142	mg/L
Aluminum	0.501		YES	6084-93	MW142	mg/L
Aluminum	0.62	<	NO	6872-94	MW142	mg/L
Aluminum	0.625	N*<	NO	5317-96	MW142	mg/L
Aluminum	0.75	<	NO	5147-97	MW142	mg/L
Aluminum	0.625	N*<	NO	5321-96	MW150	mg/L
Aluminum	0.75	<	NO	5148-97	MW150	mg/L
Aluminum	1.01		YES	4789-94	MW150	mg/L
Aluminum	2.22		YES	5650-93	MW150	mg/L
Aluminum	0.172		YES	7311-93	MW199	mg/L
Aluminum	0.721		YES	6074-94	MW199	mg/L
Aluminum	1.2		YES	6888-94	MW199	mg/L
Aluminum	1.3		YES	5260-94	MW199	mg/L
Aluminum	2.08		YES	4312-94	MW199	mg/L
Aluminum	2.42		YES	5558-97	MW199	mg/L
Aluminum	2.6		YES	5984-93	MW199	mg/L
Aluminum	4.77		YES	5170-93	MW199	mg/L

This area presents the original data sorted by concentration within well.

The units for all chemical concentrations are mg/liter, and the units for all radionuclide concentrations are pCi/liter.

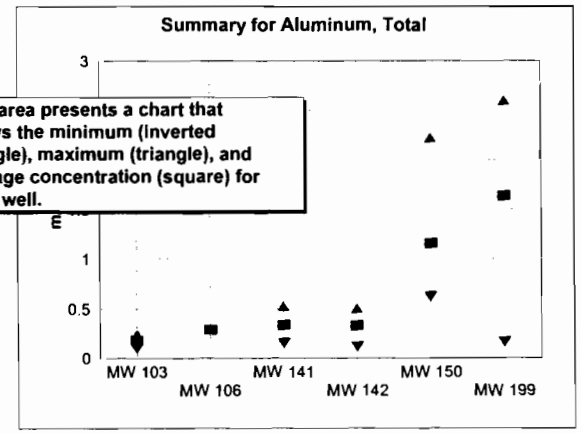
This area presents the corrected data set sorted by well.

CORRECTED DATA SET

MW 103	MW 106	MW 141	MW 142	MW 150	MW 199	Overall	Weighted
Aluminum							
0.1	0.289	0.157	0.123	0.625	0.172		
0.112	0.289	0.188	0.166	0.75	0.721		
0.115	0.289	0.204	0.169	1.01	1.2		
0.125		0.254	0.267	2.22	1.3		
0.206		0.486	0.267		2.08		
0.243		0.524	0.501		2.42		
0.243		0.524	0.501		2.6		
0.243			0.501		2.6		
0.243			0.501				

This area presents the summary statistics both within and over wells. Statistics shown are the minimum value in the corrected data set for each well and across all wells, the maximum value in the corrected data set for each well and across all wells, the average concentration for the corrected data set for each well and across all wells, and the number of observations for each well and across all wells.

Min	0.100	0.289	0.157	0.123	0.625	0.172	0.100	
Max	0.243	0.289	0.524	0.501	2.220	2.600	2.600	
Average	0.181	0.289	0.334	0.333	1.151	1.637	0.638	0.654
Number	9	3	7	9	4	8	40	



This area presents a chart that shows the minimum (inverted triangle), maximum (triangle), and average concentration (square) for each well.

This area describes the actions that were taken to correct the data set for each

MW 103 - Two nondetects greater than maximum detected value set to maximum detected value.

MW 106 - Detection at 11 mg/L declared an outlier and changed to maximum detected value. nondetect greater than new maximum detected value set to maximum detected value

MW 141 - One nondetect with a value greater than the maximum detected value reduced to the maximum detected value

MW 142 - Three nondetects greater than maximum detected value set to maximum detected value

MW 150 - Data were not modified

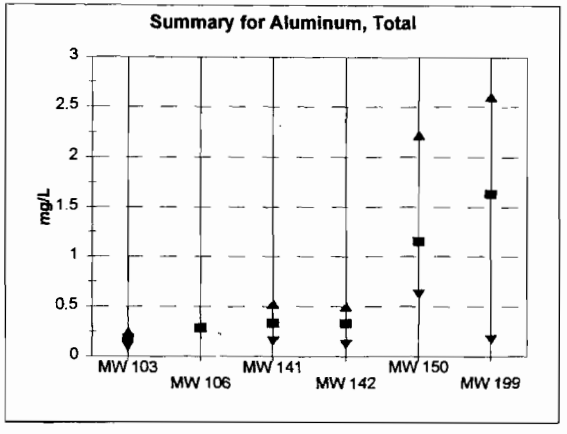
MW 199 - Detection at 4.77 mg/L declared an outlier and changed to new maximum detected value at 2.6 mg/L

Summary of RGA Background Well Inorganic Chemical Data

ANALYSIS	RESULT	QUALIFIER	DETECT?	SAMPLE ID	STATION ID	UNITS
Aluminum	0.1	<	NO	5944-93	MW103	mg/L
Aluminum	0.112		YES	5187-94	MW103	mg/L
Aluminum	0.115		YES	4272-94	MW103	mg/L
Aluminum	0.125		YES	7299-93	MW103	mg/L
Aluminum	0.206		YES	6026-94	MW103	mg/L
Aluminum	0.243		YES	5178-93	MW103	mg/L
Aluminum	0.625	<	NO	6774-94	MW103	mg/L
Aluminum	0.625	N*<	NO	5285-96	MW103	mg/L
Aluminum	0.75	<	NO	5142-97	MW103	mg/L
Aluminum	0.289		YES	4697-94	MW106	mg/L
Aluminum	0.62	<	NO	7272-94	MW106	mg/L
Aluminum	11		YES	5322-93	MW106	mg/L
Aluminum	0.157		YES	6054-94	MW141	mg/L
Aluminum	0.188		YES	5199-94	MW141	mg/L
Aluminum	0.204		YES	4229-94	MW141	mg/L
Aluminum	0.254		YES	7085-93	MW141	mg/L
Aluminum	0.486		YES	6092-93	MW141	mg/L
Aluminum	0.524		YES	6080-93	MW141	mg/L
Aluminum	0.62	<	NO	6868-94	MW141	mg/L
Aluminum	0.123		YES	4233-94	MW142	mg/L
Aluminum	0.166		YES	6058-94	MW142	mg/L
Aluminum	0.169		YES	5203-94	MW142	mg/L
Aluminum	0.267		YES	6096-93	MW142	mg/L
Aluminum	0.267		YES	7089-93	MW142	mg/L
Aluminum	0.501		YES	6084-93	MW142	mg/L
Aluminum	0.62	<	NO	6872-94	MW142	mg/L
Aluminum	0.625	N*<	NO	5317-96	MW142	mg/L
Aluminum	0.75	<	NO	5147-97	MW142	mg/L
Aluminum	0.625	N*<	NO	5321-96	MW150	mg/L
Aluminum	0.75	<	NO	5148-97	MW150	mg/L
Aluminum	1.01		YES	4789-94	MW150	mg/L
Aluminum	2.22		YES	5650-93	MW150	mg/L
Aluminum	0.172		YES	7311-93	MW199	mg/L
Aluminum	0.721		YES	6074-94	MW199	mg/L
Aluminum	1.2		YES	6888-94	MW199	mg/L
Aluminum	1.3		YES	5260-94	MW199	mg/L
Aluminum	2.08		YES	4312-94	MW199	mg/L
Aluminum	2.42		YES	5558-97	MW199	mg/L
Aluminum	2.6		YES	5984-93	MW199	mg/L
Aluminum	4.77		YES	5170-93	MW199	mg/L

CORRECTED DATA SET

	MW 103	MW 106	MW 141	MW 142	MW 150	MW 199	Overall	Weighted
	Aluminum							
	0.1	0.289	0.157	0.123	0.625	0.172		
	0.112	0.289	0.188	0.166	0.75	0.721		
	0.115	0.289	0.204	0.169	1.01	1.2		
	0.125		0.254	0.267	2.22	1.3		
	0.206		0.486	0.267		2.08		
	0.243		0.524	0.501		2.42		
	0.243		0.524	0.501		2.6		
	0.243			0.501		2.6		
	0.243			0.501				
Min	0.100	0.289	0.157	0.123	0.625	0.172	0.100	
Max	0.243	0.289	0.524	0.501	2.220	2.600	2.600	
Average	0.181	0.289	0.334	0.333	1.151	1.637	0.638	0.654
Number	9	3	7	9	4	8	40	



MW 103 - Two nondetects greater than maximum detected value set to maximum detected value.

MW 106 - Detection at 11 mg/L declared an outlier and changed to maximum detected value; nondetect greater than new maximum detected value set to maximum detected value.

MW 141 - One nondetect with a value greater than the maximum detected value reduced to the maximum detected value.

MW 142 - Three nondetects greater than maximum detected value set to maximum detected value.

MW 150 - Data were not modifed.

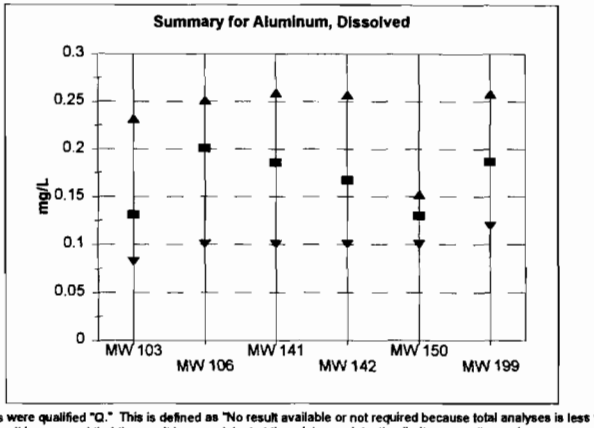
MW 199 - Detection at 4.77 mg/L declared an outlier and changed to new maximum detected value at 2.6 mg/L.

Summary of RGA Background Well Inorganic Chemical Data

ANALYSIS	RESULT	QUALIFIER	DETECT?	SAMPLE ID	STATION ID	UNITS
Aluminum, Dissolved	0.082		YES	6026-94	MW103	mg/L
Aluminum, Dissolved	0.1	<	NO	5944-93	MW103	mg/L
Aluminum, Dissolved	0.1	<	NO	7299-93	MW103	mg/L
Aluminum, Dissolved	0.1	<	NO	5187-94	MW103	mg/L
Aluminum, Dissolved	0.101		YES	4272-94	MW103	mg/L
Aluminum, Dissolved	0.232		YES	5178-93	MW103	mg/L
Aluminum, Dissolved	0.625	<	NO	6774-94	MW103	mg/L
Aluminum, Dissolved		Q	NO	5285-96	MW103	
Aluminum, Dissolved	0.1	<	NO	4697-94	MW106	mg/L
Aluminum, Dissolved	0.251		YES	5322-93	MW106	mg/L
Aluminum, Dissolved	0.62	<	NO	7272-94	MW106	mg/L
Aluminum, Dissolved	0.1	<	NO	4229-94	MW141	mg/L
Aluminum, Dissolved	0.1	<	NO	5199-94	MW141	mg/L
Aluminum, Dissolved	0.153		YES	6054-94	MW141	mg/L
Aluminum, Dissolved	0.179		YES	7085-93	MW141	mg/L
Aluminum, Dissolved	0.25		YES	6080-93	MW141	mg/L
Aluminum, Dissolved	0.259		YES	6092-93	MW141	mg/L
Aluminum, Dissolved	0.62	<	NO	6868-94	MW141	mg/L
Aluminum, Dissolved	0.1	<	NO	4233-94	MW142	mg/L
Aluminum, Dissolved	0.1	<	NO	5203-94	MW142	mg/L
Aluminum, Dissolved	0.162		YES	6058-94	MW142	mg/L
Aluminum, Dissolved	0.171		YES	6084-93	MW142	mg/L
Aluminum, Dissolved	0.188		YES	7089-93	MW142	mg/L
Aluminum, Dissolved	0.257		YES	6096-93	MW142	mg/L
Aluminum, Dissolved	0.62	<	NO	6872-94	MW142	mg/L
Aluminum, Dissolved		Q	NO	5317-96	MW142	
Aluminum, Dissolved	0.137		YES	4789-94	MW150	mg/L
Aluminum, Dissolved	0.152		YES	5650-93	MW150	mg/L
Aluminum, Dissolved		Q	NO	5321-96	MW150	
Aluminum, Dissolved	0.119		YES	6074-94	MW199	mg/L
Aluminum, Dissolved	0.124		YES	4312-94	MW199	mg/L
Aluminum, Dissolved	0.137		YES	5170-93	MW199	mg/L
Aluminum, Dissolved	0.153		YES	5984-93	MW199	mg/L
Aluminum, Dissolved	0.258		YES	5260-94	MW199	mg/L
Aluminum, Dissolved	0.62	<	NO	6888-94	MW199	mg/L
Aluminum, Dissolved	1.68		YES	7311-93	MW199	mg/L

CORRECTED DATA SET

	MW 103	MW 106	MW 141	MW 142	MW 150	MW 199	Overall	Weighted
	Aluminum, Dissolved							
	0.082	0.1	0.1	0.1	0.137	0.119		
	0.1	0.251	0.1	0.1	0.152	0.124		
	0.1	0.251	0.153	0.162	0.1	0.137		
	0.1		0.179	0.171		0.153		
	0.101		0.25	0.188		0.258		
	0.232		0.259	0.257		0.258		
	0.232		0.259	0.257		0.258		
	0.1			0.1				
Min	0.082	0.100	0.100	0.100	0.100	0.119	0.082	
Max	0.232	0.251	0.259	0.257	0.152	0.258	0.259	
Average	0.131	0.201	0.186	0.167	0.130	0.187	0.166	0.167
Number	8	3	7	8	3	7	36	



Several results were qualified "Q." This is defined as "No result available or not required because total analyses is less than PQL." For these instances, it is assumed that the result is a nondetect at the minimum detection limit across all samples.

MW 103 - One nondetect greater than maximum detected value set to maximum detected value; one "Q" qualified result value changed to minimum detection limit for samples from this well (0.1 mg/L).

MW 106 - One nondetect with a value greater than the maximum detected value reduced to the maximum detected value.

MW 141 - One nondetect with a value greater than the maximum detected value reduced to the maximum detected value.

MW 142 - One nondetect with a value greater than the maximum detected value set to maximum detected value; one "Q" qualified result given value of minimum detection limit for samples from this well (0.1 mg/L).

MW 150 - One "Q" qualified result given value of minimum detection limit for aluminum, dissolved in samples from other wells (0.1 mg/L) because there were no detection limits less than the maximum detected concentration for samples from this well.

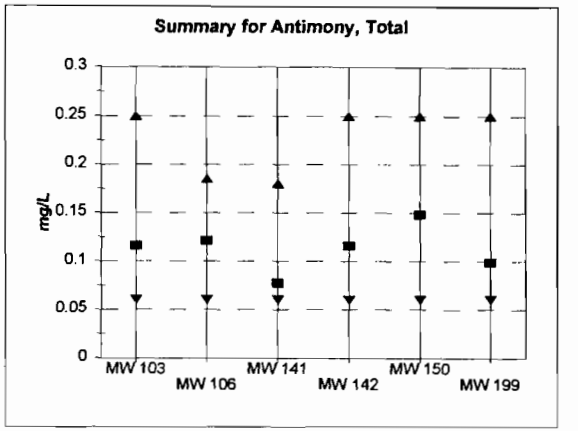
MW 199 - One nondetect greater than the maximum detected value reduced to maximum detected value; maximum detected value within this well was greater than other values; this value was reduced to the next greatest detected value.

Summary of RGA Background Well Inorganic Chemical Data

ANALYSIS	RESULT	QUALIFIER	DETECT?	SAMPLE ID	STATION ID	UNITS
Antimony	0.06	<	NO	5178-93	MW103	mg/L
Antimony	0.06	<	NO	5944-93	MW103	mg/L
Antimony	0.06	<	NO	7299-93	MW103	mg/L
Antimony	0.06	<	NO	4272-94	MW103	mg/L
Antimony	0.06	<	NO	5187-94	MW103	mg/L
Antimony	0.06	<	NO	6026-94	MW103	mg/L
Antimony	0.18	<	NO	6774-94	MW103	mg/L
Antimony	0.185	<	NO	5440-95	MW103	mg/L
Antimony	0.185	J<	NO	5285-96	MW103	mg/L
Antimony	0.25	<	NO	5142-97	MW103	mg/L
Antimony	0.06	<	NO	5322-93	MW106	mg/L
Antimony	0.06	<	NO	4697-94	MW106	mg/L
Antimony	0.18	<	NO	7272-94	MW106	mg/L
Antimony	0.185	<	NO	5444-95	MW106	mg/L
Antimony	0.06	<	NO	6080-93	MW141	mg/L
Antimony	0.06	<	NO	6092-93	MW141	mg/L
Antimony	0.06	<	NO	7085-93	MW141	mg/L
Antimony	0.06	<	NO	4229-94	MW141	mg/L
Antimony	0.06	<	NO	5199-94	MW141	mg/L
Antimony	0.06	<	NO	6054-94	MW141	mg/L
Antimony	0.18	<	NO	6868-94	MW141	mg/L
Antimony	0.06	<	NO	6084-93	MW142	mg/L
Antimony	0.06	<	NO	6096-93	MW142	mg/L
Antimony	0.06	<	NO	7089-93	MW142	mg/L
Antimony	0.06	<	NO	4233-94	MW142	mg/L
Antimony	0.06	<	NO	5203-94	MW142	mg/L
Antimony	0.06	<	NO	6058-94	MW142	mg/L
Antimony	0.18	<	NO	6872-94	MW142	mg/L
Antimony	0.185	<	NO	5464-95	MW142	mg/L
Antimony	0.185	J<	NO	5317-96	MW142	mg/L
Antimony	0.25	<	NO	5147-97	MW142	mg/L
Antimony	0.06	<	NO	5650-93	MW150	mg/L
Antimony	0.06	<	NO	4789-94	MW150	mg/L
Antimony	0.185	<	NO	5468-95	MW150	mg/L
Antimony	0.185	J<	NO	5321-96	MW150	mg/L
Antimony	0.25	<	NO	5148-97	MW150	mg/L
Antimony	0.06	<	NO	5170-93	MW199	mg/L
Antimony	0.06	<	NO	5984-93	MW199	mg/L
Antimony	0.06	<	NO	7311-93	MW199	mg/L
Antimony	0.06	<	NO	4312-94	MW199	mg/L
Antimony	0.06	<	NO	5260-94	MW199	mg/L
Antimony	0.06	<	NO	6074-94	MW199	mg/L
Antimony	0.18	<	NO	6888-94	MW199	mg/L
Antimony	0.25	<	NO	5558-97	MW199	mg/L

CORRECTED DATA SET

	MW 103	MW 106	MW 141	MW 142	MW 150	MW 199	Overall	Weighted
	Antimony							
	0.06	0.06	0.06	0.06	0.06	0.06		
	0.06	0.06	0.06	0.06	0.06	0.06		
	0.06	0.18	0.06	0.06	0.185	0.06		
	0.06	0.185	0.06	0.06	0.185	0.06		
	0.06		0.06	0.06	0.25	0.06		
	0.06		0.06	0.06		0.06		
	0.18		0.18	0.18		0.18		
	0.185			0.185		0.25		
	0.185			0.185				
	0.25			0.25				
Min	0.060	0.060	0.060	0.060	0.060	0.060	0.060	
Max	0.250	0.185	0.180	0.250	0.250	0.250	0.250	
Average	0.116	0.121	0.077	0.116	0.148	0.099	0.111	0.113
Number	10	4	7	10	5	8	44	



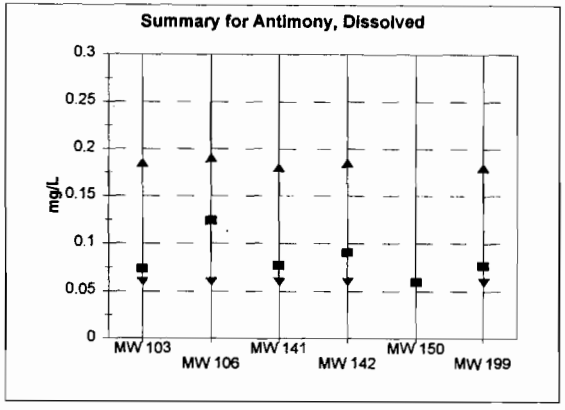
All results for this well were below their respective detection limits; therefore the plot is simply a depiction of the detection limits used for samples taken from the wells.

Summary of RGA Background Well Inorganic Chemical Data

ANALYSIS	RESULT	QUALIFIER	DETECT?	SAMPLE ID	STATION ID	UNITS
Antimony, Dissolved	0.06	<	NO	5178-93	MW103	mg/L
Antimony, Dissolved	0.06	<	NO	5944-93	MW103	mg/L
Antimony, Dissolved	0.06	<	NO	7299-93	MW103	mg/L
Antimony, Dissolved	0.06	<	NO	4272-94	MW103	mg/L
Antimony, Dissolved	0.06	<	NO	5187-94	MW103	mg/L
Antimony, Dissolved	0.06	<	NO	6026-94	MW103	mg/L
Antimony, Dissolved	0.185	<	NO	6774-94	MW103	mg/L
Antimony, Dissolved		Q	NO	5440-95	MW103	
Antimony, Dissolved		Q	NO	5285-96	MW103	
Antimony, Dissolved	0.06	<	NO	5322-93	MW106	mg/L
Antimony, Dissolved	0.06	<	NO	4697-94	MW106	mg/L
Antimony, Dissolved	0.185	<	NO	5444-95	MW106	mg/L
Antimony, Dissolved	0.19	<	NO	7272-94	MW106	mg/L
Antimony, Dissolved	0.06	<	NO	6080-93	MW141	mg/L
Antimony, Dissolved	0.06	<	NO	6092-93	MW141	mg/L
Antimony, Dissolved	0.06	<	NO	7085-93	MW141	mg/L
Antimony, Dissolved	0.06	<	NO	4229-94	MW141	mg/L
Antimony, Dissolved	0.06	<	NO	5199-94	MW141	mg/L
Antimony, Dissolved	0.06	<	NO	6054-94	MW141	mg/L
Antimony, Dissolved	0.18	<	NO	6868-94	MW141	mg/L
Antimony, Dissolved	0.06	<	NO	6084-93	MW142	mg/L
Antimony, Dissolved	0.06	<	NO	6096-93	MW142	mg/L
Antimony, Dissolved	0.06	<	NO	7089-93	MW142	mg/L
Antimony, Dissolved	0.06	<	NO	4233-94	MW142	mg/L
Antimony, Dissolved	0.06	<	NO	5203-94	MW142	mg/L
Antimony, Dissolved	0.06	<	NO	6058-94	MW142	mg/L
Antimony, Dissolved	0.18	<	NO	6872-94	MW142	mg/L
Antimony, Dissolved	0.185	<	NO	5464-95	MW142	mg/L
Antimony, Dissolved		Q	NO	5317-96	MW142	
Antimony, Dissolved	0.06	<	NO	5650-93	MW150	mg/L
Antimony, Dissolved	0.06	<	NO	4789-94	MW150	mg/L
Antimony, Dissolved		Q	NO	5468-95	MW150	
Antimony, Dissolved		Q	NO	5321-96	MW150	
Antimony, Dissolved	0.06	<	NO	5170-93	MW199	mg/L
Antimony, Dissolved	0.06	<	NO	5984-93	MW199	mg/L
Antimony, Dissolved	0.06	<	NO	7311-93	MW199	mg/L
Antimony, Dissolved	0.06	<	NO	4312-94	MW199	mg/L
Antimony, Dissolved	0.06	<	NO	5260-94	MW199	mg/L
Antimony, Dissolved	0.06	<	NO	6074-94	MW199	mg/L
Antimony, Dissolved	0.18	<	NO	6888-94	MW199	mg/L

CORRECTED DATA SET

	MW 103	MW 106	MW 141	MW 142	MW 150	MW 199	Overall	Weighted
	Antimony, Dissolved							
	0.06	0.06	0.06	0.06	0.06	0.06		
	0.06	0.06	0.06	0.06	0.06	0.06		
	0.06	0.185	0.06	0.06		0.06		
	0.06	0.19	0.06	0.06		0.06		
	0.06		0.06	0.06		0.06		
	0.06		0.06	0.06		0.06		
	0.185		0.18	0.18		0.18		
	0.06			0.185				
	0.06							
Min	0.060	0.060	0.060	0.060	0.060	0.060	0.060	
Max	0.185	0.190	0.180	0.185	0.060	0.180	0.190	
Average	0.074	0.124	0.077	0.091	0.060	0.077	0.083	0.084
Number	9	4	7	8	2	7	37	



All results for this well were below their respective detection limits; therefore the plot is simply a depiction of the detection limits used for samples taken from the wells.

MW 103 - Two "Q" qualified result values changed to minimum detection limit for samples from this well (0.06 mg/L).

MW 106 - Data not modified.

MW 141 - Data not modified.

MW 142 - One "Q" qualified result given value of minimum detection limit for samples from this well (0.06 mg/L).

MW 150 - Two "Q" qualified results given value of minimum detection limit for samplesfrom this well (0.06 mg/l).

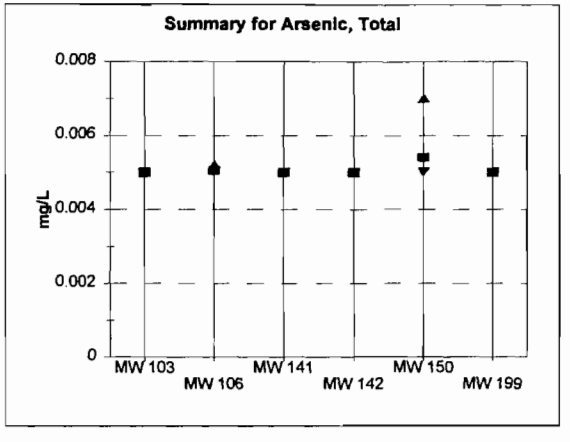
MW 199 - Data not modified.

Summary of RGA Background Well Inorganic Chemical Data

ANALYSIS	RESULT	QUALIFIER	DETECT?	SAMPLE ID	STATION ID	UNITS
Arsenic	0.005	<	NO	5178-93	MW103	mg/L
Arsenic	0.005	<	NO	5944-93	MW103	mg/L
Arsenic	0.005	<	NO	7299-93	MW103	mg/L
Arsenic	0.005	<	NO	4272-94	MW103	mg/L
Arsenic	0.005	<	NO	5187-94	MW103	mg/L
Arsenic	0.005	<	NO	6026-94	MW103	mg/L
Arsenic	0.005	<	NO	6774-94	MW103	mg/L
Arsenic	0.005	<	NO	5440-95	MW103	mg/L
Arsenic	0.005	<	NO	5285-96	MW103	mg/L
Arsenic	0.005	<	NO	5142-97	MW103	mg/L
Arsenic	0.005	<	NO	4697-94	MW106	mg/L
Arsenic	0.005	<	NO	7272-94	MW106	mg/L
Arsenic	0.005	<	NO	5444-95	MW106	mg/L
Arsenic	0.0052		YES	5322-93	MW106	mg/L
Arsenic	0.005	<	NO	6080-93	MW141	mg/L
Arsenic	0.005	<	NO	6092-93	MW141	mg/L
Arsenic	0.005	<	NO	7085-93	MW141	mg/L
Arsenic	0.005	<	NO	4229-94	MW141	mg/L
Arsenic	0.005	<	NO	5199-94	MW141	mg/L
Arsenic	0.005	<	NO	6054-94	MW141	mg/L
Arsenic	0.005	<	NO	6868-94	MW141	mg/L
Arsenic	0.005	<	NO	6084-93	MW142	mg/L
Arsenic	0.005	<	NO	6096-93	MW142	mg/L
Arsenic	0.005	<	NO	7089-93	MW142	mg/L
Arsenic	0.005	<	NO	4233-94	MW142	mg/L
Arsenic	0.005	<	NO	5203-94	MW142	mg/L
Arsenic	0.005	<	NO	6058-94	MW142	mg/L
Arsenic	0.005	<	NO	6872-94	MW142	mg/L
Arsenic	0.005	<	NO	5464-95	MW142	mg/L
Arsenic	0.005	<	NO	5317-96	MW142	mg/L
Arsenic	0.005	<	NO	5147-97	MW142	mg/L
Arsenic	0.005	<	NO	5650-93	MW150	mg/L
Arsenic	0.005	<	NO	4789-94	MW150	mg/L
Arsenic	0.005	<	NO	5468-95	MW150	mg/L
Arsenic	0.005	<	NO	5321-96	MW150	mg/L
Arsenic	0.007		YES	5148-97	MW150	mg/L
Arsenic	0.005	<	NO	5170-93	MW199	mg/L
Arsenic	0.005	<	NO	5984-93	MW199	mg/L
Arsenic	0.005	<	NO	7311-93	MW199	mg/L
Arsenic	0.005	<	NO	4312-94	MW199	mg/L
Arsenic	0.005	<	NO	5260-94	MW199	mg/L
Arsenic	0.005	<	NO	6074-94	MW199	mg/L
Arsenic	0.005	<	NO	6888-94	MW199	mg/L
Arsenic	0.005	<	NO	5558-97	MW199	mg/L

CORRECTED DATA SET

	MW 103 Arsenic	MW 106	MW 141	MW 142	MW 150	MW 199	Overall	Weighted
	0.005	0.005	0.005	0.005	0.005	0.005		
	0.005	0.005	0.005	0.005	0.005	0.005		
	0.005	0.005	0.005	0.005	0.005	0.005		
	0.005	0.0052	0.005	0.005	0.005	0.005		
	0.005		0.005	0.005	0.007	0.005		
	0.005		0.005	0.005		0.005		
	0.005		0.005	0.005		0.005		
	0.005			0.005		0.005		
	0.005			0.005				
	0.005			0.005				
Min	0.005	0.005	0.005	0.005	0.005	0.005	0.005	
Max	0.005	0.005	0.005	0.005	0.007	0.005	0.007	
Average	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005
Number	10	4	7	10	5	8	44	



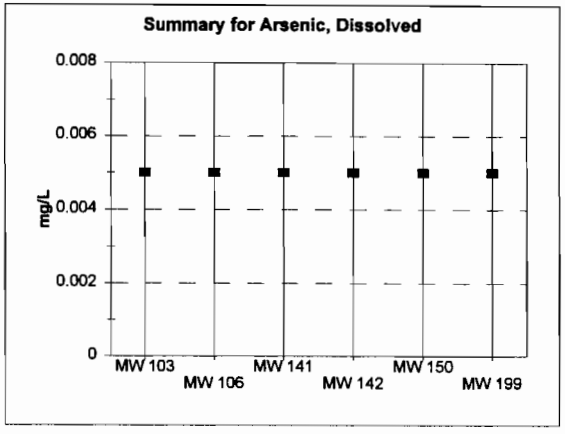
Data for Arsenic, Total was not modified.

Summary of RGA Background Well Inorganic Chemical Data

ANALYSIS	RESULT	QUALIFIER	DETECT?	SAMPLE ID	STATION ID	UNITS
Arsenic, Dissolved		Q	NO	5178-93	MW103	
Arsenic, Dissolved		Q	NO	5944-93	MW103	
Arsenic, Dissolved		Q	NO	7299-93	MW103	
Arsenic, Dissolved		Q	NO	4272-94	MW103	
Arsenic, Dissolved		Q	NO	5187-94	MW103	
Arsenic, Dissolved		Q	NO	6026-94	MW103	
Arsenic, Dissolved		Q	NO	6774-94	MW103	
Arsenic, Dissolved		Q	NO	5440-95	MW103	
Arsenic, Dissolved		Q	NO	5285-96	MW103	
Arsenic, Dissolved		Q	NO	5142-97	MW103	
Arsenic, Dissolved	0.005	<	NO	5322-93	MW106	mg/L
Arsenic, Dissolved		Q	NO	4697-94	MW106	
Arsenic, Dissolved		Q	NO	7272-94	MW106	
Arsenic, Dissolved		Q	NO	5444-95	MW106	
Arsenic, Dissolved		Q	NO	6080-93	MW141	
Arsenic, Dissolved		Q	NO	6092-93	MW141	
Arsenic, Dissolved		Q	NO	7085-93	MW141	
Arsenic, Dissolved		Q	NO	4229-94	MW141	
Arsenic, Dissolved		Q	NO	5199-94	MW141	
Arsenic, Dissolved		Q	NO	6054-94	MW141	
Arsenic, Dissolved		Q	NO	6868-94	MW141	
Arsenic, Dissolved		Q	NO	6084-93	MW142	
Arsenic, Dissolved		Q	NO	6096-93	MW142	
Arsenic, Dissolved		Q	NO	7089-93	MW142	
Arsenic, Dissolved		Q	NO	4233-94	MW142	
Arsenic, Dissolved		Q	NO	5203-94	MW142	
Arsenic, Dissolved		Q	NO	6058-94	MW142	
Arsenic, Dissolved		Q	NO	6872-94	MW142	
Arsenic, Dissolved		Q	NO	5464-95	MW142	
Arsenic, Dissolved		Q	NO	5317-96	MW142	
Arsenic, Dissolved		Q	NO	5147-97	MW142	
Arsenic, Dissolved	0.005	<	NO	5148-97	MW150	mg/L
Arsenic, Dissolved		Q	NO	5650-93	MW150	
Arsenic, Dissolved		Q	NO	4789-94	MW150	
Arsenic, Dissolved		Q	NO	5468-95	MW150	
Arsenic, Dissolved		Q	NO	5321-96	MW150	
Arsenic, Dissolved		Q	NO	5170-93	MW199	
Arsenic, Dissolved		Q	NO	5984-93	MW199	
Arsenic, Dissolved		Q	NO	7311-93	MW199	
Arsenic, Dissolved		Q	NO	4312-94	MW199	
Arsenic, Dissolved		Q	NO	5260-94	MW199	
Arsenic, Dissolved		Q	NO	6074-94	MW199	
Arsenic, Dissolved		Q	NO	6888-94	MW199	
Arsenic, Dissolved		Q	NO	5558-97	MW199	

CORRECTED DATA SET

	MW 103	MW 106	MW 141	MW 142	MW 150	MW 199	Overall	Weighted
	Arsenic, Dissolved							
	0.005	0.005	0.005	0.005	0.005	0.005		
	0.005	0.005	0.005	0.005	0.005	0.005		
	0.005	0.005	0.005	0.005	0.005	0.005		
	0.005	0.005	0.005	0.005	0.005	0.005		
	0.005		0.005	0.005	0.005	0.005		
	0.005		0.005	0.005		0.005		
	0.005		0.005	0.005		0.005		
	0.005			0.005		0.005		
	0.005			0.005				
	0.005			0.005				
Min	0.005	0.005	0.005	0.005	0.005	0.005	0.005	
Max	0.005	0.005	0.005	0.005	0.005	0.005	0.005	
Average	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005
Number	10	4	7	10	5	8	44	



All results for this well were below their respective detection limits; therefore the plot is simply a depiction of the detection limits used for samples taken from the wells.

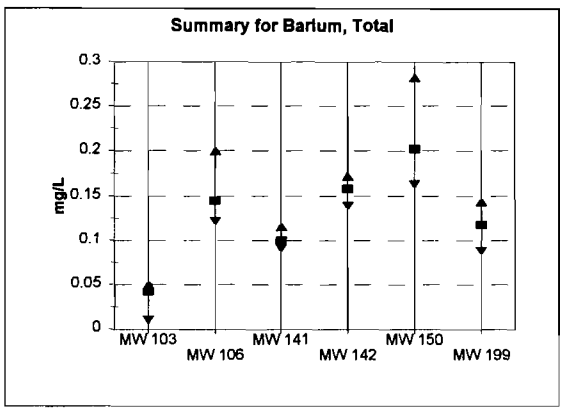
All "Q" qualified resultsin these data set to the minimum detection limit over all wells (0.005 mg/l).

Summary of RGA Background Well Inorganic Chemical Data

ANALYSIS	RESULT	QUALIFIER	DETECT?	SAMPLE ID	STATION ID	UNITS
Barium	0.01		YES	5944-93	MW103	mg/L
Barium	0.038		YES	7299-93	MW103	mg/L
Barium	0.039		YES	6026-94	MW103	mg/L
Barium	0.04		YES	4272-94	MW103	mg/L
Barium	0.046		YES	5187-94	MW103	mg/L
Barium	0.048		YES	5178-93	MW103	mg/L
Barium	0.05		YES	5440-95	MW103	mg/L
Barium	0.05	<	NO	5142-97	MW103	mg/L
Barium	0.07	<	NO	6774-94	MW103	mg/L
Barium	0.07	<	NO	5285-96	MW103	mg/L
Barium	0.122		YES	5444-95	MW106	mg/L
Barium	0.127		YES	4697-94	MW106	mg/L
Barium	0.13		YES	7272-94	MW106	mg/L
Barium	0.2		YES	5322-93	MW106	mg/L
Barium	0.091		YES	6054-94	MW141	mg/L
Barium	0.094		YES	6080-93	MW141	mg/L
Barium	0.094		YES	7085-93	MW141	mg/L
Barium	0.096		YES	6868-94	MW141	mg/L
Barium	0.099		YES	4229-94	MW141	mg/L
Barium	0.11		YES	5199-94	MW141	mg/L
Barium	0.116		YES	6092-93	MW141	mg/L
Barium	0.139		YES	5203-94	MW142	mg/L
Barium	0.145		YES	5464-95	MW142	mg/L
Barium	0.149		YES	7089-93	MW142	mg/L
Barium	0.156		YES	6084-93	MW142	mg/L
Barium	0.16		YES	4233-94	MW142	mg/L
Barium	0.16		YES	6872-94	MW142	mg/L
Barium	0.165		YES	5317-96	MW142	mg/L
Barium	0.167		YES	5147-97	MW142	mg/L
Barium	0.168		YES	6096-93	MW142	mg/L
Barium	0.172		YES	6058-94	MW142	mg/L
Barium	0.163		YES	4789-94	MW150	mg/L
Barium	0.176		YES	5321-96	MW150	mg/L
Barium	0.19		YES	5468-95	MW150	mg/L
Barium	0.199		YES	5650-93	MW150	mg/L
Barium	0.282		YES	5148-97	MW150	mg/L
Barium	0.088		YES	5170-93	MW199	mg/L
Barium	0.094		YES	5260-94	MW199	mg/L
Barium	0.116		YES	6074-94	MW199	mg/L
Barium	0.117		YES	7311-93	MW199	mg/L
Barium	0.12		YES	6888-94	MW199	mg/L
Barium	0.132		YES	4312-94	MW199	mg/L
Barium	0.132		YES	5558-97	MW199	mg/L
Barium	0.144		YES	5984-93	MW199	mg/L

CORRECTED DATA SET

	MW 103	MW 106	MW 141	MW 142	MW 150	MW 199	Overall	Weighted
	Barium							
	0.01	0.122	0.091	0.139	0.163	0.088		
	0.038	0.127	0.094	0.145	0.176	0.094		
	0.039	0.13	0.094	0.149	0.19	0.116		
	0.04	0.2	0.096	0.156	0.199	0.117		
	0.046		0.099	0.16	0.282	0.12		
	0.048		0.11	0.16		0.132		
	0.05		0.116	0.165		0.132		
	0.05			0.167		0.144		
	0.05			0.168				
	0.05			0.172				
Min	0.010	0.122	0.091	0.139	0.163	0.088	0.010	
Max	0.050	0.200	0.116	0.172	0.282	0.144	0.282	
Average	0.042	0.145	0.100	0.158	0.202	0.118	0.119	0.127
Number	10	4	7	10	5	8	44	



MW 103 - Two nondetects with results greater than the maximum detected value were changed to the maximum detected value (0.05 mg/L).

MW 106 - Data not modified.

MW 141 - Data not modified.

MW 142 - Data not modified.

MW 150 - Data were not modifed.

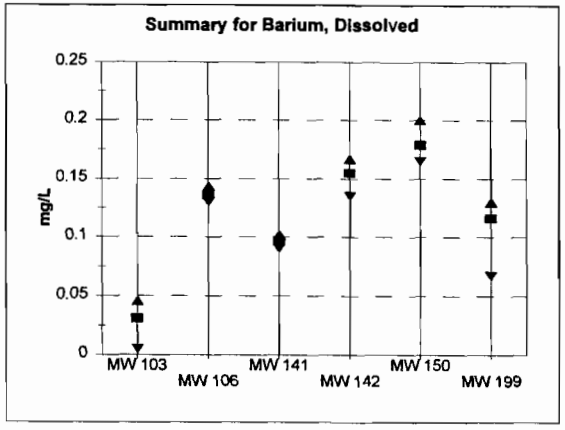
MW 199 - Data not modified.

Summary of RGA Background Well Inorganic Chemical Data

ANALYSIS	RESULT	QUALIFIER	DETECT?	SAMPLE ID	STATION ID	UNITS
Barium, Dissolved	0.005	<	NO	5944-93	MW103	mg/L
Barium, Dissolved	0.031		YES	6026-94	MW103	mg/L
Barium, Dissolved	0.039		YES	7299-93	MW103	mg/L
Barium, Dissolved	0.041		YES	4272-94	MW103	mg/L
Barium, Dissolved	0.045		YES	5178-93	MW103	mg/L
Barium, Dissolved	0.046		YES	5187-94	MW103	mg/L
Barium, Dissolved	0.07	<	NO	6774-94	MW103	mg/L
Barium, Dissolved	0.07	<	NO	5440-95	MW103	mg/L
Barium, Dissolved		Q	NO	5285-96	MW103	
Barium, Dissolved		Q	NO	5142-97	MW103	
Barium, Dissolved	0.13		YES	7272-94	MW106	mg/L
Barium, Dissolved	0.134		YES	4697-94	MW106	mg/L
Barium, Dissolved	0.136		YES	5444-95	MW106	mg/L
Barium, Dissolved	0.143		YES	5322-93	MW106	mg/L
Barium, Dissolved	0.09		YES	5199-94	MW141	mg/L
Barium, Dissolved	0.092		YES	7085-93	MW141	mg/L
Barium, Dissolved	0.095		YES	6080-93	MW141	mg/L
Barium, Dissolved	0.096		YES	4229-94	MW141	mg/L
Barium, Dissolved	0.097		YES	6868-94	MW141	mg/L
Barium, Dissolved	0.101		YES	6054-94	MW141	mg/L
Barium, Dissolved	0.102		YES	6092-93	MW141	mg/L
Barium, Dissolved	0.135		YES	5147-97	MW142	mg/L
Barium, Dissolved	0.146		YES	5203-94	MW142	mg/L
Barium, Dissolved	0.147		YES	5317-96	MW142	mg/L
Barium, Dissolved	0.15		YES	7089-93	MW142	mg/L
Barium, Dissolved	0.152		YES	6084-93	MW142	mg/L
Barium, Dissolved	0.16		YES	6872-94	MW142	mg/L
Barium, Dissolved	0.162		YES	4233-94	MW142	mg/L
Barium, Dissolved	0.164		YES	6096-93	MW142	mg/L
Barium, Dissolved	0.166		YES	6058-94	MW142	mg/L
Barium, Dissolved	0.167		YES	5464-95	MW142	mg/L
Barium, Dissolved	0.165		YES	5321-96	MW150	mg/L
Barium, Dissolved	0.167		YES	5148-97	MW150	mg/L
Barium, Dissolved	0.177		YES	5650-93	MW150	mg/L
Barium, Dissolved	0.185		YES	4789-94	MW150	mg/L
Barium, Dissolved	0.2		YES	5468-95	MW150	mg/L
Barium, Dissolved	0.067		YES	5170-93	MW199	mg/L
Barium, Dissolved	0.118		YES	5558-97	MW199	mg/L
Barium, Dissolved	0.119		YES	5260-94	MW199	mg/L
Barium, Dissolved	0.12		YES	6888-94	MW199	mg/L
Barium, Dissolved	0.121		YES	6074-94	MW199	mg/L
Barium, Dissolved	0.125		YES	7311-93	MW199	mg/L
Barium, Dissolved	0.13		YES	5984-93	MW199	mg/L
Barium, Dissolved	0.13		YES	4312-94	MW199	mg/L

CORRECTED DATA SET

	MW 103	MW 106	MW 141	MW 142	MW 150	MW 199	Overall	Weighted
	Barium, Dissolved							
	0.005	0.13	0.09	0.135	0.165	0.067		
	0.031	0.134	0.092	0.146	0.167	0.118		
	0.039	0.136	0.095	0.147	0.177	0.119		
	0.041	0.143	0.096	0.15	0.185	0.12		
	0.045		0.097	0.152	0.2	0.121		
	0.046		0.101	0.16		0.125		
	0.046		0.102	0.162		0.13		
	0.046			0.164		0.13		
	0.005			0.166				
	0.005			0.167				
Min	0.005	0.130	0.090	0.135	0.165	0.067	0.005	
Max	0.046	0.143	0.102	0.167	0.200	0.130	0.200	
Average	0.031	0.136	0.096	0.155	0.179	0.116	0.111	0.119
Number	10	4	7	10	5	8	44	



MW 103 - Two nondetects with results greeter than the maximum detected value were changed to the maximum detected velue (0.046 mg/L); two "Q" qualified data points were assigned the minimum nondetected result.

MW 106 - Data not modified.

MW 141 - Data not modified.

MW 142 - Data not modified.

MW 150 - Data were not modifed.

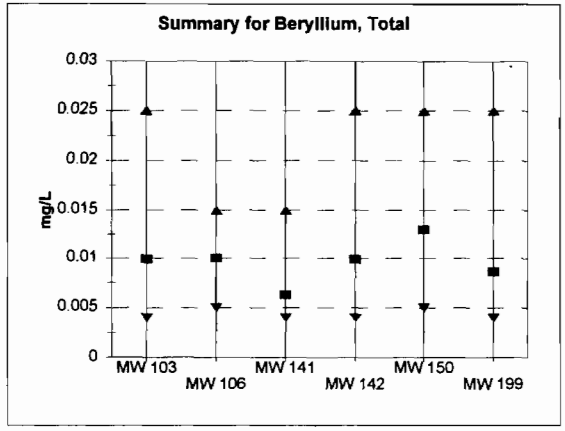
MW 199 - Data not modified.

Summary of RGA Background Well Inorganic Chemical Data

ANALYSIS	RESULT	QUALIFIER	DETECT?	SAMPLE ID	STATION ID	UNITS
Beryllium	0.004	<	NO	6026-94	MW103	mg/L
Beryllium	0.005	<	NO	5178-93	MW103	mg/L
Beryllium	0.005	<	NO	5944-93	MW103	mg/L
Beryllium	0.005	<	NO	7299-93	MW103	mg/L
Beryllium	0.005	<	NO	4272-94	MW103	mg/L
Beryllium	0.005	<	NO	5187-94	MW103	mg/L
Beryllium	0.015	<	NO	6774-94	MW103	mg/L
Beryllium	0.015	<	NO	5440-95	MW103	mg/L
Beryllium	0.015	<	NO	5285-96	MW103	mg/L
Beryllium	0.025	<	NO	5142-97	MW103	mg/L
Beryllium	0.005	<	NO	5322-93	MW106	mg/L
Beryllium	0.005	<	NO	4697-94	MW106	mg/L
Beryllium	0.015	<	NO	7272-94	MW106	mg/L
Beryllium	0.015	<	NO	5444-95	MW106	mg/L
Beryllium	0.004	<	NO	6054-94	MW141	mg/L
Beryllium	0.005	<	NO	6080-93	MW141	mg/L
Beryllium	0.005	<	NO	6092-93	MW141	mg/L
Beryllium	0.005	<	NO	7085-93	MW141	mg/L
Beryllium	0.005	<	NO	4229-94	MW141	mg/L
Beryllium	0.005	<	NO	5199-94	MW141	mg/L
Beryllium	0.015	<	NO	6868-94	MW141	mg/L
Beryllium	0.004	<	NO	6058-94	MW142	mg/L
Beryllium	0.005	<	NO	6084-93	MW142	mg/L
Beryllium	0.005	<	NO	6096-93	MW142	mg/L
Beryllium	0.005	<	NO	7089-93	MW142	mg/L
Beryllium	0.005	<	NO	4233-94	MW142	mg/L
Beryllium	0.005	<	NO	5203-94	MW142	mg/L
Beryllium	0.015	<	NO	6872-94	MW142	mg/L
Beryllium	0.015	<	NO	5464-95	MW142	mg/L
Beryllium	0.015	<	NO	5317-96	MW142	mg/L
Beryllium	0.025	<	NO	5147-97	MW142	mg/L
Beryllium	0.005	<	NO	5650-93	MW150	mg/L
Beryllium	0.005	<	NO	4789-94	MW150	mg/L
Beryllium	0.015	<	NO	5468-95	MW150	mg/L
Beryllium	0.015	<	NO	5321-96	MW150	mg/L
Beryllium	0.025	<	NO	5148-97	MW150	mg/L
Beryllium	0.004	<	NO	6074-94	MW199	mg/L
Beryllium	0.005	<	NO	5170-93	MW199	mg/L
Beryllium	0.005	<	NO	5984-93	MW199	mg/L
Beryllium	0.005	<	NO	7311-93	MW199	mg/L
Beryllium	0.005	<	NO	4312-94	MW199	mg/L
Beryllium	0.005	<	NO	5260-94	MW199	mg/L
Beryllium	0.015	<	NO	6888-94	MW199	mg/L
Beryllium	0.025	<	NO	5558-97	MW199	mg/L

CORRECTED DATA SET

	MW 103	MW 106	MW 141	MW 142	MW 150	MW 199	Overall	Weighted
	Beryllium							
	0.004	0.005	0.004	0.004	0.005	0.004		
	0.005	0.005	0.005	0.005	0.005	0.005		
	0.005	0.015	0.005	0.005	0.015	0.005		
	0.005	0.015	0.005	0.005	0.015	0.005		
	0.005		0.005	0.005	0.025	0.005		
	0.005		0.005	0.005		0.005		
	0.015		0.015	0.015		0.015		
	0.015			0.015		0.025		
	0.015			0.015				
	0.025			0.025				
Min	0.004	0.005	0.004	0.004	0.005	0.004	0.004	
Max	0.025	0.015	0.015	0.025	0.025	0.025	0.025	
Average	0.010	0.010	0.006	0.010	0.013	0.009	0.009	0.010
Number	10	4	7	10	5	8	44	



All results for this well were below their respective detection limits; therefore the plot is simply a depiction of the detection limits used for samples taken from the wells.

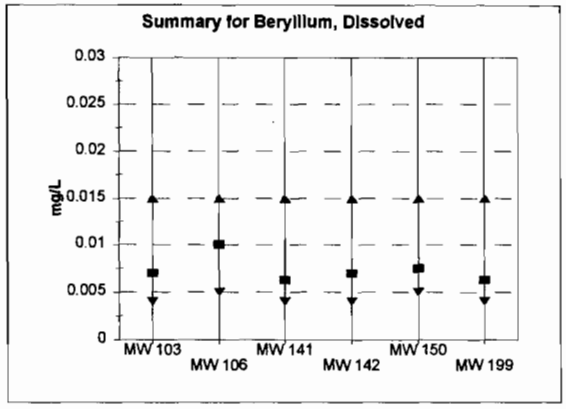
Data for Beryllium, Total were not modified.

Summary of RGA Background Well Inorganic Chemical Data

ANALYSIS	RESULT	QUALIFIER	DETECT?	SAMPLE ID	STATION ID	UNITS
Beryllium, Dissolved	0.004	<	NO	6026-94	MW103	mg/L
Beryllium, Dissolved	0.005	<	NO	5178-93	MW103	mg/L
Beryllium, Dissolved	0.005	<	NO	5944-93	MW103	mg/L
Beryllium, Dissolved	0.005	<	NO	7299-93	MW103	mg/L
Beryllium, Dissolved	0.005	<	NO	4272-94	MW103	mg/L
Beryllium, Dissolved	0.005	<	NO	5187-94	MW103	mg/L
Beryllium, Dissolved	0.015	<	NO	6774-94	MW103	mg/L
Beryllium, Dissolved	0.015	<	NO	5440-95	MW103	mg/L
Beryllium, Dissolved		Q	NO	5285-96	MW103	
Beryllium, Dissolved	0.005	<	NO	5322-93	MW106	mg/L
Beryllium, Dissolved	0.005	<	NO	4697-94	MW106	mg/L
Beryllium, Dissolved	0.015	<	NO	7272-94	MW106	mg/L
Beryllium, Dissolved	0.015	<	NO	5444-95	MW106	mg/L
Beryllium, Dissolved	0.004	<	NO	6054-94	MW141	mg/L
Beryllium, Dissolved	0.005	<	NO	6080-93	MW141	mg/L
Beryllium, Dissolved	0.005	<	NO	6092-93	MW141	mg/L
Beryllium, Dissolved	0.005	<	NO	7085-93	MW141	mg/L
Beryllium, Dissolved	0.005	<	NO	4229-94	MW141	mg/L
Beryllium, Dissolved	0.005	<	NO	5199-94	MW141	mg/L
Beryllium, Dissolved	0.015	<	NO	6868-94	MW141	mg/L
Beryllium, Dissolved	0.004	<	NO	6058-94	MW142	mg/L
Beryllium, Dissolved	0.005	<	NO	6084-93	MW142	mg/L
Beryllium, Dissolved	0.005	<	NO	6096-93	MW142	mg/L
Beryllium, Dissolved	0.005	<	NO	7089-93	MW142	mg/L
Beryllium, Dissolved	0.005	<	NO	4233-94	MW142	mg/L
Beryllium, Dissolved	0.005	<	NO	5203-94	MW142	mg/L
Beryllium, Dissolved	0.015	<	NO	6872-94	MW142	mg/L
Beryllium, Dissolved	0.015	<	NO	5464-95	MW142	mg/L
Beryllium, Dissolved		Q	NO	5317-96	MW142	
Beryllium, Dissolved	0.005	<	NO	5650-93	MW150	mg/L
Beryllium, Dissolved	0.005	<	NO	4789-94	MW150	mg/L
Beryllium, Dissolved	0.015	<	NO	5468-95	MW150	mg/L
Beryllium, Dissolved		Q	NO	5321-96	MW150	
Beryllium, Dissolved	0.004	<	NO	6074-94	MW199	mg/L
Beryllium, Dissolved	0.005	<	NO	5170-93	MW199	mg/L
Beryllium, Dissolved	0.005	<	NO	5984-93	MW199	mg/L
Beryllium, Dissolved	0.005	<	NO	7311-93	MW199	mg/L
Beryllium, Dissolved	0.005	<	NO	4312-94	MW199	mg/L
Beryllium, Dissolved	0.005	<	NO	5260-94	MW199	mg/L
Beryllium, Dissolved	0.015	<	NO	6888-94	MW199	mg/L

CORRECTED DATA SET

	MW 103	MW 106	MW 141	MW 142	MW 150	MW 199	Overall	Weighted
	Beryllium, Dissolved							
	0.004	0.005	0.004	0.004	0.005	0.004		
	0.005	0.005	0.005	0.005	0.005	0.005		
	0.005	0.015	0.005	0.005	0.015	0.005		
	0.005	0.015	0.005	0.005	0.005	0.005		
	0.005		0.005	0.005		0.005		
	0.005		0.005	0.005		0.005		
	0.015		0.015	0.015		0.015		
	0.015			0.015				
	0.004			0.004				
Min	0.004	0.005	0.004	0.004	0.005	0.004	0.004	
Max	0.015	0.015	0.015	0.015	0.015	0.015	0.015	
Average	0.007	0.010	0.006	0.007	0.008	0.006	0.007	0.007
Number	9	4	7	9	4	7	40	



MW 103 - One "Q" qualified result given value of minimum detection limt for samples from this well (0.004 mg/L).

MW 106 - Data not modified.

MW 141 - Data not modified.

MW 142 - One "Q" qualified result given value of minimum detection limit for samples from this well (0.004 mg/L).

MW 150 - One "Q" qualified result given value of minimum detection limit for samples from this well (0.005 mg/L).

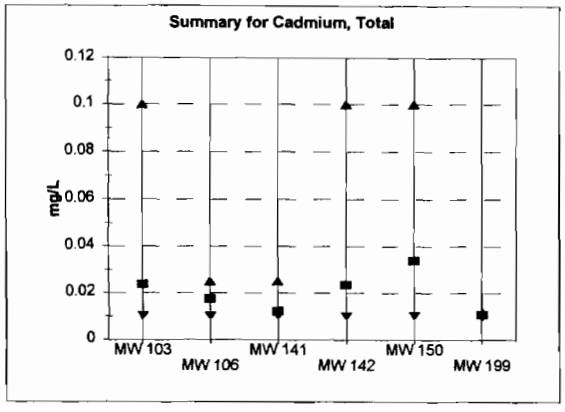
MW 199 - Data not modified.

Summary of RGA Background Well Inorganic Chemical Data

ANALYSIS	RESULT	QUALIFIER	DETECT?	SAMPLE ID	STATION ID	UNITS
Cadmium	0.01	<	NO	5178-93	MW103	mg/L
Cadmium	0.01	<	NO	5944-93	MW103	mg/L
Cadmium	0.01	<	NO	7299-93	MW103	mg/L
Cadmium	0.01	<	NO	4272-94	MW103	mg/L
Cadmium	0.01	<	NO	5187-94	MW103	mg/L
Cadmium	0.01	<	NO	6026-94	MW103	mg/L
Cadmium	0.025	<	NO	6774-94	MW103	mg/L
Cadmium	0.025	<	NO	5440-95	MW103	mg/L
Cadmium	0.025	<	NO	5285-96	MW103	mg/L
Cadmium	0.1	<	NO	5142-97	MW103	mg/L
Cadmium	0.01	<	NO	5322-93	MW106	mg/L
Cadmium	0.01	<	NO	4697-94	MW106	mg/L
Cadmium	0.025	<	NO	7272-94	MW106	mg/L
Cadmium	0.025	<	NO	5444-95	MW106	mg/L
Cadmium	0.01	<	NO	6080-93	MW141	mg/L
Cadmium	0.01	<	NO	6092-93	MW141	mg/L
Cadmium	0.01	<	NO	7085-93	MW141	mg/L
Cadmium	0.01	<	NO	4229-94	MW141	mg/L
Cadmium	0.01	<	NO	5199-94	MW141	mg/L
Cadmium	0.01	<	NO	6054-94	MW141	mg/L
Cadmium	0.025	<	NO	6868-94	MW141	mg/L
Cadmium	0.01	<	NO	6084-93	MW142	mg/L
Cadmium	0.01	<	NO	6096-93	MW142	mg/L
Cadmium	0.01	<	NO	7089-93	MW142	mg/L
Cadmium	0.01	<	NO	4233-94	MW142	mg/L
Cadmium	0.01	<	NO	5203-94	MW142	mg/L
Cadmium	0.01	<	NO	6058-94	MW142	mg/L
Cadmium	0.025	<	NO	6872-94	MW142	mg/L
Cadmium	0.025	<	NO	5464-95	MW142	mg/L
Cadmium	0.025	<	NO	5317-96	MW142	mg/L
Cadmium	0.1	<	NO	5147-97	MW142	mg/L
Cadmium	0.01	<	NO	5650-93	MW150	mg/L
Cadmium	0.01	<	NO	4789-94	MW150	mg/L
Cadmium	0.025	<	NO	5468-95	MW150	mg/L
Cadmium	0.025	<	NO	5321-96	MW150	mg/L
Cadmium	0.1	<	NO	5148-97	MW150	mg/L
Cadmium	0.01	<	NO	5170-93	MW199	mg/L
Cadmium	0.01	<	NO	5984-93	MW199	mg/L
Cadmium	0.01	<	NO	7311-93	MW199	mg/L
Cadmium	0.01	<	NO	4312-94	MW199	mg/L
Cadmium	0.01	<	NO	6074-94	MW199	mg/L
Cadmium	0.012		YES	5260-94	MW199	mg/L
Cadmium	0.025	<	NO	6888-94	MW199	mg/L
Cadmium	0.1	<	NO	5558-97	MW199	mg/L

CORRECTED DATA SET

	MW 103	MW 106	MW 141	MW 142	MW 150	MW 199	Overall	Weighted
	Cadmium							
	0.01	0.01	0.01	0.01	0.01	0.01		
	0.01	0.01	0.01	0.01	0.01	0.01		
	0.01	0.025	0.01	0.01	0.025	0.01		
	0.01	0.025	0.01	0.01	0.025	0.01		
	0.01		0.01	0.01	0.1	0.01		
	0.01		0.01	0.01		0.012		
	0.025		0.025	0.025		0.012		
	0.025			0.025		0.012		
	0.025			0.025				
	0.1			0.1				
Min	0.010	0.010	0.010	0.010	0.010	0.010	0.010	
Max	0.100	0.025	0.025	0.100	0.100	0.012	0.100	
Average	0.024	0.018	0.012	0.024	0.034	0.011	0.020	0.020
Number	10	4	7	10	5	8	44	



MW 103 - Data were not modified.

MW 106 - Data not modified.

MW 141 - Data not modified.

MW 142 - Data not modified.

MW 150 - Data were not modifed.

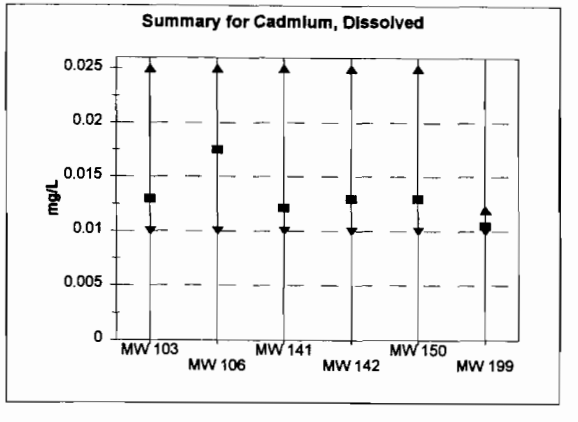
MW 199 - Two nondetected results greater than than the maximum detected value were reduced to the maximum detected value.

Summary of RGA Background Well Inorganic Chemical Data

ANALYSIS	RESULT	QUALIFIER	DETECT?	SAMPLE ID	STATION ID	UNITS
Cadmium, Dissolved	0.01	<	NO	5178-93	MW103	mg/L
Cadmium, Dissolved	0.01	<	NO	5944-93	MW103	mg/L
Cadmium, Dissolved	0.01	<	NO	7299-93	MW103	mg/L
Cadmium, Dissolved	0.01	<	NO	4272-94	MW103	mg/L
Cadmium, Dissolved	0.01	<	NO	5187-94	MW103	mg/L
Cadmium, Dissolved	0.01	<	NO	6026-94	MW103	mg/L
Cadmium, Dissolved	0.025	<	NO	6774-94	MW103	mg/L
Cadmium, Dissolved	0.025	<	NO	5440-95	MW103	mg/L
Cadmium, Dissolved		Q	NO	5285-96	MW103	
Cadmium, Dissolved		Q	NO	5142-97	MW103	
Cadmium, Dissolved	0.01	<	NO	5322-93	MW106	mg/L
Cadmium, Dissolved	0.01	<	NO	4697-94	MW106	mg/L
Cadmium, Dissolved	0.025	<	NO	7272-94	MW106	mg/L
Cadmium, Dissolved	0.025	<	NO	5444-95	MW106	mg/L
Cadmium, Dissolved	0.01	<	NO	6080-93	MW141	mg/L
Cadmium, Dissolved	0.01	<	NO	6092-93	MW141	mg/L
Cadmium, Dissolved	0.01	<	NO	7085-93	MW141	mg/L
Cadmium, Dissolved	0.01	<	NO	4229-94	MW141	mg/L
Cadmium, Dissolved	0.01	<	NO	5199-94	MW141	mg/L
Cadmium, Dissolved	0.01	<	NO	6054-94	MW141	mg/L
Cadmium, Dissolved	0.025	<	NO	6868-94	MW141	mg/L
Cadmium, Dissolved	0.01	<	NO	6084-93	MW142	mg/L
Cadmium, Dissolved	0.01	<	NO	6096-93	MW142	mg/L
Cadmium, Dissolved	0.01	<	NO	7089-93	MW142	mg/L
Cadmium, Dissolved	0.01	<	NO	4233-94	MW142	mg/L
Cadmium, Dissolved	0.01	<	NO	5203-94	MW142	mg/L
Cadmium, Dissolved	0.01	<	NO	6058-94	MW142	mg/L
Cadmium, Dissolved	0.025	<	NO	6872-94	MW142	mg/L
Cadmium, Dissolved	0.025	<	NO	5464-95	MW142	mg/L
Cadmium, Dissolved		Q	NO	5317-96	MW142	
Cadmium, Dissolved		Q	NO	5147-97	MW142	
Cadmium, Dissolved	0.01	<	NO	5650-93	MW150	mg/L
Cadmium, Dissolved	0.01	<	NO	4789-94	MW150	mg/L
Cadmium, Dissolved	0.025	<	NO	5468-95	MW150	mg/L
Cadmium, Dissolved		Q	NO	5321-96	MW150	
Cadmium, Dissolved		Q	NO	5148-97	MW150	
Cadmium, Dissolved	0.01	<	NO	5170-93	MW199	mg/L
Cadmium, Dissolved	0.01	<	NO	5984-93	MW199	mg/L
Cadmium, Dissolved	0.01	<	NO	7311-93	MW199	mg/L
Cadmium, Dissolved	0.01	<	NO	4312-94	MW199	mg/L
Cadmium, Dissolved	0.01	<	NO	6074-94	MW199	mg/L
Cadmium, Dissolved	0.012		YES	5260-94	MW199	mg/L
Cadmium, Dissolved	0.025	<	NO	6888-94	MW199	mg/L
Cadmium, Dissolved		Q	NO	5558-97	MW199	

CORRECTED DATA SET

	MW 103	MW 106	MW 141	MW 142	MW 150	MW 199	Overall	Weighted
	Cadmium, Dissolved							
	0.01	0.01	0.01	0.01	0.01	0.01		
	0.01	0.01	0.01	0.01	0.01	0.01		
	0.01	0.025	0.01	0.01	0.025	0.01		
	0.01	0.025	0.01	0.01	0.01	0.01		
	0.01		0.01	0.01	0.01	0.01		
	0.01		0.01	0.01		0.012		
	0.025		0.025	0.025		0.012		
	0.025			0.025		0.01		
	0.01			0.01				
	0.01			0.01				
Min	0.010	0.010	0.010	0.010	0.010	0.010	0.010	
Max	0.025	0.025	0.025	0.025	0.025	0.012	0.025	
Average	0.013	0.018	0.012	0.013	0.013	0.011	0.013	0.013
Number	10	4	7	10	5	8	44	



MW 103 - Two "Q" qualified results assigned value of minimum nondetected result (0.01 mg/L)

MW 106 - Data not modified.

MW 141 - Data not modified.

MW 142 - Two "Q" qualified results assigned value of minimum nondetected result (0.01 mg/L).

MW 150 - Two "Q" qualified results given value of minimum detection limit for samplesfrom this well (0.01 mg/l).

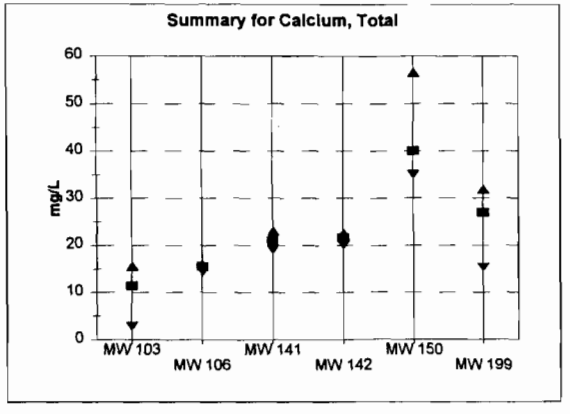
MW 199 - One "Q" qualified result assigned value of minimum nondetected result (0.01 mg/L).

Summary of RGA Background Well Inorganic Chemical Data

ANALYSIS	RESULT	QUALIFIER	DETECT?	SAMPLE ID	STATION ID	UNITS
Calcium	2.88		YES	5944-93	MW103	mg/L
Calcium	10.8		YES	6026-94	MW103	mg/L
Calcium	11.2		YES	6774-94	MW103	mg/L
Calcium	11.3		YES	7299-93	MW103	mg/L
Calcium	11.7		YES	5187-94	MW103	mg/L
Calcium	12.4		YES	5440-95	MW103	mg/L
Calcium	12.5		YES	4272-94	MW103	mg/L
Calcium	12.75		YES	5178-93	MW103	mg/L
Calcium	13	N	YES	5285-96	MW103	mg/L
Calcium	15.6	N	YES	5142-97	MW103	mg/L
Calcium	14.4		YES	4697-94	MW106	mg/L
Calcium	15.6		YES	5322-93	MW106	mg/L
Calcium	16		YES	7272-94	MW106	mg/L
Calcium	16		YES	5444-95	MW106	mg/L
Calcium	19.03		YES	6054-94	MW141	mg/L
Calcium	20.3		YES	5199-94	MW141	mg/L
Calcium	20.35		YES	6080-93	MW141	mg/L
Calcium	20.5		YES	7085-93	MW141	mg/L
Calcium	21.5		YES	4229-94	MW141	mg/L
Calcium	22		YES	6868-94	MW141	mg/L
Calcium	23		YES	6092-93	MW141	mg/L
Calcium	20.1		YES	7089-93	MW142	mg/L
Calcium	20.6		YES	5203-94	MW142	mg/L
Calcium	20.9		YES	5464-95	MW142	mg/L
Calcium	21.39		YES	6084-93	MW142	mg/L
Calcium	21.7	N	YES	5147-97	MW142	mg/L
Calcium	22		YES	4233-94	MW142	mg/L
Calcium	22		YES	6872-94	MW142	mg/L
Calcium	22.4		YES	6096-93	MW142	mg/L
Calcium	22.4	N	YES	5317-96	MW142	mg/L
Calcium	22.62		YES	6058-94	MW142	mg/L
Calcium	35		YES	5468-95	MW150	mg/L
Calcium	35.2		YES	4789-94	MW150	mg/L
Calcium	36.6		YES	5650-93	MW150	mg/L
Calcium	36.8	N	YES	5321-96	MW150	mg/L
Calcium	56.5	N	YES	5148-97	MW150	mg/L
Calcium	15.31		YES	5170-93	MW199	mg/L
Calcium	25.8		YES	5260-94	MW199	mg/L
Calcium	26.8		YES	6074-94	MW199	mg/L
Calcium	27	N	YES	5558-97	MW199	mg/L
Calcium	27.8		YES	7311-93	MW199	mg/L
Calcium	30		YES	6888-94	MW199	mg/L
Calcium	30.7		YES	4312-94	MW199	mg/L
Calcium	31.9		YES	5984-93	MW199	mg/L

CORRECTED DATA SET

	MW 103	MW 106	MW 141	MW 142	MW 150	MW 199	Overall	Weighted
	Calcium							
	2.88	14.4	19.03	20.1	35	15.31		
	10.8	15.6	20.3	20.6	35.2	25.8		
	11.2	16	20.35	20.9	36.6	26.8		
	11.3	16	20.5	21.39	36.8	27		
	11.7		21.5	21.7	56.5	27.8		
	12.4		22	22		30		
	12.5		23	22		30.7		
	12.75			22.4		31.9		
	13			22.4				
	15.6			22.62				
Min	2.880	14.400	19.030	20.100	35.000	15.310	2.880	
Max	15.600	16.000	23.000	22.620	56.500	31.900	56.500	
Average	11.413	15.500	20.954	21.611	40.020	26.914	21.689	22.735
Number	10	4	7	10	5	8	44	



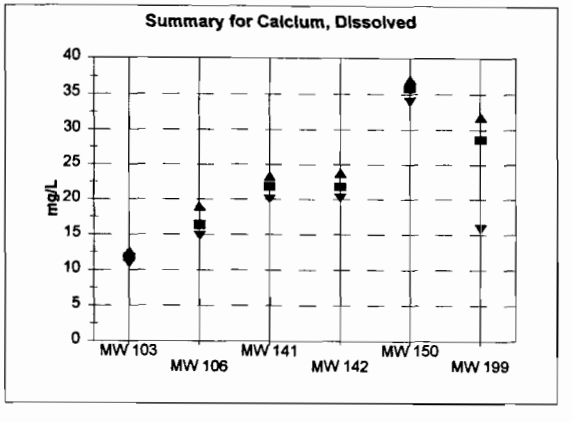
Data for Calcium, Total were not modified.

Summary of RGA Background Well Inorganic Chemical Data

ANALYSIS	RESULT	QUALIFIER	DETECT?	SAMPLE ID	STATION ID	UNITS
Calcium, Dissolved	0.026		YES	5944-93	MW103	mg/L
Calcium, Dissolved	10.9		YES	7299-93	MW103	mg/L
Calcium, Dissolved	11.7		YES	6774-94	MW103	mg/L
Calcium, Dissolved	11.8	N	YES	5285-96	MW103	mg/L
Calcium, Dissolved	11.9		YES	5187-94	MW103	mg/L
Calcium, Dissolved	11.91		YES	5178-93	MW103	mg/L
Calcium, Dissolved	12		YES	4272-94	MW103	mg/L
Calcium, Dissolved	12.2		YES	6026-94	MW103	mg/L
Calcium, Dissolved	12.6		YES	5440-95	MW103	mg/L
Calcium, Dissolved	14.8		YES	4697-94	MW106	mg/L
Calcium, Dissolved	15.1		YES	5322-93	MW106	mg/L
Calcium, Dissolved	16.5		YES	5444-95	MW106	mg/L
Calcium, Dissolved	19		YES	7272-94	MW106	mg/L
Calcium, Dissolved	20		YES	7085-93	MW141	mg/L
Calcium, Dissolved	20.7		YES	6080-93	MW141	mg/L
Calcium, Dissolved	21.4		YES	5199-94	MW141	mg/L
Calcium, Dissolved	22.1		YES	6092-93	MW141	mg/L
Calcium, Dissolved	22.3		YES	4229-94	MW141	mg/L
Calcium, Dissolved	23		YES	6868-94	MW141	mg/L
Calcium, Dissolved	23.27		YES	6054-94	MW141	mg/L
Calcium, Dissolved	20.2	N	YES	5317-96	MW142	mg/L
Calcium, Dissolved	20.4		YES	7089-93	MW142	mg/L
Calcium, Dissolved	20.93		YES	6084-93	MW142	mg/L
Calcium, Dissolved	21.3		YES	5464-95	MW142	mg/L
Calcium, Dissolved	21.5		YES	5203-94	MW142	mg/L
Calcium, Dissolved	22		YES	6096-93	MW142	mg/L
Calcium, Dissolved	22.9		YES	4233-94	MW142	mg/L
Calcium, Dissolved	23		YES	6872-94	MW142	mg/L
Calcium, Dissolved	23.72		YES	6058-94	MW142	mg/L
Calcium, Dissolved	34	N	YES	5321-96	MW150	mg/L
Calcium, Dissolved	36		YES	4789-94	MW150	mg/L
Calcium, Dissolved	36.3		YES	5650-93	MW150	mg/L
Calcium, Dissolved	37		YES	5468-95	MW150	mg/L
Calcium, Dissolved	15.86		YES	5170-93	MW199	mg/L
Calcium, Dissolved	28.4		YES	7311-93	MW199	mg/L
Calcium, Dissolved	30.2		YES	6074-94	MW199	mg/L
Calcium, Dissolved	31		YES	6888-94	MW199	mg/L
Calcium, Dissolved	31.4		YES	5984-93	MW199	mg/L
Calcium, Dissolved	31.6		YES	5260-94	MW199	mg/L
Calcium, Dissolved	31.8		YES	4312-94	MW199	mg/L

CORRECTED DATA SET

	MW 103	MW 106	MW 141	MW 142	MW 150	MW 199	Overall	Weighted
	Calcium, Dissolved							
	10.9	14.8	20	20.2	34	15.86		
	10.9	15.1	20.7	20.4	36	28.4		
	11.7	16.5	21.4	20.93	36.3	30.2		
	11.8	19	22.1	21.3	37	31		
	11.9		22.3	21.5		31.4		
	11.91		23	22		31.6		
	12		23.27	22.9		31.8		
	12.2			23				
	12.6			23.72				
Min	10.900	14.800	20.000	20.200	34.000	15.860	10.900	
Max	12.600	19.000	23.270	23.720	37.000	31.800	37.000	
Average	11.768	16.350	21.824	21.772	35.825	28.609	21.590	22.691
Number	9	4	7	9	4	7	40	



MW 103 - Very small value (0.026 mg/L) was changed to next lowest detected value (10.9 mg/L) as an outlier.

MW 106 - Data not modified.

MW 141 - Data not modified.

MW 142 - Data not modified.

MW 150 - Data not modified.

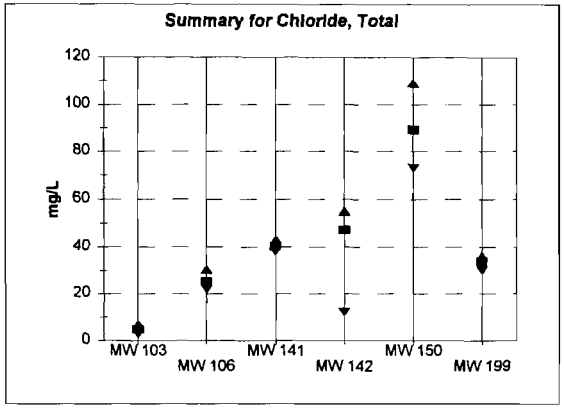
MW 199 - Data not modified.

Summary of RGA Background Well Inorganic Chemical Data

ANALYSIS	RESULT	QUALIFIER	DETECT?	SAMPLE ID	STATION ID	UNITS
Chloride	2.9		YES	5142-97	MW103	mg/L
Chloride	3.1		YES	5285-96	MW103	mg/L
Chloride	3.4		YES	6026-94	MW103	mg/L
Chloride	3.5		YES	5440-95	MW103	mg/L
Chloride	3.9		YES	6774-94	MW103	mg/L
Chloride	5		YES	5178-93	MW103	mg/L
Chloride	6		YES	4272-94	MW103	mg/L
Chloride	6		YES	5187-94	MW103	mg/L
Chloride	7		YES	5944-93	MW103	mg/L
Chloride	7		YES	7299-93	MW103	mg/L
Chloride	22		YES	5322-93	MW106	mg/L
Chloride	23		YES	4697-94	MW106	mg/L
Chloride	30.5		YES	5444-95	MW106	mg/L
Chloride	38		YES	6080-93	MW141	mg/L
Chloride	39		YES	7085-93	MW141	mg/L
Chloride	39		YES	4229-94	MW141	mg/L
Chloride	40		YES	6092-93	MW141	mg/L
Chloride	40		YES	5199-94	MW141	mg/L
Chloride	42.4		YES	6868-94	MW141	mg/L
Chloride	42.9		YES	6054-94	MW141	mg/L
Chloride	12		YES	6058-94	MW142	mg/L
Chloride	48		YES	4233-94	MW142	mg/L
Chloride	48.4		YES	5147-97	MW142	mg/L
Chloride	49		YES	7089-93	MW142	mg/L
Chloride	49		YES	5203-94	MW142	mg/L
Chloride	52		YES	6084-93	MW142	mg/L
Chloride	52.4		YES	6872-94	MW142	mg/L
Chloride	52.9		YES	5317-96	MW142	mg/L
Chloride	53.2		YES	5464-95	MW142	mg/L
Chloride	55		YES	6096-93	MW142	mg/L
Chloride	73		YES	5650-93	MW150	mg/L
Chloride	83		YES	4789-94	MW150	mg/L
Chloride	83.8	B	YES	5321-96	MW150	mg/L
Chloride	97.1		YES	5468-95	MW150	mg/L
Chloride	109.1		YES	5148-97	MW150	mg/L
Chloride	30		YES	5170-93	MW199	mg/L
Chloride	33		YES	7311-93	MW199	mg/L
Chloride	33		YES	5260-94	MW199	mg/L
Chloride	33.8		YES	6888-94	MW199	mg/L
Chloride	34.5		YES	6074-94	MW199	mg/L
Chloride	35		YES	4312-94	MW199	mg/L
Chloride	35.9		YES	5558-97	MW199	mg/L
Chloride	36		YES	5984-93	MW199	mg/L

CORRECTED DATA SET

	MW 103 Chloride	MW 106	MW 141	MW 142	MW 150	MW 199	Overall	Weighted
	2.9	22	38	12	73	30		
	3.1	23	39	48	83	33		
	3.4	30.5	39	48.4	83.8	33		
	3.5		40	49	97.1	33.8		
	3.9		40	49	109.1	34.5		
	5		42.4	52		35		
	6		42.9	52.4		35.9		
	6			52.9		36		
	7			53.2				
	7			55				
Min	2.900	22.000	38.000	12.000	73.000	30.000	2.900	
Max	7.000	30.500	42.900	55.000	109.100	36.000	109.100	
Average	4.780	25.167	40.186	47.190	89.200	33.900	37.063	40.070
Number	10	3	7	10	5	8	43	



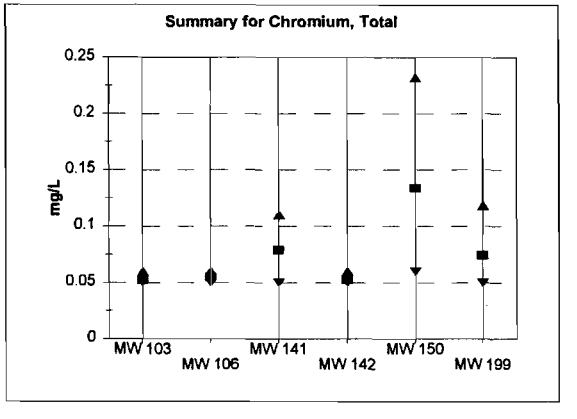
Data for Chloride, Total was not modified.

Summary of RGA Background Well Inorganic Chemical Data

ANALYSIS	RESULT	QUALIFIER	DETECT?	SAMPLE ID	STATION ID	UNITS
Chromium	0.05	<	NO	5178-93	MW103	mg/L
Chromium	0.05	<	NO	5944-93	MW103	mg/L
Chromium	0.05	<	NO	7299-93	MW103	mg/L
Chromium	0.05	<	NO	4272-94	MW103	mg/L
Chromium	0.05	<	NO	5187-94	MW103	mg/L
Chromium	0.05	<	NO	6026-94	MW103	mg/L
Chromium	0.06	<	NO	6774-94	MW103	mg/L
Chromium	0.06	<	NO	5440-95	MW103	mg/L
Chromium	0.05	<	NO	5322-93	MW106	mg/L
Chromium	0.05	<	NO	4697-94	MW106	mg/L
Chromium	0.06	<	NO	7272-94	MW106	mg/L
Chromium	0.06	<	NO	5444-95	MW106	mg/L
Chromium	0.05	<	NO	4229-94	MW141	mg/L
Chromium	0.053		YES	7085-93	MW141	mg/L
Chromium	0.067		YES	6080-93	MW141	mg/L
Chromium	0.074		YES	6054-94	MW141	mg/L
Chromium	0.089		YES	5199-94	MW141	mg/L
Chromium	0.11		YES	6868-94	MW141	mg/L
Chromium	0.926		YES	6092-93	MW141	mg/L
Chromium	0.05	<	NO	6084-93	MW142	mg/L
Chromium	0.05	<	NO	6096-93	MW142	mg/L
Chromium	0.05	<	NO	7089-93	MW142	mg/L
Chromium	0.05	<	NO	4233-94	MW142	mg/L
Chromium	0.05	<	NO	5203-94	MW142	mg/L
Chromium	0.05	<	NO	6058-94	MW142	mg/L
Chromium	0.06	<	NO	6872-94	MW142	mg/L
Chromium	0.06	<	NO	5464-95	MW142	mg/L
Chromium	0.06	<	NO	5468-95	MW150	mg/L
Chromium	0.109		YES	5650-93	MW150	mg/L
Chromium	0.232		YES	4789-94	MW150	mg/L
Chromium	0.05	<	NO	5984-93	MW199	mg/L
Chromium	0.05	<	NO	5260-94	MW199	mg/L
Chromium	0.05	<	NO	6074-94	MW199	mg/L
Chromium	0.06	<	NO	6888-94	MW199	mg/L
Chromium	0.093		YES	4312-94	MW199	mg/L
Chromium	0.1		YES	7311-93	MW199	mg/L
Chromium	0.118		YES	5170-93	MW199	mg/L

CORRECTED DATA SET

	MW 103	MW 106	MW 141	MW 142	MW 150	MW 199	Overall	Weighted
	Chromium							
	0.05	0.05	0.05	0.05	0.06	0.05		
	0.05	0.05	0.053	0.05	0.109	0.05		
	0.05	0.06	0.067	0.05	0.232	0.05		
	0.05	0.06	0.074	0.05		0.06		
	0.05		0.089	0.05		0.093		
	0.05		0.11	0.05		0.1		
	0.06		0.11	0.06		0.118		
	0.06			0.06				
Min	0.050	0.050	0.050	0.050	0.060	0.050	0.050	
Max	0.060	0.060	0.110	0.060	0.232	0.118	0.232	
Average	0.053	0.055	0.079	0.053	0.134	0.074	0.069	0.075
Number	8	4	7	8	3	7	37	



MW 103 - Data not modified.

MW 106 - Data not modified.

MW 141 - Value of 0.926 mg/L was much greater than other values for this well and determined to be related to the turbidity of the sample. Therefore, this value for this sample reduced to next highest value.

MW 142 - Data not modified.

MW 150 - Data were not modifed.

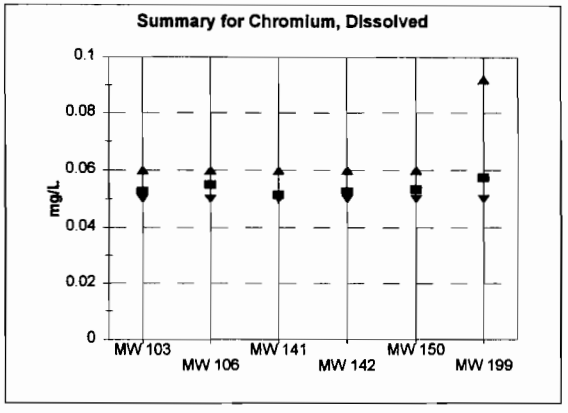
MW 199 - Data not modified.

Summary of RGA Background Well Inorganic Chemical Data

ANALYSIS	RESULT	QUALIFIER	DETECT?	SAMPLE ID	STATION ID	UNITS
Chromium, Dissolved	0.05	<	NO	5178-93	MW103	mg/L
Chromium, Dissolved	0.05	<	NO	5944-93	MW103	mg/L
Chromium, Dissolved	0.05	<	NO	7299-93	MW103	mg/L
Chromium, Dissolved	0.05	<	NO	4272-94	MW103	mg/L
Chromium, Dissolved	0.05	<	NO	5187-94	MW103	mg/L
Chromium, Dissolved	0.05	<	NO	6026-94	MW103	mg/L
Chromium, Dissolved	0.06	<	NO	6774-94	MW103	mg/L
Chromium, Dissolved	0.06	<	NO	5440-95	MW103	mg/L
Chromium, Dissolved	0.05	<	NO	5322-93	MW106	mg/L
Chromium, Dissolved	0.05	<	NO	4697-94	MW106	mg/L
Chromium, Dissolved	0.06	<	NO	7272-94	MW106	mg/L
Chromium, Dissolved	0.06	<	NO	5444-95	MW106	mg/L
Chromium, Dissolved	0.05	<	NO	6080-93	MW141	mg/L
Chromium, Dissolved	0.05	<	NO	6092-93	MW141	mg/L
Chromium, Dissolved	0.05	<	NO	7085-93	MW141	mg/L
Chromium, Dissolved	0.05	<	NO	4229-94	MW141	mg/L
Chromium, Dissolved	0.05	<	NO	5199-94	MW141	mg/L
Chromium, Dissolved	0.05	<	NO	6054-94	MW141	mg/L
Chromium, Dissolved	0.06	<	NO	6868-94	MW141	mg/L
Chromium, Dissolved	0.05	<	NO	6084-93	MW142	mg/L
Chromium, Dissolved	0.05	<	NO	6096-93	MW142	mg/L
Chromium, Dissolved	0.05	<	NO	7089-93	MW142	mg/L
Chromium, Dissolved	0.05	<	NO	4233-94	MW142	mg/L
Chromium, Dissolved	0.05	<	NO	5203-94	MW142	mg/L
Chromium, Dissolved	0.05	<	NO	6058-94	MW142	mg/L
Chromium, Dissolved	0.06	<	NO	6872-94	MW142	mg/L
Chromium, Dissolved	0.06	<	NO	5464-95	MW142	mg/L
Chromium, Dissolved	0.05	<	NO	5650-93	MW150	mg/L
Chromium, Dissolved	0.05	<	NO	4789-94	MW150	mg/L
Chromium, Dissolved	0.06	<	NO	5468-95	MW150	mg/L
Chromium, Dissolved	0.05	<	NO	5170-93	MW199	mg/L
Chromium, Dissolved	0.05	<	NO	5984-93	MW199	mg/L
Chromium, Dissolved	0.05	<	NO	4312-94	MW199	mg/L
Chromium, Dissolved	0.05	<	NO	5260-94	MW199	mg/L
Chromium, Dissolved	0.05	<	NO	6074-94	MW199	mg/L
Chromium, Dissolved	0.06	<	NO	6868-94	MW199	mg/L
Chromium, Dissolved	0.092		YES	7311-93	MW199	mg/L

CORRECTED DATA SET

	MW 103	MW 106	MW 141	MW 142	MW 150	MW 199	Overall	Weighted
	Chromium, Dissolved							
	0.05	0.05	0.05	0.05	0.05	0.05		
	0.05	0.05	0.05	0.05	0.05	0.05		
	0.05	0.06	0.05	0.05	0.06	0.05		
	0.05	0.06	0.05	0.05		0.05		
	0.05		0.05	0.05		0.05		
	0.05		0.05	0.05		0.06		
	0.06		0.06	0.06		0.092		
	0.06			0.06				
Min	0.050	0.050	0.050	0.050	0.050	0.050	0.050	
Max	0.060	0.060	0.060	0.060	0.060	0.092	0.092	
Average	0.053	0.055	0.051	0.053	0.053	0.057	0.054	0.054
Number	8	4	7	8	3	7	37	



Data for Chromium, Dissolved were not modified.

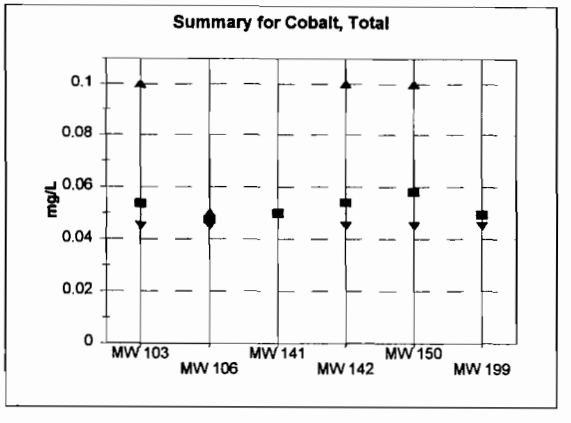
For all but MW 199, the plots are of nondetected values only.

Summary of RGA Background Well Inorganic Chemical Data

ANALYSIS	RESULT	QUALIFIER	DETECT?	SAMPLE ID	STATION ID	UNITS
Cobalt	0.045	<	NO	6774-94	MW103	mg/L
Cobalt	0.045	<	NO	5440-95	MW103	mg/L
Cobalt	0.045	<	NO	5285-96	MW103	mg/L
Cobalt	0.05	<	NO	5178-93	MW103	mg/L
Cobalt	0.05	<	NO	5944-93	MW103	mg/L
Cobalt	0.05	<	NO	7299-93	MW103	mg/L
Cobalt	0.05	<	NO	4272-94	MW103	mg/L
Cobalt	0.05	<	NO	5187-94	MW103	mg/L
Cobalt	0.05	<	NO	6026-94	MW103	mg/L
Cobalt	0.1	<	NO	5142-97	MW103	mg/L
Cobalt	0.045	<	NO	7272-94	MW106	mg/L
Cobalt	0.045	<	NO	5444-95	MW106	mg/L
Cobalt	0.05	<	NO	5322-93	MW106	mg/L
Cobalt	0.05	<	NO	4697-94	MW106	mg/L
Cobalt	0.05	<	NO	6080-93	MW141	mg/L
Cobalt	0.05	<	NO	6092-93	MW141	mg/L
Cobalt	0.05	<	NO	7085-93	MW141	mg/L
Cobalt	0.05	<	NO	4229-94	MW141	mg/L
Cobalt	0.05	<	NO	5199-94	MW141	mg/L
Cobalt	0.05	<	NO	6054-94	MW141	mg/L
Cobalt	0.05	<	NO	6868-94	MW141	mg/L
Cobalt	0.045	<	NO	5464-95	MW142	mg/L
Cobalt	0.045	<	NO	5317-96	MW142	mg/L
Cobalt	0.05	<	NO	6084-93	MW142	mg/L
Cobalt	0.05	<	NO	6096-93	MW142	mg/L
Cobalt	0.05	<	NO	7089-93	MW142	mg/L
Cobalt	0.05	<	NO	4233-94	MW142	mg/L
Cobalt	0.05	<	NO	5203-94	MW142	mg/L
Cobalt	0.05	<	NO	6058-94	MW142	mg/L
Cobalt	0.05	<	NO	6872-94	MW142	mg/L
Cobalt	0.1	<	NO	5147-97	MW142	mg/L
Cobalt	0.045	<	NO	5468-95	MW150	mg/L
Cobalt	0.045	<	NO	5321-96	MW150	mg/L
Cobalt	0.05	<	NO	5650-93	MW150	mg/L
Cobalt	0.05	<	NO	4789-94	MW150	mg/L
Cobalt	0.1	<	NO	5148-97	MW150	mg/L
Cobalt	0.045	<	NO	6888-94	MW199	mg/L
Cobalt	0.05	<	NO	5170-93	MW199	mg/L
Cobalt	0.05	<	NO	5984-93	MW199	mg/L
Cobalt	0.05	<	NO	7311-93	MW199	mg/L
Cobalt	0.05	<	NO	4312-94	MW199	mg/L
Cobalt	0.05	<	NO	5260-94	MW199	mg/L
Cobalt	0.05	<	NO	6074-94	MW199	mg/L
Cobalt	0.05	<	NO	5558-97	MW199	mg/L

CORRECTED DATA SET

	MW 103	MW 106	MW 141	MW 142	MW 150	MW 199	Overall	Weighted
	Cobalt							
	0.045	0.045	0.05	0.045	0.045	0.045		
	0.045	0.045	0.05	0.045	0.045	0.05		
	0.045	0.05	0.05	0.05	0.05	0.05		
	0.05	0.05	0.05	0.05	0.05	0.05		
	0.05		0.05	0.05	0.1	0.05		
	0.05		0.05	0.05		0.05		
	0.05		0.05	0.05		0.05		
	0.05			0.05		0.05		
	0.05			0.05				
	0.1			0.1				
Min	0.045	0.045	0.050	0.045	0.045	0.045	0.045	
Max	0.100	0.050	0.050	0.100	0.100	0.050	0.100	
Average	0.053	0.048	0.050	0.054	0.058	0.049	0.052	0.052
Number	10	4	7	10	5	8	44	



All results for this well were below their respective detection limits; therefore the plot is simply a depiction of the detection limits used for samples taken from the wells.

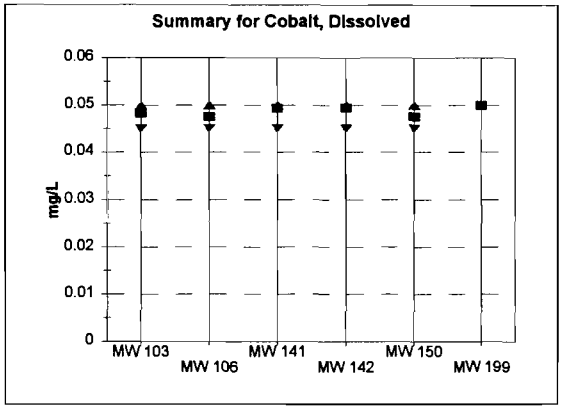
Data for Cobalt, Total were not modified.

Summary of RGA Background Well Inorganic Chemical Data

ANALYSIS	RESULT	QUALIFIER	DETECT?	SAMPLE ID	STATION ID	UNITS
Cobalt, Dissolved	0.045	<	NO	6774-94	MW103	mg/L
Cobalt, Dissolved	0.045	<	NO	5440-95	MW103	mg/L
Cobalt, Dissolved	0.05	<	NO	5178-93	MW103	mg/L
Cobalt, Dissolved	0.05	<	NO	5944-93	MW103	mg/L
Cobalt, Dissolved	0.05	<	NO	7299-93	MW103	mg/L
Cobalt, Dissolved	0.05	<	NO	4272-94	MW103	mg/L
Cobalt, Dissolved	0.05	<	NO	5187-94	MW103	mg/L
Cobalt, Dissolved	0.05	<	NO	6026-94	MW103	mg/L
Cobalt, Dissolved		Q	NO	5285-96	MW103	
Cobalt, Dissolved	0.045	<	NO	7272-94	MW106	mg/L
Cobalt, Dissolved	0.045	<	NO	5444-95	MW106	mg/L
Cobalt, Dissolved	0.05	<	NO	5322-93	MW106	mg/L
Cobalt, Dissolved	0.05	<	NO	4697-94	MW106	mg/L
Cobalt, Dissolved	0.045	<	NO	6868-94	MW141	mg/L
Cobalt, Dissolved	0.05	<	NO	6080-93	MW141	mg/L
Cobalt, Dissolved	0.05	<	NO	6092-93	MW141	mg/L
Cobalt, Dissolved	0.05	<	NO	7085-93	MW141	mg/L
Cobalt, Dissolved	0.05	<	NO	4229-94	MW141	mg/L
Cobalt, Dissolved	0.05	<	NO	5199-94	MW141	mg/L
Cobalt, Dissolved	0.05	<	NO	6054-94	MW141	mg/L
Cobalt, Dissolved	0.045	<	NO	6872-94	MW142	mg/L
Cobalt, Dissolved	0.05	<	NO	6084-93	MW142	mg/L
Cobalt, Dissolved	0.05	<	NO	6096-93	MW142	mg/L
Cobalt, Dissolved	0.05	<	NO	7089-93	MW142	mg/L
Cobalt, Dissolved	0.05	<	NO	4233-94	MW142	mg/L
Cobalt, Dissolved	0.05	<	NO	5203-94	MW142	mg/L
Cobalt, Dissolved	0.05	<	NO	6058-94	MW142	mg/L
Cobalt, Dissolved	0.45	<	NO	5464-95	MW142	mg/L
Cobalt, Dissolved		Q	NO	5317-96	MW142	
Cobalt, Dissolved	0.045	<	NO	5468-95	MW150	mg/L
Cobalt, Dissolved	0.05	<	NO	5650-93	MW150	mg/L
Cobalt, Dissolved	0.05	<	NO	4789-94	MW150	mg/L
Cobalt, Dissolved		Q	NO	5321-96	MW150	
Cobalt, Dissolved	0.05	<	NO	5170-93	MW199	mg/L
Cobalt, Dissolved	0.05	<	NO	5984-93	MW199	mg/L
Cobalt, Dissolved	0.05	<	NO	7311-93	MW199	mg/L
Cobalt, Dissolved	0.05	<	NO	4312-94	MW199	mg/L
Cobalt, Dissolved	0.05	<	NO	5260-94	MW199	mg/L
Cobalt, Dissolved	0.05	<	NO	6074-94	MW199	mg/L
Cobalt, Dissolved	0.05	<	NO	6888-94	MW199	mg/L

CORRECTED DATA SET

	MW 103	MW 106	MW 141	MW 142	MW 150	MW 199	Overall	Weighted
	Cobalt, Dissolved							
	0.045	0.045	0.045	0.045	0.045	0.05		
	0.045	0.045	0.05	0.05	0.05	0.05		
	0.05	0.05	0.05	0.05	0.05	0.05		
	0.05	0.05	0.05	0.05	0.045	0.05		
	0.05		0.05	0.05		0.05		
	0.05		0.05	0.05		0.05		
	0.05		0.05	0.05		0.05		
	0.05			0.05				
	0.045			0.05				
Min	0.045	0.045	0.045	0.045	0.045	0.050	0.045	
Max	0.050	0.050	0.050	0.050	0.050	0.050	0.050	
Average	0.048	0.048	0.049	0.049	0.048	0.050	0.049	0.049
Number	9	4	7	9	4	7	40	



MW 103 - One "Q" qualified result given value of minimum detection limt for samples from this well (0.045 mg/L).

MW 106 - Data not modified.

MW 141 - Data not modified.

MW 142 - One "Q" qualified result given value of minimum detection limit for samples from this well (0.045 mg/L); one nondetect result is much greater than others; value was reduced to next highest detection limit.

MW 150 - One "Q" qualified result given value of minimum detection limit for samples from this well (0.045 mg/L).

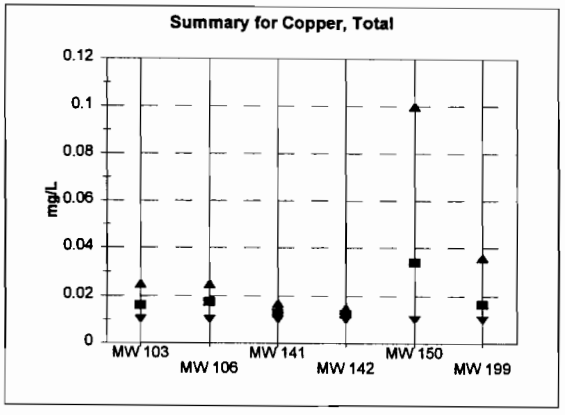
MW 199 - Data not modified.

Summary of RGA Background Well Inorganic Chemical Data

ANALYSIS	RESULT	QUALIFIER	DETECT?	SAMPLE ID	STATION ID	UNITS
Copper	0.01	<	NO	5178-93	MW103	mg/L
Copper	0.01	<	NO	5944-93	MW103	mg/L
Copper	0.01	<	NO	7299-93	MW103	mg/L
Copper	0.01	<	NO	4272-94	MW103	mg/L
Copper	0.01	<	NO	5187-94	MW103	mg/L
Copper	0.01	<	NO	6026-94	MW103	mg/L
Copper	0.025		YES	6774-94	MW103	mg/L
Copper	0.025	<	NO	5440-95	MW103	mg/L
Copper	0.025	<	NO	5285-96	MW103	mg/L
Copper	0.1	<	NO	5142-97	MW103	mg/L
Copper	0.01	<	NO	5322-93	MW106	mg/L
Copper	0.01	<	NO	4697-94	MW106	mg/L
Copper	0.025	<	NO	7272-94	MW106	mg/L
Copper	0.025	<	NO	5444-95	MW106	mg/L
Copper	0.01	<	NO	6080-93	MW141	mg/L
Copper	0.01	<	NO	4229-94	MW141	mg/L
Copper	0.01	<	NO	6054-94	MW141	mg/L
Copper	0.012		YES	7085-93	MW141	mg/L
Copper	0.014		YES	5199-94	MW141	mg/L
Copper	0.017		YES	6092-93	MW141	mg/L
Copper	0.025	<	NO	6868-94	MW141	mg/L
Copper	0.01	<	NO	6084-93	MW142	mg/L
Copper	0.01	<	NO	7089-93	MW142	mg/L
Copper	0.01	<	NO	4233-94	MW142	mg/L
Copper	0.01	<	NO	5203-94	MW142	mg/L
Copper	0.01	<	NO	6058-94	MW142	mg/L
Copper	0.015		YES	6096-93	MW142	mg/L
Copper	0.025	<	NO	6872-94	MW142	mg/L
Copper	0.025	<	NO	5464-95	MW142	mg/L
Copper	0.025	<	NO	5317-96	MW142	mg/L
Copper	0.1	<	NO	5147-97	MW142	mg/L
Copper	0.01	<	NO	5650-93	MW150	mg/L
Copper	0.01	<	NO	4789-94	MW150	mg/L
Copper	0.025	<	NO	5468-95	MW150	mg/L
Copper	0.025	<	NO	5321-96	MW150	mg/L
Copper	0.1	<	NO	5148-97	MW150	mg/L
Copper	0.01	<	NO	5170-93	MW199	mg/L
Copper	0.01	<	NO	5984-93	MW199	mg/L
Copper	0.01	<	NO	7311-93	MW199	mg/L
Copper	0.01	<	NO	4312-94	MW199	mg/L
Copper	0.01	<	NO	5260-94	MW199	mg/L
Copper	0.01		YES	6074-94	MW199	mg/L
Copper	0.036		YES	6888-94	MW199	mg/L
Copper	0.1	<	NO	5558-97	MW199	mg/L

CORRECTED DATA SET

	MW 103	MW 106	MW 141	MW 142	MW 150	MW 199	Overall	Weighted
	Copper							
	0.01	0.01	0.01	0.01	0.01	0.01		
	0.01	0.01	0.01	0.01	0.01	0.01		
	0.01	0.025	0.01	0.01	0.025	0.01		
	0.01	0.025	0.012	0.01	0.025	0.01		
	0.01		0.014	0.01	0.1	0.01		
	0.01		0.017	0.015		0.01		
	0.025		0.017	0.015		0.036		
	0.025			0.015		0.036		
	0.025			0.015				
	0.025			0.015				
Min	0.010	0.010	0.010	0.010	0.010	0.010	0.010	
Max	0.025	0.025	0.017	0.015	0.100	0.036	0.100	
Average	0.016	0.018	0.013	0.013	0.034	0.017	0.017	0.018
Number	10	4	7	10	5	8	44	



MW 103 - One nondetect greater than maximum detected value set to maximum detected value.

MW 106 - Data not modified.

MW 141 - One nondetect with a value greater than the maximum detected value reduced to the maximum detected value.

MW 142 - Four nondetects greater than maximum detected value set to maximum detected value.

MW 150 - Data were not modifed.

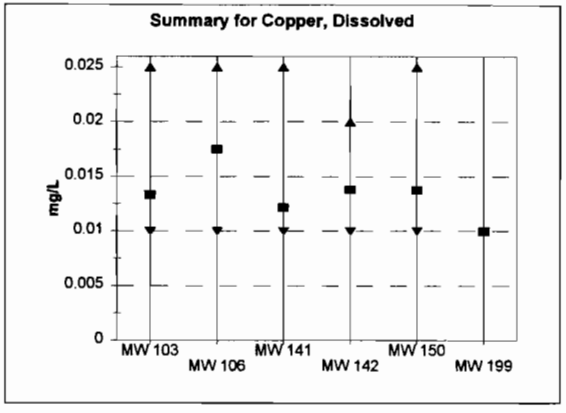
MW 199 - One nondetect greater than the maximum detected value reduced to maximum detected value.

Summary of RGA Background Well Inorganic Chemical Data

ANALYSIS	RESULT	QUALIFIER	DETECT?	SAMPLE ID	STATION ID	UNITS
Copper, Dissolved	0.01	<	NO	5178-93	MW103	mg/L
Copper, Dissolved	0.01	<	NO	5944-93	MW103	mg/L
Copper, Dissolved	0.01	<	NO	7299-93	MW103	mg/L
Copper, Dissolved	0.01	<	NO	4272-94	MW103	mg/L
Copper, Dissolved	0.01	<	NO	5187-94	MW103	mg/L
Copper, Dissolved	0.01	<	NO	6026-94	MW103	mg/L
Copper, Dissolved	0.025	<	NO	6774-94	MW103	mg/L
Copper, Dissolved	0.025	<	NO	5440-95	MW103	mg/L
Copper, Dissolved		Q	NO	5285-96	MW103	
Copper, Dissolved	0.01	<	NO	5322-93	MW106	mg/L
Copper, Dissolved	0.01	<	NO	4697-94	MW106	mg/L
Copper, Dissolved	0.025	<	NO	7272-94	MW106	mg/L
Copper, Dissolved	0.025	<	NO	5444-95	MW106	mg/L
Copper, Dissolved	0.01	<	NO	6080-93	MW141	mg/L
Copper, Dissolved	0.01	<	NO	6092-93	MW141	mg/L
Copper, Dissolved	0.01	<	NO	7085-93	MW141	mg/L
Copper, Dissolved	0.01	<	NO	4229-94	MW141	mg/L
Copper, Dissolved	0.01	<	NO	5199-94	MW141	mg/L
Copper, Dissolved	0.01	<	NO	6054-94	MW141	mg/L
Copper, Dissolved	0.025	<	NO	6868-94	MW141	mg/L
Copper, Dissolved	0.01	<	NO	6084-93	MW142	mg/L
Copper, Dissolved	0.01	<	NO	4233-94	MW142	mg/L
Copper, Dissolved	0.01	<	NO	5203-94	MW142	mg/L
Copper, Dissolved	0.01	<	NO	6058-94	MW142	mg/L
Copper, Dissolved	0.014		YES	6096-93	MW142	mg/L
Copper, Dissolved	0.02		YES	7089-93	MW142	mg/L
Copper, Dissolved	0.025	<	NO	6872-94	MW142	mg/L
Copper, Dissolved	0.025	<	NO	5464-95	MW142	mg/L
Copper, Dissolved		Q	NO	5317-96	MW142	
Copper, Dissolved	0.01	<	NO	5650-93	MW150	mg/L
Copper, Dissolved	0.01	<	NO	4789-94	MW150	mg/L
Copper, Dissolved	0.025	<	NO	5468-95	MW150	mg/L
Copper, Dissolved		Q	NO	5321-96	MW150	
Copper, Dissolved	0.01	<	NO	5170-93	MW199	mg/L
Copper, Dissolved	0.01	<	NO	5984-93	MW199	mg/L
Copper, Dissolved	0.01		YES	7311-93	MW199	mg/L
Copper, Dissolved	0.01	<	NO	4312-94	MW199	mg/L
Copper, Dissolved	0.01	<	NO	5260-94	MW199	mg/L
Copper, Dissolved	0.01	<	NO	6074-94	MW199	mg/L
Copper, Dissolved	0.025	<	NO	6888-94	MW199	mg/L

CORRECTED DATA SET

	MW 103	MW 106	MW 141	MW 142	MW 150	MW 199	Overall	Weighted
	Copper, Dissolved							
	0.01	0.01	0.01	0.01	0.01	0.01		
	0.01	0.01	0.01	0.01	0.01	0.01		
	0.01	0.025	0.01	0.01	0.025	0.01		
	0.01	0.025	0.01	0.01	0.01	0.01		
	0.01		0.01	0.014		0.01		
	0.01		0.01	0.02		0.01		
	0.025		0.025	0.02		0.01		
	0.025			0.02				
	0.01			0.01				
Min	0.010	0.010	0.010	0.010	0.010	0.010	0.010	
Max	0.025	0.025	0.025	0.020	0.025	0.010	0.025	
Average	0.013	0.018	0.012	0.014	0.014	0.010	0.013	0.013
Number	9	4	7	9	4	7	40	



MW 103 - One "Q" qualified result given value of minimum detection limt for samples from this well (0.01 mg/L).

MW 106 - Data not modified.

MW 141 - Data not modified.

MW 142 - One "Q" qualified result given value of minimum detection limit for samples from this well (0.01 mg/L); two nondetected result with concentration greater than maximum detected concentration reduced to maximum detected concentration.

MW 150 - One "Q" qualified result given value of minimum detection limit for samples from this well (0.01 mg/L).

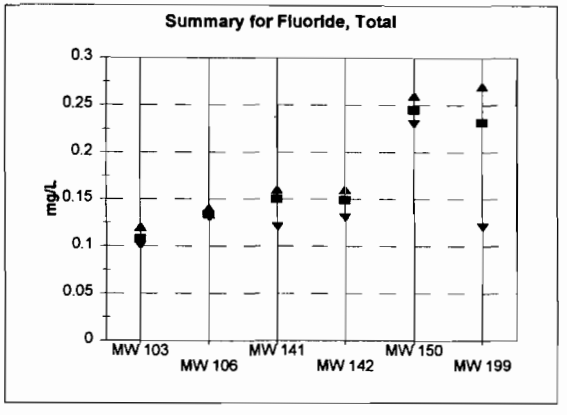
MW 199 - One nondetect greater than the maximum detected value reduced to maximum detected value; maximum detected value within this well was greater than other values; this value was reduced to the next greatest detected value.

Summary of RGA Background Well Inorganic Chemical Data

ANALYSIS	RESULT	QUALIFIER	DETECT?	SAMPLE ID	STATION ID	UNITS
Fluoride	0.1		YES	7299-93	MW103	mg/L
Fluoride	0.1	<	NO	4272-94	MW103	mg/L
Fluoride	0.1		YES	6026-94	MW103	mg/L
Fluoride	0.1		YES	5285-96	MW103	mg/L
Fluoride	0.11		YES	6774-94	MW103	mg/L
Fluoride	0.11		YES	5440-95	MW103	mg/L
Fluoride	0.12		YES	5944-93	MW103	mg/L
Fluoride	0.12		YES	5187-94	MW103	mg/L
Fluoride	0.13		YES	4697-94	MW106	mg/L
Fluoride	0.13		YES	5444-95	MW106	mg/L
Fluoride	0.14		YES	5322-93	MW106	mg/L
Fluoride	0.12		YES	6092-93	MW141	mg/L
Fluoride	0.15		YES	4229-94	MW141	mg/L
Fluoride	0.15		YES	6868-94	MW141	mg/L
Fluoride	0.16		YES	7085-93	MW141	mg/L
Fluoride	0.16		YES	5199-94	MW141	mg/L
Fluoride	0.16		YES	6054-94	MW141	mg/L
Fluoride	0.13		YES	6096-93	MW142	mg/L
Fluoride	0.14		YES	5317-96	MW142	mg/L
Fluoride	0.15		YES	7089-93	MW142	mg/L
Fluoride	0.15		YES	4233-94	MW142	mg/L
Fluoride	0.15		YES	6058-94	MW142	mg/L
Fluoride	0.15		YES	6872-94	MW142	mg/L
Fluoride	0.16		YES	5203-94	MW142	mg/L
Fluoride	0.16		YES	5464-95	MW142	mg/L
Fluoride	0.23		YES	5321-96	MW150	mg/L
Fluoride	0.24		YES	4789-94	MW150	mg/L
Fluoride	0.25		YES	5650-93	MW150	mg/L
Fluoride	0.26		YES	5468-95	MW150	mg/L
Fluoride	0.12		YES	4312-94	MW199	mg/L
Fluoride	0.24		YES	6074-94	MW199	mg/L
Fluoride	0.25		YES	5260-94	MW199	mg/L
Fluoride	0.25		YES	6888-94	MW199	mg/L
Fluoride	0.26		YES	5984-93	MW199	mg/L
Fluoride	0.27		YES	7311-93	MW199	mg/L

CORRECTED DATA SET

	MW 103	MW 106	MW 141	MW 142	MW 150	MW 199	Overall	Weighted
	Fluoride							
	0.1	0.13	0.12	0.13	0.23	0.12		
	0.1	0.13	0.15	0.14	0.24	0.24		
	0.1	0.14	0.15	0.15	0.25	0.25		
	0.1		0.16	0.15	0.26	0.25		
	0.11		0.16	0.15		0.26		
	0.11		0.16	0.15		0.27		
	0.12			0.16				
	0.12			0.16				
Min	0.100	0.130	0.120	0.130	0.230	0.120	0.100	
Max	0.120	0.140	0.160	0.160	0.260	0.270	0.270	
Average	0.108	0.133	0.150	0.149	0.245	0.232	0.163	0.169
Number	8	3	6	8	4	6	35	



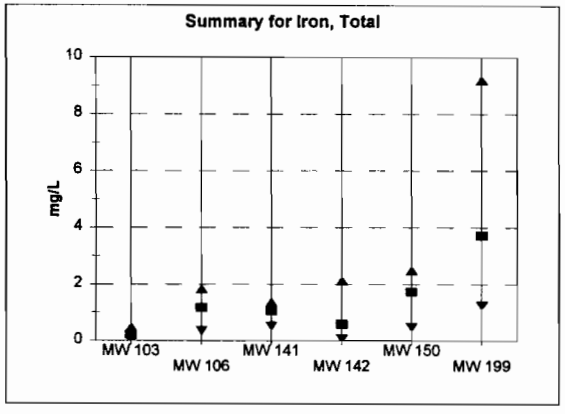
Data for Fluoride, Total were not modified.

Summary of RGA Background Well Inorganic Chemical Data

ANALYSIS	RESULT	QUALIFIER	DETECT?	SAMPLE ID	STATION ID	UNITS
Iron	0.01	<	NO	5944-93	MW103	mg/L
Iron	0.043		YES	7299-93	MW103	mg/L
Iron	0.053		YES	5187-94	MW103	mg/L
Iron	0.064		YES	4272-94	MW103	mg/L
Iron	0.069		YES	6026-94	MW103	mg/L
Iron	0.3	N<	NO	5142-97	MW103	mg/L
Iron	0.355	<	NO	6774-94	MW103	mg/L
Iron	0.355	N<	NO	5285-96	MW103	mg/L
Iron	0.438		YES	5440-95	MW103	mg/L
Iron	0.464		YES	5178-93	MW103	mg/L
Iron	0.354		YES	4697-94	MW106	mg/L
Iron	0.62		YES	7272-94	MW106	mg/L
Iron	1.84		YES	5444-95	MW106	mg/L
Iron	18.8		YES	5322-93	MW106	mg/L
Iron	0.515		YES	6054-94	MW141	mg/L
Iron	0.681		YES	4229-94	MW141	mg/L
Iron	1.02		YES	7085-93	MW141	mg/L
Iron	1.16		YES	5199-94	MW141	mg/L
Iron	1.3		YES	6868-94	MW141	mg/L
Iron	1.35		YES	6080-93	MW141	mg/L
Iron	11.3		YES	6092-93	MW141	mg/L
Iron	0.067		YES	6058-94	MW142	mg/L
Iron	0.172		YES	4233-94	MW142	mg/L
Iron	0.26		YES	5203-94	MW142	mg/L
Iron	0.354		YES	6096-93	MW142	mg/L
Iron	0.355	<	NO	5464-95	MW142	mg/L
Iron	0.355	N<	NO	5317-96	MW142	mg/L
Iron	0.36	<	NO	6872-94	MW142	mg/L
Iron	0.681		YES	7089-93	MW142	mg/L
Iron	1.01	N	YES	5147-97	MW142	mg/L
Iron	2.13		YES	6084-93	MW142	mg/L
Iron	0.48		YES	5468-95	MW150	mg/L
Iron	0.872	N	YES	5321-96	MW150	mg/L
Iron	2.31		YES	4789-94	MW150	mg/L
Iron	2.49		YES	5650-93	MW150	mg/L
Iron	46.8	N	YES	5148-97	MW150	mg/L
Iron	1.24		YES	6074-94	MW199	mg/L
Iron	1.52		YES	7311-93	MW199	mg/L
Iron	1.6		YES	6888-94	MW199	mg/L
Iron	1.75		YES	5260-94	MW199	mg/L
Iron	3.59		YES	4312-94	MW199	mg/L
Iron	3.94		YES	5984-93	MW199	mg/L
Iron	6.91		YES	5170-93	MW199	mg/L
Iron	9.2		YES	5558-97	MW199	mg/L

CORRECTED DATA SET

	MW 103	MW 106	MW 141	MW 142	MW 150	MW 199	Overall	Weighted
	Iron							
	0.01	0.354	0.515	0.067	0.48	1.24		
	0.043	0.62	0.681	0.172	0.872	1.52		
	0.053	1.84	1.02	0.26	2.31	1.6		
	0.064	1.84	1.16	0.354	2.49	1.75		
	0.069		1.3	0.355	2.49	3.59		
	0.3		1.35	0.355		3.94		
	0.355		1.35	0.36		6.91		
	0.355			0.681		9.2		
	0.438			1.01				
	0.464			2.13				
Min	0.010	0.354	0.515	0.067	0.480	1.240	0.010	
Max	0.464	1.840	1.350	2.130	2.490	9.200	9.200	
Average	0.215	1.164	1.054	0.574	1.728	3.719	1.325	1.409
Number	10	4	7	10	5	8	44	



MW 103 - Data were not modified.

MW 106 - Maxiumum value is much greater than other results and is related to turbidity of sample. Result was reduced to next greatest maximum value.

MW 141 - Maximum value is much greater than other results and is related to turbidity of sample. Result reduced to next greatest value.

MW 142 - Data not modified.

MW 150 - Maximum value is much greater than that in other samples. This was related to turbidity of sample and result reduced to next greatest value.

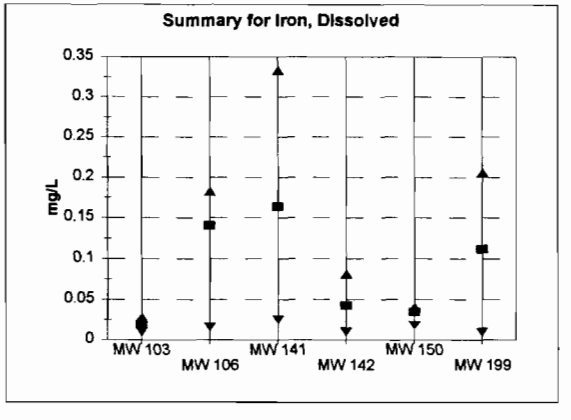
MW 199 - Data not modified.

Summary of RGA Background Well Inorganic Chemical Data

ANALYSIS	RESULT	QUALIFIER	DETECT?	SAMPLE ID	STATION ID	UNITS
Iron, Dissolved	0.01	<	NO	5944-93	MW103	mg/L
Iron, Dissolved	0.01	<	NO	7299-93	MW103	mg/L
Iron, Dissolved	0.01	<	NO	4272-94	MW103	mg/L
Iron, Dissolved	0.022		YES	6026-94	MW103	mg/L
Iron, Dissolved	0.025		YES	5187-94	MW103	mg/L
Iron, Dissolved	0.028		YES	5178-93	MW103	mg/L
Iron, Dissolved	0.355	<	NO	6774-94	MW103	mg/L
Iron, Dissolved	0.355	<	NO	5440-95	MW103	mg/L
Iron, Dissolved		Q	NO	5285-96	MW103	
Iron, Dissolved	0.016		YES	4697-94	MW106	mg/L
Iron, Dissolved	0.182		YES	5322-93	MW106	mg/L
Iron, Dissolved	0.355	<	NO	5444-95	MW106	mg/L
Iron, Dissolved	0.36	<	NO	7272-94	MW106	mg/L
Iron, Dissolved	0.025		YES	4229-94	MW141	mg/L
Iron, Dissolved	0.04		YES	5199-94	MW141	mg/L
Iron, Dissolved	0.11		YES	6080-93	MW141	mg/L
Iron, Dissolved	0.152		YES	6092-93	MW141	mg/L
Iron, Dissolved	0.152		YES	7085-93	MW141	mg/L
Iron, Dissolved	0.333		YES	6054-94	MW141	mg/L
Iron, Dissolved	0.36	<	NO	6868-94	MW141	mg/L
Iron, Dissolved	0.01	<	NO	4233-94	MW142	mg/L
Iron, Dissolved	0.01	<	NO	5203-94	MW142	mg/L
Iron, Dissolved	0.01	<	NO	6058-94	MW142	mg/L
Iron, Dissolved	0.02		YES	6084-93	MW142	mg/L
Iron, Dissolved	0.08		YES	7089-93	MW142	mg/L
Iron, Dissolved	0.081		YES	6096-93	MW142	mg/L
Iron, Dissolved	0.355	<	NO	5464-95	MW142	mg/L
Iron, Dissolved	0.36	<	NO	6872-94	MW142	mg/L
Iron, Dissolved		Q	NO	5317-96	MW142	
Iron, Dissolved	0.018		YES	5650-93	MW150	mg/L
Iron, Dissolved	0.04		YES	4789-94	MW150	mg/L
Iron, Dissolved	0.355	<	NO	5468-95	MW150	mg/L
Iron, Dissolved	0.355	N<	NO	5321-96	MW150	mg/L
Iron, Dissolved	0.01	<	NO	5170-93	MW199	mg/L
Iron, Dissolved	0.02		YES	6074-94	MW199	mg/L
Iron, Dissolved	0.031		YES	4312-94	MW199	mg/L
Iron, Dissolved	0.103		YES	5984-93	MW199	mg/L
Iron, Dissolved	0.206		YES	5260-94	MW199	mg/L
Iron, Dissolved	0.36	<	NO	6888-94	MW199	mg/L
Iron, Dissolved	2.65		YES	7311-93	MW199	mg/L

CORRECTED DATA SET

	MW 103	MW 106	MW 141	MW 142	MW 150	MW 199	Overall	Weighted
	Iron, Dissolved							
	0.01	0.016	0.025	0.01	0.018	0.01		
	0.01	0.182	0.04	0.01	0.04	0.02		
	0.01	0.182	0.11	0.01	0.04	0.031		
	0.022	0.182	0.152	0.02	0.04	0.103		
	0.025		0.152	0.08		0.206		
	0.028		0.333	0.081		0.206		
	0.028		0.333	0.081		0.206		
	0.028			0.081				
	0.01			0.01				
Min	0.010	0.016	0.025	0.010	0.018	0.010	0.010	
Max	0.028	0.182	0.333	0.081	0.040	0.206	0.333	
Average	0.019	0.141	0.164	0.043	0.035	0.112	0.080	0.085
Number	9	4	7	9	4	7	40	



MW 103 - One "Q" qualified result given value of minimum detection limt for samples from this well (0.01 mg/L); two nondetects with values greeter than maximum detected value were reduced to the maximum detected value.

MW 106 - Two nondetect results with values greater than the maximum detected value were reduced to the maximum detected value.

MW 141 - One nondetect with a value greater than the maximum detected value reduced to the maximum detected value.

Mw 142 - Two nondetect results with values greater than the maximum detected value were reduced to the maximum detected value; one "Q" qualified result was given the minimum detection limit for samples from this well (0.01 mg/L).

MW 150 - Two nondetect results with values greater than the maximum detected value were reduced to the maximum detected value.

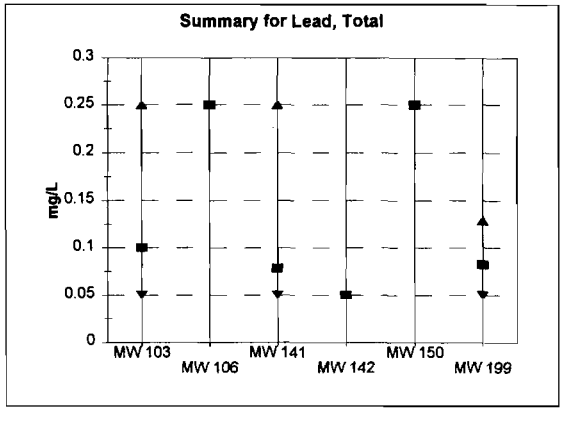
MW 199 - The maximum detected value within this well was much greater than other values; this value was reduced to the next greatest detected value.

Summary of RGA Background Well Inorganic Chemical Data

ANALYSIS	RESULT	QUALIFIER	DETECT?	SAMPLE ID	STATION ID	UNITS
Lead	0.05	<	NO	5178-93	MW103	mg/L
Lead	0.05	<	NO	5944-93	MW103	mg/L
Lead	0.05	<	NO	7299-93	MW103	mg/L
Lead	0.05	<	NO	4272-94	MW103	mg/L
Lead	0.05	<	NO	5187-94	MW103	mg/L
Lead	0.05	<	NO	6026-94	MW103	mg/L
Lead	0.25	<	NO	6774-94	MW103	mg/L
Lead	0.25	<	NO	5440-95	MW103	mg/L
Lead	0.25	<	NO	5444-95	MW106	mg/L
Lead	0.05	<	NO	6080-93	MW141	mg/L
Lead	0.05	<	NO	6092-93	MW141	mg/L
Lead	0.05	<	NO	7085-93	MW141	mg/L
Lead	0.05	<	NO	4229-94	MW141	mg/L
Lead	0.05	<	NO	5199-94	MW141	mg/L
Lead	0.05	<	NO	6054-94	MW141	mg/L
Lead	0.25	<	NO	6868-94	MW141	mg/L
Lead	0.05	<	NO	6084-93	MW142	mg/L
Lead	0.05	<	NO	6096-93	MW142	mg/L
Lead	0.05	<	NO	7089-93	MW142	mg/L
Lead	0.05	<	NO	4233-94	MW142	mg/L
Lead	0.05	<	NO	6058-94	MW142	mg/L
Lead	0.051		YES	5203-94	MW142	mg/L
Lead	0.25	<	NO	6872-94	MW142	mg/L
Lead	0.25	<	NO	5464-95	MW142	mg/L
Lead	0.25	<	NO	5468-95	MW150	mg/L
Lead	0.05	<	NO	5170-93	MW199	mg/L
Lead	0.05	<	NO	7311-93	MW199	mg/L
Lead	0.05	<	NO	6074-94	MW199	mg/L
Lead	0.068		YES	5260-94	MW199	mg/L
Lead	0.1		YES	4312-94	MW199	mg/L
Lead	0.129		YES	5984-93	MW199	mg/L
Lead	0.25	<	NO	6888-94	MW199	mg/L

CORRECTED DATA SET

	MW 103	MW 106	MW 141	MW 142	MW 150	MW 199	Overall	Weighted
	Lead							
	0.05	0.25	0.05	0.05	0.25	0.05		
	0.05		0.05	0.05		0.05		
	0.05		0.05	0.05		0.05		
	0.05		0.05	0.05		0.068		
	0.05		0.05	0.05		0.1		
	0.05		0.05	0.051		0.129		
	0.25		0.25	0.051		0.129		
	0.25			0.051				
Min	0.050	0.250	0.050	0.050	0.250	0.050	0.050	
Max	0.250	0.250	0.250	0.051	0.250	0.129	0.250	
Average	0.100	0.250	0.079	0.050	0.250	0.082	0.088	0.135
Number	8	1	7	8	1	7	32	



MW 103 - Data were not modified.

MW 106 - Data not modified.

MW 141 - Data not modified.

MW 142 - Two nondetect results with values greater than the maximum detected concentration were reduced to the maximum detected concentration.

MW 150 - Data were not modifed.

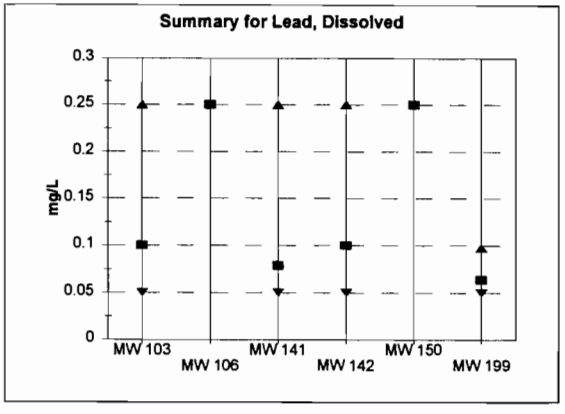
MW 199 - One nondetected result with a value greater than the maximum detected concentration was reduced to the maximum detected concentration.

Summary of RGA Background Well Inorganic Chemical Data

ANALYSIS	RESULT	QUALIFIER	DETECT?	SAMPLE ID	STATION ID	UNITS
Lead, Dissolved	0.05	<	NO	5178-93	MW103	mg/L
Lead, Dissolved	0.05	<	NO	7299-93	MW103	mg/L
Lead, Dissolved	0.05	<	NO	4272-94	MW103	mg/L
Lead, Dissolved	0.05	<	NO	5187-94	MW103	mg/L
Lead, Dissolved	0.05	<	NO	6026-94	MW103	mg/L
Lead, Dissolved	0.25	<	NO	6774-94	MW103	mg/L
Lead, Dissolved	0.25	<	NO	5440-95	MW103	mg/L
Lead, Dissolved		Q	NO	5944-93	MW103	
Lead, Dissolved	0.25	<	NO	5444-95	MW106	mg/L
Lead, Dissolved	0.05	<	NO	6080-93	MW141	mg/L
Lead, Dissolved	0.05	<	NO	6092-93	MW141	mg/L
Lead, Dissolved	0.05	<	NO	7085-93	MW141	mg/L
Lead, Dissolved	0.05	<	NO	4229-94	MW141	mg/L
Lead, Dissolved	0.05	<	NO	5199-94	MW141	mg/L
Lead, Dissolved	0.25	<	NO	6868-94	MW141	mg/L
Lead, Dissolved		Q	NO	6054-94	MW141	
Lead, Dissolved	0.05	<	NO	6084-93	MW142	mg/L
Lead, Dissolved	0.05	<	NO	6096-93	MW142	mg/L
Lead, Dissolved	0.05	<	NO	7089-93	MW142	mg/L
Lead, Dissolved	0.05	<	NO	4233-94	MW142	mg/L
Lead, Dissolved	0.05	<	NO	5203-94	MW142	mg/L
Lead, Dissolved	0.25	<	NO	6872-94	MW142	mg/L
Lead, Dissolved	0.25	<	NO	5464-95	MW142	mg/L
Lead, Dissolved		Q	NO	6058-94	MW142	
Lead, Dissolved	0.25	<	NO	5468-95	MW150	mg/L
Lead, Dissolved	0.05	<	NO	5170-93	MW199	mg/L
Lead, Dissolved	0.05	<	NO	5984-93	MW199	mg/L
Lead, Dissolved	0.05	<	NO	4312-94	MW199	mg/L
Lead, Dissolved	0.05	<	NO	5260-94	MW199	mg/L
Lead, Dissolved	0.05	<	NO	6074-94	MW199	mg/L
Lead, Dissolved	0.098		YES	7311-93	MW199	mg/L
Lead, Dissolved	0.25	<	NO	6888-94	MW199	mg/L

CORRECTED DATA SET

	MW 103	MW 106	MW 141	MW 142	MW 150	MW 199	Overall	Weighted
	Lead, Dissolved							
	0.05	0.25	0.05	0.05	0.25	0.05		
	0.05		0.05	0.05		0.05		
	0.05		0.05	0.05		0.05		
	0.05		0.05	0.05		0.05		
	0.05		0.05	0.05		0.05		
	0.25		0.25	0.25		0.098		
	0.25		0.05	0.25		0.098		
	0.05			0.05				
Min	0.050	0.250	0.050	0.050	0.250	0.050	0.050	
Max	0.250	0.250	0.250	0.250	0.250	0.098	0.250	
Average	0.100	0.250	0.079	0.100	0.250	0.064	0.097	0.140
Number	8	1	7	8	1	7	32	



MW 103 - One "Q" qualified result given value of minimum detection limit for samples from this well (0.05 mg/L).

MW 106 - Data not modified.

MW 141 - One "Q" qualified result given value of minimum detection limit for samples from this well.

MW 142 - One "Q" qualified result given value of minimum detection limit for samples from this well (0.05 mg/L).

MW 150 - Data were not modifed.

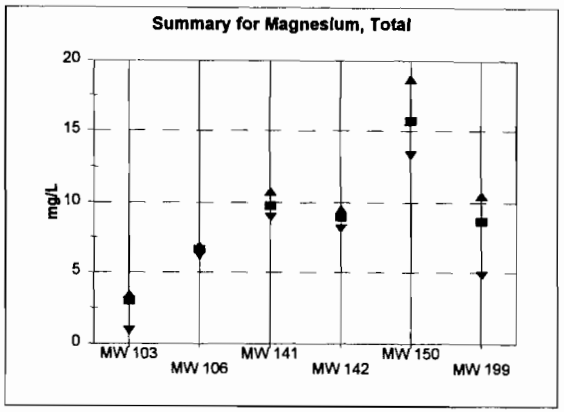
MW 199 - One nondetect greater than the maximum detected value reduced to maximum detected value.

Summary of RGA Background Well Inorganic Chemical Data

ANALYSIS	RESULT	QUALIFIER	DETECT?	SAMPLE ID	STATION ID	UNITS
Magnesium	0.879		YES	5944-93	MW103	mg/L
Magnesium	2.96		YES	7299-93	MW103	mg/L
Magnesium	3.1		YES	6026-94	MW103	mg/L
Magnesium	3.12		YES	6774-94	MW103	mg/L
Magnesium	3.14		YES	4272-94	MW103	mg/L
Magnesium	3.15		YES	5178-93	MW103	mg/L
Magnesium	3.28		YES	5187-94	MW103	mg/L
Magnesium	3.32	N	YES	5142-97	MW103	mg/L
Magnesium	3.37	N	YES	5285-96	MW103	mg/L
Magnesium	3.4		YES	5440-95	MW103	mg/L
Magnesium	6.2		YES	4697-94	MW106	mg/L
Magnesium	6.65		YES	5444-95	MW106	mg/L
Magnesium	6.73		YES	5322-93	MW106	mg/L
Magnesium	6.9		YES	7272-94	MW106	mg/L
Magnesium	8.95		YES	6054-94	MW141	mg/L
Magnesium	9.25		YES	5199-94	MW141	mg/L
Magnesium	9.51		YES	6080-93	MW141	mg/L
Magnesium	9.84		YES	7085-93	MW141	mg/L
Magnesium	9.9		YES	6868-94	MW141	mg/L
Magnesium	10.1		YES	4229-94	MW141	mg/L
Magnesium	10.8		YES	6092-93	MW141	mg/L
Magnesium	8.13		YES	5203-94	MW142	mg/L
Magnesium	8.34		YES	5464-95	MW142	mg/L
Magnesium	8.63		YES	7089-93	MW142	mg/L
Magnesium	8.86	N	YES	5147-97	MW142	mg/L
Magnesium	8.89		YES	6084-93	MW142	mg/L
Magnesium	9.1		YES	6872-94	MW142	mg/L
Magnesium	9.25		YES	4233-94	MW142	mg/L
Magnesium	9.38	N	YES	5317-96	MW142	mg/L
Magnesium	9.45		YES	6096-93	MW142	mg/L
Magnesium	9.51		YES	6058-94	MW142	mg/L
Magnesium	13.3		YES	4789-94	MW150	mg/L
Magnesium	15.2		YES	5650-93	MW150	mg/L
Magnesium	15.3	N	YES	5321-96	MW150	mg/L
Magnesium	16		YES	5468-95	MW150	mg/L
Magnesium	18.7	N	YES	5148-97	MW150	mg/L
Magnesium	4.81		YES	5170-93	MW199	mg/L
Magnesium	7.99		YES	5260-94	MW199	mg/L
Magnesium	8.52		YES	5558-97	MW199	mg/L
Magnesium	8.9		YES	7311-93	MW199	mg/L
Magnesium	9.26		YES	4312-94	MW199	mg/L
Magnesium	9.59		YES	6074-94	MW199	mg/L
Magnesium	9.7		YES	6888-94	MW199	mg/L
Magnesium	10.5		YES	5984-93	MW199	mg/L

CORRECTED DATA SET

	MW 103	MW 106	MW 141	MW 142	MW 150	MW 199	Overall	Weighted
	Magnesium							
	0.879	6.2	8.95	8.13	13.3	4.81		
	2.96	6.65	9.25	8.34	15.2	7.99		
	3.1	6.73	9.51	8.63	15.3	8.52		
	3.12	6.9	9.84	8.86	16	8.9		
	3.14		9.9	8.89	18.7	9.26		
	3.15		10.1	9.1		9.59		
	3.28		10.8	9.25		9.7		
	3.32			9.38		10.5		
	3.37			9.45				
	3.4			9.51				
Min	0.879	6.200	8.950	8.130	13.300	4.810	0.879	
Max	3.400	6.900	10.800	9.510	18.700	10.500	18.700	
Average	2.972	6.620	9.764	8.954	15.700	8.659	8.224	8.778
Number	10	4	7	10	5	8	44	



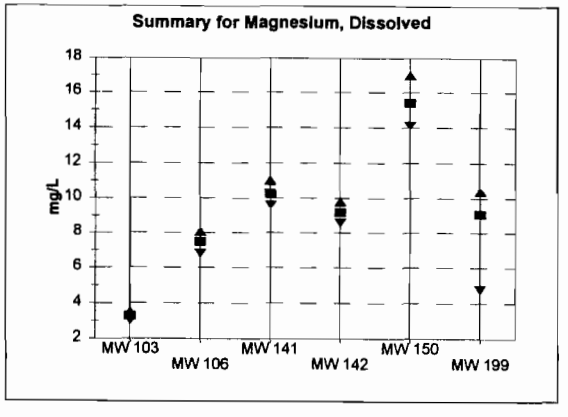
Data for Magnesium, Total were not modified.

Summary of RGA Background Well Inorganic Chemical Data

ANALYSIS	RESULT	QUALIFIER	DETECT?	SAMPLE ID	STATION ID	UNITS
Magnesium, Dissolved	0.008		YES	5944-93	MW103	mg/L
Magnesium, Dissolved	3.01		YES	7299-93	MW103	mg/L
Magnesium, Dissolved	3.07	N	YES	5285-96	MW103	mg/L
Magnesium, Dissolved	3.22		YES	5178-93	MW103	mg/L
Magnesium, Dissolved	3.33		YES	4272-94	MW103	mg/L
Magnesium, Dissolved	3.34		YES	6774-94	MW103	mg/L
Magnesium, Dissolved	3.46		YES	6026-94	MW103	mg/L
Magnesium, Dissolved	3.48		YES	5440-95	MW103	mg/L
Magnesium, Dissolved	3.51		YES	5187-94	MW103	mg/L
Magnesium, Dissolved	6.82		YES	4697-94	MW106	mg/L
Magnesium, Dissolved	7.58		YES	5444-95	MW106	mg/L
Magnesium, Dissolved	8.08		YES	7272-94	MW106	mg/L
Magnesium, Dissolved	9.6		YES	7085-93	MW141	mg/L
Magnesium, Dissolved	9.67		YES	6080-93	MW141	mg/L
Magnesium, Dissolved	9.8		YES	5199-94	MW141	mg/L
Magnesium, Dissolved	10.4		YES	6092-93	MW141	mg/L
Magnesium, Dissolved	10.6		YES	4229-94	MW141	mg/L
Magnesium, Dissolved	10.73		YES	6054-94	MW141	mg/L
Magnesium, Dissolved	11		YES	6868-94	MW141	mg/L
Magnesium, Dissolved	8.6	N	YES	5317-96	MW142	mg/L
Magnesium, Dissolved	8.69		YES	5203-94	MW142	mg/L
Magnesium, Dissolved	8.7		YES	6084-93	MW142	mg/L
Magnesium, Dissolved	8.72		YES	7089-93	MW142	mg/L
Magnesium, Dissolved	9.29		YES	6096-93	MW142	mg/L
Magnesium, Dissolved	9.59		YES	5464-95	MW142	mg/L
Magnesium, Dissolved	9.63		YES	4233-94	MW142	mg/L
Magnesium, Dissolved	9.66		YES	6058-94	MW142	mg/L
Magnesium, Dissolved	9.8		YES	6872-94	MW142	mg/L
Magnesium, Dissolved	14.1	N	YES	5321-96	MW150	mg/L
Magnesium, Dissolved	15		YES	5650-93	MW150	mg/L
Magnesium, Dissolved	15.5		YES	4789-94	MW150	mg/L
Magnesium, Dissolved	17		YES	5468-95	MW150	mg/L
Magnesium, Dissolved	4.78		YES	5170-93	MW199	mg/L
Magnesium, Dissolved	9.15		YES	7311-93	MW199	mg/L
Magnesium, Dissolved	9.31		YES	5260-94	MW199	mg/L
Magnesium, Dissolved	9.74		YES	4312-94	MW199	mg/L
Magnesium, Dissolved	10		YES	6888-94	MW199	mg/L
Magnesium, Dissolved	10.2		YES	5984-93	MW199	mg/L
Magnesium, Dissolved	10.4		YES	6074-94	MW199	mg/L

CORRECTED DATA SET

	MW 103	MW 106	MW 141	MW 142	MW 150	MW 199	Overall	Weighted
	Magnesium, Dissolved							
	3.01	6.82	9.6	8.6	14.1	4.78		
	3.01	7.58	9.67	8.69	15	9.15		
	3.07	8.08	9.8	8.7	15.5	9.31		
	3.22		10.4	8.72	17	9.74		
	3.33		10.6	9.29		10		
	3.34		10.73	9.59		10.2		
	3.46		11	9.63		10.4		
	3.48			9.66				
	3.51			9.8				
Min	3.010	6.820	9.600	8.600	14.100	4.780	3.010	
Max	3.510	8.080	11.000	9.800	17.000	10.400	17.000	
Average	3.270	7.493	10.257	9.187	15.400	9.083	8.502	9.115
Number	9	3	7	9	4	7	39	



MW 103 - One very small detected result was (0.008 mg/L) was determined to be an outlier and increased to the next smallest result.

MW 106 - Data not modified.

MW 141 - Data not modified.

MW 142 - Data not modified.

MW 150 - Data were not modifed.

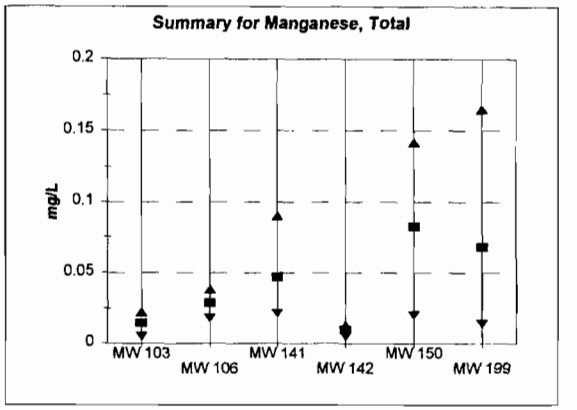
MW 199 - Data not modified.

Summary of RGA Background Well Inorganic Chemical Data

ANALYSIS	RESULT	QUALIFIER	DETECT?	SAMPLE ID	STATION ID	UNITS
Manganese	0.005	<	NO	5944-93	MW103	mg/L
Manganese	0.008		YES	4272-94	MW103	mg/L
Manganese	0.008		YES	5187-94	MW103	mg/L
Manganese	0.008		YES	6026-94	MW103	mg/L
Manganese	0.013		YES	7299-93	MW103	mg/L
Manganese	0.02	<	NO	6774-94	MW103	mg/L
Manganese	0.02	<	NO	5440-95	MW103	mg/L
Manganese	0.02	<	NO	5285-96	MW103	mg/L
Manganese	0.022		YES	5178-93	MW103	mg/L
Manganese	0.05	<	NO	5142-97	MW103	mg/L
Manganese	0.018		YES	4697-94	MW106	mg/L
Manganese	0.02	<	NO	7272-94	MW106	mg/L
Manganese	0.038		YES	5444-95	MW106	mg/L
Manganese	0.409		YES	5322-93	MW106	mg/L
Manganese	0.021		YES	6054-94	MW141	mg/L
Manganese	0.024		YES	6868-94	MW141	mg/L
Manganese	0.032		YES	6080-93	MW141	mg/L
Manganese	0.041		YES	5199-94	MW141	mg/L
Manganese	0.054		YES	4229-94	MW141	mg/L
Manganese	0.065		YES	7085-93	MW141	mg/L
Manganese	0.09		YES	6092-93	MW141	mg/L
Manganese	0.005		YES	4233-94	MW142	mg/L
Manganese	0.005	<	NO	5203-94	MW142	mg/L
Manganese	0.005	<	NO	6058-94	MW142	mg/L
Manganese	0.008		YES	7089-93	MW142	mg/L
Manganese	0.01		YES	6084-93	MW142	mg/L
Manganese	0.013		YES	6096-93	MW142	mg/L
Manganese	0.02	<	NO	6872-94	MW142	mg/L
Manganese	0.02	<	NO	5464-95	MW142	mg/L
Manganese	0.02	<	NO	5317-96	MW142	mg/L
Manganese	0.05	<	NO	5147-97	MW142	mg/L
Manganese	0.02		YES	5468-95	MW150	mg/L
Manganese	0.02	<	NO	5321-96	MW150	mg/L
Manganese	0.111		YES	4789-94	MW150	mg/L
Manganese	0.119		YES	5148-97	MW150	mg/L
Manganese	0.142		YES	5650-93	MW150	mg/L
Manganese	0.014		YES	6074-94	MW199	mg/L
Manganese	0.02	<	NO	6888-94	MW199	mg/L
Manganese	0.042		YES	4312-94	MW199	mg/L
Manganese	0.048		YES	7311-93	MW199	mg/L
Manganese	0.077		YES	5984-93	MW199	mg/L
Manganese	0.086		YES	5170-93	MW199	mg/L
Manganese	0.092		YES	5260-94	MW199	mg/L
Manganese	0.165		YES	5558-97	MW199	mg/L

CORRECTED DATA SET

	MW 103	MW 106	MW 141	MW 142	MW 150	MW 199	Overall	Weighted
	Manganese							
	0.005	0.018	0.021	0.005	0.02	0.014		
	0.008	0.02	0.024	0.005	0.02	0.02		
	0.008	0.038	0.032	0.005	0.111	0.042		
	0.008	0.038	0.041	0.008	0.119	0.048		
	0.013		0.054	0.01	0.142	0.077		
	0.02		0.065	0.013		0.086		
	0.02		0.09	0.013		0.092		
	0.02			0.013		0.165		
	0.022			0.013				
	0.022			0.013				
Min	0.005	0.018	0.021	0.005	0.020	0.014	0.005	
Max	0.022	0.038	0.090	0.013	0.142	0.165	0.165	
Average	0.015	0.029	0.047	0.010	0.082	0.068	0.037	0.042
Number	10	4	7	10	5	8	44	



MW 103 - One nondetect greater than maximum detected value set to maximum detected value.

MW 106 - Maximum detected value greatly exceeded the next greatest detection and was declared an outlier. The value was reduced to the next greatesr detected value. This decision is supported by the very high turbidity of the sample with the anamolous reesult.

MW 141 - Data not modified.

MW 142 - Four nondetected results greater than the maximum detected value set to maximum detected value.

MW 150 - Data were not modifed.

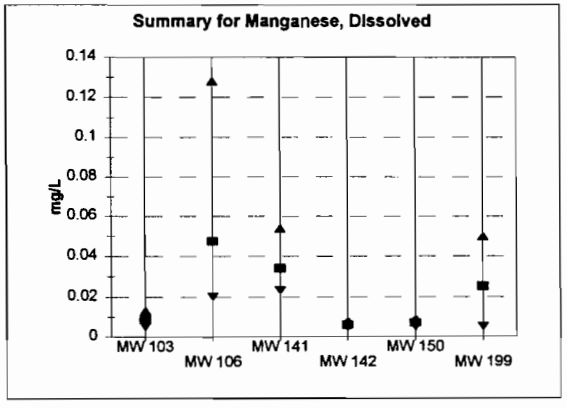
MW 199 - Data not modified.

Summary of RGA Background Well Inorganic Chemical Data

ANALYSIS	RESULT	QUALIFIER	DETECT?	SAMPLE ID	STATION ID	UNITS
Manganese, Dissolved	0.005	<	NO	5944-93	MW103	mg/L
Manganese, Dissolved	0.005		YES	5187-94	MW103	mg/L
Manganese, Dissolved	0.005	<	NO	6026-94	MW103	mg/L
Manganese, Dissolved	0.007		YES	4272-94	MW103	mg/L
Manganese, Dissolved	0.011		YES	7299-93	MW103	mg/L
Manganese, Dissolved	0.013		YES	5178-93	MW103	mg/L
Manganese, Dissolved	0.02	<	NO	6774-94	MW103	mg/L
Manganese, Dissolved	0.02	<	NO	5440-95	MW103	mg/L
Manganese, Dissolved		Q	NO	5285-96	MW103	
Manganese, Dissolved	0.02	<	NO	7272-94	MW106	mg/L
Manganese, Dissolved	0.02	<	NO	5444-95	MW106	mg/L
Manganese, Dissolved	0.022		YES	4697-94	MW106	mg/L
Manganese, Dissolved	0.128		YES	5322-93	MW106	mg/L
Manganese, Dissolved	0.023		YES	6080-93	MW141	mg/L
Manganese, Dissolved	0.024		YES	5199-94	MW141	mg/L
Manganese, Dissolved	0.024		YES	6054-94	MW141	mg/L
Manganese, Dissolved	0.026		YES	6868-94	MW141	mg/L
Manganese, Dissolved	0.038		YES	6092-93	MW141	mg/L
Manganese, Dissolved	0.049		YES	4229-94	MW141	mg/L
Manganese, Dissolved	0.054		YES	7085-93	MW141	mg/L
Manganese, Dissolved	0.005	<	NO	6096-93	MW142	mg/L
Manganese, Dissolved	0.005	<	NO	7089-93	MW142	mg/L
Manganese, Dissolved	0.005	<	NO	4233-94	MW142	mg/L
Manganese, Dissolved	0.005	<	NO	5203-94	MW142	mg/L
Manganese, Dissolved	0.005		YES	6058-94	MW142	mg/L
Manganese, Dissolved	0.008		YES	6084-93	MW142	mg/L
Manganese, Dissolved	0.02	<	NO	6872-94	MW142	mg/L
Manganese, Dissolved	0.02	<	NO	5464-95	MW142	mg/L
Manganese, Dissolved		Q	NO	5317-96	MW142	
Manganese, Dissolved	0.005		YES	5650-93	MW150	mg/L
Manganese, Dissolved	0.009		YES	4789-94	MW150	mg/L
Manganese, Dissolved	0.02	<	NO	5468-95	MW150	mg/L
Manganese, Dissolved		Q	NO	5321-96	MW150	
Manganese, Dissolved	0.005	<	NO	5260-94	MW199	mg/L
Manganese, Dissolved	0.005	<	NO	6074-94	MW199	mg/L
Manganese, Dissolved	0.008		YES	4312-94	MW199	mg/L
Manganese, Dissolved	0.02	<	NO	6888-94	MW199	mg/L
Manganese, Dissolved	0.043		YES	5170-93	MW199	mg/L
Manganese, Dissolved	0.045		YES	5984-93	MW199	mg/L
Manganese, Dissolved	0.05		YES	7311-93	MW199	mg/L

CORRECTED DATA SET

	MW 103	MW 106	MW 141	MW 142	MW 150	MW 199	Overall	Weighted
	Manganese, Dissolved							
	0.005	0.02	0.023	0.005	0.005	0.005		
	0.005	0.02	0.024	0.005	0.009	0.005		
	0.005	0.022	0.024	0.005	0.009	0.008		
	0.007	0.128	0.026	0.005	0.005	0.02		
	0.011		0.038	0.005		0.043		
	0.013		0.049	0.008		0.045		
	0.013		0.054	0.008		0.05		
	0.013			0.008				
	0.005			0.005				
Min	0.005	0.020	0.023	0.005	0.005	0.005	0.005	
Max	0.013	0.128	0.054	0.008	0.009	0.050	0.128	
Average	0.009	0.048	0.034	0.006	0.007	0.025	0.019	0.021
Number	9	4	7	9	4	7	40	



MW 103 - One "Q" qualified result given value of minimum detection limit for samples from this well (0.005 mg/L); two nondetect results reduced to maximum detected value.

MW 106 - Data not modified.

MW 141 - Data not modified.

MW 142 - One "Q" qualified result given value of minimum detection limit for samples from this well (0.005 mg/L); two nondetect values reduced to maximum detected value for this well.

MW 150 - One "Q" qualified result given value of minimum detection limit for samples from this well (0.005 mg/L); one nondetect result reduced to maximum detected value for this well.

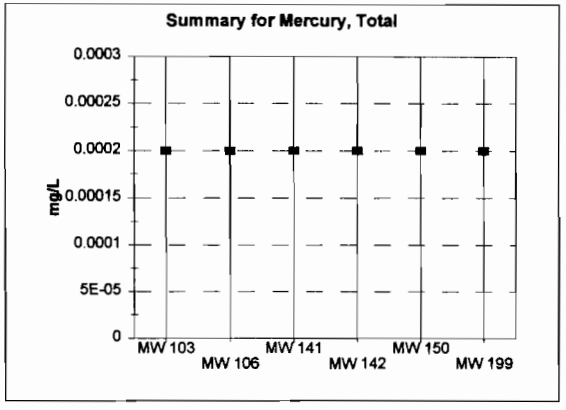
MW 199 - Data not modified.

Summary of RGA Background Well Inorganic Chemical Data

ANALYSIS	RESULT	QUALIFIER	DETECT?	SAMPLE ID	STATION ID	UNITS
Mercury	0.0002	<	NO	5178-93	MW103	mg/L
Mercury	0.0002	<	NO	5944-93	MW103	mg/L
Mercury	0.0002	<	NO	7299-93	MW103	mg/L
Mercury	0.0002	<	NO	4272-94	MW103	mg/L
Mercury	0.0002	<	NO	5187-94	MW103	mg/L
Mercury	0.0002	<	NO	6026-94	MW103	mg/L
Mercury	0.0002	<	NO	6774-94	MW103	mg/L
Mercury	0.0002	<	NO	5440-95	MW103	mg/L
Mercury	0.0002	<	NO	5444-95	MW106	mg/L
Mercury	0.0002	<	NO	6080-93	MW141	mg/L
Mercury	0.0002	<	NO	6092-93	MW141	mg/L
Mercury	0.0002	<	NO	7085-93	MW141	mg/L
Mercury	0.0002	<	NO	4229-94	MW141	mg/L
Mercury	0.0002	<	NO	6054-94	MW141	mg/L
Mercury	0.0002	<	NO	6868-94	MW141	mg/L
Mercury		Q	NO	5199-94	MW141	
Mercury	0.0002	<	NO	6084-93	MW142	mg/L
Mercury	0.0002	<	NO	6096-93	MW142	mg/L
Mercury	0.0002	<	NO	7089-93	MW142	mg/L
Mercury	0.0002	<	NO	4233-94	MW142	mg/L
Mercury	0.0002	<	NO	5203-94	MW142	mg/L
Mercury	0.0002	<	NO	6058-94	MW142	mg/L
Mercury	0.0002	<	NO	6872-94	MW142	mg/L
Mercury	0.0002	<	NO	5464-95	MW142	mg/L
Mercury	0.0002	<	NO	5468-95	MW150	mg/L
Mercury	0.0002	<	NO	5170-93	MW199	mg/L
Mercury	0.0002	<	NO	5984-93	MW199	mg/L
Mercury	0.0002	<	NO	7311-93	MW199	mg/L
Mercury	0.0002	<	NO	4312-94	MW199	mg/L
Mercury	0.0002	<	NO	5260-94	MW199	mg/L
Mercury	0.0002	<	NO	6074-94	MW199	mg/L
Mercury	0.0002	<	NO	6888-94	MW199	mg/L

CORRECTED DATA SET

	MW 103	MW 106	MW 141	MW 142	MW 150	MW 199	Overall	Weighted
	Mercury							
	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002		
	0.0002		0.0002	0.0002		0.0002		
	0.0002		0.0002	0.0002		0.0002		
	0.0002		0.0002	0.0002		0.0002		
	0.0002		0.0002	0.0002		0.0002		
	0.0002		0.0002	0.0002		0.0002		
	0.0002		0.0002	0.0002		0.0002		
	0.0002		0.0002	0.0002		0.0002		
	0.0002			0.0002				
Min	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	
Max	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	
Average	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002
Number	8	1	7	8	1	7	32	



All results for this well were below their respective detection limits; therefore the plot is simply a depiction of the detection limits used for samples taken from the wells.

MW 103 - Data not modified.

MW 106 - Data not modified.

MW 141 - One "Q" qualified result assigned minimum detection limit for samples taken from this well.

MW 142 - Data not modified.

MW 150 - Data not modified.

MW 199 - Data not modified.

Summary of RGA Background Well Inorganic Chemical Data

ANALYSIS	RESULT	QUALIFIER	DETECT?	SAMPLE ID	STATION ID	UNITS
Mercury, Dissolved		Q	NO	5178-93	MW103	
Mercury, Dissolved		Q	NO	5944-93	MW103	
Mercury, Dissolved		Q	NO	7299-93	MW103	
Mercury, Dissolved		Q	NO	4272-94	MW103	
Mercury, Dissolved		Q	NO	5187-94	MW103	
Mercury, Dissolved		Q	NO	6026-94	MW103	
Mercury, Dissolved		Q	NO	6774-94	MW103	
Mercury, Dissolved		Q	NO	5440-95	MW103	
Mercury, Dissolved		Q	NO	5444-95	MW106	
Mercury, Dissolved		Q	NO	6080-93	MW141	
Mercury, Dissolved		Q	NO	6092-93	MW141	
Mercury, Dissolved		Q	NO	7085-93	MW141	
Mercury, Dissolved		Q	NO	4229-94	MW141	
Mercury, Dissolved		Q	NO	5199-94	MW141	
Mercury, Dissolved		Q	NO	6054-94	MW141	
Mercury, Dissolved		Q	NO	6868-94	MW141	
Mercury, Dissolved		Q	NO	6084-93	MW142	
Mercury, Dissolved		Q	NO	6096-93	MW142	
Mercury, Dissolved		Q	NO	7089-93	MW142	
Mercury, Dissolved		Q	NO	4233-94	MW142	
Mercury, Dissolved		Q	NO	5203-94	MW142	
Mercury, Dissolved		Q	NO	6058-94	MW142	
Mercury, Dissolved		Q	NO	6872-94	MW142	
Mercury, Dissolved		Q	NO	5464-95	MW142	
Mercury, Dissolved		Q	NO	5468-95	MW150	
Mercury, Dissolved		Q	NO	5170-93	MW199	
Mercury, Dissolved		Q	NO	5984-93	MW199	
Mercury, Dissolved		Q	NO	7311-93	MW199	
Mercury, Dissolved		Q	NO	4312-94	MW199	
Mercury, Dissolved		Q	NO	5260-94	MW199	
Mercury, Dissolved		Q	NO	6074-94	MW199	
Mercury, Dissolved		Q	NO	6888-94	MW199	

CORRECTED DATA SET

	MW 103	MW 106	MW 141	MW 142	MW 150	MW 199	Overall	Weighted
	Mercury, Dissolved							
Min	ERR	ERR	ERR	ERR	ERR	ERR	ERR	
Max	ERR	ERR	ERR	ERR	ERR	ERR	ERR	
Average	ERR	ERR	ERR	ERR	ERR	ERR	ERR	ERR
Number	0	0	0	0	0	0	0	

Mercury, Dissolved

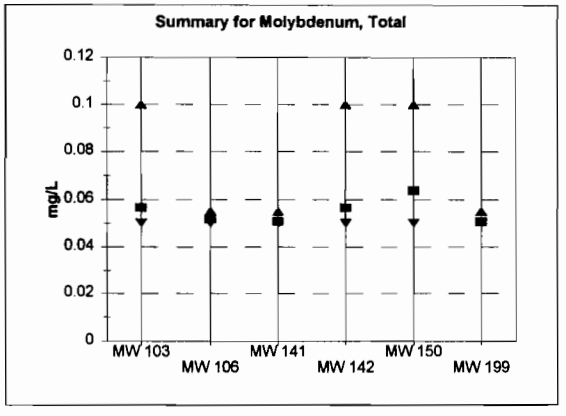
▷ Analysis for Mercury, Dissolved was not performed for any sample; therefore, no value can be assigned to any sample. Generally, this indicates that any detection of mercury in a filtered sample exceeds the background concentration.

Summary of RGA Background Well Inorganic Chemical Data

ANALYSIS	RESULT	QUALIFIER	DETECT?	SAMPLE ID	STATION ID	UNITS
Molybdenum	0.05	<	NO	5178-93	MW103	mg/L
Molybdenum	0.05	<	NO	5944-93	MW103	mg/L
Molybdenum	0.05	<	NO	7299-93	MW103	mg/L
Molybdenum	0.05	<	NO	4272-94	MW103	mg/L
Molybdenum	0.05	<	NO	5187-94	MW103	mg/L
Molybdenum	0.05	<	NO	6026-94	MW103	mg/L
Molybdenum	0.055	<	NO	6774-94	MW103	mg/L
Molybdenum	0.055	<	NO	5285-96	MW103	mg/L
Molybdenum	0.1	<	NO	5142-97	MW103	mg/L
Molybdenum	0.05	<	NO	5322-93	MW106	mg/L
Molybdenum	0.05	<	NO	4697-94	MW106	mg/L
Molybdenum	0.055	<	NO	7272-94	MW106	mg/L
Molybdenum	0.05	<	NO	6080-93	MW141	mg/L
Molybdenum	0.05	<	NO	6092-93	MW141	mg/L
Molybdenum	0.05	<	NO	7085-93	MW141	mg/L
Molybdenum	0.05	<	NO	4229-94	MW141	mg/L
Molybdenum	0.05	<	NO	5199-94	MW141	mg/L
Molybdenum	0.05	<	NO	6054-94	MW141	mg/L
Molybdenum	0.055	<	NO	6868-94	MW141	mg/L
Molybdenum	0.05	<	NO	6084-93	MW142	mg/L
Molybdenum	0.05	<	NO	6096-93	MW142	mg/L
Molybdenum	0.05	<	NO	7089-93	MW142	mg/L
Molybdenum	0.05	<	NO	4233-94	MW142	mg/L
Molybdenum	0.05	<	NO	5203-94	MW142	mg/L
Molybdenum	0.05	<	NO	6058-94	MW142	mg/L
Molybdenum	0.055	<	NO	6872-94	MW142	mg/L
Molybdenum	0.055	<	NO	5317-96	MW142	mg/L
Molybdenum	0.1	<	NO	5147-97	MW142	mg/L
Molybdenum	0.05	<	NO	5650-93	MW150	mg/L
Molybdenum	0.05	<	NO	4789-94	MW150	mg/L
Molybdenum	0.055	<	NO	5321-96	MW150	mg/L
Molybdenum	0.1	<	NO	5148-97	MW150	mg/L
Molybdenum	0.05	<	NO	5170-93	MW199	mg/L
Molybdenum	0.05	<	NO	5984-93	MW199	mg/L
Molybdenum	0.05	<	NO	7311-93	MW199	mg/L
Molybdenum	0.05	<	NO	4312-94	MW199	mg/L
Molybdenum	0.05	<	NO	5260-94	MW199	mg/L
Molybdenum	0.05	<	NO	6074-94	MW199	mg/L
Molybdenum	0.05	<	NO	5558-97	MW199	mg/L
Molybdenum	0.055	<	NO	6888-94	MW199	mg/L

CORRECTED DATA SET

	MW 103	MW 106	MW 141	MW 142	MW 150	MW 199	Overall	Weighted
	Molybdenum							
	0.05	0.05	0.05	0.05	0.05	0.05		
	0.05	0.05	0.05	0.05	0.05	0.05		
	0.05	0.055	0.05	0.05	0.055	0.05		
	0.05		0.05	0.05	0.1	0.05		
	0.05		0.05	0.05		0.05		
	0.05		0.05	0.05		0.05		
	0.055		0.055	0.055		0.05		
	0.055			0.055		0.055		
	0.1			0.1				
Min	0.050	0.050	0.050	0.050	0.050	0.050	0.050	
Max	0.100	0.055	0.055	0.100	0.100	0.055	0.100	
Average	0.057	0.052	0.051	0.057	0.064	0.051	0.055	0.055
Number	9	3	7	9	4	8	40	



All results for this well were below their respective detection limits; therefore the plot is simply a depiction of the detection limits used for samples taken from the wells.

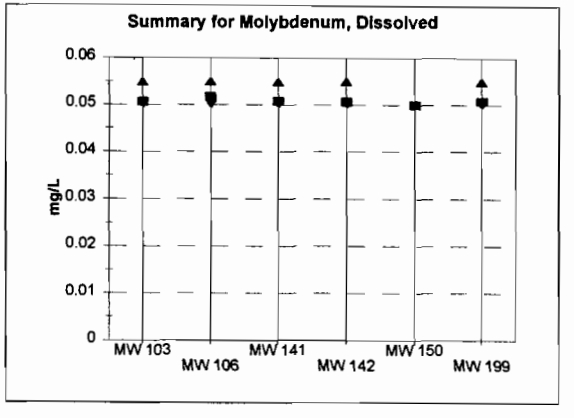
Data for Molybdenum, Total were not modified.

Summary of RGA Background Well Inorganic Chemical Data

ANALYSIS	RESULT	QUALIFIER	DETECT?	SAMPLE ID	STATION ID	UNITS
Molybdenum, Dissolved	0.05	<	NO	5178-93	MW103	mg/L
Molybdenum, Dissolved	0.05	<	NO	5944-93	MW103	mg/L
Molybdenum, Dissolved	0.05	<	NO	7299-93	MW103	mg/L
Molybdenum, Dissolved	0.05	<	NO	4272-94	MW103	mg/L
Molybdenum, Dissolved	0.05	<	NO	5187-94	MW103	mg/L
Molybdenum, Dissolved	0.05	<	NO	6026-94	MW103	mg/L
Molybdenum, Dissolved	0.055	<	NO	6774-94	MW103	mg/L
Molybdenum, Dissolved		Q	NO	5285-96	MW103	
Molybdenum, Dissolved	0.05	<	NO	5322-93	MW106	mg/L
Molybdenum, Dissolved	0.05	<	NO	4697-94	MW106	mg/L
Molybdenum, Dissolved	0.055	<	NO	7272-94	MW106	mg/L
Molybdenum, Dissolved	0.05	<	NO	6080-93	MW141	mg/L
Molybdenum, Dissolved	0.05	<	NO	6092-93	MW141	mg/L
Molybdenum, Dissolved	0.05	<	NO	7085-93	MW141	mg/L
Molybdenum, Dissolved	0.05	<	NO	4229-94	MW141	mg/L
Molybdenum, Dissolved	0.05	<	NO	5199-94	MW141	mg/L
Molybdenum, Dissolved	0.05	<	NO	6054-94	MW141	mg/L
Molybdenum, Dissolved	0.055	<	NO	6868-94	MW141	mg/L
Molybdenum, Dissolved	0.05	<	NO	6084-93	MW142	mg/L
Molybdenum, Dissolved	0.05	<	NO	6096-93	MW142	mg/L
Molybdenum, Dissolved	0.05	<	NO	7089-93	MW142	mg/L
Molybdenum, Dissolved	0.05	<	NO	4233-94	MW142	mg/L
Molybdenum, Dissolved	0.05	<	NO	5203-94	MW142	mg/L
Molybdenum, Dissolved	0.05	<	NO	6058-94	MW142	mg/L
Molybdenum, Dissolved	0.055	<	NO	6872-94	MW142	mg/L
Molybdenum, Dissolved		Q	NO	5317-96	MW142	
Molybdenum, Dissolved	0.05	<	NO	5650-93	MW150	mg/L
Molybdenum, Dissolved	0.05	<	NO	4789-94	MW150	mg/L
Molybdenum, Dissolved		Q	NO	5321-96	MW150	
Molybdenum, Dissolved	0.05	<	NO	5170-93	MW199	mg/L
Molybdenum, Dissolved	0.05	<	NO	5984-93	MW199	mg/L
Molybdenum, Dissolved	0.05	<	NO	7311-93	MW199	mg/L
Molybdenum, Dissolved	0.05	<	NO	4312-94	MW199	mg/L
Molybdenum, Dissolved	0.05	<	NO	5260-94	MW199	mg/L
Molybdenum, Dissolved	0.05	<	NO	6074-94	MW199	mg/L
Molybdenum, Dissolved	0.055	<	NO	6888-94	MW199	mg/L

CORRECTED DATA SET

	MW 103	MW 106	MW 141	MW 142	MW 150	MW 199	Overall	Weighted
	Molybdenum, Dissolved							
	0.05	0.05	0.05	0.05	0.05	0.05		
	0.05	0.05	0.05	0.05	0.05	0.05		
	0.05	0.055	0.05	0.05	0.05	0.05		
	0.05		0.05	0.05		0.05		
	0.05		0.05	0.05		0.05		
	0.05		0.05	0.05		0.05		
	0.055		0.055	0.055		0.055		
	0.05			0.05				
Min	0.050	0.050	0.050	0.050	0.050	0.050	0.050	
Max	0.055	0.055	0.055	0.055	0.050	0.055	0.055	
Average	0.051	0.052	0.051	0.051	0.050	0.051	0.051	0.051
Number	8	3	7	8	3	7	36	



All results for this well were below their respective detection limits; therefore the plot is simply a depiction of the detection limits used for samples taken from the wells.

MW 103 - One "Q" qualified result given value of minimum detection limt for samples from this well (0.05 mg/L).

MW 106 - Data not modified.

MW 141 - Data not modified.

MW 142 - One "Q" qualified result given value of minimum detection limit for samples from this well (0.05 mg/L).

MW 150 - One "Q" qualified result given value of minimum detection limit for samples from this well (0.05 mg/L).

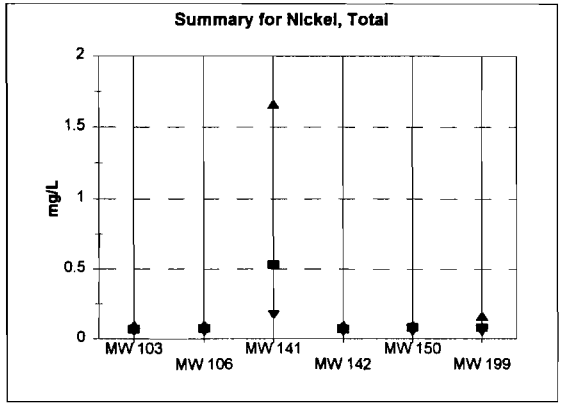
MW 199 - Data not modified.

Summary of RGA Background Well Inorganic Chemical Data

ANALYSIS	RESULT	QUALIFIER	DETECT?	SAMPLE ID	STATION ID	UNITS
Nickel	0.05	<	NO	5178-93	MW103	mg/L
Nickel	0.05	<	NO	5944-93	MW103	mg/L
Nickel	0.05	<	NO	7299-93	MW103	mg/L
Nickel	0.05	<	NO	4272-94	MW103	mg/L
Nickel	0.05	<	NO	5187-94	MW103	mg/L
Nickel	0.05	<	NO	6026-94	MW103	mg/L
Nickel	0.1	<	NO	6774-94	MW103	mg/L
Nickel	0.1	<	NO	5440-95	MW103	mg/L
Nickel	0.1	<	NO	5285-96	MW103	mg/L
Nickel	0.1	<	NO	5142-97	MW103	mg/L
Nickel	0.05	<	NO	5322-93	MW106	mg/L
Nickel	0.05	<	NO	4697-94	MW106	mg/L
Nickel	0.1	<	NO	7272-94	MW106	mg/L
Nickel	0.1	<	NO	5444-95	MW106	mg/L
Nickel	0.17		YES	6054-94	MW141	mg/L
Nickel	0.23		YES	6868-94	MW141	mg/L
Nickel	0.349		YES	5199-94	MW141	mg/L
Nickel	0.396		YES	7085-93	MW141	mg/L
Nickel	0.401		YES	4229-94	MW141	mg/L
Nickel	0.502		YES	6092-93	MW141	mg/L
Nickel	1.66		YES	6080-93	MW141	mg/L
Nickel	0.05	<	NO	6084-93	MW142	mg/L
Nickel	0.05	<	NO	6096-93	MW142	mg/L
Nickel	0.05	<	NO	7089-93	MW142	mg/L
Nickel	0.05	<	NO	4233-94	MW142	mg/L
Nickel	0.05	<	NO	6058-94	MW142	mg/L
Nickel	0.051		YES	5203-94	MW142	mg/L
Nickel	0.1	<	NO	6872-94	MW142	mg/L
Nickel	0.1	<	NO	5464-95	MW142	mg/L
Nickel	0.1	<	NO	5317-96	MW142	mg/L
Nickel	0.1	<	NO	5147-97	MW142	mg/L
Nickel	0.05	<	NO	5650-93	MW150	mg/L
Nickel	0.05	<	NO	4789-94	MW150	mg/L
Nickel	0.1	<	NO	5468-95	MW150	mg/L
Nickel	0.1	<	NO	5321-96	MW150	mg/L
Nickel	0.1	<	NO	5148-97	MW150	mg/L
Nickel	0.05	<	NO	5170-93	MW199	mg/L
Nickel	0.05	<	NO	5984-93	MW199	mg/L
Nickel	0.05	<	NO	7311-93	MW199	mg/L
Nickel	0.05	<	NO	4312-94	MW199	mg/L
Nickel	0.05	<	NO	6074-94	MW199	mg/L
Nickel	0.1	<	NO	6888-94	MW199	mg/L
Nickel	0.126		YES	5260-94	MW199	mg/L
Nickel	0.162		YES	5558-97	MW199	mg/L

CORRECTED DATA SET

	MW 103	MW 106	MW 141	MW 142	MW 150	MW 199	Overall	Weighted
	Nickel							
	0.05	0.05	0.17	0.05	0.05	0.05		
	0.05	0.05	0.23	0.05	0.05	0.05		
	0.05	0.1	0.349	0.05	0.1	0.05		
	0.05	0.1	0.396	0.05	0.1	0.05		
	0.05		0.401	0.05	0.1	0.05		
	0.05		0.502	0.051		0.1		
	0.1		1.66	0.1		0.126		
	0.1			0.1		0.162		
	0.1			0.1				
	0.1			0.1				
Min	0.050	0.050	0.170	0.050	0.050	0.050	0.050	
Max	0.100	0.100	1.660	0.100	0.100	0.162	1.660	
Average	0.070	0.075	0.530	0.070	0.080	0.080	0.147	0.151
Number	10	4	7	10	5	8	44	



MW 103 - Data not modified.

MW 106 - Data not modified.

MW 141 - Detected results in this well were determined to be directly related to the turbidity of the samples; however, turbidity was not excessive for any sample; therefore, data were not modified.

MW 142 - Four samples with nondetect values greater than the maximum detected value were reduced to the maximum detected value.

MW 150 - Data were not modifed.

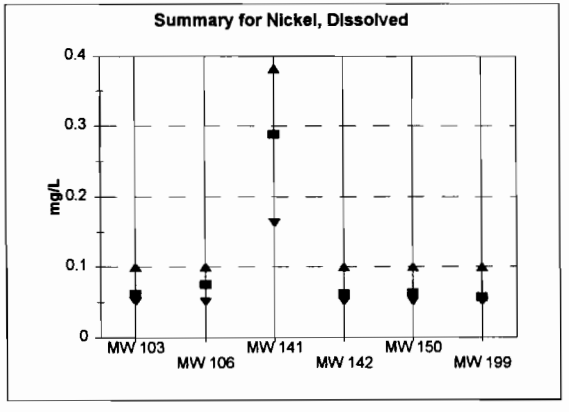
MW 199 - Data not modified.

Summary of RGA Background Well Inorganic Chemical Data

ANALYSIS	RESULT	QUALIFIER	DETECT?	SAMPLE ID	STATION ID	UNITS
Nickel, Dissolved	0.05	<	NO	5178-93	MW103	mg/L
Nickel, Dissolved	0.05	<	NO	5944-93	MW103	mg/L
Nickel, Dissolved	0.05	<	NO	7299-93	MW103	mg/L
Nickel, Dissolved	0.05	<	NO	4272-94	MW103	mg/L
Nickel, Dissolved	0.05	<	NO	5187-94	MW103	mg/L
Nickel, Dissolved	0.05	<	NO	6026-94	MW103	mg/L
Nickel, Dissolved	0.1	<	NO	6774-94	MW103	mg/L
Nickel, Dissolved	0.1	<	NO	5440-95	MW103	mg/L
Nickel, Dissolved		Q	NO	5285-96	MW103	
Nickel, Dissolved	0.05	<	NO	5322-93	MW106	mg/L
Nickel, Dissolved	0.05	<	NO	4697-94	MW106	mg/L
Nickel, Dissolved	0.1	<	NO	7272-94	MW106	mg/L
Nickel, Dissolved	0.1	<	NO	5444-95	MW106	mg/L
Nickel, Dissolved	0.163		YES	6080-93	MW141	mg/L
Nickel, Dissolved	0.205		YES	6054-94	MW141	mg/L
Nickel, Dissolved	0.25		YES	6868-94	MW141	mg/L
Nickel, Dissolved	0.288		YES	6092-93	MW141	mg/L
Nickel, Dissolved	0.365		YES	7085-93	MW141	mg/L
Nickel, Dissolved	0.366		YES	4229-94	MW141	mg/L
Nickel, Dissolved	0.382		YES	5199-94	MW141	mg/L
Nickel, Dissolved	0.05	<	NO	6084-93	MW142	mg/L
Nickel, Dissolved	0.05	<	NO	6096-93	MW142	mg/L
Nickel, Dissolved	0.05	<	NO	7089-93	MW142	mg/L
Nickel, Dissolved	0.05	<	NO	4233-94	MW142	mg/L
Nickel, Dissolved	0.05	<	NO	5203-94	MW142	mg/L
Nickel, Dissolved	0.05	<	NO	6058-94	MW142	mg/L
Nickel, Dissolved	0.1	<	NO	6872-94	MW142	mg/L
Nickel, Dissolved	0.1	<	NO	5464-95	MW142	mg/L
Nickel, Dissolved		Q	NO	5317-96	MW142	
Nickel, Dissolved	0.05	<	NO	5650-93	MW150	mg/L
Nickel, Dissolved	0.05	<	NO	4789-94	MW150	mg/L
Nickel, Dissolved	0.1	<	NO	5468-95	MW150	mg/L
Nickel, Dissolved		Q	NO	5321-96	MW150	
Nickel, Dissolved	0.05	<	NO	5170-93	MW199	mg/L
Nickel, Dissolved	0.05	<	NO	5984-93	MW199	mg/L
Nickel, Dissolved	0.05	<	NO	4312-94	MW199	mg/L
Nickel, Dissolved	0.05	<	NO	5260-94	MW199	mg/L
Nickel, Dissolved	0.05	<	NO	6074-94	MW199	mg/L
Nickel, Dissolved	0.1	<	NO	6888-94	MW199	mg/L
Nickel, Dissolved		Q	NO	7311-93	MW199	

CORRECTED DATA SET

	MW 103	MW 106	MW 141	MW 142	MW 150	MW 199	Overall	Weighted
	Nickel, Dissolved							
	0.05	0.05	0.163	0.05	0.05	0.05		
	0.05	0.05	0.205	0.05	0.05	0.05		
	0.05	0.1	0.25	0.05	0.1	0.05		
	0.05	0.1	0.288	0.05	0.05	0.05		
	0.05		0.365	0.05		0.05		
	0.05		0.366	0.05		0.1		
	0.1		0.382	0.1		0.05		
	0.1			0.1				
	0.05			0.05				
Min	0.050	0.050	0.163	0.050	0.050	0.050	0.050	
Max	0.100	0.100	0.382	0.100	0.100	0.100	0.382	
Average	0.061	0.075	0.288	0.061	0.063	0.057	0.102	0.101
Number	9	4	7	9	4	7	40	



MW 103 - One "Q" qualified result given value of minimum detection limt for samples from this well (0.05 mg/L).

MW 106 - Data not modified.

MW 141 - Data not modified.

MW 142 - One "Q" qualified result given value of minimum detection limit for samples from this well (0.05 mg/L).

MW 150 - One "Q" qualified result given value of minimum detection limit for samples from this well (0.05 mg/L).

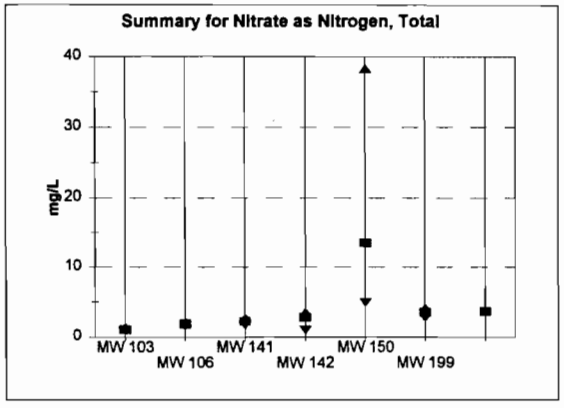
MW 199 - One "Q" qualified result given value of minimum detection limit for samples from this well (0.05 mg/L).

Summary of RGA Background Well Inorganic Chemical Data

ANALYSIS	RESULT	QUALIFIER	DETECT?	SAMPLE ID	STATION ID	UNITS
Nitrate as Nitrogen	1	<	NO	5178-93	MW103	mg/L
Nitrate as Nitrogen	1	<	NO	5944-93	MW103	mg/L
Nitrate as Nitrogen	1	<	NO	7299-93	MW103	mg/L
Nitrate as Nitrogen	1	<	NO	4272-94	MW103	mg/L
Nitrate as Nitrogen	1	<	NO	6026-94	MW103	mg/L
Nitrate as Nitrogen	1	<	NO	6774-94	MW103	mg/L
Nitrate as Nitrogen	1	<	NO	5440-95	MW103	mg/L
Nitrate as Nitrogen	1	<	NO	5285-96	MW103	mg/L
Nitrate as Nitrogen	1	<	NO	5142-97	MW103	mg/L
Nitrate as Nitrogen	1.4		YES	5187-94	MW103	mg/L
Nitrate as Nitrogen	1.6		YES	5444-95	MW106	mg/L
Nitrate as Nitrogen	1.8		YES	5322-93	MW106	mg/L
Nitrate as Nitrogen	2.2		YES	4697-94	MW106	mg/L
Nitrate as Nitrogen	1.7		YES	6092-93	MW141	mg/L
Nitrate as Nitrogen	2		YES	6080-93	MW141	mg/L
Nitrate as Nitrogen	2		YES	6054-94	MW141	mg/L
Nitrate as Nitrogen	2.1		YES	6868-94	MW141	mg/L
Nitrate as Nitrogen	2.3		YES	7085-93	MW141	mg/L
Nitrate as Nitrogen	2.6		YES	4229-94	MW141	mg/L
Nitrate as Nitrogen	2.7		YES	5199-94	MW141	mg/L
Nitrate as Nitrogen	1	<	NO	6058-94	MW142	mg/L
Nitrate as Nitrogen	2.6		YES	6096-93	MW142	mg/L
Nitrate as Nitrogen	2.9		YES	6084-93	MW142	mg/L
Nitrate as Nitrogen	2.9		YES	5464-95	MW142	mg/L
Nitrate as Nitrogen	3		YES	7089-93	MW142	mg/L
Nitrate as Nitrogen	3		YES	4233-94	MW142	mg/L
Nitrate as Nitrogen	3		YES	6872-94	MW142	mg/L
Nitrate as Nitrogen	3		YES	5317-96	MW142	mg/L
Nitrate as Nitrogen	3		YES	5147-97	MW142	mg/L
Nitrate as Nitrogen	3.5		YES	5203-94	MW142	mg/L
Nitrate as Nitrogen	4.9		YES	5148-97	MW150	mg/L
Nitrate as Nitrogen	6.3		YES	5468-95	MW150	mg/L
Nitrate as Nitrogen	7.7		YES	5650-93	MW150	mg/L
Nitrate as Nitrogen	10.2		YES	4789-94	MW150	mg/L
Nitrate as Nitrogen	38.3		YES	5321-96	MW150	mg/L
Nitrate as Nitrogen	2.7		YES	5170-93	MW199	mg/L
Nitrate as Nitrogen	3.3		YES	5984-93	MW199	mg/L
Nitrate as Nitrogen	3.4		YES	6074-94	MW199	mg/L
Nitrate as Nitrogen	3.4		YES	6888-94	MW199	mg/L
Nitrate as Nitrogen	3.4		YES	5558-97	MW199	mg/L
Nitrate as Nitrogen	3.7		YES	7311-93	MW199	mg/L
Nitrate as Nitrogen	3.8		YES	4312-94	MW199	mg/L
Nitrate as Nitrogen	4.1		YES	5260-94	MW199	mg/L

CORRECTED DATA SET

	MW 103	MW 106	MW 141	MW 142	MW 150	MW 199	Overall	Weighted
	Nitrate as Nitrogen							
	1	1.6	1.7	1	4.9	2.7		
	1	1.8	2	2.6	6.3	3.3		
	1	2.2	2	2.9	7.7	3.4		
	1		2.1	2.9	10.2	3.4		
	1		2.3	3	38.3	3.4		
	1		2.6	3		3.7		
	1		2.7	3		3.8		
	1			3		4.1		
	1			3				
	1.4			3.5				
Min	1.000	1.600	1.700	1.000	4.900	2.700	1.000	
Max	1.400	2.200	2.700	3.500	38.300	4.100	38.300	
Average	1.040	1.867	2.200	2.790	13.480	3.475	3.593	4.142
Number	10	3	7	10	5	8	43	



MW 103 - Data were not modified.

MW 106 - Data not modified.

MW 141 - Data not modified.

MW 142 - Data not modified.

MW 150 - Although values were high in this well, the results could not be related to turbidity of samples; therefore, data were not modified.

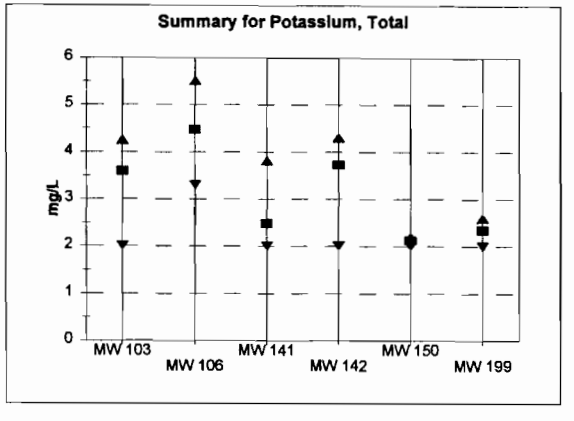
MW 199 - Data not modified.

Summary of RGA Background Well Inorganic Chemical Data

ANALYSIS	RESULT	QUALIFIER	DETECT?	SAMPLE ID	STATION ID	UNITS
Potassium	2	<	NO	5944-93	MW103	mg/L
Potassium	3.26		YES	7299-93	MW103	mg/L
Potassium	3.26		YES	6774-94	MW103	mg/L
Potassium	3.46		YES	4272-94	MW103	mg/L
Potassium	3.58		YES	5187-94	MW103	mg/L
Potassium	3.66		YES	6026-94	MW103	mg/L
Potassium	3.91		YES	5178-93	MW103	mg/L
Potassium	4.25		YES	5440-95	MW103	mg/L
Potassium	5	<	NO	5142-97	MW103	mg/L
Potassium	10.5	<	NO	5285-96	MW103	mg/L
Potassium	3.3		YES	5444-95	MW106	mg/L
Potassium	4.04		YES	4697-94	MW106	mg/L
Potassium	5.03		YES	7272-94	MW106	mg/L
Potassium	5.51		YES	5322-93	MW106	mg/L
Potassium	2	<	NO	4229-94	MW141	mg/L
Potassium	2	<	NO	6054-94	MW141	mg/L
Potassium	2.02		YES	5199-94	MW141	mg/L
Potassium	2.11		YES	7085-93	MW141	mg/L
Potassium	2.3		YES	6868-94	MW141	mg/L
Potassium	3.14		YES	6080-93	MW141	mg/L
Potassium	3.82		YES	6092-93	MW141	mg/L
Potassium	2	<	NO	6084-93	MW142	mg/L
Potassium	2	<	NO	7089-93	MW142	mg/L
Potassium	2	<	NO	4233-94	MW142	mg/L
Potassium	2	<	NO	5203-94	MW142	mg/L
Potassium	2	<	NO	6058-94	MW142	mg/L
Potassium	2	<	NO	6872-94	MW142	mg/L
Potassium	2	<	NO	5464-95	MW142	mg/L
Potassium	4.3		YES	6096-93	MW142	mg/L
Potassium	5	<	NO	5147-97	MW142	mg/L
Potassium	10.5	<	NO	5317-96	MW142	mg/L
Potassium	2	<	NO	5650-93	MW150	mg/L
Potassium	2	<	NO	4789-94	MW150	mg/L
Potassium	2.2		YES	5468-95	MW150	mg/L
Potassium	5	<	NO	5148-97	MW150	mg/L
Potassium	10.5	<	NO	5321-96	MW150	mg/L
Potassium	2	<	NO	5170-93	MW199	mg/L
Potassium	2	<	NO	7311-93	MW199	mg/L
Potassium	2	<	NO	5260-94	MW199	mg/L
Potassium	2.48		YES	4312-94	MW199	mg/L
Potassium	2.51		YES	5984-93	MW199	mg/L
Potassium	2.57		YES	6074-94	MW199	mg/L
Potassium	2.6		YES	6888-94	MW199	mg/L
Potassium	5	N<	NO	5558-97	MW199	mg/L

CORRECTED DATA SET

	MW 103	MW 106	MW 141	MW 142	MW 150	MW 199	Overall	Weighted
	Potassium							
	2	3.3	2	2	2	2		
	3.26	4.04	2	4.3	2	2		
	3.26	5.03	2.02	4.3	2.2	2		
	3.46	5.51	2.11	4.3	2.2	2.48		
	3.58		2.3		2.2	2.51		
	3.66		3.14			2.57		
	3.91		3.82			2.6		
	4.25					2.6		
	4.25							
	4.25							
Min	2.000	3.300	2.000	2.000	2.000	2.000	2.000	
Max	4.250	5.510	3.820	4.300	2.200	2.600	5.510	
Average	3.588	4.470	2.484	3.725	2.120	2.345	3.037	3.122
Number	10	4	7	4	5	8	38	



MW 103 - Two nondetects greater than maximum detected value set to maximum detected value.

MW 106 - Data not modified.

MW 141 - Data not modified.

MW 142 - Two nondetect results with values greater than the maximum detected concentration were reduced to the maximum detected concentration.

MW 150 - Two nondetect results with values greater than the maximum detected concentration were reduced to the maximum detected concentration.

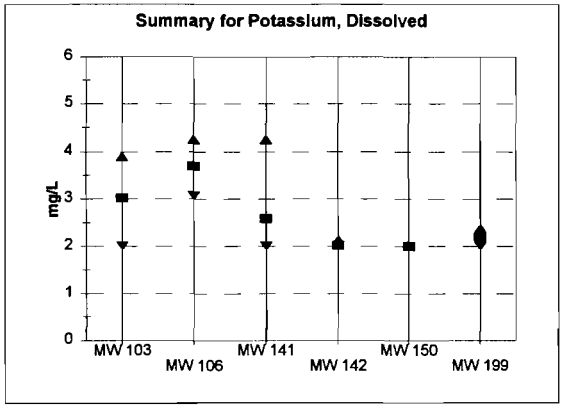
MW 199 - One nondetect greater than the maximum detected value reduced to maximum detected value.

Summary of RGA Background Well Inorganic Chemical Data

ANALYSIS	RESULT	QUALIFIER	DETECT?	SAMPLE ID	STATION ID	UNITS
Potassium, Dissolved	2	<	NO	5944-93	MW103	mg/L
Potassium, Dissolved	2.59		YES	7299-93	MW103	mg/L
Potassium, Dissolved	3.12		YES	6774-94	MW103	mg/L
Potassium, Dissolved	3.19		YES	4272-94	MW103	mg/L
Potassium, Dissolved	3.3		YES	6026-94	MW103	mg/L
Potassium, Dissolved	3.43		YES	5178-93	MW103	mg/L
Potassium, Dissolved	3.6		YES	5440-95	MW103	mg/L
Potassium, Dissolved	3.9		YES	5187-94	MW103	mg/L
Potassium, Dissolved		Q	NO	5285-96	MW103	
Potassium, Dissolved	3.07		YES	7272-94	MW106	mg/L
Potassium, Dissolved	3.54		YES	5444-95	MW106	mg/L
Potassium, Dissolved	3.92		YES	4697-94	MW106	mg/L
Potassium, Dissolved	4.26		YES	5322-93	MW106	mg/L
Potassium, Dissolved	2	<	NO	7085-93	MW141	mg/L
Potassium, Dissolved	2	<	NO	4229-94	MW141	mg/L
Potassium, Dissolved	2.09		YES	5199-94	MW141	mg/L
Potassium, Dissolved	2.13		YES	6054-94	MW141	mg/L
Potassium, Dissolved	2.3		YES	6868-94	MW141	mg/L
Potassium, Dissolved	3.3		YES	6080-93	MW141	mg/L
Potassium, Dissolved	4.25		YES	6092-93	MW141	mg/L
Potassium, Dissolved	2	<	NO	6084-93	MW142	mg/L
Potassium, Dissolved	2	<	NO	7089-93	MW142	mg/L
Potassium, Dissolved	2	<	NO	4233-94	MW142	mg/L
Potassium, Dissolved	2	<	NO	5203-94	MW142	mg/L
Potassium, Dissolved	2	<	NO	6058-94	MW142	mg/L
Potassium, Dissolved	2	<	NO	6872-94	MW142	mg/L
Potassium, Dissolved	2.02		YES	6096-93	MW142	mg/L
Potassium, Dissolved	2.13		YES	5464-95	MW142	mg/L
Potassium, Dissolved		Q	NO	5317-96	MW142	
Potassium, Dissolved	2	<	NO	5650-93	MW150	mg/L
Potassium, Dissolved	2	<	NO	4789-94	MW150	mg/L
Potassium, Dissolved	2		YES	5468-95	MW150	mg/L
Potassium, Dissolved		Q	NO	5321-96	MW150	
Potassium, Dissolved	2	<	NO	5170-93	MW199	mg/L
Potassium, Dissolved	2.08		YES	7311-93	MW199	mg/L
Potassium, Dissolved	2.1		YES	6888-94	MW199	mg/L
Potassium, Dissolved	2.22		YES	4312-94	MW199	mg/L
Potassium, Dissolved	2.29		YES	5260-94	MW199	mg/L
Potassium, Dissolved	2.36		YES	6074-94	MW199	mg/L
Potassium, Dissolved	2.38		YES	5984-93	MW199	mg/L

CORRECTED DATA SET

	MW 103	MW 106	MW 141	MW 142	MW 150	MW 199	Overall	Weighted
	Potassium, Dissolved							
	2	3.07	2	2	2	2		
	2.59	3.54	2	2	2	2.08		
	3.12	3.92	2.09	2	2	2.1		
	3.19	4.26	2.13	2	2	2.22		
	3.3		2.3	2		2.29		
	3.43		3.3	2		2.36		
	3.6		4.25	2.02		2.38		
	3.9			2.13				
	2			2				
Min	2.000	3.070	2.000	2.000	2.000	2.000	2.000	
Max	3.900	4.260	4.250	2.130	2.000	2.380	4.260	
Average	3.014	3.698	2.581	2.017	2.000	2.204	2.539	2.586
Number	9	4	7	9	4	7	40	



MW 103 - One "Q" qualified result assigned minimum detected value for this well (2 mg/L).

MW 106 - Data not modified.

MW 141 - Data not modified.

MW 142 - One "Q" qualified result given value of minimum detection limit for samples from this well (2 mg/L).

MW 150 - One "Q" qualified result given value of minimum detection limit for samples from this well (2 mg/L).

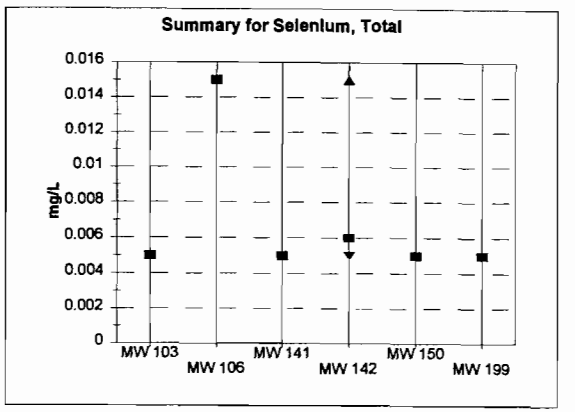
MW 199 - Data not modified.

Summary of RGA Background Well Inorganic Chemical Data

ANALYSIS	RESULT	QUALIFIER	DETECT?	SAMPLE ID	STATION ID	UNITS
Selenium	0.005	<	NO	5178-93	MW103	mg/L
Selenium	0.005	<	NO	5944-93	MW103	mg/L
Selenium	0.005	<	NO	7299-93	MW103	mg/L
Selenium	0.005	<	NO	4272-94	MW103	mg/L
Selenium	0.005	<	NO	5187-94	MW103	mg/L
Selenium	0.005	<	NO	6026-94	MW103	mg/L
Selenium	0.005	<	NO	6774-94	MW103	mg/L
Selenium	0.005	<S	NO	5440-95	MW103	mg/L
Selenium	0.005	<	NO	5285-96	MW103	mg/L
Selenium	0.005	<	NO	5142-97	MW103	mg/L
Selenium	0.015	<S	NO	5444-95	MW106	mg/L
Selenium	0.005	<	NO	6080-93	MW141	mg/L
Selenium	0.005	<	NO	6092-93	MW141	mg/L
Selenium	0.005	<	NO	7085-93	MW141	mg/L
Selenium	0.005	<	NO	4229-94	MW141	mg/L
Selenium	0.005	<	NO	5199-94	MW141	mg/L
Selenium	0.005	<	NO	6054-94	MW141	mg/L
Selenium	0.005	<	NO	6868-94	MW141	mg/L
Selenium	0.005	<	NO	6084-93	MW142	mg/L
Selenium	0.005	<	NO	6096-93	MW142	mg/L
Selenium	0.005	<	NO	7089-93	MW142	mg/L
Selenium	0.005	<	NO	4233-94	MW142	mg/L
Selenium	0.005	<	NO	5203-94	MW142	mg/L
Selenium	0.005	<	NO	6058-94	MW142	mg/L
Selenium	0.005	<	NO	6872-94	MW142	mg/L
Selenium	0.005	<	NO	5317-96	MW142	mg/L
Selenium	0.005	<	NO	5147-97	MW142	mg/L
Selenium	0.015	<S	NO	5464-95	MW142	mg/L
Selenium	0.005	<	NO	5468-95	MW150	mg/L
Selenium	0.005	<	NO	5321-96	MW150	mg/L
Selenium	0.005	<	NO	5148-97	MW150	mg/L
Selenium	0.005	<	NO	5170-93	MW199	mg/L
Selenium	0.005	<	NO	5984-93	MW199	mg/L
Selenium	0.005	<	NO	7311-93	MW199	mg/L
Selenium	0.005	<	NO	4312-94	MW199	mg/L
Selenium	0.005	<	NO	5260-94	MW199	mg/L
Selenium	0.005	<	NO	6074-94	MW199	mg/L
Selenium	0.005	<	NO	6888-94	MW199	mg/L
Selenium	0.005	<	NO	5558-97	MW199	mg/L

CORRECTED DATA SET

	MW 103	MW 106	MW 141	MW 142	MW 150	MW 199	Overall	Weighted
	Selenium							
	0.005	0.015	0.005	0.005	0.005	0.005		
	0.005		0.005	0.005	0.005	0.005		
	0.005		0.005	0.005	0.005	0.005		
	0.005		0.005	0.005		0.005		
	0.005		0.005	0.005		0.005		
	0.005		0.005	0.005		0.005		
	0.005		0.005	0.005		0.005		
	0.005			0.005		0.005		
	0.005			0.005				
	0.005			0.015				
Min	0.005	0.015	0.005	0.005	0.005	0.005	0.005	
Max	0.005	0.015	0.005	0.015	0.005	0.005	0.015	
Average	0.005	0.015	0.005	0.006	0.005	0.005	0.006	0.007
Number	10	1	7	10	3	8	39	



All results for this well were below their respective detection limits; therefore the plot is simply a depiction of the detection limits used for samples taken from the wells.

Data for Selenium, Total were not modified.

Summary of RGA Background Well Inorganic Chemical Data

ANALYSIS	RESULT	QUALIFIER	DETECT?	SAMPLE ID	STATION ID	UNITS
Selenium, Dissolved		Q	NO	5178-93	MW103	
Selenium, Dissolved		Q	NO	5944-93	MW103	
Selenium, Dissolved		Q	NO	7299-93	MW103	
Selenium, Dissolved		Q	NO	4272-94	MW103	
Selenium, Dissolved		Q	NO	5187-94	MW103	
Selenium, Dissolved		Q	NO	6026-94	MW103	
Selenium, Dissolved		Q	NO	6774-94	MW103	
Selenium, Dissolved		Q	NO	5440-95	MW103	
Selenium, Dissolved		Q	NO	5285-96	MW103	
Selenium, Dissolved		Q	NO	5142-97	MW103	
Selenium, Dissolved		Q	NO	5444-95	MW106	
Selenium, Dissolved		Q	NO	6080-93	MW141	
Selenium, Dissolved		Q	NO	6092-93	MW141	
Selenium, Dissolved		Q	NO	7085-93	MW141	
Selenium, Dissolved		Q	NO	4229-94	MW141	
Selenium, Dissolved		Q	NO	5199-94	MW141	
Selenium, Dissolved		Q	NO	6054-94	MW141	
Selenium, Dissolved		Q	NO	6868-94	MW141	
Selenium, Dissolved		Q	NO	6084-93	MW142	
Selenium, Dissolved		Q	NO	6096-93	MW142	
Selenium, Dissolved		Q	NO	7089-93	MW142	
Selenium, Dissolved		Q	NO	4233-94	MW142	
Selenium, Dissolved		Q	NO	5203-94	MW142	
Selenium, Dissolved		Q	NO	6058-94	MW142	
Selenium, Dissolved		Q	NO	6872-94	MW142	
Selenium, Dissolved		Q	NO	5464-95	MW142	
Selenium, Dissolved		Q	NO	5317-96	MW142	
Selenium, Dissolved		Q	NO	5147-97	MW142	
Selenium, Dissolved		Q	NO	5468-95	MW150	
Selenium, Dissolved		Q	NO	5321-96	MW150	
Selenium, Dissolved		Q	NO	5148-97	MW150	
Selenium, Dissolved		Q	NO	5170-93	MW199	
Selenium, Dissolved		Q	NO	5984-93	MW199	
Selenium, Dissolved		Q	NO	7311-93	MW199	
Selenium, Dissolved		Q	NO	4312-94	MW199	
Selenium, Dissolved		Q	NO	5260-94	MW199	
Selenium, Dissolved		Q	NO	6074-94	MW199	
Selenium, Dissolved		Q	NO	6888-94	MW199	
Selenium, Dissolved		Q	NO	5558-97	MW199	

CORRECTED DATA SET

	MW 103	MW 106	MW 141	MW 142	MW 150	MW 199	Overall	Weighted
	Selenium, Dissolved							
Min	ERR	ERR	ERR	ERR	ERR	ERR	ERR	
Max	ERR	ERR	ERR	ERR	ERR	ERR	ERR	
Average	ERR	ERR	ERR	ERR	ERR	ERR	ERR	ERR
Number	0	0	0	0	0	0	0	

Selenium, Dissolved

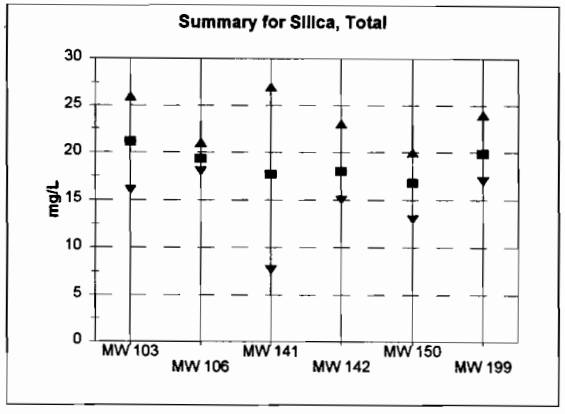
▷ Analysis for Selenium, Dissolved was not performed for any sample; therefore, no value can be assigned to any sample. Generally, this indicates that any detection of selenium in a filtered sample exceeds the background concentration.

Summary of RGA Background Well Inorganic Chemical Data

ANALYSIS	RESULT	QUALIFIER	DETECT?	SAMPLE ID	STATION ID	UNITS
Silica	16		YES	5440-95	MW103	mg/L
Silica	19		YES	5187-94	MW103	mg/L
Silica	19		YES	5142-97	MW103	mg/L
Silica	21		YES	5178-93	MW103	mg/L
Silica	21		YES	6026-94	MW103	mg/L
Silica	22		YES	5944-93	MW103	mg/L
Silica	22		YES	6774-94	MW103	mg/L
Silica	22		YES	5285-96	MW103	mg/L
Silica	23		YES	4272-94	MW103	mg/L
Silica	26		YES	7299-93	MW103	mg/L
Silica	18		YES	5444-95	MW106	mg/L
Silica	19		YES	5322-93	MW106	mg/L
Silica	21		YES	4697-94	MW106	mg/L
Silica	7.68		YES	6080-93	MW141	mg/L
Silica	16		YES	5199-94	MW141	mg/L
Silica	16		YES	6054-94	MW141	mg/L
Silica	17		YES	6092-93	MW141	mg/L
Silica	19		YES	6868-94	MW141	mg/L
Silica	21		YES	7085-93	MW141	mg/L
Silica	27		YES	4229-94	MW141	mg/L
Silica	15		YES	6058-94	MW142	mg/L
Silica	15		YES	5147-97	MW142	mg/L
Silica	16		YES	6872-94	MW142	mg/L
Silica	17		YES	6096-93	MW142	mg/L
Silica	17		YES	5203-94	MW142	mg/L
Silica	17		YES	5464-95	MW142	mg/L
Silica	18		YES	6084-93	MW142	mg/L
Silica	21		YES	7089-93	MW142	mg/L
Silica	21		YES	5317-96	MW142	mg/L
Silica	23		YES	4233-94	MW142	mg/L
Silica	13		YES	5650-93	MW150	mg/L
Silica	15		YES	5148-97	MW150	mg/L
Silica	16		YES	5468-95	MW150	mg/L
Silica	20		YES	4789-94	MW150	mg/L
Silica	20		YES	5321-96	MW150	mg/L
Silica	17		YES	5260-94	MW199	mg/L
Silica	17		YES	6074-94	MW199	mg/L
Silica	18		YES	6888-94	MW199	mg/L
Silica	18		YES	5558-97	MW199	mg/L
Silica	21		YES	4312-94	MW199	mg/L
Silica	22		YES	5170-93	MW199	mg/L
Silica	22		YES	5984-93	MW199	mg/L
Silica	24		YES	7311-93	MW199	mg/L

CORRECTED DATA SET

	MW 103	MW 106	MW 141	MW 142	MW 150	MW 199	Overall	Weighted
	Silica							
	16	18	7.68	15	13	17		
	19	19	16	15	15	17		
	19	21	16	16	16	18		
	21		17	17	20	18		
	21		19	17	20	21		
	22		21	17		22		
	22		27	18		22		
	22			21		24		
	23			21				
	26			23				
Min	16.000	18.000	7.680	15.000	13.000	17.000	7.680	
Max	26.000	21.000	27.000	23.000	20.000	24.000	27.000	
Average	21.100	19.333	17.669	18.000	16.800	19.875	18.969	18.796
Number	10	3	7	10	5	8	43	



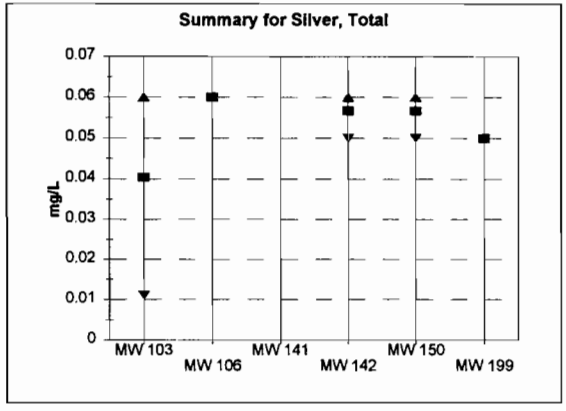
Data for Silica, Total were not modified.

Summary of RGA Background Well Inorganic Chemical Data

ANALYSIS	RESULT	QUALIFIER	DETECT?	SAMPLE ID	STATION ID	UNITS
Silver	0.011	<	NO	5440-95	MW103	mg/L
Silver	0.05	<	NO	5142-97	MW103	mg/L
Silver	0.06	N*<	NO	5285-96	MW103	mg/L
Silver	0.06	<N	NO	5444-95	MW106	mg/L
Silver	0.05	<	NO	5147-97	MW142	mg/L
Silver	0.06	<N	NO	5464-95	MW142	mg/L
Silver	0.06	N*<	NO	5317-96	MW142	mg/L
Silver	0.05	<	NO	5148-97	MW150	mg/L
Silver	0.06	<N	NO	5468-95	MW150	mg/L
Silver	0.06	N*<	NO	5321-96	MW150	mg/L
Silver	0.05	N<	NO	5558-97	MW199	mg/L

CORRECTED DATA SET

	MW 103	MW 106	MW 141	MW 142	MW 150	MW 199	Overall	Weighted
Silver								
	0.011	0.06		0.05	0.05	0.05		
	0.05			0.06	0.06			
	0.06			0.06	0.06			
Min	0.011	0.060	ERR	0.050	0.050	0.050	0.011	
Max	0.060	0.060	ERR	0.060	0.060	0.050	0.060	
Average	0.040	0.060	ERR	0.057	0.057	0.050	0.052	0.053
Number	3	1	0	3	3	1	11	



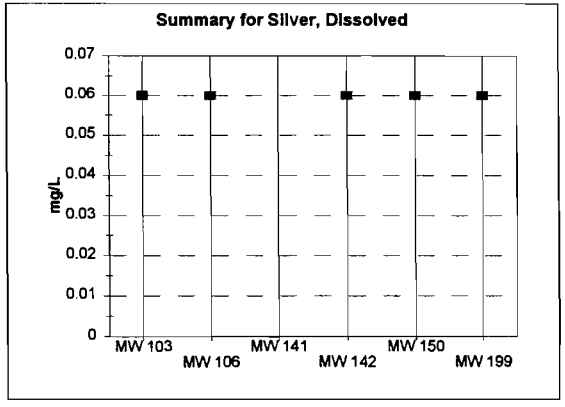
Data for Silver, Total were not modified.

Summary of RGA Background Well Inorganic Chemical Data

ANALYSIS	RESULT	QUALIFIER	DETECT?	SAMPLE ID	STATION ID	UNITS
Silver, Dissolved		Q	NO	5440-95	MW103	
Silver, Dissolved		Q	NO	5285-96	MW103	
Silver, Dissolved		Q	NO	5142-97	MW103	
Silver, Dissolved	0.06	<	NO	5444-95	MW106	mg/L
Silver, Dissolved	0.06	<	NO	5464-95	MW142	mg/L
Silver, Dissolved		Q	NO	5317-96	MW142	
Silver, Dissolved		Q	NO	5147-97	MW142	
Silver, Dissolved	0.06	<	NO	5468-95	MW150	mg/L
Silver, Dissolved		Q	NO	5321-96	MW150	
Silver, Dissolved		Q	NO	5148-97	MW150	
Silver, Dissolved		Q	NO	5558-97	MW199	

CORRECTED DATA SET

	MW 103	MW 106	MW 141	MW 142	MW 150	MW 199	Overall	Weighted
	Silver, Dissolved							
	0.06	0.06		0.06	0.06	0.06		
	0.06			0.06	0.06			
	0.06			0.06	0.06			
Min	0.060	0.060	ERR	0.060	0.060	0.060	0.060	
Max	0.060	0.060	ERR	0.060	0.060	0.060	0.060	
Average	0.060	0.060	ERR	0.060	0.060	0.060	0.060	0.060
Number	3	1	0	3	3	1	11	



All results for this well were below their respective detection limits; therefore the plot is simply a depiction of the detection limits used for samples taken from the wells.

MW 103 - Three "Q" qualified results were assigned minimum detection limit across samples from all wells (0.06 mg/L).

MW 106 - Data not modified.

MW 142 - Two "Q" qualified results were assigned minimum detection limit from samples taken from this well (0.06 mg/L).

MW 150 - Two "Q" qualified results given value of minimum detection limit for samplesfrom this well (0.06 mg/l).

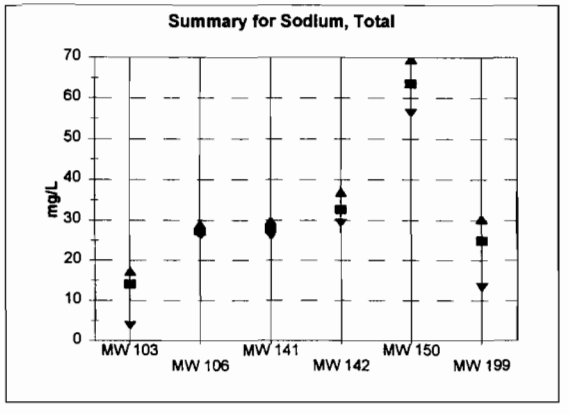
MW 199 - One "Q" qualified result assigned minimum detection limit across samples taken from all wells (0.06 mg/L).

Summary of RGA Background Well Inorganic Chemical Data

ANALYSIS	RESULT	QUALIFIER	DETECT?	SAMPLE ID	STATION ID	UNITS
Sodium	3.71		YES	5944-93	MW103	mg/L
Sodium	14.2		YES	7299-93	MW103	mg/L
Sodium	14.3		YES	6774-94	MW103	mg/L
Sodium	14.68		YES	4272-94	MW103	mg/L
Sodium	14.8		YES	6026-94	MW103	mg/L
Sodium	15	N	YES	5285-96	MW103	mg/L
Sodium	15.2		YES	5187-94	MW103	mg/L
Sodium	15.2		YES	5440-95	MW103	mg/L
Sodium	16.12		YES	5178-93	MW103	mg/L
Sodium	17.3	N	YES	5142-97	MW103	mg/L
Sodium	26.1		YES	5444-95	MW106	mg/L
Sodium	26.4		YES	4697-94	MW106	mg/L
Sodium	27.5		YES	5322-93	MW106	mg/L
Sodium	29		YES	7272-94	MW106	mg/L
Sodium	26		YES	7085-93	MW141	mg/L
Sodium	27		YES	6092-93	MW141	mg/L
Sodium	27.1		YES	6054-94	MW141	mg/L
Sodium	27.4		YES	5199-94	MW141	mg/L
Sodium	28		YES	6868-94	MW141	mg/L
Sodium	29.2		YES	4229-94	MW141	mg/L
Sodium	29.93		YES	6080-93	MW141	mg/L
Sodium	29.3		YES	5203-94	MW142	mg/L
Sodium	30.4		YES	7089-93	MW142	mg/L
Sodium	31.54		YES	6084-93	MW142	mg/L
Sodium	32.4		YES	5464-95	MW142	mg/L
Sodium	32.6		YES	4233-94	MW142	mg/L
Sodium	32.7		YES	6096-93	MW142	mg/L
Sodium	33		YES	6872-94	MW142	mg/L
Sodium	33.6	N	YES	5317-96	MW142	mg/L
Sodium	33.85		YES	6058-94	MW142	mg/L
Sodium	36.9	N	YES	5147-97	MW142	mg/L
Sodium	56.3		YES	4789-94	MW150	mg/L
Sodium	62.2	N	YES	5321-96	MW150	mg/L
Sodium	63		YES	5468-95	MW150	mg/L
Sodium	66.6		YES	5650-93	MW150	mg/L
Sodium	69.6	N	YES	5148-97	MW150	mg/L
Sodium	13.31		YES	5170-93	MW199	mg/L
Sodium	22.1		YES	5260-94	MW199	mg/L
Sodium	25		YES	6888-94	MW199	mg/L
Sodium	26.6		YES	5984-93	MW199	mg/L
Sodium	26.8		YES	4312-94	MW199	mg/L
Sodium	26.9	N	YES	5558-97	MW199	mg/L
Sodium	27.8		YES	7311-93	MW199	mg/L
Sodium	30.4		YES	6074-94	MW199	mg/L

CORRECTED DATA SET

	MW 103	MW 106	MW 141	MW 142	MW 150	MW 199	Overall	Weighted
	Sodium							
	3.71	26.1	26	29.3	56.3	13.31		
	14.2	26.4	27	30.4	62.2	22.1		
	14.3	27.5	27.1	31.54	63	25		
	14.68	29	27.4	32.4	66.6	26.6		
	14.8		28	32.6	69.6	26.8		
	15		29.2	32.7		26.9		
	15.2		29.93	33		27.8		
	15.2			33.6		30.4		
	16.12			33.85				
	17.3			36.9				
Min	3.710	26.100	26.000	29.300	56.300	13.310	3.710	
Max	17.300	29.000	29.930	36.900	69.600	30.400	69.600	
Average	14.051	27.250	27.804	32.629	63.540	24.864	29.251	31.690
Number	10	4	7	10	5	8	44	



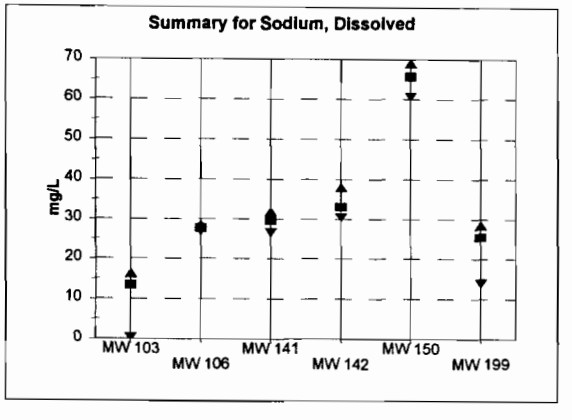
Data for Sodium, Total were not modified.

Summary of RGA Background Well Inorganic Chemical Data

ANALYSIS	RESULT	QUALIFIER	DETECT?	SAMPLE ID	STATION ID	UNITS
Sodium, Dissolved	0.317		YES	5944-93	MW103	mg/L
Sodium, Dissolved	13.7		YES	7299-93	MW103	mg/L
Sodium, Dissolved	14	N*	YES	5285-96	MW103	mg/L
Sodium, Dissolved	14.4		YES	6774-94	MW103	mg/L
Sodium, Dissolved	14.7		YES	6026-94	MW103	mg/L
Sodium, Dissolved	15.2		YES	5187-94	MW103	mg/L
Sodium, Dissolved	15.7		YES	5440-95	MW103	mg/L
Sodium, Dissolved	16.2		YES	5178-93	MW103	mg/L
Sodium, Dissolved	16.2		YES	4272-94	MW103	mg/L
Sodium, Dissolved	26.8		YES	5322-93	MW106	mg/L
Sodium, Dissolved	27.4		YES	5444-95	MW106	mg/L
Sodium, Dissolved	28	J	YES	7272-94	MW106	mg/L
Sodium, Dissolved	28.4		YES	4697-94	MW106	mg/L
Sodium, Dissolved	26.6		YES	7085-93	MW141	mg/L
Sodium, Dissolved	27.5		YES	6092-93	MW141	mg/L
Sodium, Dissolved	28.3		YES	5199-94	MW141	mg/L
Sodium, Dissolved	30.56		YES	6054-94	MW141	mg/L
Sodium, Dissolved	31		YES	6868-94	MW141	mg/L
Sodium, Dissolved	31.5		YES	4229-94	MW141	mg/L
Sodium, Dissolved	31.84		YES	6080-93	MW141	mg/L
Sodium, Dissolved	30.4		YES	7089-93	MW142	mg/L
Sodium, Dissolved	30.9		YES	5203-94	MW142	mg/L
Sodium, Dissolved	31.14		YES	6084-93	MW142	mg/L
Sodium, Dissolved	31.6	N*	YES	5317-96	MW142	mg/L
Sodium, Dissolved	32		YES	6096-93	MW142	mg/L
Sodium, Dissolved	34		YES	4233-94	MW142	mg/L
Sodium, Dissolved	34.3		YES	5464-95	MW142	mg/L
Sodium, Dissolved	35.36		YES	6058-94	MW142	mg/L
Sodium, Dissolved	38	J	YES	6872-94	MW142	mg/L
Sodium, Dissolved	60.6	N*	YES	5321-96	MW150	mg/L
Sodium, Dissolved	66.4		YES	4789-94	MW150	mg/L
Sodium, Dissolved	66.7		YES	5650-93	MW150	mg/L
Sodium, Dissolved	69		YES	5468-95	MW150	mg/L
Sodium, Dissolved	13.9		YES	5170-93	MW199	mg/L
Sodium, Dissolved	26		YES	5984-93	MW199	mg/L
Sodium, Dissolved	26.9		YES	7311-93	MW199	mg/L
Sodium, Dissolved	27		YES	5260-94	MW199	mg/L
Sodium, Dissolved	28		YES	6888-94	MW199	mg/L
Sodium, Dissolved	28.4		YES	6074-94	MW199	mg/L
Sodium, Dissolved	28.5		YES	4312-94	MW199	mg/L

CORRECTED DATA SET

	MW 103	MW 106	MW 141	MW 142	MW 150	MW 199	Overall	Weighted
	Sodium, Dissolved							
	0.317	26.8	26.6	30.4	60.6	13.9		
	13.7	27.4	27.5	30.9	66.4	26		
	14	28	28.3	31.14	66.7	26.9		
	14.4	28.4	30.56	31.6	69	27		
	14.7		31	32		28		
	15.2		31.5	34		28.4		
	15.7		31.84	34.3		28.5		
	16.2			35.36				
	16.2			38				
Min	0.317	26.800	26.600	30.400	60.600	13.900	0.317	
Max	16.200	28.400	31.840	38.000	69.000	28.500	69.000	
Average	13.380	27.650	29.614	33.078	65.675	25.529	29.435	32.488
Number	9	4	7	9	4	7	40	



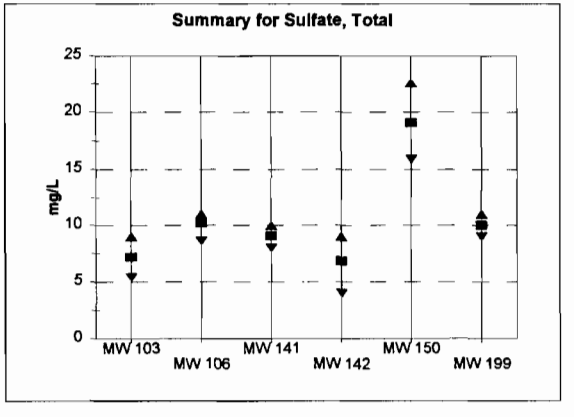
Data for Sodium, Dissolved were not modified.

Summary of RGA Background Well Inorganic Chemical Data

ANALYSIS	RESULT	QUALIFIER	DETECT?	SAMPLE ID	STATION ID	UNITS
Sulfate	5.4		YES	5285-96	MW103	mg/L
Sulfate	5.4		YES	5142-97	MW103	mg/L
Sulfate	6.1		YES	5440-95	MW103	mg/L
Sulfate	6.5		YES	6774-94	MW103	mg/L
Sulfate	7.2		YES	6026-94	MW103	mg/L
Sulfate	9		YES	5178-93	MW103	mg/L
Sulfate	9		YES	5944-93	MW103	mg/L
Sulfate	9		YES	5187-94	MW103	mg/L
Sulfate	8.6		YES	5444-95	MW106	mg/L
Sulfate	11		YES	5322-93	MW106	mg/L
Sulfate	11		YES	4697-94	MW106	mg/L
Sulfate	8		YES	6092-93	MW141	mg/L
Sulfate	9		YES	6868-94	MW141	mg/L
Sulfate	9.3		YES	6054-94	MW141	mg/L
Sulfate	10		YES	6080-93	MW141	mg/L
Sulfate	4		YES	6058-94	MW142	mg/L
Sulfate	6		YES	6096-93	MW142	mg/L
Sulfate	6.7		YES	5147-97	MW142	mg/L
Sulfate	7.1		YES	5464-95	MW142	mg/L
Sulfate	7.1		YES	5317-96	MW142	mg/L
Sulfate	8		YES	6872-94	MW142	mg/L
Sulfate	9		YES	6084-93	MW142	mg/L
Sulfate	15.9		YES	5468-95	MW150	mg/L
Sulfate	16		YES	5650-93	MW150	mg/L
Sulfate	19		YES	4789-94	MW150	mg/L
Sulfate	21.9		YES	5148-97	MW150	mg/L
Sulfate	22.6		YES	5321-96	MW150	mg/L
Sulfate	9		YES	5170-93	MW199	mg/L
Sulfate	9.4		YES	6888-94	MW199	mg/L
Sulfate	9.8		YES	6074-94	MW199	mg/L
Sulfate	11		YES	5984-93	MW199	mg/L
Sulfate	11		YES	5558-97	MW199	mg/L

CORRECTED DATA SET

	MW 103	MW 106	MW 141	MW 142	MW 150	MW 199	Overall	Weighted
	Sulfate							
	5.4	8.6	8	4	15.9	9		
	5.4	11	9	6	16	9.4		
	6.1	11	9.3	6.7	19	9.8		
	6.5		10	7.1	21.9	11		
	7.2			7.1	22.6	11		
	9			8				
	9			9				
	9							
Min	5.400	8.600	8.000	4.000	15.900	9.000	4.000	
Max	9.000	11.000	10.000	9.000	22.600	11.000	22.600	
Average	7.200	10.200	9.075	6.843	19.080	10.040	9.938	10.406
Number	8	3	4	7	5	5	32	



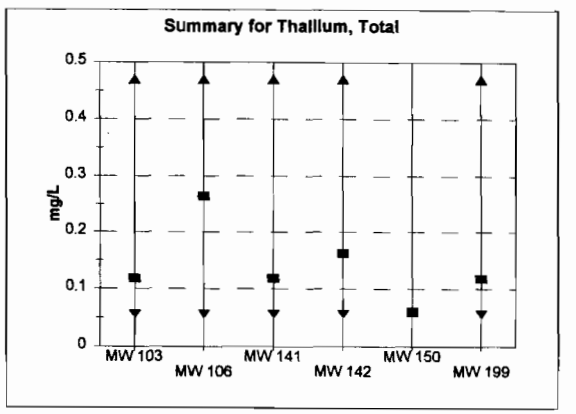
Data for Sulfate, Total were not modified.

Summary of RGA Background Well Inorganic Chemical Data

ANALYSIS	RESULT	QUALIFIER	DETECT?	SAMPLE ID	STATION ID	UNITS
Thallium	0.056	<	NO	5178-93	MW103	mg/L
Thallium	0.06	<	NO	5944-93	MW103	mg/L
Thallium	0.06	<	NO	7299-93	MW103	mg/L
Thallium	0.06	<	NO	4272-94	MW103	mg/L
Thallium	0.06	<	NO	5187-94	MW103	mg/L
Thallium	0.06	<	NO	6026-94	MW103	mg/L
Thallium	0.47	<	NO	6774-94	MW103	mg/L
Thallium	0.056	<	NO	5322-93	MW106	mg/L
Thallium	0.06	<	NO	4697-94	MW106	mg/L
Thallium	0.47	<	NO	7272-94	MW106	mg/L
Thallium	0.47	<	NO	5444-95	MW106	mg/L
Thallium	0.056	<	NO	6080-93	MW141	mg/L
Thallium	0.06	<	NO	6092-93	MW141	mg/L
Thallium	0.06	<	NO	7085-93	MW141	mg/L
Thallium	0.06	<	NO	4229-94	MW141	mg/L
Thallium	0.06	<	NO	5199-94	MW141	mg/L
Thallium	0.06	<	NO	6054-94	MW141	mg/L
Thallium	0.47	<	NO	6868-94	MW141	mg/L
Thallium	0.056	<	NO	6084-93	MW142	mg/L
Thallium	0.06	<	NO	6096-93	MW142	mg/L
Thallium	0.06	<	NO	7089-93	MW142	mg/L
Thallium	0.06	<	NO	4233-94	MW142	mg/L
Thallium	0.06	<	NO	5203-94	MW142	mg/L
Thallium	0.06	<	NO	6058-94	MW142	mg/L
Thallium	0.47	<	NO	6872-94	MW142	mg/L
Thallium	0.47	<	NO	5464-95	MW142	mg/L
Thallium	0.06	<	NO	5650-93	MW150	mg/L
Thallium	0.06	<	NO	4789-94	MW150	mg/L
Thallium	0.056	<	NO	5170-93	MW199	mg/L
Thallium	0.06	<	NO	5984-93	MW199	mg/L
Thallium	0.06	<	NO	7311-93	MW199	mg/L
Thallium	0.06	<	NO	4312-94	MW199	mg/L
Thallium	0.06	<	NO	5260-94	MW199	mg/L
Thallium	0.06	<	NO	6074-94	MW199	mg/L
Thallium	0.47	<	NO	6888-94	MW199	mg/L

CORRECTED DATA SET

	MW 103	MW 106	MW 141	MW 142	MW 150	MW 199	Overall	Weighted
	Thallium							
	0.056	0.056	0.056	0.056	0.06	0.056		
	0.06	0.06	0.06	0.06	0.06	0.06		
	0.06	0.47	0.06	0.06		0.06		
	0.06	0.47	0.06	0.06		0.06		
	0.06		0.06	0.06		0.06		
	0.06		0.06	0.06		0.06		
	0.47		0.47	0.47		0.47		
				0.47				
Min	0.056	0.056	0.056	0.056	0.060	0.056	0.056	
Max	0.470	0.470	0.470	0.470	0.060	0.470	0.470	
Average	0.118	0.264	0.118	0.162	0.060	0.118	0.141	0.140
Number	7	4	7	8	2	7	35	



All results for this well were below their respective detection limits; therefore the plot is simply a depiction of the detection limits used for samples taken from the wells.

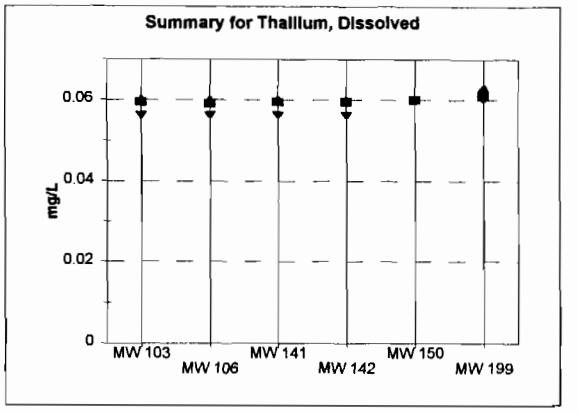
Data for Thallium, Total were not modified; however, detection limits for some samples are quite high (i.e., 0.47 mg/L).

Summary of RGA Background Well Inorganic Chemical Data

ANALYSIS	RESULT	QUALIFIER	DETECT?	SAMPLE ID	STATION ID	UNITS
Thallium, Dissolved	0.056	<	NO	5178-93	MW103	mg/L
Thallium, Dissolved	0.06	<	NO	5944-93	MW103	mg/L
Thallium, Dissolved	0.06	<	NO	7299-93	MW103	mg/L
Thallium, Dissolved	0.06	<	NO	4272-94	MW103	mg/L
Thallium, Dissolved	0.06	<	NO	5187-94	MW103	mg/L
Thallium, Dissolved	0.06	<	NO	6026-94	MW103	mg/L
Thallium, Dissolved	0.47	<	NO	6774-94	MW103	mg/L
Thallium, Dissolved	0.056	<	NO	5322-93	MW106	mg/L
Thallium, Dissolved	0.06	<	NO	4697-94	MW106	mg/L
Thallium, Dissolved	0.47	<	NO	7272-94	MW106	mg/L
Thallium, Dissolved	0.47	<	NO	5444-95	MW106	mg/L
Thallium, Dissolved	0.056	<	NO	6080-93	MW141	mg/L
Thallium, Dissolved	0.06	<	NO	6092-93	MW141	mg/L
Thallium, Dissolved	0.06	<	NO	7085-93	MW141	mg/L
Thallium, Dissolved	0.06	<	NO	4229-94	MW141	mg/L
Thallium, Dissolved	0.06	<	NO	5199-94	MW141	mg/L
Thallium, Dissolved	0.06	<	NO	6054-94	MW141	mg/L
Thallium, Dissolved	0.47	<	NO	6868-94	MW141	mg/L
Thallium, Dissolved	0.056	<	NO	6084-93	MW142	mg/L
Thallium, Dissolved	0.06	<	NO	6096-93	MW142	mg/L
Thallium, Dissolved	0.06	<	NO	7089-93	MW142	mg/L
Thallium, Dissolved	0.06	<	NO	4233-94	MW142	mg/L
Thallium, Dissolved	0.06	<	NO	5203-94	MW142	mg/L
Thallium, Dissolved	0.06	<	NO	6058-94	MW142	mg/L
Thallium, Dissolved	0.47	<	NO	6872-94	MW142	mg/L
Thallium, Dissolved	0.47	<	NO	5464-95	MW142	mg/L
Thallium, Dissolved	0.06	<	NO	5650-93	MW150	mg/L
Thallium, Dissolved	0.06	<	NO	4789-94	MW150	mg/L
Thallium, Dissolved	0.06	<	NO	5984-93	MW199	mg/L
Thallium, Dissolved	0.06	<	NO	7311-93	MW199	mg/L
Thallium, Dissolved	0.06	<	NO	5260-94	MW199	mg/L
Thallium, Dissolved	0.06	<	NO	6074-94	MW199	mg/L
Thallium, Dissolved	0.063		YES	4312-94	MW199	mg/L
Thallium, Dissolved	0.47	<	NO	6888-94	MW199	mg/L
Thallium, Dissolved		Q	NO	5170-93	MW199	

CORRECTED DATA SET

	MW 103	MW 106	MW 141	MW 142	MW 150	MW 199	Overall	Weighted
	Thallium, Dissolved							
	0.056	0.056	0.056	0.056	0.06	0.06		
	0.06	0.06	0.06	0.06	0.06	0.06		
	0.06	0.06	0.06	0.06		0.06		
	0.06	0.06	0.06	0.06		0.06		
	0.06		0.06	0.06		0.063		
	0.06		0.06	0.06		0.063		
	0.06		0.06	0.06		0.06		
				0.06				
Min	0.056	0.056	0.056	0.056	0.060	0.060	0.056	
Max	0.060	0.060	0.060	0.060	0.060	0.063	0.063	
Average	0.059	0.059	0.059	0.060	0.060	0.061	0.060	0.060
Number	7	4	7	8	2	7	35	



MW 103 - One nondetect result with a value much greater than that for other samples from this well was reduced to the next greatest nondetect result (0.06 mg/L).

MW 106 - Two nondetect results with values much greater than that for other samples from this well were reduced the the next greatest nondetect result for this well (0.06 mg/L).

MW 141 - One nondetect result with a value much greater than that for other samples from this well was reduced to the next greatest nondetect value.

MW 142 - Two nondetect results with values much greater than that for other samples from this well were reduced to the next greatest nondetect result (0.06 mg/L).

MW 150 - Data were not modifed.

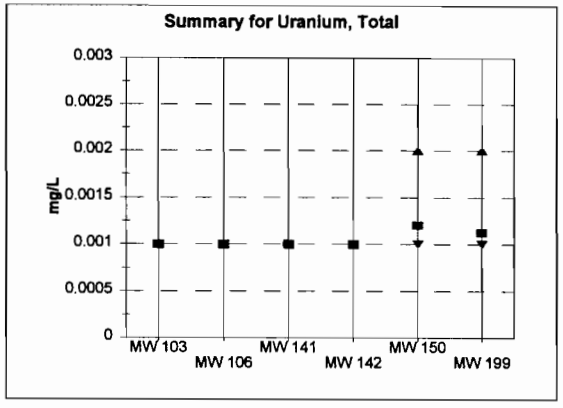
MW 199 - One "Q" qualified result assigned minimum detection limit across samples taken from all wells (0.06 mg/L); one nondetect result greater than the maximum detected value was assigned the maximum detected value.

Summary of RGA Background Well Inorganic Chemical Data

ANALYSIS	RESULT	QUALIFIER	DETECT?	SAMPLE ID	STATION ID	UNITS
Uranium	0.001	<	NO	5178-93	MW103	mg/L
Uranium	0.001	<	NO	5944-93	MW103	mg/L
Uranium	0.001	<	NO	7299-93	MW103	mg/L
Uranium	0.001	<	NO	4272-94	MW103	mg/L
Uranium	0.001	<	NO	6026-94	MW103	mg/L
Uranium	0.001	<	NO	6774-94	MW103	mg/L
Uranium	0.001	<	NO	5440-95	MW103	mg/L
Uranium	0.001	<	NO	5285-96	MW103	mg/L
Uranium	0.001	<	NO	5142-97	MW103	mg/L
Uranium	0.001	<	NO	5322-93	MW106	mg/L
Uranium	0.001	<	NO	4697-94	MW106	mg/L
Uranium	0.001	<	NO	5444-95	MW106	mg/L
Uranium	0.001	<	NO	5289-96	MW106	mg/L
Uranium	0.001	<	NO	5138-97	MW106	mg/L
Uranium	0.001	<B	NO	5788-97	MW106	mg/L
Uranium	0.001	<	NO	6080-93	MW141	mg/L
Uranium	0.001	<	NO	6092-93	MW141	mg/L
Uranium	0.001	<	NO	7085-93	MW141	mg/L
Uranium	0.001	<	NO	4229-94	MW141	mg/L
Uranium	0.001	<	NO	5199-94	MW141	mg/L
Uranium	0.001	<	NO	6054-94	MW141	mg/L
Uranium	0.001	<	NO	6868-94	MW141	mg/L
Uranium	0.001	<	NO	6084-93	MW142	mg/L
Uranium	0.001	<	NO	6096-93	MW142	mg/L
Uranium	0.001	<	NO	7089-93	MW142	mg/L
Uranium	0.001	<	NO	4233-94	MW142	mg/L
Uranium	0.001	<	NO	5203-94	MW142	mg/L
Uranium	0.001	<	NO	6058-94	MW142	mg/L
Uranium	0.001	<	NO	6872-94	MW142	mg/L
Uranium	0.001	<	NO	5464-95	MW142	mg/L
Uranium	0.001	<	NO	5317-96	MW142	mg/L
Uranium	0.001	<	NO	5147-97	MW142	mg/L
Uranium	0.001	<	NO	5797-97	MW142	mg/L
Uranium	0.001	<	NO	5650-93	MW150	mg/L
Uranium	0.001	<	NO	4789-94	MW150	mg/L
Uranium	0.001	<	NO	5468-95	MW150	mg/L
Uranium	0.001	<	NO	5321-96	MW150	mg/L
Uranium	0.002		YES	5148-97	MW150	mg/L
Uranium	0.001	<	NO	5984-93	MW199	mg/L
Uranium	0.001	<	NO	7311-93	MW199	mg/L
Uranium	0.001	<	NO	4312-94	MW199	mg/L
Uranium	0.001	<	NO	5260-94	MW199	mg/L
Uranium	0.001	<	NO	6074-94	MW199	mg/L
Uranium	0.001	<	NO	6888-94	MW199	mg/L
Uranium	0.001	<	NO	5558-97	MW199	mg/L
Uranium	0.002		YES	5170-93	MW199	mg/L

CORRECTED DATA SET

	MW 103	MW 106	MW 141	MW 142	MW 150	MW 199	Overall	Weighted
	Uranium							
	0.001	0.001	0.001	0.001	0.001	0.001		
	0.001	0.001	0.001	0.001	0.001	0.001		
	0.001	0.001	0.001	0.001	0.001	0.001		
	0.001	0.001	0.001	0.001	0.001	0.001		
	0.001	0.001	0.001	0.001	0.002	0.001		
	0.001	0.001	0.001	0.001		0.001		
	0.001		0.001	0.001		0.001		
	0.001			0.001		0.002		
	0.001			0.001				
				0.001				
				0.001				
Min	0.001	0.001	0.001	0.001	0.001	0.001	0.001	
Max	0.001	0.001	0.001	0.001	0.002	0.002	0.002	
Average	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
Number	9	6	7	11	5	8	46	



Data for Uranium, Total were not modified.

Summary of RGA Background Well Inorganic Chemical Data

ANALYSIS	RESULT	QUALIFIER	DETECT?	SAMPLE ID	STATION ID	UNITS
Uranium, Dissolved		Q	NO	5440-95	MW103	
Uranium, Dissolved		Q	NO	5285-96	MW103	
Uranium, Dissolved		Q	NO	5444-95	MW106	
Uranium, Dissolved		Q	NO	5289-96	MW106	
Uranium, Dissolved		Q	NO	5464-95	MW142	
Uranium, Dissolved		Q	NO	5317-96	MW142	
Uranium, Dissolved		Q	NO	5468-95	MW150	
Uranium, Dissolved		Q	NO	5321-96	MW150	

CORRECTED DATA SET

	MW 103	MW 106	MW 141	MW 142	MW 150	MW 199	Overall	Weighted
	Uranium, Dissolved							
Min	ERR	ERR	ERR	ERR	ERR	ERR		
Max	ERR	ERR	ERR	ERR	ERR	ERR	ERR	
Average	ERR	ERR	ERR	ERR	ERR	ERR	ERR	
Number	0	0	0	0	0	0	ERR	0

Uranium, Dissolved

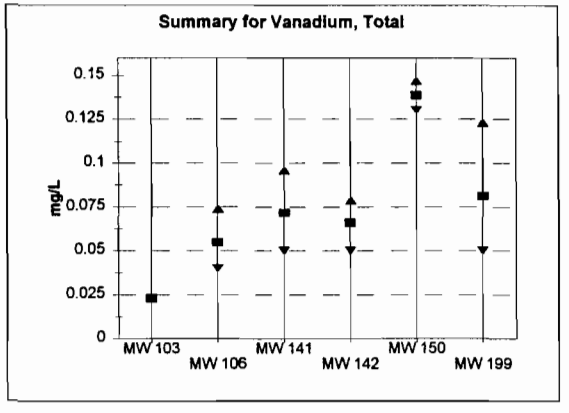
▷ Analysis for Uranium, Dissolved was not performed for any sample; therefore, no value can be assigned to any sample. Generally, this indicates that any detection of uranium in a filtered sample exceeds the background concentration.

Summary of RGA Background Well Inorganic Chemical Data

ANALYSIS	RESULT	QUALIFIER	DETECT?	SAMPLE ID	STATION ID	UNITS
Vanadium	0.023		YES	5178-93	MW103	mg/L
Vanadium	0.04	<	NO	6774-94	MW103	mg/L
Vanadium	0.05	<	NO	5944-93	MW103	mg/L
Vanadium	0.05	<	NO	7299-93	MW103	mg/L
Vanadium	0.05	<	NO	4272-94	MW103	mg/L
Vanadium	0.05	<	NO	5187-94	MW103	mg/L
Vanadium	0.05	<	NO	6026-94	MW103	mg/L
Vanadium	0.04	<	NO	7272-94	MW106	mg/L
Vanadium	0.05	<	NO	4697-94	MW106	mg/L
Vanadium	0.074		YES	5322-93	MW106	mg/L
Vanadium	0.05		YES	4229-94	MW141	mg/L
Vanadium	0.058		YES	6080-93	MW141	mg/L
Vanadium	0.064		YES	6054-94	MW141	mg/L
Vanadium	0.07		YES	5199-94	MW141	mg/L
Vanadium	0.078		YES	6868-94	MW141	mg/L
Vanadium	0.086		YES	7085-93	MW141	mg/L
Vanadium	0.096		YES	6092-93	MW141	mg/L
Vanadium	0.05	<	NO	4233-94	MW142	mg/L
Vanadium	0.053		YES	6084-93	MW142	mg/L
Vanadium	0.064		YES	5203-94	MW142	mg/L
Vanadium	0.07		YES	7089-93	MW142	mg/L
Vanadium	0.07		YES	6058-94	MW142	mg/L
Vanadium	0.076		YES	6096-93	MW142	mg/L
Vanadium	0.079		YES	6872-94	MW142	mg/L
Vanadium	0.13		YES	4789-94	MW150	mg/L
Vanadium	0.147		YES	5650-93	MW150	mg/L
Vanadium	0.05	<	NO	5170-93	MW199	mg/L
Vanadium	0.05	<	NO	6074-94	MW199	mg/L
Vanadium	0.069		YES	5260-94	MW199	mg/L
Vanadium	0.084		YES	6888-94	MW199	mg/L
Vanadium	0.086		YES	5984-93	MW199	mg/L
Vanadium	0.106		YES	7311-93	MW199	mg/L
Vanadium	0.123		YES	4312-94	MW199	mg/L

CORRECTED DATA SET

	MW 103	MW 106	MW 141	MW 142	MW 150	MW 199	Overall	Weighted
	Vanadium							
	0.023	0.04	0.05	0.05	0.13	0.05		
	0.023	0.05	0.058	0.053	0.147	0.05		
	0.023	0.074	0.064	0.064		0.069		
	0.023		0.07	0.07		0.084		
	0.023		0.078	0.07		0.086		
	0.023		0.086	0.076		0.106		
	0.023		0.096	0.079		0.123		
Min	0.023	0.040	0.050	0.050	0.130	0.050	0.023	
Max	0.023	0.074	0.096	0.079	0.147	0.123	0.147	
Average	0.023	0.055	0.072	0.066	0.139	0.081	0.065	0.073
Number	7	3	7	7	2	7	33	



MW 103 - Six nondetect results greater than the maximum detected value were reduced to the maximum detected value for this well (0.023 mg/L).

MW 106 - Data not modified.

MW 141 - Data not modified.

MW 142 - Data not modified.

MW 150 - Data were not modifed.

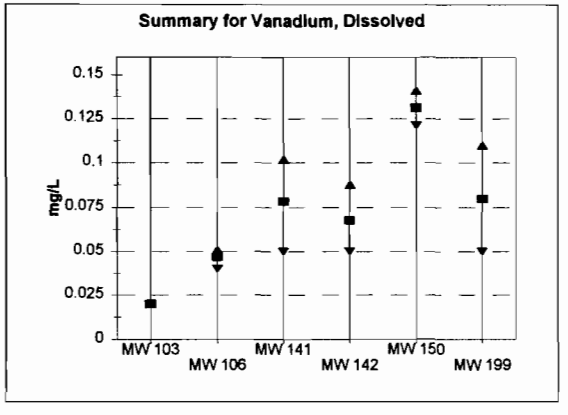
MW 199 - Data not modified.

Summary of RGA Background Well Inorganic Chemical Data

ANALYSIS	RESULT	QUALIFIER	DETECT?	SAMPLE ID	STATION ID	UNITS
Vanadium, Dissolved	0.02		YES	5178-93	MW103	mg/L
Vanadium, Dissolved	0.04	<	NO	6774-94	MW103	mg/L
Vanadium, Dissolved	0.05	<	NO	5944-93	MW103	mg/L
Vanadium, Dissolved	0.05	<	NO	7299-93	MW103	mg/L
Vanadium, Dissolved	0.05	<	NO	4272-94	MW103	mg/L
Vanadium, Dissolved	0.05	<	NO	5187-94	MW103	mg/L
Vanadium, Dissolved	0.05	<	NO	6026-94	MW103	mg/L
Vanadium, Dissolved	0.04	<	NO	7272-94	MW106	mg/L
Vanadium, Dissolved	0.05	<	NO	4697-94	MW106	mg/L
Vanadium, Dissolved	0.051		YES	5322-93	MW106	mg/L
Vanadium, Dissolved	0.05	<	NO	4229-94	MW141	mg/L
Vanadium, Dissolved	0.055		YES	6080-93	MW141	mg/L
Vanadium, Dissolved	0.075		YES	7085-93	MW141	mg/L
Vanadium, Dissolved	0.086		YES	6092-93	MW141	mg/L
Vanadium, Dissolved	0.089		YES	5199-94	MW141	mg/L
Vanadium, Dissolved	0.092		YES	6868-94	MW141	mg/L
Vanadium, Dissolved	0.102		YES	6054-94	MW141	mg/L
Vanadium, Dissolved	0.05	<	NO	6084-93	MW142	mg/L
Vanadium, Dissolved	0.05	<	NO	4233-94	MW142	mg/L
Vanadium, Dissolved	0.059		YES	7089-93	MW142	mg/L
Vanadium, Dissolved	0.072		YES	5203-94	MW142	mg/L
Vanadium, Dissolved	0.076		YES	6096-93	MW142	mg/L
Vanadium, Dissolved	0.079		YES	6872-94	MW142	mg/L
Vanadium, Dissolved	0.088		YES	6058-94	MW142	mg/L
Vanadium, Dissolved	0.121		YES	5650-93	MW150	mg/L
Vanadium, Dissolved	0.141		YES	4789-94	MW150	mg/L
Vanadium, Dissolved	0.05	<	NO	5170-93	MW199	mg/L
Vanadium, Dissolved	0.062		YES	6074-94	MW199	mg/L
Vanadium, Dissolved	0.082		YES	5260-94	MW199	mg/L
Vanadium, Dissolved	0.084		YES	6888-94	MW199	mg/L
Vanadium, Dissolved	0.085		YES	7311-93	MW199	mg/L
Vanadium, Dissolved	0.086		YES	5984-93	MW199	mg/L
Vanadium, Dissolved	0.11		YES	4312-94	MW199	mg/L

CORRECTED DATA SET

	MW 103	MW 106	MW 141	MW 142	MW 150	MW 199	Overall	Weighted
	Vanadium, Dissolved							
	0.02	0.04	0.05	0.05	0.121	0.05		
	0.02	0.05	0.055	0.05	0.141	0.062		
	0.02	0.051	0.075	0.059		0.082		
	0.02		0.086	0.072		0.084		
	0.02		0.089	0.076		0.085		
	0.02		0.092	0.079		0.086		
	0.02		0.102	0.088		0.11		
Min	0.020	0.040	0.050	0.050	0.121	0.050	0.020	
Max	0.020	0.051	0.102	0.088	0.141	0.110	0.141	
Average	0.020	0.047	0.078	0.068	0.131	0.080	0.064	0.071
Number	7	3	7	7	2	7	33	



MW 103 - Six nondetect results with values greater than the maximum detected concentration were reduced to the maximum detected value.

MW 106 - Data not modified.

MW 141 - Data not modified.

MW 142 - Data not modified.

MW 150 - Data were not modifed.

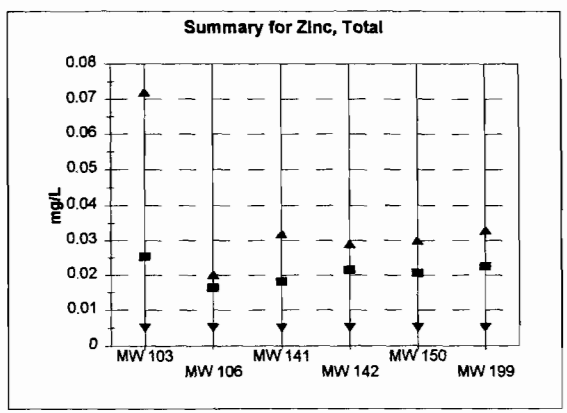
MW 199 - Data not modified.

Summary of RGA Background Well Inorganic Chemical Data

ANALYSIS	RESULT	QUALIFIER	DETECT?	SAMPLE ID	STATION ID	UNITS
Zinc	0.005	<	NO	5178-93	MW103	mg/L
Zinc	0.008	<	NO	5944-93	MW103	mg/L
Zinc	0.008	<	NO	7299-93	MW103	mg/L
Zinc	0.008	<	NO	4272-94	MW103	mg/L
Zinc	0.008		YES	5187-94	MW103	mg/L
Zinc	0.012		YES	6026-94	MW103	mg/L
Zinc	0.03	<	NO	5440-95	MW103	mg/L
Zinc	0.03	<	NO	5285-96	MW103	mg/L
Zinc	0.072		YES	6774-94	MW103	mg/L
Zinc	0.25	<	NO	5142-97	MW103	mg/L
Zinc	0.005	<	NO	4697-94	MW106	mg/L
Zinc	0.02		YES	5322-93	MW106	mg/L
Zinc	0.03	<	NO	7272-94	MW106	mg/L
Zinc	0.03	<	NO	5444-95	MW106	mg/L
Zinc	0.005	<	NO	4229-94	MW141	mg/L
Zinc	0.005	<	NO	6054-94	MW141	mg/L
Zinc	0.008		YES	6080-93	MW141	mg/L
Zinc	0.017		YES	5199-94	MW141	mg/L
Zinc	0.03		YES	6092-93	MW141	mg/L
Zinc	0.03	<	NO	6868-94	MW141	mg/L
Zinc	0.032		YES	7085-93	MW141	mg/L
Zinc	0.005		YES	6084-93	MW142	mg/L
Zinc	0.005	<	NO	6058-94	MW142	mg/L
Zinc	0.006		YES	4233-94	MW142	mg/L
Zinc	0.024		YES	6096-93	MW142	mg/L
Zinc	0.029		YES	7089-93	MW142	mg/L
Zinc	0.03	<	NO	6872-94	MW142	mg/L
Zinc	0.03	<	NO	5464-95	MW142	mg/L
Zinc	0.03	<	NO	5317-96	MW142	mg/L
Zinc	0.25	<	NO	5147-97	MW142	mg/L
Zinc	1.15		YES	5203-94	MW142	mg/L
Zinc	0.005	<	NO	4789-94	MW150	mg/L
Zinc	0.008	<	NO	5650-93	MW150	mg/L
Zinc	0.03	<	NO	5468-95	MW150	mg/L
Zinc	0.03	<	NO	5321-96	MW150	mg/L
Zinc	0.25	<	NO	5148-97	MW150	mg/L
Zinc	0.005	<	NO	5170-93	MW199	mg/L
Zinc	0.008	<	NO	4312-94	MW199	mg/L
Zinc	0.014		YES	6074-94	MW199	mg/L
Zinc	0.024		YES	5984-93	MW199	mg/L
Zinc	0.03	<	NO	6888-94	MW199	mg/L
Zinc	0.033		YES	7311-93	MW199	mg/L
Zinc	0.1	<	NO	5558-97	MW199	mg/L
Zinc	0.408		YES	5260-94	MW199	mg/L

CORRECTED DATA SET

	MW 103	MW 106	MW 141	MW 142	MW 150	MW 199	Overall	Weighted
	Zinc							
	0.005	0.005	0.005	0.005	0.005	0.005		
	0.008	0.02	0.005	0.005	0.008	0.008		
	0.008	0.02	0.008	0.006	0.03	0.014		
	0.008	0.02	0.017	0.024	0.03	0.024		
	0.008		0.03	0.029	0.03	0.03		
	0.012		0.03	0.029		0.033		
	0.03		0.032	0.029		0.033		
	0.03			0.029		0.033		
	0.072			0.029				
	0.072			0.029				
Min	0.005	0.005	0.005	0.005	0.005	0.005	0.005	
Max	0.072	0.020	0.032	0.029	0.030	0.033	0.072	
Average	0.025	0.016	0.018	0.021	0.021	0.023	0.021	0.021
Number	10	4	7	10	5	8	44	



MW 103 - One nondetect result with a value greater than the maximum detected concentration was reduced to the maximum detected concentration.

MW 106 - Two nondetect results with values greater than the maximum detected concentration were reduced to the maximum detected concentration.

MW 141 - Data not modified.

MW 150 - One nondetect with a value that greatly exceeds the other nondetect values was reduced to the next greatest detected value.

MW 142 - The maximum detected value was much greater than other results from this well and was reduced to the next greatest detected value; two nondetect results with values greater than the maximum detected concentration were reduced to the maximum detected concentration.

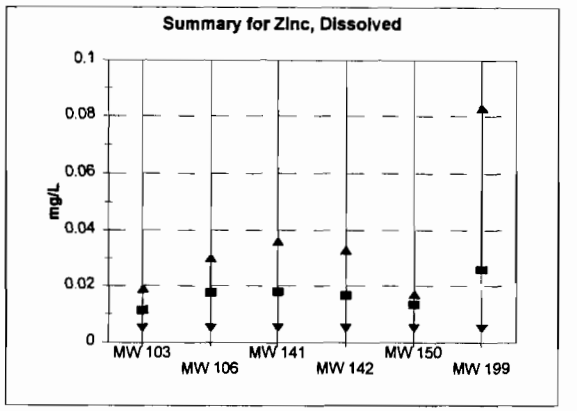
MW 199 - The maximum detected value was much greater than other results from this well and was reduced to the next greatest detected value; one nondetect result with a value greater than the maximum detected value was reduced to the maximum detected value.

Summary of RGA Background Well Inorganic Chemical Data

ANALYSIS	RESULT	QUALIFIER	DETECT?	SAMPLE ID	STATION ID	UNITS
Zinc, Dissolved	0.005	<	NO	5187-94	MW103	mg/L
Zinc, Dissolved	0.005	<	NO	6026-94	MW103	mg/L
Zinc, Dissolved	0.008	<	NO	5944-93	MW103	mg/L
Zinc, Dissolved	0.008	<	NO	7299-93	MW103	mg/L
Zinc, Dissolved	0.013		YES	4272-94	MW103	mg/L
Zinc, Dissolved	0.019		YES	5178-93	MW103	mg/L
Zinc, Dissolved	0.03	<	NO	6774-94	MW103	mg/L
Zinc, Dissolved	0.03	<	NO	5440-95	MW103	mg/L
Zinc, Dissolved		Q	NO	5285-96	MW103	
Zinc, Dissolved	0.005	<	NO	4697-94	MW106	mg/L
Zinc, Dissolved	0.03	<	NO	7272-94	MW106	mg/L
Zinc, Dissolved	0.03	<	NO	5444-95	MW106	mg/L
Zinc, Dissolved		Q	NO	5322-93	MW106	
Zinc, Dissolved	0.005	<	NO	4229-94	MW141	mg/L
Zinc, Dissolved	0.005	<	NO	5199-94	MW141	mg/L
Zinc, Dissolved	0.005	<	NO	6054-94	MW141	mg/L
Zinc, Dissolved	0.021		YES	6080-93	MW141	mg/L
Zinc, Dissolved	0.022		YES	6092-93	MW141	mg/L
Zinc, Dissolved	0.03	<	NO	6868-94	MW141	mg/L
Zinc, Dissolved	0.036		YES	7085-93	MW141	mg/L
Zinc, Dissolved	0.005	<	NO	4233-94	MW142	mg/L
Zinc, Dissolved	0.005	<	NO	5203-94	MW142	mg/L
Zinc, Dissolved	0.005	<	NO	6058-94	MW142	mg/L
Zinc, Dissolved	0.008		YES	6084-93	MW142	mg/L
Zinc, Dissolved	0.027		YES	6096-93	MW142	mg/L
Zinc, Dissolved	0.03	<	NO	6872-94	MW142	mg/L
Zinc, Dissolved	0.03	<	NO	5464-95	MW142	mg/L
Zinc, Dissolved	0.033		YES	7089-93	MW142	mg/L
Zinc, Dissolved		Q	NO	5317-96	MW142	
Zinc, Dissolved	0.014		YES	5650-93	MW150	mg/L
Zinc, Dissolved	0.017		YES	4789-94	MW150	mg/L
Zinc, Dissolved	0.03	<	NO	5468-95	MW150	mg/L
Zinc, Dissolved		Q	NO	5321-96	MW150	
Zinc, Dissolved	0.005	<	NO	5170-93	MW199	mg/L
Zinc, Dissolved	0.005	<	NO	6074-94	MW199	mg/L
Zinc, Dissolved	0.008	<	NO	4312-94	MW199	mg/L
Zinc, Dissolved	0.019		YES	5984-93	MW199	mg/L
Zinc, Dissolved	0.03	<	NO	6888-94	MW199	mg/L
Zinc, Dissolved	0.032		YES	7311-93	MW199	mg/L
Zinc, Dissolved	0.083		YES	5260-94	MW199	mg/L

CORRECTED DATA SET

	MW 103	MW 106	MW 141	MW 142	MW 150	MW 199	Overall	Weighted
Zinc, Dissolved								
	0.005	0.005	0.005	0.005	0.014	0.005		
	0.005	0.03	0.005	0.005	0.017	0.005		
	0.008	0.03	0.005	0.005	0.017	0.008		
	0.008	0.005	0.021	0.008	0.005	0.019		
	0.013		0.022	0.027		0.03		
	0.019		0.03	0.03		0.032		
	0.019		0.036	0.03		0.083		
	0.019			0.033				
	0.005			0.005				
Min	0.005	0.005	0.005	0.005	0.005	0.005	0.005	
Max	0.019	0.030	0.036	0.033	0.017	0.083	0.083	
Average	0.011	0.018	0.018	0.016	0.013	0.026	0.017	0.017
Number	9	4	7	9	4	7	40	



MW 103 - One "Q" qualified result given value of minimum detection limit for samples from this well (0.005 mg/L); two nondetect results with values greater than the maximum detected concentration were reduced to the maximum detected concentration.

MW 106 - One "Q" qualified result given value of minimum detection limit for samples from this well.

MW 141 - Data not modified.

MW 142 - One "Q" qualified result given value of minimum detection limit for samples from this well (0.005 mg/L).

MW 150 - One "Q" qualified result given value of minimum detected value from across samples from all wells limit (0.005 mg/L) because there was no other nondetect values from this well.

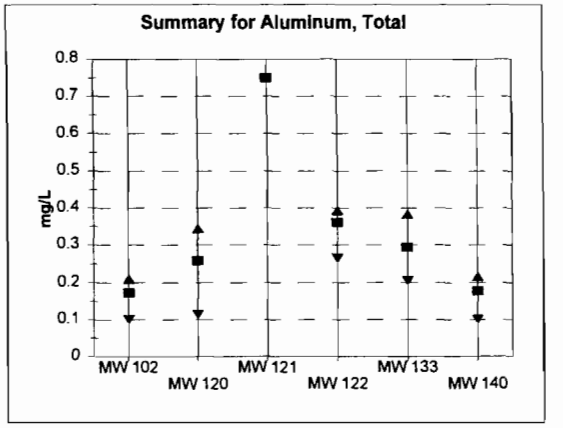
MW 199 - Data not modified.

Summary of McNairy Background Well Inorganic Chemical Data

ANALYSIS	RESULT	QUALIFIER	DETECT?	SMPID	STATION ID	UNITS
Aluminum	0.1	<	NO	7295-93	MW102	mg/L
Aluminum	0.108		YES	5940-93	MW102	mg/L
Aluminum	0.108		YES	4268-94	MW102	mg/L
Aluminum	0.19		YES	5174-93	MW102	mg/L
Aluminum	0.203		YES	5183-94	MW102	mg/L
Aluminum	0.21		YES	6022-94	MW102	mg/L
Aluminum	0.625	<	NO	6770-94	MW102	mg/L
Aluminum	0.625	N*<	NO	5281-96	MW102	mg/L
Aluminum	0.75	<	NO	5141-97	MW102	mg/L
Aluminum	0.114		YES	4209-94	MW120	mg/L
Aluminum	0.167		YES	4991-94	MW120	mg/L
Aluminum	0.194		YES	5900-93	MW120	mg/L
Aluminum	0.236		YES	7065-93	MW120	mg/L
Aluminum	0.238		YES	6034-94	MW120	mg/L
Aluminum	0.344		YES	5088-93	MW120	mg/L
Aluminum	0.625	<	NO	5293-96	MW120	mg/L
Aluminum	0.625	<	NO	6928-94	MW120	mg/L
Aluminum	0.75	<	NO	5143-97	MW120	mg/L
Aluminum	0.75	<	NO	5144-97	MW121	mg/L
Aluminum	3.52		YES	5500-96	MW121	mg/L
Aluminum	6.24		YES	4864-94	MW121	mg/L
Aluminum	90.4		YES	5206-93	MW121	mg/L
Aluminum	0.265		YES	5246-93	MW122	mg/L
Aluminum	0.393		YES	4868-94	MW122	mg/L
Aluminum	0.625	N*<	NO	5301-96	MW122	mg/L
Aluminum	0.75	<	NO	5145-97	MW122	mg/L
Aluminum	0.204		YES	4761-94	MW133	mg/L
Aluminum	0.384		YES	5282-93	MW133	mg/L
Aluminum	0.1	<	NO	5195-94	MW140	mg/L
Aluminum	0.102		YES	4225-94	MW140	mg/L
Aluminum	0.126		YES	6050-94	MW140	mg/L
Aluminum	0.192		YES	6004-93	MW140	mg/L
Aluminum	0.211		YES	6088-93	MW140	mg/L
Aluminum	0.216		YES	7081-93	MW140	mg/L
Aluminum	0.62	<	NO	6864-94	MW140	mg/L
Aluminum	0.625	N*<	NO	5313-96	MW140	mg/L
Aluminum	0.75	<	NO	5146-97	MW140	mg/L

CORRECTED DATA SET

	MW 102	MW 120	MW 121	MW 122	MW 133	MW 140	Overall	Weighted
	Aluminum							
	0.1	0.114	0.75	0.265	0.204	0.1		
	0.108	0.167	0.75	0.393	0.384	0.102		
	0.108	0.194	0.75	0.393		0.126		
	0.19	0.236	0.75	0.393		0.192		
	0.203	0.238				0.211		
	0.21	0.344				0.216		
	0.21	0.344				0.216		
	0.21	0.344				0.216		
	0.21	0.344				0.216		
Min	0.100	0.114	0.750	0.265	0.204	0.100	0.100	
Max	0.210	0.344	0.750	0.393	0.384	0.216	0.750	
Average	0.172	0.258	0.750	0.361	0.294	0.177	0.284	0.335
Number	9	9	4	4	2	9	37	



MW 102 - Three nondetects greater than maximum detected value set to maximum detected value.

MW 120 - Three nondetects greater than maximum detected value set to maximum detected value.

MW 121 - Turbidity/total solids impacted results of detected values; detected values reduced to nondetect concentration.

MW 122 - Two nondetects greater than maximum detected value set to maximum detected value.

MW 133 - Data were not modified.

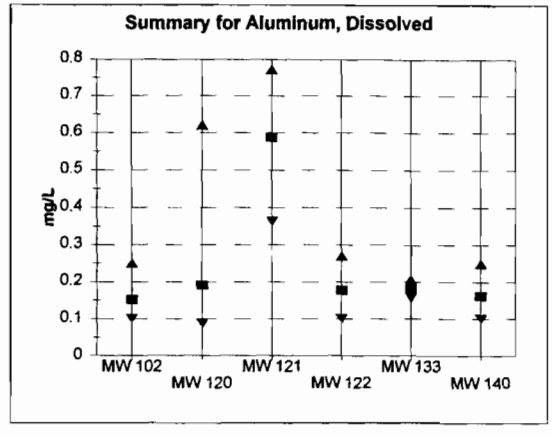
MW 140 - Three non detects greater than maximum detected value set to maximum detected value.

Summary of McNairy Background Well Inorganic Chemical Data

ANALYSIS	RESULT	QUALIFIER	DETECT?	SMPID	STATION ID	UNITS
Aluminum, Dissolved	0.106		YES	4268-94	MW102	mg/L
Aluminum, Dissolved	0.107		YES	5940-93	MW102	mg/L
Aluminum, Dissolved	0.12		YES	7295-93	MW102	mg/L
Aluminum, Dissolved	0.134		YES	6022-94	MW102	mg/L
Aluminum, Dissolved	0.147		YES	5183-94	MW102	mg/L
Aluminum, Dissolved	0.25		YES	5174-93	MW102	mg/L
Aluminum, Dissolved	0.625	<	NO	6770-94	MW102	mg/L
Aluminum, Dissolved		Q	NO	5281-96	MW102	
Aluminum, Dissolved	0.087		YES	4991-94	MW120	mg/L
Aluminum, Dissolved	0.1	<	NO	4209-94	MW120	mg/L
Aluminum, Dissolved	0.107		YES	5900-93	MW120	mg/L
Aluminum, Dissolved	0.149		YES	6034-94	MW120	mg/L
Aluminum, Dissolved	0.152		YES	7065-93	MW120	mg/L
Aluminum, Dissolved	0.208		YES	5088-93	MW120	mg/L
Aluminum, Dissolved	0.62	<	NO	6928-94	MW120	mg/L
Aluminum, Dissolved		Q	NO	5293-96	MW120	
Aluminum, Dissolved	0.363		YES	4864-94	MW121	mg/L
Aluminum, Dissolved	0.625	<	NO	5500-96	MW121	mg/L
Aluminum, Dissolved	0.772		YES	5206-93	MW121	mg/L
Aluminum, Dissolved	0.16		YES	5246-93	MW122	mg/L
Aluminum, Dissolved	0.27		YES	4868-94	MW122	mg/L
Aluminum, Dissolved		Q	NO	5301-96	MW122	
Aluminum, Dissolved	0.156		YES	4761-94	MW133	mg/L
Aluminum, Dissolved	0.206		YES	5282-93	MW133	mg/L
Aluminum, Dissolved	0.1	<	NO	4225-94	MW140	mg/L
Aluminum, Dissolved	0.1	<	NO	5195-94	MW140	mg/L
Aluminum, Dissolved	0.123		YES	6050-94	MW140	mg/L
Aluminum, Dissolved	0.156		YES	6004-93	MW140	mg/L
Aluminum, Dissolved	0.216		YES	6088-93	MW140	mg/L
Aluminum, Dissolved	0.249		YES	7081-93	MW140	mg/L
Aluminum, Dissolved	0.62	<	NO	6864-94	MW140	mg/L
Aluminum, Dissolved		Q	NO	5313-96	MW140	

CORRECTED DATA SET

	MW 102	MW 120	MW 121	MW 122	MW 133	MW 140	Overall	Weighted
	Aluminum, Dissolved							
	0.106	0.087	0.363	0.16	0.156	0.1		
	0.107	0.1	0.625	0.27	0.206	0.1		
	0.12	0.107	0.772	0.1		0.123		
	0.134	0.149				0.156		
	0.147	0.152				0.216		
	0.25	0.208				0.249		
	0.25	0.62				0.249		
	0.1	0.1				0.1		
Min	0.100	0.087	0.363	0.100	0.156	0.100	0.087	
Max	0.250	0.620	0.772	0.270	0.206	0.249	0.772	
Average	0.152	0.190	0.587	0.177	0.181	0.162	0.209	0.241
Number	8	8	3	3	2	8	32	



MW 102 - One nondetect greater than maximum detected value set to maximum detected value; one "Q" qualified result assigned the minimum detection limit across all wells.

MW 120 - One nondetect greater than maximum detected value set to maximum detected value; one "Q" qualified result assigned minimum detection limit across all wells.

MW 121 - Data were not modified.

MW 122 - One "Q" qualified result assigned minimum detection limit across all wells.

MW 133 - Data were not modified.

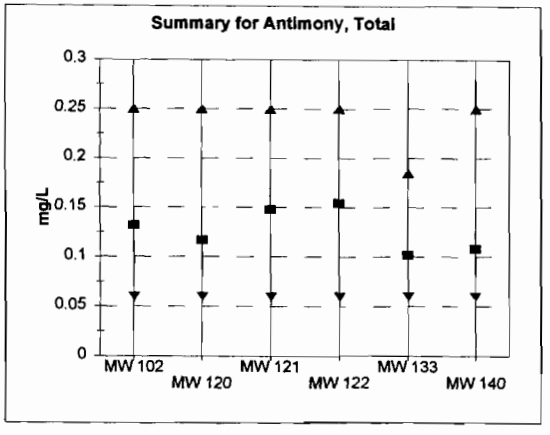
MW 140 - One nondetect greater than maximum detected value set to maximum detected value; one "Q" qualified result assigned the minimum detection limit across all wells.

Summary of McNairy Background Well Inorganic Chemical Data

ANALYSIS	RESULT	QUALIFIER	DETECT?	SMPID	STATION ID	UNITS
Antimony	0.06	<	NO	5174-93	MW102	mg/L
Antimony	0.06	<	NO	5940-93	MW102	mg/L
Antimony	0.06	<	NO	7295-93	MW102	mg/L
Antimony	0.06	<	NO	4268-94	MW102	mg/L
Antimony	0.06	<	NO	5183-94	MW102	mg/L
Antimony	0.06	<	NO	6022-94	MW102	mg/L
Antimony	0.18	<S	NO	6770-94	MW102	mg/L
Antimony	0.185	<	NO	5619-95	MW102	mg/L
Antimony	0.185	<	NO	6592-95	MW102	mg/L
Antimony	0.185	<	NO	7467-95	MW102	mg/L
Antimony	0.185	<	NO	8285-95	MW102	mg/L
Antimony	0.185	J<	NO	5281-96	MW102	mg/L
Antimony	0.25	<	NO	5141-97	MW102	mg/L
Antimony	0.06	<	NO	4209-94	MW120	mg/L
Antimony	0.06	<	NO	4991-94	MW120	mg/L
Antimony	0.06	<	NO	5088-93	MW120	mg/L
Antimony	0.06	<	NO	5900-93	MW120	mg/L
Antimony	0.06	<	NO	6034-94	MW120	mg/L
Antimony	0.06	<	NO	7065-93	MW120	mg/L
Antimony	0.185	<	NO	5448-95	MW120	mg/L
Antimony	0.185	<	NO	5293-96	MW120	mg/L
Antimony	0.19	<	NO	6928-94	MW120	mg/L
Antimony	0.25	<	NO	5143-97	MW120	mg/L
Antimony	0.06	<	NO	5206-93	MW121	mg/L
Antimony	0.06	<	NO	4864-94	MW121	mg/L
Antimony	0.185	<	NO	5452-95	MW121	mg/L
Antimony	0.185	<	NO	5500-96	MW121	mg/L
Antimony	0.25	<	NO	5144-97	MW121	mg/L
Antimony	0.06	<	NO	5246-93	MW122	mg/L
Antimony	0.06	<	NO	4868-94	MW122	mg/L
Antimony	0.185	<	NO	5456-95	MW122	mg/L
Antimony	0.185	<	NO	6596-95	MW122	mg/L
Antimony	0.185	J<	NO	5301-96	MW122	mg/L
Antimony	0.25	<	NO	5145-97	MW122	mg/L
Antimony	0.06	<	NO	5282-93	MW133	mg/L
Antimony	0.06	<	NO	4761-94	MW133	mg/L
Antimony	0.185	<	NO	5460-95	MW133	mg/L
Antimony	0.06	<	NO	6004-93	MW140	mg/L
Antimony	0.06	<	NO	6088-93	MW140	mg/L
Antimony	0.06	<	NO	4225-94	MW140	mg/L
Antimony	0.06	<	NO	5195-94	MW140	mg/L
Antimony	0.06	<	NO	6050-94	MW140	mg/L
Antimony	0.06	<N	NO	7081-93	MW140	mg/L
Antimony	0.18	<	NO	6864-94	MW140	mg/L
Antimony	0.185	J<	NO	5313-96	MW140	mg/L
Antimony	0.25	<	NO	5146-97	MW140	mg/L

CORRECTED DATA SET

	MW 102	MW 120	MW 121	MW 122	MW 133	MW 140	Overall	Weighted
	Antimony							
	0.06	0.06	0.06	0.06	0.06	0.06		
	0.06	0.06	0.06	0.06	0.06	0.06		
	0.06	0.06	0.185	0.185	0.185	0.06		
	0.06	0.06	0.185	0.185		0.06		
	0.06	0.06	0.25	0.185		0.06		
	0.06	0.06		0.25		0.06		
	0.18	0.185				0.18		
	0.185	0.185				0.185		
	0.185	0.19				0.25		
	0.185	0.25						
	0.185							
	0.185							
	0.25							
Min	0.060	0.060	0.060	0.060	0.060	0.060	0.060	
Max	0.250	0.250	0.250	0.250	0.185	0.250	0.250	
Average	0.132	0.117	0.148	0.154	0.102	0.108	0.127	0.127
Number	13	10	5	6	3	9	46	



All results for this well are below their respective detection limits; therefore, the plot is simply a depiction if the detection limits used for samples taken from these wells.

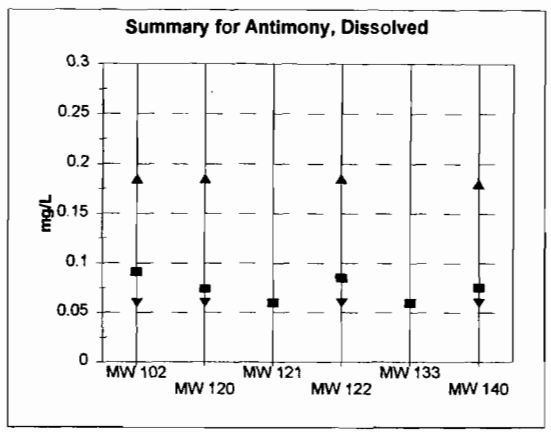
Data for Anitimony, Total were not modified.

Summary of McNairy Background Well Inorganic Chemical Data

ANALYSIS	RESULT	QUALIFIER	DETECT?	SMPID	STATION ID	UNITS
Antimony, Dissolved	0.06	<	NO	5174-93	MW102	mg/L
Antimony, Dissolved	0.06	<	NO	7295-93	MW102	mg/L
Antimony, Dissolved	0.06	<	NO	4268-94	MW102	mg/L
Antimony, Dissolved	0.06	<	NO	5183-94	MW102	mg/L
Antimony, Dissolved	0.06	<	NO	6022-94	MW102	mg/L
Antimony, Dissolved	0.185	<	NO	6770-94	MW102	mg/L
Antimony, Dissolved	0.185	<	NO	5619-95	MW102	mg/L
Antimony, Dissolved	0.185	<	NO	6592-95	MW102	mg/L
Antimony, Dissolved		Q	NO	5940-93	MW102	
Antimony, Dissolved		Q	NO	7467-95	MW102	
Antimony, Dissolved		Q	NO	8285-95	MW102	
Antimony, Dissolved		Q	NO	5281-96	MW102	
Antimony, Dissolved	0.06	<	NO	4209-94	MW120	mg/L
Antimony, Dissolved	0.06	<	NO	4991-94	MW120	mg/L
Antimony, Dissolved	0.06	<	NO	5088-93	MW120	mg/L
Antimony, Dissolved	0.06	<	NO	5900-93	MW120	mg/L
Antimony, Dissolved	0.06	<	NO	6034-94	MW120	mg/L
Antimony, Dissolved	0.185	<	NO	6928-94	MW120	mg/L
Antimony, Dissolved		Q	NO	5448-95	MW120	
Antimony, Dissolved		Q	NO	5293-96	MW120	
Antimony, Dissolved		Q	NO	7065-93	MW120	
Antimony, Dissolved	0.06	<	NO	5206-93	MW121	mg/L
Antimony, Dissolved	0.06	<	NO	4864-94	MW121	mg/L
Antimony, Dissolved		Q	NO	5452-95	MW121	
Antimony, Dissolved		Q	NO	5500-96	MW121	
Antimony, Dissolved	0.06	<	NO	5246-93	MW122	mg/L
Antimony, Dissolved	0.06	<	NO	4868-94	MW122	mg/L
Antimony, Dissolved	0.185	<	NO	6596-95	MW122	mg/L
Antimony, Dissolved		Q	NO	5456-95	MW122	
Antimony, Dissolved		Q	NO	5301-96	MW122	
Antimony, Dissolved	0.06	<	NO	5282-93	MW133	mg/L
Antimony, Dissolved	0.06	<	NO	4761-94	MW133	mg/L
Antimony, Dissolved		Q	NO	5460-95	MW133	
Antimony, Dissolved	0.06	<	NO	6004-93	MW140	mg/L
Antimony, Dissolved	0.06	<	NO	6088-93	MW140	mg/L
Antimony, Dissolved	0.06	<	NO	7081-93	MW140	mg/L
Antimony, Dissolved	0.06	<	NO	4225-94	MW140	mg/L
Antimony, Dissolved	0.06	<	NO	5195-94	MW140	mg/L
Antimony, Dissolved	0.06	<	NO	6050-94	MW140	mg/L
Antimony, Dissolved	0.18	<	NO	6864-94	MW140	mg/L
Antimony, Dissolved		Q	NO	5313-96	MW140	

CORRECTED DATA SET

	MW 102	MW 120	MW 121	MW 122	MW 133	MW 140	Overall	Weighted
	Antimony, Dissolved							
	0.06	0.06	0.06	0.06	0.06	0.06		
	0.06	0.06	0.06	0.06	0.06	0.06		
	0.06	0.06	0.06	0.185	0.06	0.06		
	0.06	0.06	0.06	0.06		0.06		
	0.06	0.06		0.06		0.06		
	0.185	0.185				0.06		
	0.185	0.06				0.18		
	0.185	0.06				0.06		
	0.06	0.06						
	0.06							
	0.06							
	0.06							
Min	0.060	0.060	0.060	0.060	0.060	0.060	0.060	
Max	0.185	0.185	0.060	0.185	0.060	0.180	0.185	
Average	0.091	0.074	0.060	0.085	0.060	0.075	0.078	0.074
Number	12	9	4	5	3	8	41	



MW 102 - Four "Q" qualified results assigned the minimum detection limit for samples from this well.

MW120 - Three "Q" qualified results assigned the minimum detection limit for samples from this well.

MW 121 - Two "Q" qualified results assigned the minimum detection limit for samples from this well.

MW 122 - Two "Q" qualified results assigned the minimum detection limit for samples from this well.

MW 133 - One "Q" qualified result assigned the minimum detection limit for samples from this well.

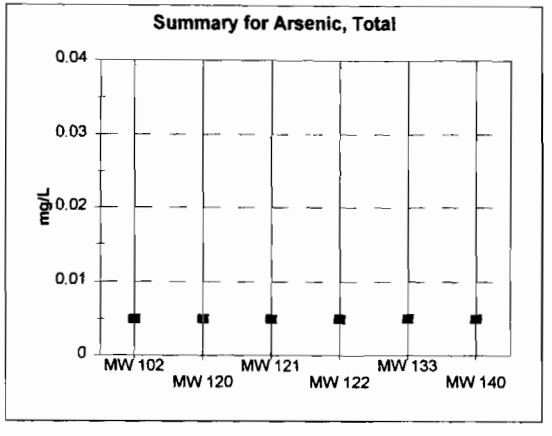
MW 140 - One "Q" qualified result assigned the minimum detection limit for samples from this well.

Summary of McNairy Background Well Inorganic Chemical Data

ANALYSIS	RESULT	QUALIFIER	DETECT?	SMPID	STATION ID	UNITS
Arsenic	0.005	<	NO	5174-93	MW102	mg/L
Arsenic	0.005	<	NO	5940-93	MW102	mg/L
Arsenic	0.005	<	NO	7295-93	MW102	mg/L
Arsenic	0.005	<	NO	4268-94	MW102	mg/L
Arsenic	0.005	<	NO	5183-94	MW102	mg/L
Arsenic	0.005	<	NO	6022-94	MW102	mg/L
Arsenic	0.005	<	NO	6770-94	MW102	mg/L
Arsenic	0.005	<	NO	6592-95	MW102	mg/L
Arsenic	0.005	<	NO	7467-95	MW102	mg/L
Arsenic	0.005	<	NO	8285-95	MW102	mg/L
Arsenic	0.005	<	NO	5281-96	MW102	mg/L
Arsenic	0.005	<	NO	5141-97	MW102	mg/L
Arsenic	0.005	<N	NO	5619-95	MW102	mg/L
Arsenic	0.005	<	NO	4209-94	MW120	mg/L
Arsenic	0.005	<	NO	5143-97	MW120	mg/L
Arsenic	0.005	<	NO	5448-95	MW120	mg/L
Arsenic	0.005	<	NO	5293-96	MW120	mg/L
Arsenic	0.005	<	NO	4991-94	MW120	mg/L
Arsenic	0.005	<	NO	5088-93	MW120	mg/L
Arsenic	0.005	<	NO	5900-93	MW120	mg/L
Arsenic	0.005	<	NO	6034-94	MW120	mg/L
Arsenic	0.005	<	NO	6928-94	MW120	mg/L
Arsenic	0.005	<	NO	7065-93	MW120	mg/L
Arsenic	0.005	<	NO	4864-94	MW121	mg/L
Arsenic	0.005	<	NO	5452-95	MW121	mg/L
Arsenic	0.005	<	NO	5500-96	MW121	mg/L
Arsenic	0.005	<	NO	5144-97	MW121	mg/L
Arsenic	0.036		YES	5206-93	MW121	mg/L
Arsenic	0.005	<	NO	5246-93	MW122	mg/L
Arsenic	0.005	<	NO	4868-94	MW122	mg/L
Arsenic	0.005	<	NO	5456-95	MW122	mg/L
Arsenic	0.005	<	NO	6596-95	MW122	mg/L
Arsenic	0.005	<	NO	5301-96	MW122	mg/L
Arsenic	0.005	<	NO	5145-97	MW122	mg/L
Arsenic	0.005	<	NO	5282-93	MW133	mg/L
Arsenic	0.005	<	NO	4761-94	MW133	mg/L
Arsenic	0.005	<	NO	5460-95	MW133	mg/L
Arsenic	0.005	<	NO	6088-93	MW140	mg/L
Arsenic	0.005	<	NO	7081-93	MW140	mg/L
Arsenic	0.005	<	NO	4225-94	MW140	mg/L
Arsenic	0.005	<	NO	5195-94	MW140	mg/L
Arsenic	0.005	<	NO	6050-94	MW140	mg/L
Arsenic	0.005	<	NO	6864-94	MW140	mg/L
Arsenic	0.005	<	NO	5313-96	MW140	mg/L
Arsenic	0.005	<	NO	5146-97	MW140	mg/L
Arsenic	0.005		YES	6004-93	MW140	mg/L

CORRECTED DATA SET

	MW 102	MW 120	MW 121	MW 122	MW 133	MW 140	Overall	Weighted
	Arsenic							
	0.005	0.005	0.005	0.005	0.005	0.005		
	0.005	0.005	0.005	0.005	0.005	0.005		
	0.005	0.005	0.005	0.005	0.005	0.005		
	0.005	0.005	0.005	0.005		0.005		
	0.005	0.005	0.005	0.005		0.005		
	0.005	0.005		0.005		0.005		
	0.005	0.005				0.005		
	0.005	0.005				0.005		
	0.005	0.005				0.005		
	0.005	0.005						
	0.005							
	0.005							
	0.005							
Min	0.005	0.005	0.005	0.005	0.005	0.005	0.005	
Max	0.005	0.005	0.005	0.005	0.005	0.005	0.005	
Average	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005
Number	13	10	5	6	3	9	46	



MW 102 - Data were not modified.

MW 120 - Data were not modified.

MW 121 - Turbidity/total solids impacted result of detected value; detected value reduced to nondetect concentration.

MW 122 - Data were not modified.

MW 133 - Data were not modified.

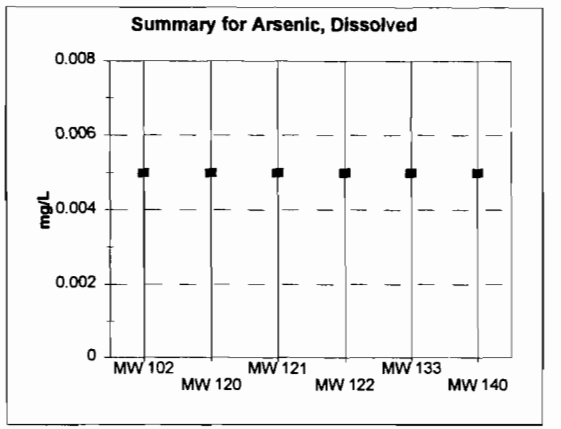
MW 140 - Data were not modified.

Summary of McNairy Background Well Inorganic Chemical Data

ANALYSIS	RESULT	QUALIFIER	DETECT?	SMPID	STATION ID	UNITS
Arsenic, Dissolved		Q	NO	5174-93	MW102	
Arsenic, Dissolved		Q	NO	5940-93	MW102	
Arsenic, Dissolved		Q	NO	7295-93	MW102	
Arsenic, Dissolved		Q	NO	4268-94	MW102	
Arsenic, Dissolved		Q	NO	5183-94	MW102	
Arsenic, Dissolved		Q	NO	6022-94	MW102	
Arsenic, Dissolved		Q	NO	6770-94	MW102	
Arsenic, Dissolved		Q	NO	5619-95	MW102	
Arsenic, Dissolved		Q	NO	6592-95	MW102	
Arsenic, Dissolved		Q	NO	7467-95	MW102	
Arsenic, Dissolved		Q	NO	8285-95	MW102	
Arsenic, Dissolved		Q	NO	5281-96	MW102	
Arsenic, Dissolved		Q	NO	5141-97	MW102	
Arsenic, Dissolved		Q	NO	4209-94	MW120	
Arsenic, Dissolved		Q	NO	5143-97	MW120	
Arsenic, Dissolved		Q	NO	5448-95	MW120	
Arsenic, Dissolved		Q	NO	5293-96	MW120	
Arsenic, Dissolved		Q	NO	4991-94	MW120	
Arsenic, Dissolved		Q	NO	5088-93	MW120	
Arsenic, Dissolved		Q	NO	5900-93	MW120	
Arsenic, Dissolved		Q	NO	6034-94	MW120	
Arsenic, Dissolved		Q	NO	6928-94	MW120	
Arsenic, Dissolved		Q	NO	7065-93	MW120	
Arsenic, Dissolved	0.005	<	NO	5206-93	MW121	mg/L
Arsenic, Dissolved		Q	NO	4864-94	MW121	
Arsenic, Dissolved		Q	NO	5452-95	MW121	
Arsenic, Dissolved		Q	NO	5500-96	MW121	
Arsenic, Dissolved		Q	NO	5144-97	MW121	
Arsenic, Dissolved		Q	NO	5246-93	MW122	
Arsenic, Dissolved		Q	NO	4868-94	MW122	
Arsenic, Dissolved		Q	NO	5456-95	MW122	
Arsenic, Dissolved		Q	NO	6596-95	MW122	
Arsenic, Dissolved		Q	NO	5301-96	MW122	
Arsenic, Dissolved		Q	NO	5145-97	MW122	
Arsenic, Dissolved		Q	NO	4761-94	MW133	
Arsenic, Dissolved		Q	NO	5460-95	MW133	
Arsenic, Dissolved	0.005	<	NO	6004-93	MW140	mg/L
Arsenic, Dissolved		Q	NO	6088-93	MW140	
Arsenic, Dissolved		Q	NO	7081-93	MW140	
Arsenic, Dissolved		Q	NO	4225-94	MW140	
Arsenic, Dissolved		Q	NO	5195-94	MW140	
Arsenic, Dissolved		Q	NO	6050-94	MW140	
Arsenic, Dissolved		Q	NO	6864-94	MW140	
Arsenic, Dissolved		Q	NO	5313-96	MW140	
Arsenic, Dissolved		Q	NO	5146-97	MW140	

CORRECTED DATA SET

	MW 102	MW 120	MW 121	MW 122	MW 133	MW 140	Overall	Weighted
	Arsenic, Dissolved							
	0.005	0.005	0.005	0.005	0.005	0.005		
	0.005	0.005	0.005	0.005	0.005	0.005		
	0.005	0.005	0.005	0.005		0.005		
	0.005	0.005	0.005	0.005		0.005		
	0.005	0.005	0.005	0.005		0.005		
	0.005	0.005		0.005		0.005		
	0.005	0.005				0.005		
	0.005	0.005				0.005		
	0.005	0.005				0.005		
	0.005	0.005						
	0.005							
	0.005							
	0.005							
Min	0.005	0.005	0.005	0.005	0.005	0.005	0.005	
Max	0.005	0.005	0.005	0.005	0.005	0.005	0.005	
Average	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005
Number	13	10	5	6	2	9	45	



MW 102 - Thirteen "Q" qualified results assigned the minimum detection limit for samples across all wells.

MW120 - Ten "Q" qualified results assigned the minimum detection limit for samples across all wells.

MW 121 - Four "Q" qualified results assigned the minimum detection limit for samples from this well.

MW 122 - Six "Q" qualified results assigned the minimum detection limit for samples across all wells.

MW 133 - Two "Q" qualified result assigned the minimum detection limit for samples from this well.

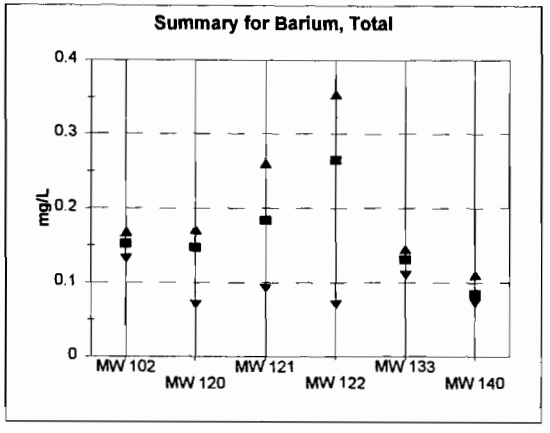
MW 140 - Eight "Q" qualified results assigned the minimum detection limit for samples from this well.

Summary of McNairy Background Well Inorganic Chemical Data

ANALYSIS	RESULT	QUALIFIER	DETECT?	SMPID	STATION ID	UNITS
Barium	0.132		YES	4268-94	MW102	mg/L
Barium	0.141		YES	7295-93	MW102	mg/L
Barium	0.143		YES	5183-94	MW102	mg/L
Barium	0.148		YES	5174-93	MW102	mg/L
Barium	0.15		YES	5940-93	MW102	mg/L
Barium	0.15		YES	5619-95	MW102	mg/L
Barium	0.15		YES	8285-95	MW102	mg/L
Barium	0.155		YES	6770-94	MW102	mg/L
Barium	0.157		YES	6022-94	MW102	mg/L
Barium	0.159		YES	7467-95	MW102	mg/L
Barium	0.162		YES	6592-95	MW102	mg/L
Barium	0.166		YES	5141-97	MW102	mg/L
Barium	0.168		YES	5281-96	MW102	mg/L
Barium	0.07	<	NO	5448-95	MW120	mg/L
Barium	0.146		YES	4209-94	MW120	mg/L
Barium	0.15		YES	6034-94	MW120	mg/L
Barium	0.15		YES	6928-94	MW120	mg/L
Barium	0.151		YES	5293-96	MW120	mg/L
Barium	0.152		YES	5088-93	MW120	mg/L
Barium	0.154		YES	7065-93	MW120	mg/L
Barium	0.162		YES	4991-94	MW120	mg/L
Barium	0.166		YES	5900-93	MW120	mg/L
Barium	0.171		YES	5143-97	MW120	mg/L
Barium	0.092		YES	5144-97	MW121	mg/L
Barium	0.148		YES	5500-96	MW121	mg/L
Barium	0.157		YES	4864-94	MW121	mg/L
Barium	0.26		YES	5452-95	MW121	mg/L
Barium	0.67		YES	5206-93	MW121	mg/L
Barium	0.07	<	NO	5456-95	MW122	mg/L
Barium	0.259		YES	5246-93	MW122	mg/L
Barium	0.288		YES	4868-94	MW122	mg/L
Barium	0.29		YES	6596-95	MW122	mg/L
Barium	0.326		YES	5301-96	MW122	mg/L
Barium	0.354		YES	5145-97	MW122	mg/L
Barium	0.11		YES	5460-95	MW133	mg/L
Barium	0.139		YES	5282-93	MW133	mg/L
Barium	0.145		YES	4761-94	MW133	mg/L
Barium	0.072		YES	5195-94	MW140	mg/L
Barium	0.072		YES	5146-97	MW140	mg/L
Barium	0.074		YES	6864-94	MW140	mg/L
Barium	0.079		YES	5313-96	MW140	mg/L
Barium	0.086		YES	6004-93	MW140	mg/L
Barium	0.086		YES	4225-94	MW140	mg/L
Barium	0.089		YES	7081-93	MW140	mg/L
Barium	0.092		YES	6050-94	MW140	mg/L
Barium	0.111		YES	6088-93	MW140	mg/L

CORRECTED DATA SET

	MW 102	MW 120	MW 121	MW 122	MW 133	MW 140	Overall	Weighted
	Barium							
	0.132	0.07	0.092	0.07	0.11	0.072		
	0.141	0.146	0.148	0.259	0.139	0.072		
	0.143	0.15	0.157	0.288	0.145	0.074		
	0.148	0.15	0.26	0.29		0.079		
	0.15	0.151	0.26	0.326		0.086		
	0.15	0.152		0.354		0.086		
	0.15	0.154				0.089		
	0.155	0.162				0.092		
	0.157	0.166				0.111		
	0.159	0.171						
	0.162							
	0.166							
	0.168							
Min	0.132	0.070	0.092	0.070	0.110	0.072	0.070	
Max	0.168	0.171	0.260	0.354	0.145	0.111	0.354	
Average	0.152	0.147	0.183	0.265	0.131	0.085	0.155	0.161
Number	13	10	5	6	3	9	46	



MW 102 - Data were not modified.

MW 120 - Data were not modified.

MW 121 - Turbidity/total solids impacted result of detected value; detected value reduced to nondetect concentration.

MW 122 - Data were not modified.

MW 133 - Data were not modified.

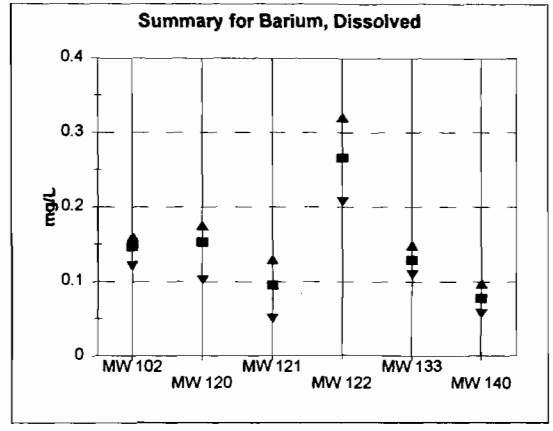
MW 140 - Data were not modified.

Summary of McNairy Background Well Inorganic Chemical Data

ANALYSIS	RESULT	QUALIFIER	DETECT?	SMPID	STATION ID	UNITS
Barium, Dissolved	0.121		YES	5141-97	MW102	mg/L
Barium, Dissolved	0.14		YES	7467-95	MW102	mg/L
Barium, Dissolved	0.142		YES	7295-93	MW102	mg/L
Barium, Dissolved	0.143		YES	5183-94	MW102	mg/L
Barium, Dissolved	0.144		YES	8285-95	MW102	mg/L
Barium, Dissolved	0.146		YES	5940-93	MW102	mg/L
Barium, Dissolved	0.149		YES	5281-96	MW102	mg/L
Barium, Dissolved	0.15		YES	6592-95	MW102	mg/L
Barium, Dissolved	0.152		YES	5174-93	MW102	mg/L
Barium, Dissolved	0.154		YES	6022-94	MW102	mg/L
Barium, Dissolved	0.157		YES	4268-94	MW102	mg/L
Barium, Dissolved	0.157		YES	6770-94	MW102	mg/L
Barium, Dissolved	0.16		YES	5619-95	MW102	mg/L
Barium, Dissolved	0.102		YES	5143-97	MW120	mg/L
Barium, Dissolved	0.143		YES	5293-96	MW120	mg/L
Barium, Dissolved	0.149		YES	5088-93	MW120	mg/L
Barium, Dissolved	0.157		YES	4209-94	MW120	mg/L
Barium, Dissolved	0.157		YES	5900-93	MW120	mg/L
Barium, Dissolved	0.16		YES	5448-95	MW120	mg/L
Barium, Dissolved	0.16		YES	6928-94	MW120	mg/L
Barium, Dissolved	0.162		YES	4991-94	MW120	mg/L
Barium, Dissolved	0.163		YES	7065-93	MW120	mg/L
Barium, Dissolved	0.175		YES	6034-94	MW120	mg/L
Barium, Dissolved	0.05	<	NO	5144-97	MW121	mg/L
Barium, Dissolved	0.08		YES	5452-95	MW121	mg/L
Barium, Dissolved	0.096		YES	5500-96	MW121	mg/L
Barium, Dissolved	0.117		YES	5206-93	MW121	mg/L
Barium, Dissolved	0.13		YES	4864-94	MW121	mg/L
Barium, Dissolved	0.207		YES	5145-97	MW122	mg/L
Barium, Dissolved	0.249		YES	5246-93	MW122	mg/L
Barium, Dissolved	0.261		YES	5301-96	MW122	mg/L
Barium, Dissolved	0.27		YES	6596-95	MW122	mg/L
Barium, Dissolved	0.286		YES	4868-94	MW122	mg/L
Barium, Dissolved	0.32		YES	5456-95	MW122	mg/L
Barium, Dissolved	0.11		YES	5460-95	MW133	mg/L
Barium, Dissolved	0.128		YES	5282-93	MW133	mg/L
Barium, Dissolved	0.149		YES	4761-94	MW133	mg/L
Barium, Dissolved	0.057		YES	5146-97	MW140	mg/L
Barium, Dissolved	0.069		YES	5195-94	MW140	mg/L
Barium, Dissolved	0.07	<	NO	6864-94	MW140	mg/L
Barium, Dissolved	0.072		YES	5313-96	MW140	mg/L
Barium, Dissolved	0.074		YES	6050-94	MW140	mg/L
Barium, Dissolved	0.08		YES	6004-93	MW140	mg/L
Barium, Dissolved	0.083		YES	4225-94	MW140	mg/L
Barium, Dissolved	0.095		YES	7081-93	MW140	mg/L
Barium, Dissolved	0.097		YES	6088-93	MW140	mg/L

CORRECTED DATA SET

	MW 102	MW 120	MW 121	MW 122	MW 133	MW 140	Overall	Weighted
	Barium, Dissolved							
	0.121	0.102	0.05	0.207	0.11	0.057		
	0.14	0.143	0.08	0.249	0.128	0.069		
	0.142	0.149	0.096	0.261	0.149	0.07		
	0.143	0.157	0.117	0.27		0.072		
	0.144	0.157	0.13	0.286		0.074		
	0.146	0.16		0.32		0.08		
	0.149	0.16				0.083		
	0.15	0.162				0.095		
	0.152	0.163				0.097		
	0.154	0.175						
	0.157							
	0.157							
	0.16							
Min	0.121	0.102	0.050	0.207	0.110	0.057	0.050	
Max	0.160	0.175	0.130	0.320	0.149	0.097	0.320	
Average	0.147	0.153	0.095	0.266	0.129	0.077	0.143	0.144
Number	13	10	5	6	3	9	46	



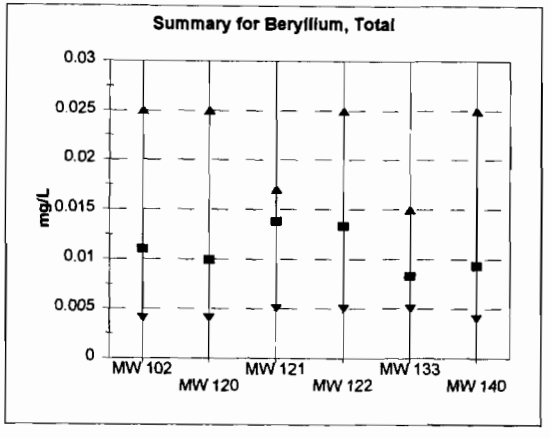
Data for Barium, Dissolved were not modified.

Summary of McNairy Background Well Inorganic Chemical Data

ANALYSIS	RESULT	QUALIFIER	DETECT?	SMPID	STATION ID	UNITS
Beryllium	0.004	<	NO	5183-94	MW102	mg/L
Beryllium	0.004	<	NO	6022-94	MW102	mg/L
Beryllium	0.005	<	NO	5174-93	MW102	mg/L
Beryllium	0.005	<	NO	5940-93	MW102	mg/L
Beryllium	0.005	<	NO	7295-93	MW102	mg/L
Beryllium	0.005	<	NO	4268-94	MW102	mg/L
Beryllium	0.015	<	NO	6770-94	MW102	mg/L
Beryllium	0.015	<	NO	5619-95	MW102	mg/L
Beryllium	0.015	<	NO	6592-95	MW102	mg/L
Beryllium	0.015	<	NO	7467-95	MW102	mg/L
Beryllium	0.015	<	NO	8285-95	MW102	mg/L
Beryllium	0.015	<	NO	5281-96	MW102	mg/L
Beryllium	0.025	<	NO	5141-97	MW102	mg/L
Beryllium	0.004	<	NO	6034-94	MW120	mg/L
Beryllium	0.005	<	NO	4209-94	MW120	mg/L
Beryllium	0.005	<	NO	4991-94	MW120	mg/L
Beryllium	0.005	<	NO	5088-93	MW120	mg/L
Beryllium	0.005	<	NO	5900-93	MW120	mg/L
Beryllium	0.005	<	NO	7065-93	MW120	mg/L
Beryllium	0.015	<	NO	5448-95	MW120	mg/L
Beryllium	0.015	<	NO	5293-96	MW120	mg/L
Beryllium	0.015	<	NO	6928-94	MW120	mg/L
Beryllium	0.025	<	NO	5143-97	MW120	mg/L
Beryllium	0.005	<	NO	4864-94	MW121	mg/L
Beryllium	0.015	<	NO	5452-95	MW121	mg/L
Beryllium	0.015	<	NO	5500-96	MW121	mg/L
Beryllium	0.017		YES	5206-93	MW121	mg/L
Beryllium	0.025	<	NO	5144-97	MW121	mg/L
Beryllium	0.005	<	NO	5246-93	MW122	mg/L
Beryllium	0.005	<	NO	4868-94	MW122	mg/L
Beryllium	0.015	<	NO	5456-95	MW122	mg/L
Beryllium	0.015	<	NO	6596-95	MW122	mg/L
Beryllium	0.015	<	NO	5301-96	MW122	mg/L
Beryllium	0.025	<	NO	5145-97	MW122	mg/L
Beryllium	0.005	<	NO	5282-93	MW133	mg/L
Beryllium	0.005	<	NO	4761-94	MW133	mg/L
Beryllium	0.015	<	NO	5460-95	MW133	mg/L
Beryllium	0.004	<	NO	6050-94	MW140	mg/L
Beryllium	0.005	<	NO	6004-93	MW140	mg/L
Beryllium	0.005	<	NO	6088-93	MW140	mg/L
Beryllium	0.005	<	NO	7081-93	MW140	mg/L
Beryllium	0.005	<	NO	4225-94	MW140	mg/L
Beryllium	0.005	<	NO	5195-94	MW140	mg/L
Beryllium	0.015	<	NO	6864-94	MW140	mg/L
Beryllium	0.015	<	NO	5313-96	MW140	mg/L
Beryllium	0.025	<	NO	5146-97	MW140	mg/L

CORRECTED DATA SET

	MW 102 Beryllium	MW 120	MW 121	MW 122	MW 133	MW 140	Overall	Weighted
	0.004	0.004	0.005	0.005	0.005	0.004		
	0.004	0.005	0.015	0.005	0.005	0.005		
	0.005	0.005	0.015	0.015	0.015	0.005		
	0.005	0.005	0.017	0.015		0.005		
	0.005	0.005	0.017	0.015		0.005		
	0.005	0.005		0.025		0.005		
	0.015	0.015				0.015		
	0.015	0.015				0.015		
	0.015	0.015				0.025		
	0.015	0.025						
	0.015							
	0.015							
	0.025							
Min	0.004	0.004	0.005	0.005	0.005	0.004	0.004	
Max	0.025	0.025	0.017	0.025	0.015	0.025	0.025	
Average	0.011	0.010	0.014	0.013	0.008	0.009	0.011	0.011
Number	13	10	5	6	3	9	46	



MW 102 - Data were not modified.

MW120 - Data were not modified.

MW 121 - One nondetect with a value greater than maximum detected value set to maximum detected value.

MW 122 - Data were not modified.

MW 133 - Data were not modified.

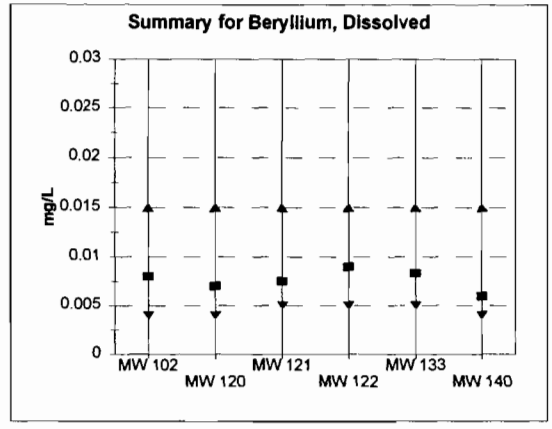
MW 140 - Data were not modified.

Summary of McNairy Background Well Inorganic Chemical Data

ANALYSIS	RESULT	QUALIFIER	DETECT?	SMPID	STATION ID	UNITS
Beryllium, Dissolved	0.004	<	NO	5183-94	MW102	mg/L
Beryllium, Dissolved	0.004	<	NO	6022-94	MW102	mg/L
Beryllium, Dissolved	0.005	<	NO	5174-93	MW102	mg/L
Beryllium, Dissolved	0.005	<	NO	5940-93	MW102	mg/L
Beryllium, Dissolved	0.005	<	NO	7295-93	MW102	mg/L
Beryllium, Dissolved	0.005	<	NO	4268-94	MW102	mg/L
Beryllium, Dissolved	0.015	<	NO	6770-94	MW102	mg/L
Beryllium, Dissolved	0.015	<	NO	5619-95	MW102	mg/L
Beryllium, Dissolved	0.015	<	NO	6592-95	MW102	mg/L
Beryllium, Dissolved	0.015	<	NO	7467-95	MW102	mg/L
Beryllium, Dissolved		Q	NO	8285-95	MW102	
Beryllium, Dissolved		Q	NO	5281-96	MW102	
Beryllium, Dissolved	0.004	<	NO	6034-94	MW120	mg/L
Beryllium, Dissolved	0.005	<	NO	4209-94	MW120	mg/L
Beryllium, Dissolved	0.005	<	NO	4991-94	MW120	mg/L
Beryllium, Dissolved	0.005	<	NO	5088-93	MW120	mg/L
Beryllium, Dissolved	0.005	<	NO	5900-93	MW120	mg/L
Beryllium, Dissolved	0.005	<	NO	7065-93	MW120	mg/L
Beryllium, Dissolved	0.015	<	NO	5448-95	MW120	mg/L
Beryllium, Dissolved	0.015	<	NO	6928-94	MW120	mg/L
Beryllium, Dissolved		Q	NO	5293-96	MW120	
Beryllium, Dissolved	0.005	<	NO	5206-93	MW121	mg/L
Beryllium, Dissolved	0.005	<	NO	4864-94	MW121	mg/L
Beryllium, Dissolved	0.015	<	NO	5452-95	MW121	mg/L
Beryllium, Dissolved		Q	NO	5500-96	MW121	
Beryllium, Dissolved	0.005	<	NO	5246-93	MW122	mg/L
Beryllium, Dissolved	0.005	<	NO	4868-94	MW122	mg/L
Beryllium, Dissolved	0.015	<	NO	5456-95	MW122	mg/L
Beryllium, Dissolved	0.015	<	NO	6596-95	MW122	mg/L
Beryllium, Dissolved		Q	NO	5301-96	MW122	
Beryllium, Dissolved	0.005	<	NO	5282-93	MW133	mg/L
Beryllium, Dissolved	0.005	<	NO	4761-94	MW133	mg/L
Beryllium, Dissolved	0.015	<	NO	5460-95	MW133	mg/L
Beryllium, Dissolved	0.004	<	NO	6050-94	MW140	mg/L
Beryllium, Dissolved	0.005	<	NO	6004-93	MW140	mg/L
Beryllium, Dissolved	0.005	<	NO	6088-93	MW140	mg/L
Beryllium, Dissolved	0.005	<	NO	7081-93	MW140	mg/L
Beryllium, Dissolved	0.005	<	NO	4225-94	MW140	mg/L
Beryllium, Dissolved	0.005	<	NO	5195-94	MW140	mg/L
Beryllium, Dissolved	0.015	<	NO	6864-94	MW140	mg/L
Beryllium, Dissolved		Q	NO	5313-96	MW140	

CORRECTED DATA SET

	MW 102	MW 120	MW 121	MW 122	MW 133	MW 140	Overall	Weighted
	Beryllium, Dissolved							
	0.004	0.004	0.005	0.005	0.005	0.004		
	0.004	0.005	0.005	0.005	0.005	0.005		
	0.005	0.005	0.015	0.015	0.015	0.005		
	0.005	0.005	0.005	0.015		0.005		
	0.005	0.005		0.005		0.005		
	0.005	0.005				0.005		
	0.015	0.015				0.015		
	0.015	0.015				0.004		
	0.015	0.004						
	0.015							
	0.004							
	0.004							
Min	0.004	0.004	0.005	0.005	0.005	0.004	0.004	
Max	0.015	0.015	0.015	0.015	0.015	0.015	0.015	
Average	0.008	0.007	0.008	0.009	0.008	0.006	0.007	0.008
Number	12	9	4	5	3	8	41	



MW 102 - Two "Q" qualified results assigned minimum detection limit for samples from this well.

MW120 - One "Q" qualified result assigned minimum detection limit for samples from this well.

MW 121 - One "Q" qualified result assigned minimum detection limit for samples from this well.

MW 122 - One "Q" qualified result assigned minimum detection limit for samples from this well.

MW 133 - Data were not modified.

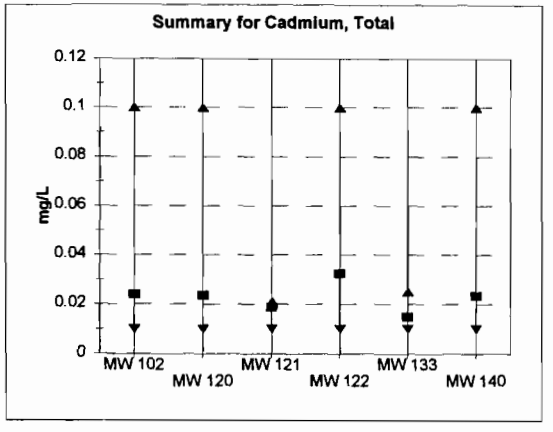
MW 140 - One "Q" qualified result assigned the minimum detection limit for samples from this well.

Summary of McNairy Background Well Inorganic Chemical Data

ANALYSIS	RESULT	QUALIFIER	DETECT?	SMPID	STATION ID	UNITS
Cadmium	0.01	<	NO	5174-93	MW102	mg/L
Cadmium	0.01	<	NO	5940-93	MW102	mg/L
Cadmium	0.01	<	NO	7295-93	MW102	mg/L
Cadmium	0.01	<	NO	4268-94	MW102	mg/L
Cadmium	0.01	<	NO	5183-94	MW102	mg/L
Cadmium	0.01	<	NO	6022-94	MW102	mg/L
Cadmium	0.025	<	NO	6770-94	MW102	mg/L
Cadmium	0.025	<	NO	5619-95	MW102	mg/L
Cadmium	0.025	<	NO	6592-95	MW102	mg/L
Cadmium	0.025	<	NO	7467-95	MW102	mg/L
Cadmium	0.025	<	NO	8285-95	MW102	mg/L
Cadmium	0.025	<	NO	5281-96	MW102	mg/L
Cadmium	0.1	<	NO	5141-97	MW102	mg/L
Cadmium	0.01	<	NO	4209-94	MW120	mg/L
Cadmium	0.01	<	NO	4991-94	MW120	mg/L
Cadmium	0.01	<	NO	5088-93	MW120	mg/L
Cadmium	0.01	<	NO	5900-93	MW120	mg/L
Cadmium	0.01	<	NO	6034-94	MW120	mg/L
Cadmium	0.01	<	NO	7065-93	MW120	mg/L
Cadmium	0.025	<	NO	5448-95	MW120	mg/L
Cadmium	0.025	<	NO	5293-96	MW120	mg/L
Cadmium	0.025	<	NO	6928-94	MW120	mg/L
Cadmium	0.1	<	NO	5143-97	MW120	mg/L
Cadmium	0.01	<	NO	4864-94	MW121	mg/L
Cadmium	0.021		YES	5206-93	MW121	mg/L
Cadmium	0.025	<	NO	5452-95	MW121	mg/L
Cadmium	0.025	<	NO	5500-96	MW121	mg/L
Cadmium	0.1	<	NO	5144-97	MW121	mg/L
Cadmium	0.01	<	NO	5246-93	MW122	mg/L
Cadmium	0.01	<	NO	4868-94	MW122	mg/L
Cadmium	0.025	<	NO	5456-95	MW122	mg/L
Cadmium	0.025	<	NO	6596-95	MW122	mg/L
Cadmium	0.025	<	NO	5301-96	MW122	mg/L
Cadmium	0.1	<	NO	5145-97	MW122	mg/L
Cadmium	0.01	<	NO	5282-93	MW133	mg/L
Cadmium	0.01	<	NO	4761-94	MW133	mg/L
Cadmium	0.025	<	NO	5460-95	MW133	mg/L
Cadmium	0.01	<	NO	6004-93	MW140	mg/L
Cadmium	0.01	<	NO	6088-93	MW140	mg/L
Cadmium	0.01	<	NO	7081-93	MW140	mg/L
Cadmium	0.01	<	NO	4225-94	MW140	mg/L
Cadmium	0.01	<	NO	5195-94	MW140	mg/L
Cadmium	0.01	<	NO	6050-94	MW140	mg/L
Cadmium	0.025	<	NO	6864-94	MW140	mg/L
Cadmium	0.025	<	NO	5313-96	MW140	mg/L
Cadmium	0.1	<	NO	5146-97	MW140	mg/L

CORRECTED DATA SET

	MW 102	MW 120	MW 121	MW 122	MW 133	MW 140	Overall	Weighted
	Cadmium							
	0.01	0.01	0.01	0.01	0.01	0.01		
	0.01	0.01	0.021	0.01	0.01	0.01		
	0.01	0.01	0.021	0.025	0.025	0.01		
	0.01	0.01	0.021	0.025		0.01		
	0.01	0.01	0.021	0.025		0.01		
	0.01	0.01		0.1		0.01		
	0.025	0.025				0.025		
	0.025	0.025				0.025		
	0.025	0.025				0.1		
	0.025	0.1						
	0.025							
	0.025							
	0.1							
Min	0.010	0.010	0.010	0.010	0.010	0.010	0.010	
Max	0.100	0.100	0.021	0.100	0.025	0.100	0.100	
Average	0.024	0.024	0.019	0.033	0.015	0.023	0.024	0.023
Number	13	10	5	6	3	9	46	



MW 102 - Data were not modified.

MW120 - Data were not modified.

MW 121 - Three nondetects with values greater than maximum detected value reduced to maximum detected value.

MW 122 - Data were not modified.

MW 133 - Data were not modified.

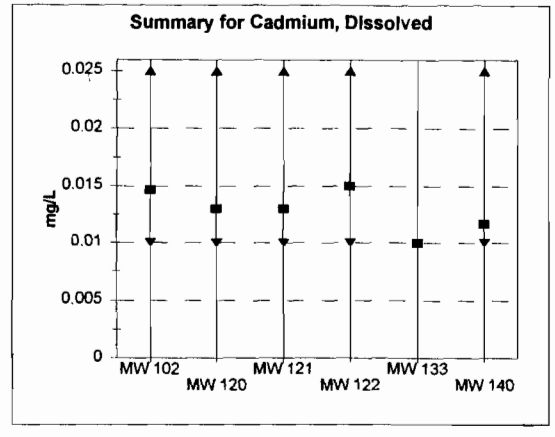
MW 140 - Data were not modified.

Summary of McNairy Background Well Inorganic Chemical Data

ANALYSIS	RESULT	QUALIFIER	DETECT?	SMPID	STATION ID	UNITS
Cadmium, Dissolved	0.01	<	NO	5174-93	MW102	mg/L
Cadmium, Dissolved	0.01	<	NO	5940-93	MW102	mg/L
Cadmium, Dissolved	0.01	<	NO	7295-93	MW102	mg/L
Cadmium, Dissolved	0.01	<	NO	4268-94	MW102	mg/L
Cadmium, Dissolved	0.01	<	NO	5183-94	MW102	mg/L
Cadmium, Dissolved	0.01	<	NO	6022-94	MW102	mg/L
Cadmium, Dissolved	0.025	<	NO	6770-94	MW102	mg/L
Cadmium, Dissolved	0.025	<	NO	5619-95	MW102	mg/L
Cadmium, Dissolved	0.025	<	NO	6592-95	MW102	mg/L
Cadmium, Dissolved	0.025	<	NO	7467-95	MW102	mg/L
Cadmium, Dissolved		Q	NO	8285-95	MW102	
Cadmium, Dissolved		Q	NO	5281-96	MW102	
Cadmium, Dissolved		Q	NO	5141-97	MW102	
Cadmium, Dissolved	0.01	<	NO	4209-94	MW120	mg/L
Cadmium, Dissolved	0.01	<	NO	4991-94	MW120	mg/L
Cadmium, Dissolved	0.01	<	NO	5088-93	MW120	mg/L
Cadmium, Dissolved	0.01	<	NO	5900-93	MW120	mg/L
Cadmium, Dissolved	0.01	<	NO	6034-94	MW120	mg/L
Cadmium, Dissolved	0.01	<	NO	7065-93	MW120	mg/L
Cadmium, Dissolved	0.025	<	NO	5448-95	MW120	mg/L
Cadmium, Dissolved	0.025	<	NO	6928-94	MW120	mg/L
Cadmium, Dissolved		Q	NO	5143-97	MW120	
Cadmium, Dissolved		Q	NO	5293-96	MW120	
Cadmium, Dissolved	0.01	<	NO	5206-93	MW121	mg/L
Cadmium, Dissolved	0.01	<	NO	4864-94	MW121	mg/L
Cadmium, Dissolved	0.025	<	NO	5452-95	MW121	mg/L
Cadmium, Dissolved		Q	NO	5500-96	MW121	
Cadmium, Dissolved		Q	NO	5144-97	MW121	
Cadmium, Dissolved	0.01	<	NO	5246-93	MW122	mg/L
Cadmium, Dissolved	0.01	<	NO	4868-94	MW122	mg/L
Cadmium, Dissolved	0.025	<	NO	5456-95	MW122	mg/L
Cadmium, Dissolved	0.025	<	NO	6596-95	MW122	mg/L
Cadmium, Dissolved		Q	NO	5301-96	MW122	
Cadmium, Dissolved		Q	NO	5145-97	MW122	
Cadmium, Dissolved	0.01	<	NO	5282-93	MW133	mg/L
Cadmium, Dissolved	0.01	<	NO	4761-94	MW133	mg/L
Cadmium, Dissolved		Q	NO	5460-95	MW133	
Cadmium, Dissolved	0.01	<	NO	6004-93	MW140	mg/L
Cadmium, Dissolved	0.01	<	NO	6088-93	MW140	mg/L
Cadmium, Dissolved	0.01	<	NO	7081-93	MW140	mg/L
Cadmium, Dissolved	0.01	<	NO	4225-94	MW140	mg/L
Cadmium, Dissolved	0.01	<	NO	5195-94	MW140	mg/L
Cadmium, Dissolved	0.01	<	NO	6050-94	MW140	mg/L
Cadmium, Dissolved	0.025	<	NO	6864-94	MW140	mg/L
Cadmium, Dissolved		Q	NO	5313-96	MW140	
Cadmium, Dissolved		Q	NO	5146-97	MW140	

CORRECTED DATA SET

	MW 102	MW 120	MW 121	MW 122	MW 133	MW 140	Overall	Weighted
	Cadmium, Dissolved							
	0.01	0.01	0.01	0.01	0.01	0.01		
	0.01	0.01	0.01	0.01	0.01	0.01		
	0.01	0.01	0.025	0.025	0.01	0.01		
	0.01	0.01	0.01	0.025		0.01		
	0.01	0.01	0.01	0.01		0.01		
	0.01	0.01		0.01		0.01		
	0.025	0.025				0.025		
	0.025	0.025				0.01		
	0.025	0.01				0.01		
	0.025	0.01						
	0.01							
	0.01							
	0.01							
Min	0.010	0.010	0.010	0.010	0.010	0.010	0.010	
Max	0.025	0.025	0.025	0.025	0.010	0.025	0.025	
Average	0.015	0.013	0.013	0.015	0.010	0.012	0.013	0.013
Number	13	10	5	6	3	9	46	



MW 102 - Two "Q" qualified results assigned the minimum detection limit for samples from this well.

MW120 - Two "Q" qualified results assigned the minimum detection limit for samples from this well.

MW 121 - Two "Q" qualified results assigned the minimum detection limit for samples from this well.

MW 122 - Two "Q" qualified results assigned the minimum detection limit for samples from this well.

MW 133 - One "Q" qualified result assigned the minimum detection limit for samples from this well.

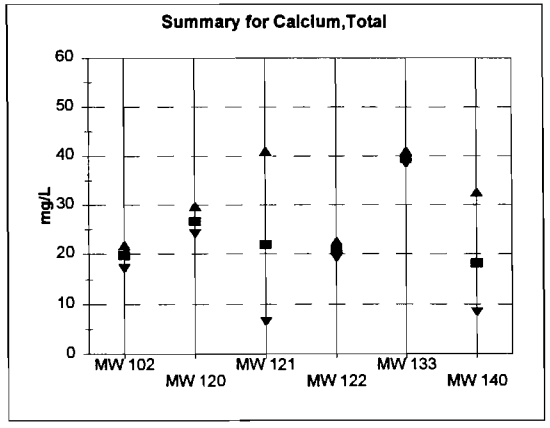
MW 140 - Two "Q" qualified results assigned the minimum detection limit for samples from this well.

Summary of McNairy Background Well Inorganic Chemical Data

ANALYSIS	RESULT	QUALIFIER	DETECT?	SMPID	STATION ID	UNITS
Calcium	17.1		YES	6022-94	MW102	mg/L
Calcium	18.9		YES	7295-93	MW102	mg/L
Calcium	19.04		YES	5174-93	MW102	mg/L
Calcium	19.2		YES	5183-94	MW102	mg/L
Calcium	19.3		YES	5940-93	MW102	mg/L
Calcium	19.8	N	YES	5141-97	MW102	mg/L
Calcium	19.8		YES	4268-94	MW102	mg/L
Calcium	19.9	N	YES	7467-95	MW102	mg/L
Calcium	20	N	YES	6592-95	MW102	mg/L
Calcium	20	N	YES	8285-95	MW102	mg/L
Calcium	20.93		YES	6770-94	MW102	mg/L
Calcium	21		YES	5619-95	MW102	mg/L
Calcium	21.8	N	YES	5281-96	MW102	mg/L
Calcium	24.1		YES	4991-94	MW120	mg/L
Calcium	25.3		YES	5088-93	MW120	mg/L
Calcium	25.6		YES	5448-95	MW120	mg/L
Calcium	26		YES	7065-93	MW120	mg/L
Calcium	26.3		YES	4209-94	MW120	mg/L
Calcium	27.1		YES	5293-96	MW120	mg/L
Calcium	27.1		YES	6928-94	MW120	mg/L
Calcium	27.4		YES	5900-93	MW120	mg/L
Calcium	27.7	N	YES	5143-97	MW120	mg/L
Calcium	29.8		YES	6034-94	MW120	mg/L
Calcium	6.48	N	YES	5144-97	MW121	mg/L
Calcium	11.9		YES	4864-94	MW121	mg/L
Calcium	17.4		YES	5500-96	MW121	mg/L
Calcium	32.6		YES	5206-93	MW121	mg/L
Calcium	41		YES	5452-95	MW121	mg/L
Calcium	19.19		YES	5246-93	MW122	mg/L
Calcium	19.5		YES	4868-94	MW122	mg/L
Calcium	20.6		YES	6596-95	MW122	mg/L
Calcium	21		YES	5456-95	MW122	mg/L
Calcium	21.3	N	YES	5145-97	MW122	mg/L
Calcium	22.6	N	YES	5301-96	MW122	mg/L
Calcium	38.4		YES	4761-94	MW133	mg/L
Calcium	39		YES	5460-95	MW133	mg/L
Calcium	41		YES	5282-93	MW133	mg/L
Calcium	8.43	N	YES	5146-97	MW140	mg/L
Calcium	11.6	N	YES	5313-96	MW140	mg/L
Calcium	13		YES	5195-94	MW140	mg/L
Calcium	13		YES	6864-94	MW140	mg/L
Calcium	15.85		YES	6050-94	MW140	mg/L
Calcium	19.52		YES	6004-93	MW140	mg/L
Calcium	21.5		YES	4225-94	MW140	mg/L
Calcium	28		YES	7081-93	MW140	mg/L
Calcium	32.6		YES	6088-93	MW140	mg/L

CORRECTED DATA SET

	MW 102	MW 120	MW 121	MW 122	MW 133	MW 140	Overall	Weighted
	Calcium							
	17.1	24.1	6.48	19.19	38.4	8.43		
	18.9	25.3	11.9	19.5	39	11.6		
	19.04	25.6	17.4	20.6	41	13		
	19.2	26	32.6	21		13		
	19.3	26.3	41	21.3		15.85		
	19.8	27.1		22.6		19.52		
	19.8	27.1				21.5		
	19.9	27.4				28		
	20	27.7				32.6		
	20	29.8						
	20.93							
	21							
	21.8							
Min	17.100	24.100	6.480	19.190	38.400	8.430	6.480	
Max	21.800	29.800	41.000	22.600	41.000	32.600	41.000	
Average	19.752	26.640	21.876	20.698	39.467	18.167	22.579	24.433
Number	13	10	5	6	3	9	46	



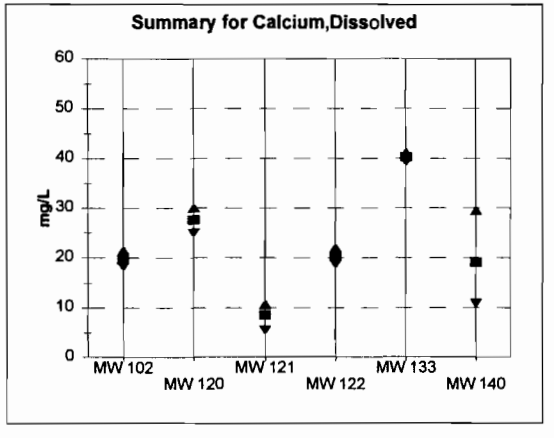
Data for Calcium, Total were not modified.

Summary of McNairy Background Well Inorganic Chemical Data

ANALYSIS	RESULT	QUALIFIER	DETECT?	SMPID	STATION ID	UNITS
Calcium, Dissolved	18.2	N	YES	7467-95	MW102	mg/L
Calcium, Dissolved	19		YES	5940-93	MW102	mg/L
Calcium, Dissolved	19.1		YES	7295-93	MW102	mg/L
Calcium, Dissolved	19.2	N	YES	6592-95	MW102	mg/L
Calcium, Dissolved	19.2	N	YES	8285-95	MW102	mg/L
Calcium, Dissolved	19.26		YES	5174-93	MW102	mg/L
Calcium, Dissolved	19.3	N	YES	5281-96	MW102	mg/L
Calcium, Dissolved	19.5		YES	6022-94	MW102	mg/L
Calcium, Dissolved	19.6		YES	5183-94	MW102	mg/L
Calcium, Dissolved	20.9		YES	4268-94	MW102	mg/L
Calcium, Dissolved	21.2		YES	5619-95	MW102	mg/L
Calcium, Dissolved	21.5		YES	6770-94	MW102	mg/L
Calcium, Dissolved	24.9		YES	5088-93	MW120	mg/L
Calcium, Dissolved	25.3		YES	4991-94	MW120	mg/L
Calcium, Dissolved	26.5	N	YES	5293-96	MW120	mg/L
Calcium, Dissolved	26.8		YES	5900-93	MW120	mg/L
Calcium, Dissolved	27.7		YES	4209-94	MW120	mg/L
Calcium, Dissolved	28		YES	5448-95	MW120	mg/L
Calcium, Dissolved	29.1		YES	6034-94	MW120	mg/L
Calcium, Dissolved	29.62		YES	7065-93	MW120	mg/L
Calcium, Dissolved	30		YES	6928-94	MW120	mg/L
Calcium, Dissolved	5.5		YES	5452-95	MW121	mg/L
Calcium, Dissolved	8.46	N	YES	5500-96	MW121	mg/L
Calcium, Dissolved	9.56		YES	4864-94	MW121	mg/L
Calcium, Dissolved	10.7		YES	5206-93	MW121	mg/L
Calcium, Dissolved	18.65		YES	5246-93	MW122	mg/L
Calcium, Dissolved	19.9	N	YES	5301-96	MW122	mg/L
Calcium, Dissolved	20.1		YES	6596-95	MW122	mg/L
Calcium, Dissolved	20.6		YES	4868-94	MW122	mg/L
Calcium, Dissolved	22		YES	5456-95	MW122	mg/L
Calcium, Dissolved	39.3		YES	5282-93	MW133	mg/L
Calcium, Dissolved	40.4	*	YES	5460-95	MW133	mg/L
Calcium, Dissolved	41.1		YES	4761-94	MW133	mg/L
Calcium, Dissolved	10.8	N	YES	5313-96	MW140	mg/L
Calcium, Dissolved	13		YES	6864-94	MW140	mg/L
Calcium, Dissolved	13.77		YES	6050-94	MW140	mg/L
Calcium, Dissolved	15.2		YES	5195-94	MW140	mg/L
Calcium, Dissolved	18.77		YES	6004-93	MW140	mg/L
Calcium, Dissolved	22.8		YES	4225-94	MW140	mg/L
Calcium, Dissolved	28.8		YES	7081-93	MW140	mg/L
Calcium, Dissolved	29.5		YES	6088-93	MW140	mg/L

CORRECTED DATA SET

	MW 102	MW 120	MW 121	MW 122	MW 133	MW 140	Overall	Weighted
	Calcium, Dissolved							
	18.2	24.9	5.5	18.65	39.3	10.8		
	19	25.3	8.46	19.9	40.4	13		
	19.1	26.5	9.56	20.1	41.1	13.77		
	19.2	26.8	10.7	20.6		15.2		
	19.2	27.7		22		18.77		
	19.26	28				22.8		
	19.3	29.1				28.8		
	19.5	29.62				29.5		
	19.6	30						
	20.9							
	21.2							
	21.5							
Min	18.200	24.900	5.500	18.650	39.300	10.800	5.500	
Max	21.500	30.000	10.700	22.000	41.100	29.500	41.100	
Average	19.663	27.547	8.555	20.250	40.267	19.080	21.775	22.560
Number	12	9	4	5	3	8	41	



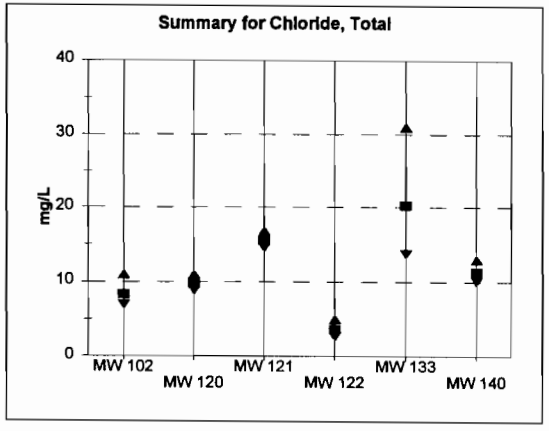
Data for Calcium, Dissolved were not modified.

Summary of McNairy Background Well Inorganic Chemical Data

ANALYSIS	RESULT	QUALIFIER	DETECT?	SMPID	STATION ID	UNITS
Chloride	6.9		YES	6592-95	MW102	mg/L
Chloride	7.1		YES	8285-95	MW102	mg/L
Chloride	7.5		YES	5141-97	MW102	mg/L
Chloride	7.6		YES	6022-94	MW102	mg/L
Chloride	7.6		YES	5619-95	MW102	mg/L
Chloride	7.6		YES	7467-95	MW102	mg/L
Chloride	7.7		YES	5281-96	MW102	mg/L
Chloride	7.9		YES	6770-94	MW102	mg/L
Chloride	9		YES	5174-93	MW102	mg/L
Chloride	9		YES	4268-94	MW102	mg/L
Chloride	9		YES	5183-94	MW102	mg/L
Chloride	10		YES	5940-93	MW102	mg/L
Chloride	11		YES	7295-93	MW102	mg/L
Chloride	8.8		YES	5143-97	MW120	mg/L
Chloride	9		YES	5900-93	MW120	mg/L
Chloride	9.1		YES	6034-94	MW120	mg/L
Chloride	9.3		YES	6928-94	MW120	mg/L
Chloride	9.4		YES	5448-95	MW120	mg/L
Chloride	9.6		YES	5293-96	MW120	mg/L
Chloride	10		YES	4209-94	MW120	mg/L
Chloride	10		YES	5088-93	MW120	mg/L
Chloride	11		YES	4991-94	MW120	mg/L
Chloride	11		YES	7065-93	MW120	mg/L
Chloride	14.5		YES	5452-95	MW121	mg/L
Chloride	15		YES	4864-94	MW121	mg/L
Chloride	15.5		YES	5144-97	MW121	mg/L
Chloride	16.8		YES	5500-96	MW121	mg/L
Chloride	2.6		YES	6596-95	MW122	mg/L
Chloride	2.8		YES	5145-97	MW122	mg/L
Chloride	3		YES	5301-96	MW122	mg/L
Chloride	3.3		YES	5456-95	MW122	mg/L
Chloride	5		YES	5246-93	MW122	mg/L
Chloride	5		YES	4868-94	MW122	mg/L
Chloride	13.7		YES	5460-95	MW133	mg/L
Chloride	16		YES	4761-94	MW133	mg/L
Chloride	31		YES	5282-93	MW133	mg/L
Chloride	10		YES	6088-93	MW140	mg/L
Chloride	10.9		YES	6864-94	MW140	mg/L
Chloride	11		YES	6004-93	MW140	mg/L
Chloride	11		YES	4225-94	MW140	mg/L
Chloride	11		YES	6050-94	MW140	mg/L
Chloride	11.1		YES	5146-97	MW140	mg/L
Chloride	11.4		YES	5313-96	MW140	mg/L
Chloride	12		YES	5195-94	MW140	mg/L
Chloride	13		YES	7081-93	MW140	mg/L

CORRECTED DATA SET

	MW 102	MW 120	MW 121	MW 122	MW 133	MW 140	Overall	Weighted
	Chloride							
	6.9	8.8	14.5	2.6	13.7	10		
	7.1	9	15	2.8	16	10.9		
	7.5	9.1	15.5	3	31	11		
	7.6	9.3	16.8	3.3		11		
	7.6	9.4		5		11		
	7.6	9.6		5		11.1		
	7.7	10				11.4		
	7.9	10				12		
	9	11				13		
	9	11						
	9							
	10							
	11							
Min	6.900	8.800	14.500	2.600	13.700	10.000	2.600	
Max	11.000	11.000	16.800	5.000	31.000	13.000	31.000	
Average	8.300	9.720	15.450	3.617	20.233	11.267	10.016	11.431
Number	13	10	4	6	3	9	45	



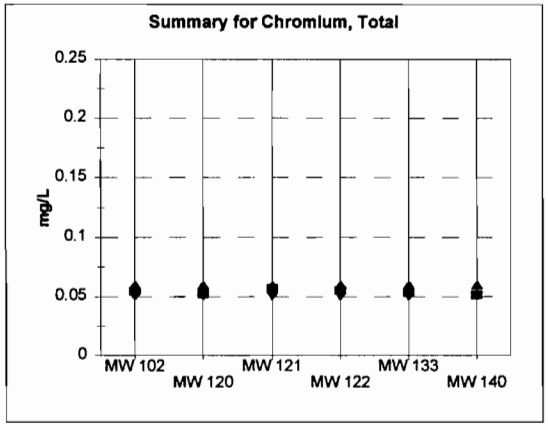
Data for Chloride, Total were not modified.

Summary of McNairy Background Well Inorganic Chemical Data

ANALYSIS	RESULT	QUALIFIER	DETECT?	SMPID	STATION ID	UNITS
Chromium	0.05	<	NO	5174-93	MW102	mg/L
Chromium	0.05	<	NO	5940-93	MW102	mg/L
Chromium	0.05	<	NO	7295-93	MW102	mg/L
Chromium	0.05	<	NO	4268-94	MW102	mg/L
Chromium	0.05	<	NO	5183-94	MW102	mg/L
Chromium	0.05	<	NO	6022-94	MW102	mg/L
Chromium	0.06	<	NO	6770-94	MW102	mg/L
Chromium	0.06	<	NO	5619-95	MW102	mg/L
Chromium	0.06	<	NO	6592-95	MW102	mg/L
Chromium	0.06	<	NO	7467-95	MW102	mg/L
Chromium	0.06	<	NO	8285-95	MW102	mg/L
Chromium	0.05	<	NO	4209-94	MW120	mg/L
Chromium	0.05	<	NO	4991-94	MW120	mg/L
Chromium	0.05	<	NO	5088-93	MW120	mg/L
Chromium	0.05	<	NO	5900-93	MW120	mg/L
Chromium	0.05	<	NO	6034-94	MW120	mg/L
Chromium	0.05	<	NO	7065-93	MW120	mg/L
Chromium	0.06	<	NO	5448-95	MW120	mg/L
Chromium	0.06	<	NO	6928-94	MW120	mg/L
Chromium	0.05	<	NO	4864-94	MW121	mg/L
Chromium	0.06	<	NO	5452-95	MW121	mg/L
Chromium	0.232		YES	5206-93	MW121	mg/L
Chromium	0.05	<	NO	5246-93	MW122	mg/L
Chromium	0.05	<	NO	4868-94	MW122	mg/L
Chromium	0.06	<	NO	5456-95	MW122	mg/L
Chromium	0.06	<	NO	6596-95	MW122	mg/L
Chromium	0.05	<	NO	5282-93	MW133	mg/L
Chromium	0.05	<	NO	4761-94	MW133	mg/L
Chromium	0.06	<	NO	5460-95	MW133	mg/L
Chromium	0.05	<	NO	6004-93	MW140	mg/L
Chromium	0.05	<	NO	6088-93	MW140	mg/L
Chromium	0.05	<	NO	7081-93	MW140	mg/L
Chromium	0.05	<	NO	4225-94	MW140	mg/L
Chromium	0.05	<	NO	5195-94	MW140	mg/L
Chromium	0.05	<	NO	6050-94	MW140	mg/L
Chromium	0.06	<	NO	6864-94	MW140	mg/L

CORRECTED DATA SET

	MW 102	MW 120	MW 121	MW 122	MW 133	MW 140	Overall	Weighted
	Chromium							
	0.05	0.05	0.05	0.05	0.05	0.05		
	0.05	0.05	0.06	0.05	0.05	0.05		
	0.05	0.05	0.06	0.06	0.06	0.05		
	0.05	0.05		0.06		0.05		
	0.05	0.05				0.05		
	0.05	0.05				0.05		
	0.06	0.06				0.06		
	0.06	0.06						
	0.06							
	0.06							
	0.06							
Min	0.050	0.050	0.050	0.050	0.050	0.050	0.050	
Max	0.060	0.060	0.060	0.060	0.060	0.060	0.060	
Average	0.055	0.053	0.057	0.055	0.053	0.051	0.054	0.054
Number	11	8	3	4	3	7	36	



MW 102 - Data were not modified.

MW 120 - Data were not modified.

MW 121 - Turbidity/total solids impacted result of detected value; detected value reduced to nondetect concentration.

MW 122 - Data were not modified.

MW 133 - Data were not modified.

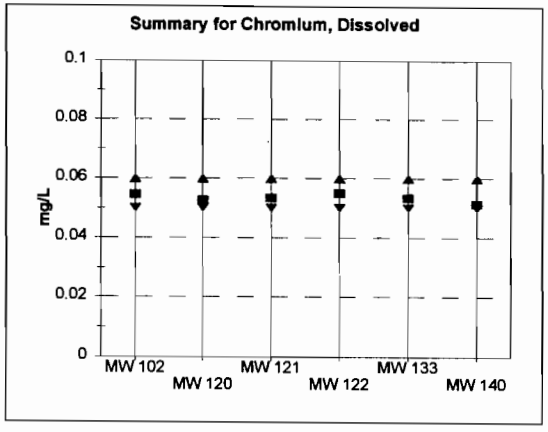
MW 140 - Data were not modified.

Summary of McNairy Background Well Inorganic Chemical Data

ANALYSIS	RESULT	QUALIFIER	DETECT?	SMPID	STATION ID	UNITS
Chromium, Dissolved	0.05	<	NO	5174-93	MW102	mg/L
Chromium, Dissolved	0.05	<	NO	5940-93	MW102	mg/L
Chromium, Dissolved	0.05	<	NO	7295-93	MW102	mg/L
Chromium, Dissolved	0.05	<	NO	4268-94	MW102	mg/L
Chromium, Dissolved	0.05	<	NO	5183-94	MW102	mg/L
Chromium, Dissolved	0.05	<	NO	6022-94	MW102	mg/L
Chromium, Dissolved	0.06	<	NO	6770-94	MW102	mg/L
Chromium, Dissolved	0.06	<	NO	5619-95	MW102	mg/L
Chromium, Dissolved	0.06	<	NO	6592-95	MW102	mg/L
Chromium, Dissolved	0.06	<	NO	7467-95	MW102	mg/L
Chromium, Dissolved	0.06	<	NO	8285-95	MW102	mg/L
Chromium, Dissolved	0.05	<	NO	4209-94	MW120	mg/L
Chromium, Dissolved	0.05	<	NO	4991-94	MW120	mg/L
Chromium, Dissolved	0.05	<	NO	5088-93	MW120	mg/L
Chromium, Dissolved	0.05	<	NO	5900-93	MW120	mg/L
Chromium, Dissolved	0.05	<	NO	6034-94	MW120	mg/L
Chromium, Dissolved	0.05	<	NO	7065-93	MW120	mg/L
Chromium, Dissolved	0.06	<	NO	5448-95	MW120	mg/L
Chromium, Dissolved	0.06	<	NO	6928-94	MW120	mg/L
Chromium, Dissolved	0.05	<	NO	5206-93	MW121	mg/L
Chromium, Dissolved	0.05	<	NO	4864-94	MW121	mg/L
Chromium, Dissolved	0.06	<	NO	5452-95	MW121	mg/L
Chromium, Dissolved	0.05	<	NO	5246-93	MW122	mg/L
Chromium, Dissolved	0.05	<	NO	4868-94	MW122	mg/L
Chromium, Dissolved	0.06	<	NO	5456-95	MW122	mg/L
Chromium, Dissolved	0.06	<	NO	6596-95	MW122	mg/L
Chromium, Dissolved	0.05	<	NO	5282-93	MW133	mg/L
Chromium, Dissolved	0.05	<	NO	4761-94	MW133	mg/L
Chromium, Dissolved	0.06	<	NO	5460-95	MW133	mg/L
Chromium, Dissolved	0.05	<	NO	6004-93	MW140	mg/L
Chromium, Dissolved	0.05	<	NO	6088-93	MW140	mg/L
Chromium, Dissolved	0.05	<	NO	7081-93	MW140	mg/L
Chromium, Dissolved	0.05	<	NO	4225-94	MW140	mg/L
Chromium, Dissolved	0.05	<	NO	5195-94	MW140	mg/L
Chromium, Dissolved	0.05	<	NO	6050-94	MW140	mg/L
Chromium, Dissolved	0.06	<	NO	6864-94	MW140	mg/L

CORRECTED DATA SET

	MW 102	MW 120	MW 121	MW 122	MW 133	MW 140	Overall	Weighted
	Chromium, Dissolved							
	0.05	0.05	0.05	0.05	0.05	0.05		
	0.05	0.05	0.05	0.05	0.05	0.05		
	0.05	0.05	0.06	0.06	0.06	0.05		
	0.05	0.05		0.06		0.05		
	0.05	0.05				0.05		
	0.05	0.05				0.05		
	0.06	0.06				0.06		
	0.06	0.06						
	0.06							
	0.06							
	0.06							
Min	0.050	0.050	0.050	0.050	0.050	0.050	0.050	
Max	0.060	0.060	0.060	0.060	0.060	0.060	0.060	
Average	0.055	0.053	0.053	0.055	0.053	0.051	0.053	0.053
Number	11	8	3	4	3	7	36	



All results for this well are below their respective detection limits; therefore, the plot is simply a depiction if the detection limits used for samples taken from these wells.

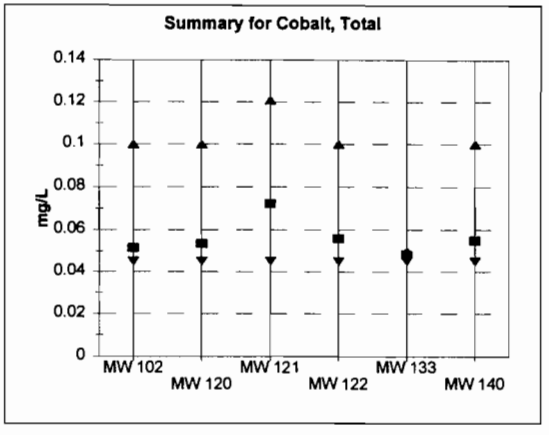
Data for Chromium, Dissolved were not modified.

Summary of McNairy Background Well Inorganic Chemical Data

ANALYSIS	RESULT	QUALIFIER	DETECT?	SMPID	STATION ID	UNITS
Cobalt	0.045	<	NO	6770-94	MW102	mg/L
Cobalt	0.045	<	NO	5619-95	MW102	mg/L
Cobalt	0.045	<	NO	6592-95	MW102	mg/L
Cobalt	0.045	<	NO	7467-95	MW102	mg/L
Cobalt	0.045	<	NO	8285-95	MW102	mg/L
Cobalt	0.045	<	NO	5281-96	MW102	mg/L
Cobalt	0.05	<	NO	5174-93	MW102	mg/L
Cobalt	0.05	<	NO	5940-93	MW102	mg/L
Cobalt	0.05	<	NO	7295-93	MW102	mg/L
Cobalt	0.05	<	NO	4268-94	MW102	mg/L
Cobalt	0.05	<	NO	5183-94	MW102	mg/L
Cobalt	0.05	<	NO	6022-94	MW102	mg/L
Cobalt	0.1	<	NO	5141-97	MW102	mg/L
Cobalt	0.045	<	NO	5448-95	MW120	mg/L
Cobalt	0.045	<	NO	5293-96	MW120	mg/L
Cobalt	0.045	<	NO	6928-94	MW120	mg/L
Cobalt	0.05	<	NO	4209-94	MW120	mg/L
Cobalt	0.05	<	NO	4991-94	MW120	mg/L
Cobalt	0.05	<	NO	5088-93	MW120	mg/L
Cobalt	0.05	<	NO	5900-93	MW120	mg/L
Cobalt	0.05	<	NO	6034-94	MW120	mg/L
Cobalt	0.05	<	NO	7065-93	MW120	mg/L
Cobalt	0.1	<	NO	5143-97	MW120	mg/L
Cobalt	0.045	<	NO	5452-95	MW121	mg/L
Cobalt	0.045	<	NO	5500-96	MW121	mg/L
Cobalt	0.05	<	NO	4864-94	MW121	mg/L
Cobalt	0.1	<	NO	5144-97	MW121	mg/L
Cobalt	0.121		YES	5206-93	MW121	mg/L
Cobalt	0.045	<	NO	5456-95	MW122	mg/L
Cobalt	0.045	<	NO	6596-95	MW122	mg/L
Cobalt	0.045	<	NO	5301-96	MW122	mg/L
Cobalt	0.05	<	NO	5246-93	MW122	mg/L
Cobalt	0.05	<	NO	4868-94	MW122	mg/L
Cobalt	0.1	<	NO	5145-97	MW122	mg/L
Cobalt	0.045	<	NO	5460-95	MW133	mg/L
Cobalt	0.05	<	NO	5282-93	MW133	mg/L
Cobalt	0.05	<	NO	4761-94	MW133	mg/L
Cobalt	0.045	<	NO	5313-96	MW140	mg/L
Cobalt	0.05	<	NO	6004-93	MW140	mg/L
Cobalt	0.05	<	NO	6088-93	MW140	mg/L
Cobalt	0.05	<	NO	7081-93	MW140	mg/L
Cobalt	0.05	<	NO	4225-94	MW140	mg/L
Cobalt	0.05	<	NO	5195-94	MW140	mg/L
Cobalt	0.05	<	NO	6050-94	MW140	mg/L
Cobalt	0.05	<	NO	6864-94	MW140	mg/L
Cobalt	0.1	<	NO	5146-97	MW140	mg/L

CORRECTED DATA SET

	MW 102	MW 120	MW 121	MW 122	MW 133	MW 140	Overall	Weighted
	Cobalt							
	0.045	0.045	0.045	0.045	0.045	0.045		
	0.045	0.045	0.045	0.045	0.05	0.05		
	0.045	0.045	0.05	0.045	0.05	0.05		
	0.045	0.05	0.1	0.05		0.05		
	0.045	0.05	0.121	0.05		0.05		
	0.045	0.05		0.1		0.05		
	0.05	0.05				0.05		
	0.05	0.05				0.05		
	0.05	0.05				0.1		
	0.05	0.1						
	0.05							
	0.05							
	0.1							
Min	0.045	0.045	0.045	0.045	0.045	0.045	0.045	
Max	0.100	0.100	0.121	0.100	0.050	0.100	0.121	
Average	0.052	0.053	0.072	0.056	0.048	0.055	0.055	0.056
Number	13	10	5	6	3	9	46	



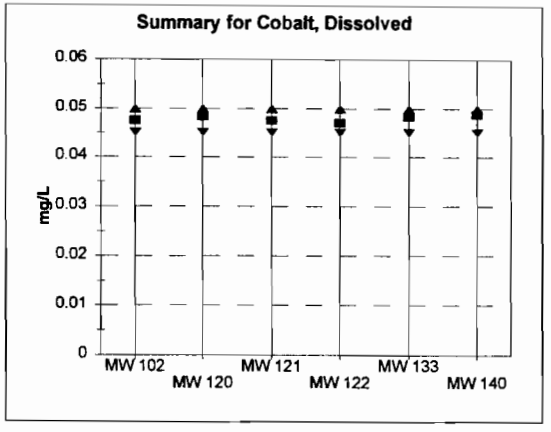
Data for Cobalt, Total were not modified.

Summary of McNairy Background Well Inorganic Chemical Data

ANALYSIS	RESULT	QUALIFIER	DETECT?	SMPID	STATION ID	UNITS
Cobalt, Dissolved	0.045	<	NO	6770-94	MW102	mg/L
Cobalt, Dissolved	0.045	<	NO	5619-95	MW102	mg/L
Cobalt, Dissolved	0.045	<	NO	6592-95	MW102	mg/L
Cobalt, Dissolved	0.045	<	NO	7467-95	MW102	mg/L
Cobalt, Dissolved	0.05	<	NO	5174-93	MW102	mg/L
Cobalt, Dissolved	0.05	<	NO	5940-93	MW102	mg/L
Cobalt, Dissolved	0.05	<	NO	7295-93	MW102	mg/L
Cobalt, Dissolved	0.05	<	NO	4268-94	MW102	mg/L
Cobalt, Dissolved	0.05	<	NO	5183-94	MW102	mg/L
Cobalt, Dissolved	0.05	<	NO	6022-94	MW102	mg/L
Cobalt, Dissolved		Q	NO	8285-95	MW102	
Cobalt, Dissolved		Q	NO	5281-96	MW102	
Cobalt, Dissolved	0.045	<	NO	5448-95	MW120	mg/L
Cobalt, Dissolved	0.045	<	NO	6928-94	MW120	mg/L
Cobalt, Dissolved	0.05	<	NO	4209-94	MW120	mg/L
Cobalt, Dissolved	0.05	<	NO	4991-94	MW120	mg/L
Cobalt, dissolved	0.05	<	NO	5088-93	MW120	mg/L
Cobalt, Dissolved	0.05	<	NO	5900-93	MW120	mg/L
Cobalt, Dissolved	0.05	<	NO	6034-94	MW120	mg/L
Cobalt, Dissolved	0.05	<	NO	7065-93	MW120	mg/L
Cobalt, Dissolved		Q	NO	5293-96	MW120	
Cobalt, Dissolved	0.045	<	NO	5452-95	MW121	mg/L
Cobalt, Dissolved	0.05	<	NO	5206-93	MW121	mg/L
Cobalt, Dissolved	0.05	<	NO	4864-94	MW121	mg/L
Cobalt, Dissolved		Q	NO	5500-96	MW121	
Cobalt, Dissolved	0.045	<	NO	5456-95	MW122	mg/L
Cobalt, Dissolved	0.045	<	NO	6596-95	MW122	mg/L
Cobalt, Dissolved	0.05	<	NO	5246-93	MW122	mg/L
Cobalt, Dissolved	0.05	<	NO	4868-94	MW122	mg/L
Cobalt, Dissolved		Q	NO	5301-96	MW122	
Cobalt, Dissolved	0.045	<	NO	5460-95	MW133	mg/L
Cobalt, Dissolved	0.05	<	NO	5282-93	MW133	mg/L
Cobalt, Dissolved	0.05	<	NO	4761-94	MW133	mg/L
Cobalt, Dissolved	0.045	<	NO	6864-94	MW140	mg/L
Cobalt, Dissolved	0.05	<	NO	6004-93	MW140	mg/L
Cobalt, Dissolved	0.05	<	NO	6088-93	MW140	mg/L
Cobalt, Dissolved	0.05	<	NO	7081-93	MW140	mg/L
Cobalt, Dissolved	0.05	<	NO	4225-94	MW140	mg/L
Cobalt, Dissolved	0.05	<	NO	5195-94	MW140	mg/L
Cobalt, Dissolved	0.05	<	NO	6050-94	MW140	mg/L
Cobalt, Dissolved		Q	NO	5313-96	MW140	

CORRECTED DATA SET

	MW 102	MW 120	MW 121	MW 122	MW 133	MW 140	Overall	Weighted
	Cobalt, Dissolved							
	0.045	0.045	0.045	0.045	0.045	0.045		
	0.045	0.045	0.05	0.045	0.05	0.05		
	0.045	0.05	0.05	0.05	0.05	0.05		
	0.045	0.05	0.045	0.05		0.05		
	0.05	0.05		0.045		0.05		
	0.05	0.05				0.05		
	0.05	0.05				0.05		
	0.05	0.05				0.045		
	0.05	0.045						
	0.05							
	0.045							
	0.045							
Min	0.045	0.045	0.045	0.045	0.045	0.045	0.045	
Max	0.050	0.050	0.050	0.050	0.050	0.050	0.050	
Average	0.048	0.048	0.048	0.047	0.048	0.049	0.048	0.048
Number	12	9	4	5	3	8	41	



MW 102 - Two "Q" qualified results assigned the minimum detection limit for samples from this well.

MW 120 - One "Q" qualified result assigned the minimum detection limit for samples from this well.

MW 121 - One "Q" qualified result assigned minimum detection limit for samples from this well.

MW 122 - One "Q" qualified result assigned minimum detection limit for samples from this well.

MW 133 - Data were not modified.

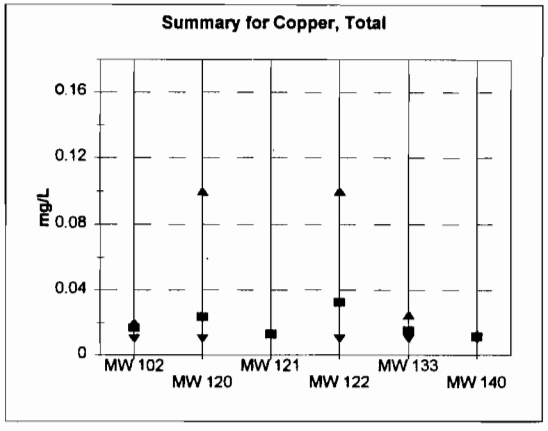
MW 140 - One "Q" qualified result assigned the minimum detection limit for samples from this well.

Summary of McNairy Background Well Inorganic Chemical Data

ANALYSIS	RESULT	QUALIFIER	DETECT?	SMPID	STATION ID	UNITS
Copper	0.01	<	NO	5174-93	MW102	mg/L
Copper	0.01	<	NO	5940-93	MW102	mg/L
Copper	0.01	<	NO	7295-93	MW102	mg/L
Copper	0.01	<	NO	4268-94	MW102	mg/L
Copper	0.016		YES	6022-94	MW102	mg/L
Copper	0.02		YES	5183-94	MW102	mg/L
Copper	0.025	<	NO	6770-94	MW102	mg/L
Copper	0.025	<	NO	5619-95	MW102	mg/L
Copper	0.025	<	NO	6592-95	MW102	mg/L
Copper	0.025	<	NO	7467-95	MW102	mg/L
Copper	0.025	<	NO	8285-95	MW102	mg/L
Copper	0.025	<	NO	5281-96	MW102	mg/L
Copper	0.1	<	NO	5141-97	MW102	mg/L
Copper	0.01	<	NO	4209-94	MW120	mg/L
Copper	0.01	<	NO	4991-94	MW120	mg/L
Copper	0.01	<	NO	5088-93	MW120	mg/L
Copper	0.01	<	NO	5900-93	MW120	mg/L
Copper	0.01	<	NO	6034-94	MW120	mg/L
Copper	0.01	<	NO	7065-93	MW120	mg/L
Copper	0.025	<	NO	5448-95	MW120	mg/L
Copper	0.025	<	NO	5293-96	MW120	mg/L
Copper	0.025	<	NO	6928-94	MW120	mg/L
Copper	0.1	<	NO	5143-97	MW120	mg/L
Copper	0.013		YES	4864-94	MW121	mg/L
Copper	0.025	<	NO	5452-95	MW121	mg/L
Copper	0.025	<	NO	5500-96	MW121	mg/L
Copper	0.1	<	NO	5144-97	MW121	mg/L
Copper	0.163		YES	5206-93	MW121	mg/L
Copper	0.01	<	NO	5246-93	MW122	mg/L
Copper	0.01	<	NO	4868-94	MW122	mg/L
Copper	0.025	<	NO	5456-95	MW122	mg/L
Copper	0.025	<	NO	6596-95	MW122	mg/L
Copper	0.025	<	NO	5301-96	MW122	mg/L
Copper	0.1	<	NO	5145-97	MW122	mg/L
Copper	0.01	<	NO	5282-93	MW133	mg/L
Copper	0.01	<	NO	4761-94	MW133	mg/L
Copper	0.025	<	NO	5460-95	MW133	mg/L
Copper	0.01	<	NO	6004-93	MW140	mg/L
Copper	0.01	<	NO	6088-93	MW140	mg/L
Copper	0.01	<	NO	4225-94	MW140	mg/L
Copper	0.01	<	NO	5195-94	MW140	mg/L
Copper	0.01	<	NO	6050-94	MW140	mg/L
Copper	0.013		YES	7081-93	MW140	mg/L
Copper	0.025	<	NO	6864-94	MW140	mg/L
Copper	0.025	<	NO	5313-96	MW140	mg/L
Copper	0.1	<	NO	5146-97	MW140	mg/L

CORRECTED DATA SET

	MW 102	MW 120	MW 121	MW 122	MW 133	MW 140	Overall	Weighted
	Copper							
	0.01	0.01	0.013	0.01	0.01	0.01		
	0.01	0.01	0.013	0.01	0.01	0.01		
	0.01	0.01	0.013	0.025	0.025	0.01		
	0.01	0.01	0.013	0.025		0.01		
	0.016	0.01	0.013	0.025		0.01		
	0.02	0.01		0.1		0.013		
	0.02	0.025				0.013		
	0.02	0.025				0.013		
	0.02	0.025				0.013		
	0.02	0.1						
	0.02							
	0.02							
	0.02							
Min	0.010	0.010	0.013	0.010	0.010	0.010	0.010	
Max	0.020	0.100	0.013	0.100	0.025	0.013	0.100	
Average	0.017	0.024	0.013	0.033	0.015	0.011	0.019	0.019
Number	13	10	5	6	3	9	46	



MW 102 - Seven nondetects with values greater than maximum detected value reduced to maximum detected value.

MW 120 - Data were not modified.

MW 121 - Turbidity/total solids impacted result of detected value; detected value reduced to next greatest detected value; three nondetect values greater than maximum detected concentration reduced to maximum detected concentration.

MW 122 - Data were not modified.

MW 133 - Data were not modified.

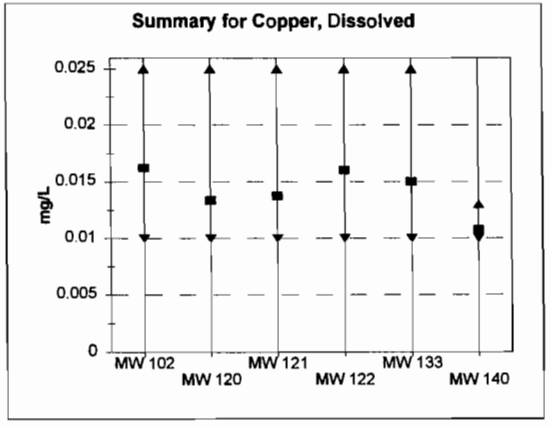
MW 140 - Three nondetects greater than maximum detected value set to maximum detected value.

Summary of McNairy Background Well Inorganic Chemical Data

ANALYSIS	RESULT	QUALIFIER	DETECT?	SMPID	STATION ID	UNITS
Copper, Dissolved	0.01	<	NO	5174-93	MW102	mg/L
Copper, Dissolved	0.01	<	NO	5940-93	MW102	mg/L
Copper, Dissolved	0.01	<	NO	7295-93	MW102	mg/L
Copper, Dissolved	0.01	<	NO	4268-94	MW102	mg/L
Copper, Dissolved	0.01	<	NO	5183-94	MW102	mg/L
Copper, Dissolved	0.01	<	NO	6022-94	MW102	mg/L
Copper, Dissolved	0.025	<	NO	6770-94	MW102	mg/L
Copper, Dissolved	0.025	<	NO	5619-95	MW102	mg/L
Copper, Dissolved	0.025	<	NO	6592-95	MW102	mg/L
Copper, Dissolved	0.025	<	NO	7467-95	MW102	mg/L
Copper, Dissolved	0.025	<	NO	8285-95	MW102	mg/L
Copper, Dissolved		Q	NO	5281-96	MW102	
Copper, Dissolved	0.01	<	NO	4209-94	MW120	mg/L
Copper, Dissolved	0.01	<	NO	4991-94	MW120	mg/L
Copper, Dissolved	0.01	<	NO	5088-93	MW120	mg/L
Copper, Dissolved	0.01	<	NO	5900-93	MW120	mg/L
Copper, Dissolved	0.01	<	NO	6034-94	MW120	mg/L
Copper, Dissolved	0.01	<	NO	7065-93	MW120	mg/L
Copper, Dissolved	0.025	<	NO	5448-95	MW120	mg/L
Copper, Dissolved	0.025	<	NO	6928-94	MW120	mg/L
Copper, Dissolved		Q	NO	5293-96	MW120	
Copper, Dissolved	0.01	<	NO	5206-93	MW121	mg/L
Copper, Dissolved	0.01	<	NO	4864-94	MW121	mg/L
Copper, Dissolved	0.025	<	NO	5452-95	MW121	mg/L
Copper, Dissolved		Q	NO	5500-96	MW121	
Copper, Dissolved	0.01	<	NO	5246-93	MW122	mg/L
Copper, Dissolved	0.01	<	NO	4868-94	MW122	mg/L
Copper, Dissolved	0.025	<	NO	5456-95	MW122	mg/L
Copper, Dissolved	0.025	<	NO	6596-95	MW122	mg/L
Copper, Dissolved		Q	NO	5301-96	MW122	
Copper, Dissolved	0.01	<	NO	5282-93	MW133	mg/L
Copper, Dissolved	0.01	<	NO	4761-94	MW133	mg/L
Copper, Dissolved	0.025	<	NO	5460-95	MW133	mg/L
Copper, Dissolved	0.01	<	NO	6004-93	MW140	mg/L
Copper, Dissolved	0.01	<	NO	6088-93	MW140	mg/L
Copper, Dissolved	0.01	<	NO	4225-94	MW140	mg/L
Copper, Dissolved	0.01	<	NO	5195-94	MW140	mg/L
Copper, Dissolved	0.01	<	NO	6050-94	MW140	mg/L
Copper, Dissolved	0.013		YES	7081-93	MW140	mg/L
Copper, Dissolved	0.025	<	NO	6864-94	MW140	mg/L
Copper, Dissolved		Q	NO	5313-96	MW140	

CORRECTED DATA SET

	MW 102	MW 120	MW 121	MW 122	MW 133	MW 140	Overall	Weighted
	Copper, Dissolved							
	0.01	0.01	0.01	0.01	0.01	0.01		
	0.01	0.01	0.01	0.01	0.01	0.01		
	0.01	0.01	0.025	0.025	0.025	0.01		
	0.01	0.01	0.01	0.025		0.01		
	0.01	0.01		0.01		0.01		
	0.01	0.01				0.013		
	0.025	0.025				0.013		
	0.025	0.025				0.01		
	0.025	0.01						
	0.025							
	0.025							
	0.01							
Min	0.010	0.010	0.010	0.010	0.010	0.010	0.010	
Max	0.025	0.025	0.025	0.025	0.025	0.013	0.025	
Average	0.016	0.013	0.014	0.016	0.015	0.011	0.014	0.014
Number	12	9	4	5	3	8	41	



MW 102 - One "Q" qualified result assigned the minimum detection limit for samples from this well.

MW 120 - One "Q" qualified result assigned the minimum detection limit for samples from this well.

MW 121 - One "Q" qualified result assigned the minimum detection limit for samples from this well.

Mw 122 - One "Q" qualified result assigned the minimum detection limit for samples from this well.

MW 133 - Data were not modified.

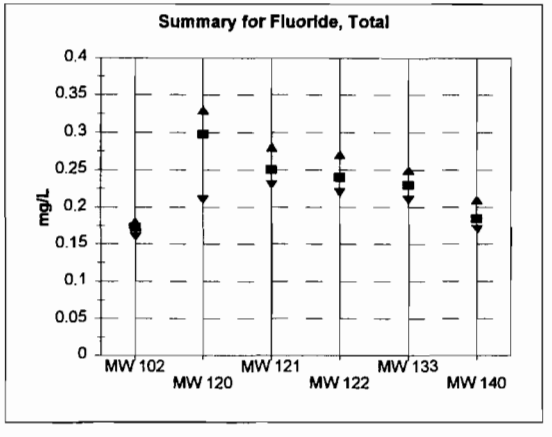
MW 140 - One "Q" qualified result assigned the minimum detection limit for samples from this well; one nondetected result with a concentration greater than the maximum detected cancentration reduced to maximum detected concentration.

Summary of McNairy Background Well Inorganic Chemical Data

ANALYSIS	RESULT	QUALIFIER	DETECT?	SMPID	STATION ID	UNITS
Fluoride	0.16		YES	7295-93	MW102	mg/L
Fluoride	0.16		YES	5281-96	MW102	mg/L
Fluoride	0.17		YES	5183-94	MW102	mg/L
Fluoride	0.17		YES	6022-94	MW102	mg/L
Fluoride	0.17		YES	6592-95	MW102	mg/L
Fluoride	0.17		YES	7467-95	MW102	mg/L
Fluoride	0.18		YES	5940-93	MW102	mg/L
Fluoride	0.18		YES	4268-94	MW102	mg/L
Fluoride	0.18		YES	6770-94	MW102	mg/L
Fluoride	0.18		YES	5619-95	MW102	mg/L
Fluoride	0.18		YES	8285-95	MW102	mg/L
Fluoride	0.21		YES	4209-94	MW120	mg/L
Fluoride	0.28		YES	7065-93	MW120	mg/L
Fluoride	0.29		YES	5088-93	MW120	mg/L
Fluoride	0.31		YES	4991-94	MW120	mg/L
Fluoride	0.31		YES	5900-93	MW120	mg/L
Fluoride	0.31		YES	6928-94	MW120	mg/L
Fluoride	0.32		YES	5448-95	MW120	mg/L
Fluoride	0.32		YES	5293-96	MW120	mg/L
Fluoride	0.33		YES	6034-94	MW120	mg/L
Fluoride	0.23		YES	5500-96	MW121	mg/L
Fluoride	0.24		YES	4864-94	MW121	mg/L
Fluoride	0.28		YES	5452-95	MW121	mg/L
Fluoride	0.22		YES	5301-96	MW122	mg/L
Fluoride	0.23		YES	5246-93	MW122	mg/L
Fluoride	0.24		YES	4868-94	MW122	mg/L
Fluoride	0.24		YES	6596-95	MW122	mg/L
Fluoride	0.27		YES	5456-95	MW122	mg/L
Fluoride	0.21		YES	4761-94	MW133	mg/L
Fluoride	0.23		YES	5282-93	MW133	mg/L
Fluoride	0.25		YES	5460-95	MW133	mg/L
Fluoride	0.17		YES	5313-96	MW140	mg/L
Fluoride	0.18		YES	6088-93	MW140	mg/L
Fluoride	0.18		YES	4225-94	MW140	mg/L
Fluoride	0.18		YES	5195-94	MW140	mg/L
Fluoride	0.18		YES	6864-94	MW140	mg/L
Fluoride	0.19		YES	6050-94	MW140	mg/L
Fluoride	0.21		YES	7081-93	MW140	mg/L

CORRECTED DATA SET

	MW 102	MW 120	MW 121	MW 122	MW 133	MW 140	Overall	Weighted
	Fluoride							
	0.16	0.21	0.23	0.22	0.21	0.17		
	0.16	0.28	0.24	0.23	0.23	0.18		
	0.17	0.29	0.28	0.24	0.25	0.18		
	0.17	0.31		0.24		0.18		
	0.17	0.31		0.27		0.18		
	0.17	0.31				0.19		
	0.18	0.32				0.21		
	0.18	0.32						
	0.18	0.33						
	0.18							
	0.18							
Min	0.160	0.210	0.230	0.220	0.210	0.170	0.160	
Max	0.180	0.330	0.280	0.270	0.250	0.210	0.330	
Average	0.173	0.298	0.250	0.240	0.230	0.184	0.224	0.229
Number	11	9	3	5	3	7	38	



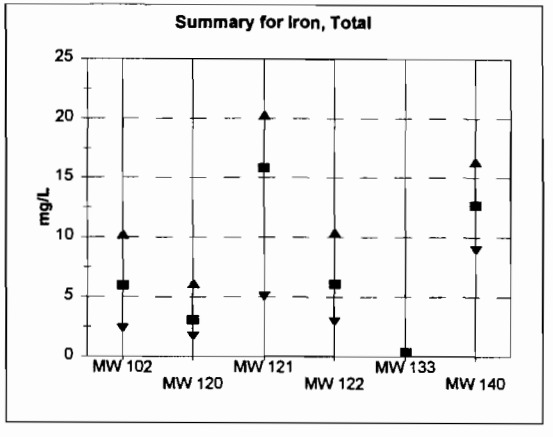
Data for Fluoride, Total were not modified.

Summary of McNairy Background Well Inorganic Chemical Data

ANALYSIS	RESULT	QUALIFIER	DETECT?	SMPID	STATION ID	UNITS
Iron	2.34	*	YES	8285-95	MW102	mg/L
Iron	3.38	N	YES	5619-95	MW102	mg/L
Iron	3.85	N	YES	5281-96	MW102	mg/L
Iron	4.33		YES	4268-94	MW102	mg/L
Iron	4.66		YES	6770-94	MW102	mg/L
Iron	5.5		YES	6592-95	MW102	mg/L
Iron	5.66		YES	7295-93	MW102	mg/L
Iron	5.88	N	YES	7467-95	MW102	mg/L
Iron	7.01		YES	5174-93	MW102	mg/L
Iron	7.31		YES	6022-94	MW102	mg/L
Iron	7.32		YES	5940-93	MW102	mg/L
Iron	9.91	N	YES	5141-97	MW102	mg/L
Iron	10.2		YES	5183-94	MW102	mg/L
Iron	1.68		YES	6034-94	MW120	mg/L
Iron	1.94		YES	4209-94	MW120	mg/L
Iron	2.37		YES	4991-94	MW120	mg/L
Iron	2.49		YES	5900-93	MW120	mg/L
Iron	2.49		YES	6928-94	MW120	mg/L
Iron	2.59		YES	5088-93	MW120	mg/L
Iron	3.02		YES	7065-93	MW120	mg/L
Iron	3.88	B	YES	5293-96	MW120	mg/L
Iron	4.26		YES	5448-95	MW120	mg/L
Iron	6.14	N	YES	5143-97	MW120	mg/L
Iron	5.04	N	YES	5144-97	MW121	mg/L
Iron	15		YES	5452-95	MW121	mg/L
Iron	18.5		YES	4864-94	MW121	mg/L
Iron	20.3		YES	5500-96	MW121	mg/L
Iron	178.8		YES	5206-93	MW121	mg/L
Iron	2.95		YES	5246-93	MW122	mg/L
Iron	3.62		YES	4868-94	MW122	mg/L
Iron	5.6		YES	5456-95	MW122	mg/L
Iron	6.7		YES	6596-95	MW122	mg/L
Iron	7.27	N	YES	5301-96	MW122	mg/L
Iron	10.4	N	YES	5145-97	MW122	mg/L
Iron	0.222		YES	4761-94	MW133	mg/L
Iron	0.36	<	NO	5460-95	MW133	mg/L
Iron	0.401		YES	5282-93	MW133	mg/L
Iron	8.94		YES	4225-94	MW140	mg/L
Iron	11.3	N	YES	7081-93	MW140	mg/L
Iron	11.48		YES	6004-93	MW140	mg/L
Iron	11.7		YES	5195-94	MW140	mg/L
Iron	12		YES	6864-94	MW140	mg/L
Iron	13.4		YES	6088-93	MW140	mg/L
Iron	13.66		YES	6050-94	MW140	mg/L
Iron	15.2	N	YES	5146-97	MW140	mg/L
Iron	16.4	N	YES	5313-96	MW140	mg/L

CORRECTED DATA SET

	MW 102	MW 120	MW 121	MW 122	MW 133	MW 140	Overall	Weighted
	Iron							
	2.34	1.68	5.04	2.95	0.222	8.94		
	3.38	1.94	15	3.62	0.36	11.3		
	3.85	2.37	18.5	5.6	0.401	11.48		
	4.33	2.49	20.3	6.7		11.7		
	4.66	2.49	20.3	7.27		12		
	5.5	2.59		10.4		13.4		
	5.66	3.02				13.66		
	5.88	3.88				15.2		
	7.01	4.26				16.4		
	7.31	6.14						
	7.32							
	9.91							
	10.2							
Min	2.340	1.680	5.040	2.950	0.222	8.940	0.222	
Max	10.200	6.140	20.300	10.400	0.401	16.400	20.300	
Average	5.950	3.086	15.828	6.090	0.328	12.676	7.369	7.326
Number	13	10	5	6	3	9	46	



MW 102 - Data were not modified.

MW 120 - Data were not modified.

MW 121 - Turbidity/total solids impacted result of detected value; detected value reduced to next greatest detected concentration.

MW 122 - Data were not modified.

MW 133 - Data were not modified.

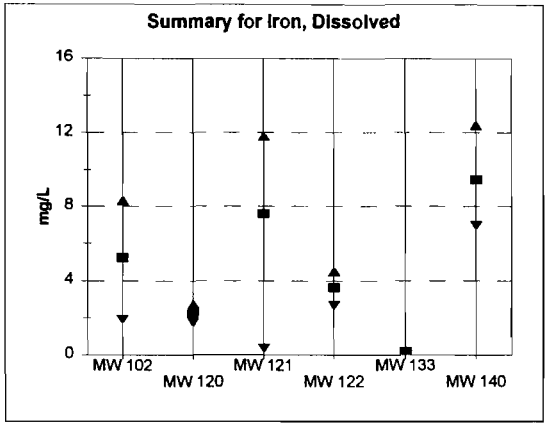
MW 140 - Data were not modified.

Summary of McNairy Background Well Inorganic Chemical Data

ANALYSIS	RESULT	QUALIFIER	DETECT?	SMPID	STATION ID	UNITS
Iron, Dissolved	1.91		YES	8285-95	MW102	mg/L
Iron, Dissolved	3.2	N	YES	5619-95	MW102	mg/L
Iron, Dissolved	3.32	N	YES	5281-96	MW102	mg/L
Iron, Dissolved	4.54		YES	6770-94	MW102	mg/L
Iron, Dissolved	5.03	N	YES	6592-95	MW102	mg/L
Iron, Dissolved	5.18		YES	7467-95	MW102	mg/L
Iron, Dissolved	5.24		YES	7295-93	MW102	mg/L
Iron, Dissolved	5.37		YES	4268-94	MW102	mg/L
Iron, Dissolved	6.59		YES	6022-94	MW102	mg/L
Iron, Dissolved	6.84		YES	5174-93	MW102	mg/L
Iron, Dissolved	7.06		YES	5940-93	MW102	mg/L
Iron, Dissolved	8.31		YES	5183-94	MW102	mg/L
Iron, Dissolved	1.75		YES	6034-94	MW120	mg/L
Iron, Dissolved	1.86		YES	4991-94	MW120	mg/L
Iron, Dissolved	1.98		YES	7065-93	MW120	mg/L
Iron, Dissolved	2		YES	4209-94	MW120	mg/L
Iron, Dissolved	2.2		YES	5088-93	MW120	mg/L
Iron, Dissolved	2.4		YES	6928-94	MW120	mg/L
Iron, Dissolved	2.49		YES	5900-93	MW120	mg/L
Iron, Dissolved	2.58		YES	5448-95	MW120	mg/L
Iron, Dissolved	2.72	N	YES	5293-96	MW120	mg/L
Iron, Dissolved	0.355	<	NO	5452-95	MW121	mg/L
Iron, Dissolved	8.52		YES	5206-93	MW121	mg/L
Iron, Dissolved	9.68	N	YES	5500-96	MW121	mg/L
Iron, Dissolved	11.8		YES	4864-94	MW121	mg/L
Iron, Dissolved	2.66		YES	5246-93	MW122	mg/L
Iron, Dissolved	3.22	N	YES	5301-96	MW122	mg/L
Iron, Dissolved	3.37		YES	4868-94	MW122	mg/L
Iron, Dissolved	4.38		YES	5456-95	MW122	mg/L
Iron, Dissolved	4.5		YES	6596-95	MW122	mg/L
Iron, Dissolved	0.024		YES	4761-94	MW133	mg/L
Iron, Dissolved	0.235		YES	5282-93	MW133	mg/L
Iron, Dissolved	0.36	<	NO	5460-95	MW133	mg/L
Iron, Dissolved	6.96		YES	6088-93	MW140	mg/L
Iron, Dissolved	7.66		YES	6004-93	MW140	mg/L
Iron, Dissolved	8.25		YES	7081-93	MW140	mg/L
Iron, Dissolved	9.07		YES	4225-94	MW140	mg/L
Iron, Dissolved	9.29		YES	5195-94	MW140	mg/L
Iron, Dissolved	10.94		YES	6050-94	MW140	mg/L
Iron, Dissolved	11		YES	6864-94	MW140	mg/L
Iron, Dissolved	12.4	N	YES	5313-96	MW140	mg/L

CORRECTED DATA SET

	MW 102	MW 120	MW 121	MW 122	MW 133	MW 140	Overall	Weighted
	Iron, Dissolved							
	1.91	1.75	0.355	2.66	0.024	6.96		
	3.2	1.86	8.52	3.22	0.235	7.66		
	3.32	1.98	9.68	3.37	0.235	8.25		
	4.54	2	11.8	4.38		9.07		
	5.03	2.2		4.5		9.29		
	5.18	2.4				10.94		
	5.24	2.49				11		
	5.37	2.58				12.4		
	6.59	2.72						
	6.84							
	7.06							
	8.31							
Min	1.910	1.750	0.355	2.660	0.024	6.960	0.024	
Max	8.310	2.720	11.800	4.500	0.235	12.400	12.400	
Average	5.216	2.220	7.589	3.626	0.165	9.446	5.052	4.710
Number	12	9	4	5	3	8	41	



MW 102 - Data were not modified.

MW 120 - Data were not modified.

MW 121 - Data were not modified.

MW 122 - Data were not modified.

MW 133 - One nondetect value greater than maximum detected value reduced to maximum detected value.

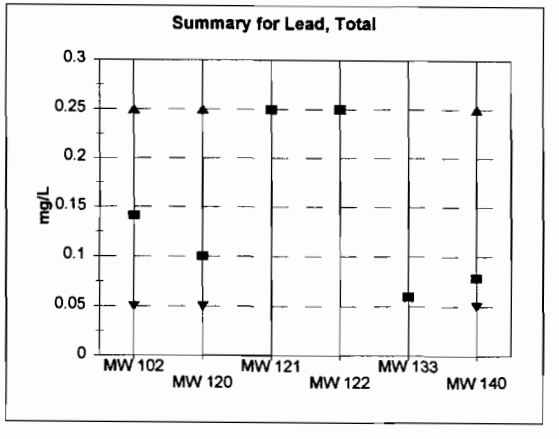
MW 140 - Data were not modified.

Summary of McNairy Background Well Inorganic Chemical Data

ANALYSIS	RESULT	QUALIFIER	DETECT?	SMPID	STATION ID	UNITS
Lead	0.05	<	NO	5174-93	MW102	mg/L
Lead	0.05	<	NO	5940-93	MW102	mg/L
Lead	0.05	<	NO	7295-93	MW102	mg/L
Lead	0.05	<	NO	4268-94	MW102	mg/L
Lead	0.05	<	NO	5183-94	MW102	mg/L
Lead	0.05	<	NO	6022-94	MW102	mg/L
Lead	0.25	<	NO	6770-94	MW102	mg/L
Lead	0.25	<	NO	5619-95	MW102	mg/L
Lead	0.25	<	NO	6592-95	MW102	mg/L
Lead	0.25	<	NO	7467-95	MW102	mg/L
Lead	0.25	<	NO	8285-95	MW102	mg/L
Lead	0.05	<	NO	4209-94	MW120	mg/L
Lead	0.05	<	NO	4991-94	MW120	mg/L
Lead	0.05	<	NO	5088-93	MW120	mg/L
Lead	0.05	<	NO	5900-93	MW120	mg/L
Lead	0.05	<	NO	6034-94	MW120	mg/L
Lead	0.05	<	NO	7065-93	MW120	mg/L
Lead	0.25	<	NO	5448-95	MW120	mg/L
Lead	0.25	<	NO	6928-94	MW120	mg/L
Lead	0.25	<	NO	5452-95	MW121	mg/L
Lead	0.25	<	NO	5456-95	MW122	mg/L
Lead	0.25	<	NO	6596-95	MW122	mg/L
Lead	0.06	<	NO	5460-95	MW133	mg/L
Lead	0.05	<	NO	6004-93	MW140	mg/L
Lead	0.05	<	NO	6088-93	MW140	mg/L
Lead	0.05	<	NO	7081-93	MW140	mg/L
Lead	0.05	<	NO	4225-94	MW140	mg/L
Lead	0.05	<	NO	5195-94	MW140	mg/L
Lead	0.05	<	NO	6050-94	MW140	mg/L
Lead	0.25	<	NO	6864-94	MW140	mg/L

CORRECTED DATA SET

	MW 102	MW 120	MW 121	MW 122	MW 133	MW 140	Overall	Weighted
	Lead							
	0.05	0.05	0.25	0.25	0.06	0.05		
	0.05	0.05		0.25		0.05		
	0.05	0.05				0.05		
	0.05	0.05				0.05		
	0.05	0.05				0.05		
	0.05	0.05				0.05		
	0.25	0.25				0.25		
	0.25	0.25						
	0.25							
	0.25							
	0.25							
Min	0.050	0.050	0.250	0.250	0.060	0.050	0.050	
Max	0.250	0.250	0.250	0.250	0.060	0.250	0.250	
Average	0.141	0.100	0.250	0.250	0.060	0.079	0.124	0.147
Number	11	8	1	2	1	7	30	



All results for this well are below their respective detection limits; therefore, the plot is simply a depiction if the detection limits used for samples taken from these wells.

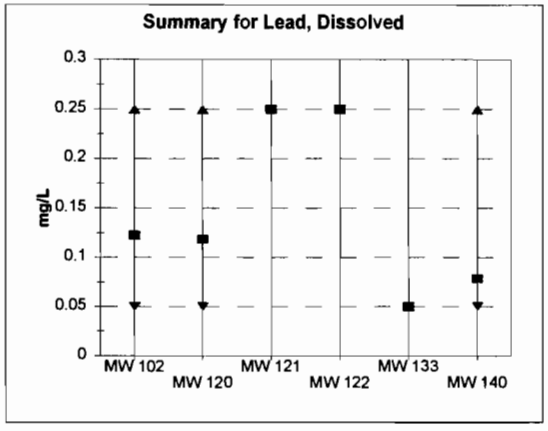
Data for Lead, Total were not modified.

Summary of McNairy Background Well Inorganic Chemical Data

ANALYSIS	RESULT	QUALIFIER	DETECT?	SMPID	STATION ID	UNITS
Lead, Dissolved	0.05	<	NO	5174-93	MW102	mg/L
Lead, Dissolved	0.05	<	NO	7295-93	MW102	mg/L
Lead, Dissolved	0.05	<	NO	4268-94	MW102	mg/L
Lead, Dissolved	0.05	<	NO	5183-94	MW102	mg/L
Lead, Dissolved	0.05	<	NO	6022-94	MW102	mg/L
Lead, Dissolved	0.25	<	NO	6770-94	MW102	mg/L
Lead, Dissolved	0.25	<	NO	5619-95	MW102	mg/L
Lead, Dissolved	0.25	<	NO	6592-95	MW102	mg/L
Lead, Dissolved	0.25	<	NO	7467-95	MW102	mg/L
Lead, Dissolved		Q	NO	5940-93	MW102	
Lead, Dissolved		Q	NO	8285-95	MW102	
Lead, Dissolved	0.05	<	NO	4209-94	MW120	mg/L
Lead, Dissolved	0.05	<	NO	4991-94	MW120	mg/L
Lead, Dissolved	0.05	<	NO	5088-93	MW120	mg/L
Lead, Dissolved	0.05	<	NO	6034-94	MW120	mg/L
Lead, Dissolved	0.05	<	NO	7065-93	MW120	mg/L
Lead, Dissolved	0.2	<	NO	5900-93	MW120	mg/L
Lead, Dissolved	0.25	<	NO	5448-95	MW120	mg/L
Lead, Dissolved	0.25	<	NO	6928-94	MW120	mg/L
Lead, Dissolved	0.25	<	NO	5452-95	MW121	mg/L
Lead, Dissolved	0.25	<	NO	5456-95	MW122	mg/L
Lead, Dissolved	0.25	<	NO	6596-95	MW122	mg/L
Lead, Dissolved		Q	NO	5460-95	MW133	
Lead, Dissolved	0.05	<	NO	6004-93	MW140	mg/L
Lead, Dissolved	0.05	<	NO	7081-93	MW140	mg/L
Lead, Dissolved	0.05	<	NO	4225-94	MW140	mg/L
Lead, Dissolved	0.05	<	NO	5195-94	MW140	mg/L
Lead, Dissolved	0.25	<	NO	6864-94	MW140	mg/L
Lead, Dissolved		Q	NO	6088-93	MW140	
Lead, Dissolved		Q	NO	6050-94	MW140	

CORRECTED DATA SET

	MW 102	MW 120	MW 121	MW 122	MW 133	MW 140	Overall	Weighted
	Lead, Dissolved							
	0.05	0.05	0.25	0.25	0.05	0.05		
	0.05	0.05		0.25		0.05		
	0.05	0.05				0.05		
	0.05	0.05				0.05		
	0.05	0.05				0.25		
	0.25	0.2				0.05		
	0.25	0.25				0.05		
	0.25	0.25						
	0.25							
	0.05							
	0.05							
Min	0.050	0.050	0.250	0.250	0.050	0.050	0.050	
Max	0.250	0.250	0.250	0.250	0.050	0.250	0.250	
Average	0.123	0.119	0.250	0.250	0.050	0.079	0.122	0.145
Number	11	8	1	2	1	7	30	



All results for this well are below their respective detection limits; therefore, the plot is simply a depiction if the detection limits used for samples taken from these wells.

MW 102 - Two "Q" qualified results assigned minimum detection limit for samples from this well.

MW 120 - Data were not modified.

MW 121 - Data were not modified.

MW 122 - Data were not modified.

MW 133 - "O" qualified result assigned minimum detection limit across all wells.

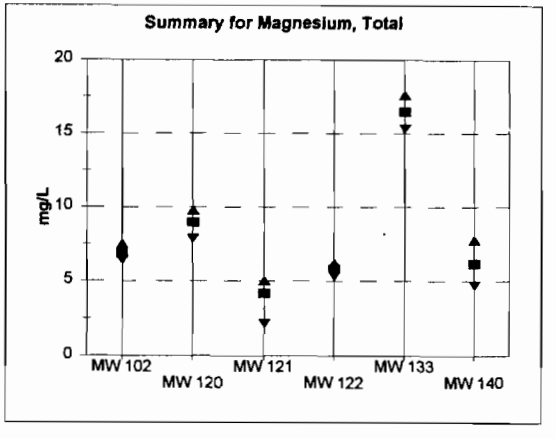
MW 140 - Two "Q" qualified results assigned minimum detection limit for samples from this well.

Summary of McNairy Background Well Inorganic Chemical Data

ANALYSIS	RESULT	QUALIFIER	DETECT?	SMPID	STATION ID	UNITS
Magnesium	6.4		YES	5174-93	MW102	mg/L
Magnesium	6.4		YES	7295-93	MW102	mg/L
Magnesium	6.54		YES	5183-94	MW102	mg/L
Magnesium	6.61		YES	4268-94	MW102	mg/L
Magnesium	6.69	N	YES	5141-97	MW102	mg/L
Magnesium	6.75		YES	6022-94	MW102	mg/L
Magnesium	6.8		YES	5940-93	MW102	mg/L
Magnesium	6.89		YES	6592-95	MW102	mg/L
Magnesium	7		YES	5619-95	MW102	mg/L
Magnesium	7.02	N	YES	7467-95	MW102	mg/L
Magnesium	7.08		YES	6770-94	MW102	mg/L
Magnesium	7.09	N	YES	8285-95	MW102	mg/L
Magnesium	7.51	N	YES	5281-96	MW102	mg/L
Magnesium	7.84		YES	6034-94	MW120	mg/L
Magnesium	8.43		YES	4209-94	MW120	mg/L
Magnesium	8.66		YES	7065-93	MW120	mg/L
Magnesium	8.74		YES	5088-93	MW120	mg/L
Magnesium	9.02	N	YES	5143-97	MW120	mg/L
Magnesium	9.02		YES	6928-94	MW120	mg/L
Magnesium	9.17		YES	4991-94	MW120	mg/L
Magnesium	9.18		YES	5900-93	MW120	mg/L
Magnesium	9.7		YES	5448-95	MW120	mg/L
Magnesium	9.76		YES	5293-96	MW120	mg/L
Magnesium	2.14	N	YES	5144-97	MW121	mg/L
Magnesium	4		YES	4864-94	MW121	mg/L
Magnesium	4.59		YES	5500-96	MW121	mg/L
Magnesium	5		YES	5452-95	MW121	mg/L
Magnesium	21.6		YES	5206-93	MW121	mg/L
Magnesium	5.31		YES	5246-93	MW122	mg/L
Magnesium	5.66	N	YES	5145-97	MW122	mg/L
Magnesium	5.67		YES	4868-94	MW122	mg/L
Magnesium	5.9		YES	6596-95	MW122	mg/L
Magnesium	6.16	N	YES	5301-96	MW122	mg/L
Magnesium	6.2		YES	5456-95	MW122	mg/L
Magnesium	15.3		YES	5460-95	MW133	mg/L
Magnesium	16.47		YES	5282-93	MW133	mg/L
Magnesium	17.6		YES	4761-94	MW133	mg/L
Magnesium	4.68		YES	5195-94	MW140	mg/L
Magnesium	5.02	N	YES	5146-97	MW140	mg/L
Magnesium	5.72		YES	7081-93	MW140	mg/L
Magnesium	6.11		YES	4225-94	MW140	mg/L
Magnesium	6.14		YES	6004-93	MW140	mg/L
Magnesium	6.2		YES	6864-94	MW140	mg/L
Magnesium	6.52	N	YES	5313-96	MW140	mg/L
Magnesium	7.23		YES	6088-93	MW140	mg/L
Magnesium	7.79		YES	6050-94	MW140	mg/L

CORRECTED DATA SET

	MW 102	MW 120	MW 121	MW 122	MW 133	MW 140	Overall	Weighted
	Magnesium							
	6.4	7.84	2.14	5.31	15.3	4.68		
	6.4	8.43	4	5.66	16.47	5.02		
	6.54	8.66	4.59	5.67	17.6	5.72		
	6.61	8.74	5	5.9		6.11		
	6.69	9.02	5	6.16		6.14		
	6.75	9.02		6.2		6.2		
	6.8	9.17				6.52		
	6.89	9.18				7.23		
	7	9.7				7.79		
	7.02	9.76						
	7.08							
	7.09							
	7.51							
Min	6.400	7.840	2.140	5.310	15.300	4.680	2.140	
Max	7.510	9.760	5.000	6.200	17.600	7.790	17.600	
Average	6.829	8.952	4.146	5.817	16.457	6.157	7.363	8.060
Number	13	10	5	6	3	9	46	



MW 102 - Data were not modified.

MW 120 - Data were not modified.

MW 121 - Maximum detected value impacted by turbidity of sample. Value reduced to next greatest detected value.

MW 122 - Data were not modified.

MW 133 - Data were not modified.

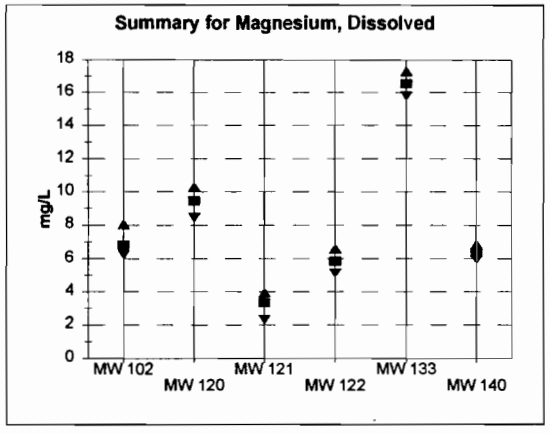
MW 140 - Data were not modified.

Summary of McNairy Background Well Inorganic Chemical Data

ANALYSIS	RESULT	QUALIFIER	DETECT?	SMPID	STATION ID	UNITS
Magnesium, Dissolved	6.23	N	YES	7467-95	MW102	mg/L
Magnesium, Dissolved	6.49		YES	7295-93	MW102	mg/L
Magnesium, Dissolved	6.51		YES	5174-93	MW102	mg/L
Magnesium, Dissolved	6.53	N	YES	6592-95	MW102	mg/L
Magnesium, Dissolved	6.56	N	YES	8285-95	MW102	mg/L
Magnesium, Dissolved	6.56	N	YES	5281-96	MW102	mg/L
Magnesium, Dissolved	6.73		YES	5940-93	MW102	mg/L
Magnesium, Dissolved	6.74		YES	5183-94	MW102	mg/L
Magnesium, Dissolved	6.9		YES	5619-95	MW102	mg/L
Magnesium, Dissolved	7.11		YES	4268-94	MW102	mg/L
Magnesium, Dissolved	7.32		YES	6770-94	MW102	mg/L
Magnesium, Dissolved	8.06		YES	6022-94	MW102	mg/L
Magnesium, Dissolved	8.46		YES	5088-93	MW120	mg/L
Magnesium, Dissolved	9.04		YES	5900-93	MW120	mg/L
Magnesium, Dissolved	9.09		YES	4209-94	MW120	mg/L
Magnesium, Dissolved	9.24	N	YES	5293-96	MW120	mg/L
Magnesium, Dissolved	9.45		YES	7065-93	MW120	mg/L
Magnesium, Dissolved	9.61		YES	4991-94	MW120	mg/L
Magnesium, Dissolved	9.73		YES	6034-94	MW120	mg/L
Magnesium, Dissolved	10		YES	6928-94	MW120	mg/L
Magnesium, Dissolved	10.3		YES	5448-95	MW120	mg/L
Magnesium, Dissolved	2.3		YES	5452-95	MW121	mg/L
Magnesium, Dissolved	3.41	N	YES	5500-96	MW121	mg/L
Magnesium, Dissolved	3.72		YES	4864-94	MW121	mg/L
Magnesium, Dissolved	3.96		YES	5206-93	MW121	mg/L
Magnesium, Dissolved	5.1		YES	5246-93	MW122	mg/L
Magnesium, Dissolved	5.45	N	YES	5301-96	MW122	mg/L
Magnesium, Dissolved	5.8		YES	6596-95	MW122	mg/L
Magnesium, Dissolved	6.15		YES	4868-94	MW122	mg/L
Magnesium, Dissolved	6.6		YES	5456-95	MW122	mg/L
Magnesium, Dissolved	15.8		YES	5282-93	MW133	mg/L
Magnesium, Dissolved	16.5		YES	5460-95	MW133	mg/L
Magnesium, Dissolved	17.3		YES	4761-94	MW133	mg/L
Magnesium, Dissolved	5.97		YES	5195-94	MW140	mg/L
Magnesium, Dissolved	6.01		YES	7081-93	MW140	mg/L
Magnesium, Dissolved	6.08	N	YES	5313-96	MW140	mg/L
Magnesium, Dissolved	6.11		YES	6004-93	MW140	mg/L
Magnesium, Dissolved	6.3		YES	4225-94	MW140	mg/L
Magnesium, Dissolved	6.66		YES	6050-94	MW140	mg/L
Magnesium, Dissolved	6.8		YES	6864-94	MW140	mg/L
Magnesium, Dissolved	6.86		YES	6088-93	MW140	mg/L

CORRECTED DATA SET

	MW 102	MW 120	MW 121	MW 122	MW 133	MW 140	Overall	Weighted
	Magnesium, Dissolved							
	6.23	8.46	2.3	5.1	15.8	5.97		
	6.49	9.04	3.41	5.45	16.5	6.01		
	6.51	9.09	3.72	5.8	17.3	6.08		
	6.53	9.24	3.96	6.15		6.11		
	6.56	9.45		6.6		6.3		
	6.56	9.61				6.66		
	6.73	9.73				6.8		
	6.74	10				6.86		
	6.9	10.3						
	7.11							
	7.32							
	8.06							
Min	6.230	8.460	2.300	5.100	15.800	5.970	2.300	
Max	8.060	10.300	3.960	6.600	17.300	6.860	17.300	
Average	6.812	9.436	3.348	5.820	16.533	6.349	7.550	8.049
Number	12	9	4	5	3	8	41	



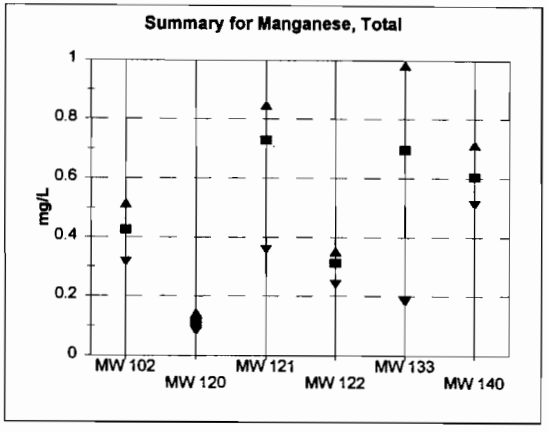
Data for Magnesium, Dissolved were not modified.

Summary of McNairy Background Well Inorganic Chemical Data

ANALYSIS	RESULT	QUALIFIER	DETECT?	SMPID	STATION ID	UNITS
Manganese	0.314		YES	8285-95	MW102	mg/L
Manganese	0.33		YES	5619-95	MW102	mg/L
Manganese	0.367		YES	7467-95	MW102	mg/L
Manganese	0.37		YES	6592-95	MW102	mg/L
Manganese	0.404		YES	5281-96	MW102	mg/L
Manganese	0.423		YES	6022-94	MW102	mg/L
Manganese	0.427		YES	6770-94	MW102	mg/L
Manganese	0.436		YES	4268-94	MW102	mg/L
Manganese	0.456		YES	7295-93	MW102	mg/L
Manganese	0.486		YES	5183-94	MW102	mg/L
Manganese	0.491		YES	5174-93	MW102	mg/L
Manganese	0.51		YES	5141-97	MW102	mg/L
Manganese	0.514		YES	5940-93	MW102	mg/L
Manganese	0.082		YES	6034-94	MW120	mg/L
Manganese	0.102		YES	7065-93	MW120	mg/L
Manganese	0.103		YES	5900-93	MW120	mg/L
Manganese	0.104		YES	4209-94	MW120	mg/L
Manganese	0.111		YES	6928-94	MW120	mg/L
Manganese	0.113		YES	4991-94	MW120	mg/L
Manganese	0.117		YES	5088-93	MW120	mg/L
Manganese	0.12		YES	5448-95	MW120	mg/L
Manganese	0.136		YES	5293-96	MW120	mg/L
Manganese	0.141		YES	5143-97	MW120	mg/L
Manganese	0.357		YES	5144-97	MW121	mg/L
Manganese	0.761		YES	4864-94	MW121	mg/L
Manganese	0.83		YES	5452-95	MW121	mg/L
Manganese	0.848		YES	5500-96	MW121	mg/L
Manganese	3.91		YES	5206-93	MW121	mg/L
Manganese	0.24		YES	5145-97	MW122	mg/L
Manganese	0.282		YES	5301-96	MW122	mg/L
Manganese	0.32		YES	6596-95	MW122	mg/L
Manganese	0.33		YES	5456-95	MW122	mg/L
Manganese	0.347		YES	4868-94	MW122	mg/L
Manganese	0.35		YES	5246-93	MW122	mg/L
Manganese	0.18		YES	5460-95	MW133	mg/L
Manganese	0.924		YES	4761-94	MW133	mg/L
Manganese	0.983		YES	5282-93	MW133	mg/L
Manganese	0.511		YES	5146-97	MW140	mg/L
Manganese	0.55		YES	6864-94	MW140	mg/L
Manganese	0.567		YES	7081-93	MW140	mg/L
Manganese	0.582		YES	4225-94	MW140	mg/L
Manganese	0.6		YES	5195-94	MW140	mg/L
Manganese	0.607		YES	6004-93	MW140	mg/L
Manganese	0.63		YES	5313-96	MW140	mg/L
Manganese	0.682		YES	6088-93	MW140	mg/L
Manganese	0.714		YES	6050-94	MW140	mg/L

CORRECTED DATA SET

	MW 102	MW 120	MW 121	MW 122	MW 133	MW 140	Overall	Weighted
	Manganese							
	0.314	0.082	0.357	0.24	0.18	0.511		
	0.33	0.102	0.761	0.282	0.924	0.55		
	0.367	0.103	0.83	0.32	0.983	0.567		
	0.37	0.104	0.848	0.33		0.582		
	0.404	0.111	0.848	0.347		0.6		
	0.423	0.113		0.35		0.607		
	0.427	0.117				0.63		
	0.436	0.12				0.682		
	0.456	0.136				0.714		
	0.486	0.141						
	0.491							
	0.51							
	0.514							
Min	0.314	0.082	0.357	0.240	0.180	0.511	0.082	
Max	0.514	0.141	0.848	0.350	0.983	0.714	0.983	
Average	0.425	0.113	0.729	0.312	0.696	0.605	0.428	0.480
Number	13	10	5	6	3	9	46	



MW 102 - Data were not modified.

MW 120 - Data were not modified.

MW 121 - Maximum detected value impacted by turbidity of sample. Value reduced to next greatest detected value.

MW 122 - Data were not modified.

MW 133 - Data were not modified.

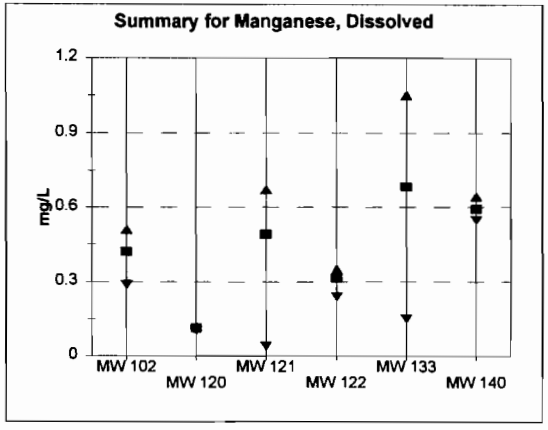
MW 140 - Data were not modified.

Summary of McNairy Background Well Inorganic Chemical Data

ANALYSIS	RESULT	QUALIFIER	DETECT?	SMPID	STATION ID	UNITS
Manganese, Dissolved	0.287		YES	8285-95	MW102	mg/L
Manganese, Dissolved	0.33		YES	5619-95	MW102	mg/L
Manganese, Dissolved	0.345		YES	6592-95	MW102	mg/L
Manganese, Dissolved	0.345		YES	7467-95	MW102	mg/L
Manganese, Dissolved	0.349		YES	5281-96	MW102	mg/L
Manganese, Dissolved	0.454		YES	6770-94	MW102	mg/L
Manganese, Dissolved	0.462		YES	7295-93	MW102	mg/L
Manganese, Dissolved	0.477		YES	4268-94	MW102	mg/L
Manganese, Dissolved	0.486		YES	6022-94	MW102	mg/L
Manganese, Dissolved	0.5		YES	5183-94	MW102	mg/L
Manganese, Dissolved	0.504		YES	5174-93	MW102	mg/L
Manganese, Dissolved	0.51		YES	5940-93	MW102	mg/L
Manganese, Dissolved	0.103		YES	6034-94	MW120	mg/L
Manganese, Dissolved	0.106		YES	5900-93	MW120	mg/L
Manganese, Dissolved	0.108		YES	4991-94	MW120	mg/L
Manganese, Dissolved	0.11		YES	4209-94	MW120	mg/L
Manganese, Dissolved	0.114		YES	5088-93	MW120	mg/L
Manganese, Dissolved	0.115		YES	7065-93	MW120	mg/L
Manganese, Dissolved	0.119		YES	5293-96	MW120	mg/L
Manganese, Dissolved	0.12		YES	5448-95	MW120	mg/L
Manganese, Dissolved	0.12		YES	6928-94	MW120	mg/L
Manganese, Dissolved	0.04		YES	5452-95	MW121	mg/L
Manganese, Dissolved	0.588		YES	5500-96	MW121	mg/L
Manganese, Dissolved	0.663		YES	5206-93	MW121	mg/L
Manganese, Dissolved	0.671		YES	4864-94	MW121	mg/L
Manganese, Dissolved	0.239		YES	5301-96	MW122	mg/L
Manganese, Dissolved	0.32		YES	6596-95	MW122	mg/L
Manganese, Dissolved	0.325		YES	5246-93	MW122	mg/L
Manganese, Dissolved	0.33		YES	5456-95	MW122	mg/L
Manganese, Dissolved	0.348		YES	4868-94	MW122	mg/L
Manganese, Dissolved	0.15		YES	5460-95	MW133	mg/L
Manganese, Dissolved	0.847		YES	5282-93	MW133	mg/L
Manganese, Dissolved	1.05		YES	4761-94	MW133	mg/L
Manganese, Dissolved	0.547		YES	5195-94	MW140	mg/L
Manganese, Dissolved	0.558		YES	5313-96	MW140	mg/L
Manganese, Dissolved	0.589		YES	7081-93	MW140	mg/L
Manganese, Dissolved	0.595		YES	4225-94	MW140	mg/L
Manganese, Dissolved	0.596		YES	6004-93	MW140	mg/L
Manganese, Dissolved	0.6		YES	6864-94	MW140	mg/L
Manganese, Dissolved	0.608		YES	6050-94	MW140	mg/L
Manganese, Dissolved	0.644		YES	6088-93	MW140	mg/L

CORRECTED DATA SET

	MW 102	MW 120	MW 121	MW 122	MW 133	MW 140	Overall	Weighted
	Manganese, Dissolved							
	0.287	0.103	0.04	0.239	0.15	0.547		
	0.33	0.106	0.588	0.32	0.847	0.558		
	0.345	0.108	0.663	0.325	1.05	0.589		
	0.345	0.11	0.671	0.33		0.595		
	0.349	0.114		0.348		0.596		
	0.454	0.115				0.6		
	0.462	0.119				0.608		
	0.477	0.12				0.644		
	0.486	0.12						
	0.5							
	0.504							
	0.51							
Min	0.287	0.103	0.040	0.239	0.150	0.547	0.040	
Max	0.510	0.120	0.671	0.348	1.050	0.644	1.050	
Average	0.421	0.113	0.491	0.312	0.682	0.592	0.399	0.435
Number	12	9	4	5	3	8	41	



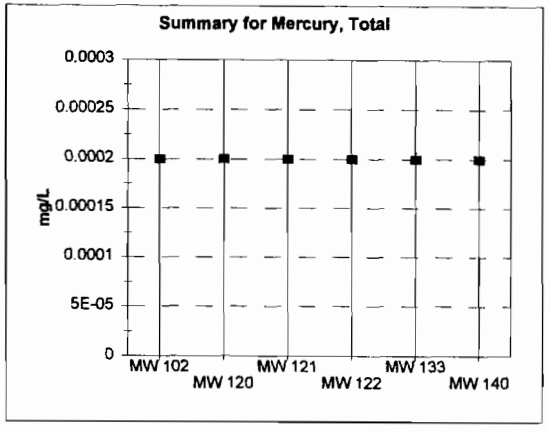
Data for Manganese, Dissolved were not modified.

Summary of McNairy Background Well Inorganic Chemical Data

ANALYSIS	RESULT	QUALIFIER	DETECT?	SMPID	STATION ID	UNITS
Mercury	0.0002	<	NO	5174-93	MW102	mg/L
Mercury	0.0002	<	NO	5940-93	MW102	mg/L
Mercury	0.0002	<	NO	7295-93	MW102	mg/L
Mercury	0.0002	<	NO	4268-94	MW102	mg/L
Mercury	0.0002	<	NO	5183-94	MW102	mg/L
Mercury	0.0002	<	NO	6022-94	MW102	mg/L
Mercury	0.0002	<	NO	6770-94	MW102	mg/L
Mercury	0.0002	<	NO	5619-95	MW102	mg/L
Mercury	0.0002	<	NO	6592-95	MW102	mg/L
Mercury	0.0002	<	NO	7467-95	MW102	mg/L
Mercury	0.0002	<	NO	8285-95	MW102	mg/L
Mercury	0.0002	<	NO	4209-94	MW120	mg/L
Mercury	0.0002	<	NO	5448-95	MW120	mg/L
Mercury	0.0002	<	NO	4991-94	MW120	mg/L
Mercury	0.0002	<	NO	5088-93	MW120	mg/L
Mercury	0.0002	<	NO	5900-93	MW120	mg/L
Mercury	0.0002	<	NO	6034-94	MW120	mg/L
Mercury	0.0002	<	NO	6928-94	MW120	mg/L
Mercury	0.0002	<	NO	7065-93	MW120	mg/L
Mercury	0.0002	<	NO	5452-95	MW121	mg/L
Mercury	0.0002	<	NO	5456-95	MW122	mg/L
Mercury	0.0002	<	NO	6596-95	MW122	mg/L
Mercury	0.0002	<	NO	5460-95	MW133	mg/L
Mercury	0.0002	<	NO	6004-93	MW140	mg/L
Mercury	0.0002	<	NO	6088-93	MW140	mg/L
Mercury	0.0002	<	NO	7081-93	MW140	mg/L
Mercury	0.0002	<	NO	4225-94	MW140	mg/L
Mercury	0.0002	<	NO	5195-94	MW140	mg/L
Mercury	0.0002	<	NO	6864-94	MW140	mg/L
Mercury	0.0045		YES	6050-94	MW140	mg/L

CORRECTED DATA SET

	MW 102	MW 120	MW 121	MW 122	MW 133	MW 140	Overall	Weighted
	Mercury							
	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002		
	0.0002	0.0002		0.0002		0.0002		
	0.0002	0.0002				0.0002		
	0.0002	0.0002				0.0002		
	0.0002	0.0002				0.0002		
	0.0002	0.0002				0.0002		
	0.0002	0.0002				0.0002		
	0.0002	0.0002						
	0.0002							
	0.0002							
	0.0002							
Min	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	
Max	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	
Average	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002
Number	11	8	1	2	1	7	30	



MW 102 - Data were not modified.

MW 120 - Data were not modified.

MW 121 - Data were not modified.

MW 122 - Data were not modified.

MW 133 - Data were not modified.

MW 140 - Maximum detected value is inconsistent with other observations. Reduced to next greatest value.

Summary of McNairy Background Well Inorganic Chemical Data

ANALYSIS	RESULT	QUALIFIER	DETECT?	SMPID	STATION ID	UNITS
Mercury, dissolved		Q	NO	5174-93	MW102	
Mercury, Dissolved		Q	NO	5940-93	MW102	
Mercury, Dissolved		Q	NO	7295-93	MW102	
Mercury, Dissolved		Q	NO	4268-94	MW102	
Mercury, Dissolved		Q	NO	5183-94	MW102	
Mercury, Dissolved		Q	NO	6022-94	MW102	
Mercury, Dissolved		Q	NO	6770-94	MW102	
Mercury, Dissolved		Q	NO	5619-95	MW102	
Mercury, Dissolved		Q	NO	6592-95	MW102	
Mercury, Dissolved		Q	NO	7467-95	MW102	
Mercury, Dissolved		Q	NO	8285-95	MW102	
Mercury, Dissolved		Q	NO	4209-94	MW120	
Mercury, Dissolved		Q	NO	5448-95	MW120	
Mercury, Dissolved		Q	NO	4991-94	MW120	
Mercury, dissolved		Q	NO	5088-93	MW120	
Mercury, Dissolved		Q	NO	5900-93	MW120	
Mercury, Dissolved		Q	NO	6034-94	MW120	
Mercury, Dissolved		Q	NO	6928-94	MW120	
Mercury, Dissolved		Q	NO	7065-93	MW120	
Mercury, Dissolved		Q	NO	5452-95	MW121	
Mercury, Dissolved		Q	NO	5456-95	MW122	
Mercury, Dissolved		Q	NO	6596-95	MW122	
Mercury, Dissolved		Q	NO	5460-95	MW133	
Mercury, dissolved		Q	NO	6004-93	MW140	
Mercury, Dissolved		Q	NO	6088-93	MW140	
Mercury, Dissolved		Q	NO	7081-93	MW140	
Mercury, Dissolved		Q	NO	4225-94	MW140	
Mercury, Dissolved		Q	NO	5195-94	MW140	
Mercury, Dissolved		Q	NO	6050-94	MW140	
Mercury, Dissolved		Q	NO	6864-94	MW140	

CORRECTED DATA SET

	MW 102	MW 120	MW 121	MW 122	MW 133	MW 140	Overall	Weighted
	Mercury, Dissolved							
Min	ERR	ERR	ERR	ERR	ERR	ERR	ERR	
Max	ERR	ERR	ERR	ERR	ERR	ERR	ERR	
Average	ERR	ERR	ERR	ERR	ERR	ERR	ERR	ERR
Number	0	0	0	0	0	0	0	

Mercury, Dissolved

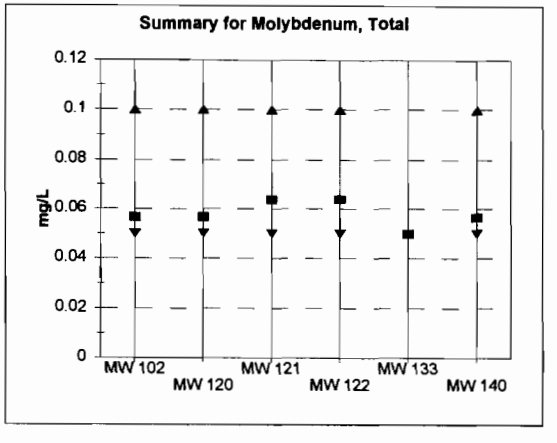
▷ Analysis for Mercury, Dissolved was not performed for any sample; therefore, no value can be assigned to any sample. Generally, this indicates that any detection of mercury in a filtered sample exceeds the background concentration.

Summary of McNairy Background Well Inorganic Chemical Data

ANALYSIS	RESULT	QUALIFIER	DETECT?	SMPID	STATION ID	UNITS
Molybdenum	0.05	<	NO	5174-93	MW102	mg/L
Molybdenum	0.05	<	NO	5940-93	MW102	mg/L
Molybdenum	0.05	<	NO	7295-93	MW102	mg/L
Molybdenum	0.05	<	NO	4268-94	MW102	mg/L
Molybdenum	0.05	<	NO	5183-94	MW102	mg/L
Molybdenum	0.05	<	NO	6022-94	MW102	mg/L
Molybdenum	0.055	<	NO	6770-94	MW102	mg/L
Molybdenum	0.055	<	NO	5281-96	MW102	mg/L
Molybdenum	0.1	<	NO	5141-97	MW102	mg/L
Molybdenum	0.05	<	NO	4209-94	MW120	mg/L
Molybdenum	0.05	<	NO	4991-94	MW120	mg/L
Molybdenum	0.05	<	NO	5088-93	MW120	mg/L
Molybdenum	0.05	<	NO	5900-93	MW120	mg/L
Molybdenum	0.05	<	NO	6034-94	MW120	mg/L
Molybdenum	0.05	<	NO	7065-93	MW120	mg/L
Molybdenum	0.055	<	NO	5293-96	MW120	mg/L
Molybdenum	0.055	<	NO	6928-94	MW120	mg/L
Molybdenum	0.1	<	NO	5143-97	MW120	mg/L
Molybdenum	0.05	<	NO	5206-93	MW121	mg/L
Molybdenum	0.05	<	NO	4864-94	MW121	mg/L
Molybdenum	0.055	<	NO	5500-96	MW121	mg/L
Molybdenum	0.1	<	NO	5144-97	MW121	mg/L
Molybdenum	0.05	<	NO	5246-93	MW122	mg/L
Molybdenum	0.05	<	NO	4868-94	MW122	mg/L
Molybdenum	0.055	<	NO	5301-96	MW122	mg/L
Molybdenum	0.1	<	NO	5145-97	MW122	mg/L
Molybdenum	0.05	<	NO	5282-93	MW133	mg/L
Molybdenum	0.05	<	NO	4761-94	MW133	mg/L
Molybdenum	0.05	<	NO	6004-93	MW140	mg/L
Molybdenum	0.05	<	NO	6088-93	MW140	mg/L
Molybdenum	0.05	<	NO	7081-93	MW140	mg/L
Molybdenum	0.05	<	NO	4225-94	MW140	mg/L
Molybdenum	0.05	<	NO	5195-94	MW140	mg/L
Molybdenum	0.05	<	NO	6050-94	MW140	mg/L
Molybdenum	0.055	<	NO	6864-94	MW140	mg/L
Molybdenum	0.055	<	NO	5313-96	MW140	mg/L
Molybdenum	0.1	<	NO	5146-97	MW140	mg/L

CORRECTED DATA SET

	MW 102	MW 120	MW 121	MW 122	MW 133	MW 140	Overall	Weighted
	Molybdenum							
	0.05	0.05	0.05	0.05	0.05	0.05		
	0.05	0.05	0.05	0.05	0.05	0.05		
	0.05	0.05	0.055	0.055		0.05		
	0.05	0.05	0.1	0.1		0.05		
	0.05	0.05				0.05		
	0.05	0.05				0.05		
	0.055	0.055				0.055		
	0.055	0.055				0.055		
	0.1	0.1				0.1		
Min	0.050	0.050	0.050	0.050	0.050	0.050	0.050	
Max	0.100	0.100	0.100	0.100	0.050	0.100	0.100	
Average	0.057	0.057	0.064	0.064	0.050	0.057	0.058	0.058
Number	9	9	4	4	2	9	37	



All results for this well are below their respective detection limits; therefore, the plot is simply a depiction if the detection limits used for samples taken from these wells.

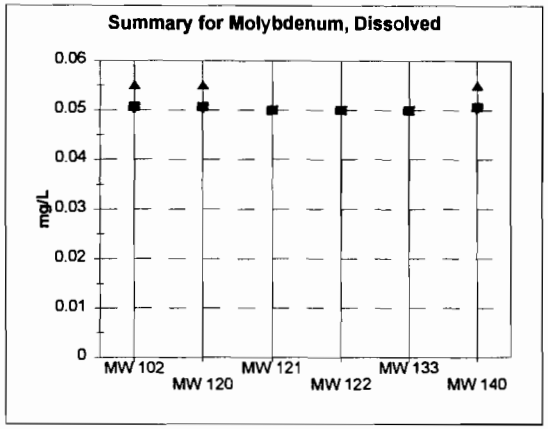
Data for Molybdenum, Total were not modified.

Summary of McNairy Background Well Inorganic Chemical Data

ANALYSIS	RESULT	QUALIFIER	DETECT?	SMPID	STATION ID	UNITS
Molybdenum, Dissolved	0.05	<	NO	5174-93	MW102	mg/L
Molybdenum, Dissolved	0.05	<	NO	7295-93	MW102	mg/L
Molybdenum, Dissolved	0.05	<	NO	4268-94	MW102	mg/L
Molybdenum, Dissolved	0.05	<	NO	5183-94	MW102	mg/L
Molybdenum, Dissolved	0.05	<	NO	6022-94	MW102	mg/L
Molybdenum, Dissolved	0.055	<	NO	6770-94	MW102	mg/L
Molybdenum, Dissolved		Q	NO	5940-93	MW102	
Molybdenum, Dissolved		Q	NO	5281-96	MW102	
Molybdenum, Dissolved	0.05	<	NO	4209-94	MW120	mg/L
Molybdenum, Dissolved	0.05	<	NO	4991-94	MW120	mg/L
Molybdenum, Dissolved	0.05	<	NO	5088-93	MW120	mg/L
Molybdenum, Dissolved	0.05	<	NO	5900-93	MW120	mg/L
Molybdenum, Dissolved	0.05	<	NO	6034-94	MW120	mg/L
Molybdenum, Dissolved	0.05	<	NO	7065-93	MW120	mg/L
Molybdenum, Dissolved	0.055	<	NO	6928-94	MW120	mg/L
Molybdenum, Dissolved		Q	NO	5293-96	MW120	
Molybdenum, Dissolved	0.05	<	NO	5206-93	MW121	mg/L
Molybdenum, Dissolved	0.05	<	NO	4864-94	MW121	mg/L
Molybdenum, Dissolved		Q	NO	5500-96	MW121	
Molybdenum, Dissolved	0.05	<	NO	5246-93	MW122	mg/L
Molybdenum, Dissolved	0.05	<	NO	4868-94	MW122	mg/L
Molybdenum, Dissolved		Q	NO	5301-96	MW122	
Molybdenum, Dissolved	0.05	<	NO	5282-93	MW133	mg/L
Molybdenum, Dissolved	0.05	<	NO	4761-94	MW133	mg/L
Molybdenum, Dissolved	0.05	<	NO	6004-93	MW140	mg/L
Molybdenum, Dissolved	0.05	<	NO	7081-93	MW140	mg/L
Molybdenum, Dissolved	0.05	<	NO	4225-94	MW140	mg/L
Molybdenum, Dissolved	0.05	<	NO	5195-94	MW140	mg/L
Molybdenum, Dissolved	0.05	<	NO	6050-94	MW140	mg/L
Molybdenum, Dissolved	0.055	<	NO	6864-94	MW140	mg/L
Molybdenum, Dissolved		Q	NO	6088-93	MW140	
Molybdenum, Dissolved		Q	NO	5313-96	MW140	

CORRECTED DATA SET

	MW 102	MW 120	MW 121	MW 122	MW 133	MW 140	Overall	Weighted
Molybdenum, Dissolved								
	0.05	0.05	0.05	0.05	0.05	0.05		
	0.05	0.05	0.05	0.05	0.05	0.05		
	0.05	0.05	0.05	0.05		0.05		
	0.05	0.05				0.05		
	0.05	0.05				0.05		
	0.055	0.05				0.055		
	0.05	0.055				0.05		
	0.05	0.05				0.05		
Min	0.050	0.050	0.050	0.050	0.050	0.050	0.050	
Max	0.055	0.055	0.050	0.050	0.050	0.055	0.055	
Average	0.051	0.051	0.050	0.050	0.050	0.051	0.050	0.050
Number	8	8	3	3	2	8	32	



All results for this well are below their respective detection limits; therefore, the plot is simply a depiction if the detection limits used for samples taken from these wells.

MW 102 - Two "Q" qualified results assigned minimum detection limit for samples from this well.

MW 120 - One "Q" qualified result assigned the minimum detection limit for samples from this well.

MW 121 - One "Q" qualified result assigned the minimum detection limit for samples from this well.

MW 122 - One "Q" qualified result assigned minimum detection limit for samples from this well.

MW 133 - Data were not modified.

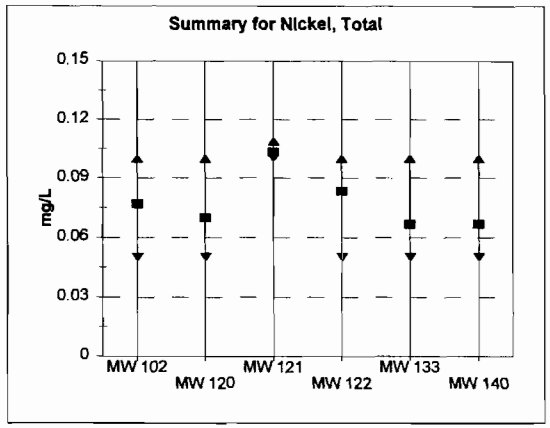
MW 140 - Two "Q" *qualified results assigned minimum* detection limit for samples from this well.

Summary of McNairy Background Well Inorganic Chemical Data

ANALYSIS	RESULT	QUALIFIER	DETECT?	SMPID	STATION ID	UNITS
Nickel	0.05	<	NO	5174-93	MW102	mg/L
Nickel	0.05	<	NO	5940-93	MW102	mg/L
Nickel	0.05	<	NO	7295-93	MW102	mg/L
Nickel	0.05	<	NO	4268-94	MW102	mg/L
Nickel	0.05	<	NO	5183-94	MW102	mg/L
Nickel	0.05	<	NO	6022-94	MW102	mg/L
Nickel	0.1	<	NO	6770-94	MW102	mg/L
Nickel	0.1	<	NO	5619-95	MW102	mg/L
Nickel	0.1	<	NO	6592-95	MW102	mg/L
Nickel	0.1	<	NO	7467-95	MW102	mg/L
Nickel	0.1	<	NO	8285-95	MW102	mg/L
Nickel	0.1	<	NO	5281-96	MW102	mg/L
Nickel	0.1	<	NO	5141-97	MW102	mg/L
Nickel	0.05	<	NO	4209-94	MW120	mg/L
Nickel	0.05	<	NO	4991-94	MW120	mg/L
Nickel	0.05	<	NO	5088-93	MW120	mg/L
Nickel	0.05	<	NO	5900-93	MW120	mg/L
Nickel	0.05	<	NO	6034-94	MW120	mg/L
Nickel	0.05	<	NO	7065-93	MW120	mg/L
Nickel	0.1	<	NO	5143-97	MW120	mg/L
Nickel	0.1	<	NO	5448-95	MW120	mg/L
Nickel	0.1	<	NO	5293-96	MW120	mg/L
Nickel	0.1	<	NO	6928-94	MW120	mg/L
Nickel	0.1	<	NO	5452-95	MW121	mg/L
Nickel	0.1	<	NO	5500-96	MW121	mg/L
Nickel	0.1	<	NO	5144-97	MW121	mg/L
Nickel	0.107		YES	5206-93	MW121	mg/L
Nickel	0.109		YES	4864-94	MW121	mg/L
Nickel	0.05	<	NO	5246-93	MW122	mg/L
Nickel	0.05	<	NO	4868-94	MW122	mg/L
Nickel	0.1	<	NO	5458-95	MW122	mg/L
Nickel	0.1	<	NO	6596-95	MW122	mg/L
Nickel	0.1	<	NO	5301-96	MW122	mg/L
Nickel	0.1	<	NO	5145-97	MW122	mg/L
Nickel	0.05	<	NO	5282-93	MW133	mg/L
Nickel	0.05	<	NO	4761-94	MW133	mg/L
Nickel	0.1	<	NO	5460-95	MW133	mg/L
Nickel	0.05	<	NO	6004-93	MW140	mg/L
Nickel	0.05	<	NO	6088-93	MW140	mg/L
Nickel	0.05	<	NO	7081-93	MW140	mg/L
Nickel	0.05	<	NO	4225-94	MW140	mg/L
Nickel	0.05	<	NO	5195-94	MW140	mg/L
Nickel	0.05	<	NO	6050-94	MW140	mg/L
Nickel	0.1	<	NO	6864-94	MW140	mg/L
Nickel	0.1	<	NO	5313-96	MW140	mg/L
Nickel	0.1	<	NO	5146-97	MW140	mg/L

CORRECTED DATA SET

	MW 102	MW 120	MW 121	MW 122	MW 133	MW 140	Overall	Weighted
	Nickel							
	0.05	0.05	0.1	0.05	0.05	0.05		
	0.05	0.05	0.1	0.05	0.05	0.05		
	0.05	0.05	0.1	0.1	0.1	0.05		
	0.05	0.05	0.107	0.1		0.05		
	0.05	0.05	0.109	0.1		0.05		
	0.05	0.05		0.1		0.05		
	0.1	0.1				0.1		
	0.1	0.1				0.1		
	0.1	0.1				0.1		
	0.1	0.1						
	0.1							
	0.1							
	0.1							
Min	0.050	0.050	0.100	0.050	0.050	0.050	0.050	
Max	0.100	0.100	0.109	0.100	0.100	0.100	0.109	
Average	0.077	0.070	0.103	0.083	0.067	0.067	0.076	0.078
Number	13	10	5	6	3	9	46	



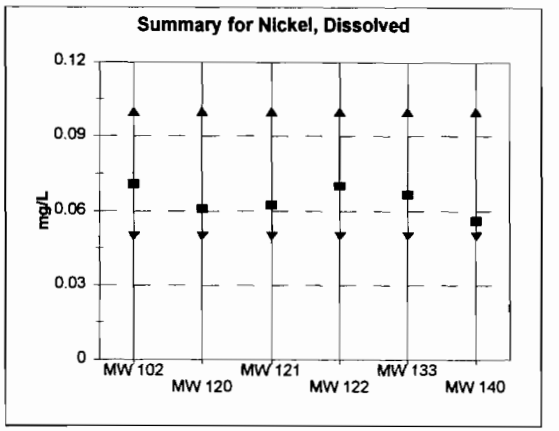
Data for Nickel, Total were not modified.

Summary of McNairy Background Well Inorganic Chemical Data

ANALYSIS	RESULT	QUALIFIER	DETECT?	SMPID	STATION ID	UNITS
Nickel, Dissolved	0.05	<	NO	5174-93	MW102	mg/L
Nickel, Dissolved	0.05	<	NO	5940-93	MW102	mg/L
Nickel, Dissolved	0.05	<	NO	7295-93	MW102	mg/L
Nickel, Dissolved	0.05	<	NO	4268-94	MW102	mg/L
Nickel, Dissolved	0.05	<	NO	5183-94	MW102	mg/L
Nickel, Dissolved	0.05	<	NO	6022-94	MW102	mg/L
Nickel, Dissolved	0.1	<	NO	6770-94	MW102	mg/L
Nickel, Dissolved	0.1	<	NO	5619-95	MW102	mg/L
Nickel, Dissolved	0.1	<	NO	6592-95	MW102	mg/L
Nickel, Dissolved	0.1	<	NO	7467-95	MW102	mg/L
Nickel, Dissolved	0.1	<	NO	8285-95	MW102	mg/L
Nickel, Dissolved		Q	NO	5281-96	MW102	
Nickel, Dissolved	0.05	<	NO	4209-94	MW120	mg/L
Nickel, Dissolved	0.05	<	NO	4991-94	MW120	mg/L
Nickel, Dissolved	0.05	<	NO	5088-93	MW120	mg/L
Nickel, Dissolved	0.05	<	NO	5900-93	MW120	mg/L
Nickel, Dissolved	0.05	<	NO	6034-94	MW120	mg/L
Nickel, Dissolved	0.05	<	NO	7065-93	MW120	mg/L
Nickel, Dissolved	0.1	<	NO	5448-95	MW120	mg/L
Nickel, Dissolved	0.1	<	NO	6928-94	MW120	mg/L
Nickel, Dissolved		Q	NO	5293-96	MW120	
Nickel, Dissolved	0.05	<	NO	5206-93	MW121	mg/L
Nickel, Dissolved	0.05	<	NO	4864-94	MW121	mg/L
Nickel, Dissolved	0.1	<	NO	5452-95	MW121	mg/L
Nickel, Dissolved		Q	NO	5500-96	MW121	
Nickel, Dissolved	0.05	<	NO	5246-93	MW122	mg/L
Nickel, Dissolved	0.05	<	NO	4868-94	MW122	mg/L
Nickel, Dissolved	0.1	<	NO	5456-95	MW122	mg/L
Nickel, Dissolved	0.1	<	NO	6596-95	MW122	mg/L
Nickel, Dissolved		Q	NO	5301-96	MW122	
Nickel, Dissolved	0.05	<	NO	5282-93	MW133	mg/L
Nickel, Dissolved	0.05	<	NO	4761-94	MW133	mg/L
Nickel, Dissolved	0.1	<	NO	5460-95	MW133	mg/L
Nickel, Dissolved	0.05	<	NO	6004-93	MW140	mg/L
Nickel, Dissolved	0.05	<	NO	6088-93	MW140	mg/L
Nickel, Dissolved	0.05	<	NO	7081-93	MW140	mg/L
Nickel, Dissolved	0.05	<	NO	4225-94	MW140	mg/L
Nickel, Dissolved	0.05	<	NO	5195-94	MW140	mg/L
Nickel, Dissolved	0.05	<	NO	6050-94	MW140	mg/L
Nickel, Dissolved	0.1	<	NO	6864-94	MW140	mg/L
Nickel, Dissolved		Q	NO	5313-96	MW140	

CORRECTED DATA SET

	MW 102	MW 120	MW 121	MW 122	MW 133	MW 140	Overall	Weighted
	Nickel, Dissolved							
	0.05	0.05	0.05	0.05	0.05	0.05		
	0.05	0.05	0.05	0.05	0.05	0.05		
	0.05	0.05	0.1	0.1	0.1	0.05		
	0.05	0.05	0.05	0.1		0.05		
	0.05	0.05		0.05		0.05		
	0.05	0.05				0.05		
	0.1	0.1				0.1		
	0.1	0.1				0.05		
	0.1	0.05						
	0.1							
	0.1							
	0.05							
Min	0.050	0.050	0.050	0.050	0.050	0.050	0.050	
Max	0.100	0.100	0.100	0.100	0.100	0.100	0.100	
Average	0.071	0.061	0.063	0.070	0.067	0.056	0.065	0.065
Number	12	9	4	5	3	8	41	



All results for this well are below their respective detection limits; therefore, the plot is simply a depiction if the detection limits used for samples taken from these wells.

MW 102 - One "Q" qualified result assigned the minimum detection limit for samples from this well.

MW 120 - One "Q" qualified result assigned the minimum detection limit for samples from this well.

MW 121 - One "Q" qualified result assigned the minimum detection limit for samples from this well.

MW 122 - One "Q" qualified result assigned minimum detection limit for samples from this well.

MW 133 - Data were not modified.

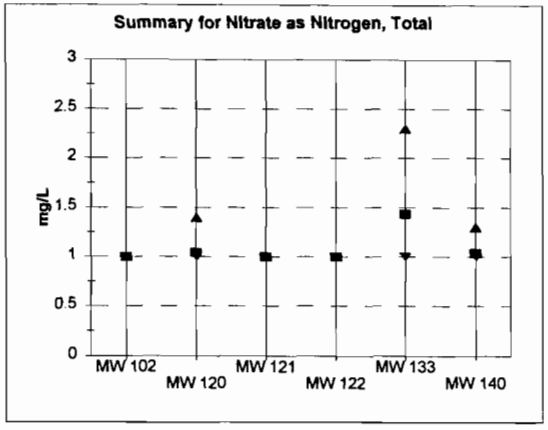
MW 140 - One "Q" qualified result assigned the minimum detection limit for samples from this well.

Summary of McNairy Background Well Inorganic Chemical Data

ANALYSIS	RESULT	QUALIFIER	DETECT?	SMPID	STATION ID	UNITS
Nitrate as Nitrogen	1	<	NO	5174-93	MW102	mg/L
Nitrate as Nitrogen	1	<	NO	5940-93	MW102	mg/L
Nitrate as Nitrogen	1	<	NO	7295-93	MW102	mg/L
Nitrate as Nitrogen	1	<	NO	4268-94	MW102	mg/L
Nitrate as Nitrogen	1	<	NO	5183-94	MW102	mg/L
Nitrate as Nitrogen	1	<	NO	6022-94	MW102	mg/L
Nitrate as Nitrogen	1	<	NO	6770-94	MW102	mg/L
Nitrate as Nitrogen	1	<	NO	5619-95	MW102	mg/L
Nitrate as Nitrogen	1	<	NO	6592-95	MW102	mg/L
Nitrate as Nitrogen	1	<	NO	7467-95	MW102	mg/L
Nitrate as Nitrogen	1	<	NO	8285-95	MW102	mg/L
Nitrate as Nitrogen	1	<	NO	5281-96	MW102	mg/L
Nitrate as Nitrogen	1	<	NO	5141-97	MW102	mg/L
Nitrate as Nitrogen	1	<	NO	4209-94	MW120	mg/L
Nitrate as Nitrogen	1	<	NO	5143-97	MW120	mg/L
Nitrate as Nitrogen	1	<	NO	5448-95	MW120	mg/L
Nitrate as Nitrogen	1	<	NO	5293-96	MW120	mg/L
Nitrate as Nitrogen	1	<	NO	5088-93	MW120	mg/L
Nitrate as Nitrogen	1	<	NO	5900-93	MW120	mg/L
Nitrate as Nitrogen	1	<	NO	6034-94	MW120	mg/L
Nitrate as Nitrogen	1	<	NO	6928-94	MW120	mg/L
Nitrate as Nitrogen	1	<	NO	7065-93	MW120	mg/L
Nitrate as Nitrogen	1.4		YES	4991-94	MW120	mg/L
Nitrate as Nitrogen	1	<	NO	4864-94	MW121	mg/L
Nitrate as Nitrogen	1	<	NO	5452-95	MW121	mg/L
Nitrate as Nitrogen	1	<	NO	5500-96	MW121	mg/L
Nitrate as Nitrogen	1	<	NO	5144-97	MW121	mg/L
Nitrate as Nitrogen	1	<	NO	5246-93	MW122	mg/L
Nitrate as Nitrogen	1	<	NO	4868-94	MW122	mg/L
Nitrate as Nitrogen	1	<	NO	5456-95	MW122	mg/L
Nitrate as Nitrogen	1	<	NO	6596-95	MW122	mg/L
Nitrate as Nitrogen	1	<	NO	5301-96	MW122	mg/L
Nitrate as Nitrogen	1	<	NO	5145-97	MW122	mg/L
Nitrate as Nitrogen	1	<	NO	4761-94	MW133	mg/L
Nitrate as Nitrogen	1	<	NO	5460-95	MW133	mg/L
Nitrate as Nitrogen	2.3		YES	5282-93	MW133	mg/L
Nitrate as Nitrogen	1	<	NO	6004-93	MW140	mg/L
Nitrate as Nitrogen	1	<	NO	6088-93	MW140	mg/L
Nitrate as Nitrogen	1	<	NO	7081-93	MW140	mg/L
Nitrate as Nitrogen	1	<	NO	4225-94	MW140	mg/L
Nitrate as Nitrogen	1	<	NO	6050-94	MW140	mg/L
Nitrate as Nitrogen	1	<	NO	6864-94	MW140	mg/L
Nitrate as Nitrogen	1	<	NO	5313-96	MW140	mg/L
Nitrate as Nitrogen	1	<	NO	5146-97	MW140	mg/L
Nitrate as Nitrogen	1.3		YES	5195-94	MW140	mg/L

CORRECTED DATA SET

	MW 102	MW 120	MW 121	MW 122	MW 133	MW 140	Overall	Weighted
	Nitrate as Nitrogen							
	1	1	1	1	1	1		
	1	1	1	1	1	1		
	1	1	1	1	2.3	1		
	1	1	1	1		1		
	1	1		1		1		
	1	1		1		1		
	1	1				1		
	1	1				1		
	1	1				1.3		
	1	1.4						
	1							
	1							
	1							
Min	1.000	1.000	1.000	1.000	1.000	1.000	1.000	
Max	1.000	1.400	1.000	1.000	2.300	1.300	2.300	
Average	1.000	1.040	1.000	1.000	1.433	1.033	1.044	1.084
Number	13	10	4	6	3	9	45	



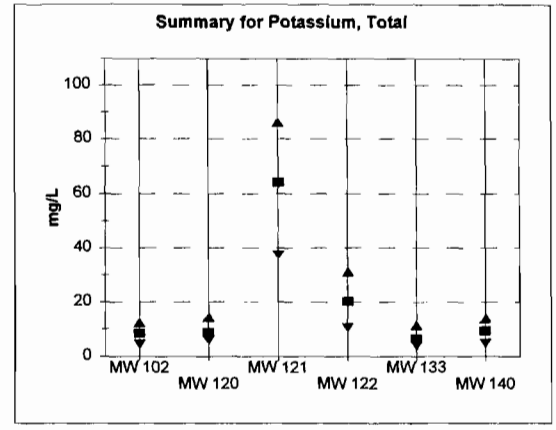
Data for Nitrate as Nitrogen, Total were not modified.

Summary of McNairy Background Well Inorganic Chemical Data

ANALYSIS	RESULT	QUALIFIER	DETECT?	SMPID	STATION ID	UNITS
Potassium	4.37		YES	5183-94	MW102	mg/L
Potassium	4.64		YES	5174-93	MW102	mg/L
Potassium	4.66		YES	5940-93	MW102	mg/L
Potassium	6.45		YES	7295-93	MW102	mg/L
Potassium	7.41		YES	6022-94	MW102	mg/L
Potassium	8.24		YES	5141-97	MW102	mg/L
Potassium	9.12		YES	4268-94	MW102	mg/L
Potassium	9.31		YES	6770-94	MW102	mg/L
Potassium	10.5	<	NO	7467-95	MW102	mg/L
Potassium	10.5	<	NO	5281-96	MW102	mg/L
Potassium	10.5	J<	NO	8285-95	MW102	mg/L
Potassium	12.3		YES	5619-95	MW102	mg/L
Potassium		QX	NO	6592-95	MW102	
Potassium	5.8		YES	6928-94	MW120	mg/L
Potassium	6.2		YES	5448-95	MW120	mg/L
Potassium	6.63		YES	5143-97	MW120	mg/L
Potassium	6.99		YES	5088-93	MW120	mg/L
Potassium	7.31		YES	4209-94	MW120	mg/L
Potassium	8.69		YES	4991-94	MW120	mg/L
Potassium	9.99		YES	6034-94	MW120	mg/L
Potassium	10.21		YES	7065-93	MW120	mg/L
Potassium	10.5	<	NO	5293-96	MW120	mg/L
Potassium	14.4		YES	5900-93	MW120	mg/L
Potassium	37.3		YES	5500-96	MW121	mg/L
Potassium	42		YES	4864-94	MW121	mg/L
Potassium	77		YES	5452-95	MW121	mg/L
Potassium	78		YES	5206-93	MW121	mg/L
Potassium	86.1		YES	5144-97	MW121	mg/L
Potassium	17.5		YES	4868-94	MW122	mg/L
Potassium	18.98		YES	5246-93	MW122	mg/L
Potassium	19		YES	5456-95	MW122	mg/L
Potassium	24.2		YES	5301-96	MW122	mg/L
Potassium	31.1		YES	5145-97	MW122	mg/L
Potassium		QX	NO	6596-95	MW122	
Potassium	3.82		YES	5282-93	MW133	mg/L
Potassium	4.1		YES	4761-94	MW133	mg/L
Potassium	11.4		YES	5460-95	MW133	mg/L
Potassium	4.75		YES	4225-94	MW140	mg/L
Potassium	7.6		YES	6050-94	MW140	mg/L
Potassium	7.67		YES	5195-94	MW140	mg/L
Potassium	8.26		YES	7081-93	MW140	mg/L
Potassium	8.4		YES	6864-94	MW140	mg/L
Potassium	8.82		YES	5146-97	MW140	mg/L
Potassium	10.5	<	NO	5313-96	MW140	mg/L
Potassium	13.23		YES	6004-93	MW140	mg/L
Potassium	13.9		YES	6088-93	MW140	mg/L

CORRECTED DATA SET

	MW 102	MW 120	MW 121	MW 122	MW 133	MW 140	Overall	Weighted
	Potassium							
	4.37	5.8	37.3	17.5	3.82	4.75		
	4.64	6.2	42	18.98	4.1	7.6		
	4.66	6.63	77	19	11.4	7.67		
	6.45	6.99	78	24.2		8.26		
	7.41	7.31	86.1	31.1		8.4		
	8.24	8.69		10.5		8.82		
	9.12	9.99				10.5		
	9.31	10.21				13.23		
	10.5	10.5				13.9		
	10.5	14.4						
	10.5							
	12.3							
	10.5							
Min	4.370	5.800	37.300	10.500	3.820	4.750	3.820	
Max	12.300	14.400	86.100	31.100	11.400	13.900	86.100	
Average	8.346	8.672	64.080	20.213	6.440	9.237	16.073	19.498
Number	13	10	5	6	3	9	46	



MW 102 - One "Q" qualified result assigned the minimum detection limit for samples from this well.

MW 120 - Data were not modified.

MW 121 - High values for samples from this well do not appear to be directly related to tubdity and were not modified.

MW 122 - One "Q" qualified result assigned value detected in a sample from this well because there is no minimum detection limit.

MW 133 - Data were not modified.

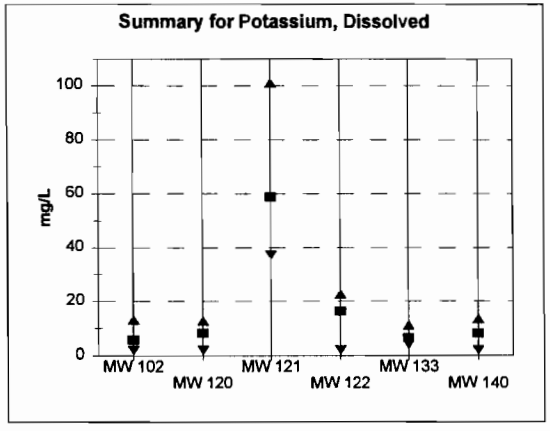
MW 140 - Data were not modified.

Summary of McNairy Background Well Inorganic Chemical Data

ANALYSIS	RESULT	QUALIFIER	DETECT?	SMPID	STATION ID	UNITS
Potassium, Dissolved	2	<	NO	4268-94	MW102	mg/L
Potassium, Dissolved	4.38		YES	5174-93	MW102	mg/L
Potassium, Dissolved	4.54		YES	5940-93	MW102	mg/L
Potassium, Dissolved	4.91		YES	5183-94	MW102	mg/L
Potassium, Dissolved	5.83		YES	7295-93	MW102	mg/L
Potassium, Dissolved	7.66		YES	6022-94	MW102	mg/L
Potassium, Dissolved	9.47		YES	6770-94	MW102	mg/L
Potassium, Dissolved	10.5	*N<	NO	7467-95	MW102	mg/L
Potassium, Dissolved	13.1		YES	5619-95	MW102	mg/L
Potassium, Dissolved		Q	NO	8285-95	MW102	
Potassium, Dissolved		Q	NO	5281-96	MW102	
Potassium, Dissolved		QX	NO	6592-95	MW102	
Potassium, Dissolved	6.37		YES	5088-93	MW120	mg/L
Potassium, Dissolved	6.5		YES	5448-95	MW120	mg/L
Potassium, Dissolved	6.7		YES	6928-94	MW120	mg/L
Potassium, Dissolved	7.44		YES	4209-94	MW120	mg/L
Potassium, Dissolved	9.41		YES	4991-94	MW120	mg/L
Potassium, Dissolved	9.66		YES	7065-93	MW120	mg/L
Potassium, Dissolved	12.5		YES	6034-94	MW120	mg/L
Potassium, Dissolved	12.7		YES	5900-93	MW120	mg/L
Potassium, Dissolved		Q	NO	5293-96	MW120	
Potassium, Dissolved	37.2		YES	5500-96	MW121	mg/L
Potassium, Dissolved	43.5		YES	4864-94	MW121	mg/L
Potassium, Dissolved	53.3		YES	5206-93	MW121	mg/L
Potassium, Dissolved	101		YES	5452-95	MW121	mg/L
Potassium, Dissolved	16.06		YES	5246-93	MW122	mg/L
Potassium, Dissolved	19.8		YES	4868-94	MW122	mg/L
Potassium, Dissolved	21		YES	5456-95	MW122	mg/L
Potassium, Dissolved	22.6		YES	5301-96	MW122	mg/L
Potassium, Dissolved		QX	NO	6596-95	MW122	
Potassium, Dissolved	4.03		YES	5282-93	MW133	mg/L
Potassium, Dissolved	4.57		YES	4761-94	MW133	mg/L
Potassium, Dissolved	11.1		YES	5460-95	MW133	mg/L
Potassium, Dissolved	5.28		YES	4225-94	MW140	mg/L
Potassium, Dissolved	7.14		YES	7081-93	MW140	mg/L
Potassium, Dissolved	7.44		YES	6050-94	MW140	mg/L
Potassium, Dissolved	7.81		YES	5195-94	MW140	mg/L
Potassium, Dissolved	8.7		YES	6864-94	MW140	mg/L
Potassium, Dissolved	13.16		YES	6004-93	MW140	mg/L
Potassium, Dissolved	13.4		YES	6088-93	MW140	mg/L
Potassium, Dissolved		Q	NO	5313-96	MW140	

CORRECTED DATA SET

	MW 102	MW 120	MW 121	MW 122	MW 133	MW 140	Overall	Weighted
	Potassium, Dissolved							
	2	6.37	37.2	16.06	4.03	5.28		
	4.38	6.5	43.5	19.8	4.57	7.14		
	4.54	6.7	53.3	21	11.1	7.44		
	4.91	7.44	101	22.6		7.81		
	5.83	9.41		2		8.7		
	7.66	9.66				13.16		
	9.47	12.5				13.4		
	10.5	12.7				2		
	13.1	2						
	2							
	2							
	2							
Min	2.000	2.000	37.200	2.000	4.030	2.000	2.000	
Max	13.100	12.700	101.000	22.600	11.100	13.400	101.000	
Average	5.699	8.142	58.750	16.292	6.567	8.116	13.238	17.261
Number	12	9	4	5	3	8	41	



MW 102 - Three "Q" qualified results assigned minimum detection limit for samples from this well.

MW 120 - One "Q" qualified result assigned the minimum detection limit for samples across all wells.

MW 121 - Data were not modified.

MW 122 - One "Q" qualified result assigned the minimum detection limit for samples across all wells.

MW 133 - Data were not modified.

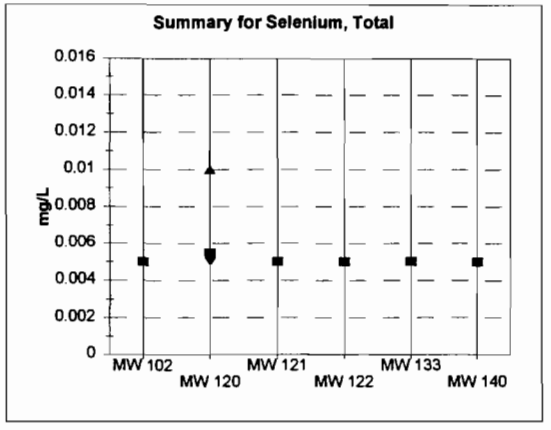
MW 140 - One "Q" qualified result assigned the minimum detection limit for samples across all wells.

Summary of McNairy Background Well Inorganic Chemical Data

ANALYSIS	RESULT	QUALIFIER	DETECT?	SMPID	STATION ID	UNITS
Selenium	0.005	<	NO	5174-93	MW102	mg/L
Selenium	0.005	<	NO	5940-93	MW102	mg/L
Selenium	0.005	<	NO	7295-93	MW102	mg/L
Selenium	0.005	<	NO	4268-94	MW102	mg/L
Selenium	0.005	<	NO	5183-94	MW102	mg/L
Selenium	0.005	<	NO	6022-94	MW102	mg/L
Selenium	0.005	<	NO	6770-94	MW102	mg/L
Selenium	0.005	<	NO	6592-95	MW102	mg/L
Selenium	0.005	<	NO	7467-95	MW102	mg/L
Selenium	0.005	<	NO	8285-95	MW102	mg/L
Selenium	0.005	<	NO	5281-96	MW102	mg/L
Selenium	0.005	<	NO	5141-97	MW102	mg/L
Selenium	0.005	<N	NO	5619-95	MW102	mg/L
Selenium	0.005	<	NO	4209-94	MW120	mg/L
Selenium	0.005	<	NO	5143-97	MW120	mg/L
Selenium	0.005	<	NO	5448-95	MW120	mg/L
Selenium	0.005	<	NO	4991-94	MW120	mg/L
Selenium	0.005	<	NO	5900-93	MW120	mg/L
Selenium	0.005	<	NO	6034-94	MW120	mg/L
Selenium	0.005	<	NO	6928-94	MW120	mg/L
Selenium	0.005	<	NO	7065-93	MW120	mg/L
Selenium	0.005	<B	NO	5293-96	MW120	mg/L
Selenium	0.01	<	NO	5088-93	MW120	mg/L
Selenium	0.005	<	NO	5452-95	MW121	mg/L
Selenium	0.005	<	NO	5144-97	MW121	mg/L
Selenium	0.005	<B	NO	5500-96	MW121	mg/L
Selenium	0.005	<	NO	5456-95	MW122	mg/L
Selenium	0.005	<	NO	6596-95	MW122	mg/L
Selenium	0.005	<	NO	5301-96	MW122	mg/L
Selenium	0.005	<	NO	5145-97	MW122	mg/L
Selenium	0.005	<	NO	5460-95	MW133	mg/L
Selenium	0.005	<	NO	6004-93	MW140	mg/L
Selenium	0.005	<	NO	6088-93	MW140	mg/L
Selenium	0.005	<	NO	7081-93	MW140	mg/L
Selenium	0.005	<	NO	4225-94	MW140	mg/L
Selenium	0.005	<	NO	5195-94	MW140	mg/L
Selenium	0.005	<	NO	6050-94	MW140	mg/L
Selenium	0.005	<	NO	6864-94	MW140	mg/L
Selenium	0.005	<	NO	5313-96	MW140	mg/L
Selenium	0.005	<	NO	5146-97	MW140	mg/L

CORRECTED DATA SET

	MW 102	MW 120	MW 121	MW 122	MW 133	MW 140	Overall	Weighted
	Selenium							
	0.005	0.005	0.005	0.005	0.005	0.005		
	0.005	0.005	0.005	0.005		0.005		
	0.005	0.005	0.005	0.005		0.005		
	0.005	0.005		0.005		0.005		
	0.005	0.005				0.005		
	0.005	0.005				0.005		
	0.005	0.005				0.005		
	0.005	0.005				0.005		
	0.005	0.005				0.005		
	0.005	0.01						
	0.005							
	0.005							
	0.005							
Min	0.005	0.005	0.005	0.005	0.005	0.005	0.005	
Max	0.005	0.010	0.005	0.005	0.005	0.005	0.010	
Average	0.005	0.006	0.005	0.005	0.005	0.005	0.005	0.005
Number	13	10	3	4	1	9	40	



All results for this well are below their respective detection limits; therefore, the plot is simply a depiction if the detection limits used for samples taken from these wells.

Data for Selenium, Total were not modified.

Summary of McNairy Background Well Inorganic Chemical Data

ANALYSIS	RESULT	QUALIFIER	DETECT?	SMPID	STATION ID	UNITS
Selenium, Dissolved		Q	NO	5174-93	MW102	
Selenium, Dissolved		Q	NO	5940-93	MW102	
Selenium, Dissolved		Q	NO	7295-93	MW102	
Selenium, Dissolved		Q	NO	4268-94	MW102	
Selenium, Dissolved		Q	NO	5183-94	MW102	
Selenium, Dissolved		Q	NO	6022-94	MW102	
Selenium, Dissolved		Q	NO	6770-94	MW102	
Selenium, Dissolved		Q	NO	5619-95	MW102	
Selenium, Dissolved		Q	NO	6592-95	MW102	
Selenium, Dissolved		Q	NO	7467-95	MW102	
Selenium, Dissolved		Q	NO	8285-95	MW102	
Selenium, Dissolved		Q	NO	5281-96	MW102	
Selenium, Dissolved		Q	NO	5141-97	MW102	
Selenium, Dissolved		Q	NO	4209-94	MW120	
Selenium, Dissolved		Q	NO	5143-97	MW120	
Selenium, Dissolved		Q	NO	5448-95	MW120	
Selenium, Dissolved		Q	NO	5293-96	MW120	
Selenium, Dissolved		Q	NO	4991-94	MW120	
Selenium, Dissolved		Q	NO	5088-93	MW120	
Selenium, Dissolved		Q	NO	5900-93	MW120	
Selenium, Dissolved		Q	NO	6034-94	MW120	
Selenium, Dissolved		Q	NO	6928-94	MW120	
Selenium, Dissolved		Q	NO	7065-93	MW120	
Selenium, Dissolved		Q	NO	5452-95	MW121	
Selenium, Dissolved		Q	NO	5500-96	MW121	
Selenium, Dissolved		Q	NO	5144-97	MW121	
Selenium, Dissolved		Q	NO	5456-95	MW122	
Selenium, Dissolved		Q	NO	6596-95	MW122	
Selenium, Dissolved		Q	NO	5301-96	MW122	
Selenium, Dissolved		Q	NO	5145-97	MW122	
Selenium, Dissolved		Q	NO	5460-95	MW133	
Selenium, Dissolved		Q	NO	6004-93	MW140	
Selenium, Dissolved		Q	NO	6088-93	MW140	
Selenium, Dissolved		Q	NO	7081-93	MW140	
Selenium, Dissolved		Q	NO	4225-94	MW140	
Selenium, Dissolved		Q	NO	5195-94	MW140	
Selenium, Dissolved		Q	NO	6050-94	MW140	
Selenium, Dissolved		Q	NO	6864-94	MW140	
Selenium, Dissolved		Q	NO	5313-96	MW140	
Selenium, Dissolved		Q	NO	5146-97	MW140	

CORRECTED DATA SET

	MW 102	MW 120	MW 121	MW 122	MW 133	MW 140	Overall	Weighted
	Selenium, Dissolved							
Min	ERR	ERR	ERR	ERR	ERR	ERR	ERR	
Max	ERR	ERR	ERR	ERR	ERR	ERR	ERR	
Average	ERR	ERR	ERR	ERR	ERR	ERR	ERR	ERR
Number	0	0	0	0	0	0	0	

Selenium, Dissolved

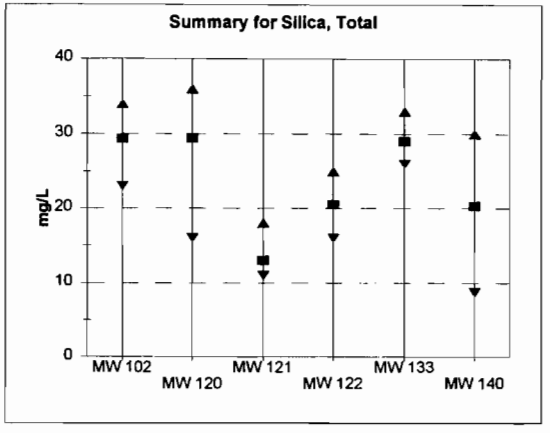
▷ Analysis for Selenium, Dissolved was not performed for any sample; therefore, no value can be assigned to any sample. Generally, this indicates that any detection of selanium in a filtered sample exceeds the background concentration.

Summary of McNairy Background Well Inorganic Chemical Data

ANALYSIS	RESULT	QUALIFIER	DETECT?	SMPID	STATION ID	UNITS
Silica	23		YES	5174-93	MW102	mg/L
Silica	24		YES	6022-94	MW102	mg/L
Silica	25		YES	5183-94	MW102	mg/L
Silica	25		YES	6770-94	MW102	mg/L
Silica	25		YES	5141-97	MW102	mg/L
Silica	31		YES	4268-94	MW102	mg/L
Silica	31		YES	5619-95	MW102	mg/L
Silica	31		YES	6592-95	MW102	mg/L
Silica	32		YES	5940-93	MW102	mg/L
Silica	32		YES	8285-95	MW102	mg/L
Silica	34		YES	7295-93	MW102	mg/L
Silica	34		YES	7467-95	MW102	mg/L
Silica	34		YES	5281-96	MW102	mg/L
Silica	16		YES	5143-97	MW120	mg/L
Silica	25		YES	4991-94	MW120	mg/L
Silica	27		YES	6034-94	MW120	mg/L
Silica	29		YES	5900-93	MW120	mg/L
Silica	29		YES	6928-94	MW120	mg/L
Silica	32		YES	5448-95	MW120	mg/L
Silica	32		YES	7065-93	MW120	mg/L
Silica	33		YES	5088-93	MW120	mg/L
Silica	35		YES	4209-94	MW120	mg/L
Silica	36		YES	5293-96	MW120	mg/L
Silica	11		YES	4864-94	MW121	mg/L
Silica	11		YES	5144-97	MW121	mg/L
Silica	12		YES	5452-95	MW121	mg/L
Silica	18		YES	5500-96	MW121	mg/L
Silica	16		YES	5145-97	MW122	mg/L
Silica	19		YES	5301-96	MW122	mg/L
Silica	20		YES	5246-93	MW122	mg/L
Silica	21		YES	5456-95	MW122	mg/L
Silica	22		YES	6596-95	MW122	mg/L
Silica	25		YES	4868-94	MW122	mg/L
Silica	26		YES	4761-94	MW133	mg/L
Silica	28		YES	5282-93	MW133	mg/L
Silica	33		YES	5460-95	MW133	mg/L
Silica	8.73		YES	6004-93	MW140	mg/L
Silica	19		YES	5195-94	MW140	mg/L
Silica	19		YES	6050-94	MW140	mg/L
Silica	19		YES	6864-94	MW140	mg/L
Silica	19		YES	5146-97	MW140	mg/L
Silica	21		YES	6088-93	MW140	mg/L
Silica	22		YES	7081-93	MW140	mg/L
Silica	25		YES	4225-94	MW140	mg/L
Silica	30		YES	5313-96	MW140	mg/L

CORRECTED DATA SET

	MW 102	MW 120	MW 121	MW 122	MW 133	MW 140	Overall	Weighted
	Silica							
	23	16	11	16	26	8.73		
	24	25	11	19	28	19		
	25	27	12	20	33	19		
	25	29	18	21		19		
	25	29		22		19		
	31	32		25		21		
	31	32				22		
	31	33				25		
	32	35				30		
	32	36						
	34							
	34							
	34							
Min	23.000	16.000	11.000	16.000	26.000	8.730	8.730	
Max	34.000	36.000	18.000	25.000	33.000	30.000	36.000	
Average	29.308	29.400	13.000	20.500	29.000	20.303	24.883	23.585
Number	13	10	4	6	3	9	45	



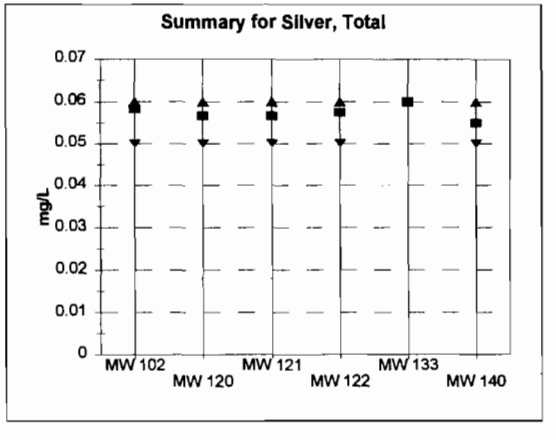
Data for Silica, Total were not modified.

Summary of McNairy Background Well Inorganic Chemical Data

ANALYSIS	RESULT	QUALIFIER	DETECT?	SMPID	STATION ID	UNITS
Silver	0.05	<	NO	5141-97	MW102	mg/L
Silver	0.06	<	NO	5619-95	MW102	mg/L
Silver	0.06	<	NO	6592-95	MW102	mg/L
Silver	0.06	<	NO	7467-95	MW102	mg/L
Silver	0.06	<	NO	8285-95	MW102	mg/L
Silver	0.06	N*<	NO	5281-96	MW102	mg/L
Silver	0.05	<	NO	5143-97	MW120	mg/L
Silver	0.06	<N	NO	5448-95	MW120	mg/L
Silver	0.06	<X	NO	5293-96	MW120	mg/L
Silver	0.05	<	NO	5144-97	MW121	mg/L
Silver	0.06	<N	NO	5452-95	MW121	mg/L
Silver	0.06	<X	NO	5500-96	MW121	mg/L
Silver	0.05	<	NO	5145-97	MW122	mg/L
Silver	0.06	<	NO	6596-95	MW122	mg/L
Silver	0.06	<N	NO	5456-95	MW122	mg/L
Silver	0.06	N*<	NO	5301-96	MW122	mg/L
Silver	0.06	<	NO	5460-95	MW133	mg/L
Silver	0.05	<	NO	5146-97	MW140	mg/L
Silver	0.06	N*<	NO	5313-96	MW140	mg/L

CORRECTED DATA SET

	MW 102	MW 120	MW 121	MW 122	MW 133	MW 140	Overall	Weighted
Silver								
	0.05	0.05	0.05	0.05	0.06	0.05		
	0.06	0.06	0.06	0.06		0.06		
	0.06	0.06	0.06	0.06				
	0.06			0.06				
	0.06							
	0.06							
Min	0.050	0.050	0.050	0.050	0.060	0.050	0.050	
Max	0.060	0.060	0.060	0.060	0.060	0.060	0.060	
Average	0.058	0.057	0.057	0.058	0.060	0.055	0.057	0.057
Number	6	3	3	4	1	2	19	



All results for this well are below their respective detection limits; therefore, the plot is simply a depiction if the detection limits used for samples taken from these wells.

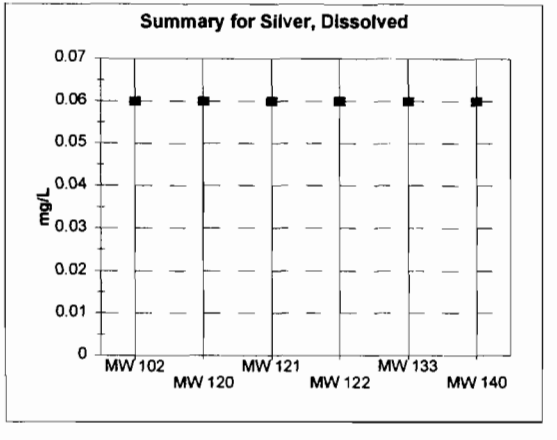
Data for Silver, Total were not modified.

Summary of McNairy Background Well Inorganic Chemical Data

ANALYSIS	RESULT	QUALIFIER	DETECT?	SMPID	STATION ID	UNITS
Silver, Dissolved	0.06	<	NO	5619-95	MW102	mg/L
Silver, Dissolved	0.06	<	NO	6592-95	MW102	mg/L
Silver, Dissolved	0.06	<	NO	7467-95	MW102	mg/L
Silver, Dissolved		Q	NO	8285-95	MW102	
Silver, Dissolved		Q	NO	5281-96	MW102	
Silver, Dissolved		Q	NO	5141-97	MW102	
Silver, Dissolved	0.06	<	NO	5448-95	MW120	mg/L
Silver, Dissolved		Q	NO	5143-97	MW120	
Silver, Dissolved		Q	NO	5293-96	MW120	
Silver, Dissolved	0.06	<	NO	5452-95	MW121	mg/L
Silver, Dissolved		Q	NO	5500-96	MW121	
Silver, Dissolved		Q	NO	5144-97	MW121	
Silver, Dissolved	0.06	<	NO	5456-95	MW122	mg/L
Silver, Dissolved		Q	NO	6596-95	MW122	
Silver, Dissolved		Q	NO	5301-96	MW122	
Silver, Dissolved		Q	NO	5145-97	MW122	
Silver, Dissolved	0.06	<	NO	5460-95	MW133	mg/L
Silver, Dissolved		Q	NO	5313-96	MW140	
Silver, Dissolved		Q	NO	5146-97	MW140	

CORRECTED DATA SET

	MW 102	MW 120	MW 121	MW 122	MW 133	MW 140	Overall	Weighted
	Silver, Dissolved							
	0.06	0.06	0.06	0.06	0.06	0.06		
	0.06	0.06	0.06	0.06		0.06		
	0.06	0.06	0.06	0.06				
	0.06			0.06				
	0.06							
	0.06							
Min	0.060	0.060	0.060	0.060	0.060	0.060	0.060	
Max	0.060	0.060	0.060	0.060	0.060	0.060	0.060	
Average	0.060	0.060	0.060	0.060	0.060	0.060	0.060	0.060
Number	6	3	3	4	1	2	19	



All results for this well are below their respective detection limits; therefore, the plot is simply a depiction if the detection limits used for samples taken from these wells.

MW 102 - Three "Q" qualified results assigned the minimum detection limit for samples from this well.

MW 120 - Two "Q" qualified results assigned the minimum detection limit for samples from this well.

MW 121 - Two "Q" qualified results assigned the minimum detection limit for samples from this well.

MW 122 - Three "Q" qualified results assigned the minimum detection limit for samples from this well.

MW 133 - Data were not modified.

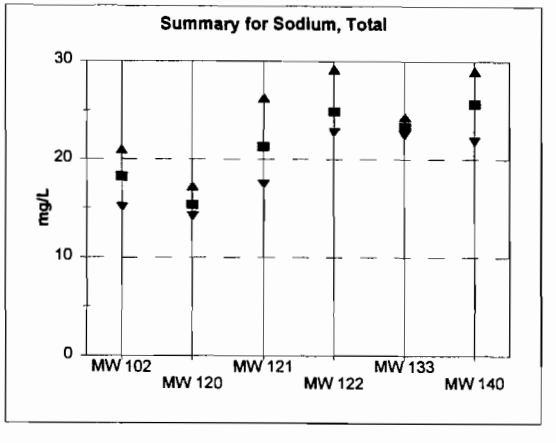
MW 140 - Two "Q" qualified results assigned the minimum detection limit for samples across all wells.

Summary of McNairy Background Well Inorganic Chemical Data

ANALYSIS	RESULT	QUALIFIER	DETECT?	SMPID	STATION ID	UNITS
Sodium	15		YES	5183-94	MW102	mg/L
Sodium	16.2		YES	5940-93	MW102	mg/L
Sodium	16.5		YES	7295-93	MW102	mg/L
Sodium	16.6		YES	6022-94	MW102	mg/L
Sodium	17.26		YES	5174-93	MW102	mg/L
Sodium	17.6		YES	4268-94	MW102	mg/L
Sodium	18.6	*N	YES	7467-95	MW102	mg/L
Sodium	18.8	N	YES	5141-97	MW102	mg/L
Sodium	19.54		YES	6770-94	MW102	mg/L
Sodium	19.6		YES	6592-95	MW102	mg/L
Sodium	20	B	YES	5619-95	MW102	mg/L
Sodium	20	N	YES	8285-95	MW102	mg/L
Sodium	21	N	YES	5281-96	MW102	mg/L
Sodium	14.1		YES	5088-93	MW120	mg/L
Sodium	14.7	N	YES	5293-96	MW120	mg/L
Sodium	14.9		YES	5900-93	MW120	mg/L
Sodium	15		YES	5448-95	MW120	mg/L
Sodium	15.1		YES	4209-94	MW120	mg/L
Sodium	15.3		YES	4991-94	MW120	mg/L
Sodium	15.4		YES	6034-94	MW120	mg/L
Sodium	15.5	N	YES	5143-97	MW120	mg/L
Sodium	15.6		YES	6928-94	MW120	mg/L
Sodium	17.2		YES	7065-93	MW120	mg/L
Sodium	17.4		YES	4864-94	MW121	mg/L
Sodium	19	N	YES	5500-96	MW121	mg/L
Sodium	20.8		YES	5206-93	MW121	mg/L
Sodium	23		YES	5452-95	MW121	mg/L
Sodium	26.3	N	YES	5144-97	MW121	mg/L
Sodium	22.8	J	YES	6596-95	MW122	mg/L
Sodium	23.23		YES	5246-93	MW122	mg/L
Sodium	24		YES	4868-94	MW122	mg/L
Sodium	24		YES	5456-95	MW122	mg/L
Sodium	26.3	N	YES	5301-96	MW122	mg/L
Sodium	29.2	N	YES	5145-97	MW122	mg/L
Sodium	22.5		YES	5282-93	MW133	mg/L
Sodium	23.3		YES	4761-94	MW133	mg/L
Sodium	24.4		YES	5460-95	MW133	mg/L
Sodium	21.9	N	YES	5313-96	MW140	mg/L
Sodium	24		YES	6864-94	MW140	mg/L
Sodium	24.5		YES	5195-94	MW140	mg/L
Sodium	24.7	N	YES	5146-97	MW140	mg/L
Sodium	25		YES	7081-93	MW140	mg/L
Sodium	25.6		YES	4225-94	MW140	mg/L
Sodium	28.11		YES	6004-93	MW140	mg/L
Sodium	28.4		YES	6050-94	MW140	mg/L
Sodium	29		YES	6088-93	MW140	mg/L

CORRECTED DATA SET

	MW 102	MW 120	MW 121	MW 122	MW 133	MW 140	Overall	Weighted
	Sodium							
	15	14.1	17.4	22.8	22.5	21.9		
	16.2	14.7	19	23.23	23.3	24		
	16.5	14.9	20.8	24	24.4	24.5		
	16.6	15	23	24		24.7		
	17.26	15.1	26.3	26.3		25		
	17.6	15.3		29.2		25.6		
	18.6	15.4				28.11		
	18.8	15.5				28.4		
	19.54	15.6				29		
	19.6	17.2						
	20							
	20							
	21							
Min	15.000	14.100	17.400	22.800	22.500	21.900	14.100	
Max	21.000	17.200	26.300	29.200	24.400	29.000	29.200	
Average	18.208	15.280	21.300	24.922	23.400	25.690	20.586	21.467
Number	13	10	5	6	3	9	46	



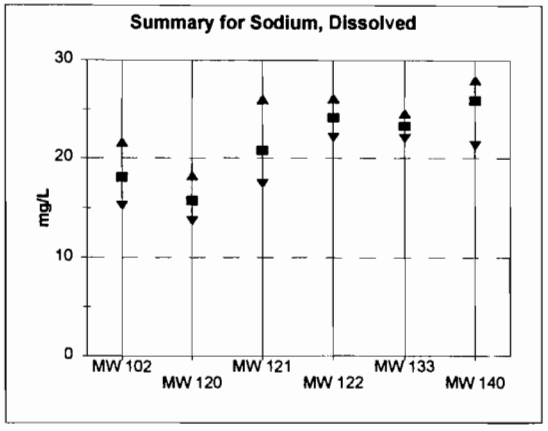
Data for Sodium, Total were not modified.

Summary of McNairy Background Well Inorganic Chemical Data

ANALYSIS	RESULT	QUALIFIER	DETECT?	SMPID	STATION ID	UNITS
Sodium, Dissolved	15.2	N	YES	7467-95	MW102	mg/L
Sodium, Dissolved	15.7		YES	5940-93	MW102	mg/L
Sodium, Dissolved	15.7		YES	5183-94	MW102	mg/L
Sodium, Dissolved	16.8		YES	7295-93	MW102	mg/L
Sodium, Dissolved	18		YES	5174-93	MW102	mg/L
Sodium, Dissolved	18.3		YES	6022-94	MW102	mg/L
Sodium, Dissolved	18.6	N	YES	6592-95	MW102	mg/L
Sodium, Dissolved	18.8	N*	YES	5281-96	MW102	mg/L
Sodium, Dissolved	18.9	N*	YES	8285-95	MW102	mg/L
Sodium, Dissolved	19.4		YES	6770-94	MW102	mg/L
Sodium, Dissolved	19.9		YES	4268-94	MW102	mg/L
Sodium, Dissolved	21.6	B	YES	5619-95	MW102	mg/L
Sodium, Dissolved	13.7	N	YES	5293-96	MW120	mg/L
Sodium, Dissolved	13.8		YES	5088-93	MW120	mg/L
Sodium, Dissolved	14.9		YES	5900-93	MW120	mg/L
Sodium, Dissolved	15.5		YES	4991-94	MW120	mg/L
Sodium, Dissolved	15.9		YES	4209-94	MW120	mg/L
Sodium, Dissolved	16		YES	5448-95	MW120	mg/L
Sodium, Dissolved	16		YES	6928-94	MW120	mg/L
Sodium, Dissolved	17.4		YES	6034-94	MW120	mg/L
Sodium, Dissolved	18.23		YES	7065-93	MW120	mg/L
Sodium, Dissolved	17.4	N	YES	5500-96	MW121	mg/L
Sodium, Dissolved	19.5		YES	4864-94	MW121	mg/L
Sodium, Dissolved	20.1		YES	5206-93	MW121	mg/L
Sodium, Dissolved	26		YES	5452-95	MW121	mg/L
Sodium, Dissolved	22.07		YES	5246-93	MW122	mg/L
Sodium, Dissolved	22.8		YES	6596-95	MW122	mg/L
Sodium, Dissolved	23.7	N	YES	5301-96	MW122	mg/L
Sodium, Dissolved	26		YES	5456-95	MW122	mg/L
Sodium, Dissolved	26.1		YES	4868-94	MW122	mg/L
Sodium, Dissolved	22.03		YES	5282-93	MW133	mg/L
Sodium, Dissolved	23.2		YES	4761-94	MW133	mg/L
Sodium, Dissolved	24.6	B	YES	5460-95	MW133	mg/L
Sodium, Dissolved	21.3	N*	YES	5313-96	MW140	mg/L
Sodium, Dissolved	25.3		YES	5195-94	MW140	mg/L
Sodium, Dissolved	25.7		YES	7081-93	MW140	mg/L
Sodium, Dissolved	25.83		YES	6050-94	MW140	mg/L
Sodium, Dissolved	26.5		YES	4225-94	MW140	mg/L
Sodium, Dissolved	27	J	YES	6864-94	MW140	mg/L
Sodium, Dissolved	27.6		YES	6088-93	MW140	mg/L
Sodium, Dissolved	27.98		YES	6004-93	MW140	mg/L

CORRECTED DATA SET

	MW 102	MW 120	MW 121	MW 122	MW 133	MW 140	Overall	Weighted
	Sodium, Dissolved							
	15.2	13.7	17.4	22.07	22.03	21.3		
	15.7	13.8	19.5	22.8	23.2	25.3		
	15.7	14.9	20.1	23.7	24.6	25.7		
	16.8	15.5	26	26		25.83		
	18	15.9		26.1		26.5		
	18.3	16				27		
	18.6	16				27.6		
	18.8	17.4				27.98		
	18.9	18.23						
	19.4							
	19.9							
	21.6							
Min	15.200	13.700	17.400	22.070	22.030	21.300	13.700	
Max	21.600	18.230	26.000	26.100	24.600	27.980	27.980	
Average	18.075	15.714	20.750	24.134	23.277	25.901	20.464	21.309
Number	12	9	4	5	3	8	41	



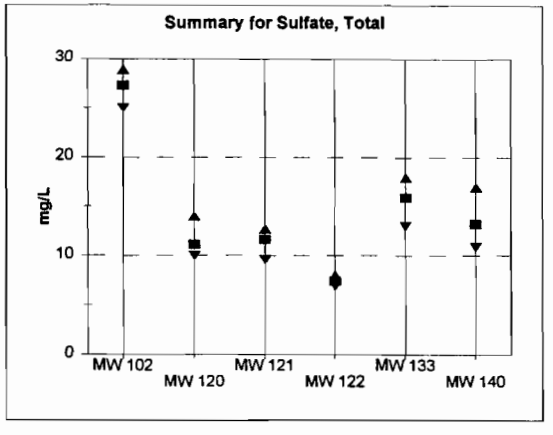
Data for Sodium, Dissolved were not modified.

Summary of McNairy Background Well Inorganic Chemical Data

ANALYSIS	RESULT	QUALIFIER	DETECT?	SMPID	STATION ID	UNITS
Sulfate	25		YES	5174-93	MW102	mg/L
Sulfate	25		YES	5940-93	MW102	mg/L
Sulfate	26.2		YES	6022-94	MW102	mg/L
Sulfate	27.4		YES	7467-95	MW102	mg/L
Sulfate	27.5		YES	5619-95	MW102	mg/L
Sulfate	27.7		YES	6770-94	MW102	mg/L
Sulfate	27.8		YES	5141-97	MW102	mg/L
Sulfate	28.4		YES	6592-95	MW102	mg/L
Sulfate	28.8		YES	8285-95	MW102	mg/L
Sulfate	28.9		YES	5281-96	MW102	mg/L
Sulfate	10		YES	5900-93	MW120	mg/L
Sulfate	10.1		YES	5143-97	MW120	mg/L
Sulfate	10.4		YES	5293-96	MW120	mg/L
Sulfate	10.6		YES	5448-95	MW120	mg/L
Sulfate	10.9		YES	6928-94	MW120	mg/L
Sulfate	11.1		YES	6034-94	MW120	mg/L
Sulfate	12		YES	5088-93	MW120	mg/L
Sulfate	14		YES	4991-94	MW120	mg/L
Sulfate	9.6		YES	5452-95	MW121	mg/L
Sulfate	12		YES	4864-94	MW121	mg/L
Sulfate	12.2		YES	5144-97	MW121	mg/L
Sulfate	12.7		YES	5500-96	MW121	mg/L
Sulfate	6.9		YES	5145-97	MW122	mg/L
Sulfate	7.1		YES	6596-95	MW122	mg/L
Sulfate	7.1		YES	5301-96	MW122	mg/L
Sulfate	7.3		YES	5456-95	MW122	mg/L
Sulfate	8		YES	5246-93	MW122	mg/L
Sulfate	8		YES	4868-94	MW122	mg/L
Sulfate	13		YES	5282-93	MW133	mg/L
Sulfate	16.8		YES	5460-95	MW133	mg/L
Sulfate	18		YES	4761-94	MW133	mg/L
Sulfate	10.9		YES	5146-97	MW140	mg/L
Sulfate	11.2		YES	5313-96	MW140	mg/L
Sulfate	12.2		YES	6864-94	MW140	mg/L
Sulfate	12.9		YES	6050-94	MW140	mg/L
Sulfate	15		YES	6088-93	MW140	mg/L
Sulfate	17		YES	6004-93	MW140	mg/L

CORRECTED DATA SET

	MW 102	MW 120	MW 121	MW 122	MW 133	MW 140	Overall	Weighted
	Sulfate							
	25	10	9.6	6.9	13	10.9		
	25	10.1	12	7.1	16.8	11.2		
	26.2	10.4	12.2	7.1	18	12.2		
	27.4	10.6	12.7	7.3		12.9		
	27.5	10.9		8		15		
	27.7	11.1		8		17		
	27.8	12						
	28.4	14						
	28.8							
	28.9							
Min	25.000	10.000	9.600	6.900	13.000	10.900	6.900	
Max	28.900	14.000	12.700	8.000	18.000	17.000	28.900	
Average	27.270	11.138	11.625	7.400	15.933	13.200	15.668	14.428
Number	10	8	4	6	3	6	37	



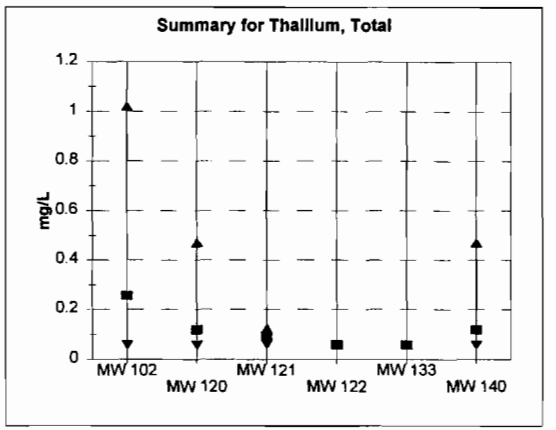
Data for Sulfate, Total were not modified.

Summary of McNairy Background Well Inorganic Chemical Data

ANALYSIS	RESULT	QUALIFIER	DETECT?	SMPID	STATION ID	UNITS
Thallium	0.056	<	NO	5174-93	MW102	mg/L
Thallium	0.06	<	NO	5940-93	MW102	mg/L
Thallium	0.06	<	NO	7295-93	MW102	mg/L
Thallium	0.06	<	NO	4268-94	MW102	mg/L
Thallium	0.06	<	NO	5183-94	MW102	mg/L
Thallium	0.47	<	NO	6770-94	MW102	mg/L
Thallium	1.02		YES	6022-94	MW102	mg/L
Thallium	0.056	<	NO	5088-93	MW120	mg/L
Thallium	0.06	<	NO	4209-94	MW120	mg/L
Thallium	0.06	<	NO	4991-94	MW120	mg/L
Thallium	0.06	<	NO	5900-93	MW120	mg/L
Thallium	0.06	<	NO	6034-94	MW120	mg/L
Thallium	0.06	<	NO	7065-93	MW120	mg/L
Thallium	0.47	<	NO	6928-94	MW120	mg/L
Thallium	0.06	<	NO	4864-94	MW121	mg/L
Thallium	0.123		YES	5206-93	MW121	mg/L
Thallium	0.06	<	NO	5246-93	MW122	mg/L
Thallium	0.06	<	NO	4868-94	MW122	mg/L
Thallium	0.056	<	NO	5282-93	MW133	mg/L
Thallium	0.06	<	NO	4761-94	MW133	mg/L
Thallium	0.056	<	NO	6004-93	MW140	mg/L
Thallium	0.06	<	NO	6088-93	MW140	mg/L
Thallium	0.06	<	NO	7081-93	MW140	mg/L
Thallium	0.06	<	NO	4225-94	MW140	mg/L
Thallium	0.06	<	NO	5195-94	MW140	mg/L
Thallium	0.06	<	NO	6050-94	MW140	mg/L
Thallium	0.47	<	NO	6864-94	MW140	mg/L

CORRECTED DATA SET

	MW 102	MW 120	MW 121	MW 122	MW 133	MW 140	Overall	Weighted
	Thallium							
	0.056	0.056	0.06	0.06	0.056	0.056		
	0.06	0.06	0.123	0.06	0.06	0.06		
	0.06	0.06				0.06		
	0.06	0.06				0.06		
	0.06	0.06				0.06		
	0.47	0.06				0.06		
	1.02	0.47				0.47		
Min	0.056	0.056	0.060	0.060	0.056	0.056	0.056	
Max	1.020	0.470	0.123	0.060	0.060	0.470	1.020	
Average	0.255	0.118	0.092	0.060	0.058	0.118	0.143	0.117
Number	7	7	2	2	2	7	27	



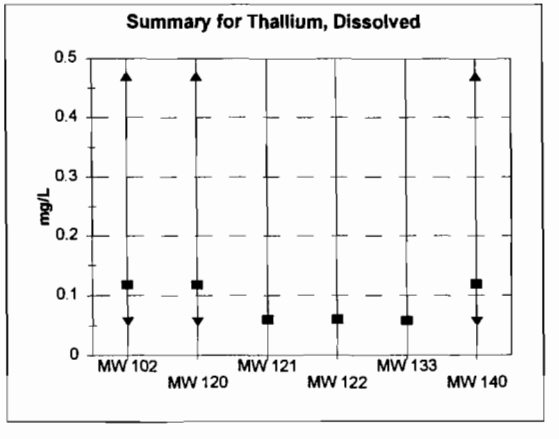
Data for Thallium, Total were not modified. The two detected values which appear to be anomolous do not seem to be related to sample turbidity.

Summary of McNairy Background Well Inorganic Chemical Data

ANALYSIS	RESULT	QUALIFIER	DETECT?	SMPID	STATION ID	UNITS
Thallium, Dissolved	0.056	<	NO	5174-93	MW102	mg/L
Thallium, Dissolved	0.06	<	NO	7295-93	MW102	mg/L
Thallium, Dissolved	0.06	<	NO	4268-94	MW102	mg/L
Thallium, Dissolved	0.06	<	NO	5183-94	MW102	mg/L
Thallium, Dissolved	0.06	<	NO	6022-94	MW102	mg/L
Thallium, Dissolved	0.47	<	NO	6770-94	MW102	mg/L
Thallium, Dissolved		Q	NO	5940-93	MW102	
Thallium, Dissolved	0.056	<	NO	5088-93	MW120	mg/L
Thallium, Dissolved	0.06	<	NO	4209-94	MW120	mg/L
Thallium, Dissolved	0.06	<	NO	4991-94	MW120	mg/L
Thallium, Dissolved	0.06	<	NO	5900-93	MW120	mg/L
Thallium, Dissolved	0.06	<	NO	6034-94	MW120	mg/L
Thallium, Dissolved	0.47	<	NO	6928-94	MW120	mg/L
Thallium, Dissolved		Q	NO	7065-93	MW120	
Thallium, Dissolved	0.06	<	NO	4864-94	MW121	mg/L
Thallium, Dissolved	0.06	<	NO	5246-93	MW122	mg/L
Thallium, Dissolved	0.06	<	NO	4868-94	MW122	mg/L
Thallium, Dissolved	0.056	<	NO	5282-93	MW133	mg/L
Thallium, Dissolved	0.06	<	NO	4761-94	MW133	mg/L
Thallium, Dissolved	0.056	<	NO	6004-93	MW140	mg/L
Thallium, Dissolved	0.06	<	NO	6088-93	MW140	mg/L
Thallium, Dissolved	0.06	<	NO	7081-93	MW140	mg/L
Thallium, Dissolved	0.06	<	NO	4225-94	MW140	mg/L
Thallium, Dissolved	0.06	<	NO	5195-94	MW140	mg/L
Thallium, Dissolved	0.06	<	NO	6050-94	MW140	mg/L
Thallium, Dissolved	0.47	<	NO	6864-94	MW140	mg/L

CORRECTED DATA SET

	MW 102	MW 120	MW 121	MW 122	MW 133	MW 140	Overall	Weighted
	Thallium, Dissolved							
	0.056	0.056	0.06	0.06	0.056	0.056		
	0.06	0.06		0.06	0.06	0.06		
	0.06	0.06				0.06		
	0.06	0.06				0.06		
	0.06	0.06				0.06		
	0.47	0.47				0.06		
	0.056	0.056				0.47		
Min	0.056	0.056	0.060	0.060	0.056	0.056	0.056	
Max	0.470	0.470	0.060	0.060	0.060	0.470	0.470	
Average	0.117	0.117	0.060	0.060	0.058	0.118	0.106	0.088
Number	7	7	1	2	2	7	26	



All results for this well are below their respective detection limits; therefore, the plot is simply a depiction if the detection limits used for samples taken from these wells.

MW 102 - One "Q" qualified result assigned the minimum detection limit for samples from this well.

MW 120 - One "Q" qualified result assigned the minimum detection limit for samples from this well.

MW 121 - Data were not modified.

MW 122 - Data were not modified.

MW 133 - Data were not modified.

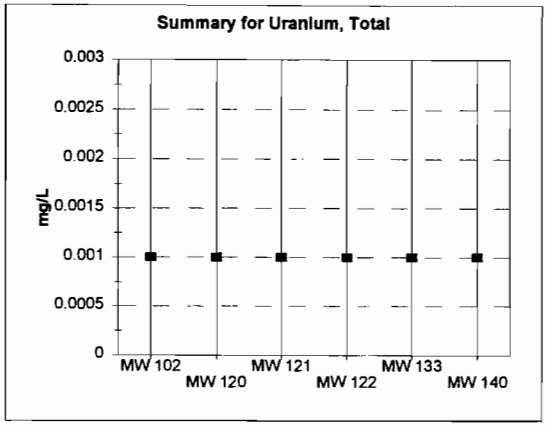
MW 140 - Data were not modified.

Summary of McNairy Background Well Inorganic Chemical Data

ANALYSIS	RESULT	QUALIFIER	DETECT?	SMPID	STATION ID	UNITS
Uranium	0.001	<	NO	5174-93	MW102	mg/L
Uranium	0.001	<	NO	5940-93	MW102	mg/L
Uranium	0.001	<	NO	7295-93	MW102	mg/L
Uranium	0.001	<	NO	4268-94	MW102	mg/L
Uranium	0.001	<	NO	5183-94	MW102	mg/L
Uranium	0.001	<	NO	6022-94	MW102	mg/L
Uranium	0.001	<	NO	6770-94	MW102	mg/L
Uranium	0.001	<	NO	5619-95	MW102	mg/L
Uranium	0.001	<	NO	6592-95	MW102	mg/L
Uranium	0.001	<	NO	7467-95	MW102	mg/L
Uranium	0.001	<	NO	8285-95	MW102	mg/L
Uranium	0.001	<	NO	5281-96	MW102	mg/L
Uranium	0.001	<	NO	5141-97	MW102	mg/L
Uranium	0.001	<	NO	4209-94	MW120	mg/L
Uranium	0.001	<	NO	5143-97	MW120	mg/L
Uranium	0.001	<	NO	5448-95	MW120	mg/L
Uranium	0.001	<	NO	5293-96	MW120	mg/L
Uranium	0.001	<	NO	4991-94	MW120	mg/L
Uranium	0.001	<	NO	5900-93	MW120	mg/L
Uranium	0.001	<	NO	6034-94	MW120	mg/L
Uranium	0.001	<	NO	1766-91	MW120	mg/L
Uranium	0.001	<	NO	6928-94	MW120	mg/L
Uranium	0.001	<	NO	7065-93	MW120	mg/L
Uranium	0.001	<	NO	5793-97	MW120	mg/L
Uranium	0.001	<	NO	4864-94	MW121	mg/L
Uranium	0.001	<	NO	5452-95	MW121	mg/L
Uranium	0.001	<	NO	5500-96	MW121	mg/L
Uranium	0.001	<	NO	5144-97	MW121	mg/L
Uranium	0.001	<	NO	5794-97	MW121	mg/L
Uranium	0.001	<	NO	5246-93	MW122	mg/L
Uranium	0.001	<	NO	4868-94	MW122	mg/L
Uranium	0.001	<	NO	5456-95	MW122	mg/L
Uranium	0.001	<	NO	6596-95	MW122	mg/L
Uranium	0.001	<	NO	5301-96	MW122	mg/L
Uranium	0.001	<	NO	5145-97	MW122	mg/L
Uranium	0.001	<	NO	5795-97	MW122	mg/L
Uranium	0.001	<	NO	4761-94	MW133	mg/L
Uranium	0.001	<	NO	5460-95	MW133	mg/L
Uranium	0.001	<	NO	5305-96	MW133	mg/L
Uranium	0.001	<	NO	5139-97	MW133	mg/L
Uranium	0.001	<B	NO	5789-97	MW133	mg/L
Uranium	0.001		YES	5282-93	MW133	mg/L
Uranium	0.001	<	NO	6004-93	MW140	mg/L
Uranium	0.001	<	NO	6088-93	MW140	mg/L
Uranium	0.001	<	NO	7081-93	MW140	mg/L
Uranium	0.001	<	NO	4225-94	MW140	mg/L
Uranium	0.001	<	NO	5195-94	MW140	mg/L
Uranium	0.001	<	NO	6050-94	MW140	mg/L
Uranium	0.001	<	NO	6864-94	MW140	mg/L
Uranium	0.001	<	NO	5313-96	MW140	mg/L
Uranium	0.001	<	NO	5146-97	MW140	mg/L
Uranium	0.001	<	NO	5796-97	MW140	mg/L

CORRECTED DATA SET

	MW 102	MW 120	MW 121	MW 122	MW 133	MW 140	Overall	Weighted
	Uranium							
	0.001	0.001	0.001	0.001	0.001	0.001		
	0.001	0.001	0.001	0.001	0.001	0.001		
	0.001	0.001	0.001	0.001	0.001	0.001		
	0.001	0.001	0.001	0.001	0.001	0.001		
	0.001	0.001	0.001	0.001	0.001	0.001		
	0.001	0.001		0.001	0.001	0.001		
	0.001	0.001		0.001		0.001		
	0.001	0.001				0.001		
	0.001	0.001				0.001		
	0.001	0.001				0.001		
	0.001	0.001						
	0.001							
	0.001							
Min	0.001	0.001	0.001	0.001	0.001	0.001	0.001	
Max	0.001	0.001	0.001	0.001	0.001	0.001	0.001	
Average	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
Number	13	11	5	7	6	10	52	



Data for Uranium, Total were not modified.

Summary of McNairy Background Well Inorganic Chemical Data

ANALYSIS	RESULT	QUALIFIER	DETECT?	SMPID	STATION ID	UNITS
Uranium, Dissolved		Q	NO	5619-95	MW102	
Uranium, Dissolved		Q	NO	6592-95	MW102	
Uranium, Dissolved		Q	NO	7467-95	MW102	
Uranium, Dissolved		Q	NO	8285-95	MW102	
Uranium, Dissolved		Q	NO	5281-96	MW102	
Uranium, Dissolved		Q	NO	5448-95	MW120	
Uranium, Dissolved		Q	NO	5293-96	MW120	
Uranium, Dissolved		Q	NO	5452-95	MW121	
Uranium, Dissolved		Q	NO	5500-96	MW121	
Uranium, Dissolved		Q	NO	5456-95	MW122	
Uranium, Dissolved		Q	NO	6596-95	MW122	
Uranium, Dissolved		Q	NO	5301-96	MW122	
Uranium, Dissolved		Q	NO	5460-95	MW133	
Uranium, Dissolved		Q	NO	5305-96	MW133	
Uranium, Dissolved		Q	NO	5313-96	MW140	

CORRECTED DATA SET

	MW 102	MW 120	MW 121	MW 122	MW 133	MW 140	Overall	Weighted
	Uranium, Dissolved							
Min	ERR	ERR	ERR	ERR	ERR	ERR	ERR	
Max	ERR	ERR	ERR	ERR	ERR	ERR	ERR	
Average	ERR	ERR	ERR	ERR	ERR	ERR	ERR	ERR
Number	0	0	0	0	0	0	0	

Uranium, Dissolved

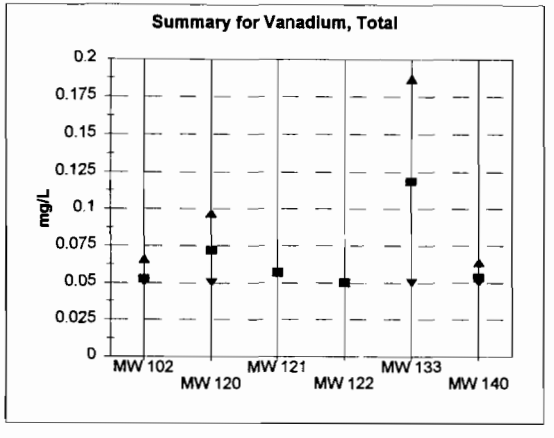
▷ Analysis for Uranium Dissolved was not performed for any sample; therefore, no value can be assigned to any sample. Generally, this indicates that any detection of uranium in a filtered sample exceeds the background concentration.

Summary of McNairy Background Well Inorganic Chemical Data

ANALYSIS	RESULT	QUALIFIER	DETECT?	SMPID	STATION ID	UNITS
Vanadium	0.05	<	NO	5174-93	MW102	mg/L
Vanadium	0.05	<	NO	5183-94	MW102	mg/L
Vanadium	0.05	<	NO	6022-94	MW102	mg/L
Vanadium	0.051		YES	5940-93	MW102	mg/L
Vanadium	0.051		YES	4268-94	MW102	mg/L
Vanadium	0.051		YES	6770-94	MW102	mg/L
Vanadium	0.066		YES	7295-93	MW102	mg/L
Vanadium	0.05	<	NO	5088-93	MW120	mg/L
Vanadium	0.052		YES	4991-94	MW120	mg/L
Vanadium	0.065		YES	6034-94	MW120	mg/L
Vanadium	0.075		YES	5900-93	MW120	mg/L
Vanadium	0.08		YES	7065-93	MW120	mg/L
Vanadium	0.084		YES	6928-94	MW120	mg/L
Vanadium	0.097		YES	4209-94	MW120	mg/L
Vanadium	0.057		YES	4864-94	MW121	mg/L
Vanadium	0.836		YES	5206-93	MW121	mg/L
Vanadium	0.05	<	NO	5246-93	MW122	mg/L
Vanadium	0.05	<	NO	4868-94	MW122	mg/L
Vanadium	0.05	<	NO	5282-93	MW133	mg/L
Vanadium	0.187		YES	4761-94	MW133	mg/L
Vanadium	0.05	<	NO	6004-93	MW140	mg/L
Vanadium	0.05	<	NO	4225-94	MW140	mg/L
Vanadium	0.05	<	NO	5195-94	MW140	mg/L
Vanadium	0.053		YES	7081-93	MW140	mg/L
Vanadium	0.053		YES	6050-94	MW140	mg/L
Vanadium	0.055		YES	6864-94	MW140	mg/L
Vanadium	0.064		YES	6088-93	MW140	mg/L

CORRECTED DATA SET

	MW 102	MW 120	MW 121	MW 122	MW 133	MW 140	Overall	Weighted
	Vanadium							
	0.05	0.05	0.057	0.05	0.05	0.05		
	0.05	0.052	0.057	0.05	0.187	0.05		
	0.05	0.065				0.05		
	0.051	0.075				0.053		
	0.051	0.08				0.053		
	0.051	0.084				0.055		
	0.066	0.097				0.064		
Min	0.050	0.050	0.057	0.050	0.050	0.050	0.050	
Max	0.066	0.097	0.057	0.050	0.187	0.064	0.187	
Average	0.053	0.072	0.057	0.050	0.119	0.054	0.063	0.067
Number	7	7	2	2	2	7	27	



MW 102 - Data were not modified.

MW 120 - Data were not modified.

MW 121 - Maximum detected value appears to be affected by turbiditiy of sample and was reduced to next greatest maximum detected concentration.

MW 122 - Data were not modified.

MW 133 - Maximum detected value was not related to turbidity of sample.

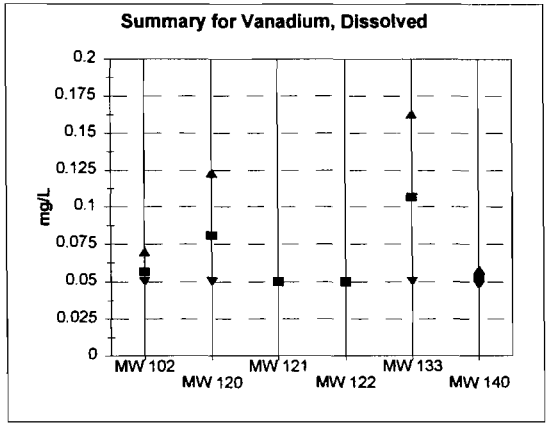
MW 140 - Data were not modified.

Summary of McNairy Background Well Inorganic Chemical Data

ANALYSIS	RESULT	QUALIFIER	DETECT?	SMPID	STATION ID	UNITS
Vanadium, Dissolved	0.05	<	NO	5174-93	MW102	mg/L
Vanadium, Dissolved	0.05	<	NO	5940-93	MW102	mg/L
Vanadium, Dissolved	0.05	<	NO	5183-94	MW102	mg/L
Vanadium, Dissolved	0.05	<	NO	6022-94	MW102	mg/L
Vanadium, Dissolved	0.061		YES	7295-93	MW102	mg/L
Vanadium, Dissolved	0.065		YES	4268-94	MW102	mg/L
Vanadium, Dissolved	0.07		YES	6770-94	MW102	mg/L
Vanadium, Dissolved	0.052		YES	4991-94	MW120	mg/L
Vanadium, Dissolved	0.076		YES	6928-94	MW120	mg/L
Vanadium, Dissolved	0.078		YES	5900-93	MW120	mg/L
Vanadium, Dissolved	0.089		YES	6034-94	MW120	mg/L
Vanadium, Dissolved	0.097		YES	4209-94	MW120	mg/L
Vanadium, Dissolved	0.123		YES	7065-93	MW120	mg/L
Vanadium, Dissolved		Q	NO	5088-93	MW120	
Vanadium, Dissolved	0.05	<	NO	5206-93	MW121	mg/L
Vanadium, Dissolved	0.05	<	NO	4864-94	MW121	mg/L
Vanadium, Dissolved	0.05	<	NO	5246-93	MW122	mg/L
Vanadium, Dissolved	0.05	<	NO	4868-94	MW122	mg/L
Vanadium, Dissolved	0.05	<	NO	5282-93	MW133	mg/L
Vanadium, Dissolved	0.163		YES	4761-94	MW133	mg/L
Vanadium, Dissolved	0.048		YES	7081-93	MW140	mg/L
Vanadium, Dissolved	0.05	<	NO	6004-93	MW140	mg/L
Vanadium, Dissolved	0.05	<	NO	4225-94	MW140	mg/L
Vanadium, Dissolved	0.052		YES	5195-94	MW140	mg/L
Vanadium, Dissolved	0.054		YES	6088-93	MW140	mg/L
Vanadium, Dissolved	0.056		YES	6864-94	MW140	mg/L
Vanadium, Dissolved	0.058		YES	6050-94	MW140	mg/L

CORRECTED DATA SET

	MW 102	MW 120	MW 121	MW 122	MW 133	MW 140	Overall	Weighted
	Vanadium, Dissolved							
	0.05	0.052	0.05	0.05	0.05	0.048		
	0.05	0.076	0.05	0.05	0.163	0.05		
	0.05	0.078				0.05		
	0.05	0.089				0.052		
	0.061	0.097				0.054		
	0.065	0.123				0.056		
	0.07	0.05				0.058		
Min	0.050	0.050	0.050	0.050	0.050	0.048	0.048	
Max	0.070	0.123	0.050	0.050	0.163	0.058	0.163	
Average	0.057	0.081	0.050	0.050	0.107	0.053	0.065	0.066
Number	7	7	2	2	2	7	27	



MW 102 - Data were not modified.

MW 120 - One "Q" qualified result assigned minimum detection limit for samples across wells.

MW 121 - Data were not modified.

MW 122 - Data were not modified.

MW 133 - Data were not modified.

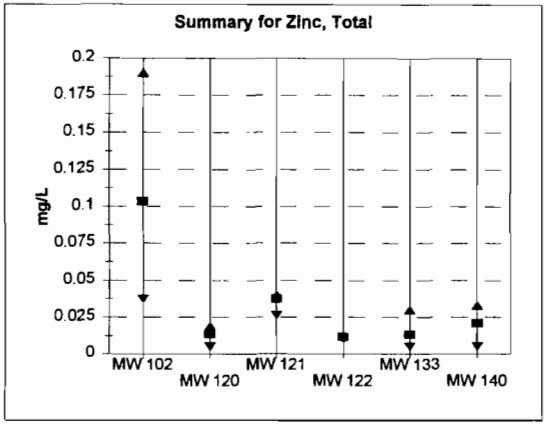
MW 140 - Data were not modified.

Summary of McNairy Background Well Inorganic Chemical Data

ANALYSIS	RESULT	QUALIFIER	DETECT?	SMPID	STATION ID	UNITS
Zinc	0.037		YES	5940-93	MW102	mg/L
Zinc	0.04		YES	5174-93	MW102	mg/L
Zinc	0.058		YES	7467-95	MW102	mg/L
Zinc	0.071		YES	5183-94	MW102	mg/L
Zinc	0.078		YES	6022-94	MW102	mg/L
Zinc	0.088		YES	8285-95	MW102	mg/L
Zinc	0.103		YES	5281-96	MW102	mg/L
Zinc	0.109		YES	7295-93	MW102	mg/L
Zinc	0.124		YES	6770-94	MW102	mg/L
Zinc	0.125		YES	4268-94	MW102	mg/L
Zinc	0.133		YES	6592-95	MW102	mg/L
Zinc	0.19		YES	5619-95	MW102	mg/L
Zinc	0.25	<	NO	5141-97	MW102	mg/L
Zinc	0.005	<	NO	6034-94	MW120	mg/L
Zinc	0.006		YES	4991-94	MW120	mg/L
Zinc	0.007		YES	5088-93	MW120	mg/L
Zinc	0.008	<	NO	4209-94	MW120	mg/L
Zinc	0.016		YES	7065-93	MW120	mg/L
Zinc	0.019		YES	5900-93	MW120	mg/L
Zinc	0.03	<	NO	5448-95	MW120	mg/L
Zinc	0.03	<	NO	6928-94	MW120	mg/L
Zinc	0.03	B<	NO	5293-96	MW120	mg/L
Zinc	0.25	<	NO	5143-97	MW120	mg/L
Zinc	0.026		YES	4864-94	MW121	mg/L
Zinc	0.04		YES	5452-95	MW121	mg/L
Zinc	0.063	B	YES	5500-96	MW121	mg/L
Zinc	0.25	<	NO	5144-97	MW121	mg/L
Zinc	0.564		YES	5206-93	MW121	mg/L
Zinc	0.01		YES	4868-94	MW122	mg/L
Zinc	0.012		YES	5246-93	MW122	mg/L
Zinc	0.03	<	NO	5456-95	MW122	mg/L
Zinc	0.03	<	NO	5301-96	MW122	mg/L
Zinc	0.25	<	NO	5145-97	MW122	mg/L
Zinc	0.34	B	YES	6596-95	MW122	mg/L
Zinc	0.005	<	NO	5282-93	MW133	mg/L
Zinc	0.005	<	NO	4761-94	MW133	mg/L
Zinc	0.03	<	NO	5460-95	MW133	mg/L
Zinc	0.005	<	NO	5195-94	MW140	mg/L
Zinc	0.005	<	NO	6050-94	MW140	mg/L
Zinc	0.005		YES	4225-94	MW140	mg/L
Zinc	0.017		YES	6004-93	MW140	mg/L
Zinc	0.029		YES	6088-93	MW140	mg/L
Zinc	0.03	<	NO	6864-94	MW140	mg/L
Zinc	0.03	<	NO	5313-96	MW140	mg/L
Zinc	0.033		YES	7081-93	MW140	mg/L
Zinc	0.25	<	NO	5146-97	MW140	mg/L

CORRECTED DATA SET

	MW 102	MW 120	MW 121	MW 122	MW 133	MW 140	Overall	Weighted
	Zinc							
	0.037	0.005	0.026	0.01	0.005	0.005		
	0.04	0.006	0.04	0.012	0.005	0.005		
	0.058	0.007	0.04	0.012	0.03	0.005		
	0.071	0.008	0.04	0.012		0.017		
	0.078	0.016	0.04	0.012		0.029		
	0.088	0.019		0.012		0.03		
	0.103	0.019				0.03		
	0.109	0.019				0.033		
	0.124	0.019				0.033		
	0.125	0.019						
	0.133							
	0.19							
	0.19							
Min	0.037	0.005	0.026	0.010	0.005	0.005	0.005	
Max	0.190	0.019	0.040	0.012	0.030	0.033	0.190	
Average	0.104	0.014	0.037	0.012	0.013	0.021	0.043	0.033
Number	13	10	5	6	3	9	46	



MW 102 - One nondetect greater than maximum detected value set to maximum detected value.

MW 120 - Four nondetects greater than maximum detected value set to maximum detected value.

MW 121 - Maximum detected value appears to be related to turbidity of sample and reduced to next greatest value; two nondetects with values greater than maximum detected value reduced to maximum detected value.

MW 122 - Maximum detected value is "B" qualified; result reduced to next greatest detected value; three nondetects greater than maximum detected value reduced to maximum detected value.

MW 133 - Data were not modified.

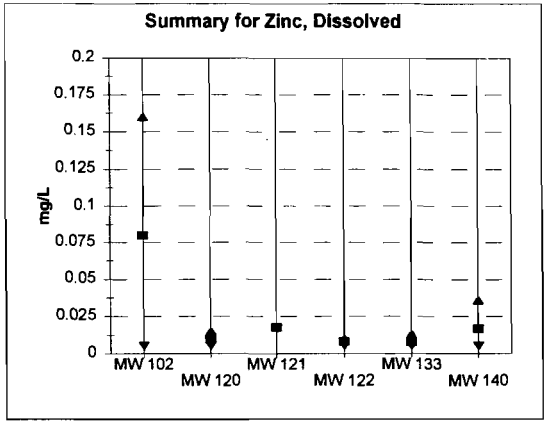
MW 140 - One nondetect with a value greater than the maximum detected value was reduced to the maximum detected value.

Summary of McNairy Background Well Inorganic Chemical Data

ANALYSIS	RESULT	QUALIFIER	DETECT?	SMPID	STATION ID	UNITS
Zinc, Dissolved	0.041		YES	5174-93	MW102	mg/L
Zinc, Dissolved	0.043		YES	5940-93	MW102	mg/L
Zinc, Dissolved	0.047		YES	5183-94	MW102	mg/L
Zinc, Dissolved	0.067		YES	7467-95	MW102	mg/L
Zinc, Dissolved	0.073		YES	8285-95	MW102	mg/L
Zinc, Dissolved	0.08		YES	6022-94	MW102	mg/L
Zinc, Dissolved	0.091		YES	7295-93	MW102	mg/L
Zinc, Dissolved	0.097		YES	6592-95	MW102	mg/L
Zinc, Dissolved	0.107		YES	6770-94	MW102	mg/L
Zinc, Dissolved	0.147		YES	4268-94	MW102	mg/L
Zinc, Dissolved	0.16		YES	5619-95	MW102	mg/L
Zinc, Dissolved		Q	NO	5281-96	MW102	
Zinc, Dissolved	0.005	<	NO	4991-94	MW120	mg/L
Zinc, Dissolved	0.005	<	NO	6034-94	MW120	mg/L
Zinc, Dissolved	0.008	<	NO	4209-94	MW120	mg/L
Zinc, Dissolved	0.008		YES	5088-93	MW120	mg/L
Zinc, Dissolved	0.01		YES	5900-93	MW120	mg/L
Zinc, Dissolved	0.015		YES	7065-93	MW120	mg/L
Zinc, Dissolved	0.03	<	NO	5448-95	MW120	mg/L
Zinc, Dissolved	0.03	<	NO	6928-94	MW120	mg/L
Zinc, Dissolved		Q	NO	5293-96	MW120	
Zinc, Dissolved	0.016		YES	4864-94	MW121	mg/L
Zinc, Dissolved	0.018		YES	5206-93	MW121	mg/L
Zinc, Dissolved	0.03	<	NO	5452-95	MW121	mg/L
Zinc, Dissolved	0.03	<	NO	5500-96	MW121	mg/L
Zinc, Dissolved	0.005	<	NO	4868-94	MW122	mg/L
Zinc, Dissolved	0.01		YES	5246-93	MW122	mg/L
Zinc, Dissolved	0.03	<	NO	5456-95	MW122	mg/L
Zinc, Dissolved	0.03	<	NO	6596-95	MW122	mg/L
Zinc, Dissolved		Q	NO	5301-96	MW122	
Zinc, Dissolved	0.005	<	NO	4761-94	MW133	mg/L
Zinc, Dissolved	0.013		YES	5282-93	MW133	mg/L
Zinc, Dissolved		Q	NO	5460-95	MW133	
Zinc, Dissolved	0.005	<	NO	6050-94	MW140	mg/L
Zinc, Dissolved	0.008		YES	5195-94	MW140	mg/L
Zinc, Dissolved	0.011		YES	6004-93	MW140	mg/L
Zinc, Dissolved	0.012		YES	4225-94	MW140	mg/L
Zinc, Dissolved	0.026		YES	6088-93	MW140	mg/L
Zinc, Dissolved	0.03	<	NO	6864-94	MW140	mg/L
Zinc, Dissolved	0.036		YES	7081-93	MW140	mg/L
Zinc, Dissolved		Q	NO	5313-96	MW140	

CORRECTED DATA SET

	MW 102	MW 120	MW 121	MW 122	MW 133	MW 140	Overall	Weighted
	Zinc, Dissolved							
	0.041	0.005	0.016	0.005	0.005	0.005		
	0.043	0.005	0.018	0.01	0.013	0.008		
	0.047	0.008	0.018	0.01	0.005	0.011		
	0.067	0.008	0.018	0.01		0.012		
	0.073	0.01		0.005		0.026		
	0.08	0.015				0.03		
	0.091	0.015				0.036		
	0.097	0.015				0.005		
	0.107	0.005						
	0.147							
	0.16							
	0.005							
Min	0.005	0.005	0.016	0.005	0.005	0.005	0.005	
Max	0.160	0.015	0.018	0.010	0.013	0.036	0.160	
Average	0.080	0.010	0.018	0.008	0.008	0.017	0.032	0.023
Number	12	9	4	5	3	8	41	



MW 102 - One "Q" qualified result assigned minimum detection limt for samples from this well.

MW 120 - One "Q" qualified result assigned minimum detection limit across all wells; two nondetects with values greater than the maximum detected value reduced to maximum detected value.

MW 121 - Two nondetects with values greater than the maximum detected value reduced to maximum detected value.

MW 122 - One "Q" qualified result assigned minimum detection limit across all wells; two nondetects with values greater than maximum detected value reduced to maximum detected value.

MW 133 - One "Q" qualified result assigned the minimum detection limit for samples from this well.

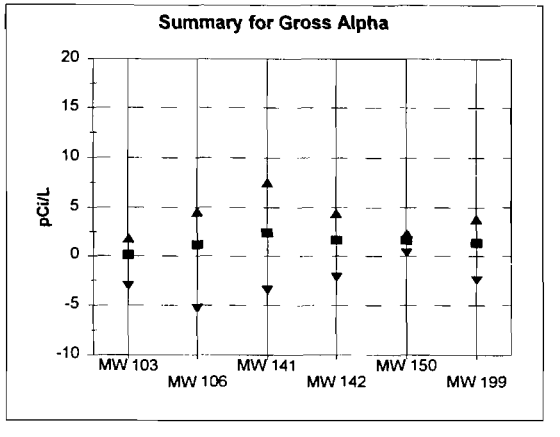
MW 140 - One "Q" qualified result assigned the minimum detection limit for samples from this well.

Summary of RGA Background Wells Radionuclide Data

ANALYSIS	RESULT	ERROR	QUALIFIER	DETECT?	SAMPLE ID	STATION ID	UNITS
Gross Alpha	-3.1	1.5		YES	7299-93	MW103	pCi/L
Gross Alpha	-1.4	0.9		YES	5944-93	MW103	pCi/L
Gross Alpha	-0.6	0		YES	5178-93	MW103	pCi/L
Gross Alpha	-0.2	0.1		YES	4272-94	MW103	pCi/L
Gross Alpha	0.4	0.7		YES	5187-94	MW103	pCi/L
Gross Alpha	0.7	0.4		YES	5142-97	MW103	pCi/L
Gross Alpha	0.8	0.5		YES	6774-94	MW103	pCi/L
Gross Alpha	1	0.6		YES	6026-94	MW103	pCi/L
Gross Alpha	1.5	0.9		YES	5440-95	MW103	pCi/L
Gross Alpha	1.8	1.1		YES	5285-96	MW103	pCi/L
Gross Alpha	-5.3	2.6		YES	6579-93	MW106	pCi/L
Gross Alpha	0.3	0.7		YES	4697-94	MW106	pCi/L
Gross Alpha	0.5	0.2		YES	5138-97	MW106	pCi/L
Gross Alpha	0.7	0.6		YES	7272-94	MW106	pCi/L
Gross Alpha	0.8	0.7		YES	5444-95	MW106	pCi/L
Gross Alpha	0.8	0.7		YES	6640-94	MW106	pCi/L
Gross Alpha	1.2	0.8		YES	6782-94	MW106	pCi/L
Gross Alpha	1.3	0.6		YES	5513-94	MW106	pCi/L
Gross Alpha	2	1		YES	5788-97	MW106	pCi/L
Gross Alpha	2.3	1.4		YES	5289-96	MW106	pCi/L
Gross Alpha	4.5	2.5		YES	7862-93	MW106	pCi/L
Gross Alpha	7.9	3		YES	5322-93	MW106	pCi/L
Gross Alpha	-3.5	1.8		YES	7085-93	MW141	pCi/L
Gross Alpha	0.7	0		YES	6092-93	MW141	pCi/L
Gross Alpha	1.2	0.8		YES	6054-94	MW141	pCi/L
Gross Alpha	1.2	0.7		YES	6868-94	MW141	pCi/L
Gross Alpha	2.3	1		YES	5199-94	MW141	pCi/L
Gross Alpha	7.1	2.7		YES	4229-94	MW141	pCi/L
Gross Alpha	7.5	3		YES	6080-93	MW141	pCi/L
Gross Alpha	-2.2	0.8		YES	7089-93	MW142	pCi/L
Gross Alpha	0.1	0.7		YES	5203-94	MW142	pCi/L
Gross Alpha	0.9	0.7		YES	5464-95	MW142	pCi/L
Gross Alpha	0.9	0.8		YES	6872-94	MW142	pCi/L
Gross Alpha	1.4	0.7		YES	5797-97	MW142	pCi/L
Gross Alpha	1.7	0		YES	6084-93	MW142	pCi/L
Gross Alpha	1.9	0.9		YES	5147-97	MW142	pCi/L
Gross Alpha	2.2	1		YES	6058-94	MW142	pCi/L
Gross Alpha	2.8	1.3		YES	4233-94	MW142	pCi/L
Gross Alpha	3.7	1		YES	6096-93	MW142	pCi/L
Gross Alpha	4.4	2.2		YES	5317-96	MW142	pCi/L
Gross Alpha	-7.6	3.7		YES	6764-93	MW150	pCi/L
Gross Alpha	-3.2	1.6		YES	7724-93	MW150	pCi/L
Gross Alpha	0.3	0.8		YES	5578-94	MW150	pCi/L
Gross Alpha	0.9	0.9		YES	7366-94	MW150	pCi/L
Gross Alpha	1.3	0.9		YES	5468-95	MW150	pCi/L
Gross Alpha	1.5	1		YES	6501-94	MW150	pCi/L
Gross Alpha	2	1.5		YES	5321-96	MW150	pCi/L
Gross Alpha	2.2	1.2		YES	4789-94	MW150	pCi/L
Gross Alpha	2.3	1		YES	5650-93	MW150	pCi/L
Gross Alpha	16.8	7		YES	5148-97	MW150	pCi/L
Gross Alpha	-2.5	1.1		YES	7311-93	MW199	pCi/L
Gross Alpha	-0.3	0.2		YES	5984-93	MW199	pCi/L
Gross Alpha	0.7	0.8		YES	6888-94	MW199	pCi/L
Gross Alpha	1.2	0.9		YES	6074-94	MW199	pCi/L

CORRECTED DATA SET

	MW 103	MW 106	MW 141	MW 142	MW 150	MW 199	Overall	Weighted
	Gross Alpha							
	-3.1	-5.3	-3.5	-2.2	0.3	-2.5		
	-1.4	0.3	0.7	0.1	0.9	-0.3		
	-0.6	0.5	1.2	0.9	1.3	0.7		
	-0.2	0.7	1.2	0.9	1.5	1.2		
	0.4	0.8	2.3	1.4	2	1.6		
	0.7	0.8	7.1	1.7	2.2	2.6		
	0.8	1.2	7.5	1.9	2.3	3.8		
	1	1.3		2.2	2.3	3.8		
	1.5	2		2.8				
	1.8	2.3		3.7				
		4.5		4.4				
		4.5						
Min	-3.10	-5.30	-3.50	-2.20	0.30	-2.50	-5.30	
Max	1.80	4.50	7.50	4.40	2.30	3.80	7.50	
Average	0.09	1.13	2.36	1.62	1.60	1.36	1.29	1.36
Number	10	12	7	11	8	8	56	



MW 103 - Data were not modified.

MW 106 - Maximum detected value was related to turbidity of sample; result was reduced to next greatest detected value.

MW 141 - Data were not modified.

MW 142 - Data were not modified.

MW 150 - Maximum detected value was related to turbidity of sample; result was reduced to next greatest detected value.

MW 199 - Maximum detected value was related to turbidity of sample; result was reduced to next greatest detected value.

Summary of RGA Background Wells Radionuclide Data

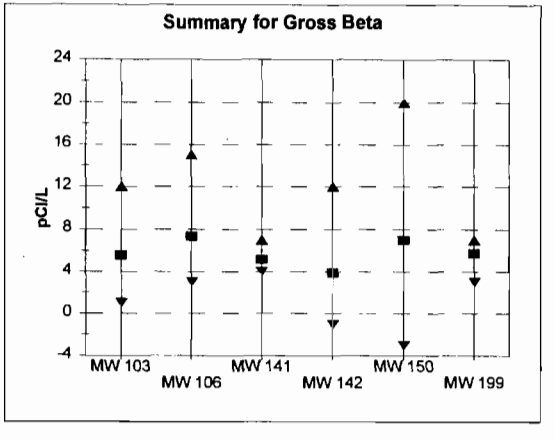
ANALYSIS	RESULT	ERROR	QUALIFIER	DETECT?	SAMPLE ID	STATION ID	UNITS
Gross Alpha	1.6	0.9		YES	4312-94	MW199	pCi/L
Gross Alpha	2.6	1.1		YES	5260-94	MW199	pCi/L
Gross Alpha	3.8	1.3		YES	5558-97	MW199	pCi/L
Gross Alpha	9.9	3		YES	5170-93	MW199	pCi/L

Summary of RGA Background Wells Radionuclide Data

ANALYSIS	RESULT	ERROR	QUALIFIER	DETECT?	SAMPLE ID	STATION ID	UNITS
Gross Beta	1	0		YES	5142-97	MW103	pCi/L
Gross Beta	3	2		YES	6026-94	MW103	pCi/L
Gross Beta	3	1		YES	5178-93	MW103	pCi/L
Gross Beta	4	1		YES	6774-94	MW103	pCi/L
Gross Beta	4	1		YES	5944-93	MW103	pCi/L
Gross Beta	6	3		YES	5440-95	MW103	pCi/L
Gross Beta	6	2		YES	5187-94	MW103	pCi/L
Gross Beta	7	2		YES	4272-94	MW103	pCi/L
Gross Beta	10	2		YES	7299-93	MW103	pCi/L
Gross Beta	12	2		YES	5285-96	MW103	pCi/L
Gross Beta	3	1		YES	6579-93	MW106	pCi/L
Gross Beta	4	2		YES	6782-94	MW106	pCi/L
Gross Beta	4	1		YES	5322-93	MW106	pCi/L
Gross Beta	6	1		YES	5138-97	MW106	pCi/L
Gross Beta	6	2		YES	5444-95	MW106	pCi/L
Gross Beta	6	3		YES	5513-94	MW106	pCi/L
Gross Beta	6	1		YES	5788-97	MW106	pCi/L
Gross Beta	7	2		YES	6640-94	MW106	pCi/L
Gross Beta	9	4		YES	7272-94	MW106	pCi/L
Gross Beta	11	2		YES	7862-93	MW106	pCi/L
Gross Beta	11	3		YES	4697-94	MW106	pCi/L
Gross Beta	15	3		YES	5289-96	MW106	pCi/L
Gross Beta	4	1		YES	6080-93	MW141	pCi/L
Gross Beta	4	2		YES	5199-94	MW141	pCi/L
Gross Beta	5	2		YES	6868-94	MW141	pCi/L
Gross Beta	5	1		YES	7085-93	MW141	pCi/L
Gross Beta	5	1		YES	6092-93	MW141	pCi/L
Gross Beta	6	1		YES	4229-94	MW141	pCi/L
Gross Beta	7	3		YES	6054-94	MW141	pCi/L
Gross Beta	-1	0		YES	5797-97	MW142	pCi/L
Gross Beta	-1	0		YES	5147-97	MW142	pCi/L
Gross Beta	0	0		NO	4233-94	MW142	pCi/L
Gross Beta	3	1		YES	5464-95	MW142	pCi/L
Gross Beta	3	1		YES	6872-94	MW142	pCi/L
Gross Beta	3	2		YES	5203-94	MW142	pCi/L
Gross Beta	4	1		YES	6096-93	MW142	pCi/L
Gross Beta	5	1		YES	6084-93	MW142	pCi/L
Gross Beta	7	2		YES	7089-93	MW142	pCi/L
Gross Beta	8	3		YES	6058-94	MW142	pCi/L
Gross Beta	12	3		YES	5317-96	MW142	pCi/L
Gross Beta	-3	1		YES	6764-93	MW150	pCi/L
Gross Beta	2	1		YES	5578-94	MW150	pCi/L
Gross Beta	3	1		YES	5650-93	MW150	pCi/L
Gross Beta	4	1		YES	6501-94	MW150	pCi/L
Gross Beta	5	2		YES	5468-95	MW150	pCi/L
Gross Beta	7	1		YES	7724-93	MW150	pCi/L
Gross Beta	8	3		YES	7366-94	MW150	pCi/L
Gross Beta	10	3		YES	5321-96	MW150	pCi/L
Gross Beta	14	2		YES	5148-97	MW150	pCi/L
Gross Beta	20	7		YES	4789-94	MW150	pCi/L
Gross Beta	3	2		YES	6074-94	MW199	pCi/L
Gross Beta	5	1		YES	5984-93	MW199	pCi/L
Gross Beta	5	2		YES	6888-94	MW199	pCi/L
Gross Beta	6	3		YES	5260-94	MW199	pCi/L
Gross Beta	6	1		YES	7311-93	MW199	pCi/L

CORRECTED DATA SET

	MW 103	MW 106	MW 141	MW 142	MW 150	MW 199	Overall	Weighted
	Gross Beta							
	1	3	4	-1	-3	3		
	3	4	4	-1	2	5		
	3	4	5	0	3	5		
	4	6	5	3	4	6		
	4	6	5	3	5	6		
	6	6	6	3	7	7		
	6	6	7	4	8	7		
	7	7		5	10	7		
	10	9		7	14			
	12	11		8	20			
		11		12				
		15						
Min	1.00	3.00	4.00	-1.00	-3.00	3.00	-3.00	
Max	12.00	15.00	7.00	12.00	20.00	7.00	20.00	
Average	5.60	7.33	5.14	3.91	7.00	5.75	5.84	5.79
Number	10	12	7	11	10	8	58	



MW 103 - Data were not modified.

MW 106 - Data were not modified

MW 141 - Data were not modified.

MW 142 - Data were not modified.

MW 150 - Data were not modified.

MW 199 - Two greatest detected values appear to be related to turbidity of sample; values were reduced to next greatest value.

Summary of RGA Background Wells Radionuclide Data

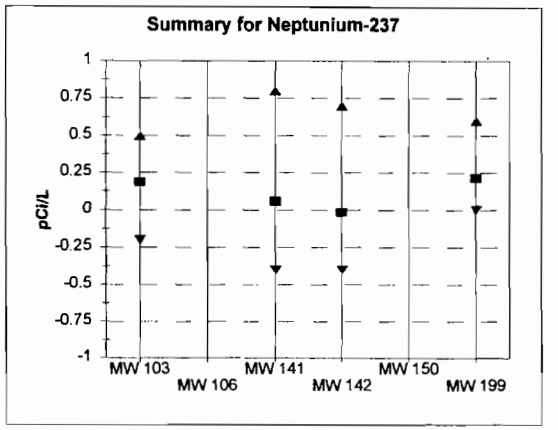
ANALYSIS	RESULT	ERROR	QUALIFIER	DETECT?	SAMPLE ID	STATION ID	UNITS
Gross Beta	7	3		YES	4312-94	MW199	pCi/L
Gross Beta	20	4		YES	5170-93	MW199	pCi/L
Gross Beta	36	4		YES	5558-97	MW199	pCi/L

Summary of RGA Background Wells Radionuclide Data

ANALYSIS	RESULT	ERROR	QUALIFIER	DETECT?	SAMPLE ID	STATION ID	UNITS
Neptunium-237	-0.2	0		YES	5178-93	MW103	pCi/L
Neptunium-237	0.1	0.1		YES	6774-94	MW103	pCi/L
Neptunium-237	0.1	0.1		YES	7299-93	MW103	pCi/L
Neptunium-237	0.2	0.1		YES	5944-93	MW103	pCi/L
Neptunium-237	0.3	0.1		YES	6026-94	MW103	pCi/L
Neptunium-237	0.3	0.2		YES	5187-94	MW103	pCi/L
Neptunium-237	0.5	0.2		YES	4272-94	MW103	pCi/L
Neptunium-237	-0.4	0		YES	6092-93	MW141	pCi/L
Neptunium-237	-0.3	0.3		YES	7085-93	MW141	pCi/L
Neptunium-237	-0.1	0		YES	6054-94	MW141	pCi/L
Neptunium-237	0	0		NO	5199-94	MW141	pCi/L
Neptunium-237	0.2	0.1		YES	6868-94	MW141	pCi/L
Neptunium-237	0.2	0.1		YES	4229-94	MW141	pCi/L
Neptunium-237	0.8	0		YES	6080-93	MW141	pCi/L
Neptunium-237	-0.4	0.2		YES	6058-94	MW142	pCi/L
Neptunium-237	-0.3	0.2		YES	5203-94	MW142	pCi/L
Neptunium-237	-0.3	0		YES	6096-93	MW142	pCi/L
Neptunium-237	-0.1	0.1		YES	7089-93	MW142	pCi/L
Neptunium-237	0.1	0.1		YES	4233-94	MW142	pCi/L
Neptunium-237	0.2	0		YES	6084-93	MW142	pCi/L
Neptunium-237	0.7	0.3		YES	6872-94	MW142	pCi/L
Neptunium-237	0	0		NO	6074-94	MW199	pCi/L
Neptunium-237	0	0		NO	4312-94	MW199	pCi/L
Neptunium-237	0.1	0		YES	5170-93	MW199	pCi/L
Neptunium-237	0.1	0.1		YES	7311-93	MW199	pCi/L
Neptunium-237	0.2	0.1		YES	5260-94	MW199	pCi/L
Neptunium-237	0.5	0.2		YES	6888-94	MW199	pCi/L
Neptunium-237	0.6	0.3		YES	5984-93	MW199	pCi/L

CORRECTED DATA SET

	MW 103	MW 106	MW 141	MW 142	MW 150	MW 199	Overall	Weighted
	Neptunium-237							
	-0.2		-0.4	-0.4		0		
	0.1		-0.3	-0.3		0		
	0.1		-0.1	-0.3		0.1		
	0.2		0	-0.1		0.1		
	0.3		0.2	0.1		0.2		
	0.3		0.2	0.2		0.5		
	0.5		0.8	0.7		0.6		
Min	-0.20	ERR	-0.40	-0.40	ERR	0.00	-0.40	
Max	0.50	ERR	0.80	0.70	ERR	0.60	0.80	
Average	0.19	ERR	0.06	-0.01	ERR	0.21	0.11	0.11
Number	7	0	7	7	0	7	28	



MW 103 - Data were not modified.

MW 106 - Data were not modified

MW 141 - Data were not modified.

MW 142 - Data were not modified.

MW 150 - Data were not modified.

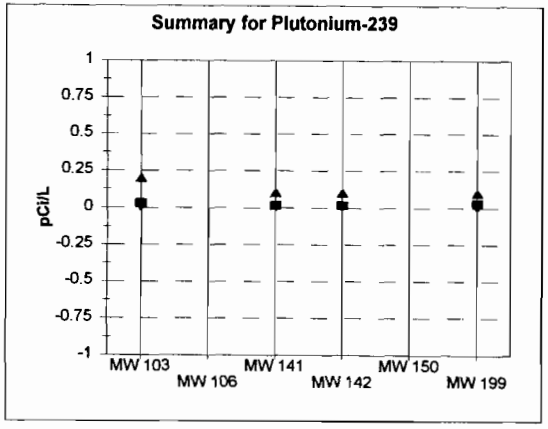
MW 199 - Data were not modified.

Summary of RGA Background Wells Radionuclide Data

ANALYSIS	RESULT	ERROR	QUALIFIER	DETECT?	SAMPLE ID	STATION ID	UNITS
Plutonium-239	0	0		NO	5944-93	MW103	pCi/L
Plutonium-239	0	0		NO	6774-94	MW103	pCi/L
Plutonium-239	0	0		NO	7299-93	MW103	pCi/L
Plutonium-239	0	0		NO	4272-94	MW103	pCi/L
Plutonium-239	0	0		NO	6026-94	MW103	pCi/L
Plutonium-239	0	0		NO	5187-94	MW103	pCi/L
Plutonium-239	0.2	0		YES	5178-93	MW103	pCi/L
Plutonium-239	0	0		NO	4229-94	MW141	pCi/L
Plutonium-239	0	0		NO	6054-94	MW141	pCi/L
Plutonium-239	0	0		NO	7085-93	MW141	pCi/L
Plutonium-239	0	0		NO	6868-94	MW141	pCi/L
Plutonium-239	0	0		NO	5199-94	MW141	pCi/L
Plutonium-239	0	0		NO	6092-93	MW141	pCi/L
Plutonium-239	0.1	0		YES	6080-93	MW141	pCi/L
Plutonium-239	0	0		NO	6872-94	MW142	pCi/L
Plutonium-239	0	0		NO	5203-94	MW142	pCi/L
Plutonium-239	0	0		NO	7089-93	MW142	pCi/L
Plutonium-239	0	0		NO	4233-94	MW142	pCi/L
Plutonium-239	0	0		NO	6096-93	MW142	pCi/L
Plutonium-239	0	0		NO	6058-94	MW142	pCi/L
Plutonium-239	0.1	0		YES	6084-93	MW142	pCi/L
Plutonium-239	0	0		NO	7311-93	MW199	pCi/L
Plutonium-239	0	0		NO	6888-94	MW199	pCi/L
Plutonium-239	0	0		NO	6074-94	MW199	pCi/L
Plutonium-239	0	0		NO	5260-94	MW199	pCi/L
Plutonium-239	0	0		NO	4312-94	MW199	pCi/L
Plutonium-239	0.1	0		YES	5170-93	MW199	pCi/L
Plutonium-239	0.1	0.1		YES	5984-93	MW199	pCi/L

CORRECTED DATA SET

	MW 103	MW 106	MW 141	MW 142	MW 150	MW 199	Overall	Weighted
	Plutonium-239							
	0		0	0		0		
	0		0	0		0		
	0		0	0		0		
	0		0	0		0		
	0		0	0		0		
	0		0	0		0.1		
	0.2		0.1	0.1		0.1		
Min	0.00	ERR	0.00	0.00	ERR	0.00	0.00	
Max	0.20	ERR	0.10	0.10	ERR	0.10	0.20	
Average	0.03	ERR	0.01	0.01	ERR	0.03	0.02	0.02
Number	7	0	7	7	0	7	28	



MW 103 - Data were not modified.

MW 106 - Data were not modified

MW 141 - Data were not modified.

MW 142 - Data were not modified.

MW 150 - Data were not modified.

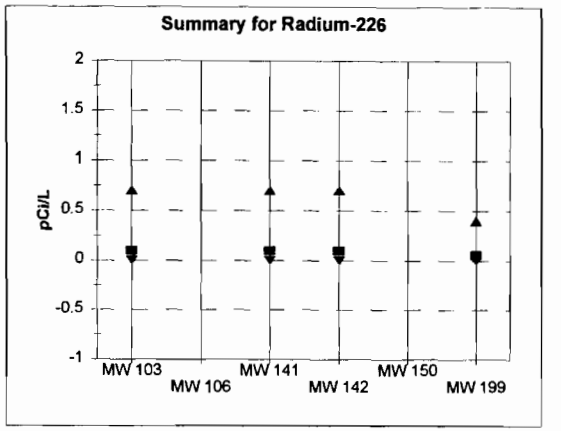
MW 199 - Data were not modified.

Summary of RGA Background Wells Radionuclide Data

ANALYSIS	RESULT	ERROR	QUALIFIER	DETECT?	SAMPLE ID	STATION ID	UNITS
Radium-226	0			NO	6774-94	MW103	pCi/L
Radium-226	0			NO	4272-94	MW103	pCi/L
Radium-226	0			NO	6026-94	MW103	pCi/L
Radium-226	0			NO	7299-93	MW103	pCi/L
Radium-226	0			NO	5187-94	MW103	pCi/L
Radium-226	0.7	0		YES	5178-93	MW103	pCi/L
Radium-226			Q	NO	5944-93	MW103	pCi/L
Radium-226	0			NO	5199-94	MW141	pCi/L
Radium-226	0	0.1		YES	6092-93	MW141	pCi/L
Radium-226	0			NO	6054-94	MW141	pCi/L
Radium-226	0			NO	7085-93	MW141	pCi/L
Radium-226	0			NO	6868-94	MW141	pCi/L
Radium-226	0			NO	4229-94	MW141	pCi/L
Radium-226	0.7	0		YES	6080-93	MW141	pCi/L
Radium-226	0			NO	6872-94	MW142	pCi/L
Radium-226	0			NO	7089-93	MW142	pCi/L
Radium-226	0			NO	6058-94	MW142	pCi/L
Radium-226	0			NO	5203-94	MW142	pCi/L
Radium-226	0	0		NO	6096-93	MW142	pCi/L
Radium-226	0			NO	4233-94	MW142	pCi/L
Radium-226	0.7	0		YES	6084-93	MW142	pCi/L
Radium-226	0			NO	4312-94	MW199	pCi/L
Radium-226	0			NO	6888-94	MW199	pCi/L
Radium-226	0			NO	6074-94	MW199	pCi/L
Radium-226	0			NO	5260-94	MW199	pCi/L
Radium-226	0			NO	7311-93	MW199	pCi/L
Radium-226	0.4	0		YES	5170-93	MW199	pCi/L
Radium-226			Q	NO	5984-93	MW199	pCi/L

CORRECTED DATA SET

	MW 103	MW 106	MW 141	MW 142	MW 150	MW 199	Overall	Weighted
	Radium-226							
	0		0	0		0		
	0		0	0		0		
	0		0	0		0		
	0		0	0		0		
	0		0	0		0		
	0.7		0	0		0.4		
	0		0.7	0.7		0		
Min	0.00	ERR	0.00	0.00	ERR	0.00	0.00	
Max	0.70	ERR	0.70	0.70	ERR	0.40	0.70	
Average	0.10	ERR	0.10	0.10	ERR	0.06	0.09	0.09
Number	7	0	7	7	0	7	28	



MW 103 - One "Q" qualified result was assigned the minimum detection limit for samples from this well.

MW 106 - Data were not modified

MW 141 - Data were not modified.

MW 142 - Data were not modified.

MW 150 - Data were not modified.

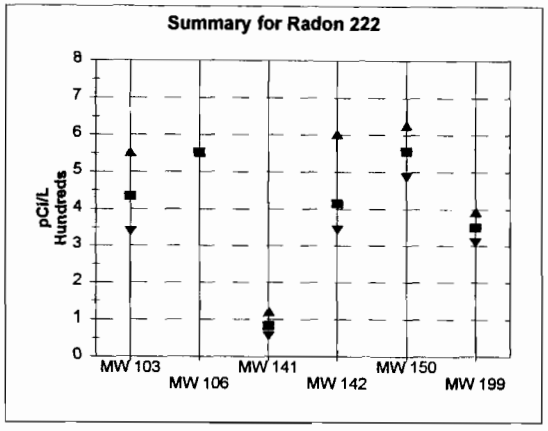
MW 199 - One "Q" qualified result was assigned the minimum detection limit for samples from this well.

Summary of RGA Background Wells Radionuclide Data

ANALYSIS	RESULT	ERROR	QUALIFIER	DETECT?	SAMPLE ID	STATION ID	UNITS
Radon 222	340	63		YES	7299-93	MW103	pCi/L
Radon 222	403	64		YES	5944-93	MW103	pCi/L
Radon 222	417	64		YES	6026-94	MW103	pCi/L
Radon 222	424	64		YES	5142-97	MW103	pCi/L
Radon 222	424	52		YES	5178-93	MW103	pCi/L
Radon 222	428	91		YES	6774-94	MW103	pCi/L
Radon 222	433	57		YES	5285-96	MW103	pCi/L
Radon 222	436	67		YES	4272-94	MW103	pCi/L
Radon 222	481	61		YES	5187-94	MW103	pCi/L
Radon 222	552	74		YES	5440-95	MW103	pCi/L
Radon 222	422	68		YES	5444-95	MW106	pCi/L
Radon 222	55	56		YES	4229-94	MW141	pCi/L
Radon 222	58	39		YES	6092-93	MW141	pCi/L
Radon 222	60	50		YES	7085-93	MW141	pCi/L
Radon 222	94	66		YES	5199-94	MW141	pCi/L
Radon 222	95	61		YES	6054-94	MW141	pCi/L
Radon 222	96	40		YES	6080-93	MW141	pCi/L
Radon 222	120	56		YES	6868-94	MW141	pCi/L
Radon 222	344	54		YES	6084-93	MW142	pCi/L
Radon 222	346	61		YES	5147-97	MW142	pCi/L
Radon 222	362	61		YES	7089-93	MW142	pCi/L
Radon 222	370	57		YES	6096-93	MW142	pCi/L
Radon 222	374	65		YES	5464-95	MW142	pCi/L
Radon 222	375	68		YES	4233-94	MW142	pCi/L
Radon 222	424	62		YES	6872-94	MW142	pCi/L
Radon 222	464	71		YES	5203-94	MW142	pCi/L
Radon 222	483	72		YES	6058-94	MW142	pCi/L
Radon 222	602	73		YES	5317-96	MW142	pCi/L
Radon 222	486	54		YES	5321-96	MW150	pCi/L
Radon 222	554	81		YES	5468-95	MW150	pCi/L
Radon 222	626	71		YES	5148-97	MW150	pCi/L
Radon 222	310	65		YES	4312-94	MW199	pCi/L
Radon 222	326	61		YES	7311-93	MW199	pCi/L
Radon 222	328	63		YES	5984-93	MW199	pCi/L
Radon 222	338	60		YES	6074-94	MW199	pCi/L
Radon 222	364	71		YES	5558-97	MW199	pCi/L
Radon 222	371	76		YES	5260-94	MW199	pCi/L
Radon 222	379	62		YES	6888-94	MW199	pCi/L
Radon 222	393	61		YES	5170-93	MW199	pCi/L

CORRECTED DATA SET

	MW 103	MW 106	MW 141	MW 142	MW 150	MW 199	Overall	Weighted
	Radon 222							
	340	552	55	344	486	310		
	403		58	346	554	326		
	417		60	362	626	328		
	424		94	370		338		
	424		95	374		364		
	428		96	375		371		
	433		120	424		379		
	436			464		393		
	481			483				
	552			602				
Min	340.0	552.0	55.0	344.0	486.0	310.0	55.0	
Max	552.0	552.0	120.0	602.0	626.0	393.0	626.0	
Average	433.8	552.0	82.6	414.4	555.3	351.1	361.2	398.2
Number	10	1	7	10	3	8	39	



MW 103 - Data were not modified.

MW 106 - Data were not modified

MW 141 - Data were not modified.

MW 142 - Data were not modified.

MW 150 - Data were not modified.

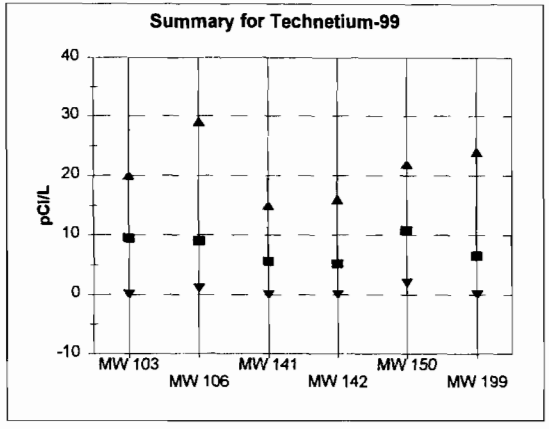
MW 199 - Data were not modified.

Summary of RGA Background Wells Radionuclide Data

ANALYSIS	RESULT	ERROR	QUALIFIER	DETECT?	SAMPLE ID	STATION ID	UNITS
Technetium-99	0	0		NO	5187-94	MW103	pCi/L
Technetium-99	4	18		YES	5440-95	MW103	pCi/L
Technetium-99	4	11		YES	5142-97	MW103	pCi/L
Technetium-99	5	11		YES	5372-97	MW103	pCi/L
Technetium-99	5	93		YES	5178-93	MW103	pCi/L
Technetium-99	10	45		YES	4272-94	MW103	pCi/L
Technetium-99	12	19		YES	7299-93	MW103	pCi/L
Technetium-99	13	34		YES	5944-93	MW103	pCi/L
Technetium-99	13	10		YES	5285-96	MW103	pCi/L
Technetium-99	18	20		YES	6774-94	MW103	pCi/L
Technetium-99	20	18		YES	6026-94	MW103	pCi/L
Technetium-99	1	2		YES	6640-94	MW106	pCi/L
Technetium-99	1	10		YES	5289-96	MW106	pCi/L
Technetium-99	3	6		YES	4697-94	MW106	pCi/L
Technetium-99	5	7		YES	5444-95	MW106	pCi/L
Technetium-99	5	17		YES	6782-94	MW106	pCi/L
Technetium-99	5	11		YES	5138-97	MW106	pCi/L
Technetium-99	6	12		YES	5788-97	MW106	pCi/L
Technetium-99	7	6		YES	7272-94	MW106	pCi/L
Technetium-99	10	24		YES	7862-93	MW106	pCi/L
Technetium-99	11	21		YES	5513-94	MW106	pCi/L
Technetium-99	25	19		YES	6579-93	MW106	pCi/L
Technetium-99	29	23		YES	5322-93	MW106	pCi/L
Technetium-99	0	14		YES	6054-94	MW141	pCi/L
Technetium-99	0	0		NO	5199-94	MW141	pCi/L
Technetium-99	1	3		YES	6092-93	MW141	pCi/L
Technetium-99	7	33		YES	7085-93	MW141	pCi/L
Technetium-99	8	24		YES	6868-94	MW141	pCi/L
Technetium-99	8	35		YES	6080-93	MW141	pCi/L
Technetium-99	15	20		YES	4229-94	MW141	pCi/L
Technetium-99	0	0		NO	5203-94	MW142	pCi/L
Technetium-99	0	16		YES	6096-93	MW142	pCi/L
Technetium-99	0	13		YES	7089-93	MW142	pCi/L
Technetium-99	0	0		NO	5147-97	MW142	pCi/L
Technetium-99	1	1		YES	6058-94	MW142	pCi/L
Technetium-99	3	10		YES	5317-96	MW142	pCi/L
Technetium-99	8	17		YES	6872-94	MW142	pCi/L
Technetium-99	9	6		YES	6084-93	MW142	pCi/L
Technetium-99	10	12		YES	5797-97	MW142	pCi/L
Technetium-99	10	19		YES	4233-94	MW142	pCi/L
Technetium-99	16	19		YES	5464-95	MW142	pCi/L
Technetium-99	2	4		YES	4789-94	MW150	pCi/L
Technetium-99	4	6		YES	6501-94	MW150	pCi/L
Technetium-99	4	11		YES	5148-97	MW150	pCi/L
Technetium-99	6	10		YES	5321-96	MW150	pCi/L
Technetium-99	8	42		YES	5578-94	MW150	pCi/L
Technetium-99	10	18		YES	7724-93	MW150	pCi/L
Technetium-99	15	21		YES	7366-94	MW150	pCi/L
Technetium-99	18	19		YES	6764-93	MW150	pCi/L
Technetium-99	19	20		YES	5650-93	MW150	pCi/L
Technetium-99	22	19		YES	5468-95	MW150	pCi/L
Technetium-99	0	0		NO	4312-94	MW199	pCi/L
Technetium-99	0	14		YES	5984-93	MW199	pCi/L
Technetium-99	3	12		YES	5558-97	MW199	pCi/L

CORRECTED DATA SET

	MW 103	MW 106	MW 141	MW 142	MW 150	MW 199	Overall	Weighted
	Technetium-99							
	0	1	0	0	2	0		
	4	1	0	0	4	0		
	4	3	1	0	4	3		
	5	5	7	0	6	4		
	5	5	8	1	8	4		
	10	5	8	3	10	7		
	12	6	15	8	15	10		
	13	7		9	18	24		
	13	10		10	19			
	18	11		10	22			
	20	25		16				
		29						
Min	0.00	1.00	0.00	0.00	2.00	0.00	0.00	
Max	20.00	29.00	15.00	16.00	22.00	24.00	29.00	
Average	9.45	9.00	5.57	5.18	10.80	6.50	7.93	7.75
Number	11	12	7	11	10	8	59	



MW 103 - Data were not modified.

MW 106 - Data were not modified

MW 141 - Data were not modified.

MW 142 - Data were not modified.

MW 150 - Data were not modified.

MW 199 - Data were not modified.

Summary of RGA Background Wells Radionuclide Data

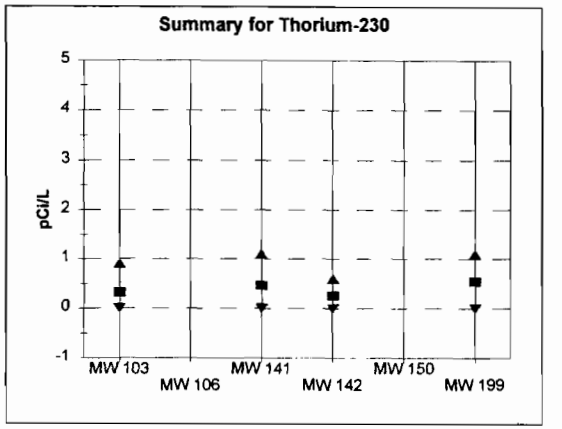
ANALYSIS	RESULT	ERROR	QUALIFIER	DETECT?	SAMPLE ID	STATION ID	UNITS
Technetium-99	4	6		YES	5170-93	MW199	pCi/L
Technetium-99	4	21		YES	5260-94	MW199	pCi/L
Technetium-99	7	20		YES	7311-93	MW199	pCi/L
Technetium-99	10	18		YES	6888-94	MW199	pCi/L
Technetium-99	24	20		YES	6074-94	MW199	pCi/L

Summary of RGA Background Wells Radionuclide Data

ANALYSIS	RESULT	ERROR	QUALIFIER	DETECT?	SAMPLE ID	STATION ID	UNITS
Thorium-230	0	0.1		YES	6774-94	MW103	pCi/L
Thorium-230	0.1	0.1		YES	7299-93	MW103	pCi/L
Thorium-230	0.1	0		YES	6026-94	MW103	pCi/L
Thorium-230	0.2	0.2		YES	5944-93	MW103	pCi/L
Thorium-230	0.3	0.1		YES	4272-94	MW103	pCi/L
Thorium-230	0.6	0		YES	5178-93	MW103	pCi/L
Thorium-230	0.9	0.2		YES	5187-94	MW103	pCi/L
Thorium-230	0	0		NO	6868-94	MW141	pCi/L
Thorium-230	0	0		NO	7085-93	MW141	pCi/L
Thorium-230	0.1	0		YES	6054-94	MW141	pCi/L
Thorium-230	0.5	0.2		YES	4229-94	MW141	pCi/L
Thorium-230	0.6	0		YES	6080-93	MW141	pCi/L
Thorium-230	0.9	0.2		YES	5199-94	MW141	pCi/L
Thorium-230	1.1	0		YES	6092-93	MW141	pCi/L
Thorium-230	0	0		NO	7089-93	MW142	pCi/L
Thorium-230	0.1	0.1		YES	5203-94	MW142	pCi/L
Thorium-230	0.1	0.1		YES	6872-94	MW142	pCi/L
Thorium-230	0.1	0		YES	6058-94	MW142	pCi/L
Thorium-230	0.3	0.1		YES	4233-94	MW142	pCi/L
Thorium-230	0.6	0		YES	6096-93	MW142	pCi/L
Thorium-230	0.6	0		YES	6084-93	MW142	pCi/L
Thorium-230	0	0		NO	6074-94	MW199	pCi/L
Thorium-230	0.1	0		YES	6888-94	MW199	pCi/L
Thorium-230	0.2	0.1		YES	7311-93	MW199	pCi/L
Thorium-230	0.5	0.3		YES	5984-93	MW199	pCi/L
Thorium-230	0.9	0.2		YES	4312-94	MW199	pCi/L
Thorium-230	1	0		YES	5170-93	MW199	pCi/L
Thorium-230	1.1	0.2		YES	5260-94	MW199	pCi/L

CORRECTED DATA SET

	MW 103	MW 106	MW 141	MW 142	MW 150	MW 199	Overall	Weighted
	Thorium-230							
	0		0	0		0		
	0.1		0	0.1		0.1		
	0.1		0.1	0.1		0.2		
	0.2		0.5	0.1		0.5		
	0.3		0.6	0.3		0.9		
	0.6		0.9	0.6		1		
	0.9		1.1	0.6		1.1		
Min	0.00	ERR	0.00	0.00	ERR	0.00	0.00	
Max	0.90	ERR	1.10	0.60	ERR	1.10	1.10	
Average	0.31	ERR	0.46	0.26	ERR	0.54	0.39	0.39
Number	7	0	7	7	0	7	28	



MW 103 - Data were not modified.

MW 106 - Data were not modified

MW 141 - Data were not modified.

MW 142 - Data were not modified.

MW 150 - Data were not modified.

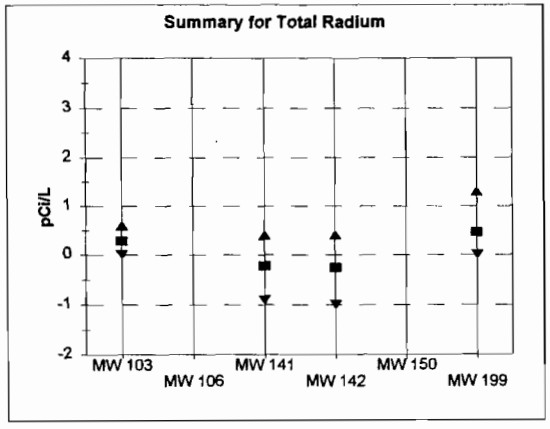
MW 199 - Data were not modified.

Summary of RGA Background Wells Radionuclide Data

ANALYSIS	RESULT	ERROR	QUALIFIER	DETECT?	SAMPLE ID	STATION ID	UNITS
Total Radium	0	0		NO	6026-94	MW103	pCi/L
Total Radium	0.1	0.1		YES	6774-94	MW103	pCi/L
Total Radium	0.2	0.1		YES	7299-93	MW103	pCi/L
Total Radium	0.5	0.1		YES	5187-94	MW103	pCi/L
Total Radium	0.6	0.1		YES	4272-94	MW103	pCi/L
Total Radium	-0.9	0		YES	6868-94	MW141	pCi/L
Total Radium	-0.8	0		YES	6054-94	MW141	pCi/L
Total Radium	0	0.2		YES	7085-93	MW141	pCi/L
Total Radium	0.2	0.1		YES	5199-94	MW141	pCi/L
Total Radium	0.4	0.1		YES	4229-94	MW141	pCi/L
Total Radium	-1	0		YES	6872-94	MW142	pCi/L
Total Radium	-1	0		YES	6058-94	MW142	pCi/L
Total Radium	0	0		NO	7089-93	MW142	pCi/L
Total Radium	0.3	0.1		YES	5203-94	MW142	pCi/L
Total Radium	0.4	0.1		YES	4233-94	MW142	pCi/L
Total Radium	0	0		NO	7311-93	MW199	pCi/L
Total Radium	0.2	0.1		YES	6888-94	MW199	pCi/L
Total Radium	0.4	0.1		YES	4312-94	MW199	pCi/L
Total Radium	0.4	0.1		YES	5260-94	MW199	pCi/L
Total Radium	1.3	0.5		YES	6074-94	MW199	pCi/L

CORRECTED DATA SET

	MW 103	MW 106	MW 141	MW 142	MW 150	MW 199	Overall	Weighted
Total Radium								
	0		-0.9	-1		0		
	0.1		-0.8	-1		0.2		
	0.2		0	0		0.4		
	0.5		0.2	0.3		0.4		
	0.6		0.4	0.4		1.3		
Min	0.00	ERR	-0.90	-1.00	ERR	0.00	-1.00	
Max	0.60	ERR	0.40	0.40	ERR	1.30	1.30	
Average	0.28	ERR	-0.22	-0.26	ERR	0.46	0.07	0.06
Number	5	0	5	5	0	5	20	



MW 103 - Data were not modified.

MW 106 - Data were not modified

MW 141 - Data were not modified.

MW 142 - Data were not modified.

MW 150 - Data were not modified.

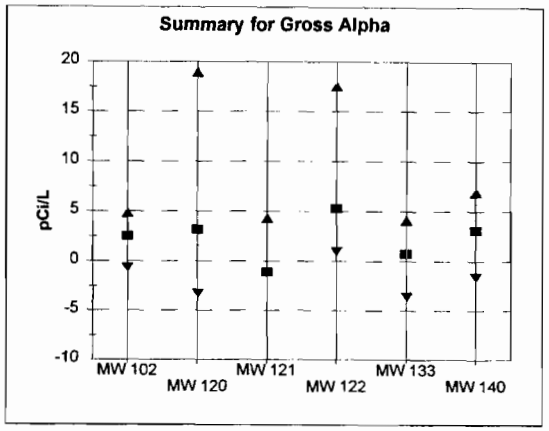
MW 199 - Data were not modified.

Summary of McNairy Background Wells Radionuclides

ANALYSIS	RESULT	ERROR	QUALIFIER	DETECT?	SAMPLE ID	STATION ID	UNITS
Gross Alpha	-0.7	-0.4		YES	8285-95	MW102	pCi/L
Gross Alpha	0	0		NO	7295-93	MW102	pCi/L
Gross Alpha	1.8	0.8		YES	6770-94	MW102	pCi/L
Gross Alpha	2.2	1		YES	6022-94	MW102	pCi/L
Gross Alpha	2.2	0.9		YES	5183-94	MW102	pCi/L
Gross Alpha	2.3	0.9		YES	4268-94	MW102	pCi/L
Gross Alpha	2.4	1.4		YES	5619-95	MW102	pCi/L
Gross Alpha	2.8	1		YES	5174-93	MW102	pCi/L
Gross Alpha	3.3	1.3		YES	5940-93	MW102	pCi/L
Gross Alpha	3.5	1.4		YES	5141-97	MW102	pCi/L
Gross Alpha	3.7	1.8		YES	5281-96	MW102	pCi/L
Gross Alpha	3.9	1.5		YES	7467-95	MW102	pCi/L
Gross Alpha	4.8	1.2		YES	6592-95	MW102	pCi/L
Gross Alpha	-3.3	-1.8		YES	5143-97	MW120	pCi/L
Gross Alpha	-1.4	0.5		YES	7065-93	MW120	pCi/L
Gross Alpha	-1.2	-1		YES	5293-96	MW120	pCi/L
Gross Alpha	0.9	0.7		YES	5448-95	MW120	pCi/L
Gross Alpha	1.3	0.9		YES	4209-94	MW120	pCi/L
Gross Alpha	1.8	0.9		YES	6928-94	MW120	pCi/L
Gross Alpha	2	1		YES	6034-94	MW120	pCi/L
Gross Alpha	3	1		YES	4991-94	MW120	pCi/L
Gross Alpha	4.4	1.6		YES	5793-97	MW120	pCi/L
Gross Alpha	8	3		YES	5900-93	MW120	pCi/L
Gross Alpha	18.9	8		YES	5088-93	MW120	pCi/L
Gross Alpha	-18	9.6		YES	6658-93	MW121	pCi/L
Gross Alpha	-8	3		YES	7782-93	MW121	pCi/L
Gross Alpha	-1.7	-0.8		YES	5144-97	MW121	pCi/L
Gross Alpha	0.5	0.2		YES	5794-97	MW121	pCi/L
Gross Alpha	1.2	1		YES	4864-94	MW121	pCi/L
Gross Alpha	1.8	1.4		YES	6453-94	MW121	pCi/L
Gross Alpha	2.7	1.6		YES	5452-95	MW121	pCi/L
Gross Alpha	2.8	1.8		YES	7276-94	MW121	pCi/L
Gross Alpha	3.1	1.3		YES	5500-96	MW121	pCi/L
Gross Alpha	4.3	1.3		YES	5517-94	MW121	pCi/L
Gross Alpha	1	0.4		YES	6662-93	MW122	pCi/L
Gross Alpha	1.8	1.1		YES	5456-95	MW122	pCi/L
Gross Alpha	1.9	1.1		YES	6457-94	MW122	pCi/L
Gross Alpha	2.5	1.1		YES	7200-94	MW122	pCi/L
Gross Alpha	3.4	1.2		YES	5145-97	MW122	pCi/L
Gross Alpha	3.5	1.2		YES	5521-94	MW122	pCi/L
Gross Alpha	4.4	1.6		YES	5795-97	MW122	pCi/L
Gross Alpha	5.8	2.1		YES	6596-95	MW122	pCi/L
Gross Alpha	6.1	1.3		YES	4868-94	MW122	pCi/L
Gross Alpha	6.5	2.5		YES	5301-96	MW122	pCi/L
Gross Alpha	8.8	2		YES	5246-93	MW122	pCi/L
Gross Alpha	17.5	4.6		YES	7786-93	MW122	pCi/L
Gross Alpha	-3.6	1.7		YES	6740-93	MW133	pCi/L
Gross Alpha	-2.9	-1.5		YES	5139-97	MW133	pCi/L
Gross Alpha	0.7	0.8		YES	5611-94	MW133	pCi/L
Gross Alpha	1.3	1		YES	6648-94	MW133	pCi/L
Gross Alpha	1.4	1		YES	5460-95	MW133	pCi/L
Gross Alpha	1.8	0.9		YES	5789-97	MW133	pCi/L
Gross Alpha	1.9	1.3		YES	5305-96	MW133	pCi/L
Gross Alpha	2	0		YES	5282-93	MW133	pCi/L

CORRECTED DATA SET

	MW 102	MW 120	MW 121	MW 122	MW 133	MW 140	Overall	Weighted
	Gross Alpha							
	-0.7	-3.3	-18	1	-3.6	-1.6		
	0	-1.4	-8	1.8	-2.9	0.9		
	1.8	-1.2	-1.7	1.9	0.7	1.1		
	2.2	0.9	0.5	2.5	1.3	1.9		
	2.2	1.3	1.2	3.4	1.4	3.4		
	2.3	1.8	1.8	3.5	1.8	3.5		
	2.4	2	2.7	4.4	1.9	3.9		
	2.8	3	2.8	5.8	2	5		
	3.3	4.4	3.1	6.1	4.1	6		
	3.5	8	4.3	6.5		6.9		
	3.7	18.9		8.8				
	3.9			17.5				
	4.8							
Min	-0.70	-3.30	-18.00	1.00	-3.60	-1.60	-18.00	
Max	4.80	18.90	4.30	17.50	4.10	6.90	18.90	
Average	2.48	3.13	-1.13	5.27	0.74	3.10	2.40	2.26
Number	13	11	10	12	9	10	65	



MW 102 - Data were not modified.

MW 120 - Data were not modified

MW 121 - Data were not modified.

MW 122 - Data were not modified.

MW 133 - Data were not modified.

MW 140 - Data were not modified.

Summary of McNairy Background Wells Radionuclides

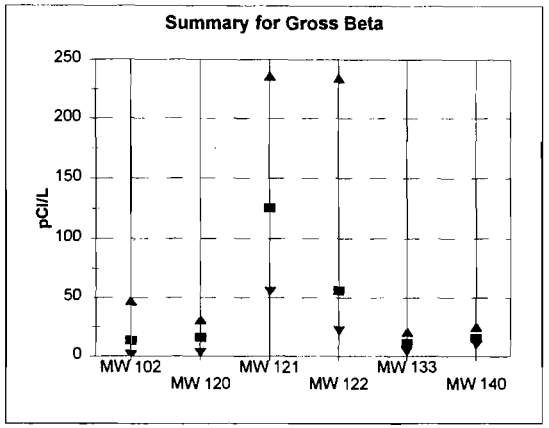
ANALYSIS	RESULT	ERROR	QUALIFIER	DETECT?	SAMPLE ID	STATION ID	UNITS
Gross Alpha	4.1	1.2		YES	4761-94	MW133	pCi/L
Gross Alpha	-1.6	0.6		YES	7081-93	MW140	pCi/L
Gross Alpha	0.9	0.8		YES	5195-94	MW140	pCi/L
Gross Alpha	1.1	0.8		YES	6864-94	MW140	pCi/L
Gross Alpha	1.9	0.9		YES	5146-97	MW140	pCi/L
Gross Alpha	3.4	1		YES	6004-93	MW140	pCi/L
Gross Alpha	3.5	1.1		YES	6050-94	MW140	pCi/L
Gross Alpha	3.9	1.4		YES	4225-94	MW140	pCi/L
Gross Alpha	5	1.7		YES	6088-93	MW140	pCi/L
Gross Alpha	6	2		YES	5796-97	MW140	pCi/L
Gross Alpha	6.9	2.8		YES	5313-96	MW140	pCi/L

Summary of McNairy Background Wells Radionuclides

ANALYSIS	RESULT	ERROR	QUALIFIER	DETECT?	SAMPLE ID	STATION ID	UNITS
Gross Beta	1	1		YES	5619-95	MW102	pCi/L
Gross Beta	6	1		YES	8285-95	MW102	pCi/L
Gross Beta	6	2		YES	5183-94	MW102	pCi/L
Gross Beta	7	1		YES	5940-93	MW102	pCi/L
Gross Beta	9	3		YES	6770-94	MW102	pCi/L
Gross Beta	9	4		YES	6022-94	MW102	pCi/L
Gross Beta	9	1		YES	5141-97	MW102	pCi/L
Gross Beta	12	2		YES	7295-93	MW102	pCi/L
Gross Beta	12	2		YES	5174-93	MW102	pCi/L
Gross Beta	14	2		YES	7467-95	MW102	pCi/L
Gross Beta	17	1		YES	6592-95	MW102	pCi/L
Gross Beta	24	4		YES	5281-96	MW102	pCi/L
Gross Beta	47	8		YES	4268-94	MW102	pCi/L
Gross Beta	3	1		YES	5293-96	MW120	pCi/L
Gross Beta	9	2		YES	6928-94	MW120	pCi/L
Gross Beta	10	4		YES	5448-95	MW120	pCi/L
Gross Beta	11	2		YES	7065-93	MW120	pCi/L
Gross Beta	11	2		YES	5143-97	MW120	pCi/L
Gross Beta	12	2		YES	5793-97	MW120	pCi/L
Gross Beta	20	5		YES	4209-94	MW120	pCi/L
Gross Beta	20	3		YES	5900-93	MW120	pCi/L
Gross Beta	20	4		YES	4991-94	MW120	pCi/L
Gross Beta	26	5		YES	6034-94	MW120	pCi/L
Gross Beta	31	5		YES	5088-93	MW120	pCi/L
Gross Beta	55	5		YES	5500-96	MW121	pCi/L
Gross Beta	65	10		YES	5517-94	MW121	pCi/L
Gross Beta	105	7		YES	5794-97	MW121	pCi/L
Gross Beta	118	22		YES	4864-94	MW121	pCi/L
Gross Beta	119	33		YES	7276-94	MW121	pCi/L
Gross Beta	120	9		YES	5144-97	MW121	pCi/L
Gross Beta	122	6		YES	6453-94	MW121	pCi/L
Gross Beta	123	42		YES	5452-95	MW121	pCi/L
Gross Beta	191	10		YES	6658-93	MW121	pCi/L
Gross Beta	236	14		YES	7782-93	MW121	pCi/L
Gross Beta	22	6		YES	7200-94	MW122	pCi/L
Gross Beta	24	3		YES	5246-93	MW122	pCi/L
Gross Beta	24	8		YES	5456-95	MW122	pCi/L
Gross Beta	25	3		YES	6457-94	MW122	pCi/L
Gross Beta	28	3		YES	6596-95	MW122	pCi/L
Gross Beta	30	3		YES	6662-93	MW122	pCi/L
Gross Beta	38	6		YES	4868-94	MW122	pCi/L
Gross Beta	44	5		YES	5301-96	MW122	pCi/L
Gross Beta	44	4		YES	5795-97	MW122	pCi/L
Gross Beta	45	5		YES	5145-97	MW122	pCi/L
Gross Beta	113	9		YES	7786-93	MW122	pCi/L
Gross Beta	234	58		YES	5521-94	MW122	pCi/L
Gross Beta	4	1		YES	5789-97	MW133	pCi/L
Gross Beta	6	1		YES	5139-97	MW133	pCi/L
Gross Beta	7	1		YES	5282-93	MW133	pCi/L
Gross Beta	9	5		YES	5611-94	MW133	pCi/L
Gross Beta	9	2		YES	6648-94	MW133	pCi/L
Gross Beta	11	2		YES	6740-93	MW133	pCi/L
Gross Beta	16	3		YES	5305-96	MW133	pCi/L
Gross Beta	18	6		YES	5460-95	MW133	pCi/L

CORRECTED DATA SET

	MW 102	MW 120	MW 121	MW 122	MW 133	MW 140	Overall	Weighted
	Gross Beta							
	1	3	55	22	4	10		
	6	9	65	24	6	11		
	6	10	105	24	7	13		
	7	11	118	25	9	15		
	9	11	119	28	9	15		
	9	12	120	30	11	15		
	9	20	122	38	16	15		
	12	20	123	44	18	16		
	12	20	191	44	21	17		
	14	26	236	45		25		
	17	31		113				
	24			234				
	47							
Min	1.00	3.00	55.00	22.00	4.00	10.00	1.00	
Max	47.00	31.00	236.00	234.00	21.00	25.00	236.00	
Average	13.31	15.73	125.40	55.92	11.22	15.20	38.83	39.46
Number	13	11	10	12	9	10	65	



MW 102 - Data were not modified.

MW 120 - Data were not modified

MW 121 - Data were not modified.

MW 122 - Data were not modified.

MW 133 - Data were not modified.

MW 140 - Data were not modified.

Summary of McNairy Background Wells Radionuclides

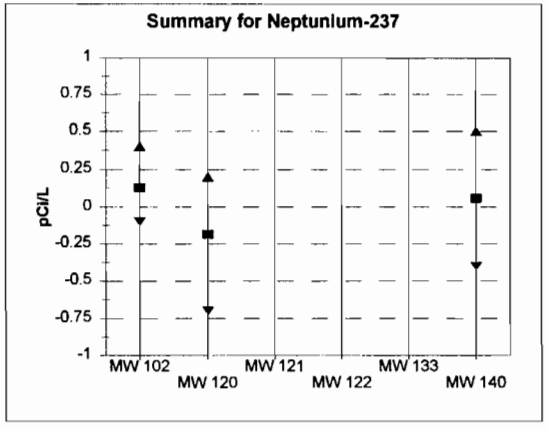
ANALYSIS	RESULT	ERROR	QUALIFIER	DETECT?	SAMPLE ID	STATION ID	UNITS
Gross Beta	21	5		YES	4761-94	MW133	pCi/L
Gross Beta	10	2		YES	5146-97	MW140	pCi/L
Gross Beta	11	3		YES	6864-94	MW140	pCi/L
Gross Beta	13	2		YES	7081-93	MW140	pCi/L
Gross Beta	15	2		YES	6004-93	MW140	pCi/L
Gross Beta	15	2		YES	5796-97	MW140	pCi/L
Gross Beta	15	2		YES	4225-94	MW140	pCi/L
Gross Beta	15	4		YES	6050-94	MW140	pCi/L
Gross Beta	16	4		YES	5195-94	MW140	pCi/L
Gross Beta	17	2		YES	6088-93	MW140	pCi/L
Gross Beta	25	4		YES	5313-96	MW140	pCi/L

Summary of McNairy Background Wells Radionuclides

ANALYSIS	RESULT	ERROR	QUALIFIER	DETECT?	SAMPLE ID	STATION ID	UNITS
Neptunium-237	-0.1	0.1		YES	5183-94	MW102	pCi/L
Neptunium-237	0	0		NO	6022-94	MW102	pCi/L
Neptunium-237	0	0		NO	5940-93	MW102	pCi/L
Neptunium-237	0.1	0.1		YES	7295-93	MW102	pCi/L
Neptunium-237	0.2	0.1		YES	4268-94	MW102	pCi/L
Neptunium-237	0.3	0.2		YES	6770-94	MW102	pCi/L
Neptunium-237	0.4	0		YES	5174-93	MW102	pCi/L
Neptunium-237	-0.7	0.3		YES	6928-94	MW120	pCi/L
Neptunium-237	-0.4	0.2		YES	6034-94	MW120	pCi/L
Neptunium-237	-0.2	0.2		YES	7065-93	MW120	pCi/L
Neptunium-237	-0.2	0.1		YES	5900-93	MW120	pCi/L
Neptunium-237	-0.1	0.1		YES	4991-94	MW120	pCi/L
Neptunium-237	0.1	0		YES	5088-93	MW120	pCi/L
Neptunium-237	0.2	0.1		YES	4209-94	MW120	pCi/L
Neptunium-237	-0.4	0.2		YES	6088-93	MW140	pCi/L
Neptunium-237	-0.3	0.2		YES	7081-93	MW140	pCi/L
Neptunium-237	-0.1	0.1		YES	5195-94	MW140	pCi/L
Neptunium-237	0.1	0.1		YES	4225-94	MW140	pCi/L
Neptunium-237	0.1	0		YES	6050-94	MW140	pCi/L
Neptunium-237	0.5	0.2		YES	6864-94	MW140	pCi/L
Neptunium-237	0.5	0		YES	6004-93	MW140	pCi/L

CORRECTED DATA SET

	MW 102	MW 120	MW 121	MW 122	MW 133	MW 140	Overall	Weighted
	Neptunium-237							
	-0.1	-0.7				-0.4		
	0	-0.4				-0.3		
	0	-0.2				-0.1		
	0.1	-0.2				0.1		
	0.2	-0.1				0.1		
	0.3	0.1				0.5		
	0.4	0.2				0.5		
Min	-0.10	-0.70	ERR	ERR	ERR	-0.40	-0.70	
Max	0.40	0.20	ERR	ERR	ERR	0.50	0.50	
Average	0.13	-0.19	ERR	ERR	ERR	0.06	0.00	0.00
Number	7	7	0	0	0	7	21	



MW 102 - Data were not modified.

MW 120 - Data were not modified

MW 121 - Data were not modified.

MW 122 - Data were not modified.

MW 133 - Data were not modified.

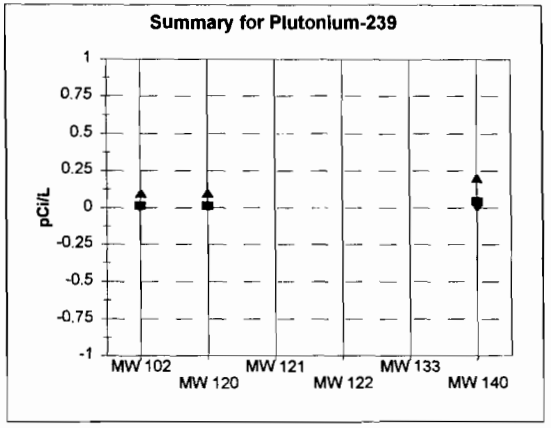
MW 140 - Data were not modified.

Summary of McNairy Background Wells Radionuclides

ANALYSIS	RESULT	ERROR	QUALIFIER	DETECT?	SAMPLE ID	STATION ID	UNITS
Plutonium-239	0	0		NO	7295-93	MW102	pCi/L
Plutonium-239	0	0		NO	6022-94	MW102	pCi/L
Plutonium-239	0	0		NO	4268-94	MW102	pCi/L
Plutonium-239	0	0		NO	6770-94	MW102	pCi/L
Plutonium-239	0	0		NO	5940-93	MW102	pCi/L
Plutonium-239	0	0		NO	5183-94	MW102	pCi/L
Plutonium-239	0.1	0		YES	5174-93	MW102	pCi/L
Plutonium-239	0	0		NO	5088-93	MW120	pCi/L
Plutonium-239	0	0		NO	7065-93	MW120	pCi/L
Plutonium-239	0	0		NO	4209-94	MW120	pCi/L
Plutonium-239	0	0		NO	4991-94	MW120	pCi/L
Plutonium-239	0	0		NO	6928-94	MW120	pCi/L
Plutonium-239	0	0		NO	6034-94	MW120	pCi/L
Plutonium-239	0.1	0.1		YES	5900-93	MW120	pCi/L
Plutonium-239	0	0		NO	6864-94	MW140	pCi/L
Plutonium-239	0	0		NO	5195-94	MW140	pCi/L
Plutonium-239	0	0		NO	7081-93	MW140	pCi/L
Plutonium-239	0	0		NO	6050-94	MW140	pCi/L
Plutonium-239	0	0		NO	4225-94	MW140	pCi/L
Plutonium-239	0.1	0		YES	6088-93	MW140	pCi/L
Plutonium-239	0.2	0		YES	6004-93	MW140	pCi/L

CORRECTED DATA SET

	MW 102	MW 120	MW 121	MW 122	MW 133	MW 140	Overall	Weighted
	Plutonium-239							
	0	0				0		
	0	0				0		
	0	0				0		
	0	0				0		
	0	0				0		
	0	0				0.1		
	0.1	0.1				0.2		
Min	0.00	0.00	ERR	ERR	ERR	0.00	0.00	
Max	0.10	0.10	ERR	ERR	ERR	0.20	0.20	
Average	0.01	0.01	ERR	ERR	ERR	0.04	0.02	0.02
Number	7	7	0	0	0	7	21	



MW 102 - Data were not modified.

MW 120 - Data were not modified

MW 121 - Data were not modified.

MW 122 - Data were not modified.

MW 133 - Data were not modified.

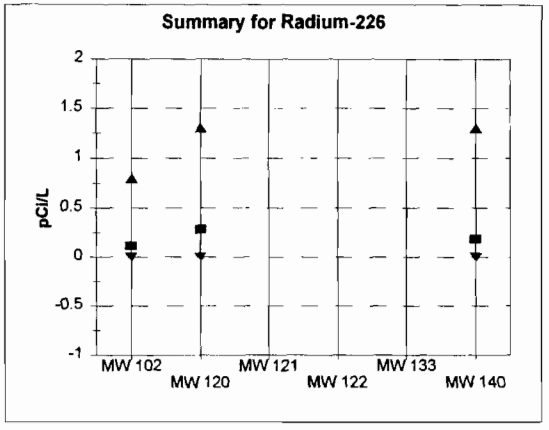
MW 140 - Data were not modified.

Summary of McNairy Background Wells Radionuclides

ANALYSIS	RESULT	ERROR	QUALIFIER	DETECT?	SAMPLE ID	STATION ID	UNITS
Radium-226	0			NO	7295-93	MW102	pCi/L
Radium-226	0			NO	6022-94	MW102	pCi/L
Radium-226	0			NO	4268-94	MW102	pCi/L
Radium-226	0			NO	5183-94	MW102	pCi/L
Radium-226	0			NO	6770-94	MW102	pCi/L
Radium-226	0.8	0		YES	5174-93	MW102	pCi/L
Radium-226			Q	NO	5940-93	MW102	pCi/L
Radium-226	0			NO	4991-94	MW120	pCi/L
Radium-226	0			NO	4209-94	MW120	pCi/L
Radium-226	0			NO	6034-94	MW120	pCi/L
Radium-226	0			NO	7065-93	MW120	pCi/L
Radium-226	0			NO	6928-94	MW120	pCi/L
Radium-226	0.7	0		YES	5088-93	MW120	pCi/L
Radium-226	1.3	0.2		YES	5900-93	MW120	pCi/L
Radium-226	0			NO	6864-94	MW140	pCi/L
Radium-226	0			NO	4225-94	MW140	pCi/L
Radium-226	0			NO	5195-94	MW140	pCi/L
Radium-226	0	0		NO	6088-93	MW140	pCi/L
Radium-226	0			NO	6050-94	MW140	pCi/L
Radium-226	0			NO	7081-93	MW140	pCi/L
Radium-226	1.3	0		YES	6004-93	MW140	pCi/L

CORRECTED DATA SET

	MW 102	MW 120	MW 121	MW 122	MW 133	MW 140	Overall	Weighted
Radium-226								
	0	0				0		
	0	0				0		
	0	0				0		
	0	0				0		
	0	0				0		
	0.8	0.7				0		
	0	1.3				1.3		
Min	0.00	0.00	ERR	ERR	ERR	0.00	0.00	
Max	0.80	1.30	ERR	ERR	ERR	1.30	1.30	
Average	0.11	0.29	ERR	ERR	ERR	0.19	0.20	0.20
Number	7	7	0	0	0	7	21	



MW 102 - One "Q" qualified result assigned minimum detection limit for samples from this well.

MW 120 - Data were not modified

MW 121 - Data were not modified.

MW 122 - Data were not modified.

MW 133 - Data were not modified.

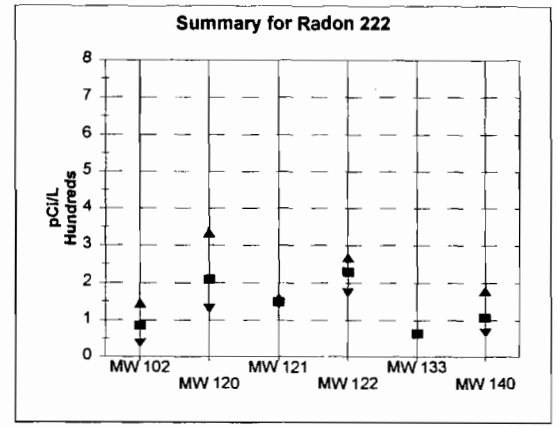
MW 140 - Data were not modified.

Summary of McNairy Background Wells Radionuclides

ANALYSIS	RESULT	ERROR	QUALIFIER	DETECT?	SAMPLE ID	STATION ID	UNITS
Radon 222	37	9		YES	7467-95	MW102	pCi/L
Radon 222	38	48		YES	6770-94	MW102	pCi/L
Radon 222	60	50		YES	4268-94	MW102	pCi/L
Radon 222	75	46		YES	8285-95	MW102	pCi/L
Radon 222	75	52		YES	5940-93	MW102	pCi/L
Radon 222	80	67		YES	6592-95	MW102	pCi/L
Radon 222	94	52		YES	6022-94	MW102	pCi/L
Radon 222	96	52		YES	5141-97	MW102	pCi/L
Radon 222	96	34		YES	5174-93	MW102	pCi/L
Radon 222	105	52		YES	5619-95	MW102	pCi/L
Radon 222	105	40		YES	5281-96	MW102	pCi/L
Radon 222	113	63		YES	7295-93	MW102	pCi/L
Radon 222	145	72		YES	5183-94	MW102	pCi/L
Radon 222	0			NO	5293-96	MW120	pCi/L
Radon 222	130	53		YES	5900-93	MW120	pCi/L
Radon 222	135	47		YES	4991-94	MW120	pCi/L
Radon 222	148	40		YES	5088-93	MW120	pCi/L
Radon 222	206	55		YES	7065-93	MW120	pCi/L
Radon 222	220	52		YES	5143-97	MW120	pCi/L
Radon 222	230	62		YES	4209-94	MW120	pCi/L
Radon 222	266	61		YES	6034-94	MW120	pCi/L
Radon 222	286	71		YES	5448-95	MW120	pCi/L
Radon 222	333	59		YES	6928-94	MW120	pCi/L
Radon 222	0			NO	5500-96	MW121	pCi/L
Radon 222	143	50		YES	5144-97	MW121	pCi/L
Radon 222	157	34		YES	5452-95	MW121	pCi/L
Radon 222	173	34		YES	5456-95	MW122	pCi/L
Radon 222	218	46		YES	5301-96	MW122	pCi/L
Radon 222	255	60		YES	5145-97	MW122	pCi/L
Radon 222	267	53		YES	6596-95	MW122	pCi/L
Radon 222	64	49		YES	5460-95	MW133	pCi/L
Radon 222	67	53		YES	7081-93	MW140	pCi/L
Radon 222	74	40		YES	6088-93	MW140	pCi/L
Radon 222	79	46		YES	5146-97	MW140	pCi/L
Radon 222	83	64		YES	5195-94	MW140	pCi/L
Radon 222	97	53		YES	4225-94	MW140	pCi/L
Radon 222	101	48		YES	5313-96	MW140	pCi/L
Radon 222	114	44		YES	6004-93	MW140	pCi/L
Radon 222	172	51		YES	6864-94	MW140	pCi/L
Radon 222	178	61		YES	6050-94	MW140	pCi/L

CORRECTED DATA SET

	MW 102	MW 120	MW 121	MW 122	MW 133	MW 140	Overall	Weighted
	Radon 222							
	37	130	143	173	64	67		
	38	130	143	218		74		
	60	135	157	255		79		
	75	148		267		83		
	75	206				97		
	80	220				101		
	94	230				114		
	96	266				172		
	96	286				178		
	105	333						
	105							
	113							
	145							
Min	37.00	130.00	143.00	173.00	64.00	67.00	37.00	
Max	145.00	333.00	157.00	267.00	64.00	178.00	333.00	
Average	86.08	208.40	147.67	228.25	64.00	107.22	139.70	140.27
Number	13	10	3	4	1	9	40	



MW 102 - Data were not modified.

MW 120 - "0" value appears anomalous and increased to next smallest value.

MW 121 - "0" value appears anomalous and increased to next smallest value.

MW 122 - Data were not modified.

MW 133 - Data were not modified.

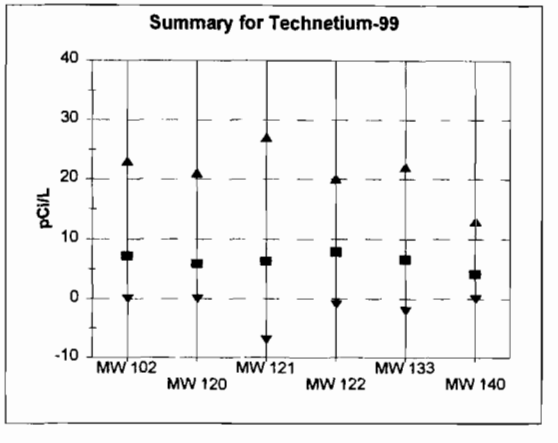
MW 140 - Data were not modified.

Summary of McNairy Background Wells Radionuclides

ANALYSIS	RESULT	ERROR	QUALIFIER	DETECT?	SAMPLE ID	STATION ID	UNITS
Technetium-99	0	0		NO	8285-95	MW102	pCi/L
Technetium-99	0	0		NO	5141-97	MW102	pCi/L
Technetium-99	0	0		NO	6022-94	MW102	pCi/L
Technetium-99	2	10		YES	7467-95	MW102	pCi/L
Technetium-99	4	22		YES	5619-95	MW102	pCi/L
Technetium-99	5	10		YES	5281-96	MW102	pCi/L
Technetium-99	6	37		YES	4268-94	MW102	pCi/L
Technetium-99	9	18		YES	5174-93	MW102	pCi/L
Technetium-99	9	27		YES	5940-93	MW102	pCi/L
Technetium-99	9	37		YES	7295-93	MW102	pCi/L
Technetium-99	10	10		YES	6592-95	MW102	pCi/L
Technetium-99	17	21		YES	6770-94	MW102	pCi/L
Technetium-99	23	19		YES	5183-94	MW102	pCi/L
Technetium-99	0	0		NO	4209-94	MW120	pCi/L
Technetium-99	0	0		NO	5293-96	MW120	pCi/L
Technetium-99	0	0		NO	6928-94	MW120	pCi/L
Technetium-99	1	12		YES	5793-97	MW120	pCi/L
Technetium-99	3	18		YES	4991-94	MW120	pCi/L
Technetium-99	4	19		YES	6034-94	MW120	pCi/L
Technetium-99	5	40		YES	5088-93	MW120	pCi/L
Technetium-99	8	28		YES	5900-93	MW120	pCi/L
Technetium-99	11	11		YES	5143-97	MW120	pCi/L
Technetium-99	12	21		YES	7065-93	MW120	pCi/L
Technetium-99	21	20		YES	5448-95	MW120	pCi/L
Technetium-99	-7	0		YES	5794-97	MW121	pCi/L
Technetium-99	0	0		NO	5500-96	MW121	pCi/L
Technetium-99	0	0		NO	5144-97	MW121	pCi/L
Technetium-99	0	0		NO	7276-94	MW121	pCi/L
Technetium-99	4	10		YES	6658-93	MW121	pCi/L
Technetium-99	7	18		YES	5452-95	MW121	pCi/L
Technetium-99	8	21		YES	6453-94	MW121	pCi/L
Technetium-99	9	33		YES	4864-94	MW121	pCi/L
Technetium-99	15	20		YES	7782-93	MW121	pCi/L
Technetium-99	27	23		YES	5517-94	MW121	pCi/L
Technetium-99	-1	0		YES	5795-97	MW122	pCi/L
Technetium-99	0	0		NO	7200-94	MW122	pCi/L
Technetium-99	0	0		NO	4868-94	MW122	pCi/L
Technetium-99	1	11		YES	5145-97	MW122	pCi/L
Technetium-99	2	10		YES	5301-96	MW122	pCi/L
Technetium-99	5	34		YES	5246-93	MW122	pCi/L
Technetium-99	11	11		YES	6596-95	MW122	pCi/L
Technetium-99	11	31		YES	5521-94	MW122	pCi/L
Technetium-99	13	17		YES	6457-94	MW122	pCi/L
Technetium-99	15	23		YES	7786-93	MW122	pCi/L
Technetium-99	17	19		YES	6662-93	MW122	pCi/L
Technetium-99	20	20		YES	5456-95	MW122	pCi/L
Technetium-99	-2	0		YES	5789-97	MW133	pCi/L
Technetium-99	0	0		NO	5139-97	MW133	pCi/L
Technetium-99	3	6		YES	6648-94	MW133	pCi/L
Technetium-99	3	10		YES	5305-96	MW133	pCi/L
Technetium-99	4	12		YES	5282-93	MW133	pCi/L
Technetium-99	8	25		YES	5460-95	MW133	pCi/L
Technetium-99	9	20		YES	5611-94	MW133	pCi/L
Technetium-99	13	26		YES	4761-94	MW133	pCi/L

CORRECTED DATA SET

	MW 102	MW 120	MW 121	MW 122	MW 133	MW 140	Overall	Weighted
	Technetium-99							
	0	0	-7	-1	-2	0		
	0	0	0	0	0	0		
	0	0	0	0	3	0		
	2	1	0	1	3	0		
	4	3	4	2	4	4		
	5	4	7	5	8	4		
	6	5	8	11	9	5		
	9	8	9	11	13	6		
	9	11	15	13	22	10		
	9	12	27	15		13		
	10	21		17				
	17			20				
	23							
Min	0.00	0.00	-7.00	-1.00	-2.00	0.00	-7.00	
Max	23.00	21.00	27.00	20.00	22.00	13.00	27.00	
Average	7.23	5.91	6.30	7.83	6.67	4.20	6.43	6.36
Number	13	11	10	12	9	10	65	



MW 102 - Data were not modified.

MW 120 - Data were not modified

MW 121 - Data were not modified.

MW 122 - Data were not modified.

MW 133 - Data were not modified.

MW 140 - Data were not modified.

Summary of McNairy Background Wells Radionuclides

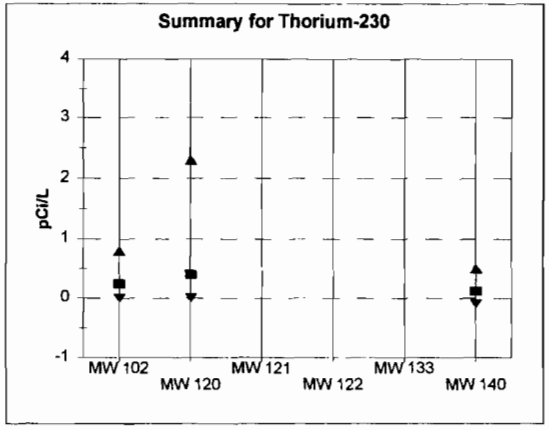
ANALYSIS	RESULT	ERROR	QUALIFIER	DETECT?	SAMPLE ID	STATION ID	UNITS
Technetium-99	22	22		YES	6740-93	MW133	pCi/L
Technetium-99	0	0		NO	6050-94	MW140	pCi/L
Technetium-99	0	0		NO	5313-96	MW140	pCi/L
Technetium-99	0	11		YES	5146-97	MW140	pCi/L
Technetium-99	0	0		NO	5195-94	MW140	pCi/L
Technetium-99	4	9		YES	7081-93	MW140	pCi/L
Technetium-99	4	11		YES	6088-93	MW140	pCi/L
Technetium-99	5	16		YES	4225-94	MW140	pCi/L
Technetium-99	6	38		YES	6864-94	MW140	pCi/L
Technetium-99	10	31		YES	6004-93	MW140	pCi/L
Technetium-99	13	11		YES	5796-97	MW140	pCi/L

Summary of McNairy Background Wells Radionuclides

ANALYSIS	RESULT	ERROR	QUALIFIER	DETECT?	SAMPLE ID	STATION ID	UNITS
Thorium-230	0	0		NO	7295-93	MW102	pCi/L
Thorium-230	0	0		NO	6022-94	MW102	pCi/L
Thorium-230	0.1	0.1		YES	5940-93	MW102	pCi/L
Thorium-230	0.1	0.1		YES	6770-94	MW102	pCi/L
Thorium-230	0.3	0		YES	5174-93	MW102	pCi/L
Thorium-230	0.4	0.1		YES	4268-94	MW102	pCi/L
Thorium-230	0.8	0.2		YES	5183-94	MW102	pCi/L
Thorium-230	0	0		NO	6034-94	MW120	pCi/L
Thorium-230	0	0		NO	5088-93	MW120	pCi/L
Thorium-230	0	0		NO	6928-94	MW120	pCi/L
Thorium-230	0.1	0.1		YES	4209-94	MW120	pCi/L
Thorium-230	0.2	0.2		YES	5900-93	MW120	pCi/L
Thorium-230	0.2	0		YES	7065-93	MW120	pCi/L
Thorium-230	2.3	0.6		YES	4991-94	MW120	pCi/L
Thorium-230	-0.1	0.1		YES	6088-93	MW140	pCi/L
Thorium-230	0	0		NO	7081-93	MW140	pCi/L
Thorium-230	0	0		NO	6050-94	MW140	pCi/L
Thorium-230	0.1	0		YES	6004-93	MW140	pCi/L
Thorium-230	0.1	0.1		YES	6864-94	MW140	pCi/L
Thorium-230	0.2	0.1		YES	5195-94	MW140	pCi/L
Thorium-230	0.5	0.2		YES	4225-94	MW140	pCi/L

CORRECTED DATA SET

	MW 102	MW 120	MW 121	MW 122	MW 133	MW 140	Overall	Weighted
	Thorium-230							
	0	0				-0.1		
	0	0				0		
	0.1	0				0		
	0.1	0.1				0.1		
	0.3	0.2				0.1		
	0.4	0.2				0.2		
	0.8	2.3				0.5		
Min	0.00	0.00	ERR	ERR	ERR	-0.10	-0.10	
Max	0.80	2.30	ERR	ERR	ERR	0.50	2.30	
Average	0.24	0.40	ERR	ERR	ERR	0.11	0.25	0.25
Number	7	7	0	0	0	7	21	



MW 102 - Data were not modified.

MW 120 - Data were not modified

MW 121 - Data were not modified.

MW 122 - Data were not modified.

MW 133 - Data were not modified.

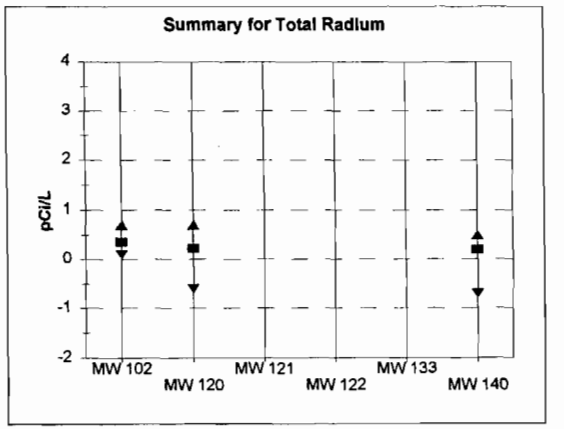
MW 140 - Data were not modified.

Summary of McNairy Background Wells Radionuclides

ANALYSIS	RESULT	ERROR	QUALIFIER	DETECT?	SAMPLE ID	STATION ID	UNITS
Total Radium	0.1			YES	7295-93	MW102	pCi/L
Total Radium	0.3	0.1		YES	6770-94	MW102	pCi/L
Total Radium	0.3	0.1		YES	6022-94	MW102	pCi/L
Total Radium	0.4	0.1		YES	5183-94	MW102	pCi/L
Total Radium	0.7	0.1		YES	4268-94	MW102	pCi/L
Total Radium	-0.6	0		YES	6034-94	MW120	pCi/L
Total Radium	0.2	0.1		YES	7065-93	MW120	pCi/L
Total Radium	0.4	0.1		YES	4209-94	MW120	pCi/L
Total Radium	0.4	0.2		YES	6928-94	MW120	pCi/L
Total Radium	0.7	0.1		YES	4991-94	MW120	pCi/L
Total Radium	-0.7	0		YES	6050-94	MW140	pCi/L
Total Radium	0.3	0.2		YES	7081-93	MW140	pCi/L
Total Radium	0.4	0.1		YES	6864-94	MW140	pCi/L
Total Radium	0.5	0.1		YES	5195-94	MW140	pCi/L
Total Radium	0.5	0.1		YES	4225-94	MW140	pCi/L

CORRECTED DATA SET

	MW 102	MW 120	MW 121	MW 122	MW 133	MW 140	Overall	Weighted
Total Radium								
	0.1	-0.6				-0.7		
	0.3	0.2				0.3		
	0.3	0.4				0.4		
	0.4	0.4				0.5		
	0.7	0.7				0.5		
Min	0.10	-0.60	ERR	ERR	ERR	-0.70	-0.70	
Max	0.70	0.70	ERR	ERR	ERR	0.50	0.70	
Average	0.36	0.22	ERR	ERR	ERR	0.20	0.26	0.26
Number	5	5	0	0	0	5	15	



MW 102 - Data were not modified.

MW 120 - Data were not modified

MW 121 - Data were not modified.

MW 122 - Data were not modified.

MW 133 - Data were not modified.

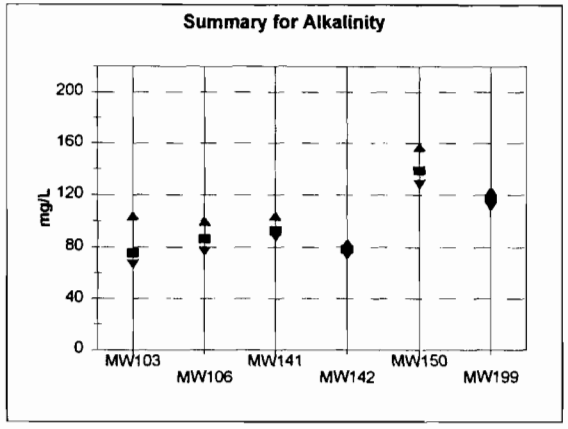
MW 140 - Data were not modified.

Summary of RGA Background Wells Physical Parameters

ANALYSIS	RESULT	QUALIFIER	DETECT?	SAMPLE ID	STATION ID	UNITS
Alkalinity	67		YES	6026-94	MW103	mg/L
Alkalinity	69		YES	7299-93	MW103	mg/L
Alkalinity	69		YES	4272-94	MW103	mg/L
Alkalinity	69		YES	6774-94	MW103	mg/L
Alkalinity	70		YES	5440-95	MW103	mg/L
Alkalinity	71		YES	5187-94	MW103	mg/L
Alkalinity	72		YES	5944-93	MW103	mg/L
Alkalinity	78		YES	5178-93	MW103	mg/L
Alkalinity	86		YES	5142-97	MW103	mg/L
Alkalinity	104		YES	5285-96	MW103	mg/L
Alkalinity	77		YES	5444-95	MW106	mg/L
Alkalinity	82		YES	4697-94	MW106	mg/L
Alkalinity	100		YES	5322-93	MW106	mg/L
Alkalinity	88		YES	5199-94	MW141	mg/L
Alkalinity	90		YES	6868-94	MW141	mg/L
Alkalinity	90		YES	6054-94	MW141	mg/L
Alkalinity	91		YES	7085-93	MW141	mg/L
Alkalinity	92		YES	4229-94	MW141	mg/L
Alkalinity	93		YES	6092-93	MW141	mg/L
Alkalinity	104		YES	6080-93	MW141	mg/L
Alkalinity	74		YES	7089-93	MW142	mg/L
Alkalinity	75		YES	5464-95	MW142	mg/L
Alkalinity	76		YES	6096-93	MW142	mg/L
Alkalinity	77		YES	4233-94	MW142	mg/L
Alkalinity	78		YES	6058-94	MW142	mg/L
Alkalinity	80		YES	6872-94	MW142	mg/L
Alkalinity	80		YES	6084-93	MW142	mg/L
Alkalinity	80		YES	5203-94	MW142	mg/L
Alkalinity	81		YES	5147-97	MW142	mg/L
Alkalinity	83		YES	5317-96	MW142	mg/L
Alkalinity	128		YES	5468-95	MW150	mg/L
Alkalinity	130		YES	4789-94	MW150	mg/L
Alkalinity	138		YES	5321-96	MW150	mg/L
Alkalinity	140		YES	5650-93	MW150	mg/L
Alkalinity	157		YES	5148-97	MW150	mg/L
Alkalinity	111		YES	7311-93	MW199	mg/L
Alkalinity	113		YES	5984-93	MW199	mg/L
Alkalinity	117		YES	6888-94	MW199	mg/L
Alkalinity	117		YES	5558-97	MW199	mg/L
Alkalinity	118		YES	5260-94	MW199	mg/L
Alkalinity	118		YES	6074-94	MW199	mg/L
Alkalinity	120		YES	5170-93	MW199	mg/L
Alkalinity	123		YES	4312-94	MW199	mg/L

CORRECTED DATA SET

	MW103	MW106	MW141	MW142	MW150	MW199	Overall	Weighted
	Alkalinity							
	67	77	88	74	128	111		
	69	82	90	75	130	113		
	69	100	90	76	138	117		
	69		91	77	140	117		
	70		92	78	157	118		
	71		93	80		118		
	72		104	80		120		
	78			80		123		
	86			81				
	104			83				
Min	67.00	77.00	88.00	74.00	128.00	111.00	67.00	
Max	104.00	100.00	104.00	83.00	157.00	123.00	157.00	
Average	75.50	86.33	92.57	78.40	138.60	117.13	94.79	98.09
Number	10	3	7	10	5	8	43	



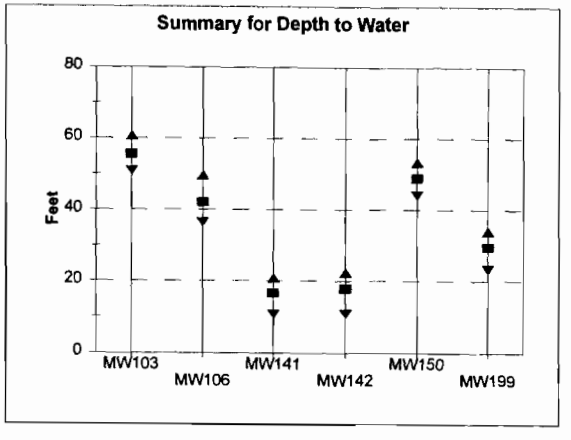
Data for Alkalinity were not modified.

Summary of RGA Background Wells Physical Parameters

ANALYSIS	RESULT	QUALIFIER	DETECT?	SAMPLE ID	STATION ID	UNITS
Depth to Water	50.78		YES	5187-94	MW103	Feet
Depth to Water	52.62		YES	5178-93	MW103	Feet
Depth to Water	52.65		YES	6026-94	MW103	Feet
Depth to Water	53.29		YES	5944-93	MW103	Feet
Depth to Water	55.05		YES	5142-97	MW103	Feet
Depth to Water	55.42		YES	4272-94	MW103	Feet
Depth to Water	56		YES	7299-93	MW103	Feet
Depth to Water	56.02		YES	6774-94	MW103	Feet
Depth to Water	58.81		YES	5440-95	MW103	Feet
Depth to Water	59.44		YES	5285-96	MW103	Feet
Depth to Water	60.65		YES	5372-97	MW103	Feet
Depth to Water	36.39		YES	5513-94	MW106	Feet
Depth to Water	37.65		YES	5322-93	MW106	Feet
Depth to Water	37.68		YES	4697-94	MW106	Feet
Depth to Water	39.89		YES	5138-97	MW106	Feet
Depth to Water	40.49		YES	6579-93	MW106	Feet
Depth to Water	41.13		YES	6640-94	MW106	Feet
Depth to Water	42.95		YES	6782-94	MW106	Feet
Depth to Water	43.86		YES	5444-95	MW106	Feet
Depth to Water	44.54		YES	5788-97	MW106	Feet
Depth to Water	44.74		YES	7272-94	MW106	Feet
Depth to Water	44.95		YES	5289-96	MW106	Feet
Depth to Water	49.61		YES	7862-93	MW106	Feet
Depth to Water	10.64		YES	5199-94	MW141	Feet
Depth to Water	14.32		YES	6080-93	MW141	Feet
Depth to Water	15.67		YES	6092-93	MW141	Feet
Depth to Water	17.39		YES	4229-94	MW141	Feet
Depth to Water	17.65		YES	6054-94	MW141	Feet
Depth to Water	19.28		YES	7085-93	MW141	Feet
Depth to Water	20.75		YES	6868-94	MW141	Feet
Depth to Water	10.8		YES	5203-94	MW142	Feet
Depth to Water	14.63		YES	6084-93	MW142	Feet
Depth to Water	15.97		YES	6096-93	MW142	Feet
Depth to Water	16.71		YES	6058-94	MW142	Feet
Depth to Water	17.64		YES	4233-94	MW142	Feet
Depth to Water	19.55		YES	7089-93	MW142	Feet
Depth to Water	20.44		YES	5464-95	MW142	Feet
Depth to Water	21.03		YES	6872-94	MW142	Feet
Depth to Water	21.58		YES	5797-97	MW142	Feet
Depth to Water	22.24		YES	5317-96	MW142	Feet
Depth to Water	1539		YES	5147-97	MW142	Feet
Depth to Water	44.09		YES	5578-94	MW150	Feet
Depth to Water	44.79		YES	7724-93	MW150	Feet
Depth to Water	46.42		YES	5650-93	MW150	Feet
Depth to Water	46.63		YES	4789-94	MW150	Feet
Depth to Water	47.5		YES	5148-97	MW150	Feet
Depth to Water	49.5		YES	6764-93	MW150	Feet
Depth to Water	50.46		YES	6501-94	MW150	Feet
Depth to Water	52.74		YES	5468-95	MW150	Feet
Depth to Water	53.15		YES	5321-96	MW150	Feet
Depth to Water	53.34		YES	7366-94	MW150	Feet
Depth to Water	23.3		YES	5260-94	MW199	Feet
Depth to Water	27.5		YES	5170-93	MW199	Feet
Depth to Water	29.52		YES	5984-93	MW199	Feet
Depth to Water	30.2		YES	5558-97	MW199	Feet

CORRECTED DATA SET

	MW103	MW106	MW141	MW142	MW150	MW199	Overall	Weighted
	Depth to Water							
	50.78	36.39	10.64	10.8	44.09	23.3		
	52.62	37.65	14.32	14.63	44.79	27.5		
	52.65	37.68	15.67	15.97	46.42	29.52		
	53.29	39.89	17.39	16.71	46.63	30.2		
	55.05	40.49	17.65	17.64	47.5	30.27		
	55.42	41.13	19.28	19.55	49.5	30.28		
	56	42.95	20.75	20.44	50.46	32.1		
	56.02	43.86		21.03	52.74	34.07		
	58.81	44.54		21.58	53.15			
	59.44	44.74		22.24	53.34			
	60.65	44.95		15.39				
		49.61						
Min	50.780	36.390	10.640	10.800	44.090	23.300	10.640	
Max	60.650	49.610	20.750	22.240	53.340	34.070	60.650	
Average	55.521	41.990	16.529	17.816	48.862	29.655	36.477	35.062
Number	11	12	7	11	10	8	59	



MW103 - Data were not modified.

MW106 - Data were not modified.

MW141 - Data were not modified.

MW142 - Maximum value modified by insertion of decimal point.

MW150 - Data were not modified.

MW199 - Data were not modified.

Summary of RGA Background Wells Physical Parameters

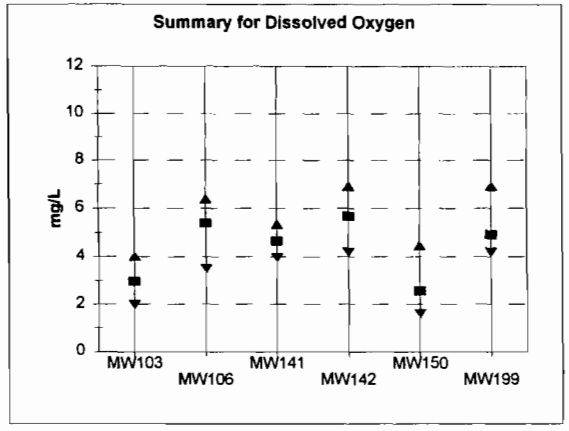
ANALYSIS	RESULT	QUALIFIER	DETECT?	SAMPLE ID	STATION ID	UNITS
Depth to Water	30.27		YES	4312-94	MW199	Feet
Depth to Water	30.28		YES	6074-94	MW199	Feet
Depth to Water	32.1		YES	7311-93	MW199	Feet
Depth to Water	34.07		YES	6888-94	MW199	Feet

Summary of RGA Background Wells Physical Parameters

ANALYSIS	RESULT	QUALIFIER	DETECT?	SAMPLE ID	STATION ID	UNITS
Dissolved Oxygen	1.97	J	YES	5944-93	MW103	mg/L
Dissolved Oxygen	2.14		YES	6026-94	MW103	mg/L
Dissolved Oxygen	2.43		YES	4272-94	MW103	mg/L
Dissolved Oxygen	2.46		YES	5285-96	MW103	mg/L
Dissolved Oxygen	2.6		YES	5178-93	MW103	mg/L
Dissolved Oxygen	3.05		YES	7299-93	MW103	mg/L
Dissolved Oxygen	3.11		YES	5187-94	MW103	mg/L
Dissolved Oxygen	3.31		YES	5142-97	MW103	mg/L
Dissolved Oxygen	3.68		YES	5372-97	MW103	mg/L
Dissolved Oxygen	3.83		YES	5440-95	MW103	mg/L
Dissolved Oxygen	4.02		YES	6774-94	MW103	mg/L
Dissolved Oxygen	3.49		YES	5138-97	MW106	mg/L
Dissolved Oxygen	5.11		YES	7862-93	MW106	mg/L
Dissolved Oxygen	5.17		YES	7272-94	MW106	mg/L
Dissolved Oxygen	5.18	J	YES	6579-93	MW106	mg/L
Dissolved Oxygen	5.3		YES	5444-95	MW106	mg/L
Dissolved Oxygen	5.41		YES	5788-97	MW106	mg/L
Dissolved Oxygen	5.52		YES	6640-94	MW106	mg/L
Dissolved Oxygen	5.6		YES	5322-93	MW106	mg/L
Dissolved Oxygen	5.64		YES	4697-94	MW106	mg/L
Dissolved Oxygen	5.8		YES	5513-94	MW106	mg/L
Dissolved Oxygen	5.95		YES	6782-94	MW106	mg/L
Dissolved Oxygen	6.37		YES	5289-96	MW106	mg/L
Dissolved Oxygen	3.95		YES	6868-94	MW141	mg/L
Dissolved Oxygen	3.99		YES	4229-94	MW141	mg/L
Dissolved Oxygen	4.2		YES	6080-93	MW141	mg/L
Dissolved Oxygen	4.83		YES	7085-93	MW141	mg/L
Dissolved Oxygen	4.98		YES	5199-94	MW141	mg/L
Dissolved Oxygen	5.28		YES	6092-93	MW141	mg/L
Dissolved Oxygen	5.35		YES	6054-94	MW141	mg/L
Dissolved Oxygen	4.2		YES	5147-97	MW142	mg/L
Dissolved Oxygen	5.37		YES	7089-93	MW142	mg/L
Dissolved Oxygen	5.43		YES	4233-94	MW142	mg/L
Dissolved Oxygen	5.5		YES	6084-93	MW142	mg/L
Dissolved Oxygen	5.5		YES	5317-96	MW142	mg/L
Dissolved Oxygen	5.54		YES	5464-95	MW142	mg/L
Dissolved Oxygen	5.57		YES	5797-97	MW142	mg/L
Dissolved Oxygen	5.81		YES	6872-94	MW142	mg/L
Dissolved Oxygen	5.99		YES	5203-94	MW142	mg/L
Dissolved Oxygen	6.42		YES	6058-94	MW142	mg/L
Dissolved Oxygen	6.91		YES	6096-93	MW142	mg/L
Dissolved Oxygen	1.6		YES	6501-94	MW150	mg/L
Dissolved Oxygen	1.62		YES	5321-96	MW150	mg/L
Dissolved Oxygen	1.71		YES	7724-93	MW150	mg/L
Dissolved Oxygen	1.81		YES	5468-95	MW150	mg/L
Dissolved Oxygen	1.89		YES	5578-94	MW150	mg/L
Dissolved Oxygen	1.92		YES	5148-97	MW150	mg/L
Dissolved Oxygen	2.89		YES	5650-93	MW150	mg/L
Dissolved Oxygen	3.33		YES	6764-93	MW150	mg/L
Dissolved Oxygen	4.29		YES	4789-94	MW150	mg/L
Dissolved Oxygen	4.46		YES	7366-94	MW150	mg/L
Dissolved Oxygen	4.2		YES	5558-97	MW199	mg/L
Dissolved Oxygen	4.31		YES	5260-94	MW199	mg/L
Dissolved Oxygen	4.46		YES	4312-94	MW199	mg/L

CORRECTED DATA SET

	MW103	MW106	MW141	MW142	MW150	MW199	Overall	Weighted
	Dissolved Oxygen							
	1.97	3.49	3.95	4.2	1.6	4.2		
	2.14	5.11	3.99	5.37	1.62	4.31		
	2.43	5.17	4.2	5.43	1.71	4.46		
	2.46	5.18	4.83	5.5	1.81	4.5		
	2.6	5.3	4.98	5.5	1.89	4.84		
	3.05	5.41	5.28	5.54	1.92	4.9		
	3.11	5.52	5.35	5.57	2.89	5.17		
	3.31	5.6		5.81	3.33	6.92		
	3.68	5.64		5.99	4.29			
	3.83	5.8		6.42	4.46			
	4.02	5.95		6.91				
		6.37						
Min	1.970	3.490	3.950	4.200	1.600	4.200	1.600	
Max	4.020	6.370	5.350	6.910	4.460	6.920	6.920	
Average	2.964	5.378	4.654	5.658	2.552	4.913	4.352	4.353
Number	11	12	7	11	10	8	59	



Data for Dissolved Oxygen were not modified.

Summary of RGA Background Wells Physical Parameters

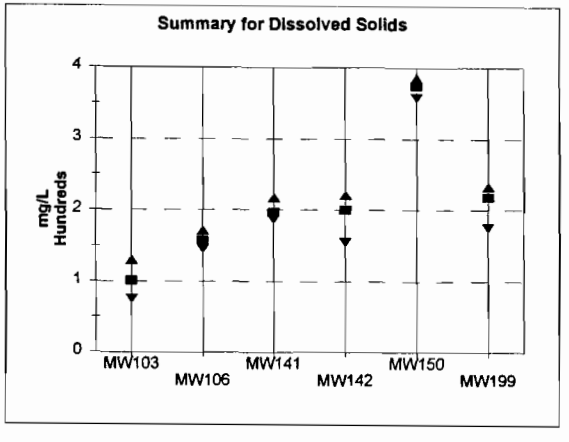
ANALYSIS	RESULT	QUALIFIER	DETECT?	SAMPLE ID	STATION ID	UNITS
Dissolved Oxygen	4.5	J	YES	5984-93	MW199	mg/L
Dissolved Oxygen	4.84		YES	6888-94	MW199	mg/L
Dissolved Oxygen	4.9		YES	5170-93	MW199	mg/L
Dissolved Oxygen	5.17		YES	6074-94	MW199	mg/L
Dissolved Oxygen	6.92		YES	7311-93	MW199	mg/L

Summary of RGA Background Wells Physical Parameters

ANALYSIS	RESULT	QUALIFIER	DETECT?	SAMPLE ID	STATION ID	UNITS
Dissolved Solids	75		YES	5285-96	MW103	mg/L
Dissolved Solids	89		YES	6774-94	MW103	mg/L
Dissolved Solids	94		YES	4272-94	MW103	mg/L
Dissolved Solids	96		YES	5440-95	MW103	mg/L
Dissolved Solids	97		YES	7299-93	MW103	mg/L
Dissolved Solids	101		YES	5187-94	MW103	mg/L
Dissolved Solids	108		YES	5944-93	MW103	mg/L
Dissolved Solids	116		YES	5178-93	MW103	mg/L
Dissolved Solids	130		YES	5142-97	MW103	mg/L
Dissolved Solids	136		YES	6026-94	MW103	mg/L
Dissolved Solids	145		YES	5444-95	MW106	mg/L
Dissolved Solids	155		YES	4697-94	MW106	mg/L
Dissolved Solids	171		YES	5322-93	MW106	mg/L
Dissolved Solids	186		YES	6080-93	MW141	mg/L
Dissolved Solids	187		YES	5199-94	MW141	mg/L
Dissolved Solids	189		YES	4229-94	MW141	mg/L
Dissolved Solids	189		YES	6054-94	MW141	mg/L
Dissolved Solids	195		YES	7085-93	MW141	mg/L
Dissolved Solids	210		YES	6868-94	MW141	mg/L
Dissolved Solids	217		YES	6092-93	MW141	mg/L
Dissolved Solids	155		YES	5464-95	MW142	mg/L
Dissolved Solids	173		YES	6084-93	MW142	mg/L
Dissolved Solids	192		YES	5147-97	MW142	mg/L
Dissolved Solids	203		YES	6058-94	MW142	mg/L
Dissolved Solids	207		YES	4233-94	MW142	mg/L
Dissolved Solids	210		YES	6872-94	MW142	mg/L
Dissolved Solids	210		YES	5203-94	MW142	mg/L
Dissolved Solids	211		YES	5317-96	MW142	mg/L
Dissolved Solids	214		YES	7089-93	MW142	mg/L
Dissolved Solids	221		YES	6096-93	MW142	mg/L
Dissolved Solids	358		YES	4789-94	MW150	mg/L
Dissolved Solids	370		YES	5321-96	MW150	mg/L
Dissolved Solids	378		YES	5148-97	MW150	mg/L
Dissolved Solids	380		YES	5650-93	MW150	mg/L
Dissolved Solids	385		YES	5468-95	MW150	mg/L
Dissolved Solids	175		YES	4312-94	MW199	mg/L
Dissolved Solids	210		YES	7311-93	MW199	mg/L
Dissolved Solids	212		YES	5558-97	MW199	mg/L
Dissolved Solids	220		YES	6888-94	MW199	mg/L
Dissolved Solids	229		YES	5984-93	MW199	mg/L
Dissolved Solids	231		YES	6074-94	MW199	mg/L
Dissolved Solids	233		YES	5170-93	MW199	mg/L
Dissolved Solids	233		YES	5260-94	MW199	mg/L

CORRECTED DATA SET

	MW103	MW106	MW141	MW142	MW150	MW199	Overall	Weighted
	Dissolved Solids							
	75	145	186	155	358	175		
	89	155	187	173	370	210		
	94	171	189	192	378	212		
	96		189	203	380	220		
	97		195	207	385	229		
	101		210	210		231		
	108		217	210		233		
	116			211		233		
	130			214				
				221				
Min	75.00	145.00	186.00	155.00	358.00	175.00	75.00	
Max	130.00	171.00	217.00	221.00	385.00	233.00	385.00	
Average	100.67	157.00	196.14	199.60	374.20	217.88	199.05	207.58
Number	9	3	7	10	5	8	42	



Data for Dissolved Solids were not modified.

Summary of RGA Background Wells Physical Parameters

ANALYSIS	RESULT	QUALIFIER	DETECT?	SAMPLE ID	STATION ID	UNITS
pH	5.6		YES	5288-96	MW103	SU
pH	5.6		YES	5286-96	MW103	SU
pH	5.6		YES	5287-96	MW103	SU
pH	5.6		YES	5285-96	MW103	SU
pH	5.8		YES	7302-93	MW103	SU
pH	5.8		YES	7300-93	MW103	SU
pH	5.8		YES	7301-93	MW103	SU
pH	5.9		YES	7299-93	MW103	SU
pH	5.9		YES	6029-94	MW103	SU
pH	5.9		YES	4274-94	MW103	SU
pH	5.9		YES	6028-94	MW103	SU
pH	5.9		YES	6027-94	MW103	SU
pH	5.9		YES	6026-94	MW103	SU
pH	5.9		YES	4273-94	MW103	SU
pH	5.9		YES	4275-94	MW103	SU
pH	6		YES	5188-94	MW103	SU
pH	6		YES	5189-94	MW103	SU
pH	6		YES	5187-94	MW103	SU
pH	6		YES	5441-95	MW103	SU
pH	6		YES	5440-95	MW103	SU
pH	6		YES	5442-95	MW103	SU
pH	6		YES	5190-94	MW103	SU
pH	6		YES	5443-95	MW103	SU
pH	6		YES	6777-94	MW103	SU
pH	6		YES	4272-94	MW103	SU
pH	6.1		YES	5179-93	MW103	SU
pH	6.1		YES	5945-93	MW103	SU
pH	6.1		YES	5944-93	MW103	SU
pH	6.1		YES	5180-93	MW103	SU
pH	6.1		YES	5947-93	MW103	SU
pH	6.1		YES	5181-93	MW103	SU
pH	6.1		YES	6776-94	MW103	SU
pH	6.1		YES	6775-94	MW103	SU
pH	6.1		YES	6774-94	MW103	SU
pH	6.1		YES	5946-93	MW103	SU
pH	6.2		YES	5178-93	MW103	SU
pH	6.2		YES	5372-97	MW103	SU
pH	6.3		YES	5142-97	MW103	SU
pH	5.9		YES	5324-93	MW106	SU
pH	5.9		YES	5323-93	MW106	SU
pH	5.9		YES	5513-94	MW106	SU
pH	5.9		YES	5322-93	MW106	SU
pH	5.9		YES	5516-94	MW106	SU
pH	5.9		YES	5514-94	MW106	SU
pH	5.9		YES	5325-93	MW106	SU
pH	5.9		YES	5515-94	MW106	SU
pH	5.9		YES	6784-94	MW106	SU
pH	5.9		YES	6785-94	MW106	SU
pH	5.9		YES	6782-94	MW106	SU

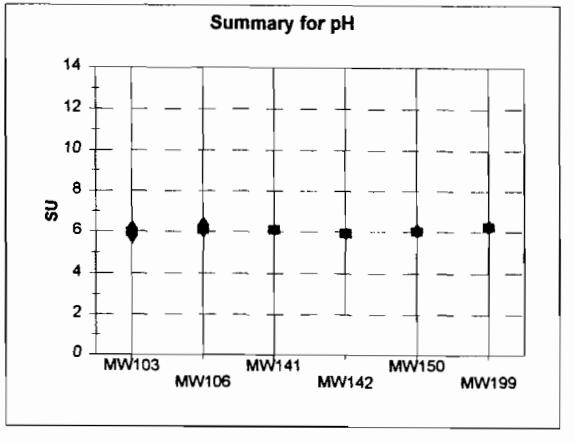
CORRECTED DATA SET

	MW103	MW106	MW141	MW142	MW150	MW199	Overall	Weighted
	pH							
	5.6	5.9	6	5.8	5.9	6.1		
	5.6	5.9	6	5.8	5.9	6.1		
	5.6	5.9	6	5.8	5.9	6.1		
	5.6	5.9	6	5.8	5.9	6.1		
	5.8	5.9	6	5.8	5.9	6.1		
	5.8	5.9	6	5.8	5.9	6.1		
	5.8	5.9	6	5.8	5.9	6.1		
	5.9	5.9	6	5.8	5.9	6.1		
	5.9	5.9	6.1	5.8	6	6.1		
	5.9	5.9	6.1	5.9	6	6.2		
	5.9	5.9	6.1	5.9	6	6.2		
	5.9	6	6.1	5.9	6	6.2		
	5.9	6	6.1	5.9	6	6.2		
	5.9	6	6.1	5.9	6	6.3		
	5.9	6	6.1	5.9	6	6.3		
	6	6	6.1	5.9	6	6.3		
	6	6.1	6.1	5.9	6	6.3		
	6	6.1	6.1	6	6	6.3		
	6	6.1	6.1	6	6	6.3		
	6	6.1	6.1	6	6	6.3		
	6	6.1	6.2	6	6	6.3		
	6	6.1	6.2	6	6	6.3		
	6	6.1	6.2	6	6	6.3		
	6	6.1	6.2	6	6	6.3		
	6	6.1	6.2	6	6	6.4		
	6.1	6.1	6.2	6	6	6.4		
	6.1	6.1	6.2	6	6	6.4		
	6.1	6.1	6.2	6	6	6.4		
	6.1	6.13		6	6	6.4		
	6.1	6.2		6	6.1			
	6.1	6.2		6	6.1			
	6.1	6.2		6	6.1			
	6.1	6.2		6	6.1			
	6.1	6.2		6	6.1			
	6.2	6.2		6	6.2			
	6.2	6.2		6	6.2			
	6.2	6.2		6	6.2			
	6.3	6.4		6	6.2			
		6.4						
		6.4						
		6.4						
		6.5						
Min	5.60	5.90	6.00	5.80	5.90	6.10	5.60	
Max	6.30	6.50	6.20	6.00	6.20	6.40	6.50	
Average	5.97	6.09	6.10	5.93	6.01	6.24	6.05	6.06
Number	38	42	28	38	38	29	213	

Summary of RGA Background Wells Physical Parameters

ANALYSIS	RESULT	QUALIFIER	DETECT?	SAMPLE ID	STATION ID	UNITS
pH	6		YES	5291-96	MW106	SU
pH	6		YES	5292-96	MW106	SU
pH	6		YES	5289-96	MW106	SU
pH	6		YES	6783-94	MW106	SU
pH	6		YES	5290-96	MW106	SU
pH	6.1		YES	7275-94	MW106	SU
pH	6.1		YES	7272-94	MW106	SU
pH	6.1		YES	7274-94	MW106	SU
pH	6.1		YES	7273-94	MW106	SU
pH	6.1		YES	6643-94	MW106	SU
pH	6.1		YES	6641-94	MW106	SU
pH	6.1		YES	6642-94	MW106	SU
pH	6.1		YES	7863-93	MW106	SU
pH	6.1		YES	7862-93	MW106	SU
pH	6.1		YES	7864-93	MW106	SU
pH	6.1		YES	6640-94	MW106	SU
pH	6.1		YES	7865-93	MW106	SU
pH	6.13		YES	5788-97	MW106	SU
pH	6.2		YES	4697-94	MW106	SU
pH	6.2		YES	5447-95	MW106	SU
pH	6.2		YES	5446-95	MW106	SU
pH	6.2		YES	4699-94	MW106	SU
pH	6.2		YES	4700-94	MW106	SU
pH	6.2		YES	5444-95	MW106	SU
pH	6.2		YES	5445-95	MW106	SU
pH	6.2		YES	4698-94	MW106	SU
pH	6.4		YES	6582-93	MW106	SU
pH	6.4		YES	6580-93	MW106	SU
pH	6.4		YES	6581-93	MW106	SU
pH	6.4		YES	5138-97	MW106	SU
pH	6.5		YES	6579-93	MW106	SU
pH	6		YES	4231-94	MW141	SU
pH	6		YES	7086-93	MW141	SU
pH	6		YES	7087-93	MW141	SU
pH	6		YES	4229-94	MW141	SU
pH	6		YES	4230-94	MW141	SU
pH	6		YES	4232-94	MW141	SU
pH	6		YES	7088-93	MW141	SU
pH	6		YES	7085-93	MW141	SU
pH	6.1		YES	6871-94	MW141	SU
pH	6.1		YES	6869-94	MW141	SU
pH	6.1		YES	5200-94	MW141	SU
pH	6.1		YES	5199-94	MW141	SU
pH	6.1		YES	6054-94	MW141	SU
pH	6.1		YES	5202-94	MW141	SU
pH	6.1		YES	6056-94	MW141	SU
pH	6.1		YES	6055-94	MW141	SU
pH	6.1		YES	6868-94	MW141	SU
pH	6.1		YES	6870-94	MW141	SU
pH	6.1		YES	6057-94	MW141	SU
pH	6.1		YES	5201-94	MW141	SU
pH	6.2		YES	6082-93	MW141	SU
pH	6.2		YES	6081-93	MW141	SU
pH	6.2		YES	6080-93	MW141	SU

CORRECTED DATA SET



Data for pH were not modified.

Summary of RGA Background Wells Physical Parameters

ANALYSIS	RESULT	QUALIFIER	DETECT?	SAMPLE ID	STATION ID	UNITS
pH	6.2		YES	6094-93	MW141	SU
pH	6.2		YES	6093-93	MW141	SU
pH	6.2		YES	6092-93	MW141	SU
pH	6.2		YES	6095-93	MW141	SU
pH	6.2		YES	6083-93	MW141	SU
pH	5.8		YES	7091-93	MW142	SU
pH	5.8		YES	5797-97	MW142	SU
pH	5.8		YES	4233-94	MW142	SU
pH	5.8		YES	4234-94	MW142	SU
pH	5.8		YES	4235-94	MW142	SU
pH	5.8		YES	7089-93	MW142	SU
pH	5.8		YES	4236-94	MW142	SU
pH	5.8		YES	7090-93	MW142	SU
pH	5.8		YES	7092-93	MW142	SU
pH	5.9		YES	6058-94	MW142	SU
pH	5.9		YES	6060-94	MW142	SU
pH	5.9		YES	5318-96	MW142	SU
pH	5.9		YES	6059-94	MW142	SU
pH	5.9		YES	5319-96	MW142	SU
pH	5.9		YES	5320-96	MW142	SU
pH	5.9		YES	6061-94	MW142	SU
pH	5.9		YES	5317-96	MW142	SU
pH	6		YES	6098-93	MW142	SU
pH	6		YES	6875-94	MW142	SU
pH	6		YES	6873-94	MW142	SU
pH	6		YES	6872-94	MW142	SU
pH	6		YES	5464-95	MW142	SU
pH	6		YES	5147-97	MW142	SU
pH	6		YES	5465-95	MW142	SU
pH	6		YES	5466-95	MW142	SU
pH	6		YES	6084-93	MW142	SU
pH	6		YES	6874-94	MW142	SU
pH	6		YES	5467-95	MW142	SU
pH	6		YES	6096-93	MW142	SU
pH	6		YES	6087-93	MW142	SU
pH	6		YES	6099-93	MW142	SU
pH	6		YES	5203-94	MW142	SU
pH	6		YES	6086-93	MW142	SU
pH	6		YES	5206-94	MW142	SU
pH	6		YES	6097-93	MW142	SU
pH	6		YES	5204-94	MW142	SU
pH	6		YES	6085-93	MW142	SU
pH	6		YES	5205-94	MW142	SU
pH	5.9		YES	5652-93	MW150	SU
pH	5.9		YES	5651-93	MW150	SU
pH	5.9		YES	5650-93	MW150	SU
pH	5.9		YES	5653-93	MW150	SU
pH	5.9		YES	7369-94	MW150	SU
pH	5.9		YES	7367-94	MW150	SU
pH	5.9		YES	7368-94	MW150	SU
pH	5.9		YES	7366-94	MW150	SU
pH	6		YES	5322-96	MW150	SU
pH	6		YES	5321-96	MW150	SU
pH	6		YES	5580-94	MW150	SU

Summary of RGA Background Wells Physical Parameters

ANALYSIS	RESULT	QUALIFIER	DETECT?	SAMPLE ID	STATION ID	UNITS
pH	6		YES	6767-93	MW150	SU
pH	6		YES	5470-95	MW150	SU
pH	6		YES	5578-94	MW150	SU
pH	6		YES	5323-96	MW150	SU
pH	6		YES	5468-95	MW150	SU
pH	6		YES	4790-94	MW150	SU
pH	6		YES	4789-94	MW150	SU
pH	6		YES	4791-94	MW150	SU
pH	6		YES	4792-94	MW150	SU
pH	6		YES	5649-93	MW150	SU
pH	6		YES	6764-93	MW150	SU
pH	6		YES	5581-94	MW150	SU
pH	6		YES	6765-93	MW150	SU
pH	6		YES	6766-93	MW150	SU
pH	6		YES	5471-95	MW150	SU
pH	6		YES	5469-95	MW150	SU
pH	6		YES	5579-94	MW150	SU
pH	6		YES	5324-96	MW150	SU
pH	6.1		YES	6502-94	MW150	SU
pH	6.1		YES	6501-94	MW150	SU
pH	6.1		YES	6503-94	MW150	SU
pH	6.1		YES	6504-94	MW150	SU
pH	6.1		YES	5148-97	MW150	SU
pH	6.2		YES	7725-93	MW150	SU
pH	6.2		YES	7726-93	MW150	SU
pH	6.2		YES	7727-93	MW150	SU
pH	6.2		YES	7724-93	MW150	SU
pH	6.1		YES	5558-97	MW199	SU
pH	6.1		YES	5171-93	MW199	SU
pH	6.1		YES	4312-94	MW199	SU
pH	6.1		YES	4315-94	MW199	SU
pH	6.1		YES	4313-94	MW199	SU
pH	6.1		YES	5170-93	MW199	SU
pH	6.1		YES	5173-93	MW199	SU
pH	6.1		YES	5172-93	MW199	SU
pH	6.1		YES	4314-94	MW199	SU
pH	6.2		YES	6077-94	MW199	SU
pH	6.2		YES	6076-94	MW199	SU
pH	6.2		YES	6075-94	MW199	SU
pH	6.2		YES	6074-94	MW199	SU
pH	6.3		YES	6890-94	MW199	SU
pH	6.3		YES	6891-94	MW199	SU
pH	6.3		YES	7313-93	MW199	SU
pH	6.3		YES	7311-93	MW199	SU
pH	6.3		YES	6889-94	MW199	SU
pH	6.3		YES	7312-93	MW199	SU
pH	6.3		YES	5260-94	MW199	SU
pH	6.3		YES	5262-94	MW199	SU
pH	6.3		YES	7314-93	MW199	SU
pH	6.3		YES	5261-94	MW199	SU
pH	6.3		YES	5263-94	MW199	SU
pH	6.4		YES	5985-93	MW199	SU
pH	6.4		YES	6888-94	MW199	SU
pH	6.4		YES	5987-93	MW199	SU

Summary of RGA Background Wells Physical Parameters

ANALYSIS	RESULT	QUALIFIER	DETECT?	SAMPLE ID	STATION ID	UNITS
pH	6.4		YES	5986-93	MW199	SU
pH	6.4		YES	5984-93	MW199	SU

Summary of RGA Background Wells Physical Parameters

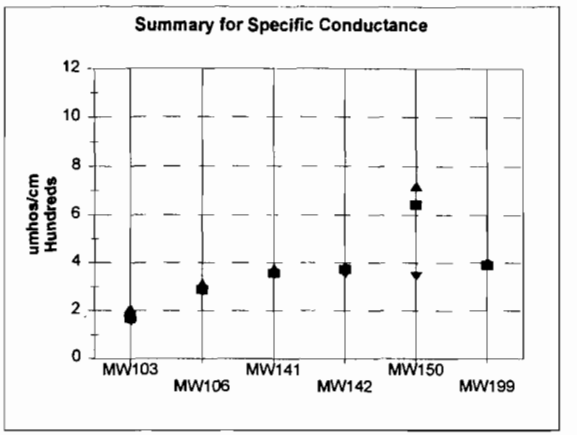
ANALYSIS	RESULT	QUALIFIER	DETECT?	SAMPLE ID	STATION ID	UNITS
Specific conductance	155		YES	6027-94	MW103	umhos/cm
Specific conductance	155		YES	6028-94	MW103	umhos/cm
Specific conductance	155		YES	6029-94	MW103	umhos/cm
Specific conductance	156		YES	7302-93	MW103	umhos/cm
Specific conductance	156		YES	6026-94	MW103	umhos/cm
Specific conductance	157		YES	7301-93	MW103	umhos/cm
Specific conductance	158		YES	7300-93	MW103	umhos/cm
Specific conductance	159		YES	5287-96	MW103	umhos/cm
Specific conductance	159		YES	6776-94	MW103	umhos/cm
Specific conductance	160		YES	6777-94	MW103	umhos/cm
Specific conductance	160		YES	6775-94	MW103	umhos/cm
Specific conductance	160		YES	7299-93	MW103	umhos/cm
Specific conductance	160		YES	5288-96	MW103	umhos/cm
Specific conductance	160		YES	5286-96	MW103	umhos/cm
Specific conductance	160		YES	5285-96	MW103	umhos/cm
Specific conductance	161		YES	6774-94	MW103	umhos/cm
Specific conductance	165		YES	4275-94	MW103	umhos/cm
Specific conductance	166		YES	4274-94	MW103	umhos/cm
Specific conductance	167		YES	5947-93	MW103	umhos/cm
Specific conductance	167		YES	5946-93	MW103	umhos/cm
Specific conductance	168		YES	4273-94	MW103	umhos/cm
Specific conductance	168		YES	5945-93	MW103	umhos/cm
Specific conductance	169		YES	4272-94	MW103	umhos/cm
Specific conductance	170		YES	5190-94	MW103	umhos/cm
Specific conductance	170		YES	5443-95	MW103	umhos/cm
Specific conductance	170		YES	5944-93	MW103	umhos/cm
Specific conductance	170		YES	5441-95	MW103	umhos/cm
Specific conductance	172		YES	5440-95	MW103	umhos/cm
Specific conductance	172		YES	5189-94	MW103	umhos/cm
Specific conductance	172		YES	5442-95	MW103	umhos/cm
Specific conductance	177		YES	5181-93	MW103	umhos/cm
Specific conductance	179		YES	5179-93	MW103	umhos/cm
Specific conductance	180		YES	5180-93	MW103	umhos/cm
Specific conductance	183		YES	5178-93	MW103	umhos/cm
Specific conductance	190		YES	5142-97	MW103	umhos/cm
Specific conductance	209		YES	5372-97	MW103	umhos/cm
Specific conductance	278		YES	5516-94	MW106	umhos/cm
Specific conductance	278		YES	5514-94	MW106	umhos/cm
Specific conductance	278		YES	5515-94	MW106	umhos/cm
Specific conductance	280		YES	5513-94	MW106	umhos/cm
Specific conductance	280		YES	5325-93	MW106	umhos/cm
Specific conductance	280		YES	5324-93	MW106	umhos/cm
Specific conductance	280		YES	5323-93	MW106	umhos/cm
Specific conductance	281		YES	4698-94	MW106	umhos/cm
Specific conductance	282		YES	4700-94	MW106	umhos/cm
Specific conductance	282		YES	4699-94	MW106	umhos/cm
Specific conductance	283		YES	5322-93	MW106	umhos/cm
Specific conductance	284		YES	6582-93	MW106	umhos/cm
Specific conductance	284		YES	4697-94	MW106	umhos/cm

CORRECTED DATA SET

	MW103	MW106	MW141	MW142	MW150	MW199	Overall	Weighted
	Specific conductance							
	155	278	346	352	344	379		
	155	278	347	353	632	380		
	155	278	347	366	633	380		
	156	280	347	368	633	381		
	156	280	347	369	633	384		
	157	280	351	369	639	384		
	158	280	351	369	639	384		
	159	281	351	369	639	384		
	159	282	351	369	640	388		
	160	282	352	369	640	388		
	160	283	352	370	640	389		
	160	284	352	370	641	389		
	160	284	352	370	641	390		
	160	284	353	370	642	390		
	160	284	354	371	642	390		
	161	285	355	371	642	390		
	165	285	357	371	643	390		
	166	286	358	371	644	390		
	167	286	360	372	645	390		
	167	286	360	372	645	390		
	168	287	361	372	645	390		
	168	287	362	373	651	391		
	169	288	363	373	652	391		
	170	288	364	373	652	391		
	170	290	364	373	653	394		
	170	290	367	373	655	394		
	170	290	369	374	657	395		
	172	290	374	374	657	395		
	172	290		374	657	402		
	172	290		375	660			
	177	291		377	661			
	179	291		378	661			
	180	292		378	662			
	183	292		378	662			
	190	292		381	662			
	209	293		383	662			
		294		383	663			
		295		383	719			
		295						
		296						
		310						
		310						
Min	155.00	278.00	346.00	352.00	344.00	379.00	155.00	
Max	209.00	310.00	374.00	383.00	719.00	402.00	719.00	
Average	167.08	287.79	355.96	372.00	641.79	388.72	369.03	368.89
Number	36	42	28	38	38	29	211	

Summary of RGA Background Wells Physical Parameters

ANALYSIS	RESULT	QUALIFIER	DETECT?	SAMPLE ID	STATION ID	UNITS	CORRECTED DATA SET
Specific conductance	284		YES	6580-93	MW106	umhos/cm	
Specific conductance	284		YES	6581-93	MW106	umhos/cm	
Specific conductance	285		YES	7865-93	MW106	umhos/cm	
Specific conductance	285		YES	6579-93	MW106	umhos/cm	
Specific conductance	286		YES	7862-93	MW106	umhos/cm	
Specific conductance	286		YES	7864-93	MW106	umhos/cm	
Specific conductance	286		YES	7863-93	MW106	umhos/cm	
Specific conductance	287		YES	5291-96	MW106	umhos/cm	
Specific conductance	287		YES	5292-96	MW106	umhos/cm	
Specific conductance	288		YES	5290-96	MW106	umhos/cm	
Specific conductance	288		YES	5289-96	MW106	umhos/cm	
Specific conductance	290		YES	5447-95	MW106	umhos/cm	
Specific conductance	290		YES	6640-94	MW106	umhos/cm	
Specific conductance	290		YES	5444-95	MW106	umhos/cm	
Specific conductance	290		YES	6643-94	MW106	umhos/cm	
Specific conductance	290		YES	5446-95	MW106	umhos/cm	
Specific conductance	290		YES	5445-95	MW106	umhos/cm	
Specific conductance	291		YES	6641-94	MW106	umhos/cm	
Specific conductance	291		YES	6642-94	MW106	umhos/cm	
Specific conductance	292		YES	7275-94	MW106	umhos/cm	
Specific conductance	292		YES	7274-94	MW106	umhos/cm	
Specific conductance	292		YES	7273-94	MW106	umhos/cm	
Specific conductance	293		YES	7272-94	MW106	umhos/cm	
Specific conductance	294		YES	6785-94	MW106	umhos/cm	Data for Specific Conductance were not modified.
Specific conductance	295		YES	6784-94	MW106	umhos/cm	
Specific conductance	295		YES	6783-94	MW106	umhos/cm	
Specific conductance	296		YES	6782-94	MW106	umhos/cm	
Specific conductance	310		YES	5788-97	MW106	umhos/cm	
Specific conductance	310		YES	5138-97	MW106	umhos/cm	
Specific conductance	346		YES	7087-93	MW141	umhos/cm	
Specific conductance	347		YES	6054-94	MW141	umhos/cm	
Specific conductance	347		YES	6057-94	MW141	umhos/cm	
Specific conductance	347		YES	6055-94	MW141	umhos/cm	
Specific conductance	347		YES	6056-94	MW141	umhos/cm	
Specific conductance	351		YES	7088-93	MW141	umhos/cm	
Specific conductance	351		YES	5202-94	MW141	umhos/cm	
Specific conductance	351		YES	7086-93	MW141	umhos/cm	
Specific conductance	351		YES	6093-93	MW141	umhos/cm	
Specific conductance	352		YES	5199-94	MW141	umhos/cm	
Specific conductance	352		YES	5200-94	MW141	umhos/cm	
Specific conductance	352		YES	7085-93	MW141	umhos/cm	
Specific conductance	352		YES	5201-94	MW141	umhos/cm	
Specific conductance	353		YES	6094-93	MW141	umhos/cm	
Specific conductance	354		YES	6092-93	MW141	umhos/cm	
Specific conductance	355		YES	6095-93	MW141	umhos/cm	
Specific conductance	357		YES	4230-94	MW141	umhos/cm	
Specific conductance	358		YES	4231-94	MW141	umhos/cm	
Specific conductance	360		YES	4229-94	MW141	umhos/cm	
Specific conductance	360		YES	4232-94	MW141	umhos/cm	
Specific conductance	361		YES	6870-94	MW141	umhos/cm	
Specific conductance	362		YES	6871-94	MW141	umhos/cm	
Specific conductance	363		YES	6869-94	MW141	umhos/cm	
Specific conductance	364		YES	6083-93	MW141	umhos/cm	
Specific conductance	364		YES	6868-94	MW141	umhos/cm	



Summary of RGA Background Wells Physical Parameters

ANALYSIS	RESULT	QUALIFIER	DETECT?	SAMPLE ID	STATION ID	UNITS
Specific conductance	367		YES	6082-93	MW141	umhos/cm
Specific conductance	369		YES	6081-93	MW141	umhos/cm
Specific conductance	374		YES	6080-93	MW141	umhos/cm
Specific conductance	352		YES	5797-97	MW142	umhos/cm
Specific conductance	353		YES	5147-97	MW142	umhos/cm
Specific conductance	366		YES	6058-94	MW142	umhos/cm
Specific conductance	368		YES	5205-94	MW142	umhos/cm
Specific conductance	369		YES	6061-94	MW142	umhos/cm
Specific conductance	369		YES	6060-94	MW142	umhos/cm
Specific conductance	369		YES	6059-94	MW142	umhos/cm
Specific conductance	369		YES	5203-94	MW142	umhos/cm
Specific conductance	369		YES	5206-94	MW142	umhos/cm
Specific conductance	369		YES	5318-96	MW142	umhos/cm
Specific conductance	370		YES	5317-96	MW142	umhos/cm
Specific conductance	370		YES	5320-96	MW142	umhos/cm
Specific conductance	370		YES	5204-94	MW142	umhos/cm
Specific conductance	370		YES	5319-96	MW142	umhos/cm
Specific conductance	371		YES	7092-93	MW142	umhos/cm
Specific conductance	371		YES	7090-93	MW142	umhos/cm
Specific conductance	371		YES	7091-93	MW142	umhos/cm
Specific conductance	371		YES	7089-93	MW142	umhos/cm
Specific conductance	372		YES	6085-93	MW142	umhos/cm
Specific conductance	372		YES	6086-93	MW142	umhos/cm
Specific conductance	372		YES	6087-93	MW142	umhos/cm
Specific conductance	373		YES	5464-95	MW142	umhos/cm
Specific conductance	373		YES	5467-95	MW142	umhos/cm
Specific conductance	373		YES	5466-95	MW142	umhos/cm
Specific conductance	373		YES	5465-95	MW142	umhos/cm
Specific conductance	373		YES	6084-93	MW142	umhos/cm
Specific conductance	374		YES	6098-93	MW142	umhos/cm
Specific conductance	374		YES	6096-93	MW142	umhos/cm
Specific conductance	374		YES	6097-93	MW142	umhos/cm
Specific conductance	375		YES	6099-93	MW142	umhos/cm
Specific conductance	377		YES	4234-94	MW142	umhos/cm
Specific conductance	378		YES	4235-94	MW142	umhos/cm
Specific conductance	378		YES	4236-94	MW142	umhos/cm
Specific conductance	378		YES	4233-94	MW142	umhos/cm
Specific conductance	381		YES	6874-94	MW142	umhos/cm
Specific conductance	383		YES	6873-94	MW142	umhos/cm
Specific conductance	383		YES	6872-94	MW142	umhos/cm
Specific conductance	383		YES	6875-94	MW142	umhos/cm
Specific conductance	344		YES	5649-93	MW150	umhos/cm
Specific conductance	632		YES	4789-94	MW150	umhos/cm
Specific conductance	633		YES	4791-94	MW150	umhos/cm
Specific conductance	633		YES	4792-94	MW150	umhos/cm
Specific conductance	633		YES	4790-94	MW150	umhos/cm
Specific conductance	639		YES	6766-93	MW150	umhos/cm
Specific conductance	639		YES	6765-93	MW150	umhos/cm
Specific conductance	639		YES	6764-93	MW150	umhos/cm
Specific conductance	640		YES	5652-93	MW150	umhos/cm
Specific conductance	640		YES	5653-93	MW150	umhos/cm
Specific conductance	640		YES	6767-93	MW150	umhos/cm
Specific conductance	641		YES	5651-93	MW150	umhos/cm
Specific conductance	641		YES	5650-93	MW150	umhos/cm

Summary of RGA Background Wells Physical Parameters

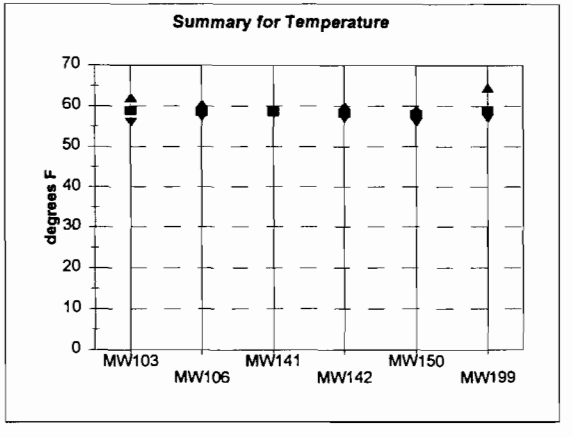
ANALYSIS	RESULT	QUALIFIER	DETECT?	SAMPLE ID	STATION ID	UNITS
Specific conductance	642		YES	7726-93	MW150	umhos/cm
Specific conductance	642		YES	7724-93	MW150	umhos/cm
Specific conductance	642		YES	7725-93	MW150	umhos/cm
Specific conductance	643		YES	7727-93	MW150	umhos/cm
Specific conductance	644		YES	5321-96	MW150	umhos/cm
Specific conductance	645		YES	5322-96	MW150	umhos/cm
Specific conductance	645		YES	5323-96	MW150	umhos/cm
Specific conductance	645		YES	5324-96	MW150	umhos/cm
Specific conductance	651		YES	5578-94	MW150	umhos/cm
Specific conductance	652		YES	5579-94	MW150	umhos/cm
Specific conductance	652		YES	5580-94	MW150	umhos/cm
Specific conductance	653		YES	5581-94	MW150	umhos/cm
Specific conductance	655		YES	7367-94	MW150	umhos/cm
Specific conductance	657		YES	7368-94	MW150	umhos/cm
Specific conductance	657		YES	7369-94	MW150	umhos/cm
Specific conductance	657		YES	7366-94	MW150	umhos/cm
Specific conductance	660		YES	6503-94	MW150	umhos/cm
Specific conductance	661		YES	6504-94	MW150	umhos/cm
Specific conductance	661		YES	5468-95	MW150	umhos/cm
Specific conductance	662		YES	6501-94	MW150	umhos/cm
Specific conductance	662		YES	5469-95	MW150	umhos/cm
Specific conductance	662		YES	5470-95	MW150	umhos/cm
Specific conductance	662		YES	6502-94	MW150	umhos/cm
Specific conductance	663		YES	5471-95	MW150	umhos/cm
Specific conductance	719		YES	5148-97	MW150	umhos/cm
Specific conductance	379		YES	6077-94	MW199	umhos/cm
Specific conductance	380		YES	6074-94	MW199	umhos/cm
Specific conductance	380		YES	6075-94	MW199	umhos/cm
Specific conductance	381		YES	6076-94	MW199	umhos/cm
Specific conductance	384		YES	7314-93	MW199	umhos/cm
Specific conductance	384		YES	7312-93	MW199	umhos/cm
Specific conductance	384		YES	7311-93	MW199	umhos/cm
Specific conductance	384		YES	7313-93	MW199	umhos/cm
Specific conductance	388		YES	5171-93	MW199	umhos/cm
Specific conductance	388		YES	5172-93	MW199	umhos/cm
Specific conductance	389		YES	5170-93	MW199	umhos/cm
Specific conductance	389		YES	5173-93	MW199	umhos/cm
Specific conductance	390		YES	6888-94	MW199	umhos/cm
Specific conductance	390		YES	5263-94	MW199	umhos/cm
Specific conductance	390		YES	5985-93	MW199	umhos/cm
Specific conductance	390		YES	5262-94	MW199	umhos/cm
Specific conductance	390		YES	5984-93	MW199	umhos/cm
Specific conductance	390		YES	5986-93	MW199	umhos/cm
Specific conductance	390		YES	6889-94	MW199	umhos/cm
Specific conductance	390		YES	5987-93	MW199	umhos/cm
Specific conductance	390		YES	6890-94	MW199	umhos/cm
Specific conductance	391		YES	5260-94	MW199	umhos/cm
Specific conductance	391		YES	5261-94	MW199	umhos/cm
Specific conductance	391		YES	6891-94	MW199	umhos/cm
Specific conductance	394		YES	4313-94	MW199	umhos/cm
Specific conductance	394		YES	4312-94	MW199	umhos/cm
Specific conductance	395		YES	4314-94	MW199	umhos/cm
Specific conductance	395		YES	4315-94	MW199	umhos/cm
Specific conductance	402		YES	5558-97	MW199	umhos/cm

Summary of RGA Background Wells Physical Parameters

ANALYSIS	RESULT	QUALIFIER	DETECT?	SAMPLE ID	STATION ID	UNITS
Temperature	56		YES	5142-97	MW103	F
Temperature	58		YES	5440-95	MW103	F
Temperature	58		YES	4272-94	MW103	F
Temperature	58		YES	5285-96	MW103	F
Temperature	59		YES	5178-93	MW103	F
Temperature	59		YES	5187-94	MW103	F
Temperature	59		YES	6774-94	MW103	F
Temperature	59		YES	6026-94	MW103	F
Temperature	59.3		YES	7299-93	MW103	F
Temperature	59.3		YES	5944-93	MW103	F
Temperature	62		YES	5372-97	MW103	F
Temperature	57.3		YES	5788-97	MW106	F
Temperature	58		YES	5138-97	MW106	F
Temperature	58		YES	7862-93	MW106	F
Temperature	58		YES	4697-94	MW106	F
Temperature	58		YES	7272-94	MW106	F
Temperature	58		YES	5444-95	MW106	F
Temperature	58		YES	5289-96	MW106	F
Temperature	59		YES	6640-94	MW106	F
Temperature	59		YES	5513-94	MW106	F
Temperature	59		YES	6782-94	MW106	F
Temperature	60		YES	5322-93	MW106	F
Temperature	60.4		YES	6579-93	MW106	F
Temperature	58		YES	4229-94	MW141	F
Temperature	58		YES	7085-93	MW141	F
Temperature	58		YES	6868-94	MW141	F
Temperature	59		YES	5199-94	MW141	F
Temperature	59		YES	6080-93	MW141	F
Temperature	59		YES	6092-93	MW141	F
Temperature	59		YES	6054-94	MW141	F
Temperature	57		YES	5464-95	MW142	F
Temperature	57		YES	5147-97	MW142	F
Temperature	58		YES	6872-94	MW142	F
Temperature	58		YES	4233-94	MW142	F
Temperature	58		YES	5797-97	MW142	F
Temperature	58		YES	5317-96	MW142	F
Temperature	58		YES	7089-93	MW142	F
Temperature	59		YES	6096-93	MW142	F
Temperature	59		YES	6058-94	MW142	F
Temperature	59		YES	6084-93	MW142	F
Temperature	60		YES	5203-94	MW142	F
Temperature	56		YES	5148-97	MW150	F
Temperature	57		YES	4789-94	MW150	F
Temperature	58		YES	5650-93	MW150	F
Temperature	58		YES	7724-93	MW150	F
Temperature	58		YES	5321-96	MW150	F
Temperature	58		YES	5468-95	MW150	F
Temperature	58		YES	7366-94	MW150	F
Temperature	58		YES	6501-94	MW150	F
Temperature	58.6		YES	6764-93	MW150	F
Temperature	59		YES	5578-94	MW150	F
Temperature	57		YES	6888-94	MW199	F
Temperature	57.9		YES	7311-93	MW199	F
Temperature	58		YES	5260-94	MW199	F

CORRECTED DATA SET

	MW103	MW106	MW141	MW142	MW150	MW199	Overall	Weighted
	Temperature							
	56	57.3	58	57	56	57		
	58	58	58	57	57	57.9		
	58	58	58	58	58	58		
	58	58	59	58	58	58		
	59	58	59	58	58	58		
	59	58	59	58	58	58		
	59	58	59	58	58	59.1		
	59	59		59	58	64.5		
	59.3	59		59	58.6			
	59.3	59		59	59			
	62	60		60				
		60.4						
Min	56.00	57.30	58.00	57.00	56.00	57.00	56.00	
Max	62.00	60.40	59.00	60.00	59.00	64.50	64.50	
Average	58.78	58.56	58.57	58.27	57.86	58.81	58.46	58.48
Number	11	12	7	11	10	8	59	



Data for Temperature were not modified.

Summary of RGA Background Wells Physical Parameters

ANALYSIS	RESULT	QUALIFIER	DETECT?	SAMPLE ID	STATION ID	UNITS
Temperature	58		YES	5170-93	MW199	F
Temperature	58		YES	4312-94	MW199	F
Temperature	58		YES	6074-94	MW199	F
Temperature	59.1		YES	5984-93	MW199	F
Temperature	64.5		YES	5558-97	MW199	F

Summary of RGA Background Wells Physical Parameters

ANALYSIS	RESULT	QUALIFIER	DETECT?	SAMPLE ID	STATION ID	UNITS
Total Organic Carbon	1	<	NO	5180-93	MW103	mg/L
Total Organic Carbon	1	<	NO	6029-94	MW103	mg/L
Total Organic Carbon	1	<	NO	5945-93	MW103	mg/L
Total Organic Carbon	1	<	NO	7299-93	MW103	mg/L
Total Organic Carbon	1	<	NO	5946-93	MW103	mg/L
Total Organic Carbon	1	<	NO	6776-94	MW103	mg/L
Total Organic Carbon	1	<	NO	6777-94	MW103	mg/L
Total Organic Carbon	1	<	NO	5288-96	MW103	mg/L
Total Organic Carbon	1	<	NO	5944-93	MW103	mg/L
Total Organic Carbon	1	<	NO	5441-95	MW103	mg/L
Total Organic Carbon	1	<	NO	5181-93	MW103	mg/L
Total Organic Carbon	1	<	NO	5179-93	MW103	mg/L
Total Organic Carbon	1	<	NO	7301-93	MW103	mg/L
Total Organic Carbon	1	<	NO	7302-93	MW103	mg/L
Total Organic Carbon	1	<	NO	5286-96	MW103	mg/L
Total Organic Carbon	1	<	NO	6026-94	MW103	mg/L
Total Organic Carbon	1	<	NO	5285-96	MW103	mg/L
Total Organic Carbon	1	<	NO	7300-93	MW103	mg/L
Total Organic Carbon	1	<	NO	6775-94	MW103	mg/L
Total Organic Carbon	1	<	NO	5287-96	MW103	mg/L
Total Organic Carbon	1	<	NO	6774-94	MW103	mg/L
Total Organic Carbon	1	<	NO	6027-94	MW103	mg/L
Total Organic Carbon	1	<	NO	5178-93	MW103	mg/L
Total Organic Carbon	1	<	NO	5440-95	MW103	mg/L
Total Organic Carbon	1	<	NO	5947-93	MW103	mg/L
Total Organic Carbon	1	<	NO	5443-95	MW103	mg/L
Total Organic Carbon	1	<	NO	5442-95	MW103	mg/L
Total Organic Carbon	1	<	NO	4272-94	MW103	mg/L
Total Organic Carbon	1	<	NO	6028-94	MW103	mg/L
Total Organic Carbon	1	<	NO	5187-94	MW103	mg/L
Total Organic Carbon	1	<	NO	5445-95	MW106	mg/L
Total Organic Carbon	1	<	NO	5446-95	MW106	mg/L
Total Organic Carbon	1	<	NO	5325-93	MW106	mg/L
Total Organic Carbon	1	<	NO	5324-93	MW106	mg/L
Total Organic Carbon	1	<	NO	5444-95	MW106	mg/L
Total Organic Carbon	1	<	NO	5323-93	MW106	mg/L
Total Organic Carbon	1	<	NO	5447-95	MW106	mg/L
Total Organic Carbon	1	<	NO	4700-94	MW106	mg/L
Total Organic Carbon	1	<	NO	5322-93	MW106	mg/L

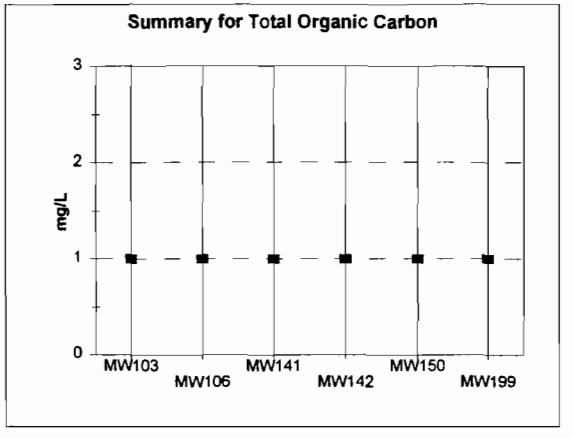
CORRECTED DATA SET

	MW103	MW106	MW141	MW142	MW150	MW199	Overall	Weighted
	Total Organic Carbon							
	1	1	1	1	1	1		
	1	1	1	1	1	1		
	1	1	1	1	1	1		
	1	1	1	1	1	1		
	1	1	1	1	1	1		
	1	1	1	1	1	1		
	1	1	1	1	1	1		
	1	1	1	1	1	1		
	1	1	1	1	1	1		
	1	1	1	1	1	1		
	1	1	1	1	1	1		
	1	1	1	1	1	1		
	1	1	1	1	1	1		
	1	1	1	1	1	1		
	1		1	1	1	1		
	1		1	1	1	1		
	1		1	1	1	1		
	1		1	1	1	1		
	1		1	1	1	1		
	1		1	1		1		
	1		1	1		1		
	1		1	1		1		
	1		1	1		1		
	1		1	1		1		
	1		1	1		1		
	1		1	1		1		
	1		1	1		1		
	1		1	1		1		
	1			1				
	1			1				
	1			1				
	1			1				
	1			1				
				1				
				1				
Min	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Max	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Average	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Number	30	12	25	32	17	25	141	

Summary of RGA Background Wells Physical Parameters

ANALYSIS	RESULT	QUALIFIER	DETECT?	SAMPLE ID	STATION ID	UNITS
Total Organic Carbon	1	<	NO	4698-94	MW106	mg/L
Total Organic Carbon	1	<	NO	4697-94	MW106	mg/L
Total Organic Carbon	1	<	NO	4699-94	MW106	mg/L
Total Organic Carbon	1	<	NO	5201-94	MW141	mg/L
Total Organic Carbon	1	<	NO	6095-93	MW141	mg/L
Total Organic Carbon	1	<	NO	4229-94	MW141	mg/L
Total Organic Carbon	1	<	NO	5199-94	MW141	mg/L
Total Organic Carbon	1	<	NO	7088-93	MW141	mg/L
Total Organic Carbon	1	<	NO	6869-94	MW141	mg/L
Total Organic Carbon	1	<	NO	6871-94	MW141	mg/L
Total Organic Carbon	1	<	NO	6870-94	MW141	mg/L
Total Organic Carbon	1	<	NO	6057-94	MW141	mg/L
Total Organic Carbon	1	<	NO	6056-94	MW141	mg/L
Total Organic Carbon	1	<	NO	5200-94	MW141	mg/L
Total Organic Carbon	1	<	NO	7085-93	MW141	mg/L
Total Organic Carbon	1	<	NO	6082-93	MW141	mg/L
Total Organic Carbon	1	<	NO	7086-93	MW141	mg/L
Total Organic Carbon	1	<	NO	6094-93	MW141	mg/L
Total Organic Carbon	1	<	NO	7087-93	MW141	mg/L
Total Organic Carbon	1	<	NO	5202-94	MW141	mg/L
Total Organic Carbon	1		YES	6092-93	MW141	mg/L
Total Organic Carbon	1		YES	6093-93	MW141	mg/L
Total Organic Carbon	1		YES	6080-93	MW141	mg/L
Total Organic Carbon	1	<	NO	6083-93	MW141	mg/L
Total Organic Carbon	1	<	NO	6054-94	MW141	mg/L
Total Organic Carbon	1	<	NO	6868-94	MW141	mg/L
Total Organic Carbon	1	<	NO	6055-94	MW141	mg/L
Total Organic Carbon	1	<	NO	6081-93	MW141	mg/L
Total Organic Carbon	1	<	NO	5465-95	MW142	mg/L
Total Organic Carbon	1	<	NO	7091-93	MW142	mg/L
Total Organic Carbon	1	<	NO	7092-93	MW142	mg/L
Total Organic Carbon	1	<	NO	7089-93	MW142	mg/L
Total Organic Carbon	1	<	NO	5205-94	MW142	mg/L
Total Organic Carbon	1	<	NO	5204-94	MW142	mg/L
Total Organic Carbon	1		YES	6099-93	MW142	mg/L
Total Organic Carbon	1	<	NO	5203-94	MW142	mg/L
Total Organic Carbon	1	<	NO	5206-94	MW142	mg/L
Total Organic Carbon	1	<	NO	7090-93	MW142	mg/L
Total Organic Carbon	1	<	NO	5467-95	MW142	mg/L
Total Organic Carbon	1		YES	6096-93	MW142	mg/L
Total Organic Carbon	1	<	NO	6061-94	MW142	mg/L
Total Organic Carbon	1	<	NO	6872-94	MW142	mg/L
Total Organic Carbon	1	<	NO	5466-95	MW142	mg/L
Total Organic Carbon	1	<	NO	6058-94	MW142	mg/L
Total Organic Carbon	1		YES	6085-93	MW142	mg/L
Total Organic Carbon	1	<	NO	6873-94	MW142	mg/L
Total Organic Carbon	1	<	NO	5318-96	MW142	mg/L
Total Organic Carbon	1		YES	4233-94	MW142	mg/L
Total Organic Carbon	1	<	NO	6087-93	MW142	mg/L
Total Organic Carbon	1	<	NO	5320-96	MW142	mg/L
Total Organic Carbon	1	<	NO	6875-94	MW142	mg/L
Total Organic Carbon	1	<	NO	6059-94	MW142	mg/L
Total Organic Carbon	1	<	NO	5317-96	MW142	mg/L
Total Organic Carbon	1	<	NO	5464-95	MW142	mg/L

CORRECTED DATA SET



Data for Total Organic Carbon were not modified.

Summary of RGA Background Wells Physical Parameters

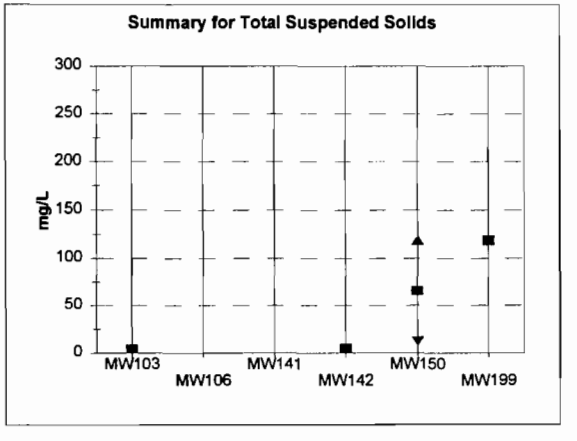
ANALYSIS	RESULT	QUALIFIER	DETECT?	SAMPLE ID	STATION ID	UNITS
Total Organic Carbon	1		YES	6098-93	MW142	mg/L
Total Organic Carbon	1	<	NO	5319-96	MW142	mg/L
Total Organic Carbon	1	<	NO	6084-93	MW142	mg/L
Total Organic Carbon	1	<	NO	6060-94	MW142	mg/L
Total Organic Carbon	1	<	NO	6097-93	MW142	mg/L
Total Organic Carbon	1		YES	6086-93	MW142	mg/L
Total Organic Carbon		Q	NO	6874-94	MW142	
Total Organic Carbon	1		YES	5651-93	MW150	mg/L
Total Organic Carbon	1		YES	5469-95	MW150	mg/L
Total Organic Carbon	1		YES	4789-94	MW150	mg/L
Total Organic Carbon	1	<	NO	5471-95	MW150	mg/L
Total Organic Carbon	1		YES	4792-94	MW150	mg/L
Total Organic Carbon	1		YES	5653-93	MW150	mg/L
Total Organic Carbon	1	<	NO	5649-93	MW150	mg/L
Total Organic Carbon	1	<	NO	5321-96	MW150	mg/L
Total Organic Carbon	1		YES	5323-96	MW150	mg/L
Total Organic Carbon	1	<	NO	5468-95	MW150	mg/L
Total Organic Carbon	1		YES	5650-93	MW150	mg/L
Total Organic Carbon	1		YES	4791-94	MW150	mg/L
Total Organic Carbon	1		YES	5324-96	MW150	mg/L
Total Organic Carbon	1		YES	4790-94	MW150	mg/L
Total Organic Carbon	1	<	NO	5322-96	MW150	mg/L
Total Organic Carbon	1		YES	5470-95	MW150	mg/L
Total Organic Carbon	1		YES	5652-93	MW150	mg/L
Total Organic Carbon	1	<	NO	6077-94	MW199	mg/L
Total Organic Carbon	1	<	NO	5171-93	MW199	mg/L
Total Organic Carbon	1	<	NO	5260-94	MW199	mg/L
Total Organic Carbon	1	<	NO	4312-94	MW199	mg/L
Total Organic Carbon	1		YES	5261-94	MW199	mg/L
Total Organic Carbon	1		YES	5170-93	MW199	mg/L
Total Organic Carbon	1	<	NO	7312-93	MW199	mg/L
Total Organic Carbon	1	<	NO	5262-94	MW199	mg/L
Total Organic Carbon	1	<	NO	6075-94	MW199	mg/L
Total Organic Carbon	1	<	NO	6076-94	MW199	mg/L
Total Organic Carbon	1	<	NO	7314-93	MW199	mg/L
Total Organic Carbon	1	<	NO	7311-93	MW199	mg/L
Total Organic Carbon	1		YES	5263-94	MW199	mg/L
Total Organic Carbon	1	<	NO	6888-94	MW199	mg/L
Total Organic Carbon	1		YES	6889-94	MW199	mg/L
Total Organic Carbon	1		YES	5173-93	MW199	mg/L
Total Organic Carbon	1	<	NO	6891-94	MW199	mg/L
Total Organic Carbon	1	<	NO	6890-94	MW199	mg/L
Total Organic Carbon	1	<	NO	5984-93	MW199	mg/L
Total Organic Carbon	1		YES	6074-94	MW199	mg/L
Total Organic Carbon	1	<	NO	5986-93	MW199	mg/L
Total Organic Carbon	1	<	NO	5987-93	MW199	mg/L
Total Organic Carbon	1	<	NO	5172-93	MW199	mg/L
Total Organic Carbon	1	<	NO	7313-93	MW199	mg/L
Total Organic Carbon	1	<	NO	5985-93	MW199	mg/L

Summary of RGA Background Wells Physical Parameters

ANALYSIS	RESULT	QUALIFIER	DETECT?	SAMPLE ID	STATION ID	UNITS
Total Suspended Solids	4	<	NO	5285-96	MW103	mg/L
Total Suspended Solids	4	<	NO	5142-97	MW103	mg/L
Total Suspended Solids	4	<	NO	5317-96	MW142	mg/L
Total Suspended Solids	5	*	YES	5147-97	MW142	mg/L
Total Suspended Solids	12		YES	5321-96	MW150	mg/L
Total Suspended Solids	119		YES	5148-97	MW150	mg/L
Total Suspended Solids	119		YES	5558-97	MW199	mg/L

CORRECTED DATA SET

	MW103	MW106	MW141	MW142	MW150	MW199	Overall	Weighted
Total Suspended Solids								
	4			4	12	119		
	4			5	119			
Min	4.00	ERR	ERR	4.00	12.00	119.00	4.00	
Max	4.00	ERR	ERR	5.00	119.00	119.00	119.00	
Average	4.00	ERR	ERR	4.50	65.50	119.00	38.14	48.25
Number	2	0	0	2	2	1	7	



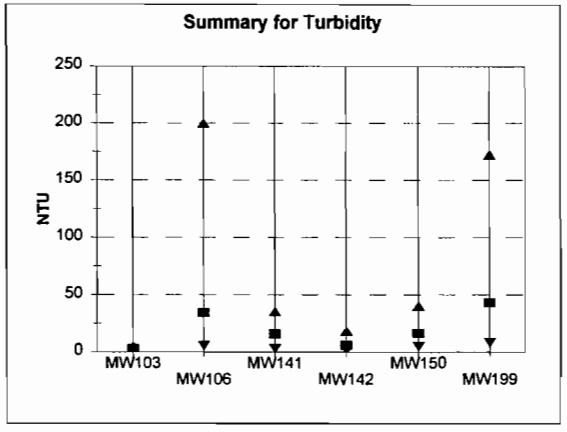
Data for Total Suspended Solids were not modified.

Summary of RGA Background Wells Physical Parameters

ANALYSIS	RESULT	QUALIFIER	DETECT?	SAMPLE ID	STATION ID	UNITS
Turbidity	0.35		YES	6026-94	MW103	NTU
Turbidity	0.42		YES	6774-94	MW103	NTU
Turbidity	0.43		YES	5187-94	MW103	NTU
Turbidity	1.1		YES	5944-93	MW103	NTU
Turbidity	1.8		YES	7299-93	MW103	NTU
Turbidity	4		YES	5285-96	MW103	NTU
Turbidity	4.5		YES	5440-95	MW103	NTU
Turbidity	4.8		YES	4272-94	MW103	NTU
Turbidity	5		YES	5178-93	MW103	NTU
Turbidity	5.3		YES	4697-94	MW106	NTU
Turbidity	7		YES	6782-94	MW106	NTU
Turbidity	9		YES	7272-94	MW106	NTU
Turbidity	11		YES	6579-93	MW106	NTU
Turbidity	14		YES	6640-94	MW106	NTU
Turbidity	18		YES	7862-93	MW106	NTU
Turbidity	23		YES	5444-95	MW106	NTU
Turbidity	25		YES	5513-94	MW106	NTU
Turbidity	27		YES	5289-96	MW106	NTU
Turbidity	200		YES	5322-93	MW106	NTU
Turbidity	2.9		YES	6054-94	MW141	NTU
Turbidity	3		YES	6868-94	MW141	NTU
Turbidity	7.6		YES	5199-94	MW141	NTU
Turbidity	9.3		YES	7085-93	MW141	NTU
Turbidity	17		YES	4229-94	MW141	NTU
Turbidity	33		YES	6080-93	MW141	NTU
Turbidity	35		YES	6092-93	MW141	NTU
Turbidity	1.6		YES	4233-94	MW142	NTU
Turbidity	1.8		YES	6872-94	MW142	NTU
Turbidity	2.2		YES	6096-93	MW142	NTU
Turbidity	2.6		YES	5203-94	MW142	NTU
Turbidity	3.8		YES	5464-95	MW142	NTU
Turbidity	4		YES	5317-96	MW142	NTU
Turbidity	6.6		YES	7089-93	MW142	NTU
Turbidity	11		YES	6058-94	MW142	NTU
Turbidity	18		YES	6084-93	MW142	NTU
Turbidity	5		YES	5468-95	MW150	NTU
Turbidity	5.8		YES	6501-94	MW150	NTU
Turbidity	7		YES	7366-94	MW150	NTU
Turbidity	8.2		YES	5321-96	MW150	NTU
Turbidity	12		YES	5578-94	MW150	NTU
Turbidity	18		YES	6764-93	MW150	NTU
Turbidity	23		YES	4789-94	MW150	NTU
Turbidity	26		YES	7724-93	MW150	NTU
Turbidity	40		YES	5650-93	MW150	NTU
Turbidity	8.3		YES	4312-94	MW199	NTU
Turbidity	14		YES	6074-94	MW199	NTU
Turbidity	23		YES	5260-94	MW199	NTU
Turbidity	24		YES	6888-94	MW199	NTU
Turbidity	27		YES	5984-93	MW199	NTU
Turbidity	33		YES	7311-93	MW199	NTU
Turbidity	172		YES	5170-93	MW199	NTU

CORRECTED DATA SET

	MW103	MW106	MW141	MW142	MW150	MW199	Overall	Weighted
	Turbidity							
	0.35	5.3	2.9	1.6	5	8.3		
	0.42	7	3	1.8	5.8	14		
	0.43	9	7.6	2.2	7	23		
	1.1	11	9.3	2.6	8.2	24		
	1.8	14	17	3.8	12	27		
	4	18	33	4	18	33		
	4.5	23	35	6.6	23	172		
	4.8	25		11	26			
	5	27		18	40			
		200						
Min	0.350	5.300	2.900	1.600	5.000	8.300	0.350	
Max	5.000	200.000	35.000	18.000	40.000	172.000	200.000	
Average	2.489	33.930	15.400	5.733	16.111	43.043	18.969	19.451
Number	9	10	7	9	9	7	51	



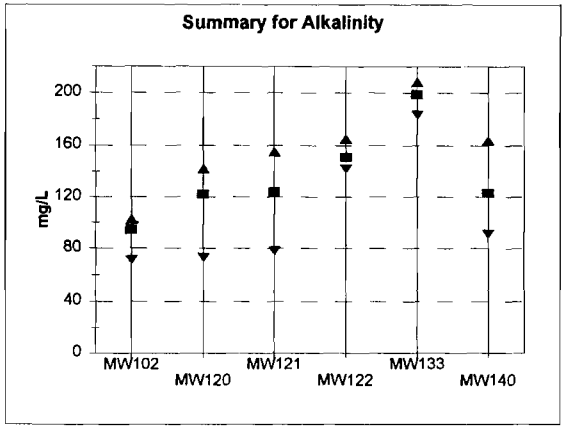
Data for Tubidity were not modified.

Summary of McNairy Background Wells Physical Parameters

ANALYSIS	RESULT	QUALIFIER	DETECT?	SAMPLE ID	STATION	UNITS
Alkalinity	71		YES	5281-96	MW102	mg/L
Alkalinity	92		YES	7295-93	MW102	mg/L
Alkalinity	93		YES	5141-97	MW102	mg/L
Alkalinity	93		YES	4268-94	MW102	mg/L
Alkalinity	94		YES	7467-95	MW102	mg/L
Alkalinity	95		YES	6022-94	MW102	mg/L
Alkalinity	95		YES	5940-93	MW102	mg/L
Alkalinity	95		YES	5174-93	MW102	mg/L
Alkalinity	96		YES	5183-94	MW102	mg/L
Alkalinity	99		YES	5619-95	MW102	mg/L
Alkalinity	100		YES	6592-95	MW102	mg/L
Alkalinity	100		YES	8285-95	MW102	mg/L
Alkalinity	102		YES	6770-94	MW102	mg/L
Alkalinity	73		YES	5293-96	MW120	mg/L
Alkalinity	120		YES	5448-95	MW120	mg/L
Alkalinity	121		YES	7065-93	MW120	mg/L
Alkalinity	126		YES	4209-94	MW120	mg/L
Alkalinity	127		YES	5088-93	MW120	mg/L
Alkalinity	127		YES	6928-94	MW120	mg/L
Alkalinity	127		YES	4991-94	MW120	mg/L
Alkalinity	128		YES	5143-97	MW120	mg/L
Alkalinity	130		YES	6034-94	MW120	mg/L
Alkalinity	142		YES	5900-93	MW120	mg/L
Alkalinity	78		YES	5500-96	MW121	mg/L
Alkalinity	112		YES	4864-94	MW121	mg/L
Alkalinity	151		YES	5452-95	MW121	mg/L
Alkalinity	155		YES	5144-97	MW121	mg/L
Alkalinity	142		YES	5456-95	MW122	mg/L
Alkalinity	145		YES	5246-93	MW122	mg/L
Alkalinity	146		YES	6596-95	MW122	mg/L
Alkalinity	150		YES	4868-94	MW122	mg/L
Alkalinity	158		YES	5301-96	MW122	mg/L
Alkalinity	165		YES	5145-97	MW122	mg/L
Alkalinity	183		YES	5460-95	MW133	mg/L
Alkalinity	205		YES	5282-93	MW133	mg/L
Alkalinity	208		YES	4761-94	MW133	mg/L
Alkalinity	91		YES	5146-97	MW140	mg/L
Alkalinity	111		YES	6864-94	MW140	mg/L
Alkalinity	112		YES	6050-94	MW140	mg/L
Alkalinity	112		YES	5313-96	MW140	mg/L
Alkalinity	120		YES	5195-94	MW140	mg/L
Alkalinity	130		YES	6004-93	MW140	mg/L
Alkalinity	131		YES	4225-94	MW140	mg/L
Alkalinity	137		YES	7081-93	MW140	mg/L
Alkalinity	164		YES	6088-93	MW140	mg/L

CORRECTED DATA SET

	MW102 Alkalinity	MW120	MW121	MW122	MW133	MW140	Overall	Weighted
	71	73	78	142	183	91		
	92	120	112	145	205	111		
	93	121	151	146	208	112		
	93	126	155	150		112		
	94	127		158		120		
	95	127		165		130		
	95	127				131		
	95	128				137		
	96	130				164		
	99	142						
	100							
	100							
	102							
Min	71.00	73.00	78.00	142.00	183.00	91.00	71.00	
Max	102.00	142.00	155.00	165.00	208.00	164.00	208.00	
Average	94.23	122.10	124.00	151.00	198.67	123.11	123.38	135.52
Number	13	10	4	6	3	9	45	



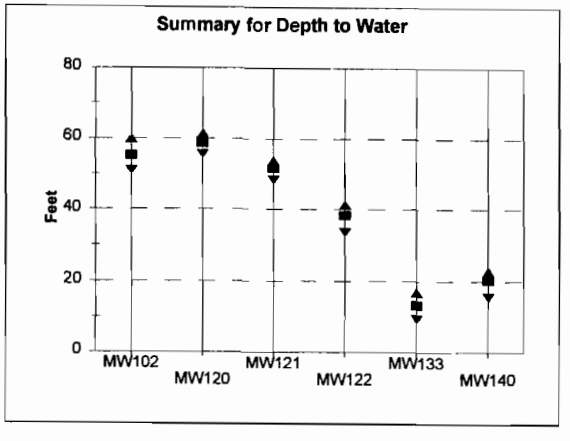
Data for Alkalinity were not modified.

Summary of McNairy Background Wells Physical Parameters

ANALYSIS	RESULT	QUALIFIER	DETECT?	SAMPLE ID	STATION	UNITS
Depth to Water	50.95		YES	5183-94	MW102	Feet
Depth to Water	52.59		YES	5174-93	MW102	Feet
Depth to Water	52.95		YES	6022-94	MW102	Feet
Depth to Water	53.14		YES	5940-93	MW102	Feet
Depth to Water	54.64		YES	6592-95	MW102	Feet
Depth to Water	54.82		YES	5141-97	MW102	Feet
Depth to Water	54.95		YES	7467-95	MW102	Feet
Depth to Water	55.16		YES	4268-94	MW102	Feet
Depth to Water	55.46		YES	7295-93	MW102	Feet
Depth to Water	56.76		YES	5619-95	MW102	Feet
Depth to Water	57.93		YES	8285-95	MW102	Feet
Depth to Water	58.48		YES	5281-96	MW102	Feet
Depth to Water	59.95		YES	6770-94	MW102	Feet
Depth to Water	55.62		YES	6034-94	MW120	Feet
Depth to Water	55.7		YES	4991-94	MW120	Feet
Depth to Water	57.5		YES	5900-93	MW120	Feet
Depth to Water	57.87		YES	5088-93	MW120	Feet
Depth to Water	58.75		YES	4209-94	MW120	Feet
Depth to Water	58.85		YES	5143-97	MW120	Feet
Depth to Water	59.01		YES	7065-93	MW120	Feet
Depth to Water	59.42		YES	6928-94	MW120	Feet
Depth to Water	60.29		YES	5793-97	MW120	Feet
Depth to Water	60.93		YES	5448-95	MW120	Feet
Depth to Water	61.31		YES	5293-96	MW120	Feet
Depth to Water	48.39		YES	4864-94	MW121	Feet
Depth to Water	49.79		YES	5517-94	MW121	Feet
Depth to Water	50.35		YES	5144-97	MW121	Feet
Depth to Water	51.36		YES	7782-93	MW121	Feet
Depth to Water	52.4		YES	6658-93	MW121	Feet
Depth to Water	52.48		YES	5452-95	MW121	Feet
Depth to Water	52.76		YES	5500-96	MW121	Feet
Depth to Water	52.87		YES	6453-94	MW121	Feet
Depth to Water	53.75		YES	5794-97	MW121	Feet
Depth to Water	33.46		YES	5521-94	MW122	Feet
Depth to Water	36.31		YES	4868-94	MW122	Feet
Depth to Water	36.32		YES	5246-93	MW122	Feet
Depth to Water	37.68		YES	5145-97	MW122	Feet
Depth to Water	37.83		YES	6662-93	MW122	Feet
Depth to Water	38.27		YES	6457-94	MW122	Feet
Depth to Water	38.32		YES	6596-95	MW122	Feet
Depth to Water	39		YES	7786-93	MW122	Feet
Depth to Water	39.84		YES	5795-97	MW122	Feet
Depth to Water	40.43		YES	7200-94	MW122	Feet
Depth to Water	40.65		YES	5456-95	MW122	Feet
Depth to Water	41.18		YES	5301-96	MW122	Feet
Depth to Water	9.45		YES	4761-94	MW133	Feet
Depth to Water	9.5		YES	5611-94	MW133	Feet
Depth to Water	10.61		YES	5282-93	MW133	Feet
Depth to Water	11.52		YES	5139-97	MW133	Feet
Depth to Water	12.82		YES	7704-93	MW133	Feet
Depth to Water	13.5		YES	6740-93	MW133	Feet
Depth to Water	13.75		YES	5460-95	MW133	Feet
Depth to Water	15.01		YES	6648-94	MW133	Feet
Depth to Water	16.16		YES	5305-96	MW133	Feet

CORRECTED DATA SET

	MW102	MW120	MW121	MW122	MW133	MW140	Overall	Weighted
	Depth to Water							
	50.95	55.62	48.39	33.46	9.45	15.63		
	52.59	55.7	49.79	36.31	9.5	18.45		
	52.95	57.5	50.35	36.32	10.61	19.7		
	53.14	57.87	51.36	37.68	11.52	19.81		
	54.64	58.75	52.4	37.83	12.82	20.21		
	54.82	58.85	52.48	38.27	13.5	20.95		
	54.95	59.01	52.76	38.32	13.75	21.11		
	55.16	59.42	52.87	39	15.01	21.98		
	55.46	60.29	53.75	39.84	16.16	22.43		
	56.76	60.93		40.43	16.88	22.67		
	57.93	61.31		40.65	16.89			
	58.48			41.18				
	59.95							
Min	50.950	55.620	48.390	33.460	9.450	15.630	9.450	
Max	59.950	61.310	53.750	41.180	16.890	22.670	61.310	
Average	55.214	58.659	51.572	38.274	13.281	20.294	39.932	39.549
Number	13	11	9	12	11	10	66	



Data for Depth to Water were not modified.

Summary of McNairy Background Wells Physical Parameters

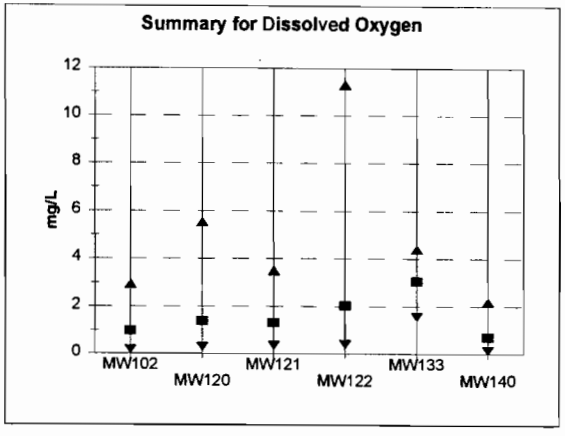
ANALYSIS	RESULT	QUALIFIER	DETECT?	SAMPLE ID	STATION	UNITS
Depth to Water	16.88		YES	7292-94	MW133	Feet
Depth to Water	16.89		YES	5789-97	MW133	Feet
Depth to Water	15.63		YES	5195-94	MW140	Feet
Depth to Water	18.45		YES	6004-93	MW140	Feet
Depth to Water	19.7		YES	6088-93	MW140	Feet
Depth to Water	19.81		YES	6050-94	MW140	Feet
Depth to Water	20.21		YES	4225-94	MW140	Feet
Depth to Water	20.95		YES	7081-93	MW140	Feet
Depth to Water	21.11		YES	5146-97	MW140	Feet
Depth to Water	21.98		YES	5313-96	MW140	Feet
Depth to Water	22.43		YES	6864-94	MW140	Feet
Depth to Water	22.67		YES	5796-97	MW140	Feet

Summary of McNairy Background Wells Physical Parameters

ANALYSIS	RESULT	QUALIFIER	DETECT?	SAMPLE ID	STATION	UNITS
Dissolved Oxygen	0.17	J	YES	5940-93	MW102	mg/L
Dissolved Oxygen	0.19		YES	4268-94	MW102	mg/L
Dissolved Oxygen	0.27		YES	8285-95	MW102	mg/L
Dissolved Oxygen	0.31		YES	7467-95	MW102	mg/L
Dissolved Oxygen	0.38		YES	5281-96	MW102	mg/L
Dissolved Oxygen	0.73		YES	6022-94	MW102	mg/L
Dissolved Oxygen	0.83		YES	5619-95	MW102	mg/L
Dissolved Oxygen	0.9		YES	5174-93	MW102	mg/L
Dissolved Oxygen	0.95		YES	5183-94	MW102	mg/L
Dissolved Oxygen	1.02		YES	5141-97	MW102	mg/L
Dissolved Oxygen	1.48		YES	6592-95	MW102	mg/L
Dissolved Oxygen	2.4		YES	7295-93	MW102	mg/L
Dissolved Oxygen	2.94		YES	6770-94	MW102	mg/L
Dissolved Oxygen	0.29		YES	5088-93	MW120	mg/L
Dissolved Oxygen	0.33		YES	5293-96	MW120	mg/L
Dissolved Oxygen	0.33		YES	7065-93	MW120	mg/L
Dissolved Oxygen	0.45		YES	5793-97	MW120	mg/L
Dissolved Oxygen	0.52		YES	4991-94	MW120	mg/L
Dissolved Oxygen	0.71		YES	5143-97	MW120	mg/L
Dissolved Oxygen	0.83		YES	4209-94	MW120	mg/L
Dissolved Oxygen	1.8		YES	6928-94	MW120	mg/L
Dissolved Oxygen	2.04		YES	5448-95	MW120	mg/L
Dissolved Oxygen	2.39		YES	6034-94	MW120	mg/L
Dissolved Oxygen	5.53		YES	5900-93	MW120	mg/L
Dissolved Oxygen	0.35		YES	5794-97	MW121	mg/L
Dissolved Oxygen	0.36		YES	4864-94	MW121	mg/L
Dissolved Oxygen	0.43	J	YES	6658-93	MW121	mg/L
Dissolved Oxygen	0.6		YES	5517-94	MW121	mg/L
Dissolved Oxygen	0.62		YES	5144-97	MW121	mg/L
Dissolved Oxygen	1.21		YES	7782-93	MW121	mg/L
Dissolved Oxygen	1.94		YES	6453-94	MW121	mg/L
Dissolved Oxygen	2.73		YES	5452-95	MW121	mg/L
Dissolved Oxygen	3.5		YES	5500-96	MW121	mg/L
Dissolved Oxygen	0.4	J	YES	6662-93	MW122	mg/L
Dissolved Oxygen	0.48		YES	5145-97	MW122	mg/L
Dissolved Oxygen	0.48		YES	5795-97	MW122	mg/L
Dissolved Oxygen	0.51		YES	6457-94	MW122	mg/L
Dissolved Oxygen	0.79		YES	5301-96	MW122	mg/L
Dissolved Oxygen	0.83		YES	5521-94	MW122	mg/L
Dissolved Oxygen	1.15		YES	6596-95	MW122	mg/L
Dissolved Oxygen	1.37		YES	4868-94	MW122	mg/L
Dissolved Oxygen	1.97		YES	7200-94	MW122	mg/L
Dissolved Oxygen	2.08		YES	5246-93	MW122	mg/L
Dissolved Oxygen	3.08		YES	5456-95	MW122	mg/L
Dissolved Oxygen	11.31		YES	7786-93	MW122	mg/L
Dissolved Oxygen	1.57		YES	5139-97	MW133	mg/L
Dissolved Oxygen	2.06		YES	5789-97	MW133	mg/L
Dissolved Oxygen	2.81		YES	5460-95	MW133	mg/L
Dissolved Oxygen	2.93		YES	5305-96	MW133	mg/L
Dissolved Oxygen	2.97		YES	5282-93	MW133	mg/L
Dissolved Oxygen	3.41		YES	5611-94	MW133	mg/L
Dissolved Oxygen	3.48		YES	6648-94	MW133	mg/L
Dissolved Oxygen	3.91		YES	6740-93	MW133	mg/L
Dissolved Oxygen	4.39		YES	4761-94	MW133	mg/L

CORRECTED DATA SET

	MW102	MW120	MW121	MW122	MW133	MW140	Overall	Weighted
	Dissolved Oxygen							
	0.17	0.29	0.35	0.4	1.57	0.14		
	0.19	0.33	0.36	0.48	2.06	0.3		
	0.27	0.33	0.43	0.48	2.81	0.32		
	0.31	0.45	0.6	0.51	2.93	0.34		
	0.38	0.52	0.62	0.79	2.97	0.39		
	0.73	0.71	1.21	0.83	3.41	0.41		
	0.83	0.83	1.94	1.15	3.48	0.72		
	0.9	1.8	2.73	1.37	3.91	1.02		
	0.95	2.04	3.5	1.97	4.39	1.27		
	1.02	2.39		2.08		2.2		
	1.48	5.53		3.08				
	2.4			11.31				
	2.94							
Min	0.170	0.290	0.350	0.400	1.570	0.140	0.140	
Max	2.940	5.530	3.500	11.310	4.390	2.200	11.310	
Average	0.967	1.384	1.304	2.038	3.059	0.711	1.541	1.577
Number	13	11	9	12	9	10	64	



Data for Dissolved Oxygen were not modified.

Summary of McNairy Background Wells Physical Parameters

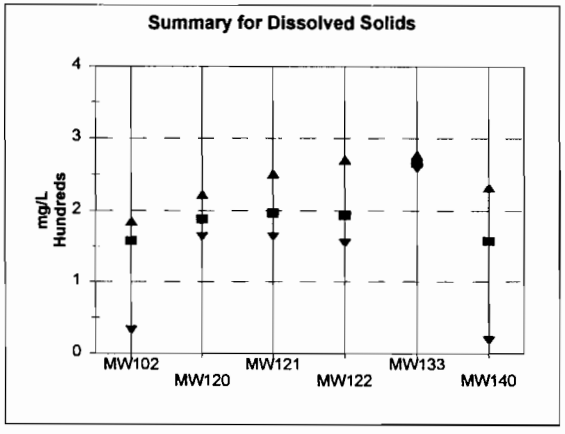
ANALYSIS	RESULT	QUALIFIER	DETECT?	SAMPLE ID	STATION	UNITS
Dissolved Oxygen	0.14		YES	6004-93	MW140	mg/L
Dissolved Oxygen	0.3		YES	5146-97	MW140	mg/L
Dissolved Oxygen	0.32		YES	5313-96	MW140	mg/L
Dissolved Oxygen	0.34		YES	5796-97	MW140	mg/L
Dissolved Oxygen	0.39		YES	6088-93	MW140	mg/L
Dissolved Oxygen	0.41		YES	7081-93	MW140	mg/L
Dissolved Oxygen	0.72		YES	6864-94	MW140	mg/L
Dissolved Oxygen	1.02		YES	4225-94	MW140	mg/L
Dissolved Oxygen	1.27		YES	6050-94	MW140	mg/L
Dissolved Oxygen	2.2		YES	5195-94	MW140	mg/L

Summary of McNairy Background Wells Physical Parameters

ANALYSIS	RESULT	QUALIFIER	DETECT?	SAMPLE ID	STATION	UNITS
Dissolved Solids	32		YES	5183-94	MW102	mg/L
Dissolved Solids	141		YES	6592-95	MW102	mg/L
Dissolved Solids	157		YES	5281-96	MW102	mg/L
Dissolved Solids	164		YES	7295-93	MW102	mg/L
Dissolved Solids	166		YES	6022-94	MW102	mg/L
Dissolved Solids	166		YES	5940-93	MW102	mg/L
Dissolved Solids	167		YES	4268-94	MW102	mg/L
Dissolved Solids	167		YES	5619-95	MW102	mg/L
Dissolved Solids	170		YES	8285-95	MW102	mg/L
Dissolved Solids	173		YES	5174-93	MW102	mg/L
Dissolved Solids	176		YES	6770-94	MW102	mg/L
Dissolved Solids	178		YES	5141-97	MW102	mg/L
Dissolved Solids	185		YES	7467-95	MW102	mg/L
Dissolved Solids	163		YES	5293-96	MW120	mg/L
Dissolved Solids	173		YES	5143-97	MW120	mg/L
Dissolved Solids	180		YES	4209-94	MW120	mg/L
Dissolved Solids	185		YES	6928-94	MW120	mg/L
Dissolved Solids	185		YES	4991-94	MW120	mg/L
Dissolved Solids	189		YES	5900-93	MW120	mg/L
Dissolved Solids	189		YES	6034-94	MW120	mg/L
Dissolved Solids	193		YES	7065-93	MW120	mg/L
Dissolved Solids	200		YES	5448-95	MW120	mg/L
Dissolved Solids	222		YES	5088-93	MW120	mg/L
Dissolved Solids	163		YES	5500-96	MW121	mg/L
Dissolved Solids	176		YES	4864-94	MW121	mg/L
Dissolved Solids	195		YES	5452-95	MW121	mg/L
Dissolved Solids	251		YES	5144-97	MW121	mg/L
Dissolved Solids	154		YES	5456-95	MW122	mg/L
Dissolved Solids	172		YES	5301-96	MW122	mg/L
Dissolved Solids	179		YES	4868-94	MW122	mg/L
Dissolved Solids	182		YES	6596-95	MW122	mg/L
Dissolved Solids	200		YES	5145-97	MW122	mg/L
Dissolved Solids	270		YES	5246-93	MW122	mg/L
Dissolved Solids	258		YES	4761-94	MW133	mg/L
Dissolved Solids	263		YES	5460-95	MW133	mg/L
Dissolved Solids	277		YES	5282-93	MW133	mg/L
Dissolved Solids	18		YES	7081-93	MW140	mg/L
Dissolved Solids	135		YES	5146-97	MW140	mg/L
Dissolved Solids	142		YES	5313-96	MW140	mg/L
Dissolved Solids	152		YES	6050-94	MW140	mg/L
Dissolved Solids	172		YES	5195-94	MW140	mg/L
Dissolved Solids	182		YES	6864-94	MW140	mg/L
Dissolved Solids	188		YES	4225-94	MW140	mg/L
Dissolved Solids	194		YES	6004-93	MW140	mg/L
Dissolved Solids	232		YES	6088-93	MW140	mg/L

CORRECTED DATA SET

	MW102	MW120	MW121	MW122	MW133	MW140	Overall	Weighted
	Dissolved Solids							
	32	163	163	154	258	18		
	141	173	176	172	263	135		
	157	180	195	179	277	142		
	164	185	251	182		152		
	166	185		200		172		
	166	189		270		182		
	167	189				188		
	167	193				194		
	170	200				232		
	173	222						
	176							
	178							
	185							
Min	32.000	163.000	163.000	154.000	258.000	18.000	18.000	
Max	185.000	222.000	251.000	270.000	277.000	232.000	277.000	
Average	157.077	187.900	196.250	192.833	266.000	157.222	179.467	192.880
Number	13	10	4	6	3	9	45	



Data for Dissolved Solids were not modified.

Summary of McNairy Background Wells Physical Parameters

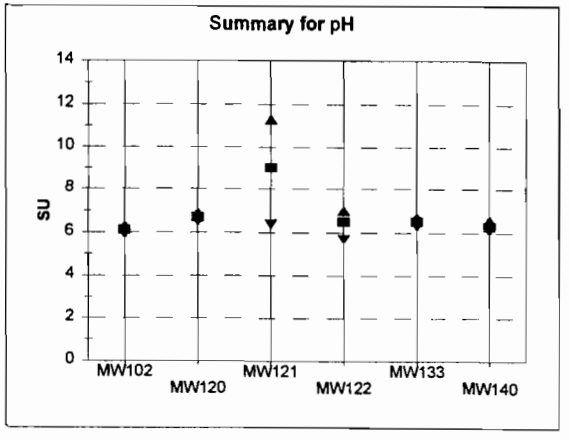
ANALYSIS	RESULT	QUALIFIER	DETECT?	SAMPLE ID	STATION	UNITS
pH	5.9		YES	6022-94	MW102	SU
pH	5.9		YES	5281-96	MW102	SU
pH	5.9		YES	6023-94	MW102	SU
pH	5.9		YES	5283-96	MW102	SU
pH	5.9		YES	6024-94	MW102	SU
pH	5.9		YES	6025-94	MW102	SU
pH	5.9		YES	5284-96	MW102	SU
pH	5.9		YES	5282-96	MW102	SU
pH	6		YES	7297-93	MW102	SU
pH	6		YES	7298-93	MW102	SU
pH	6		YES	7295-93	MW102	SU
pH	6		YES	7296-93	MW102	SU
pH	6.1		YES	4271-94	MW102	SU
pH	6.1		YES	6770-94	MW102	SU
pH	6.1		YES	4269-94	MW102	SU
pH	6.1		YES	4270-94	MW102	SU
pH	6.1		YES	4268-94	MW102	SU
pH	6.1		YES	6773-94	MW102	SU
pH	6.1		YES	5184-94	MW102	SU
pH	6.1		YES	5186-94	MW102	SU
pH	6.1		YES	5185-94	MW102	SU
pH	6.1		YES	5175-93	MW102	SU
pH	6.1		YES	5183-94	MW102	SU
pH	6.1		YES	6771-94	MW102	SU
pH	6.1		YES	5174-93	MW102	SU
pH	6.1		YES	5177-93	MW102	SU
pH	6.1		YES	6772-94	MW102	SU
pH	6.1		YES	5176-93	MW102	SU
pH	6.2		YES	7470-95	MW102	SU
pH	6.2		YES	6593-95	MW102	SU
pH	6.2		YES	6594-95	MW102	SU
pH	6.2		YES	7467-95	MW102	SU
pH	6.2		YES	5622-95	MW102	SU
pH	6.2		YES	6595-95	MW102	SU
pH	6.2		YES	7468-95	MW102	SU
pH	6.2		YES	5940-93	MW102	SU
pH	6.2		YES	5941-93	MW102	SU
pH	6.2		YES	7469-95	MW102	SU
pH	6.2		YES	5942-93	MW102	SU
pH	6.2		YES	6592-95	MW102	SU
pH	6.2		YES	5619-95	MW102	SU
pH	6.2		YES	5141-97	MW102	SU
pH	6.2		YES	5943-93	MW102	SU
pH	6.2		YES	5621-95	MW102	SU
pH	6.2		YES	5620-95	MW102	SU
pH	6.3		YES	8287-95	MW102	SU
pH	6.3		YES	8285-95	MW102	SU
pH	6.3		YES	8286-95	MW102	SU
pH	6.3		YES	8288-95	MW102	SU
pH	6.5		YES	6931-94	MW120	SU
pH	6.5		YES	6930-94	MW120	SU
pH	6.5		YES	6928-94	MW120	SU
pH	6.55		YES	5793-97	MW120	SU
pH	6.6		YES	5295-96	MW120	SU
pH	6.6		YES	5293-96	MW120	SU

CORRECTED DATA SET

	MW102	MW120	MW121	MW122	MW133	MW140	Overall	Weighted
	pH							
	5.9	6.5	6.4	5.7	6.3	6.1		
	5.9	6.5	6.4	5.7	6.3	6.1		
	5.9	6.5	6.4	5.7	6.3	6.1		
	5.9	6.55	6.4	5.7	6.3	6.1		
	5.9	6.6	6.4	6.2	6.4	6.2		
	5.9	6.6	6.4	6.2	6.4	6.2		
	5.9	6.6	6.5	6.2	6.4	6.2		
	5.9	6.6	6.5	6.2	6.4	6.2		
	6	6.6	6.5	6.4	6.4	6.2		
	6	6.6	6.5	6.4	6.49	6.2		
	6	6.6	6.5	6.4	6.5	6.2		
	6	6.6	6.5	6.4	6.5	6.2		
	6.1	6.6	9.5	6.5	6.5	6.2		
	6.1	6.7	9.9	6.5	6.5	6.2		
	6.1	6.7	9.9	6.5	6.5	6.3		
	6.1	6.7	9.9	6.5	6.5	6.3		
	6.1	6.7	9.9	6.6	6.5	6.3		
	6.1	6.7	10.8	6.6	6.5	6.3		
	6.1	6.7	10.8	6.6	6.6	6.3		
	6.1	6.7	10.8	6.6	6.7	6.3		
	6.1	6.7	10.8	6.6	6.7	6.3		
	6.1	6.7	10.8	6.6	6.7	6.3		
	6.1	6.7	11.3	6.6	6.7	6.4		
	6.1	6.7	11.3	6.6	6.7	6.4		
	6.1	6.7	11.3	6.6	6.7	6.4		
	6.1	6.7	11.3	6.6	6.7	6.4		
	6.1	6.7	11.3	6.6	6.7	6.5		
	6.1	6.7	11.3	6.6	6.7	6.5		
	6.2	6.7	11.3	6.6	6.7	6.5		
	6.2	6.7	11.3	6.6	6.7	6.5		
	6.2	6.8		6.7		6.6		
	6.2	6.8		6.7		6.6		
	6.2	6.8		6.7		6.6		
	6.2	6.8		6.7		6.6		
	6.2	6.9		6.7				
	6.2	6.9		6.7				
	6.2	6.9		6.8				
	6.2	6.9		6.95				
	6.2			7				
	6.2			7				
	6.2			7				
	6.2			7				
	6.2							
	6.2							
	6.2							
	6.3							
	6.3							
	6.3							
	6.3							
Min	5.900	6.500	6.400	5.700	6.300	6.100	5.700	
Max	6.300	6.900	11.300	7.000	6.700	6.600	11.300	
Average	6.110	6.688	9.030	6.513	6.533	6.318	6.766	6.865
Number	49	38	30	42	30	34	223	

Summary of McNairy Background Wells Physical Parameters

ANALYSIS	RESULT	QUALIFIER	DETECT?	SAMPLE ID	STATION	UNITS	CORRECTED DATA SET
pH	6.6		YES	5296-96	MW120	SU	
pH	6.6		YES	5294-96	MW120	SU	
pH	6.6		YES	6929-94	MW120	SU	
pH	6.6		YES	5090-93	MW120	SU	
pH	6.6		YES	5089-93	MW120	SU	
pH	6.6		YES	5091-93	MW120	SU	
pH	6.6		YES	5088-93	MW120	SU	
pH	6.7		YES	5903-93	MW120	SU	
pH	6.7		YES	5902-93	MW120	SU	
pH	6.7		YES	5901-93	MW120	SU	
pH	6.7		YES	5900-93	MW120	SU	
pH	6.7		YES	5451-95	MW120	SU	
pH	6.7		YES	4211-94	MW120	SU	
pH	6.7		YES	4210-94	MW120	SU	
pH	6.7		YES	5449-95	MW120	SU	
pH	6.7		YES	5448-95	MW120	SU	
pH	6.7		YES	5143-97	MW120	SU	
pH	6.7		YES	5450-95	MW120	SU	
pH	6.7		YES	4212-94	MW120	SU	
pH	6.7		YES	4991-94	MW120	SU	
pH	6.7		YES	4209-94	MW120	SU	
pH	6.7		YES	4992-94	MW120	SU	
pH	6.7		YES	4993-94	MW120	SU	
pH	6.7		YES	4994-94	MW120	SU	
pH	6.8		YES	7067-93	MW120	SU	
pH	6.8		YES	7065-93	MW120	SU	
pH	6.8		YES	7068-93	MW120	SU	
pH	6.8		YES	7066-93	MW120	SU	
pH	6.9		YES	6036-94	MW120	SU	
pH	6.9		YES	6037-94	MW120	SU	
pH	6.9		YES	6034-94	MW120	SU	
pH	6.9		YES	6035-94	MW120	SU	
pH	6.4		YES	5503-96	MW121	SU	
pH	6.4		YES	4867-94	MW121	SU	
pH	6.4		YES	5501-96	MW121	SU	
pH	6.4		YES	5502-96	MW121	SU	
pH	6.4		YES	4865-94	MW121	SU	
pH	6.4		YES	4866-94	MW121	SU	
pH	6.5		YES	5520-94	MW121	SU	
pH	6.5		YES	5518-94	MW121	SU	
pH	6.5		YES	5517-94	MW121	SU	
pH	6.5		YES	5500-96	MW121	SU	
pH	6.5		YES	4864-94	MW121	SU	
pH	6.5		YES	5519-94	MW121	SU	
pH	9.5		YES	5144-97	MW121	SU	
pH	9.9		YES	5454-95	MW121	SU	
pH	9.9		YES	5455-95	MW121	SU	
pH	9.9		YES	5452-95	MW121	SU	
pH	9.9		YES	5453-95	MW121	SU	
pH	10.8		YES	7782-93	MW121	SU	
pH	10.8		YES	5794-97	MW121	SU	
pH	10.8		YES	7785-93	MW121	SU	
pH	10.8		YES	7783-93	MW121	SU	
pH	10.8		YES	7784-93	MW121	SU	



Data for pH were not modified.

Summary of McNairy Background Wells Physical Parameters

ANALYSIS	RESULT	QUALIFIER	DETECT?	SAMPLE ID	STATION	UNITS
pH	11.3		YES	6455-94	MW121	SU
pH	11.3		YES	6660-93	MW121	SU
pH	11.3		YES	6453-94	MW121	SU
pH	11.3		YES	6456-94	MW121	SU
pH	11.3		YES	6661-93	MW121	SU
pH	11.3		YES	6454-94	MW121	SU
pH	11.3		YES	6658-93	MW121	SU
pH	11.3		YES	6659-93	MW121	SU
pH	5.7		YES	4870-94	MW122	SU
pH	5.7		YES	4871-94	MW122	SU
pH	5.7		YES	4869-94	MW122	SU
pH	5.7		YES	4868-94	MW122	SU
pH	6.2		YES	5521-94	MW122	SU
pH	6.2		YES	5524-94	MW122	SU
pH	6.2		YES	5522-94	MW122	SU
pH	6.2		YES	5523-94	MW122	SU
pH	6.4		YES	5246-93	MW122	SU
pH	6.4		YES	5248-93	MW122	SU
pH	6.4		YES	5247-93	MW122	SU
pH	6.4		YES	5249-93	MW122	SU
pH	6.5		YES	6459-94	MW122	SU
pH	6.5		YES	6457-94	MW122	SU
pH	6.5		YES	6458-94	MW122	SU
pH	6.5		YES	6460-94	MW122	SU
pH	6.6		YES	5302-96	MW122	SU
pH	6.6		YES	7202-94	MW122	SU
pH	6.6		YES	6663-93	MW122	SU
pH	6.6		YES	5304-96	MW122	SU
pH	6.6		YES	5301-96	MW122	SU
pH	6.6		YES	5303-96	MW122	SU
pH	6.6		YES	7203-94	MW122	SU
pH	6.6		YES	6597-95	MW122	SU
pH	6.6		YES	6665-93	MW122	SU
pH	6.6		YES	6662-93	MW122	SU
pH	6.6		YES	6664-93	MW122	SU
pH	6.6		YES	6599-95	MW122	SU
pH	6.6		YES	6596-95	MW122	SU
pH	6.6		YES	6598-95	MW122	SU
pH	6.7		YES	5456-95	MW122	SU
pH	6.7		YES	5459-95	MW122	SU
pH	6.7		YES	5457-95	MW122	SU
pH	6.7		YES	7200-94	MW122	SU
pH	6.7		YES	5458-95	MW122	SU
pH	6.7		YES	7201-94	MW122	SU
pH	6.8		YES	5145-97	MW122	SU
pH	6.95		YES	5795-97	MW122	SU
pH	7		YES	7787-93	MW122	SU
pH	7		YES	7786-93	MW122	SU
pH	7		YES	7789-93	MW122	SU
pH	7		YES	7788-93	MW122	SU
pH	6.3		YES	4764-94	MW133	SU
pH	6.3		YES	4761-94	MW133	SU
pH	6.3		YES	4763-94	MW133	SU
pH	6.3		YES	4762-94	MW133	SU

Summary of McNairy Background Wells Physical Parameters

ANALYSIS	RESULT	QUALIFIER	DETECT?	SAMPLE ID	STATION	UNITS
pH	6.4		YES	5611-94	MW133	SU
pH	6.4		YES	5139-97	MW133	SU
pH	6.4		YES	5613-94	MW133	SU
pH	6.4		YES	5612-94	MW133	SU
pH	6.4		YES	5614-94	MW133	SU
pH	6.49		YES	5789-97	MW133	SU
pH	6.5		YES	5284-93	MW133	SU
pH	6.5		YES	5283-93	MW133	SU
pH	6.5		YES	5307-96	MW133	SU
pH	6.5		YES	5305-96	MW133	SU
pH	6.5		YES	5308-96	MW133	SU
pH	6.5		YES	5282-93	MW133	SU
pH	6.5		YES	5285-93	MW133	SU
pH	6.5		YES	5306-96	MW133	SU
pH	6.6		YES	5460-95	MW133	SU
pH	6.7		YES	6651-94	MW133	SU
pH	6.7		YES	6649-94	MW133	SU
pH	6.7		YES	6743-93	MW133	SU
pH	6.7		YES	6648-94	MW133	SU
pH	6.7		YES	6742-93	MW133	SU
pH	6.7		YES	6650-94	MW133	SU
pH	6.7		YES	5462-95	MW133	SU
pH	6.7		YES	5463-95	MW133	SU
pH	6.7		YES	6741-93	MW133	SU
pH	6.7		YES	6740-93	MW133	SU
pH	6.7		YES	5461-95	MW133	SU
pH	6.1		YES	6051-94	MW140	SU
pH	6.1		YES	5796-97	MW140	SU
pH	6.1		YES	6050-94	MW140	SU
pH	6.1		YES	6052-94	MW140	SU
pH	6.2		YES	5198-94	MW140	SU
pH	6.2		YES	5196-94	MW140	SU
pH	6.2		YES	5314-96	MW140	SU
pH	6.2		YES	5316-96	MW140	SU
pH	6.2		YES	5195-94	MW140	SU
pH	6.2		YES	5146-97	MW140	SU
pH	6.2		YES	6053-94	MW140	SU
pH	6.2		YES	5313-96	MW140	SU
pH	6.2		YES	5197-94	MW140	SU
pH	6.2		YES	5315-96	MW140	SU
pH	6.3		YES	6866-94	MW140	SU
pH	6.3		YES	6867-94	MW140	SU
pH	6.3		YES	4227-94	MW140	SU
pH	6.3		YES	4228-94	MW140	SU
pH	6.3		YES	4226-94	MW140	SU
pH	6.3		YES	6865-94	MW140	SU
pH	6.3		YES	6864-94	MW140	SU
pH	6.3		YES	4225-94	MW140	SU
pH	6.4		YES	7081-93	MW140	SU
pH	6.4		YES	7084-93	MW140	SU
pH	6.4		YES	7082-93	MW140	SU
pH	6.4		YES	7083-93	MW140	SU
pH	6.5		YES	6007-93	MW140	SU
pH	6.5		YES	6004-93	MW140	SU

Summary of McNairy Background Wells Physical Parameters

ANALYSIS	RESULT	QUALIFIER	DETECT?	SAMPLE ID	STATION	UNITS
pH	6.5		YES	6006-93	MW140	SU
pH	6.5		YES	6005-93	MW140	SU
pH	6.6		YES	6089-93	MW140	SU
pH	6.6		YES	6091-93	MW140	SU
pH	6.6		YES	6088-93	MW140	SU
pH	6.6		YES	6090-93	MW140	SU

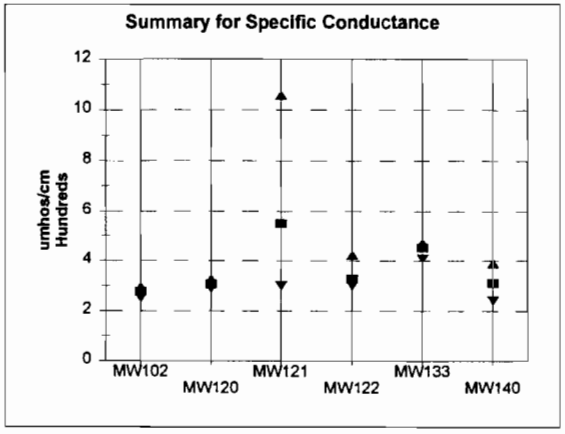
Summary of McNairy Background Wells Physical Parameters

ANALYSIS	RESULT	QUALIFIER	DETECT?	SAMPLE ID	STATION	UNITS
Specific conductance	251		YES	5185-94	MW102	umhos/cm
Specific conductance	251		YES	5186-94	MW102	umhos/cm
Specific conductance	251		YES	5184-94	MW102	umhos/cm
Specific conductance	253		YES	5183-94	MW102	umhos/cm
Specific conductance	259		YES	5943-93	MW102	umhos/cm
Specific conductance	259		YES	5942-93	MW102	umhos/cm
Specific conductance	260		YES	5941-93	MW102	umhos/cm
Specific conductance	261		YES	6023-94	MW102	umhos/cm
Specific conductance	261		YES	6025-94	MW102	umhos/cm
Specific conductance	261		YES	6024-94	MW102	umhos/cm
Specific conductance	262		YES	6022-94	MW102	umhos/cm
Specific conductance	263		YES	5940-93	MW102	umhos/cm
Specific conductance	264		YES	7298-93	MW102	umhos/cm
Specific conductance	265		YES	7297-93	MW102	umhos/cm
Specific conductance	266		YES	7295-93	MW102	umhos/cm
Specific conductance	266		YES	7296-93	MW102	umhos/cm
Specific conductance	272		YES	7467-95	MW102	umhos/cm
Specific conductance	273		YES	7468-95	MW102	umhos/cm
Specific conductance	273		YES	5175-93	MW102	umhos/cm
Specific conductance	273		YES	5177-93	MW102	umhos/cm
Specific conductance	273		YES	7470-95	MW102	umhos/cm
Specific conductance	273		YES	7469-95	MW102	umhos/cm
Specific conductance	274		YES	5174-93	MW102	umhos/cm
Specific conductance	275		YES	5176-93	MW102	umhos/cm
Specific conductance	278		YES	5141-97	MW102	umhos/cm
Specific conductance	280		YES	6595-95	MW102	umhos/cm
Specific conductance	281		YES	5284-96	MW102	umhos/cm
Specific conductance	281		YES	6594-95	MW102	umhos/cm
Specific conductance	282		YES	6593-95	MW102	umhos/cm
Specific conductance	282		YES	5282-96	MW102	umhos/cm
Specific conductance	282		YES	5283-96	MW102	umhos/cm
Specific conductance	283		YES	5281-96	MW102	umhos/cm
Specific conductance	283		YES	6592-95	MW102	umhos/cm
Specific conductance	286		YES	8286-95	MW102	umhos/cm
Specific conductance	288		YES	8288-95	MW102	umhos/cm
Specific conductance	288		YES	8287-95	MW102	umhos/cm
Specific conductance	289		YES	8285-95	MW102	umhos/cm
Specific conductance	290		YES	5622-95	MW102	umhos/cm
Specific conductance	290		YES	6773-94	MW102	umhos/cm
Specific conductance	290		YES	6772-94	MW102	umhos/cm
Specific conductance	292		YES	4270-94	MW102	umhos/cm
Specific conductance	292		YES	5620-95	MW102	umhos/cm
Specific conductance	292		YES	6771-94	MW102	umhos/cm
Specific conductance	292		YES	5621-95	MW102	umhos/cm
Specific conductance	292		YES	6770-94	MW102	umhos/cm
Specific conductance	292		YES	4271-94	MW102	umhos/cm
Specific conductance	294		YES	4269-94	MW102	umhos/cm
Specific conductance	294		YES	5619-95	MW102	umhos/cm
Specific conductance	295		YES	4268-94	MW102	umhos/cm
Specific conductance	290		YES	5296-96	MW120	umhos/cm
Specific conductance	291		YES	5295-96	MW120	umhos/cm
Specific conductance	291		YES	5294-96	MW120	umhos/cm
Specific conductance	291		YES	5293-96	MW120	umhos/cm
Specific conductance	292		YES	5793-97	MW120	umhos/cm
Specific conductance	298		YES	5451-95	MW120	umhos/cm

CORRECTED DATA SET	MW102	MW120	MW121	MW122	MW133	MW140	Overall	Weighted
	Specific conductance							
	251	290	301	301	408	242		
	251	291	305	303	408	243		
	251	291	305	303	409	265		
	253	291	306	303	410	270		
	259	292	306	304	414	273		
	259	298	306	304	427	274		
	260	298	308	305	451	274		
	261	298	310	305	452	274		
	261	299	346	306	453	275		
	261	304	348	306	454	276		
	262	305	350	309	455	284		
	263	305	353	310	455	286		
	264	305	383	310	455	287		
	265	306	384	311	458	288		
	266	306	388	312	459	289		
	266	306	390	312	460	289		
	272	306	415	317	460	290		
	273	306	427	318	461	291		
	273	306	436	320	462	324		
	273	307	456	320	462	324		
	273	307	458	321	463	325		
	273	307	535	322	467	326		
	274	307	564	322	467	332		
	275	307	641	326	468	334		
	278	308	746	327	468	334		
	280	308	781	328	469	337		
	281	308	847	328	470	356		
	281	309	884	329	471	359		
	282	309	941	329	471	359		
	282	309	979	331	472	360		
	282	316	990	331		378		
	283	317	1042	339		379		
	283	317	1058	339		379		
	286	317	1058	341		390		
	288	324		343				
	288	326		344				
	289	327		353				
	290	327		356				
	290			360				
	290			371				
	292			383				
	292			422				
	292							
	292							
	292							
	294							
	292							
	294							
	294							
	295							
	295							
Min	251.00	290.00	301.00	301.00	408.00	242.00	242.00	
Max	295.00	327.00	1058.00	422.00	472.00	390.00	1058.00	
Average	276.06	306.84	548.44	326.76	451.97	310.76	359.84	370.14
Number	49	38	34	42	30	34	227	

Summary of McNairy Background Wells Physical Parameters

ANALYSIS	RESULT	QUALIFIER	DETECT?	SAMPLE ID	STATION	UNITS	CORRECTED DATA SET
Specific conductance	298		YES	5449-95	MW120	umhos/cm	
Specific conductance	298		YES	5450-95	MW120	umhos/cm	
Specific conductance	299		YES	5448-95	MW120	umhos/cm	
Specific conductance	304		YES	5143-97	MW120	umhos/cm	
Specific conductance	305		YES	6930-94	MW120	umhos/cm	
Specific conductance	305		YES	6929-94	MW120	umhos/cm	
Specific conductance	305		YES	6931-94	MW120	umhos/cm	
Specific conductance	306		YES	6928-94	MW120	umhos/cm	
Specific conductance	306		YES	4210-94	MW120	umhos/cm	
Specific conductance	306		YES	4209-94	MW120	umhos/cm	
Specific conductance	306		YES	4212-94	MW120	umhos/cm	
Specific conductance	306		YES	4211-94	MW120	umhos/cm	
Specific conductance	306		YES	7066-93	MW120	umhos/cm	
Specific conductance	307		YES	5090-93	MW120	umhos/cm	
Specific conductance	307		YES	5088-93	MW120	umhos/cm	
Specific conductance	307		YES	7068-93	MW120	umhos/cm	
Specific conductance	307		YES	7067-93	MW120	umhos/cm	
Specific conductance	307		YES	7065-93	MW120	umhos/cm	
Specific conductance	308		YES	5089-93	MW120	umhos/cm	
Specific conductance	308		YES	5091-93	MW120	umhos/cm	
Specific conductance	308		YES	4993-94	MW120	umhos/cm	
Specific conductance	309		YES	4992-94	MW120	umhos/cm	
Specific conductance	309		YES	4994-94	MW120	umhos/cm	
Specific conductance	309		YES	4991-94	MW120	umhos/cm	
Specific conductance	316		YES	6036-94	MW120	umhos/cm	
Specific conductance	317		YES	6034-94	MW120	umhos/cm	
Specific conductance	317		YES	6035-94	MW120	umhos/cm	
Specific conductance	317		YES	6037-94	MW120	umhos/cm	
Specific conductance	324		YES	5901-93	MW120	umhos/cm	
Specific conductance	326		YES	5902-93	MW120	umhos/cm	
Specific conductance	327		YES	5900-93	MW120	umhos/cm	
Specific conductance	327		YES	5903-93	MW120	umhos/cm	
Specific conductance	301		YES	4867-94	MW121	umhos/cm	
Specific conductance	305		YES	5500-96	MW121	umhos/cm	
Specific conductance	305		YES	5502-96	MW121	umhos/cm	
Specific conductance	306		YES	5501-96	MW121	umhos/cm	
Specific conductance	306		YES	4865-94	MW121	umhos/cm	
Specific conductance	306		YES	5503-96	MW121	umhos/cm	
Specific conductance	308		YES	4866-94	MW121	umhos/cm	
Specific conductance	310		YES	4864-94	MW121	umhos/cm	
Specific conductance	346		YES	5517-94	MW121	umhos/cm	
Specific conductance	348		YES	5518-94	MW121	umhos/cm	
Specific conductance	350		YES	5519-94	MW121	umhos/cm	
Specific conductance	353		YES	5520-94	MW121	umhos/cm	
Specific conductance	383		YES	5453-95	MW121	umhos/cm	
Specific conductance	384		YES	5454-95	MW121	umhos/cm	
Specific conductance	388		YES	5455-95	MW121	umhos/cm	
Specific conductance	390		YES	5452-95	MW121	umhos/cm	
Specific conductance	415		YES	7279-94	MW121	umhos/cm	
Specific conductance	427		YES	7278-94	MW121	umhos/cm	
Specific conductance	436		YES	7277-94	MW121	umhos/cm	
Specific conductance	456		YES	5144-97	MW121	umhos/cm	
Specific conductance	458		YES	7276-94	MW121	umhos/cm	
Specific conductance	535		YES	6661-93	MW121	umhos/cm	



Data for Specific Conductance were not modified.

Summary of McNairy Background Wells Physical Parameters

ANALYSIS	RESULT	QUALIFIER	DETECT?	SAMPLE ID	STATION	UNITS
Specific conductance	564		YES	6660-93	MW121	umhos/cm
Specific conductance	641		YES	6659-93	MW121	umhos/cm
Specific conductance	746		YES	6658-93	MW121	umhos/cm
Specific conductance	781		YES	5794-97	MW121	umhos/cm
Specific conductance	847		YES	6456-94	MW121	umhos/cm
Specific conductance	884		YES	6455-94	MW121	umhos/cm
Specific conductance	941		YES	6454-94	MW121	umhos/cm
Specific conductance	979		YES	6453-94	MW121	umhos/cm
Specific conductance	990		YES	7785-93	MW121	umhos/cm
Specific conductance	1042		YES	7784-93	MW121	umhos/cm
Specific conductance	1058		YES	7782-93	MW121	umhos/cm
Specific conductance	1058		YES	7783-93	MW121	umhos/cm
Specific conductance	301		YES	5524-94	MW122	umhos/cm
Specific conductance	303		YES	5522-94	MW122	umhos/cm
Specific conductance	303		YES	5521-94	MW122	umhos/cm
Specific conductance	303		YES	5523-94	MW122	umhos/cm
Specific conductance	304		YES	5249-93	MW122	umhos/cm
Specific conductance	304		YES	6597-95	MW122	umhos/cm
Specific conductance	305		YES	6596-95	MW122	umhos/cm
Specific conductance	305		YES	5248-93	MW122	umhos/cm
Specific conductance	306		YES	5247-93	MW122	umhos/cm
Specific conductance	306		YES	6598-95	MW122	umhos/cm
Specific conductance	309		YES	6599-95	MW122	umhos/cm
Specific conductance	310		YES	4871-94	MW122	umhos/cm
Specific conductance	310		YES	5246-93	MW122	umhos/cm
Specific conductance	311		YES	4869-94	MW122	umhos/cm
Specific conductance	312		YES	4870-94	MW122	umhos/cm
Specific conductance	312		YES	4868-94	MW122	umhos/cm
Specific conductance	317		YES	5304-96	MW122	umhos/cm
Specific conductance	318		YES	5456-95	MW122	umhos/cm
Specific conductance	320		YES	5457-95	MW122	umhos/cm
Specific conductance	320		YES	5303-96	MW122	umhos/cm
Specific conductance	321		YES	5301-96	MW122	umhos/cm
Specific conductance	322		YES	5458-95	MW122	umhos/cm
Specific conductance	322		YES	5302-96	MW122	umhos/cm
Specific conductance	326		YES	6665-93	MW122	umhos/cm
Specific conductance	327		YES	7203-94	MW122	umhos/cm
Specific conductance	328		YES	5459-95	MW122	umhos/cm
Specific conductance	328		YES	7202-94	MW122	umhos/cm
Specific conductance	329		YES	6664-93	MW122	umhos/cm
Specific conductance	329		YES	6663-93	MW122	umhos/cm
Specific conductance	331		YES	7201-94	MW122	umhos/cm
Specific conductance	331		YES	6662-93	MW122	umhos/cm
Specific conductance	339		YES	6460-94	MW122	umhos/cm
Specific conductance	339		YES	6459-94	MW122	umhos/cm
Specific conductance	341		YES	6458-94	MW122	umhos/cm
Specific conductance	343		YES	6457-94	MW122	umhos/cm
Specific conductance	344		YES	7200-94	MW122	umhos/cm
Specific conductance	353		YES	7789-93	MW122	umhos/cm
Specific conductance	356		YES	7788-93	MW122	umhos/cm
Specific conductance	360		YES	7787-93	MW122	umhos/cm
Specific conductance	371		YES	7786-93	MW122	umhos/cm
Specific conductance	383		YES	5145-97	MW122	umhos/cm
Specific conductance	422		YES	5795-97	MW122	umhos/cm
Specific conductance	408		YES	5308-96	MW133	umhos/cm

Summary of McNairy Background Wells Physical Parameters

ANALYSIS	RESULT	QUALIFIER	DETECT?	SAMPLE ID	STATION	UNITS
Specific conductance	408		YES	5305-96	MW133	umhos/cm
Specific conductance	409		YES	5307-96	MW133	umhos/cm
Specific conductance	410		YES	5306-96	MW133	umhos/cm
Specific conductance	414		YES	5789-97	MW133	umhos/cm
Specific conductance	427		YES	5139-97	MW133	umhos/cm
Specific conductance	451		YES	5463-95	MW133	umhos/cm
Specific conductance	452		YES	5462-95	MW133	umhos/cm
Specific conductance	453		YES	5614-94	MW133	umhos/cm
Specific conductance	454		YES	5461-95	MW133	umhos/cm
Specific conductance	455		YES	5613-94	MW133	umhos/cm
Specific conductance	455		YES	5460-95	MW133	umhos/cm
Specific conductance	455		YES	5285-93	MW133	umhos/cm
Specific conductance	458		YES	5284-93	MW133	umhos/cm
Specific conductance	459		YES	5611-94	MW133	umhos/cm
Specific conductance	460		YES	5283-93	MW133	umhos/cm
Specific conductance	460		YES	5612-94	MW133	umhos/cm
Specific conductance	461		YES	4764-94	MW133	umhos/cm
Specific conductance	462		YES	4762-94	MW133	umhos/cm
Specific conductance	462		YES	4763-94	MW133	umhos/cm
Specific conductance	463		YES	4761-94	MW133	umhos/cm
Specific conductance	467		YES	5282-93	MW133	umhos/cm
Specific conductance	467		YES	6743-93	MW133	umhos/cm
Specific conductance	468		YES	6651-94	MW133	umhos/cm
Specific conductance	468		YES	6742-93	MW133	umhos/cm
Specific conductance	469		YES	6741-93	MW133	umhos/cm
Specific conductance	470		YES	6650-94	MW133	umhos/cm
Specific conductance	471		YES	6740-93	MW133	umhos/cm
Specific conductance	471		YES	6649-94	MW133	umhos/cm
Specific conductance	472		YES	6648-94	MW133	umhos/cm
Specific conductance	242		YES	5146-97	MW140	umhos/cm
Specific conductance	243		YES	5796-97	MW140	umhos/cm
Specific conductance	265		YES	5316-96	MW140	umhos/cm
Specific conductance	270		YES	5315-96	MW140	umhos/cm
Specific conductance	273		YES	5314-96	MW140	umhos/cm
Specific conductance	274		YES	5313-96	MW140	umhos/cm
Specific conductance	274		YES	6052-94	MW140	umhos/cm
Specific conductance	274		YES	6053-94	MW140	umhos/cm
Specific conductance	275		YES	6051-94	MW140	umhos/cm
Specific conductance	276		YES	6050-94	MW140	umhos/cm
Specific conductance	284		YES	5198-94	MW140	umhos/cm
Specific conductance	286		YES	5196-94	MW140	umhos/cm
Specific conductance	287		YES	6867-94	MW140	umhos/cm
Specific conductance	288		YES	5195-94	MW140	umhos/cm
Specific conductance	289		YES	6866-94	MW140	umhos/cm
Specific conductance	289		YES	5197-94	MW140	umhos/cm
Specific conductance	290		YES	6865-94	MW140	umhos/cm
Specific conductance	291		YES	6864-94	MW140	umhos/cm
Specific conductance	324		YES	4226-94	MW140	umhos/cm
Specific conductance	324		YES	4228-94	MW140	umhos/cm
Specific conductance	325		YES	4227-94	MW140	umhos/cm
Specific conductance	326		YES	4225-94	MW140	umhos/cm
Specific conductance	332		YES	6005-93	MW140	umhos/cm
Specific conductance	334		YES	6007-93	MW140	umhos/cm
Specific conductance	334		YES	6006-93	MW140	umhos/cm

Summary of McNairy Background Wells Physical Parameters

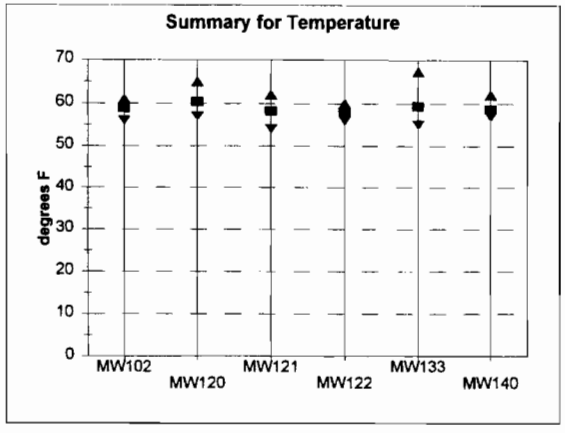
ANALYSIS	RESULT	QUALIFIER	DETECT?	SAMPLE ID	STATION	UNITS
Specific conductance	337		YES	6004-93	MW140	umhos/cm
Specific conductance	356		YES	7081-93	MW140	umhos/cm
Specific conductance	359		YES	7083-93	MW140	umhos/cm
Specific conductance	359		YES	7084-93	MW140	umhos/cm
Specific conductance	360		YES	7082-93	MW140	umhos/cm
Specific conductance	378		YES	6089-93	MW140	umhos/cm
Specific conductance	379		YES	6091-93	MW140	umhos/cm
Specific conductance	379		YES	6090-93	MW140	umhos/cm
Specific conductance	390		YES	6088-93	MW140	umhos/cm

Summary of McNairy Background Wells Physical Parameters

ANALYSIS	RESULT	QUALIFIER	DETECT?	SAMPLE ID	STATION	UNITS
Temperature	56		YES	5141-97	MW102	F
Temperature	58		YES	5281-96	MW102	F
Temperature	58		YES	4268-94	MW102	F
Temperature	58		YES	8285-95	MW102	F
Temperature	59		YES	5174-93	MW102	F
Temperature	59		YES	5619-95	MW102	F
Temperature	59		YES	6022-94	MW102	F
Temperature	59		YES	7467-95	MW102	F
Temperature	59.7		YES	7295-93	MW102	F
Temperature	60		YES	5183-94	MW102	F
Temperature	60		YES	6770-94	MW102	F
Temperature	60		YES	6592-95	MW102	F
Temperature	61		YES	5940-93	MW102	F
Temperature	57		YES	5448-95	MW120	F
Temperature	58		YES	5143-97	MW120	F
Temperature	59		YES	4209-94	MW120	F
Temperature	60		YES	5293-96	MW120	F
Temperature	60		YES	6928-94	MW120	F
Temperature	60		YES	4991-94	MW120	F
Temperature	60.5		YES	5793-97	MW120	F
Temperature	61		YES	5088-93	MW120	F
Temperature	61.1		YES	7065-93	MW120	F
Temperature	62		YES	6034-94	MW120	F
Temperature	65		YES	5900-93	MW120	F
Temperature	54		YES	7782-93	MW121	F
Temperature	57		YES	5452-95	MW121	F
Temperature	57		YES	5144-97	MW121	F
Temperature	58		YES	5500-96	MW121	F
Temperature	58.1		YES	5794-97	MW121	F
Temperature	59		YES	4864-94	MW121	F
Temperature	59.6		YES	6658-93	MW121	F
Temperature	60		YES	6453-94	MW121	F
Temperature	62		YES	5517-94	MW121	F
Temperature	5.72		YES	5795-97	MW122	F
Temperature	56		YES	5145-97	MW122	F
Temperature	56		YES	7786-93	MW122	F
Temperature	57		YES	5456-95	MW122	F
Temperature	58		YES	5301-96	MW122	F
Temperature	58		YES	4868-94	MW122	F
Temperature	58		YES	7200-94	MW122	F
Temperature	59		YES	5246-93	MW122	F
Temperature	59.7		YES	6662-93	MW122	F
Temperature	60		YES	6457-94	MW122	F
Temperature	60		YES	5521-94	MW122	F
Temperature	60		YES	6596-95	MW122	F
Temperature	55		YES	5139-97	MW133	F
Temperature	55		YES	4761-94	MW133	F
Temperature	56		YES	5305-96	MW133	F
Temperature	56		YES	5789-97	MW133	F
Temperature	57		YES	5460-95	MW133	F
Temperature	61		YES	5282-93	MW133	F
Temperature	63		YES	5611-94	MW133	F
Temperature	64		YES	6648-94	MW133	F
Temperature	67.3		YES	6740-93	MW133	F
Temperature	57		YES	5313-96	MW140	F

CORRECTED DATA SET

	MW102	MW120	MW121	MW122	MW133	MW140	Overall	Weighted
	Temperature							
	56	57	54	56	55	57		
	58	58	57	56	55	57		
	58	59	57	56	56	57.1		
	58	60	58	57	56	58		
	59	60	58.1	58	57	58		
	59	60	59	58	61	58		
	59	60.5	59.6	58	63	59		
	59	61	60	59	64	60		
	59.7	61.1	62	59.7	67.3	61		
	60	62		60		62		
	60	65		60				
	60			60				
	61							
Min	56.00	57.00	54.00	56.00	55.00	57.00	54.00	
Max	61.00	65.00	62.00	60.00	67.30	62.00	67.30	
Average	58.98	60.33	58.30	58.14	59.37	58.71	58.97	58.97
Number	13	11	9	12	9	10	64	



MW 102 - Data were not modified.

MW 120 - Data were not modified.

MW 121 - Data were not modified.

MW 122 - Smallest detected value is anamolous and increased to next smallest detected value.

MW 133 - Data were not modified.

MW 140 - Data were not modified.

Summary of McNairy Background Wells Physical Parameters

MW 140 data were not modified.

ANALYSIS	RESULT	QUALIFIER	DETECT?	SAMPLE ID	STATION	UNITS
Temperature	57		YES	5146-97	MW140	F
Temperature	57.1		YES	5796-97	MW140	F
Temperature	58		YES	7081-93	MW140	F
Temperature	58		YES	4225-94	MW140	F
Temperature	58		YES	6864-94	MW140	F
Temperature	59		YES	6004-93	MW140	F
Temperature	60		YES	6050-94	MW140	F
Temperature	61		YES	6088-93	MW140	F
Temperature	62		YES	5195-94	MW140	F

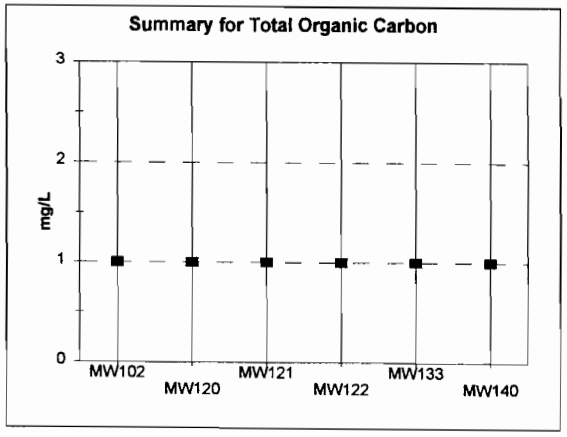
Summary of McNairy Background Wells Physical Parameters

ANALYSIS	RESULT	QUALIFIER	DETECT?	SAMPLE ID	STATION	UNITS	CORRECTED DATA SET								
Total Organic Carbon	1	<	NO	8286-95	MW102	mg/L		MW102	MW120	MW121	MW122	MW133	MW140	Overall	Weighted
Total Organic Carbon	1	<	NO	7469-95	MW102	mg/L		Total Organic Carbon							
Total Organic Carbon	1	<	NO	5941-93	MW102	mg/L		1	1	1	1	1	1		
Total Organic Carbon	1	<	NO	6772-94	MW102	mg/L		1	1	1	1	1	1		
Total Organic Carbon	1	<	NO	7297-93	MW102	mg/L		1	1	1	1	1	1		
Total Organic Carbon	1	<	NO	5620-95	MW102	mg/L		1	1	1	1	1	1		
Total Organic Carbon	1	<	NO	7470-95	MW102	mg/L		1	1	1	1	1	1		
Total Organic Carbon	1	<	NO	5943-93	MW102	mg/L		1	1	1	1	1	1		
Total Organic Carbon	1	<	NO	6593-95	MW102	mg/L		1	1	1	1	1	1		
Total Organic Carbon	1	<	NO	4268-94	MW102	mg/L		1	1	1	1	1	1		
Total Organic Carbon	1	<	NO	8288-95	MW102	mg/L		1	1	1	1	1	1		
Total Organic Carbon	1	<	NO	5622-95	MW102	mg/L		1	1	1	1	1	1		
Total Organic Carbon	1	<	NO	5619-95	MW102	mg/L		1	1	1	1	1	1		
Total Organic Carbon	1	<	NO	7468-95	MW102	mg/L		1	1	1	1	1	1		
Total Organic Carbon	1	<	NO	6594-95	MW102	mg/L		1	1		1		1		
Total Organic Carbon	1	<	NO	5281-96	MW102	mg/L		1	1		1		1		
Total Organic Carbon	1	<	NO	5942-93	MW102	mg/L		1	1		1		1		
Total Organic Carbon	1	<	NO	5282-96	MW102	mg/L		1	1		1		1		
Total Organic Carbon	1	<	NO	5177-93	MW102	mg/L		1	1		1		1		
Total Organic Carbon	1	<	NO	6592-95	MW102	mg/L		1	1		1		1		
Total Organic Carbon	1	<	NO	8287-95	MW102	mg/L		1	1		1		1		
Total Organic Carbon	1	<	NO	5940-93	MW102	mg/L		1	1		1		1		
Total Organic Carbon	1	<	NO	6595-95	MW102	mg/L		1	1				1		
Total Organic Carbon	1	<	NO	5283-96	MW102	mg/L		1	1				1		
Total Organic Carbon	1	<	NO	5176-93	MW102	mg/L		1	1				1		
Total Organic Carbon	1	<	NO	5621-95	MW102	mg/L		1	1				1		
Total Organic Carbon	1	<	NO	7467-95	MW102	mg/L		1	1				1		
Total Organic Carbon	1		YES	8285-95	MW102	mg/L		1	1				1		
Total Organic Carbon	1	<	NO	6773-94	MW102	mg/L		1	1				1		
Total Organic Carbon	1	<	NO	6025-94	MW102	mg/L		1	1				1		
Total Organic Carbon	1	<	NO	5175-93	MW102	mg/L		1	1				1		
Total Organic Carbon	1	<	NO	7295-93	MW102	mg/L		1	1						
Total Organic Carbon	1	<	NO	6024-94	MW102	mg/L		1							
Total Organic Carbon	1	<	NO	5284-96	MW102	mg/L		1							
Total Organic Carbon	1	<	NO	5183-94	MW102	mg/L		1							
Total Organic Carbon	1	<	NO	5185-94	MW102	mg/L		1							
Total Organic Carbon	1		YES	5174-93	MW102	mg/L		1							
Total Organic Carbon	1	<	NO	5184-94	MW102	mg/L		1							
Total Organic Carbon	1	<	NO	7296-93	MW102	mg/L		1							
Total Organic Carbon	1	<	NO	6022-94	MW102	mg/L		1							
Total Organic Carbon	1	<	NO	6771-94	MW102	mg/L		1							
Total Organic Carbon	1	<	NO	5186-94	MW102	mg/L		1							
Total Organic Carbon	1	<	NO	7298-93	MW102	mg/L		1							
Total Organic Carbon	1	<	NO	6770-94	MW102	mg/L		1							
Total Organic Carbon	1	<	NO	6023-94	MW102	mg/L		1							
Total Organic Carbon	1	<	NO	5088-93	MW120	mg/L		1							
Total Organic Carbon	1	<	NO	7067-93	MW120	mg/L		1							
Total Organic Carbon	1	<	NO	5091-93	MW120	mg/L									
Total Organic Carbon	1	<	NO	5293-96	MW120	mg/L									
Total Organic Carbon	1	<	NO	7068-93	MW120	mg/L									
Total Organic Carbon	1	<	NO	4209-94	MW120	mg/L									
Total Organic Carbon	1	<	NO	5089-93	MW120	mg/L	Min	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Total Organic Carbon	1	<	NO	5090-93	MW120	mg/L	Max	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Total Organic Carbon	1	<	NO	6931-94	MW120	mg/L	Average	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Total Organic Carbon	1	<	NO	6036-94	MW120	mg/L	Number	45	30	12	20	12	29	148	

Summary of McNairy Background Wells Physical Parameters

ANALYSIS	RESULT	QUALIFIER	DETECT?	SAMPLE ID	STATION	UNITS
Total Organic Carbon	1	<	NO	5901-93	MW120	mg/L
Total Organic Carbon	1	<	NO	5450-95	MW120	mg/L
Total Organic Carbon	1	<	NO	5295-96	MW120	mg/L
Total Organic Carbon	1	<	NO	6930-94	MW120	mg/L
Total Organic Carbon	1	<	NO	6037-94	MW120	mg/L
Total Organic Carbon	1	<	NO	6035-94	MW120	mg/L
Total Organic Carbon	1	<	NO	5296-96	MW120	mg/L
Total Organic Carbon	1	<	NO	5294-96	MW120	mg/L
Total Organic Carbon	1	<	NO	6034-94	MW120	mg/L
Total Organic Carbon	1	<	NO	5449-95	MW120	mg/L
Total Organic Carbon	1	<	NO	4991-94	MW120	mg/L
Total Organic Carbon	1	<	NO	5448-95	MW120	mg/L
Total Organic Carbon	1	<	NO	6929-94	MW120	mg/L
Total Organic Carbon	1	<	NO	5900-93	MW120	mg/L
Total Organic Carbon	1	<	NO	5902-93	MW120	mg/L
Total Organic Carbon	1	<	NO	7066-93	MW120	mg/L
Total Organic Carbon	1	<	NO	5903-93	MW120	mg/L
Total Organic Carbon	1	<	NO	5451-95	MW120	mg/L
Total Organic Carbon	1		YES	6928-94	MW120	mg/L
Total Organic Carbon	1	<	NO	7065-93	MW120	mg/L
Total Organic Carbon	1	<	NO	5454-95	MW121	mg/L
Total Organic Carbon	1	<	NO	5500-96	MW121	mg/L
Total Organic Carbon	1	<	NO	4866-94	MW121	mg/L
Total Organic Carbon	1	<	NO	4865-94	MW121	mg/L
Total Organic Carbon	1		YES	5453-95	MW121	mg/L
Total Organic Carbon	1	<	NO	4864-94	MW121	mg/L
Total Organic Carbon	1	<	NO	4867-94	MW121	mg/L
Total Organic Carbon	1		YES	5455-95	MW121	mg/L
Total Organic Carbon	1		YES	5452-95	MW121	mg/L
Total Organic Carbon	1	<	NO	5501-96	MW121	mg/L
Total Organic Carbon	1	<	NO	5503-96	MW121	mg/L
Total Organic Carbon	1	<	NO	5502-96	MW121	mg/L
Total Organic Carbon	1	<	NO	5304-96	MW122	mg/L
Total Organic Carbon	1	<	NO	5303-96	MW122	mg/L
Total Organic Carbon	1	<	NO	4869-94	MW122	mg/L
Total Organic Carbon	1	<	NO	6599-95	MW122	mg/L
Total Organic Carbon	1	<	NO	5248-93	MW122	mg/L
Total Organic Carbon	1	<	NO	5302-96	MW122	mg/L
Total Organic Carbon	1	<	NO	4868-94	MW122	mg/L
Total Organic Carbon	1	<	NO	6597-95	MW122	mg/L
Total Organic Carbon	1	<	NO	6598-95	MW122	mg/L
Total Organic Carbon	1	<	NO	6596-95	MW122	mg/L
Total Organic Carbon	1	<	NO	5456-95	MW122	mg/L
Total Organic Carbon	1	<	NO	4871-94	MW122	mg/L
Total Organic Carbon	1	<	NO	5457-95	MW122	mg/L
Total Organic Carbon	1		YES	5246-93	MW122	mg/L
Total Organic Carbon	1	<	NO	5249-93	MW122	mg/L
Total Organic Carbon	1	<	NO	4870-94	MW122	mg/L
Total Organic Carbon	1	<	NO	5459-95	MW122	mg/L
Total Organic Carbon	1	<	NO	5247-93	MW122	mg/L
Total Organic Carbon	1	<	NO	5301-96	MW122	mg/L
Total Organic Carbon	1	<	NO	5458-95	MW122	mg/L
Total Organic Carbon	1	<	NO	4764-94	MW133	mg/L
Total Organic Carbon	1	<	NO	4761-94	MW133	mg/L

CORRECTED DATA SET



Data for Total Organic Carbon were not modified.

Summary of McNairy Background Wells Physical Parameters

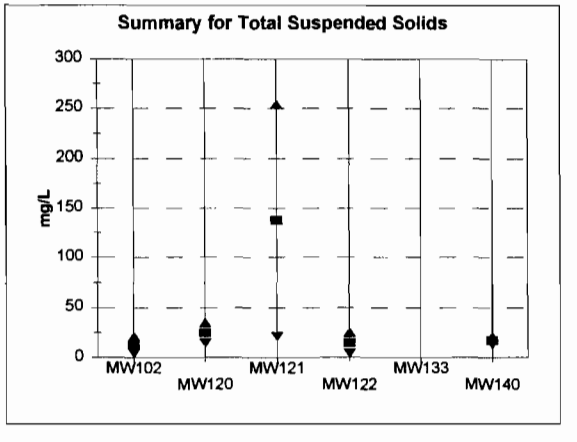
ANALYSIS	RESULT	QUALIFIER	DETECT?	SAMPLE ID	STATION	UNITS
Total Organic Carbon	1	<	NO	4763-94	MW133	mg/L
Total Organic Carbon	1	<	NO	5283-93	MW133	mg/L
Total Organic Carbon	1	<	NO	5284-93	MW133	mg/L
Total Organic Carbon	1	<	NO	5462-95	MW133	mg/L
Total Organic Carbon	1	<	NO	5282-93	MW133	mg/L
Total Organic Carbon	1	<	NO	4762-94	MW133	mg/L
Total Organic Carbon	1	<	NO	5461-95	MW133	mg/L
Total Organic Carbon	1	<	NO	5285-93	MW133	mg/L
Total Organic Carbon	1	<	NO	5460-95	MW133	mg/L
Total Organic Carbon	1	<	NO	5463-95	MW133	mg/L
Total Organic Carbon	1	<	NO	6004-93	MW140	mg/L
Total Organic Carbon	1	<	NO	5198-94	MW140	mg/L
Total Organic Carbon	1	<	NO	5195-94	MW140	mg/L
Total Organic Carbon	1	<	NO	6864-94	MW140	mg/L
Total Organic Carbon	1	<	NO	5197-94	MW140	mg/L
Total Organic Carbon	1	<	NO	5316-96	MW140	mg/L
Total Organic Carbon	1	<	NO	6089-93	MW140	mg/L
Total Organic Carbon	1	<	NO	6007-93	MW140	mg/L
Total Organic Carbon	1	<	NO	6052-94	MW140	mg/L
Total Organic Carbon	1	<	NO	5314-96	MW140	mg/L
Total Organic Carbon	1	<	NO	6865-94	MW140	mg/L
Total Organic Carbon	1	<	NO	6006-93	MW140	mg/L
Total Organic Carbon	1	<	NO	6867-94	MW140	mg/L
Total Organic Carbon	1	<	NO	6866-94	MW140	mg/L
Total Organic Carbon	1	<	NO	4225-94	MW140	mg/L
Total Organic Carbon	1	<	NO	7084-93	MW140	mg/L
Total Organic Carbon	1	<	NO	5315-96	MW140	mg/L
Total Organic Carbon	1	<	NO	6005-93	MW140	mg/L
Total Organic Carbon	1	<	NO	7082-93	MW140	mg/L
Total Organic Carbon	1	<	NO	5196-94	MW140	mg/L
Total Organic Carbon	1	<	NO	6053-94	MW140	mg/L
Total Organic Carbon	1	<	NO	7083-93	MW140	mg/L
Total Organic Carbon	1		YES	6090-93	MW140	mg/L
Total Organic Carbon	1	<	NO	6091-93	MW140	mg/L
Total Organic Carbon	1	<	NO	5313-96	MW140	mg/L
Total Organic Carbon	1	<	NO	7081-93	MW140	mg/L
Total Organic Carbon	1	<	NO	6050-94	MW140	mg/L
Total Organic Carbon	1	<	NO	6088-93	MW140	mg/L
Total Organic Carbon	1	<	NO	6051-94	MW140	mg/L

Summary of McNairy Background Wells Physical Parameters

ANALYSIS	RESULT	QUALIFIER	DETECT?	SAMPLE ID	STATION	UNITS
Total Suspended Solids	4	<	NO	5281-96	MW102	mg/L
Total Suspended Solids	21		YES	5141-97	MW102	mg/L
Total Suspended Solids	14		YES	5293-96	MW120	mg/L
Total Suspended Solids	35		YES	5143-97	MW120	mg/L
Total Suspended Solids	21		YES	5144-97	MW121	mg/L
Total Suspended Solids	254		YES	5500-96	MW121	mg/L
Total Suspended Solids	4	<	NO	5301-96	MW122	mg/L
Total Suspended Solids	25		YES	5145-97	MW122	mg/L
Total Suspended Solids	13		YES	5146-97	MW140	mg/L
Total Suspended Solids	21		YES	5313-96	MW140	mg/L

CORRECTED DATA SET

	MW102	MW120	MW121	MW122	MW133	MW140	Overall	Weighted
Total Suspended Solids								
	4	14	21	4		13		
	21	35	254	25		21		
Min	4.00	14.00	21.00	4.00	ERR	13.00	4.00	
Max	21.00	35.00	254.00	25.00	ERR	21.00	254.00	
Average	12.50	24.50	137.50	14.50	ERR	17.00	41.20	41.20
Number	2	2	2	2	0	2	10	



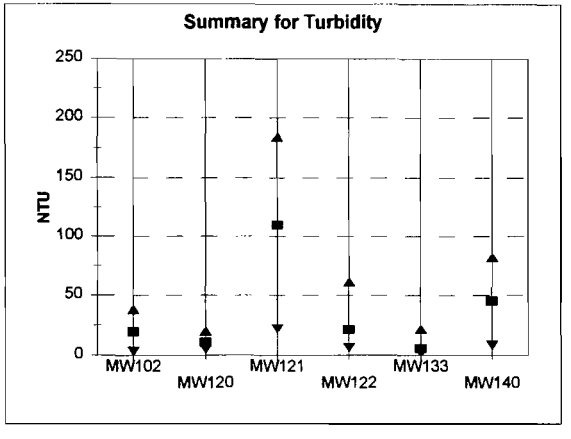
Data for Total Suspended Solids were not modified.

Summary of McNairy Background Wells Physical Parameters

ANALYSIS	RESULT	QUALIFIER	DETECT?	SAMPLE ID	STATION	UNITS
Turbidity	3.4		YES	4268-94	MW102	NTU
Turbidity	6.6		YES	5174-93	MW102	NTU
Turbidity	11		YES	5281-96	MW102	NTU
Turbidity	12		YES	8285-95	MW102	NTU
Turbidity	15		YES	5619-95	MW102	NTU
Turbidity	16		YES	7467-95	MW102	NTU
Turbidity	17		YES	5940-93	MW102	NTU
Turbidity	22		YES	6592-95	MW102	NTU
Turbidity	24		YES	5183-94	MW102	NTU
Turbidity	35.1		YES	6770-94	MW102	NTU
Turbidity	36		YES	6022-94	MW102	NTU
Turbidity	38		YES	7295-93	MW102	NTU
Turbidity	5		YES	6034-94	MW120	NTU
Turbidity	6		YES	5900-93	MW120	NTU
Turbidity	8		YES	4209-94	MW120	NTU
Turbidity	9.3		YES	6928-94	MW120	NTU
Turbidity	10		YES	5293-96	MW120	NTU
Turbidity	11		YES	4991-94	MW120	NTU
Turbidity	18		YES	5448-95	MW120	NTU
Turbidity	20		YES	7065-93	MW120	NTU
Turbidity	22		YES	7782-93	MW121	NTU
Turbidity	29		YES	6453-94	MW121	NTU
Turbidity	67		YES	5517-94	MW121	NTU
Turbidity	120		YES	6658-93	MW121	NTU
Turbidity	140		YES	4864-94	MW121	NTU
Turbidity	155		YES	5500-96	MW121	NTU
Turbidity	160		YES	5452-95	MW121	NTU
Turbidity	184		YES	7276-94	MW121	NTU
Turbidity	6.5		YES	6457-94	MW122	NTU
Turbidity	9.7		YES	5521-94	MW122	NTU
Turbidity	12		YES	6662-93	MW122	NTU
Turbidity	13		YES	5456-95	MW122	NTU
Turbidity	13		YES	4868-94	MW122	NTU
Turbidity	18		YES	7786-93	MW122	NTU
Turbidity	23		YES	7200-94	MW122	NTU
Turbidity	35		YES	6596-95	MW122	NTU
Turbidity	61		YES	5301-96	MW122	NTU
Turbidity	1.5		YES	5611-94	MW133	NTU
Turbidity	1.5		YES	5305-96	MW133	NTU
Turbidity	1.5		YES	6648-94	MW133	NTU
Turbidity	1.9		YES	4761-94	MW133	NTU
Turbidity	2.8		YES	5460-95	MW133	NTU
Turbidity	10		YES	5282-93	MW133	NTU
Turbidity	22		YES	6740-93	MW133	NTU
Turbidity	8.4		YES	6050-94	MW140	NTU
Turbidity	22		YES	4225-94	MW140	NTU
Turbidity	29		YES	5313-96	MW140	NTU
Turbidity	33		YES	6864-94	MW140	NTU
Turbidity	48		YES	5195-94	MW140	NTU
Turbidity	68		YES	7081-93	MW140	NTU
Turbidity	70		YES	6004-93	MW140	NTU
Turbidity	82		YES	6088-93	MW140	NTU

CORRECTED DATA SET

	MW102	MW120	MW121	MW122	MW133	MW140	Overall	Weighted
	Turbidity							
	3.4	5	22	6.5	1.5	8.4		
	6.6	6	29	9.7	1.5	22		
	11	8	67	12	1.5	29		
	12	9.3	120	13	1.9	33		
	15	10	140	13	2.8	48		
	16	11	155	18	10	68		
	17	18	160	23	22	70		
	22	20	184	35		82		
	24			61				
	35.1							
	36							
	38							
Min	3.40	5.00	22.00	6.50	1.50	8.40	3.40	
Max	38.00	20.00	184.00	61.00	22.00	82.00	184.00	
Average	19.68	10.91	109.63	21.24	5.89	45.05	34.48	41.30
Number	12	8	8	9	7	8	52	



Data for Turbidity were not modified.

APPENDIX C

RESULTS OF REGRESSION AND CORRELATION ANALYSES FOR TURBIDITY AND DISSOLVED SOLIDS

THIS PAGE INTENTIONALLY LEFT BLANK

Regression and Correlation Analyses

As noted earlier in this document, sample turbidity can significantly affect the concentrations of constituents in groundwater. To further investigate this phenomenon, simple regression analyses were performed in which the concentrations of inorganic chemicals in samples were regressed upon sample turbidity. This appendix presents the results of these analyses. In addition, this appendix presents the results of simple regression analyses of inorganic chemical concentrations upon sample dissolved solids estimates. This additional analyses was performed after it was noted that sample dissolved solids seems to be more highly related to inorganic chemical concentrations than turbidity.

A summary of the information in this appendix is presented in Table C.1. As noted in this summary, the analyses for groundwater samples from the McNairy Formation are limited to the development of a correlation matrix for total samples. Analyses for McNairy Formation samples were limited here because analyses of RGA samples are sufficient to demonstrate that sample results for turbidity and total dissolved solids should be considered when applying the background concentrations developed in this report to results from site samples.

Table C.1. Table of Contents for Appendix B

Information	Pages
Summary of Results of Regression and Correlation Analyses - RGA Samples	C-5
Correlations for Total Concentrations and Turbidity/Dissolved Solids - RGA Samples	C-7
Correlations for Total Concentrations and Turbidity/Dissolved Solids - McNairy Samples	C-9
Results of Regression of Dissolved Solids upon Turbidity - RGA Samples	C-11
Results of Regression of Total Sample Inorganic Chemical Concentrations upon Turbidity - RGA Samples	C-13 through C-18
Results of Regression of Total Sample Inorganic Chemical Concentrations upon Dissolved Solids	C-19 through C-24
Results of Regression of Filtered Sample Inorganic Chemical Concentrations upon Turbidity	C-25 through C-26
Results of Regression of Filtered Sample Inorganic Chemical Concentrations upon Dissolved Solids	C-27 through C-28

THIS PAGE INTENTIONALLY LEFT BLANK

Summary of Results of Regression and Correlation Analyses - RGA Samples

Results of Regression of Background Concentrations on Turbidity and Dissolved Solids - Total Samples

		Regression on Turbidity				Regression on Dissolved Solids			
Chemical	Freq	R2	Intercept	Slope	Significance	R2	Intercept	Slope	Significance
Aluminum	29/40	0.263	0.2765	0.0277	0.002	0.015	0.3551	0.0034	0.484
Barium	41/44	0.088	0.1004	0.0013	0.070	0.520	0.0254	0.0005	0.000
Iron	37/44	0.394	0.0218	0.1076	0.000	0.012	0.8874	0.0049	0.515
Magnesium	44/44	0.222	6.4854	0.1518	0.003	0.821	-0.1998	0.0426	0.000
Calcium	44/44	0.284	16.8778	0.3798	0.001	0.767	3.2867	0.0909	0.000
Manganese	30/44	0.548	0.0085	0.0021	0.000	0.040	0.0089	0.0002	0.223
Sodium	44/44	0.120	24.1574	0.4182	0.033	0.809	-2.6587	0.1597	0.000
Sulfate	32/32	0.098	2.8265	0.8953	0.119	0.614	2.3583	0.0371	0.000
Vanadium	22/33	0.344	0.0533	0.0014	0.001	0.556	0.0100	0.0003	0.000
Chloride	43/43	0.073	29.9286	0.5728	0.107	0.791	-17.4928	0.2742	0.000
Nitrate as Nitrogen	33/43	0.009	3.1623	0.0498	0.586	0.370	-5.5670	0.0474	0.000
Silica	43/43	0.091	20.2192	-0.0973	0.070	0.091	21.9484	-0.0141	0.062

Results of Regression of Background Concentrations on Turbidity and Dissolved Solids - Dissolved Samples

		Regression on Turbidity				Regression on Dissolved Solids			
Chemical	Freq	R2	Intercept	Slope	Significance	R2	Intercept	Slope	Significance
Barium, Dissolved	39/44	0.069	0.1037	0.0011	0.116	0.515	0.0247	0.00046	0.000
Calcium, Dissolved	40/40	0.268	17.2791	0.3890	0.001	0.729	3.1551	0.09371	0.000
Magnesium, Dissolved	39/39	0.202	6.8341	0.1510	0.005	0.793	-0.1011	0.04375	0.000
Sodium, Dissolved	40/40	0.115	24.9454	0.4446	0.037	0.805	-4.0165	0.17221	0.000

Notes:
An analyte must be detected in more than two-thirds of all samples to be presented here.

Significance" reports the p-value of the simple regression of the inorganic chemical upon either turbidity or dissolved solids. This value should be considered an estimate only because results were not corrected for temporal or spatial correlation.

Correlations for Total Concentrations and Turbidity/Dissolved Solids - RGA Samples

	Al	Ba	Ca	Cl-	Fe	Mg	Mn	Nitrate as Nitrogen	Si	Na	Sulfate	Va	Turbidity	Dissolved Solids
Aluminum	1.00													
Barium	0.38	1.00												
Calcium	**0.64**	**0.79**	1.00											
Chloride	0.31	**0.83**	**0.81**	1.00										
Iron	0.39	0.17	0.34	0.18	1.00									
Magnesium	0.44	**0.85**	**0.93**	**0.91**	0.33	1.00								
Manganese	**0.62**	0.27	**0.54**	0.36	**0.57**	0.48	1.00							
Nitrate as Nitrogen	0.16	0.40	**0.55**	**0.55**	0.02	**0.53**	0.14	1.00						
Silica	-0.17	-0.32	-0.25	-0.30	-0.14	-0.35	-0.14	-0.02	1.00					
Sodium	0.37	**0.84**	**0.84**	**0.90**	0.13	**0.91**	0.42	**0.63**	-0.34	1.00				
Sulfate	0.38	0.43	**0.68**	**0.71**	0.10	**0.66**	0.47	**0.80**	-0.03	**0.76**	1.00			
Vanadium	**0.61**	**0.56**	**0.80**	**0.66**	0.47	**0.73**	**0.73**	**0.76**	-0.22	**0.70**	**0.64**	1.00		
Turbidity	0.51	0.30	0.53	0.27	0.63	0.47	0.74	0.51	0.30	0.36	0.38	0.58	1.00	
Dissolved Solids	0.45	**0.78**	**0.90**	**0.90**	0.23	**0.93**	**0.51**	**0.61**	-0.32	**0.93**	**0.80**	**0.78**	1.00	1.00
Frequncy	29/40	41/44	44/44	43/43	37/44	44/44	30/44	33/43	43/43	44/44	32/32	22/33	NA	NA

Notes: When calculating these values, only samples that had a result for turbidity were used; however the frequncies presented are for all samples.
Only correlations that involve inorganic chemicals that were detected in more than two-thirds of all samples are shown.
Correlations between turbidity and inorganic chemicals are shaded. Correlations that exceed |0.50| are in bold font. Correlations that exceed |0.90| are in bold font and outlined.

Correlations for Total Concentrations and Turbidity/Dissolved Solids - McNairy Samples

	Ba	Ca	Cl-	Fluoride	Fe	Mg	Mn	K	Si	Na	Sulfate	Turbidity	Dissolved Solids
Barium	1.00												
Calcium	0.10	1.00											
Chloride	-0.29	**0.57**	1.00										
Fluoride	0.10	**0.50**	0.01	1.00									
Iron	-0.38	**-0.80**	-0.17	-0.48	1.00								
Magnesium	-0.07	**0.90**	**0.71**	0.32	**-0.58**	1.00							
Manganese	-0.22	-0.06	**0.54**	**-0.61**	0.39	0.21	1.00						
Potassium	0.24	-0.13	**-0.52**	0.24	-0.13	-0.25	-0.42	1.00					
Silica	0.11	0.33	0.06	0.07	-0.48	0.24	-0.39	0.02	1.00				
Sodium	-0.16	-0.10	0.14	-0.36	0.35	0.06	**0.58**	0.17	**-0.52**	1.00			
Turbidity	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	1.00	
Dissolved Solids	0.00	**0.70**	**0.56**	0.31	**-0.55**	**0.72**	0.12	-0.06	0.11	0.24	-0.19	[illegible]	1.00
Frequancy	44/46	46/46	45/45	38/38	45/46	46/46	46/46	39/46	45/45	46/46	37/37		

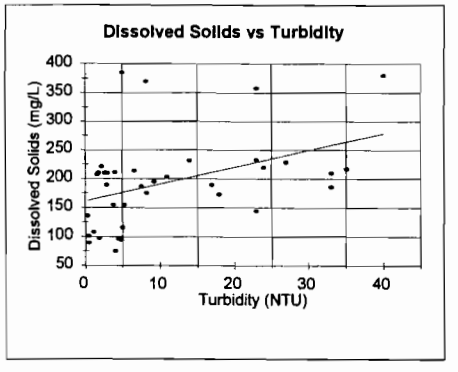
When calculating these values, only samples which had a result for turbidity were used; however, the frequncies presented are for all samples.
Only correlations that involve inorganic chemicals that were detected in more than two-thirds of all samples are shown.
Correlations between turbidity and inorganic chemicals are shaded. Correlations that exceed |0.50| are in bold font. Correlations that exceed |0.90| are in bold font and outlined.

Summary of Results of Regression and Correlation Analyses - RGA Samples

Turbidity	Dissolved	Y-Hat
0.35	136	161.982
0.42	89	162.189
0.43	101	162.218
1.1	108	164.193
1.6	207	165.666
1.8	210	166.256
1.8	97	166.256
2.2	221	167.435
2.6	210	168.613
2.9	189	169.498
3	210	169.792
3.6	155	172.15
4	211	172.739
4	75	172.739
4.5	96	174.213
4.8	94	175.097
5	385	175.686
5	116	175.686
5.3	155	176.57
6.6	214	180.402
7.6	187	183.349
8.2	370	185.117
8.3	175	185.412
9.3	195	188.359
11	203	193.369
14	231	202.21
17	189	211.051
18	173	213.998
23	358	228.734
23	145	228.734
23	233	228.734
24	220	231.681
27	229	240.522
33	188	258.204
33	210	258.204
35	217	264.098
40	380	276.634

ith turbidity of 200 NTU and 172 NTU

172	233
200	171



Regression Statistics

Multiple R	0.427253
R Square	0.182545
Adjusted R Square	0.159189
Standard Error	72.17695
Observations	37

Analysis of Variance

	df	Sum of Squar	Meen S	F	Significance F
Regression	1	40718.86342	40719	7.81581962135372	0.0083528
Residual	35	182343.0285	5209.8		
Total	36	223061.8919			

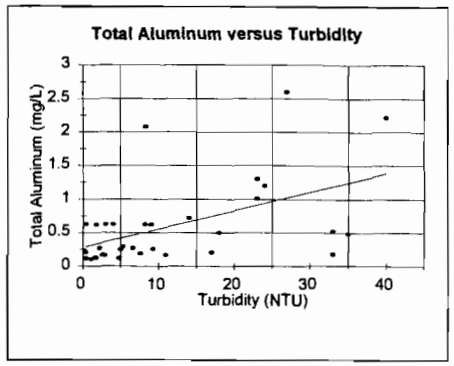
	Coefficien	Standard Error	t Statist	P-value	Lower 95.0	Upper 95.00
Intercept	160.9513	16.76326358	9.6014	1.8206376836E-11	126.9201	194.9826
x1	2.947066	1.054150542	2.7957	0.00825548514989	0.8070269	5.087106

Summary of Results of Regression and Correlation Analyses - RGA Samples

Aluminum	Turbidity	Y-Hat
0.206	0.35	0.2862
0.625	0.42	0.28813
0.112	0.43	0.28841
0.1	1.1	0.30697
0.123	1.6	0.32082
0.62	1.6	0.32636
0.125	1.8	0.32636
0.267	2.2	0.33744
0.169	2.6	0.34652
0.157	2.9	0.35683
0.62	3	0.3596
0.625	4	0.3673
0.625	4	0.3873
0.115	4.8	0.40946
0.243	5	0.415
0.289	5.3	0.42331
0.267	6.6	0.45932
0.188	7.6	0.48702
0.625	8.2	0.50364
2.08	8.3	0.50641
0.62	9	0.5258
0.254	9.3	0.53411
0.166	11	0.5812
0.721	14	0.6643
0.204	17	0.7474
0.501	18	0.7751
1.01	23	0.9136
1.3	23	0.9136
1.2	24	0.9413
2.6	27	1.0244
0.172	33	1.1906
0.524	33	1.1906
0.486	35	1.246
2.22	40	1.3845

ith turbidity of 200 NTU and 172 NTU

11	200	171
4.77	172	233



Regression Statistics

Multiple R	0.513313
R Square	0.26349
Adjusted R Square	0.240474
Standard Error	0.543953
Observations	34

Analysis of Variance

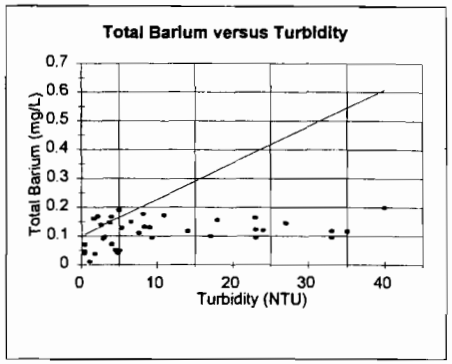
	df	Sum of Squar	Mean S	F	Significance F
Regression	1	3.387336627	3.3673	11.448174215982	0.0019051
Residual	32	9.468302108	0.2959		
Total	33	12.85563874			

	Coefficien	Standard Error	t Statist	P-value	Lower 95.0	Upper 95.00
Intercept	0.276544	0.132080335	2.0938	0.0440440507228	0.0075056	0.545563
x1	0.027701	0.008187194	3.3835	0.00185893203631	0.0110247	0.044378

Barium	Turbidity	Y-Hat
0.039	0.35	0.10487
0.07	0.42	0.10575
0.046	0.43	0.10588
0.01	1.1	0.11439
0.16	1.6	0.12074
0.038	1.8	0.12328
0.16	1.8	0.12328
0.168	2.2	0.12836
0.139	2.6	0.13344
0.091	2.9	0.13725
0.096	3	0.13852
0.145	3.8	0.14868
0.165	4	0.15122
0.07	4	0.15122
0.05	4.5	0.15757
0.04	4.8	0.16138
0.048	5	0.16392
0.19	5	0.16392
0.127	5.3	0.16773
0.149	6.6	0.18424
0.11	7.6	0.19694
0.176	8.2	0.20456
0.132	8.3	0.20583
0.13	9	0.21472
0.094	9.3	0.21853
0.172	11	0.24012
0.116	14	0.27822
0.099	17	0.31632
0.156	18	0.32902
0.163	23	0.39252
0.122	23	0.39252
0.094	23	0.39252
0.12	24	0.40522
0.144	27	0.44332
0.094	33	0.51952
0.117	33	0.51952
0.116	35	0.54492
0.199	40	0.60842

ith turbidity of 200 NTU and 172 NTU

0.088	172
0.2	200



Regression Statistics

Multiple R	0.297132
R Square	0.088287
Adjusted R Square	0.062962
Standard Error	0.046566
Observations	38

Analysis of Variance

	df	Sum of Squar	Mean S	F	Significance F
Regression	1	0.007559247	0.0076	3.4861199257538	0.0700454
Residual	36	0.078061832	0.0022		
Total	37	0.085621079			

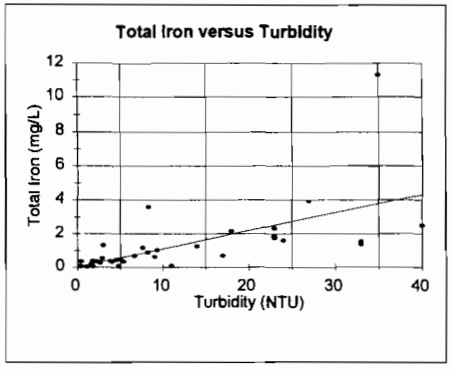
	Coefficien	Standard Error	t Statist	P-value	Lower 95.0	Upper 95.00
Intercept	0.100424	0.010712043	9.3749	2.5862516864E-11	0.0786994	0.122149
x1	0.001269	0.000679729	1.8671	0.06982400503276	-0.0001094	0.002648

Summary of Results of Regression and Correlation Analyses - RGA Samples

Iron	Turbidity	Y-Hat
0.069	0.35	0.05951
0.355	0.42	0.06704
0.053	0.43	0.06812
0.01	1.1	0.14021
0.172	1.6	0.19401
0.043	1.8	0.21553
0.36	1.8	0.21553
0.354	2.2	0.25857
0.26	2.6	0.30161
0.515	2.9	0.33389
1.3	3	0.34465
0.355	3.8	0.43073
0.355	4	0.45225
0.355	4	0.45225
0.438	4.5	0.50605
0.064	4.8	0.53833
0.464	5	0.55985
0.48	5	0.55985
0.354	5.3	0.59213
0.681	6.6	0.73201
1.16	7.6	0.83961
0.672	8.2	0.90417
3.59	8.3	0.91493
0.62	9	0.99025
1.02	9.3	1.02253
0.067	11	1.20545
1.24	14	1.52825
0.681	17	1.85105
2.13	18	1.95865
2.31	23	2.49665
1.84	23	2.49665
1.75	23	2.49665
1.6	24	2.60425
3.94	27	2.92705
1.35	33	3.57265
1.52	33	3.57265
11.3	35	3.78785
2.49	40	4.32585

ith turbidity of 200 NTU and 172 NTU

6.91	172
18.8	200



Regression Statistics

Multiple R	0.627573
R Square	0.393848
Adjusted R Square	0.37701
Standard Error	1.524116
Observations	38

Analysis of Variance

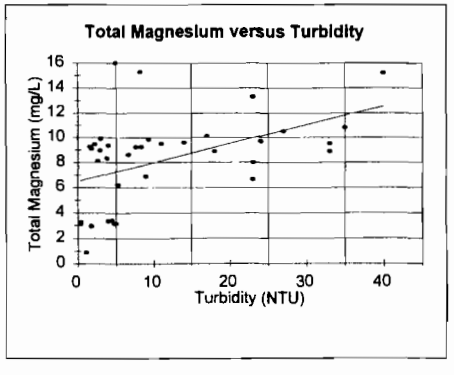
	df	Sum of Squar	Mean S	F	Significance F
Regression	1	54.33567561	54.338	23.3910067188121	2.474E-05
Residual	36	83.62548673	2.3229		
Total	37	137.9611623			

	Coefficien	Standard Error	t Statist	P-value	Lower 95.0	Upper 95.00
Intercept	0.02185	0.350608375	0.0623	0.950644328726 31	-0.6892172	0.732916
x1	0.107599	0.02224772	4.8364	2.3357952353E-05	0.062479	0.15272

Magnesiu	Turbidity	Y-Hat
3.1	0.35	6.53851
3.12	0.42	6.54914
3.28	0.43	6.55066
0.879	1.1	6.6524
9.25	1.6	6.72832
2.96	1.8	6.75869
9.1	1.8	6.75869
9.45	2.2	6.81943
8.13	2.6	6.88017
8.95	2.9	6.92573
9.9	3	6.94091
8.34	3.8	7.06239
9.38	4	7.09276
3.37	4	7.09276
3.4	4.5	7.16869
3.14	4.8	7.21424
3.15	5	7.24461
16	5	7.24461
6.2	5.3	7.29017
8.63	6.6	7.48757
9.25	7.6	7.63942
15.3	8.2	7.73053
9.26	8.3	7.74572
6.9	9	7.85201
9.84	9.3	7.89757
9.51	11	8.15571
9.59	14	8.61126
10.1	17	9.06681
8.89	18	9.21886
13.3	23	9.97791
6.65	23	9.97791
7.99	23	9.97791
9.7	24	10.1298
10.5	27	10.5853
9.51	33	11.4964
8.9	33	11.4964
10.8	35	11.8001
15.2	40	12.5594

ith turbidity of 200 NTU and 172 NTU

4.81	172
6.73	200



Regression Statistics

Multiple R	0.471575
R Square	0.222383
Adjusted R Square	0.200783
Standard Error	3.242109
Observations	38

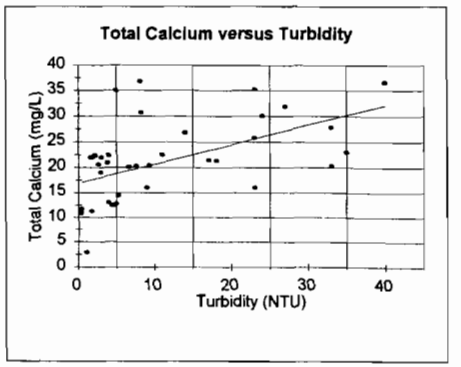
Analysis of Variance

	df	Sum of Squar	Mean S	F	Significance F
Regression	1	108.216509	108.22	10.2952837049897	0.0028014
Residual	36	378.4057278	10.511		
Total	37	486.6222368			

	Coefficien	Standard Error	t Statist	P-value	Lower 95.0	Upper 95.00
Intercept	6.485357	0.745816192	6.6957	1.7920557562E-10	4.972772	7.997943
x1	0.15185	0.047325481	3.2086	0.0027537687328	0.0558693	0.24783

Summary of Results of Regression and Correlation Analyses - RGA Samples

STATION ID	SAMPLE ID	Calcium	Turbidity	Y-Hat
MW103	6026-94	10.8	0.35	17.0107
MW103	6774-94	11.2	0.42	17.0373
MW103	5187-94	11.7	0.43	17.0411
MW103	5944-93	2.88	1.1	17.2956
MW142	4233-94	22	1.6	17.4855
MW103	7299-93	11.3	1.8	17.5614
MW142	6872-94	22	1.8	17.5614
MW142	6096-93	22.4	2.2	17.7134
MW142	5203-94	20.6	2.6	17.8653
MW141	6054-94	19.03	2.9	17.9792
MW141	6868-94	22	3	18.0172
MW142	5464-95	20.9	3.8	18.321
MW142	5317-96	22.4	4	18.397
MW103	5285-96	13	4	18.397
MW103	5440-95	12.4	4.5	18.5869
MW103	4272-94	12.5	4.8	18.7008
MW103	5178-93	12.75	5	18.7768
MW150	5488-95	35	5	18.7768
MW106	4697-94	14.4	5.3	18.8907
MW142	7089-93	20.1	6.6	19.3845
MW141	5199-94	20.3	7.6	19.7643
MW150	5321-96	36.8	8.2	19.9922
MW199	4312-94	30.7	8.3	20.0301
MW106	7272-94	18	9	20.296
MW141	7085-93	20.5	9.3	20.4099
MW142	6058-94	22.62	11	21.0556
MW199	6074-94	26.8	14	22.195
MW141	4229-94	21.5	17	23.3344
MW142	6084-93	21.39	18	23.7142
MW150	4789-94	35.2	23	25.6132
MW106	5444-95	16	23	25.8132
MW199	5260-94	25.8	23	25.6132
MW199	6888-94	30	24	25.993
MW199	5984-93	31.9	27	27.1324
MW141	6080-93	20.35	33	29.4112
MW199	7311-93	27.8	33	29.4112
MW141	6092-93	23	35	30.1708
MW150	5650-93	36.6	40	32.0698
	Delete value with turbidity of 200 NTU and 172 NTU			
MW199	5170-93	15.31	172	
MW106	5322-93	15.6	200	



Regression Statistics

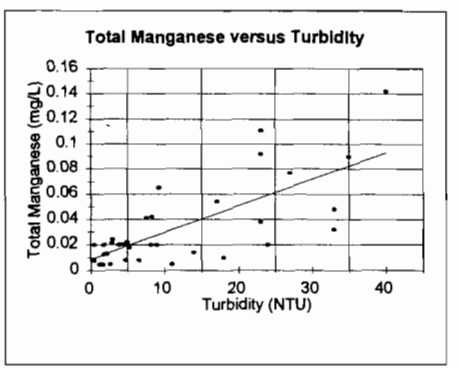
Multiple R	0.532476
R Square	0.28353
Adjusted R Square	0.263628
Standard Error	6.893458
Observations	38

Analysis of Variance

	df	Sum of Squar	Mean S	F	Significance F
Regression	1	676.9836045	676.98	14.2463587516294	0.000579
Residual	36	1710.711501	47.52		
Total	37	2387.695105			

	Coefficien	Standard Error	t Statist	P-value	Lower 95.0	Upper 95.00
Intercept	16.8778	1.585774189	10.643	8.1626643379E-13	13.661699	20.0939
x1	0.379801	0.100624694	3.7744	0.000562986396978	0.175725	0.583878

STATION ID	SAMPLE ID	Manganes	Turbidity	Y-Hat
MW103	6026-94	0.008	0.35	0.00926
MW103	6774-94	0.02	0.42	0.00941
MW103	5187-94	0.008	0.43	0.00943
MW103	5944-93	0.005	1.1	0.01084
MW142	4233-94	0.005	1.6	0.0119
MW103	7299-93	0.013	1.8	0.01232
MW142	6872-94	0.02	1.8	0.01232
MW142	6096-93	0.013	2.2	0.01316
MW142	5203-94	0.005	2.6	0.01401
MW141	6054-94	0.021	2.9	0.01464
MW141	6868-94	0.024	3	0.01485
MW142	5464-95	0.02	3.8	0.01654
MW142	5317-96	0.02	4	0.01696
MW103	5285-96	0.02	4	0.01696
MW103	5440-95	0.02	4.5	0.01802
MW103	4272-94	0.008	4.8	0.01865
MW103	5178-93	0.022	5	0.01907
MW150	5488-95	0.02	5	0.01907
MW106	4697-94	0.016	5.3	0.0197
MW142	7089-93	0.008	6.6	0.02245
MW141	5199-94	0.041	7.6	0.02456
MW150	5321-96	0.02	8.2	0.02582
MW199	4312-94	0.042	8.3	0.02603
MW106	7272-94	0.02	9	0.02751
MW141	7085-93	0.065	9.3	0.02814
MW142	6058-94	0.005	11	0.03173
MW199	6074-94	0.014	14	0.03606
MW141	4229-94	0.054	17	0.04439
MW142	6084-93	0.01	18	0.0465
MW150	4789-94	0.111	23	0.05705
MW106	5444-95	0.038	23	0.05705
MW199	5260-94	0.092	23	0.05705
MW199	6888-94	0.02	24	0.05916
MW199	5984-93	0.077	27	0.06549
MW141	6080-93	0.032	33	0.07815
MW199	7311-93	0.048	33	0.07815
MW141	6092-93	0.09	35	0.08237
MW150	5650-93	0.142	40	0.09292
	Delete value with turbidity of 200 NTU and 172 NTU			
MW199	5170-93	0.086	172	
MW106	5322-93	0.409	200	



Regression Statistics

Multiple R	0.740395
R Square	0.548185
Adjusted R Square	0.535635
Standard Error	0.021852
Observations	38

Analysis of Variance

	df	Sum of Squar	Mean S	F	Significance F
Regression	1	0.020856683	0.0208	43.6787115849972	1.076E-07
Residual	36	0.017190081	0.0005		
Total	37	0.038046763			

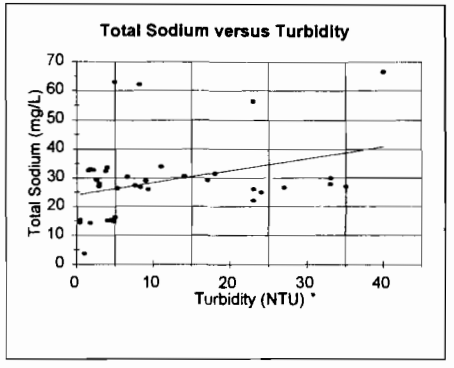
	Coefficien	Standard Error	t Statist	P-value	Lower 95.0	Upper 95.00
Intercept	0.008524	0.005026804	1.6957	0.0983501633959	-0.0016711	0.018719
x1	0.002108	0.000318974	6.609	9.4590645061E-08	0.0014812	0.002755

Summary of Results of Regression and Correlation Analyses - RGA Samples

STATION ID	SAMPLE ID	Sodium	Turbidity	Y-Hat
MW103	6026-94	14.8	0.35	24.3038
MW103	6774-94	14.3	0.42	24.333
MW103	5187-94	15.2	0.43	24.3372
MW103	5944-93	3.71	1.1	24.6174
MW142	4233-94	32.6	1.6	24.8264
MW103	7299-93	14.2	1.8	24.9101
MW142	6872-94	33	1.8	24.9101
MW142	6096-93	32.7	2.2	25.0773
MW142	5203-94	29.3	2.6	25.2446
MW141	6054-94	27.1	2.9	25.37
MW141	6868-94	28	3	25.4119
MW142	5484-95	32.4	3.8	25.7484
MW142	5317-96	33.6	4	25.83
MW103	5285-96	15	4	25.83
MW103	5440-95	15.2	4.5	26.0391
MW103	4272-94	14.68	4.8	26.1645
MW103	5178-93	16.12	5	26.2482
MW150	5468-95	63	5	26.2482
MW106	4697-94	26.4	5.3	26.3736
MW142	7089-93	30.4	6.6	28.9172
MW141	5199-94	27.4	7.6	27.3353
MW150	5321-96	62.2	8.2	27.5862
MW199	4312-94	26.6	8.3	27.628
MW106	7272-94	29	9	27.9208
MW141	7085-93	26	9.3	28.0462
MW142	6058-94	33.85	11	28.7571
MW199	6074-94	30.4	14	30.0115
MW141	4229-94	29.2	17	31.266
MW142	6084-93	31.54	18	31.6641
MW150	4789-94	56.3	23	33.7749
MW106	5444-95	26.1	23	33.7749
MW199	5260-94	22.1	23	33.7749
MW199	6888-94	25	24	34.193
MW199	5984-93	26.6	27	35.4475
MW141	6080-93	29.93	33	37.9564
MW199	7311-93	27.8	33	37.9564
MW141	6092-93	27	35	38.7927
MW150	5650-93	66.6	40	40.8834

Delete value with turbidity of 200 NTU and 172 NTU

MW199	5170-93	13.31	172	
MW106	5322-93	27.5	200	



Regression Statistics

Multiple R	0.345822
R Square	0.119593
Adjusted R Square	0.095137
Standard Error	12.95401
Observations	38

Analysis of Variance

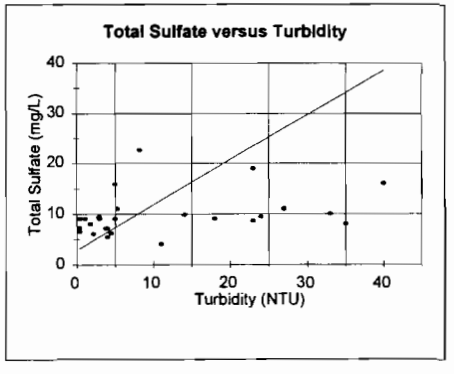
	df	Sum of Squar	Mean S	F	Significance F
Regression	1	820.6016754	820.6	4.89017217828602	0.0334463
Residual	36	6041.026622	167.81		
Total	37	6861.628297			

	Coefficien	Standard Error	t Statist	P-value	Lower 95.0	Upper 95.00
Intercept	24.15744	2.979945573	8.1067	1.00479198696E-09	18.113835	30.20105
x1	0.418151	0.189091306	2.2114	0.03326801624876	0.0346565	0.801646

STATION ID	SAMPLE ID	Sulfate	Turbidity	Y-Hat
MW103	6026-94	7.2	0.35	3.13989
MW103	6774-94	6.5	0.42	3.20256
MW103	5187-94	9	0.43	3.21151
MW103	5944-93	9	1.1	3.81136
MW142	6872-94	6	1.8	4.43807
MW142	6096-93	6	2.2	4.79619
MW141	6054-94	9.3	2.9	5.4229
MW141	6868-94	9	3	5.51243
MW142	5484-95	7.1	3.8	6.22867
MW103	5285-96	5.4	4	6.40773
MW142	5317-96	7.1	4	6.40773
MW103	5440-95	6.1	4.5	6.85538
MW150	5468-95	15.9	5	7.30303
MW103	5178-93	9	5	7.30303
MW106	4697-94	11	5.3	7.57162
MW150	5321-96	22.6	8.2	10.168
MW142	6058-94	4	11	12.6748
MW199	6074-94	9.8	14	15.3607
MW142	6084-93	9	18	18.9419
MW106	5444-95	8.6	23	23.4184
MW150	4789-94	19	23	23.4184
MW199	6888-94	9.4	24	24.3137
MW199	5984-93	11	27	26.9996
MW141	6080-93	10	33	32.3714
MW141	6092-93	8	35	34.162
MW150	5650-93	16	40	38.6385

Delete value with turbidity of 200 NTU and 172 NTU

MW199	5170-93	9	172	
MW106	5322-93	11	200	



Regression Statistics

Multiple R	0.313041
R Square	0.097995
Adjusted R Square	0.060411
Standard Error	11.78542
Observations	26

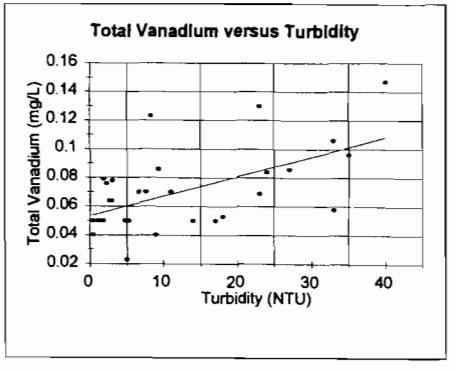
Analysis of Variance

	df	Sum of Squar	Mean S	F	Significance F
Regression	1	362.1561446	362.16	2.60738668045193	0.1194368
Residual	24	3333.509194	138.9		
Total	25	3695.665338			

	Coefficien	Standard Error	t Statist	P-value	Lower 95.0	Upper 95.00
Intercept	2.826527	5.869491031	0.4818	0.63430535394857	-9.2875069	14.94056
x1	0.895298	0.554452952	1.6147	0.11891904106708	-0.249037	2.039632

Summary of Results of Regression and Correlation Analyses - RGA Samples

STATION ID	SAMPLE ID	Vanadium	Turbidity	Y-Hat
MW103	6026-94	0.05	0.35	0.0538
MW103	6774-94	0.04	0.42	0.0539
MW103	5187-94	0.05	0.43	0.05391
MW103	5944-93	0.05	1.1	0.05483
MW142	4233-94	0.05	1.8	0.05551
MW103	7299-93	0.05	1.8	0.05579
MW142	6872-94	0.079	1.8	0.05579
MW142	6096-93	0.076	2.2	0.05633
MW142	5203-94	0.064	2.6	0.05688
MW141	6054-94	0.064	2.9	0.05729
MW141	6868-94	0.078	3	0.05743
MW103	4272-94	0.05	4.8	0.0599
MW103	5178-93	0.023	5	0.06017
MW106	4697-94	0.05	5.3	0.06056
MW142	7089-93	0.07	6.6	0.06236
MW141	5199-94	0.07	7.6	0.06373
MW199	4312-94	0.123	8.3	0.06469
MW106	7272-94	0.04	9	0.06565
MW141	7085-93	0.086	9.3	0.06606
MW142	6058-94	0.07	11	0.06839
MW199	6074-94	0.05	14	0.0725
MW141	4229-94	0.05	17	0.07661
MW142	6084-93	0.053	18	0.07798
MW150	4789-94	0.13	23	0.08483
MW199	5260-94	0.069	23	0.08483
MW199	6888-94	0.084	24	0.0862
MW199	5984-93	0.086	27	0.09031
MW141	6080-93	0.058	33	0.09653
MW199	7311-93	0.106	33	0.09853
MW141	6092-93	0.096	35	0.10127
MW150	5650-93	0.147	40	0.10812
	Delete value with turbidity of 200 NTU and 172 NTU			
MW199	5170-93	0.05	172	
MW106	5322-93	0.074	200	



Regression Statistics

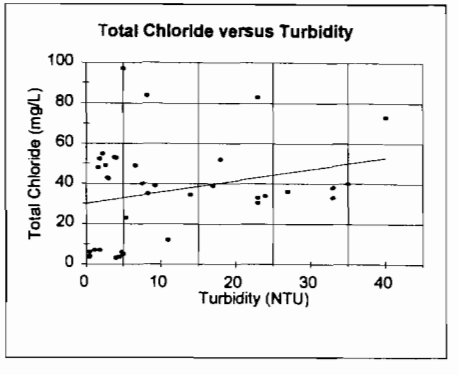
Multiple R	0.586535
R Square	0.344024
Adjusted R Square	0.321404
Standard Error	0.022963
Observations	31

Analysis of Variance

	df	Sum of Squar	Meen S	F	Significance F
Regression	1	0.00801988	0.008	15.2089189448776	0.0005247
Residual	29	0.015292076	0.0005		
Total	30	0.023311935			

	Coefficien	Standard Error	t Statist	P-value	Lower 95.0	Upper 95.00
Intercept	0.053317	0.005894731	9.0449	4.49111885144E-10	0.0412611	0.065373
x1	0.001368	0.000350874	3.8999	0.00050244019536	0.0006507	0.002086

STATION ID	SAMPLE ID	Chloride	Turbidity	Y-Hat
MW103	6026-94	3.4	0.35	30.1291
MW103	6774-94	3.9	0.42	30.1692
MW103	5187-94	6	0.43	30.1749
MW103	5944-93	7	1.1	30.5586
MW142	4233-94	48	1.6	30.845
MW103	7299-93	7	1.8	30.9596
MW142	6872-94	52.4	1.8	30.9596
MW142	6096-93	55	2.2	31.1887
MW142	5203-94	49	2.6	31.4178
MW141	6054-94	42.9	2.9	31.5896
MW141	6868-94	42.4	3	31.6469
MW142	5464-95	53.2	3.8	32.1051
MW142	5317-96	52.9	4	32.2196
MW103	5285-96	3.1	4	32.2196
MW103	5440-95	3.5	4.5	32.506
MW103	4272-94	6	4.8	32.6778
MW103	5178-93	5	5	32.7924
MW150	5468-95	97.1	5	32.7924
MW106	4697-94	23	5.3	32.9642
MW142	7089-93	49	6.6	33.7088
MW141	5199-94	40	7.6	34.2816
MW150	5321-96	83.8	8.2	34.6252
MW199	4312-94	35	8.3	34.6825
MW141	7085-93	39	9.3	35.2553
MW142	6058-94	12	11	36.229
MW199	6074-94	34.5	14	37.9472
MW141	4229-94	39	17	39.6655
MW142	6084-93	52	18	40.2383
MW150	4789-94	83	23	43.1021
MW106	5444-95	30.5	23	43.1021
MW199	5260-94	33	23	43.1021
MW199	6888-94	33.8	24	43.6748
MW199	5984-93	36	27	45.3931
MW141	6080-93	38	33	48.8297
MW199	7311-93	33	33	48.8297
MW141	6092-93	40	35	49.9752
MW150	5650-93	73	40	52.839
	Delete value with turbidity of 200 NTU and 172 NTU			
MW199	5170-93	30	172	
MW106	5322-93	22	200	



Regression Statistics

Multiple R	0.269608
R Squere	0.072688
Adjusted R Square	0.046194
Standard Error	23.67718
Observations	37

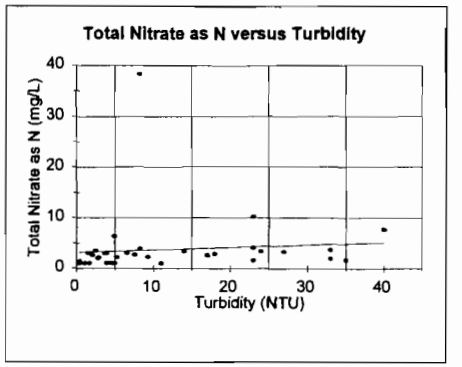
Analysis of Variance

	df	Sum of Squar	Mean S	F	Significance F
Regression	1	1538.04005	1538	2.74351783662844	0.1065892
Residuel	35	19621.30698	560.61		
Total	36	21159.34703			

	Coefficien	Standard Error	t Stetist	P-value	Lower 95.0	Upper 95.00
Intercept	29.92863	5.498927047	5.4426	3.8641000478E-06	18.765211	41.09204
x1	0.572764	0.345797637	1.6564	0.10634164351726	-0.1292423	1.274771

Summary of Results of Regression and Correlation Analyses - RGA Samples

STATION ID	SAMPLE ID	Nitrate as	Turbidity	Y-Hat
MW103	6026-94	1	0.35	3.17968
MW103	6774-94	1	0.42	3.18317
MW103	5187-94	1.4	0.43	3.18368
MW103	5944-93	1	1.1	3.21703
MW142	4233-94	3	1.6	3.24193
MW103	7299-93	1	1.8	3.25189
MW142	6872-94	3	1.8	3.25189
MW142	6096-93	2.6	2.2	3.27181
MW142	5203-94	3.5	2.6	3.29173
MW141	6054-94	2	2.9	3.30667
MW141	6868-94	2.1	3	3.31165
MW142	5464-95	2.9	3.8	3.35149
MW142	5317-96	3	4	3.36145
MW103	5285-96	1	4	3.36145
MW103	5440-95	1	4.5	3.38635
MW103	4272-94	1	4.8	3.40129
MW103	5178-93	1	5	3.41125
MW150	5468-95	6.3	5	3.41125
MW106	4697-94	2.2	5.3	3.42619
MW142	7089-93	3	6.6	3.49093
MW141	5199-94	2.7	7.6	3.54073
MW150	5321-96	38.3	8.2	3.57061
MW199	4312-94	3.8	8.3	3.57559
MW141	7085-93	2.3	9.3	3.62539
MW142	6058-94	1	11	3.71005
MW199	6074-94	3.4	14	3.85945
MW141	4229-94	2.8	17	4.00885
MW142	6084-93	2.9	18	4.05865
MW150	4789-94	10.2	23	4.30765
MW106	5444-95	1.6	23	4.30765
MW199	5260-94	4.1	23	4.30765
MW199	6888-94	3.4	24	4.35745
MW199	5984-93	3.3	27	4.50685
MW141	6060-93	2	33	4.80565
MW199	7311-93	3.7	33	4.80565
MW141	6092-93	1.7	35	4.90525
MW150	5650-93	7.7	40	5.15425
	Delete value with turbidity of 200 NTU and 172 NTU			
MW199	5170-93	2.7	172	
MW106	5322-93	1.8	200	



Regression Statistics

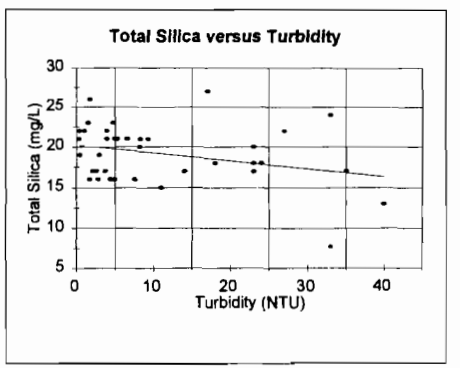
Multiple R	0.092421
R Square	0.008542
Adjusted R Square	-0.01979
Standard Error	6.20966
Observations	37

Analysis of Variance

	df	Sum of Squar	Mean S	F	Significance F
Regression	1	11.62703135	11.627	0.30153186304786	0.5884102
Residual	35	1349.595671	38.56		
Total	36	1361.222703			

	Coefficien	Standard Error	t Statist	P-value	Lower 95.0	Upper 95.00
Intercept	3.16225	1.442187918	2.1927	0.03467444744809	0.2344936	6.090007
x1	0.0498	0.090690103	0.5491	0.58631384959335	-0.134311	0.23391

STATION ID	SAMPLE ID	Silica	Turbidity	Y-Hat
MW103	6026-94	21	0.35	20.1852
MW103	6774-94	22	0.42	20.1783
MW103	5187-94	19	0.43	20.1774
MW103	5944-93	22	1.1	20.1122
MW142	4233-94	23	1.6	20.0636
MW142	6872-94	16	1.8	20.0441
MW103	7299-93	26	1.8	20.0441
MW142	6096-93	17	2.2	20.0052
MW142	5203-94	17	2.6	19.9663
MW141	6054-94	16	2.9	19.9371
MW141	6868-94	19	3	19.9274
MW142	5464-95	17	3.8	19.8495
MW142	5317-96	21	4	19.8301
MW103	5285-96	22	4	19.8301
MW103	5440-95	16	4.5	19.7814
MW103	4272-94	23	4.8	19.7523
MW150	5468-95	16	5	19.7328
MW103	5178-93	21	5	19.7328
MW106	4697-94	21	5.3	19.7036
MW142	7089-93	21	6.6	19.5772
MW141	5199-94	16	7.6	19.4799
MW150	5321-96	20	8.2	19.4215
MW199	4312-94	21	8.3	19.4118
MW141	7085-93	21	9.3	19.3145
MW142	6058-94	15	11	19.1491
MW199	6074-94	17	14	18.8573
MW141	4229-94	27	17	18.5654
MW142	6084-93	18	18	18.4882
MW150	4789-94	20	23	17.9818
MW106	5444-95	18	23	17.9818
MW199	5260-94	17	23	17.9818
MW199	6888-94	18	24	17.8845
MW199	5984-93	22	27	17.5926
MW141	6060-93	7.68	33	17.009
MW199	7311-93	24	33	17.009
MW141	6092-93	17	35	16.8144
MW150	5650-93	13	40	16.328
	Delete value with turbidity of 200 NTU and 172 NTU			
MW199	5170-93	22	172	
MW106	5322-93	19	200	



Regression Statistics

Multiple R	0.301656
R Square	0.090996
Adjusted R Square	0.065025
Standard Error	3.558431
Observations	37

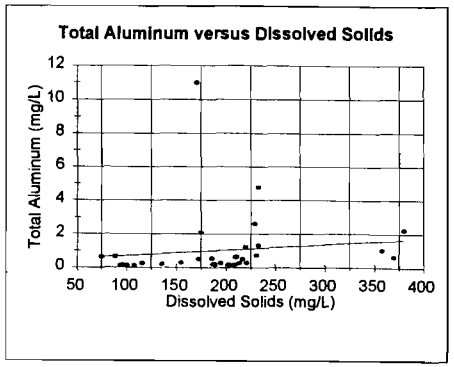
Analysis of Variance

	df	Sum of Squar	Mean S	F	Significance F
Regression	1	44.36525113	44.365	3.50369059489662	0.0696083
Residual	35	443.1851921	12.662		
Total	36	487.5504432			

	Coefficien	Standard Error	t Statist	P-value	Lower 95.0	Upper 95.00
Intercept	20.21915	0.826431025	24.466	0	18.541408	21.8969
x1	-0.09728	0.051969756	-1.872	0.0693748658819	-0.202782	0.008226

Summary of Results of Regression and Correlation Analyses - RGA Samples

STATION ID	SAMPLE ID	Aluminum	Dissolved	Y-Hat
MW103	5285-96	0.625	75	0.60714
MW103	6774-94	0.625	89	0.65418
MW103	4272-94	0.115	94	0.67098
MW103	7299-93	0.125	97	0.68106
MW103	5187-94	0.112	101	0.6945
MW103	5944-93	0.1	108	0.71802
MW103	5178-93	0.243	116	0.7449
MW103	6026-94	0.206	136	0.8121
MW106	4697-94	0.289	155	0.87594
MW106	5322-93	11	171	0.9297
MW142	6084-93	0.501	173	0.93642
MW199	4312-94	2.08	175	0.94314
MW141	6080-93	0.524	186	0.9801
MW141	5199-94	0.188	187	0.98346
MW141	6054-94	0.157	189	0.99018
MW141	4229-94	0.204	189	0.99018
MW141	7085-93	0.254	195	1.01034
MW142	6058-94	0.166	203	1.03722
MW142	4233-94	0.123	207	1.05066
MW141	6868-94	0.62	210	1.06074
MW142	5203-94	0.169	210	1.06074
MW199	7311-93	0.172	210	1.06074
MW142	6872-94	0.62	210	1.06074
MW142	5317-96	0.625	211	1.0641
MW142	7089-93	0.267	214	1.07418
MW141	6092-93	0.486	217	1.08426
MW199	6888-94	1.2	220	1.09434
MW142	6096-93	0.267	221	1.0977
MW199	5984-93	2.6	229	1.12458
MW199	6074-94	0.721	231	1.1313
MW199	5170-93	4.77	233	1.13802
MW199	5260-94	1.3	233	1.13802
MW150	4789-94	1.01	358	1.55802
MW150	5321-96	0.625	370	1.59834
MW150	5650-93	2.22	380	1.63194



Regression Statistics

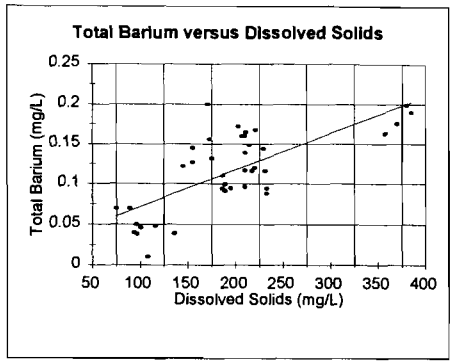
Multiple R	0.122232
R Square	0.014941
Adjusted R Square	-0.01491
Standard Error	1.989179
Observations	35

Analysis of Variance

	df	Sum of Squar	Mean S	F	Significance F
Regression	1	1.980459202	1.9805	0.50051635884656	0.4842401
Residual	33	130.5754598	3.9568		
Total	34	132.555919			

	Coefficien	Standard Error	t Statist	P-value	Lower 95.0	Upper 95.00
Intercept	0.355138	0.983256268	0.3612	0.72019530953947	-1.6453117	2.355588
x1	0.003363	0.004753686	0.7075	0.48409482520671	-0.0063083	0.013035

STATION ID	SAMPLE ID	Barium	Dissolved	Y-Hat
MW103	5285-96	0.07	75	0.05992
MW103	6774-94	0.07	89	0.06636
MW103	4272-94	0.04	94	0.06866
MW103	5440-95	0.05	96	0.06958
MW103	7299-93	0.036	97	0.07004
MW103	5187-94	0.046	101	0.07188
MW103	5944-93	0.01	108	0.0751
MW103	5178-93	0.048	116	0.07878
MW103	6026-94	0.039	136	0.08798
MW106	5444-95	0.122	145	0.09212
MW106	4697-94	0.127	155	0.09672
MW142	5464-95	0.145	155	0.09672
MW106	5322-93	0.2	171	0.10408
MW142	6084-93	0.156	173	0.105
MW199	4312-94	0.132	175	0.10592
MW141	6080-93	0.094	186	0.11098
MW141	5199-94	0.11	187	0.11144
MW141	6054-94	0.091	189	0.11236
MW141	4229-94	0.099	189	0.11236
MW141	7085-93	0.094	195	0.11512
MW142	6058-94	0.172	203	0.1188
MW142	4233-94	0.16	207	0.12064
MW142	5203-94	0.139	210	0.12202
MW141	6868-94	0.096	210	0.12202
MW142	6872-94	0.16	210	0.12202
MW199	7311-93	0.117	210	0.12202
MW142	5317-96	0.165	211	0.12248
MW142	7089-93	0.149	214	0.12386
MW141	6092-93	0.116	217	0.12524
MW199	6888-94	0.12	220	0.12662
MW142	6096-93	0.168	221	0.12708
MW199	5984-93	0.144	229	0.13076
MW199	6074-94	0.116	231	0.13168
MW199	5260-94	0.094	233	0.1326
MW199	5170-93	0.088	233	0.1326
MW150	4789-94	0.163	358	0.1901
MW150	5321-96	0.176	370	0.19562
MW150	5650-93	0.199	380	0.20022
MW150	5468-95	0.19	385	0.20252



Regression Statistics

Multiple R	0.72115
R Square	0.520057
Adjusted R Square	0.507086
Standard Error	0.034795
Observations	39

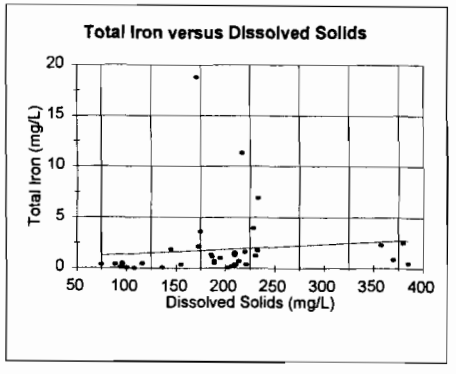
Analysis of Variance

	df	Sum of Squar	Mean S	F	Significance F
Regression	1	0.048540017	0.0485	40.092539483707	2.234E-07
Residual	37	0.044795881	0.0012		
Total	38	0.093335897			

	Coefficien	Standard Error	t Statist	P-value	Lower 95.0	Upper 95.00
Intercept	0.025417	0.015311095	1.86	0.10513835665696	-0.0056082	0.05644
x1	0.000464	7.33376E-05	6.3319	1.9975721929E-07	0.0003158	0.000613

Summary of Results of Regression and Correlation Analyses - RGA Samples

STATION ID	SAMPLE ID	Iron	Dissolved	Y-Hat
MW103	5285-96	0.355	75	1.2534
MW103	6774-94	0.355	89	1.32172
MW103	4272-94	0.064	94	1.34612
MW103	5440-95	0.438	96	1.35588
MW103	7299-93	0.043	97	1.36076
MW103	5187-94	0.053	101	1.38028
MW103	5944-93	0.01	108	1.41444
MW103	5178-93	0.464	116	1.45348
MW103	6028-94	0.069	136	1.55108
MW106	5444-95	1.84	145	1.595
MW142	5464-95	0.355	155	1.6438
MW106	4697-94	0.354	155	1.6438
MW106	5322-93	18.8	171	1.72188
MW142	6084-93	2.13	173	1.73164
MW199	4312-94	3.59	175	1.7414
MW141	6080-93	1.35	186	1.79508
MW141	5199-94	1.18	187	1.79996
MW141	6054-94	0.515	189	1.80972
MW141	4229-94	0.681	189	1.80972
MW141	7085-93	1.02	195	1.839
MW142	6058-94	0.067	203	1.87804
MW142	4233-94	0.172	207	1.89756
MW142	5203-94	0.26	210	1.9122
MW141	6868-94	1.3	210	1.9122
MW199	7311-93	1.52	210	1.9122
MW142	6872-94	0.36	210	1.9122
MW142	5317-96	0.355	211	1.91708
MW142	7089-93	0.681	214	1.93172
MW141	6092-93	11.3	217	1.94636
MW199	6888-94	1.6	220	1.961
MW142	6096-93	0.354	221	1.96588
MW199	5984-93	3.94	229	2.00492
MW199	6074-94	1.24	231	2.01468
MW199	5170-93	6.91	233	2.02444
MW199	5260-94	1.75	233	2.02444
MW150	4789-94	2.31	358	2.63444
MW150	5321-96	0.872	370	2.693
MW150	5650-93	2.49	380	2.7418
MW150	5468-95	0.48	385	2.7662



Regression Statistics

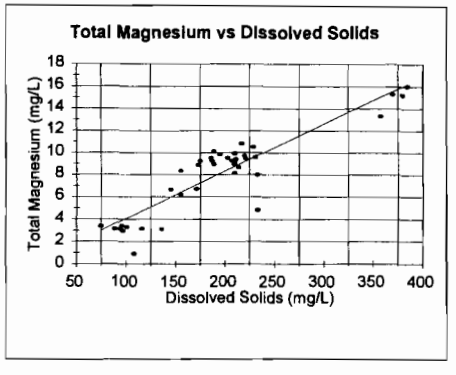
Multiple R	0.107426
R Square	0.01154
Adjusted R Square	-0.01517
Standard Error	3.521649
Observations	39

Analysis of Variance

	df	Sum of Squar	Mean S	F	Significance F
Regression	1	5.357387551	5.3574	0.4319772920673	0.5150883
Residual	37	458.8744432	12.402		
Total	38	464.2318308			

	Coefficien	Standard Error	t Statist	P-value	Lower 95.0	Upper 95.00
Intercept	0.887399	1.54965188	0.5726	0.57025879528398	-2.2524943	4.027292
x1	0.004878	0.007422578	0.6572	0.51498176300206	-0.0101611	0.019918

STATION ID	SAMPLE ID	Magnesiu	Dissolved	Y-Hat
MW103	5285-96	3.37	75	2.99816
MW103	6774-94	3.12	89	3.59512
MW103	4272-94	3.14	94	3.80832
MW103	5440-95	3.4	96	3.8936
MW103	7299-93	2.96	97	3.93624
MW103	5187-94	3.28	101	4.1068
MW103	5944-93	0.879	108	4.40528
MW103	5178-93	3.15	116	4.7464
MW103	6028-94	3.1	136	5.5992
MW106	5444-95	6.65	145	5.98296
MW106	4697-94	6.2	155	6.40936
MW142	5464-95	8.34	155	6.40936
MW106	5322-93	6.73	171	7.0916
MW142	6084-93	8.89	173	7.17688
MW199	4312-94	9.26	175	7.26216
MW141	6080-93	9.51	186	7.7312
MW141	5199-94	9.25	187	7.77384
MW141	6054-94	8.95	189	7.85912
MW141	4229-94	10.1	189	7.85912
MW141	7085-93	9.84	195	8.11496
MW142	6058-94	9.51	203	8.45608
MW142	4233-94	9.25	207	8.62664
MW142	5203-94	8.13	210	8.75456
MW141	6868-94	9.9	210	8.75456
MW142	6872-94	9.1	210	8.75456
MW199	7311-93	8.9	210	8.75456
MW142	5317-96	9.38	211	8.7972
MW142	7089-93	8.63	214	8.92512
MW141	6092-93	10.8	217	9.05304
MW199	6888-94	9.7	220	9.18096
MW142	6096-93	9.45	221	9.2236
MW199	5984-93	10.5	229	9.56472
MW199	6074-94	9.59	231	9.65
MW199	5260-94	7.99	233	9.73528
MW199	5170-93	4.81	233	9.73528
MW150	4789-94	13.3	358	15.0653
MW150	5321-96	15.3	370	15.577
MW150	5650-93	15.2	380	16.0034
MW150	5468-95	16	385	16.2166



Regression Statistics

Multiple R	0.906349
R Square	0.821469
Adjusted R Square	0.816644
Standard Error	1.550351
Observations	39

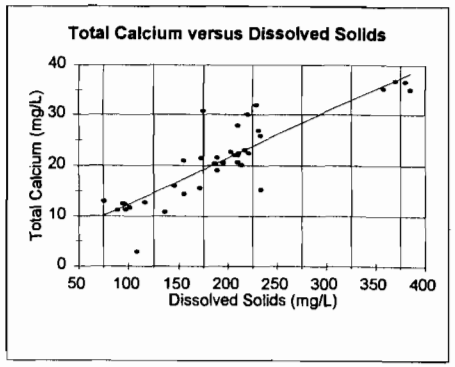
Analysis of Variance

	df	Sum of Squar	Mean S	F	Significance F
Regression	1	409.2035185	409.2	170.246975715171	2.051E-15
Residual	37	88.93274093	2.4036		
Total	38	498.1362594			

	Coefficien	Standard Error	t Statist	P-value	Lower 95.0	Upper 95.00
Intercept	-0.19984	0.682209952	-0.293	0.7711665005984	-1.582131	1.182446
x1	0.042636	0.003267674	13.048	1.2984947319E-15	0.0360153	0.049257

Summary of Results of Regression and Correlation Analyses - RGA Samples

STATION ID	SAMPLE ID	Calcium	Dissolved	Y-Hat
MW103	5285-96	13	75	10.1042
MW103	6774-94	11.2	89	11.3768
MW103	4272-94	12.5	94	11.8313
MW103	5440-95	12.4	96	12.0131
MW103	7299-93	11.3	97	12.104
MW103	5187-94	11.7	101	12.4676
MW103	5944-93	2.88	108	13.1039
MW103	5178-93	12.75	116	13.8311
MW103	6026-94	10.8	136	15.6491
MW106	5444-95	16	145	16.4672
MW106	4697-94	14.4	155	17.3762
MW142	5464-95	20.9	155	17.3762
MW106	5322-93	15.6	171	18.8306
MW142	6084-93	21.39	173	19.0124
MW199	4312-94	30.7	175	19.1942
MW141	6080-93	20.35	186	20.1941
MW141	5199-94	20.3	187	20.285
MW141	6054-94	19.03	189	20.4668
MW141	4229-94	21.5	189	20.4668
MW141	7065-93	20.5	195	21.0122
MW142	6058-94	22.62	203	21.7394
MW142	4233-94	22	207	22.103
MW142	5203-94	20.6	210	22.3757
MW141	6658-94	22	210	22.3757
MW142	6872-94	22	210	22.3757
MW199	7311-93	27.8	210	22.3757
MW142	5317-96	22.4	211	22.4666
MW142	7089-93	20.1	214	22.7393
MW141	6092-93	23	217	23.012
MW199	6888-94	30	220	23.2847
MW142	6096-93	22.4	221	23.3756
MW199	5984-93	31.9	229	24.1028
MW199	6074-94	26.8	231	24.2846
MW199	5260-94	25.8	233	24.4664
MW199	5170-93	15.31	233	24.4664
MW150	4789-94	35.2	358	35.8289
MW150	5321-96	36.8	370	36.9197
MW150	5650-93	36.6	380	37.8287
MW150	5468-95	35	385	38.2832



Regression Statistics

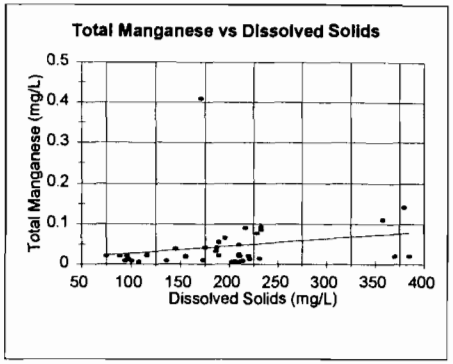
Multiple R	0.875789
R Square	0.767007
Adjusted R Square	0.760709
Standard Error	3.907539
Observations	39

Analysis of Variance

	df	Sum of Squar	Mean S	F	Significance F
Regression	1	1859.78958	1859.8	121.802759036819	2.918E-13
Residual	37	564.9479125	15.269		
Total	38	2424.737492			

	Coefficien	Standard Error	t Statist	P-value	Lower 95.0	Upper 95.00
Intercept	3.286702	1.719457383	1.9115	0.06350898859912	-0.1972499	6.770653
x1	0.090895	0.008235918	11.036	2.0540692628E-13	0.0742078	0.107583

STATION ID	SAMPLE ID	Manganes	Dissolved	Y-Hat
MW103	5285-96	0.02	75	0.02241
MW103	6774-94	0.02	89	0.02493
MW103	4272-94	0.008	94	0.02583
MW103	5440-95	0.02	96	0.02619
MW103	7299-93	0.013	97	0.02637
MW103	5187-94	0.008	101	0.02709
MW103	5944-93	0.005	108	0.02835
MW103	5178-93	0.022	116	0.02979
MW103	6026-94	0.008	136	0.03339
MW106	5444-95	0.038	145	0.03501
MW106	4697-94	0.018	155	0.03681
MW142	5464-95	0.02	155	0.03681
MW106	5322-93	0.409	171	0.03969
MW142	6084-93	0.01	173	0.04005
MW199	4312-94	0.042	175	0.04041
MW141	6080-93	0.032	186	0.04239
MW141	5199-94	0.041	187	0.04257
MW141	6054-94	0.021	189	0.04293
MW141	4229-94	0.054	189	0.04293
MW141	7065-93	0.065	195	0.04401
MW142	6058-94	0.005	203	0.04545
MW142	4233-94	0.005	207	0.04617
MW142	5203-94	0.005	210	0.04671
MW141	6658-94	0.024	210	0.04671
MW142	6872-94	0.02	210	0.04671
MW199	7311-93	0.048	210	0.04671
MW142	5317-96	0.02	211	0.04689
MW142	7089-93	0.008	214	0.04743
MW141	6092-93	0.09	217	0.04797
MW199	6888-94	0.02	220	0.04851
MW142	6096-93	0.013	221	0.04869
MW199	5984-93	0.077	229	0.05013
MW199	6074-94	0.014	231	0.05049
MW199	5260-94	0.092	233	0.05085
MW199	5170-93	0.086	233	0.05085
MW150	4789-94	0.111	358	0.07335
MW150	5321-96	0.02	370	0.07551
MW150	5650-93	0.142	380	0.07731
MW150	5468-95	0.02	385	0.07821



Regression Statistics

Multiple R	0.199741
R Square	0.039896
Adjusted R Square	0.013948
Standard Error	0.067933
Observations	39

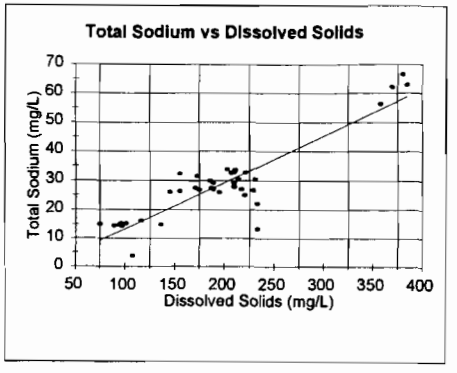
Analysis of Variance

	df	Sum of Squar	Mean S	F	Significance F
Regression	1	0.007095457	0.0071	1.53750290946946	0.2227964
Residual	37	0.170752133	0.0046		
Total	38	0.17784759			

	Coefficien	Standard Error	t Statist	P-value	Lower 95.0	Upper 95.00
Intercept	0.008911	0.029893054	0.2981	0.76725414884904	-0.0516581	0.06948
x1	0.000176	0.000143183	1.24	0.22259246785761	-0.0001126	0.000468

Summary of Results of Regression and Correlation Analyses - RGA Samples

STATION ID	SAMPLE ID	Sodium	Dissolved	Y-Hat
MW103	5285-96	15	75	9.31728
MW103	6774-94	14.3	89	11.5528
MW103	4272-94	14.68	94	12.3512
MW103	5440-95	15.2	96	12.6706
MW103	7299-93	14.2	97	12.8302
MW103	5187-94	15.2	101	13.469
MW103	5944-93	3.71	108	14.5867
MW103	5178-93	16.12	116	15.8642
MW103	6026-94	14.8	136	19.0578
MW106	5444-95	26.1	145	20.4949
MW106	4697-94	26.4	155	22.0917
MW142	5464-95	32.4	155	22.0917
MW106	5322-93	27.5	171	24.8466
MW142	8084-93	31.54	173	24.9659
MW199	4312-94	26.8	175	25.2853
MW141	6080-93	29.93	186	27.0418
MW141	5199-94	27.4	187	27.2014
MW141	6054-94	27.1	189	27.5208
MW141	4229-94	29.2	189	27.5208
MW141	7085-93	26	195	28.4789
MW142	6058-94	33.85	203	29.7563
MW142	4233-94	32.6	207	30.395
MW142	5203-94	29.3	210	30.8741
MW141	6868-94	28	210	30.8741
MW142	6872-94	33	210	30.8741
MW199	7311-93	27.8	210	30.8741
MW142	5317-96	33.6	211	31.0338
MW142	7089-93	30.4	214	31.5128
MW141	6092-93	27	217	31.9918
MW199	6888-94	25	220	32.4709
MW142	6096-93	32.7	221	32.6306
MW199	5984-93	26.6	229	33.908
MW199	6074-94	30.4	231	34.2274
MW199	5260-94	22.1	233	34.5467
MW199	5170-93	13.31	233	34.5467
MW150	4789-94	56.3	358	54.5087
MW150	5321-96	62.2	370	56.4229
MW150	5650-93	86.8	360	58.0197
MW150	5468-95	63	385	58.8181



Regression Statistics

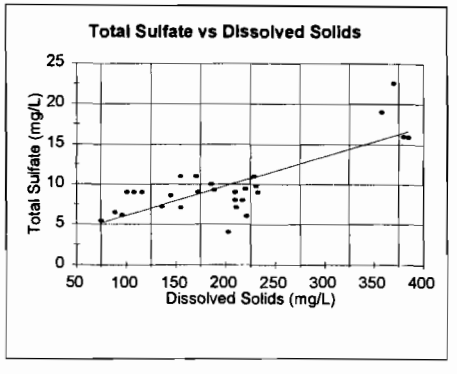
Multiple R	0.899325
R Square	0.808785
Adjusted R Square	0.803617
Standard Error	6.056078
Observations	39

Analysis of Variance

	df	Sum of Squar	Mean S	F	Significance F
Regression	1	5739.787407	5739.8	156.499490458139	7.354E-15
Residual	37	1357.01486	36.676		
Total	38	7096.802267			

	Coefficien	Standard Error	t Statist	P-value	Lower 95.0	Upper 95.00
Intercept	-2.65872	2.66489139	-0.998	0.32474364964446	-8.058302	2.740864
x1	0.159682	0.012764392	12.51	4.7888667858E-15	0.1338191	0.185545

STATION ID	SAMPLE ID	Sulfate	Dissolved	Y-Hat
MW103	5285-96	5.4	75	5.14376
MW103	6774-94	6.5	89	5.66372
MW103	5440-95	6.1	96	5.9237
MW103	5187-94	9	101	6.1094
MW103	5944-93	9	108	6.36938
MW103	5178-93	9	116	6.6665
MW103	6026-94	7.2	136	7.4093
MW106	5444-95	8.6	145	7.74356
MW106	4697-94	11	155	8.11496
MW142	5464-95	7.1	155	8.11496
MW106	5322-93	11	171	8.7092
MW142	6084-93	9	173	8.78348
MW141	8080-93	10	188	9.2663
MW141	6054-94	9.3	189	9.37772
MW142	6058-94	4	203	9.89768
MW141	6868-94	9	210	10.1577
MW142	6872-94	6	210	10.1577
MW142	5317-96	7.1	211	10.1948
MW141	6092-93	8	217	10.4176
MW199	6888-94	9.4	220	10.5291
MW142	6096-93	6	221	10.5662
MW199	5964-93	11	229	10.8633
MW199	6074-94	9.8	231	10.9376
MW199	5170-93	9	233	11.0119
MW150	4789-94	19	356	15.6544
MW150	5321-96	22.6	370	16.1001
MW150	5650-93	16	380	16.4715
MW150	5468-95	15.9	385	16.6572



Regression Statistics

Multiple R	0.783319
R Square	0.613589
Adjusted R Square	0.598727
Standard Error	2.59742
Observations	28

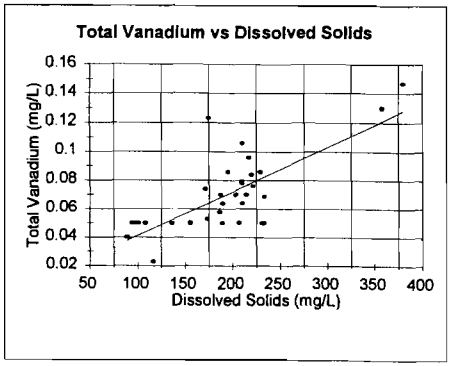
Analysis of Variance

	df	Sum of Squar	Mean S	F	Significance F
Regression	1	278.5385852	278.54	41.2858149636649	8.292E-07
Residual	26	175.4114148	6.7466		
Total	27	453.95			

	Coefficien	Standard Error	t Statist	P-value	Lower 95.0	Upper 95.00
Intercept	2.358264	1.250740731	1.8855	0.07016652567078	-0.2126701	4.929199
x1	0.037138	0.005779829	6.4254	6.9522267125E-07	0.0252571	0.049018

Summary of Results of Regression and Correlation Analyses - RGA Samples

STATION ID	SAMPLE ID	Vanadium	Dissolved	Y-Hat
MW103	6774-94	0.04	89	0.03763
MW103	4272-94	0.05	94	0.03918
MW103	7299-93	0.05	97	0.04011
MW103	5187-94	0.05	101	0.04135
MW103	5944-93	0.05	108	0.04352
MW103	5178-93	0.023	118	0.046
MW103	6026-94	0.05	136	0.0522
MW106	4697-94	0.05	155	0.05809
MW106	5322-93	0.074	171	0.06305
MW142	6084-93	0.053	173	0.06367
MW199	4312-94	0.123	175	0.06429
MW141	6080-93	0.058	186	0.0677
MW141	5199-94	0.07	187	0.06801
MW141	4229-94	0.05	189	0.06863
MW141	6054-94	0.064	189	0.06863
MW141	7085-93	0.086	195	0.07049
MW142	6058-94	0.07	203	0.07297
MW142	4233-94	0.05	207	0.07421
MW142	5203-94	0.064	210	0.07514
MW141	6888-94	0.078	210	0.07514
MW199	7311-93	0.106	210	0.07514
MW142	6872-94	0.079	210	0.07514
MW142	7069-93	0.07	214	0.07638
MW141	6092-93	0.096	217	0.07731
MW199	6888-94	0.084	220	0.07824
MW142	6096-93	0.076	221	0.07855
MW199	5984-93	0.086	229	0.08103
MW199	6074-94	0.05	231	0.08165
MW199	5260-94	0.069	233	0.08227
MW199	5170-93	0.05	233	0.08227
MW150	4789-94	0.13	358	0.12102
MW150	5650-93	0.147	380	0.12784



Regression Statistics

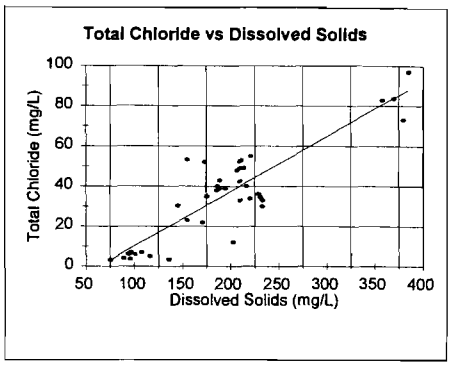
Multiple R	0.745907
R Square	0.556377
Adjusted R Square	0.54159
Standard Error	0.018373
Observations	32

Analysis of Variance

	df	Sum of Squar	Mean S	F	Significance F
Regression	1	0.012701461	0.0127	37.624989636894	9.595E-07
Residual	30	0.010127414	0.0003		
Total	31	0.022828875			

	Coefficien	Standard Error	t Statist	P-value	Lower 95.0	Upper 95.00
Intercept	0.010042	0.010329266	0.9722	0.33846135887401	-0.0110527	0.031138
x1	0.000313	5.10445E-05	6.1339	8.3872320043E-07	0.0002089	0.000417

STATION ID	SAMPLE ID	Chloride	Dissolved	Y-Hat
MW103	5285-96	3.1	75	3.07295
MW103	6774-94	3.9	89	6.91189
MW103	4272-94	6	94	8.28294
MW103	5440-95	3.5	96	8.83136
MW103	7299-93	7	97	9.10557
MW103	5187-94	8	101	10.2024
MW103	5944-93	7	108	12.1219
MW103	5178-93	5	116	14.3156
MW103	6026-94	3.4	136	19.7998
MW106	5444-95	30.5	145	22.2677
MW106	4697-94	23	155	25.0098
MW142	5464-95	53.2	155	25.0098
MW106	5322-93	22	171	29.3971
MW142	6084-93	52	173	29.9455
MW199	4312-94	35	175	30.494
MW141	6080-93	38	186	33.5103
MW141	5199-94	40	187	33.7845
MW141	6054-94	42.9	189	34.3329
MW141	4229-94	39	189	34.3329
MW141	7085-93	39	195	35.9782
MW142	6058-94	12	203	38.1718
MW142	4233-94	48	207	39.2687
MW142	5203-94	49	210	40.0913
MW141	6866-94	42.4	210	40.0913
MW142	6872-94	52.4	210	40.0913
MW199	7311-93	33	210	40.0913
MW142	5317-96	52.9	211	40.3655
MW142	7069-93	49	214	41.1881
MW141	6092-93	40	217	42.0108
MW199	6888-94	33.8	220	42.8334
MW142	6096-93	55	221	43.1076
MW199	5984-93	38	229	45.3013
MW199	6074-94	34.5	231	45.8497
MW199	5260-94	33	233	46.3981
MW199	5170-93	30	233	46.3981
MW150	4789-94	83	358	80.6744
MW150	5321-96	83.8	370	83.9649
MW150	5650-93	73	380	86.707
MW150	5468-95	97.1	385	88.0781



Regression Statistics

Multiple R	0.889446
R Square	0.791114
Adjusted R Square	0.785468
Standard Error	10.99034
Observations	39

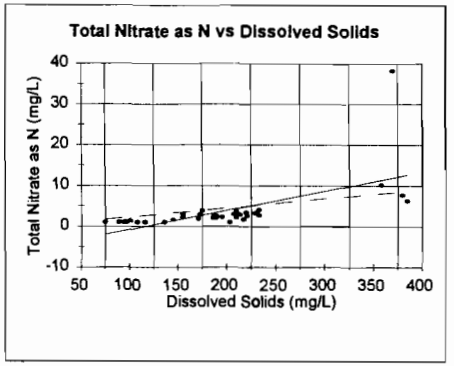
Analysis of Variance

	df	Sum of Squar	Mean S	F	Significance F
Regression	1	16925.94373	16926	140.129870371988	3.813E-14
Residual	37	4469.139351	120.79		
Total	38	21395.08308			

	Coefficien	Standard Error	t Statist	P-value	Lower 95.0	Upper 95.00
Intercept	-17.4928	4.836143292	-3.617	0.00068335759674	-27.291713	-7.6938
x1	0.274211	0.023164332	11.838	2.5720907609E-14	0.2272758	0.321147

Summary of Results of Regression and Correlation Analyses - RGA Samples

STATION ID	SAMPLE ID	Nitrate as	Dissolved	Y-Hat	Y-Hat 2
MW103	5285-96	1	75	-2.0135	1.6905
MW103	6774-94	1	89	-1.3501	2.00606
MW103	4272-94	1	94	-1.1132	2.11876
MW103	5440-95	1	96	-1.0185	2.16384
MW103	7299-93	1	97	-0.9711	2.18638
MW103	5187-94	1.4	101	-0.7816	2.27654
MW103	5944-93	1	108	-0.4499	2.43432
MW103	5178-93	1	116	-0.0709	2.61464
MW103	6026-94	1	136	0.87672	3.06544
MW106	5444-95	1.6	145	1.30314	3.2683
MW142	5464-95	2.9	155	1.77694	3.4937
MW106	4697-94	2.2	155	1.77694	3.4937
MW106	5322-93	1.8	171	2.53502	3.85434
MW142	6064-93	2.9	173	2.62978	3.89942
MW199	4312-94	3.8	175	2.72454	3.9445
MW141	6080-93	2	186	3.24572	4.19244
MW141	5199-94	2.7	187	3.2931	4.21498
MW141	6054-94	2	189	3.38766	4.26006
MW141	4229-94	2.6	189	3.38766	4.26006
MW141	7085-93	2.3	195	3.67214	4.3953
MW142	6058-94	1	203	4.05116	4.57562
MW142	4233-94	3	207	4.2407	4.66578
MW142	5203-94	3.5	210	4.38284	4.7334
MW141	6868-94	2.1	210	4.38284	4.7334
MW199	7311-93	3.7	210	4.38284	4.7334
MW142	6872-94	3	210	4.38284	4.7334
MW142	5317-96	3	211	4.43022	4.75594
MW142	7089-93	3	214	4.57236	4.82356
MW141	6092-93	1.7	217	4.7145	4.89118
MW199	6888-94	3.4	220	4.85664	4.9588
MW142	6096-93	2.6	221	4.90402	4.98134
MW199	5984-93	3.3	229	5.28308	5.18166
MW199	6074-94	3.4	231	5.37782	5.20674
MW199	5170-93	2.7	233	5.47258	5.25182
MW199	5260-94	4.1	233	5.47258	5.25182
MW150	4789-94	10.2	358	11.3951	8.06932
MW150	5321-96	38.3	370	11.9636	8.3398
MW150	5650-93	7.7	380	12.4374	8.5652
MW150	5468-95	6.3	385	12.6743	8.6779



Regression Statistics

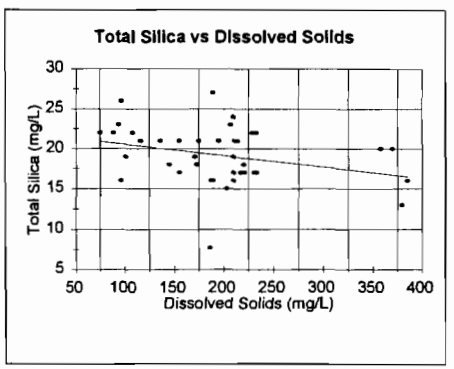
Multiple R	0.606248
R Square	0.369966
Adjusted R Square	0.352938
Standard Error	4.822417
Observations	39

Analysis of Variance

	df	Sum of Squar	Mean S	F	Significance F
Regression	1	505.2757445	505.28	21.7269564380973	3.997E-05
Residual	37	860.4611786	23.256		
Total	38	1365.736923			

	Coefficien	Standard Error	t Statist	P-value	Lower 95.0	Upper 95.00
Intercept	-5.56696	2.122036514	-2.623	0.01246269449679	-9.8668185	-1.26731
x1	0.047378	0.010164206	4.6612	3.8027146148E-05	0.0267829	0.067972

STATION ID	SAMPLE ID	Silica	Dissolved	Y-Hat
MW103	5285-96	22	75	20.8872
MW103	6774-94	22	89	20.6891
MW103	4272-94	23	94	20.6183
MW103	5440-95	16	96	20.59
MW103	7299-93	26	97	20.5759
MW103	5187-94	19	101	20.5193
MW103	5944-93	22	108	20.4202
MW103	5178-93	21	116	20.307
MW103	6026-94	21	136	20.024
MW106	5444-95	18	145	19.8967
MW142	5464-95	17	155	19.7552
MW106	4697-94	21	155	19.7552
MW106	5322-93	19	171	19.5288
MW142	6064-93	18	173	19.5005
MW199	4312-94	21	175	19.4722
MW141	6080-93	7.68	186	19.3165
MW141	5199-94	16	187	19.3024
MW141	6054-94	16	189	19.2741
MW141	4229-94	27	189	19.2741
MW141	7085-93	21	195	19.1892
MW142	6056-94	15	203	19.076
MW142	4233-94	23	207	19.0194
MW142	5203-94	17	210	18.9769
MW141	6868-94	19	210	18.9769
MW199	7311-93	24	210	18.9769
MW142	6872-94	16	210	18.9769
MW142	5317-96	21	211	18.9628
MW142	7089-93	21	214	18.9203
MW141	6092-93	17	217	18.8779
MW199	6866-94	18	220	18.8354
MW142	6096-93	17	221	18.8213
MW199	5984-93	22	229	18.7061
MW199	8074-94	17	231	18.6798
MW199	5170-93	22	233	18.6515
MW199	5260-94	17	233	18.6515
MW150	4789-94	20	356	16.8827
MW150	5321-96	20	370	16.7129
MW150	5650-93	13	380	16.5714
MW150	5468-95	16	385	16.5007



Regression Statistics

Multiple R	0.502767
R Square	0.252775
Adjusted R Square	0.233111
Standard Error	5.162239
Observations	39

Analysis of Variance

	df	Sum of Squar	Mean S	F	Significance F
Regression	1	345.2238937	345.22	12.6548167253195	0.0009454
Residual	38	1020.513029	26.856		
Total	39	1365.736923			

	Coefficien	Standerd Error	t Statist	P-value	Lower 95.0	Upper 95.00
Intercept	0	0	0	0	0	0
x1	0.022541	0.003974713	5.6711	1.4827037192E-06	0.0144945	0.030587

Regression Statistics

Multiple R	0.301535
R Square	0.090923
Adjusted R Square	0.066353
Standard Error	3.489621
Observations	39

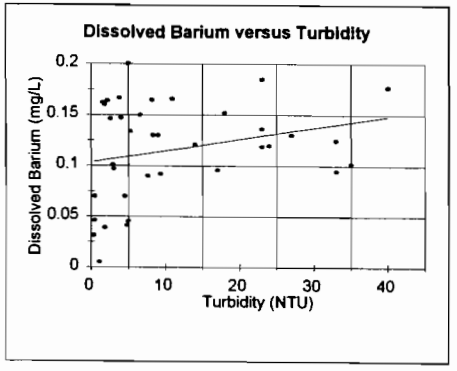
Analysis of Variance

	df	Sum of Squar	Mean S	F	Significance F
Regression	1	45.06424082	45.064	3.7006291814531	0.0621113
Residual	37	450.5657899	12.177		
Total	38	495.6300308			

	Coefficien	Standard Error	t Statist	P-value	Lower 95.0	Upper 95.00
Intercept	21.94835	1.535558333	14.293	7.1991024253E-17	18.837016	25.05969
x1	-0.01415	0.007355072	-1.924	0.06190691958534	-0.0290518	0.000754

Summary of Results of Regression and Correlation Analyses - RGA Samples

STATION ID	SAMPLE ID	Barium, Dissolved	Turbidity	Y-Hat
MW103	6026-94	0.031	0.35	0.1040885
MW103	6774-94	0.07	0.42	0.1041662
MW103	5187-94	0.046	0.43	0.1041773
MW103	5944-93	0.005	1.1	0.104921
MW142	4233-94	0.162	1.6	0.105476
MW142	6872-94	0.16	1.8	0.105698
MW103	7299-93	0.039	1.8	0.105698
MW142	6096-93	0.164	2.2	0.106142
MW142	5203-94	0.146	2.6	0.106586
MW141	6054-94	0.101	2.9	0.106919
MW141	6868-94	0.097	3	0.10703
MW142	5464-95	0.167	3.8	0.107918
MW142	5317-96	0.147	4	0.10814
MW103	5440-95	0.07	4.5	0.108695
MW103	4272-94	0.041	4.8	0.109028
MW103	5178-93	0.045	5	0.10925
MW150	5468-95	0.2	5	0.10925
MW106	4697-94	0.134	5.3	0.109583
MW142	7089-93	0.15	6.6	0.111026
MW141	5199-94	0.09	7.6	0.112136
MW150	5321-96	0.165	8.2	0.112802
MW199	4312-94	0.13	8.3	0.112913
MW106	7272-94	0.13	9	0.11369
MW141	7085-93	0.092	9.3	0.114023
MW142	6058-94	0.166	11	0.11591
MW199	6074-94	0.121	14	0.11924
MW141	4229-94	0.096	17	0.12257
MW142	6064-93	0.152	18	0.12368
MW106	5444-95	0.136	23	0.12923
MW150	4789-94	0.185	23	0.12923
MW199	5260-94	0.119	23	0.12923
MW199	6688-94	0.12	24	0.13034
MW199	5984-93	0.13	27	0.13367
MW199	7311-93	0.125	33	0.14033
MW141	6080-93	0.095	33	0.14033
MW141	6092-93	0.102	35	0.14255
MW150	5650-93	0.177	40	0.1461
	Delete value with turbidity of 200 NTU and 172 NTU			
MW199	5170-93	0.067	172	
MW106	5322-93	0.143	200	



Regression Statistics

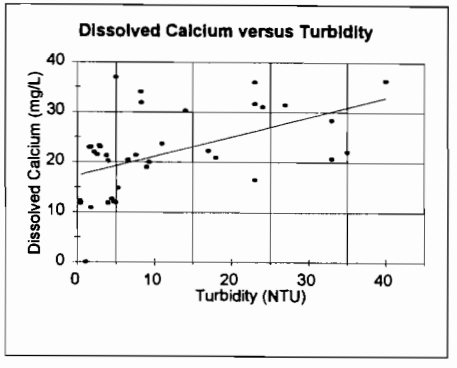
Multiple R	0.26285
R Square	0.06909
Adjusted R Square	0.04249
Standard Error	0.04707
Observations	37

Analysis of Variance

	df	Sum of S	Mean Squ	F	Significance F
Regression	1	0.005755	0.005755	2.597702	0.1160013
Residual	35	0.07754	0.002215		
Total	36	0.083295			

	Coefficie	Standard	t Statistic	P-value	Lower 95.00	Upper 95.
Intercept	0.10372	0.011026	9.406839	3.1E-11	0.0813351	0.126103
x1	0.00111	0.000691	1.611739	0.115753	-0.0002891	0.002516

STATION ID	SAMPLE ID	Calcium, Dissolved	Turbidity	Y-Hat
MW103	6026-94	12.2	0.35	17.415136
MW103	6774-94	11.7	0.42	17.4423632
MW103	5187-94	11.9	0.43	17.4462528
MW103	5944-93	0.026	1.1	17.706856
MW142	4233-94	22.9	1.6	17.901336
MW103	7299-93	10.9	1.8	17.979128
MW142	6872-94	23	1.8	17.979128
MW142	6096-93	22	2.2	18.134712
MW142	5203-94	21.5	2.6	18.290296
MW141	6054-94	23.27	2.9	18.406984
MW141	6868-94	23	3	18.44588
MW142	5464-95	21.3	3.8	18.757048
MW142	5317-96	20.2	4	18.83484
MW103	5285-96	11.8	4	18.83484
MW103	5440-95	12.6	4.5	19.02932
MW103	4272-94	12	4.8	19.146008
MW103	5178-93	11.91	5	19.2238
MW150	5468-95	37	5	19.2238
MW106	4697-94	14.8	5.3	19.340488
MW142	7089-93	20.4	6.6	19.846138
MW141	5199-94	21.4	7.6	20.235096
MW150	5321-96	34	8.2	20.468472
MW199	4312-94	31.8	8.3	20.507368
MW106	7272-94	19	9	20.77964
MW141	7085-93	20	9.3	20.896328
MW142	6056-94	23.72	11	21.55756
MW199	6074-94	30.2	14	22.72444
MW141	4229-94	22.3	17	23.89132
MW142	8064-93	20.93	18	24.28028
MW150	4789-94	36	23	26.22508
MW106	5444-95	18.5	23	26.22508
MW199	5260-94	31.8	23	26.22508
MW199	6888-94	31	24	26.61404
MW199	5984-93	31.4	27	27.78092
MW141	6080-93	20.7	33	30.11468
MW199	7311-93	28.4	33	30.11468
MW141	6092-93	22.1	35	30.8926
MW150	5650-93	36.3	40	32.8374
	Delete value with turbidity of 200 NTU and 172 NTU			
MW199	5170-93	15.86	172	
MW106	5322-93	15.1	200	



Regression Statistics

Multiple R	0.51795
R Square	0.26827
Adjusted R Square	0.24795
Standard Error	7.33449
Observations	38

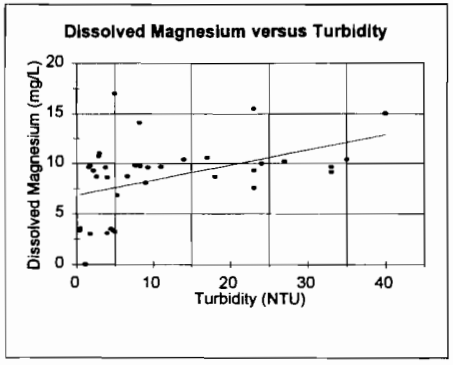
Analysis of Variance

	df	Sum of S	Mean Squ	F	Significance F
Regression	1	710.0195	710.0195	13.19867	0.0008663
Residual	36	1936.612	53.79478		
Total	37	2646.632			

	Coefficie	Standard	t Statistic	P-value	Lower 95.00	Upper 95.
Intercept	17.2791	1.68723	10.24108	2.39E-12	13.857204	20.70093
x1	0.38896	0.107063	3.632997	0.000845	0.171825	0.606091

Summary of Results of Regression and Correlation Analyses - RGA Samples

STATION ID	SAMPLE ID	Magnesium, Dissolve	Turbidity	Y-Hat
MW103	6026-94	3.46	0.35	6.8868925
MW103	6774-94	3.34	0.42	6.897459
MW103	5187-94	3.51	0.43	6.8989685
MW103	5944-93	0.008	1.1	7.000105
MW142	4233-94	9.63	1.6	7.07558
MW142	6872-94	9.8	1.8	7.10577
MW103	7299-93	3.01	1.8	7.10577
MW142	6096-93	9.29	2.2	7.16615
MW142	5203-94	8.69	2.6	7.22653
MW141	6054-94	10.73	2.9	7.271815
MW141	6868-94	11	3	7.28691
MW142	5464-95	9.59	3.8	7.40767
MW142	5317-96	8.6	4	7.43786
MW103	5285-96	3.07	4	7.43786
MW103	5440-95	3.48	4.5	7.513335
MW103	4272-94	3.33	4.8	7.55862
MW150	5468-95	17	5	7.58881
MW103	5178-93	3.22	5	7.58881
MW106	4697-94	6.62	5.3	7.634095
MW142	7089-93	8.72	6.6	7.83033
MW141	5199-94	9.8	7.6	7.98128
MW150	5321-96	14.1	8.2	8.07165
MW199	4312-94	9.74	8.3	8.086945
MW106	7272-94	8.06	9	8.19261
MW141	7085-93	9.6	9.3	8.237895
MW142	6058-94	9.66	11	8.49451
MW199	6074-94	10.4	14	8.94736
MW141	4229-94	10.6	17	9.40021
MW142	6084-93	8.7	18	9.55116
MW199	5280-94	9.31	23	10.30591
MW150	4789-94	15.5	23	10.30591
MW106	5444-95	7.58	23	10.30591
MW199	6888-94	10	24	10.45686
MW199	5984-93	10.2	27	10.90971
MW141	6080-93	9.67	33	11.61541
MW199	7311-93	9.15	33	11.61541
MW141	6092-93	10.4	35	12.11731
MW150	5650-93	15	40	12.87206
	Delete value with turbidity of 172 NTU			
MW199	5170-93	4.78	172	



Regression Statistics

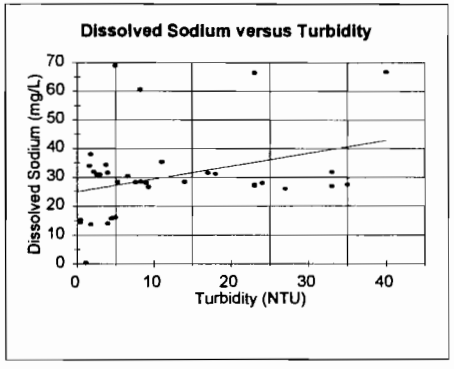
Multiple R	0.44991
R Square	0.20242
Adjusted R Square	0.18027
Standard Error	3.42118
Observations	38

Analysis of Variance

	df	Sum of S	Mean Squ	F	Significance F
Regression	1	106.9396	106.9396	9.136656	0.0045954
Residual	36	421.3605	11.70446		
Total	37	528.3001			

	Coefficie	Standard	t Statistic	P-value	Lower 95.00	Upper 95.
Intercept	6.83406	0.787009	8.683576	1.86E-10	5.2379283	8.430184
x1	0.15095	0.049939	3.02269	0.00453	0.0496695	0.252233

STATION ID	SAMPLE ID	Sodium, Dissolved	Turbidity	Y-Hat
MW103	6026-94	14.7	0.35	25.101205
MW103	6774-94	14.4	0.42	25.132446
MW103	5187-94	15.2	0.43	25.136909
MW103	5944-93	0.317	1.1	25.43593
MW142	4233-94	34	1.6	25.65908
MW103	7299-93	13.7	1.8	25.74834
MW142	6872-94	38	1.8	25.74834
MW142	6096-93	32	2.2	25.92686
MW142	5203-94	30.9	2.6	26.10538
MW141	6054-94	30.56	2.9	26.23927
MW141	6868-94	31	3	26.2839
MW142	5464-95	34.3	3.8	26.64094
MW142	5317-96	31.6	4	26.7302
MW103	5285-96	14	4	26.7302
MW103	5440-95	15.7	4.5	26.95335
MW103	4272-94	16.2	4.8	27.08724
MW103	5178-93	16.2	5	27.1765
MW150	5468-95	69	5	27.1765
MW106	4697-94	28.4	5.3	27.31039
MW142	7089-93	30.4	6.6	27.89058
MW141	5199-94	28.3	7.6	28.33686
MW150	5321-96	60.6	8.2	28.60486
MW199	4312-94	28.5	8.3	28.64929
MW106	7272-94	28	9	28.9617
MW141	7085-93	26.6	9.3	29.09559
MW142	6058-94	35.36	11	29.8543
MW199	6074-94	28.4	14	31.1932
MW141	4229-94	31.5	17	32.5321
MW142	6084-93	31.14	18	32.9784
MW150	4789-94	86.4	23	35.2099
MW106	5444-95	27.4	23	35.2099
MW199	5260-94	27	23	35.2099
MW199	6888-94	28	24	35.6562
MW199	5984-93	26	27	36.9951
MW141	6080-93	31.84	33	39.6729
MW199	7311-93	26.9	33	39.6729
MW141	6092-93	27.5	35	40.5655
MW150	5650-93	66.7	40	42.797
	Delete value with turbidity of 172 NTU			
MW199	5170-93	13.9	172	
MW106	5322-93	26.8	200	



Regression Statistics

Multiple R	0.33983
R Square	0.11549
Adjusted R Square	0.09092
Standard Error	14.0497
Observations	38

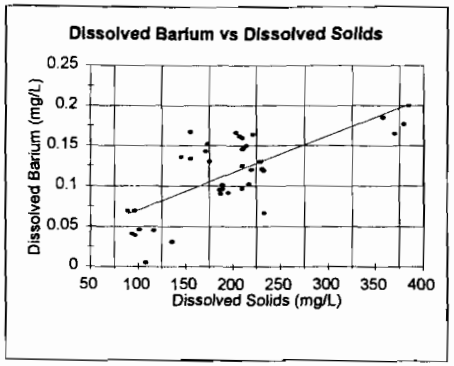
Analysis of Variance

	df	Sum of S	Mean Squ	F	Significance F
Regression	1	927.8233	927.8233	4.70037	0.0368451
Residual	36	7106.172	197.3937		
Total	37	8033.995			

	Coefficie	Standard	t Statistic	P-value	Lower 95.00	Upper 95.
Intercept	24.9454	3.231996	7.718275	3.2E-09	18.390643	31.50023
x1	0.44463	0.205085	2.168034	0.03666	0.0286995	0.860563

Summary of Results of Regression and Correlation Analyses - RGA Samples

STATION ID	SAMPLE ID	Barium, Dissolved	Dissolved Solids	Y-Hat
MW103	6774-94	0.07	89	0.065511
MW103	4272-94	0.041	94	0.067806
MW103	5440-95	0.07	96	0.068724
MW103	7299-93	0.039	97	0.069183
MW103	5187-94	0.046	101	0.071019
MW103	5944-93	0.005	108	0.074232
MW103	5178-93	0.045	116	0.077904
MW103	6026-94	0.031	136	0.087084
MW106	5444-95	0.136	145	0.091215
MW142	5464-95	0.167	155	0.095805
MW106	4697-94	0.134	155	0.095805
MW106	5322-93	0.143	171	0.103149
MW142	6084-93	0.152	173	0.104067
MW199	4312-94	0.13	175	0.104985
MW141	6080-93	0.095	186	0.110034
MW141	5199-94	0.09	187	0.110493
MW141	6054-94	0.101	189	0.111411
MW141	4229-94	0.096	189	0.111411
MW141	7085-93	0.092	195	0.114165
MW142	6058-94	0.168	203	0.117837
MW142	4233-94	0.162	207	0.119673
MW142	5203-94	0.146	210	0.12105
MW141	6866-94	0.097	210	0.12105
MW199	7311-93	0.125	210	0.12105
MW142	6872-94	0.16	210	0.12105
MW142	5317-96	0.147	211	0.121509
MW142	7089-93	0.15	214	0.122886
MW141	6092-93	0.102	217	0.124263
MW199	6888-94	0.12	220	0.12564
MW142	6096-93	0.164	221	0.126099
MW199	5984-93	0.13	229	0.129771
MW199	6074-94	0.121	231	0.130689
MW199	5170-93	0.067	233	0.131607
MW199	5260-94	0.119	233	0.131607
MW150	4769-94	0.185	358	0.188982
MW150	5321-96	0.165	370	0.19449
MW150	5650-93	0.177	380	0.19908
MW150	5468-95	0.2	385	0.201375



Regression Statistics

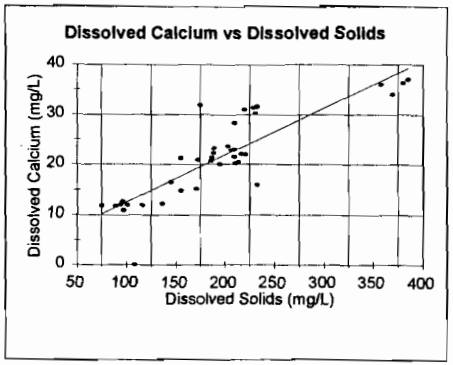
Multiple R	0.7176
R Square	0.51495
Adjusted R Square	0.50147
Standard Error	0.03408
Observations	38

Analysis of Variance

	df	Sum of S	Mean Squ	F	Significance F
Regression	1	0.044399	0.044399	38.21886	3.971E-07
Residual	36	0.041822	0.001162		
Total	37	0.086221			

	Coefficie	Standard	t Statistic	P-value	Lower 95.00	Upper 95.
Intercept	0.02466	0.015688	1.571817	0.124506	-0.0071581	0.056476
x1	0.00046	7.43E-05	6.18214	3.56E-07	0.0003086	0.00061

STATION ID	SAMPLE ID	Calcium, Dissolved	Dissolved Solids	Y-Hat
MW103	5285-96	11.8	75	10.18295
MW103	6774-94	11.7	89	11.494834
MW103	4272-94	12	94	11.963364
MW103	5440-95	12.6	96	12.150776
MW103	7299-93	10.9	97	12.244482
MW103	5187-94	11.9	101	12.619306
MW103	5944-93	0.026	108	13.275248
MW103	5178-93	11.91	116	14.024896
MW103	6026-94	12.2	136	15.899016
MW106	5444-95	16.5	145	16.74237
MW142	5464-95	21.3	155	17.67943
MW106	4697-94	14.8	155	17.67943
MW106	5322-93	15.1	171	19.178726
MW142	6084-93	20.93	173	19.366138
MW199	4312-94	31.8	175	19.55355
MW141	6080-93	20.7	186	20.584316
MW141	5199-94	21.4	187	20.678022
MW141	6054-94	23.27	189	20.865434
MW141	4229-94	22.3	189	20.865434
MW141	7085-93	20	195	21.42767
MW142	6058-94	23.72	203	22.177318
MW142	4233-94	22.9	207	22.552142
MW142	5203-94	21.5	210	22.83326
MW141	6866-94	23	210	22.83326
MW199	7311-93	26.4	210	22.83326
MW142	6872-94	23	210	22.83326
MW142	5317-96	20.2	211	22.926966
MW142	7089-93	20.4	214	23.208084
MW141	6092-93	22.1	217	23.489202
MW199	6888-94	31	220	23.77032
MW142	6096-93	22	221	23.864026
MW199	5984-93	31.4	229	24.613674
MW199	6074-94	30.2	231	24.801086
MW199	5170-93	15.86	233	24.988498
MW199	5260-94	31.6	233	24.988498
MW150	4769-94	36	358	36.701748
MW150	5321-96	34	370	37.82622
MW150	5650-93	36.3	380	38.76328
MW150	5468-95	37	385	39.23181



Regression Statistics

Multiple R	0.85354
R Square	0.72853
Adjusted R Square	0.72119
Standard Error	4.46171
Observations	39

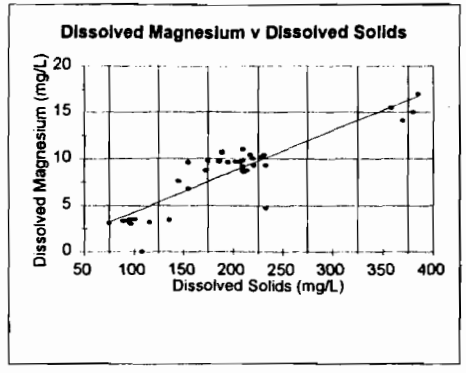
Analysis of Variance

	df	Sum of S	Mean Squ	F	Significance F
Regression	1	1976.606	1976.606	99.29272	5.054E-12
Residual	37	736.5537	19.90666		
Total	38	2713.16			

	Coefficie	Standard	t Statistic	P-value	Lower 95.00	Upper 95.
Intercept	3.15506	1.963312	1.607011	0.116331	-0.822985	7.133113
x1	0.09371	0.009404	9.964573	3.77E-12	0.0746521	0.11278

Summary of Results of Regression and Correlation Analyses - RGA Samples

STATION ID	SAMPLE ID	Magnesium, Dissolve	Dissolved Solids	Y-Hat
MW103	5285-96	3.07	75	3.18012
MW103	6774-94	3.34	89	3.79262
MW103	4272-94	3.33	94	4.01137
MW103	5440-95	3.48	96	4.09887
MW103	7299-93	3.01	97	4.14262
MW103	5187-94	3.51	101	4.31762
MW103	5944-93	0.008	108	4.62387
MW103	5178-93	3.22	116	4.97387
MW103	6026-94	3.46	136	5.84887
MW106	5444-95	7.58	145	6.24262
MW106	4697-94	6.82	155	6.68012
MW142	5464-95	9.59	155	6.68012
MW142	6084-93	8.7	173	7.46762
MW199	4312-94	9.74	175	7.55512
MW141	6080-93	9.67	186	8.03637
MW141	5199-94	9.8	187	8.08012
MW141	6054-94	10.73	189	8.16762
MW141	4229-94	10.6	189	8.16762
MW141	7085-93	9.6	195	8.43012
MW142	6058-94	9.66	203	8.78012
MW142	4233-94	9.63	207	8.95512
MW142	5203-94	8.69	210	9.08637
MW141	6868-94	11	210	9.08637
MW199	7311-93	9.15	210	9.08637
MW142	6872-94	9.8	210	9.08637
MW142	5317-96	8.6	211	9.13012
MW142	7089-93	8.72	214	9.26137
MW141	6092-93	10.4	217	9.39262
MW199	6888-94	10	220	9.52387
MW142	6096-93	9.29	221	9.56762
MW199	5984-93	10.2	229	9.91762
MW199	6074-94	10.4	231	10.00512
MW199	5170-93	4.78	233	10.09262
MW199	5260-94	9.31	233	10.09262
MW150	4789-94	15.5	358	15.56137
MW150	5321-96	14.1	370	16.08637
MW150	5650-93	15	380	16.52387
MW150	5488-95	17	385	16.74262



Regression Statistics

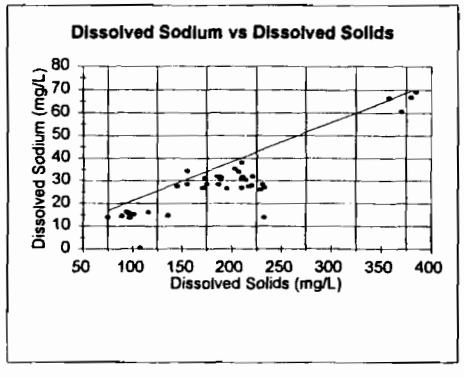
Multiple R	0.89067
R Square	0.79329
Adjusted R Square	0.78755
Standard Error	1.76382
Observations	38

Analysis of Variance

	df	Sum of S	Mean Squ	F	Significance F
Regression	1	429.8137	429.8137	138.156	6.993E-14
Residual	36	111.9987	3.111074		
Total	37	541.8124			

	Coefficie	Standard	t Statistic	P-value	Lower 95.00	Upper 95.
Intercept	-0.1011	0.78048	-0.12958	0.897603	-1.6840182	1.481754
x1	0.04375	0.003722	11.75398	4.7E-14	0.0362025	0.051301

STATION ID	SAMPLE ID	Sodium, Dissolved	Dissolved Solids	Y-Hat
MW103	5285-96	14	75	16.9315
MW103	6774-94	14.4	89	19.3423
MW103	4272-94	16.2	94	20.2033
MW103	5440-95	15.7	96	20.5477
MW103	7299-93	13.7	97	20.7199
MW103	5187-94	15.2	101	21.4087
MW103	5944-93	0.317	108	22.6141
MW103	5178-93	16.2	116	23.9917
MW103	6026-94	14.7	136	27.4357
MW106	5444-95	27.4	145	28.9855
MW142	5464-95	34.3	155	30.7075
MW106	4697-94	28.4	155	30.7075
MW106	5322-93	26.8	171	33.4827
MW142	6084-93	31.14	173	33.8071
MW199	4312-94	26.5	175	34.1515
MW141	6080-93	31.84	186	36.0457
MW141	5199-94	28.3	187	36.2179
MW141	6054-94	30.56	189	36.5623
MW141	4229-94	31.5	189	36.5623
MW141	7085-93	26.6	195	37.5955
MW142	6058-94	35.36	203	38.9731
MW142	4233-94	34	207	39.6619
MW142	5203-94	30.9	210	40.1785
MW141	6868-94	31	210	40.1785
MW199	7311-93	26.9	210	40.1785
MW142	6872-94	38	210	40.1785
MW142	5317-96	31.6	211	40.3507
MW142	7089-93	30.4	214	40.8673
MW141	6092-93	27.5	217	41.3839
MW199	6888-94	28	220	41.9005
MW142	6096-93	32	221	42.0727
MW199	5984-93	26	229	43.4503
MW199	6074-94	26.4	231	43.7947
MW199	5170-93	13.9	233	44.1391
MW199	5260-94	27	233	44.1391
MW150	4789-94	66.4	358	65.6641
MW150	5321-96	60.6	370	67.7305
MW150	5650-93	66.7	380	69.4525
MW150	5468-95	69	385	70.3135



Regression Statistics

Multiple R	0.89745
R Square	0.80541
Adjusted R Square	0.80015
Standard Error	6.60245
Observations	39

Analysis of Variance

	df	Sum of S	Mean Squ	F	Significance F
Regression	1	6675.949	6675.949	153.145	1.018E-14
Residual	37	1612.918	43.59233		
Total	38	8288.866			

	Coefficie	Standard	t Statistic	P-value	Lower 95.00	Upper 95.
Intercept	-4.0165	2.905314	-1.38247	0.174698	-9.9032446	1.870207
x1	0.17221	0.013916	12.37518	6.66E-15	0.1440163	0.200409