DRAFT FINAL

PHASE I RFI/RI REPORT
WALNUT CREEK PRIORITY DRAINAGE
OPERABLE UNIT NO. 6

VOLUME 6

APPENDIX D
APPENDIX E

DOCUMENT CLASSIFICATION
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U.S. Department of Energy
Rocky Flats Environmental Technology Site
Golden, Colorado

September 1995

(4047-910-0052-510) (R7-CVRS) (09/25/95 9:13am)

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1,1-DCE	1,1-dichloroethene
1,1,1-TCA	1,1,1-trichloroethane
1,2-DCA	1,2-dichlorothane
1,2-DCE	1,2-dichloroethene
ac-ft	acre-feet
AEC	Atomic Energy Commission
af	man-made deposits
AGS	above ground surface
Am-241	Americium-241
AMSL	above mean sea level
AOC	Area of Concern
ARARs	applicable or relevant and appropriate requirements
BGS	below ground surface
BSL	Background Screening Level
Ca^{+2}	calcium
$CaCO_3$	calcium carbonate
CCl_4	Carbon tetrachloride
CDPHE	Colorado Department of Public Health and Environment
CDH	Colorado Department of Health
CEARP	Comprehensive Environmental Assessment & Response Program
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
cfs	cubic feet per second
CHC	chlorinated hydrocarbons
$CHCl_3$	chloroform
Cis-1,2-DCE	cis-1,2-dichloroethene
CLC	common laboratory contaminants

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cm/sec	centimeters per second
cm	centimeter
COCs	chemicals of concern
CRQL	contract required quantitation limit
C_s-137	Cesium-137
CSM	conceptual site model
DCN	document change notice
d/m/l	disintegrations per minute per liter
DLG	Digital Line Graph
DOE	Department of Energy
DQO	Data Quality Objective
DRCOG	Denver Regional Council of Governments
ECD	Electron Capture Detector
EM	Electromagnetic
EMD	Environmental Management Department
EMRGs	Environmental Management Radiological Guidelines
EPA	Environmental Protection Agency
ER	Environmental Restoration
ERDA	Energy Research and Development Administration
ERP	Environmental Restoration Program
FDM	Fugitive Dust Model
FIDLER	field instrument for the detection of low-energy radiation
FSP	field sampling plan
GAC	granular activated carbon
gal	gallon
GS	gauging station
HCO^{3-}	bicarbonate
HEAST	Health Effects Assessment Summary Tables
HHRA	Human Health Risk Assessment

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HPGe	high purity germanium
HRR	Historical Release Report
HSP	Health and Safety Plan
ID	inside diameter
IHSS	Individual Hazardous Substance Site
in/hr	inches per hour
IRIS	Integrated Risk Information System
K; (K^+)	hydraulic conductivity; (symbol for potassium)
Ka	Cretaceous Arapahoe Formation
Kl	Cretaceous Laramie Formation
LHSU	lower hydrostratigraphic unit
mCi	millicurie
meq/l	milliequivalents
Mgal	millions of gallons
ml	milliliter
mm	millimeters
MSL	mean sea level
Na+	sodium
NAAQS	National Ambient Air Quality Standards
NPDES	National Pollutant Discharge Elimination System
OU	operable unit
OVM	organic vapor monitor
PA	protected area
PAH	polynuclear aromatic hydrocarbon
PCB	polychlorinated biphenyl
PCE	tetrachloroethene
PCOC	potential chemical of concern
pCi/g	picocuries per gram
PID	photoionization detector

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Pu-239/240	plutonium-239/240
PVC	polyvinyl chloride
QA/QC	quality assurance/quality control
QAPjP	Quality Assurance Project Plan
Qc	Quaternary colluvium
QC	quality control
Q_{ls}	Quarternary landslides
Qrf	Quaternary Rocky Flats Alluvium
Qt	Quaternary Terrace Alluvium
Qvf	Quaternary Valley-Fill Alluvium
Ra-226	radium-226
RAD screen	radiological screen
RBC	risk-based concentration
RCRA	Resource Conservation and Recovery Act
RFA	Rocky Flats Alluvium
RfCs	reference air concentrations
RfDs	noncarcinogenic reference doses
RFEDS	Rocky Flats Environmental Database System
RFETS	Rocky Flats Environmental Technology Site
RFI/RI	RCRA Facility Investigation/Remedial Investigation
RFP	Rocky Flats Plant
RI	remedial investigation
SEAM	Superfund Exposure Assessment Manual
SFs	carcinogenic slope factors
SO_4^{2-}	sulfate
SOP	Standard Operating Procedure
sq ft	square feet
sq mi	square mile

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Sr-89,90	strontium-89,90
STP	Sewage Treatment Plant
SVOC	semivolatile organic compound
SWMU	Solid Waste Management Unit
TAL	target analyte list
TCE	trichloroethene
TCL	Target Compound List
TM	Technical Memorandum
TOC	total organic carbon
µg/kg	micrograms per kilogram
µg/l	microgram per liter
U-233/234	uranium-233/234
U-235	uranium-235
U-238	uranium-238
UHSU	upper hydrostratigraphic unit
USACE	U.S. Army Corps of Engineers
USCS	Unified Soil Classification System
UTL	upper tolerance limit
VOC	volatile organic compound
WARP	Well Abandonment and Replacement Program
W&I	Walnut and Indiana

DRAFT

APPENDIX D
OU6 PHASE I ANALYTICAL DATA

APPENDIX D
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D1 OU6 PHASE I SURFACE SOIL AND DRY SEDIMENT DATA

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D4 OU6 PHASE I SURFACE WATER AND SEDIMENT DATA

D5 OU6 PHASE I FIELD PARAMETERS

D6 OU6 PHASE I BIOLOGICAL DATA

D7 BACKGROUND AND OU6 PHASE I HISTOGRAMS AND BOX PLOTS

D8 LOG-NORMAL AND NORMAL PROBABILITY PLOTS

D9 OU6 PHASE I POND SEDIMENT DATA (STOLLER)

APPENDIX D
OU6 PHASE I ANALYTICAL DATA

Appendix D contains analytical data used in the site characterization of Operable Unit No. 6 (OU6) for the Phase I RCRA Facility Investigation/Remedial Investigation (RFI/RI) Report. Analytical results contained in this appendix are raw and non-validated data for real and duplicate samples collected in various media types and are presented as reported by Rocky Flats Environmental Database System. This appendix includes data from the OU6 Phase I RFI/RI field investigation as well as selected historical OU6 data derived from other investigations at Rocky Flats Environmental Technology Site (RFETS). All data within these volumes are grouped by analyte type and listed by sample site. Due to the quantity of data contained within this appendix, Appendices D1 through D7, and D9 are provided on computer disk in MS-Excel 4.0 format. Only probability plots (Appendix D8) are presented in hard copy.

Appendix D1 contains analytical data for surface soil samples and dry sediment samples collected during the OU6 Phase I field investigation. These data are separated into their respective media types prior to their presentation as noted above.

Appendix D2 contains analytical data for subsurface soil samples collected during the drilling of soil borings and monitoring wells in the OU6 Phase I field investigation.

Appendix D3 contains analytical data for groundwater samples collected within and near OU6 during the Phase I field investigation. Also presented are analytical data for monitoring wells within and near OU6 which are part of a groundwater monitoring program at RFETS.

Appendix D4 contains analytical data for surface water and sediment samples collected during the OU6 Phase I field investigation. These data are separated into their respective media types prior to their presentation as noted above. Water quality parameters for surface water samples are presented in this appendix.

Appendix D5 contains field parameter data for groundwater and surface water samples collected within OU6. Data collected during other OU6 investigations and data collected during the Phase I field investigation are contained in this appendix.

Appendix D6 contains analytical data from biota samples collected during other investigations in the OU6 area (not available at the time of this report).

Appendix D7 contains histograms and box plots for background and Phase I analytical data collected in the OU6 area. These graphically depict background comparison summaries for each media-analyte group.

Appendix D8 contains normal and log-normal probability plots of analytical results for selected analytes and media used in Potential Chemical of Concern determination, as detailed in Section 4.3.4. These paired plots are used to better define the Upper Tolerance Limit $(UTL)_{99/99}$. Plots are restricted to those media-analytes which passed formal statistical testing, but failed to pass the normal-based $UTL_{99/99}$ comparison.

Appendix D9 contains analytical data for pond sediment samples collected in the OU6 A and B-Series Ponds during an additional Phase I sampling program performed by R.L. Stoller Company.

NOTICE:

DISKS

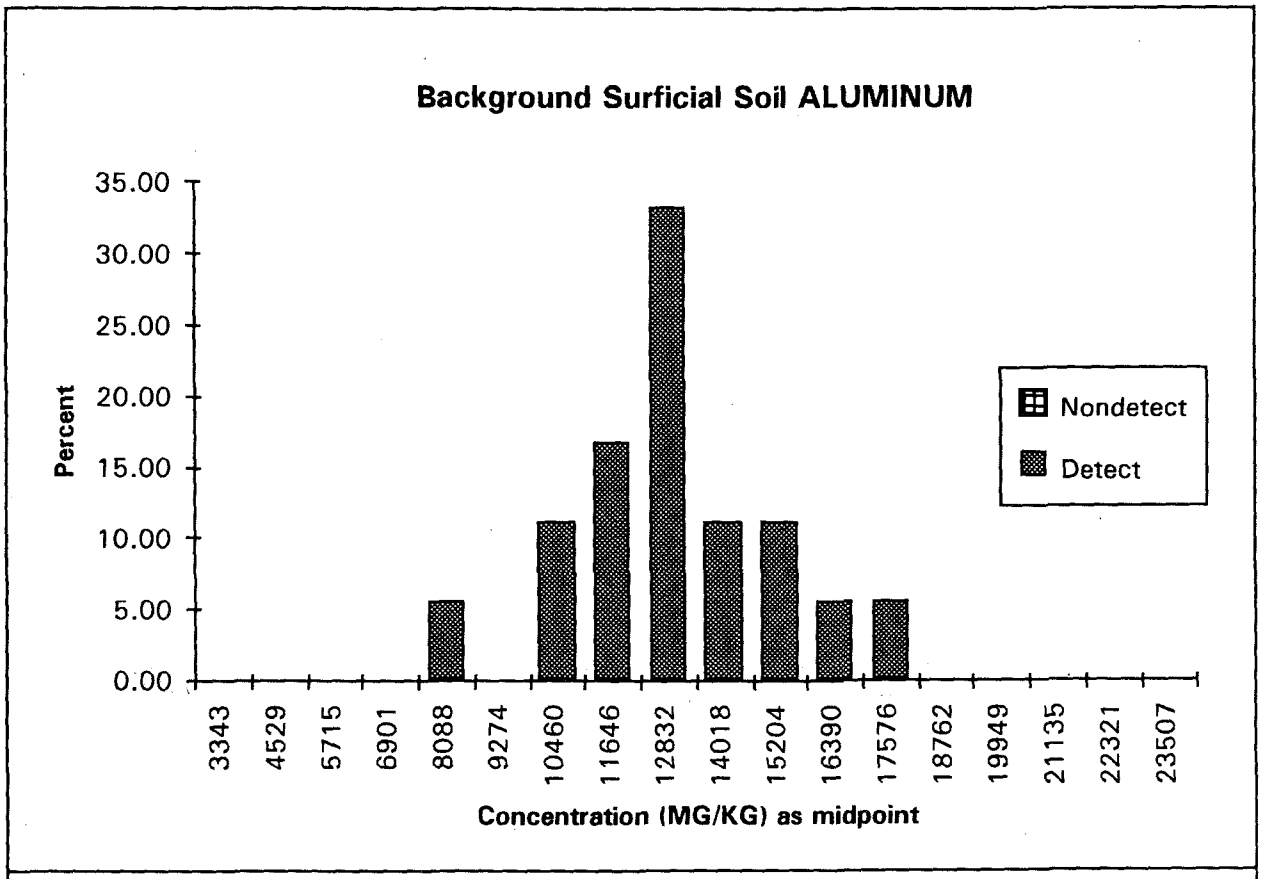
This document contains six computer disks which take the place of:

Appendix D1 through D7, and D9. (due to the quantity of data contained within this appendix)

These disks can be found in the original AR file at the Interlocken facility.

(OU06 Phase I RFI/RI Report Walnut Creek Priority Drainage, Vol. 6)

The Administrative Record Staff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30.00
25.00
20.00
15.00
10.00
5.00
0.00
Percent
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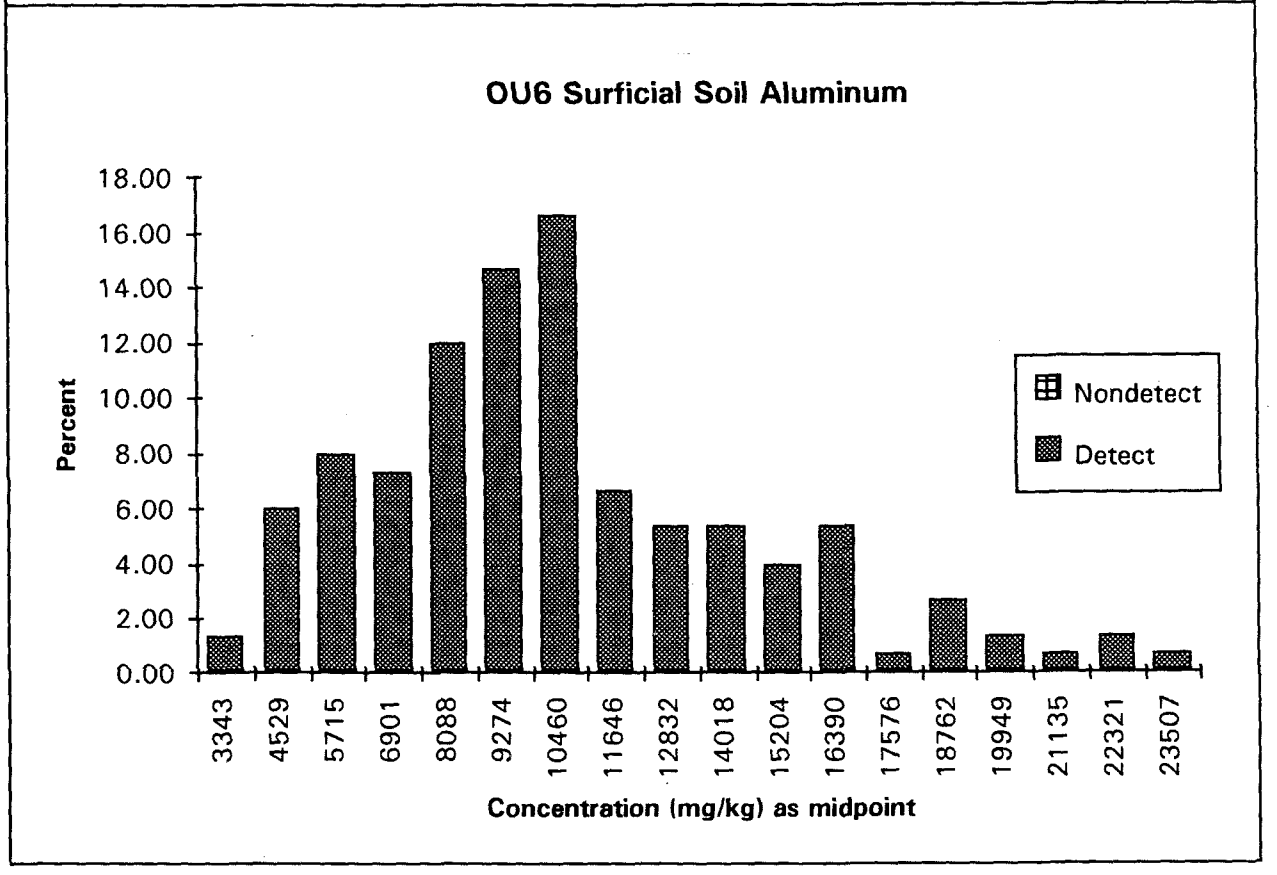
Detect
3343
4529
5715
6901
8088
9274
10460
11646
12832
14018
15204
16390
17576
18762
19949
21135
22321
23507
Concentration (MG/KG) as midpoint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16.00
14.00
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8.00
6.00
4.00
2.00
0.00
Percent
Nondetect
Detect
3343
4529
5715
6901
8088
9274
10460
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14018
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18762
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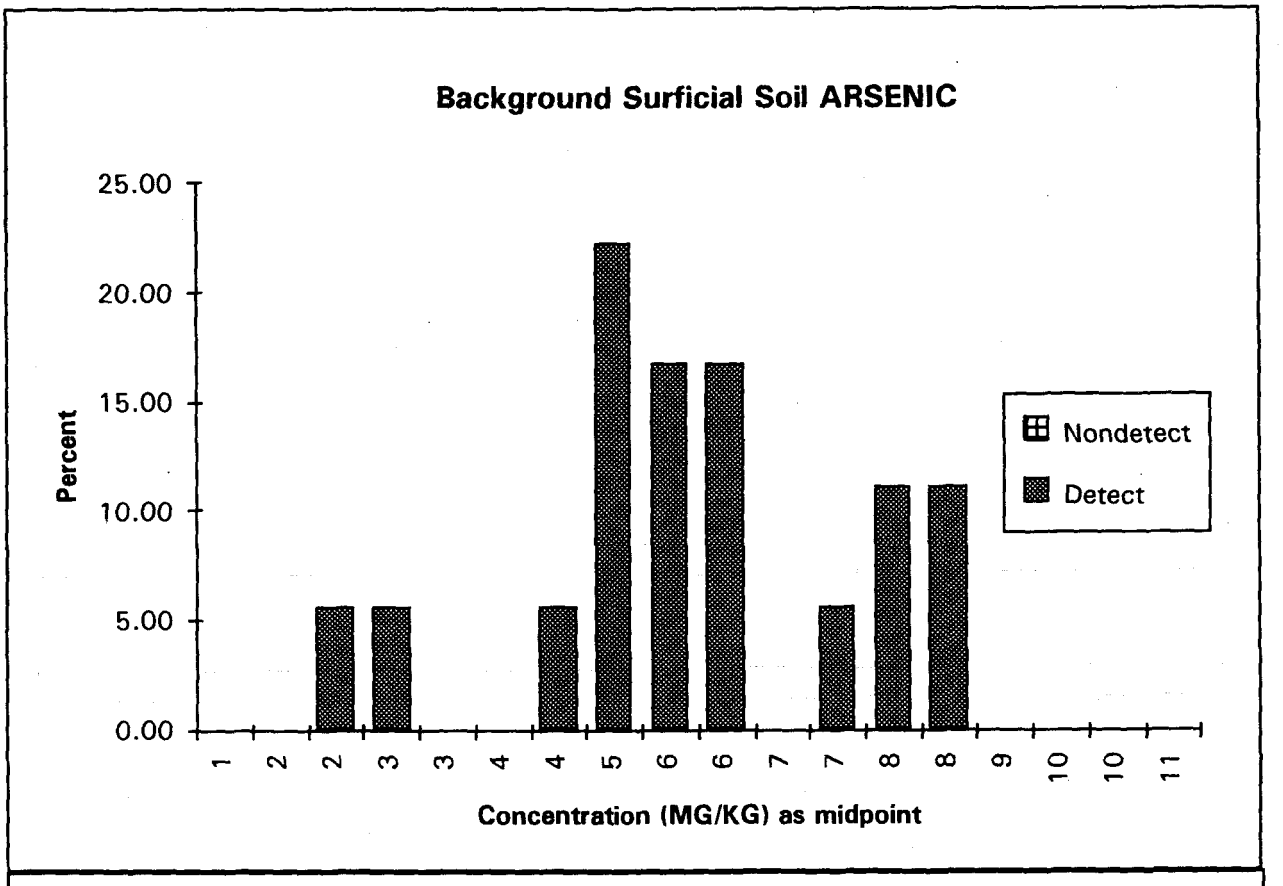
21135
22321
23507
Concentration (mg/kg) as midpoint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20.00
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Percent
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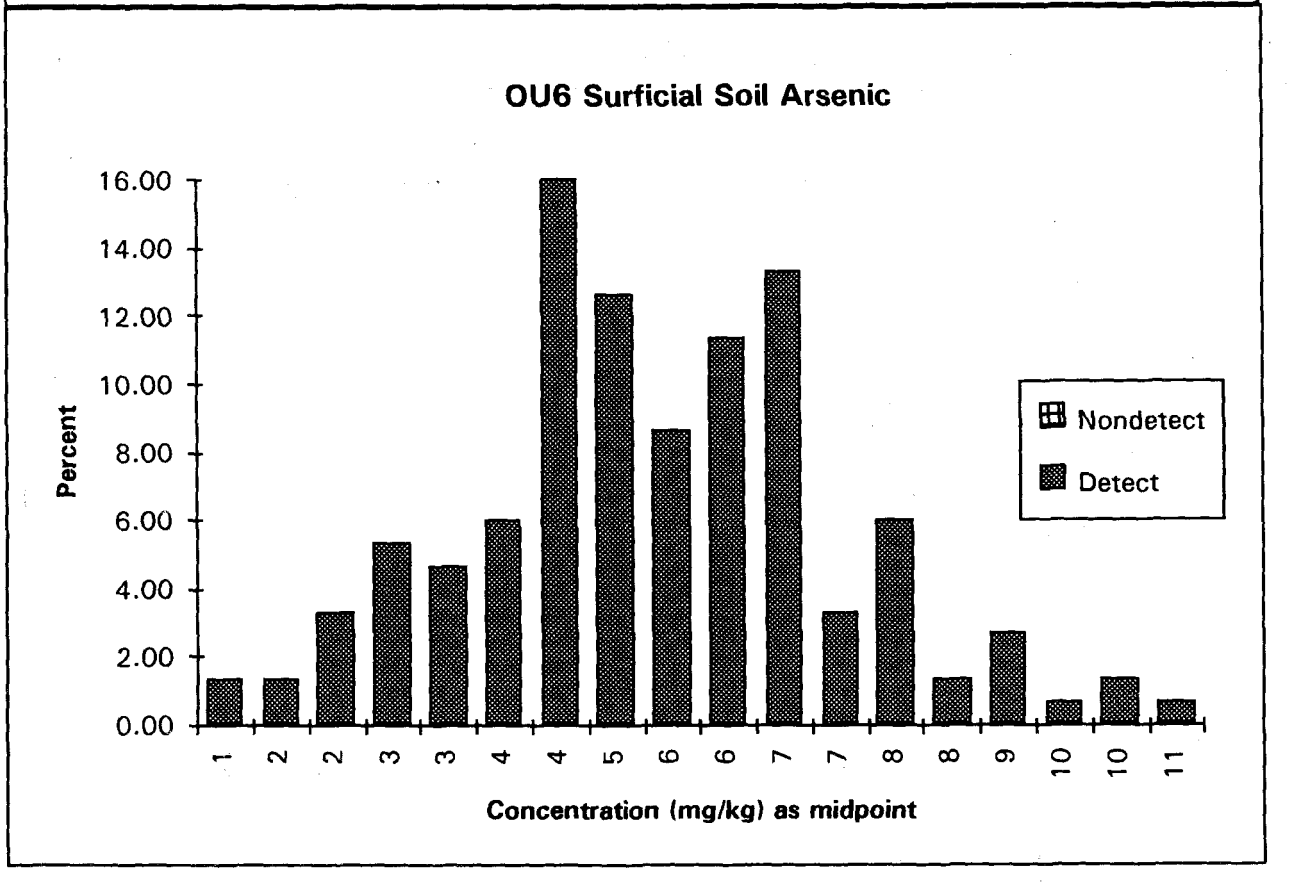
Concentration (MG/KG) as midpoint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10.00
8.00
6.00
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Percent
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Detect
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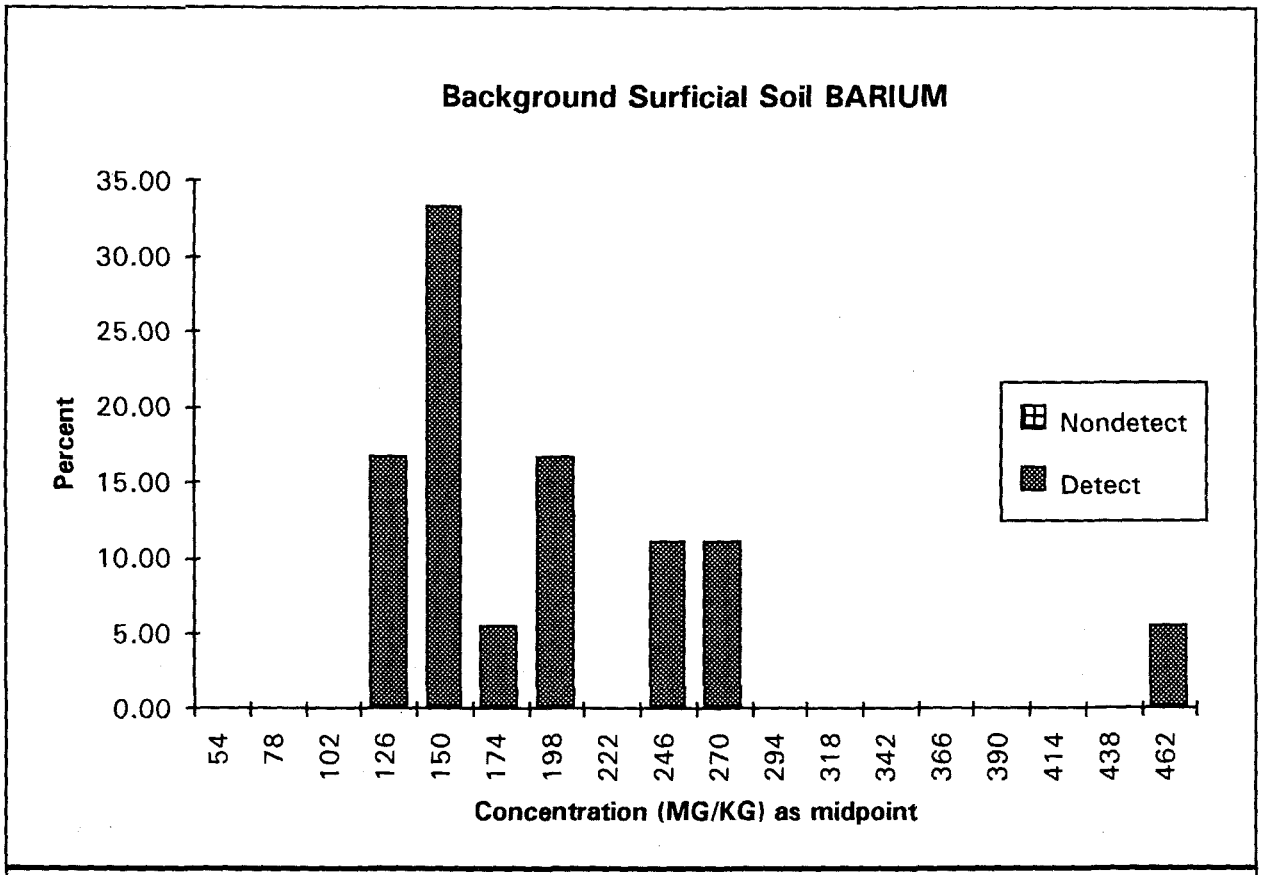
Concentration (mg/kg) as midpoint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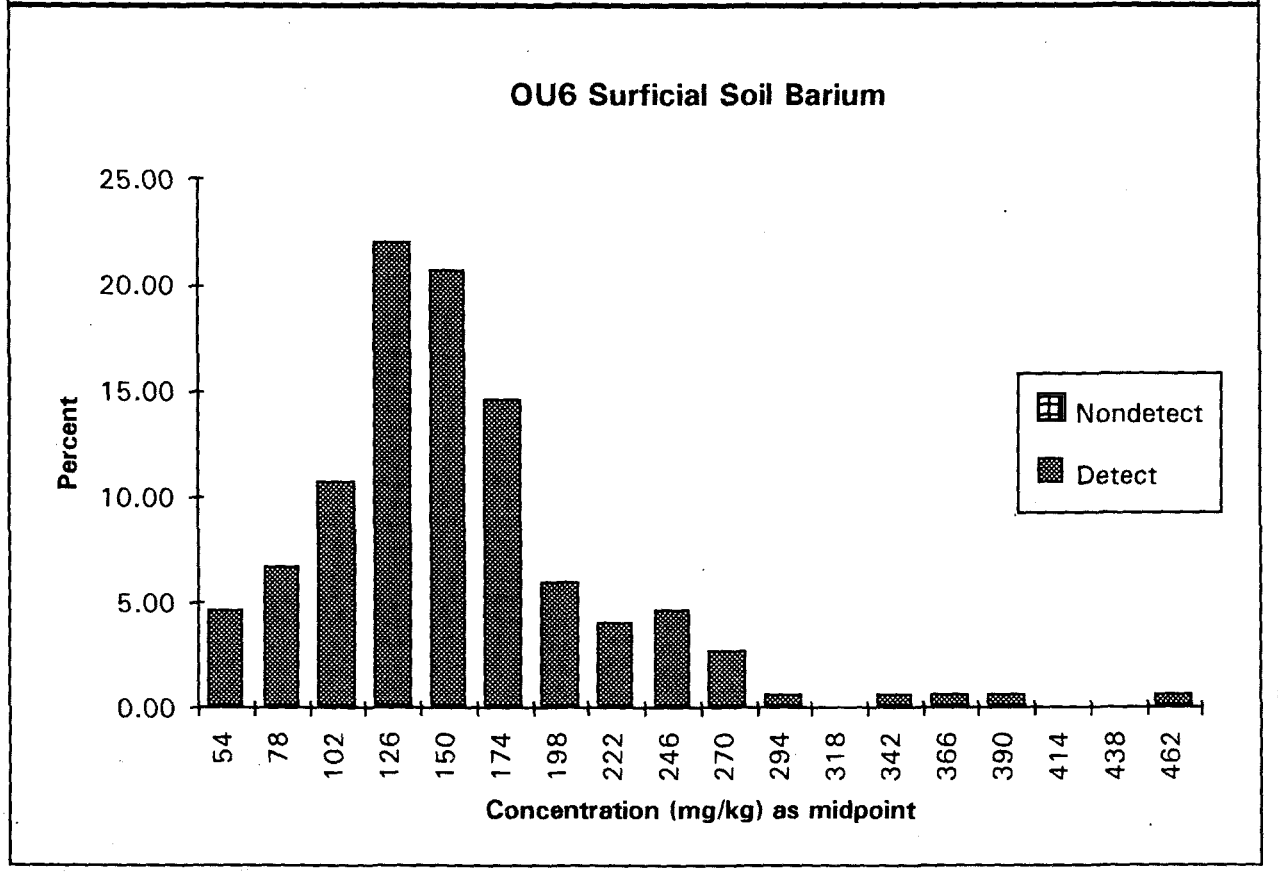
30.00
25.00
20.00
15.00
10.00
5.00
0.00
Percent
Nondetect
Detect
54
78
102
126
150
174
198
222
246
270
294
318
342
366
390
414
438
462
Concentration (MG/KG) as midpoint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20.00
15.00
10.00
5.00
0.00
Percent
Nondetect
Detect
54
78
102
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150
174
198
222
246
270
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366
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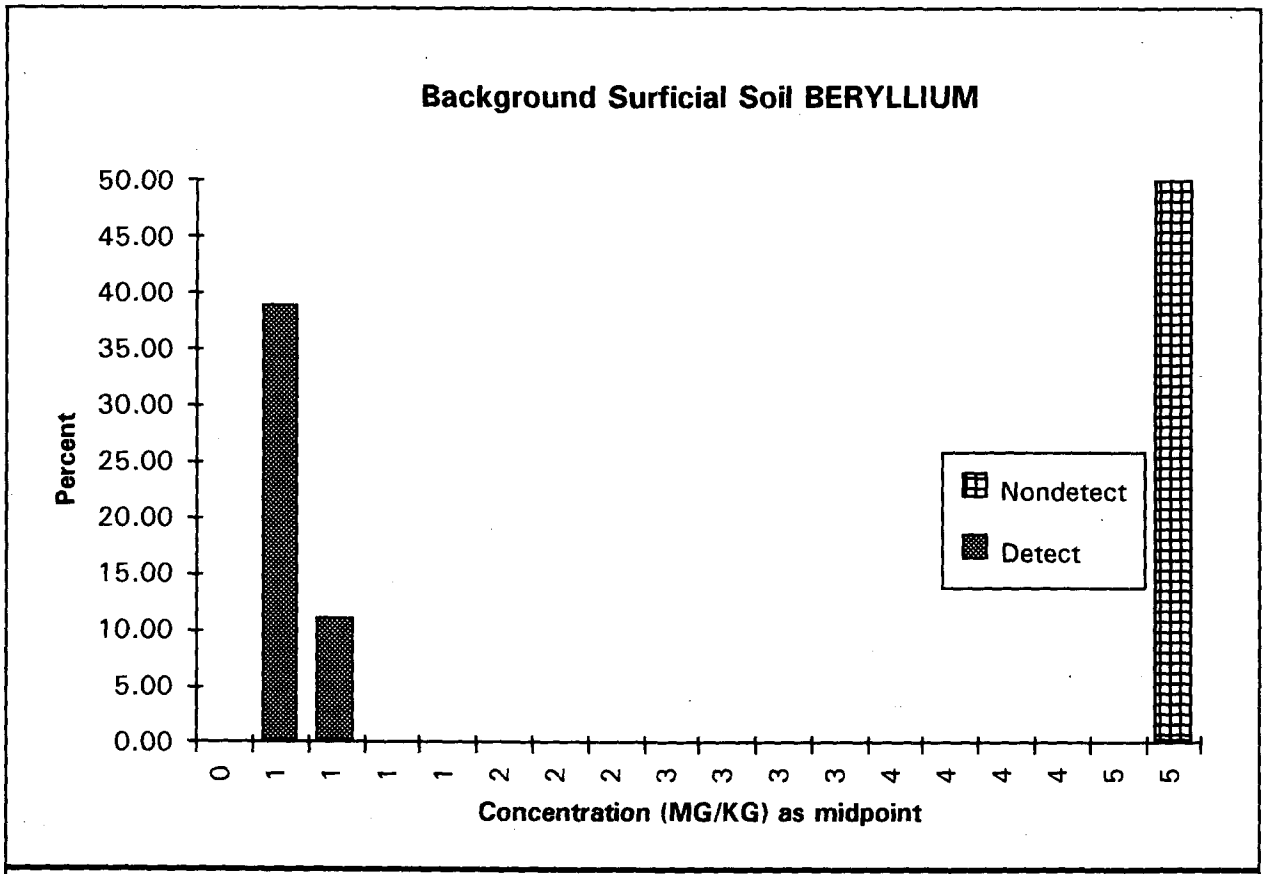
414
438
462
Concentration (mg/kg) as midpoint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Percent
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45.00
40.00
35.00
30.00
25.00
20.00
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10.00
5.00
0.00
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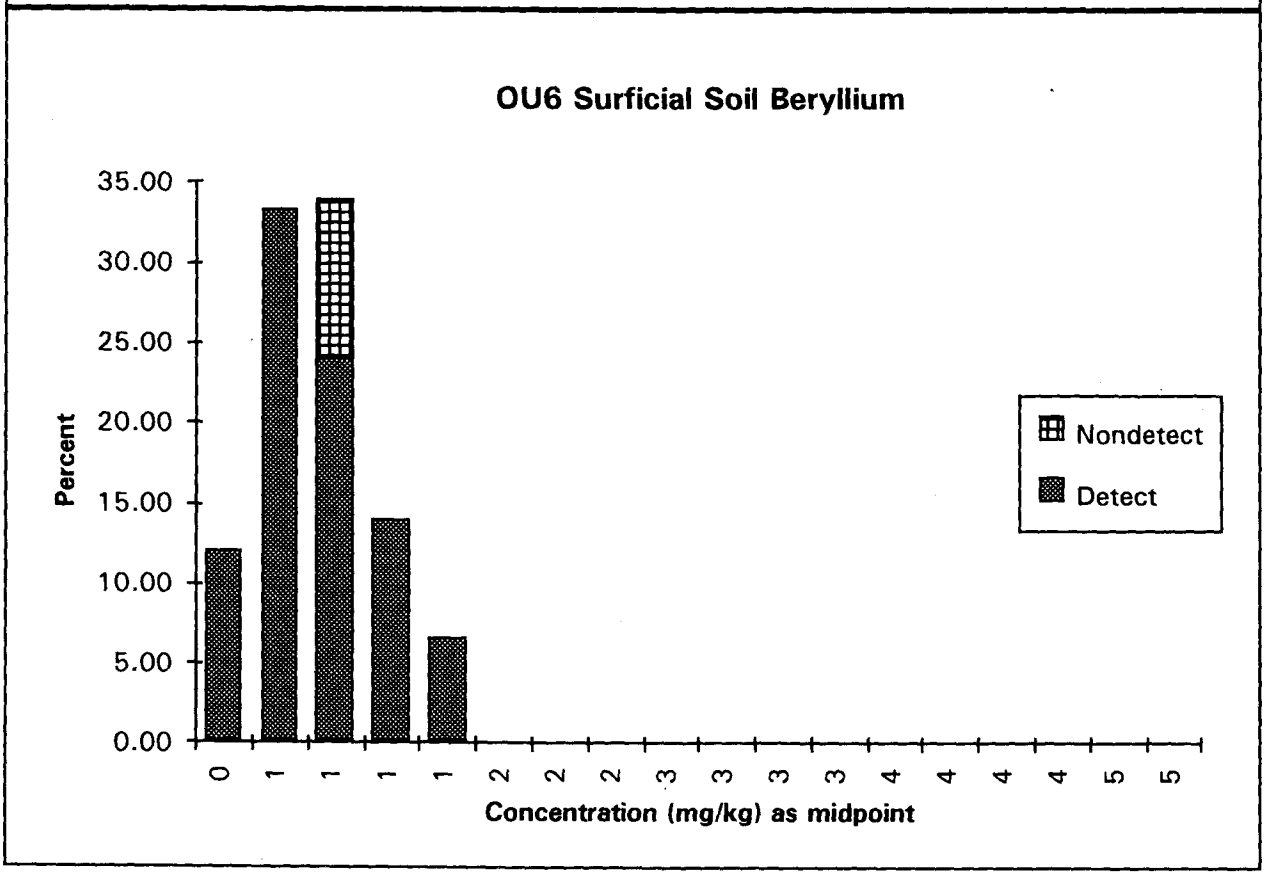
Concentration (MG/KG) as midpoint
Nondetect
Detect


OU6 Surficial Soil Beryllium
Percent
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30.00
25.00
20.00
15.00
10.00
5.00
0.00
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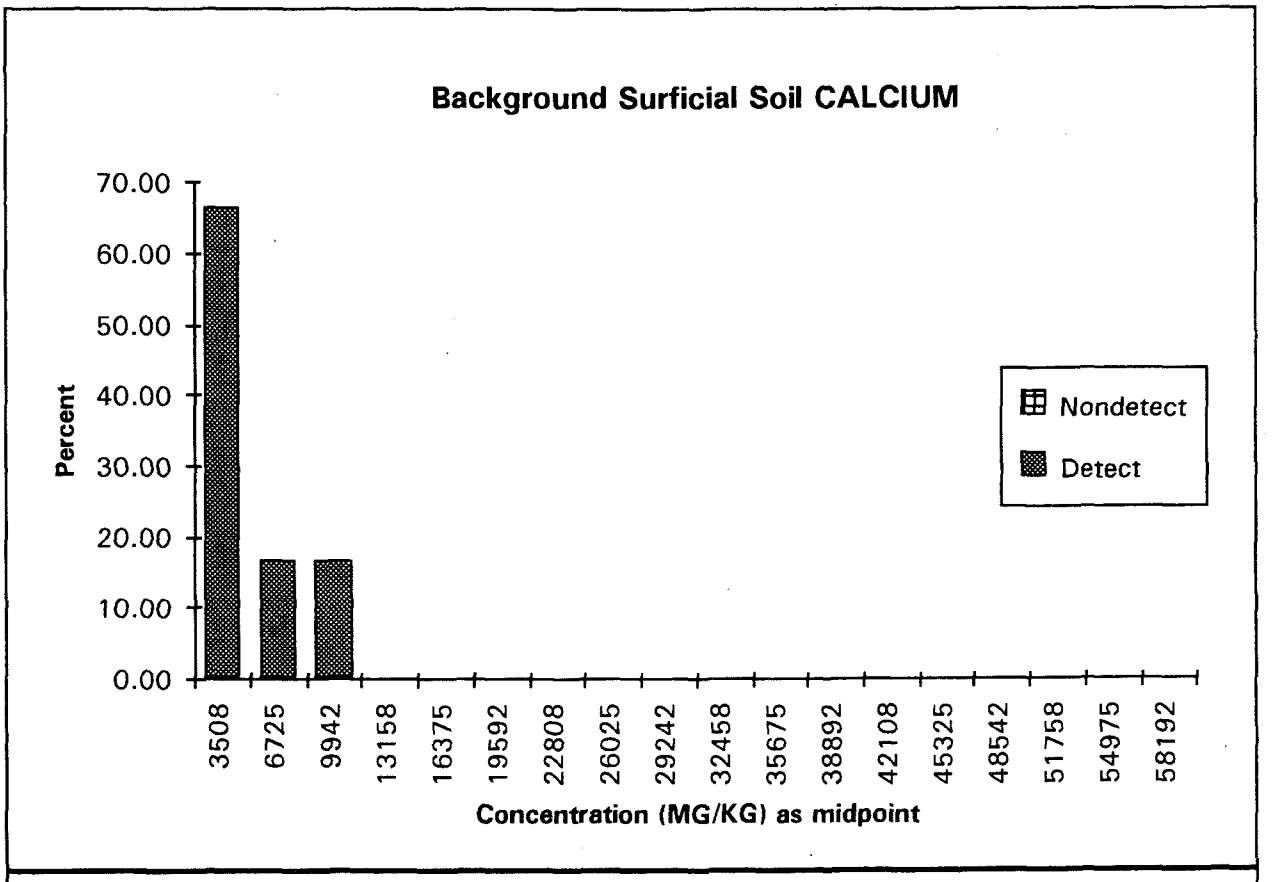
Concentration (mg/kg) as midpoint
Nondetect
Detect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Percent
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60.00
50.00
40.00
30.00
20.00
10.00
0.00
Nondetect
Detect
3508
6725
9942
13158
16375
19592
22808
26025
29242
32458
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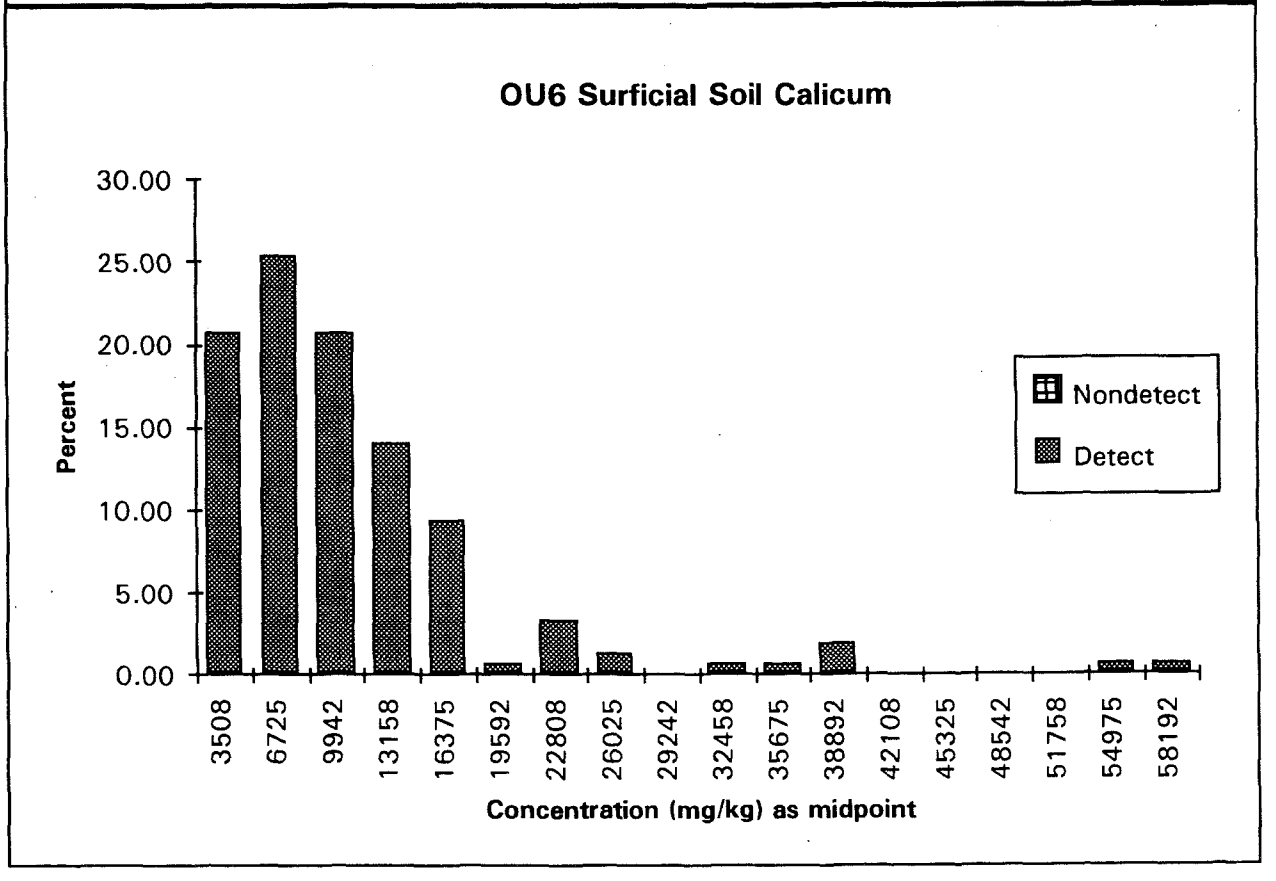
42108
45325
48542
51758
54975
58192
Concentration (MG/KG) as midpoint


OU6 Surficial Soil Calicum
Percent
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20.00
15.00
10.00
5.00
0.00
Nondetect
Detect
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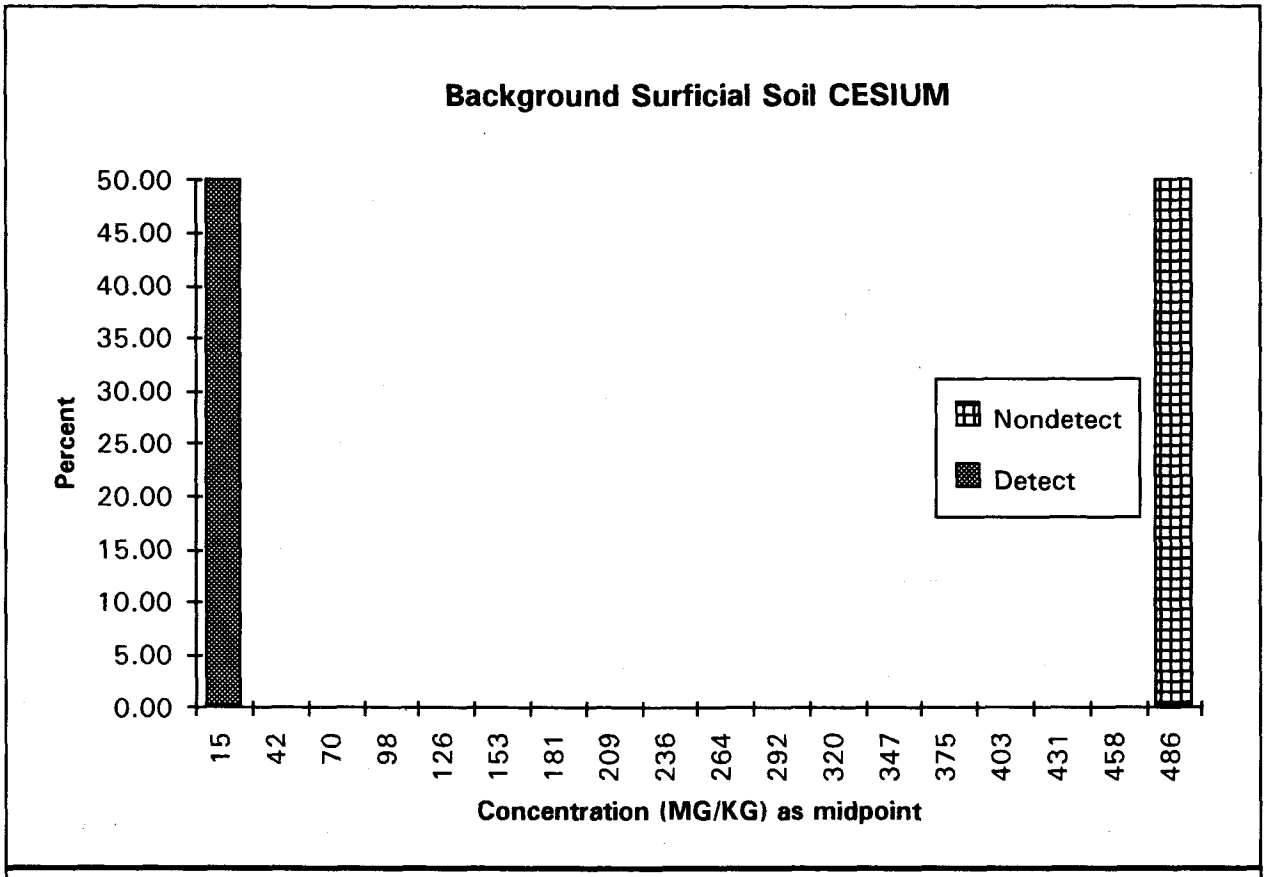
6725
9942
13158
16375
19592
22808
26025
29242
32458
35675
38892
42108
45325
48542
51758
54975
58192
Concentration (mg/kg) as midpoint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Percent
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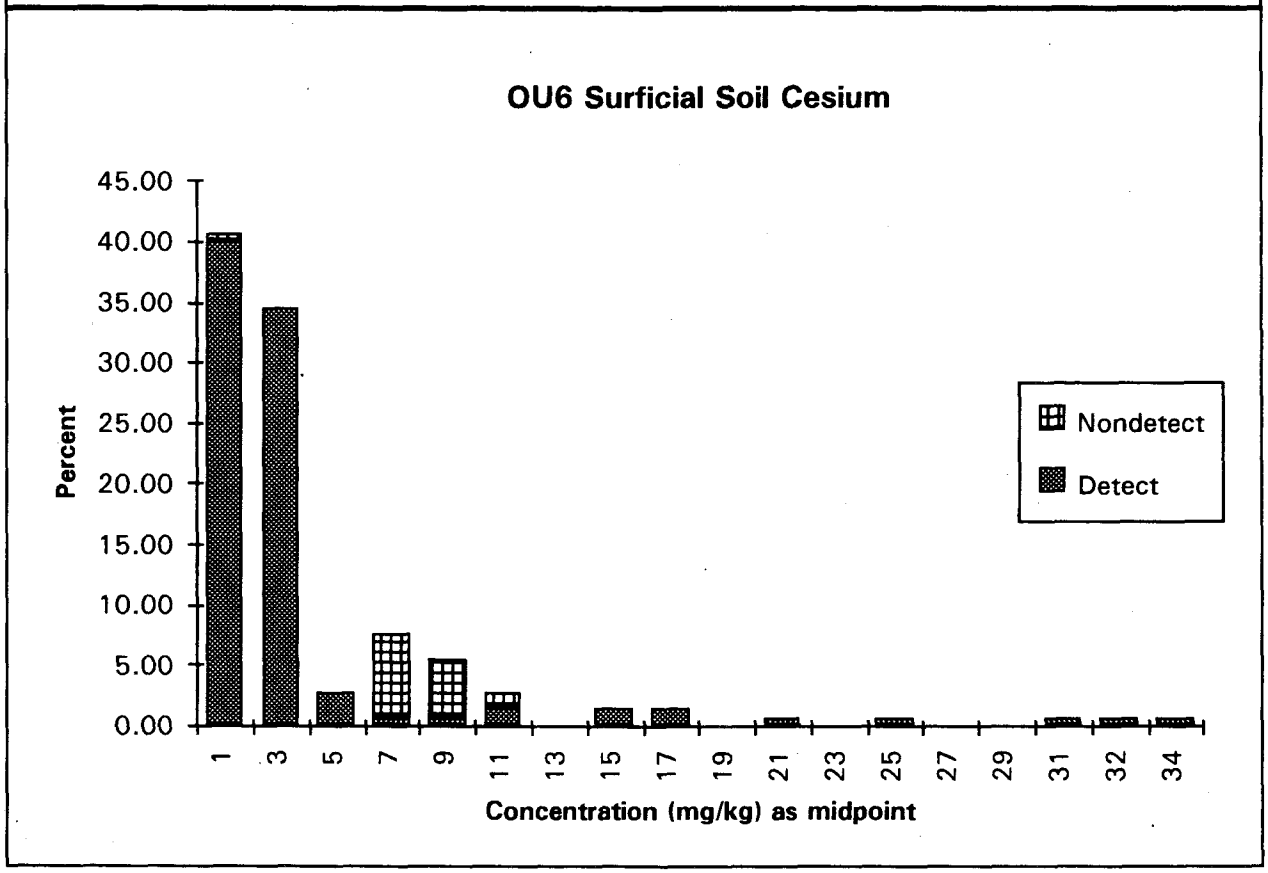
40.00
35.00
30.00
25.00
20.00
15.00
10.00
5.00
0.00
15
42
70
98
126
153
181
209
236
264
292
320
347
375
403
431
458
486
Concentration (MG/KG) as midpoint
Nondetect
Detect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Percent
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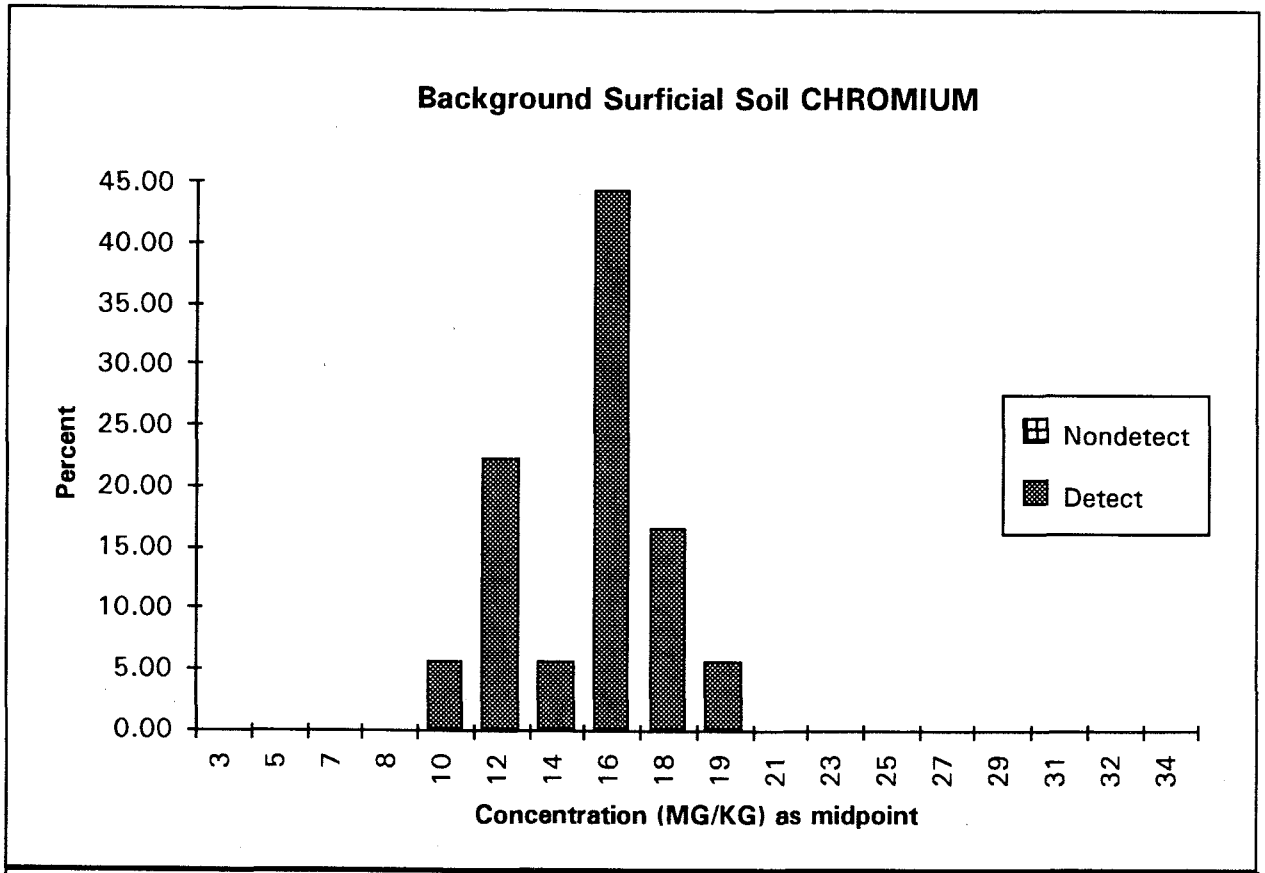
1
3
5
7
9
11
13
15
17
19
21
23
25
27
29
31
32
34
Concentration (mg/kg) as midpoint
Nondetect
Detect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30.00
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5.00
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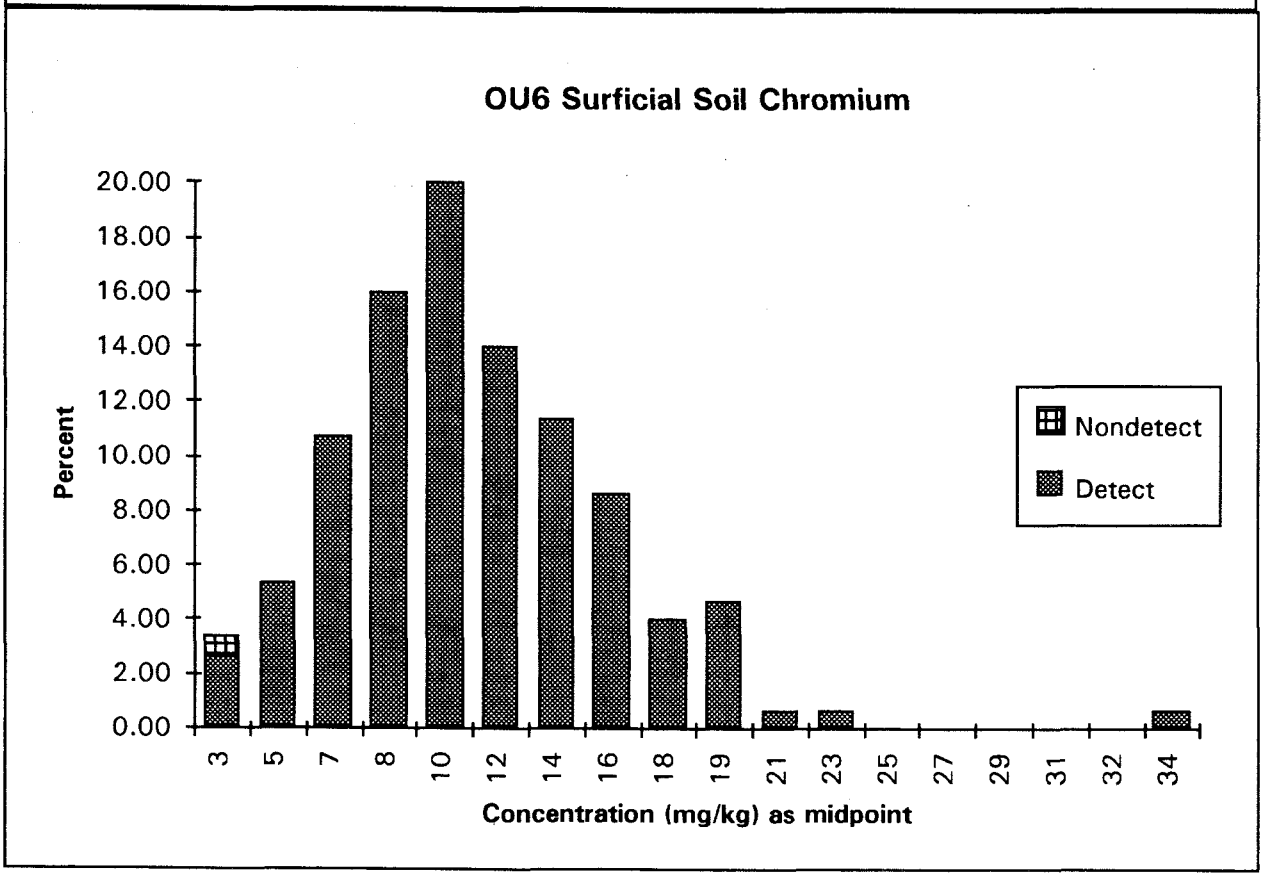
Percent
3
5
7
8
10
12
14
16
18
19
21
23
25
27
29
31
32
34
Concentration (MG/KG) as midpoint
Nondetect
Detect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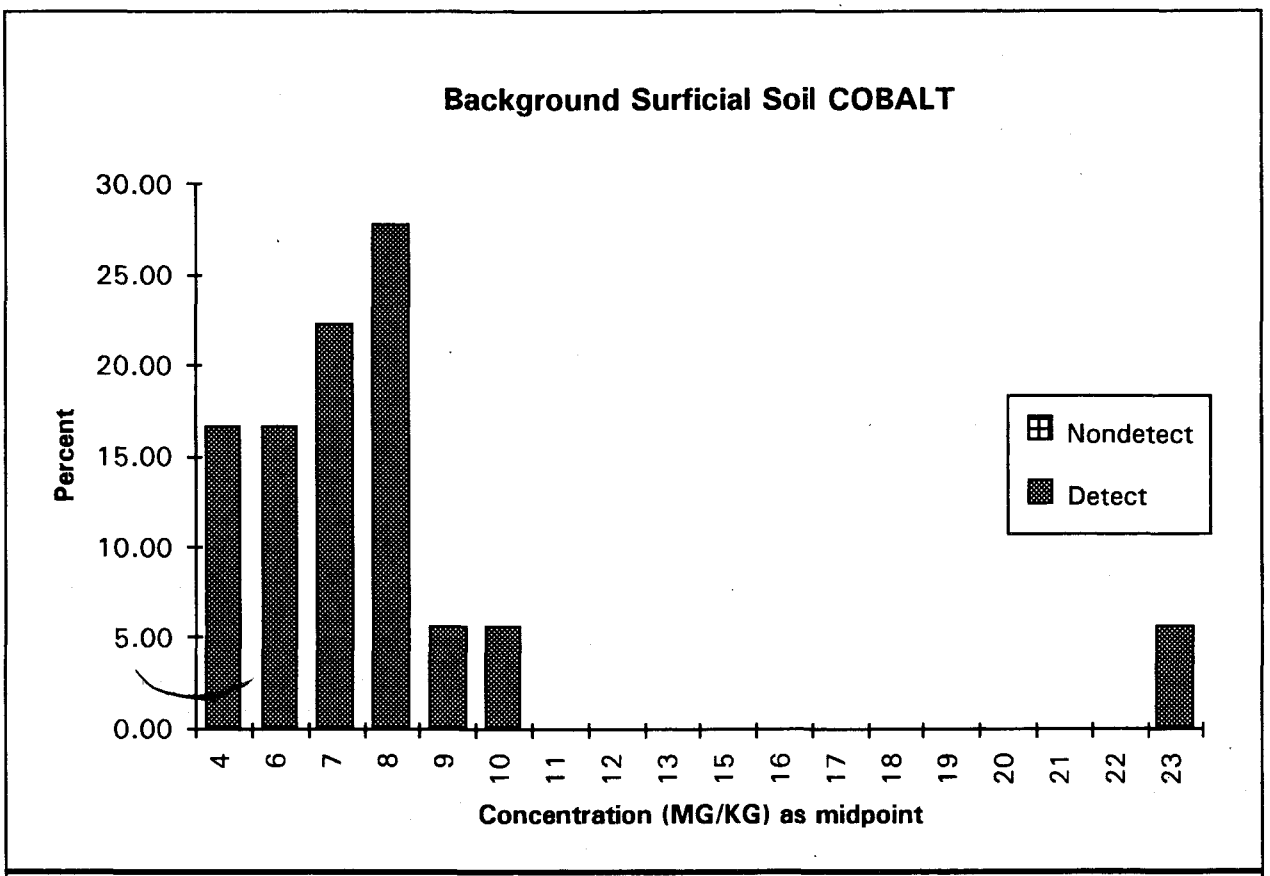
18.00
16.00
14.00
12.00
10.00
8.00
6.00
4.00
2.00
0.00
Percent
3
5
7
8
10
12
14
16
18
19
21
23
25
27
29
31
32
34
Concentration (mg/kg) as midpoint
Nondetect
Detect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Percent
Nondetect
Detect
4
6
7
8
9
10
11
12
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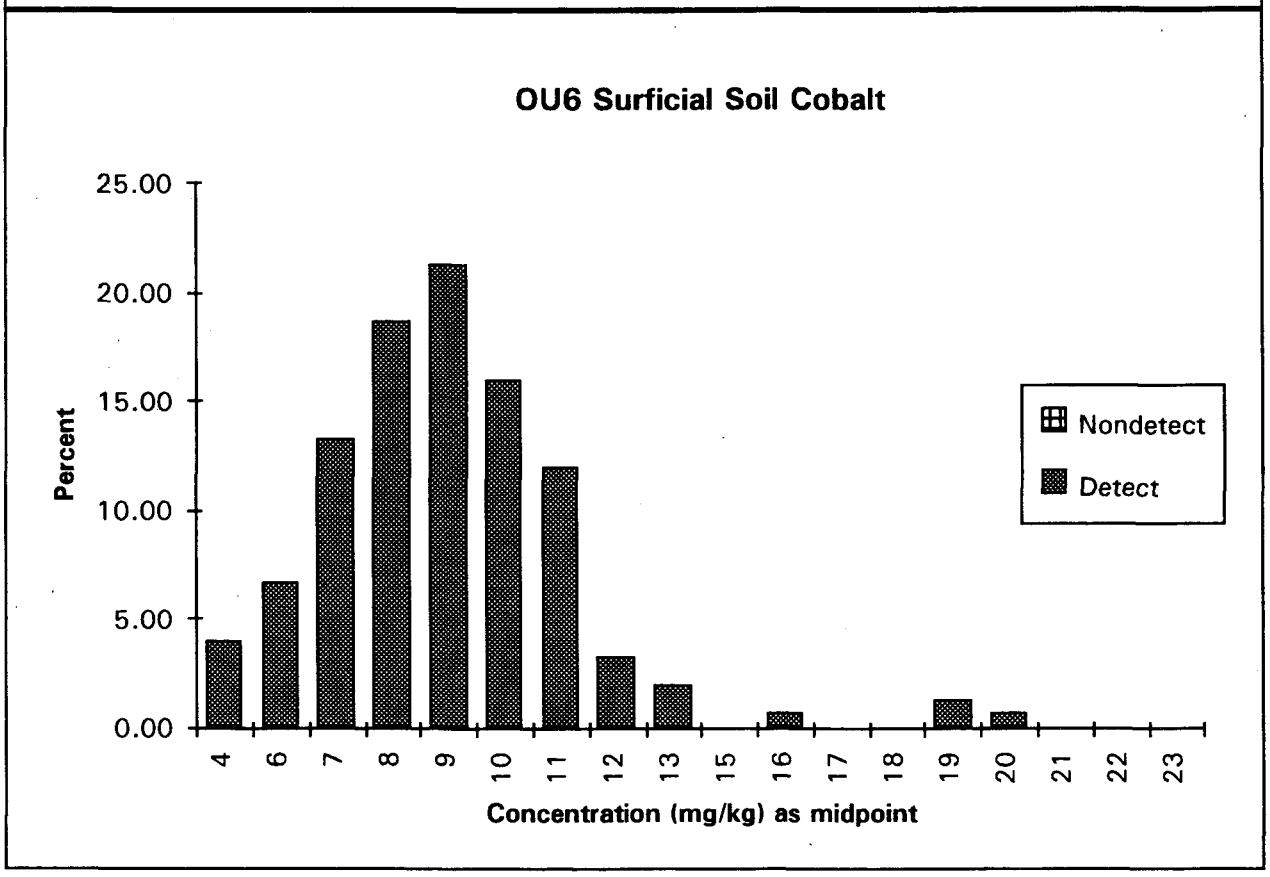
19
20
21
22
23
Concentration (MG/KG) as midpoint


OU6 Surficial Soil Cobalt
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20.00
15.00
10.00
5.00
0.00
Percent
Nondetect
Detect
4
6
7
8
9
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11
12
13
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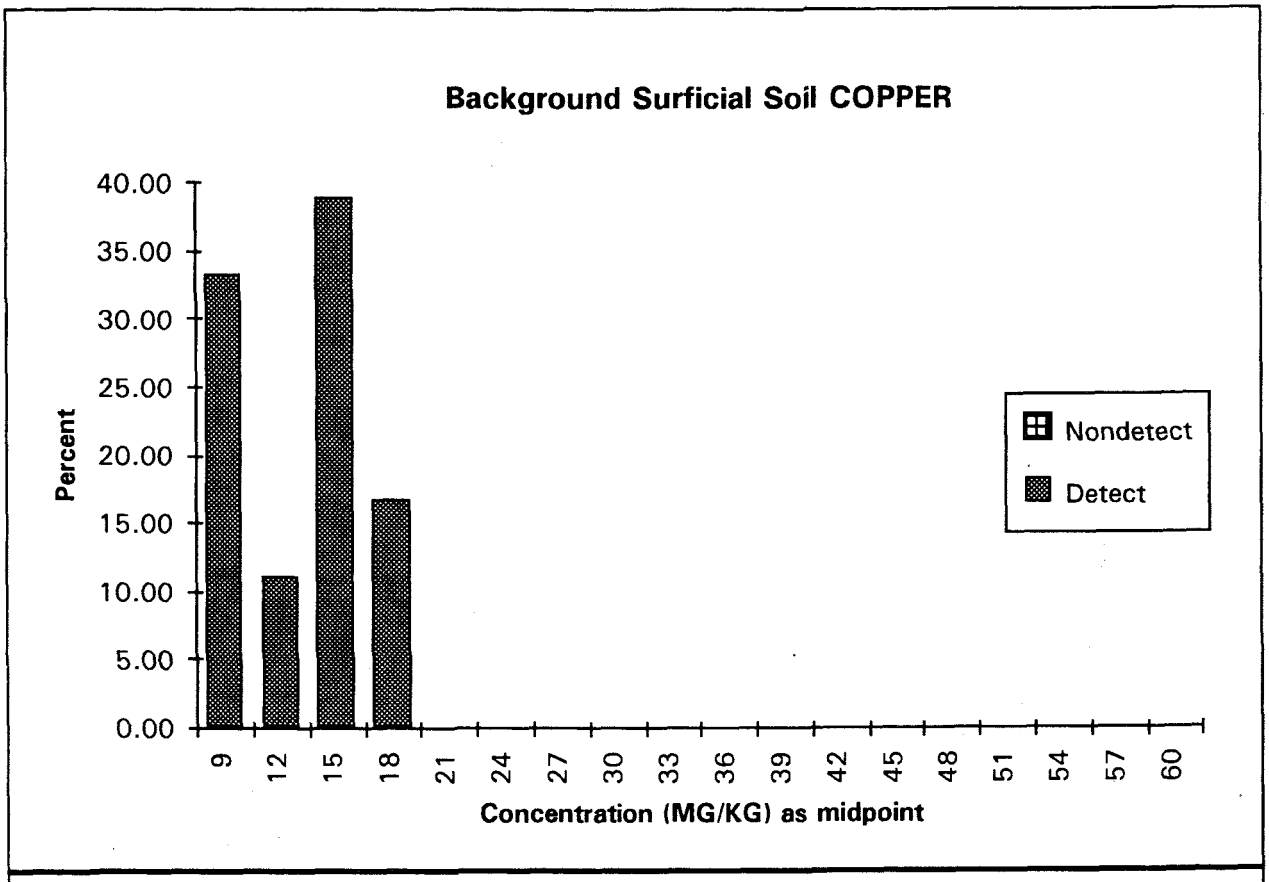
21
22
23
Concentration (mg/kg) as midpoint


Background Surficial Soil COPPER
Percent
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35.00
30.00
25.00
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10.00
5.00
0.00
9
12
15
18
21
24
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30
33
36
39
42
45
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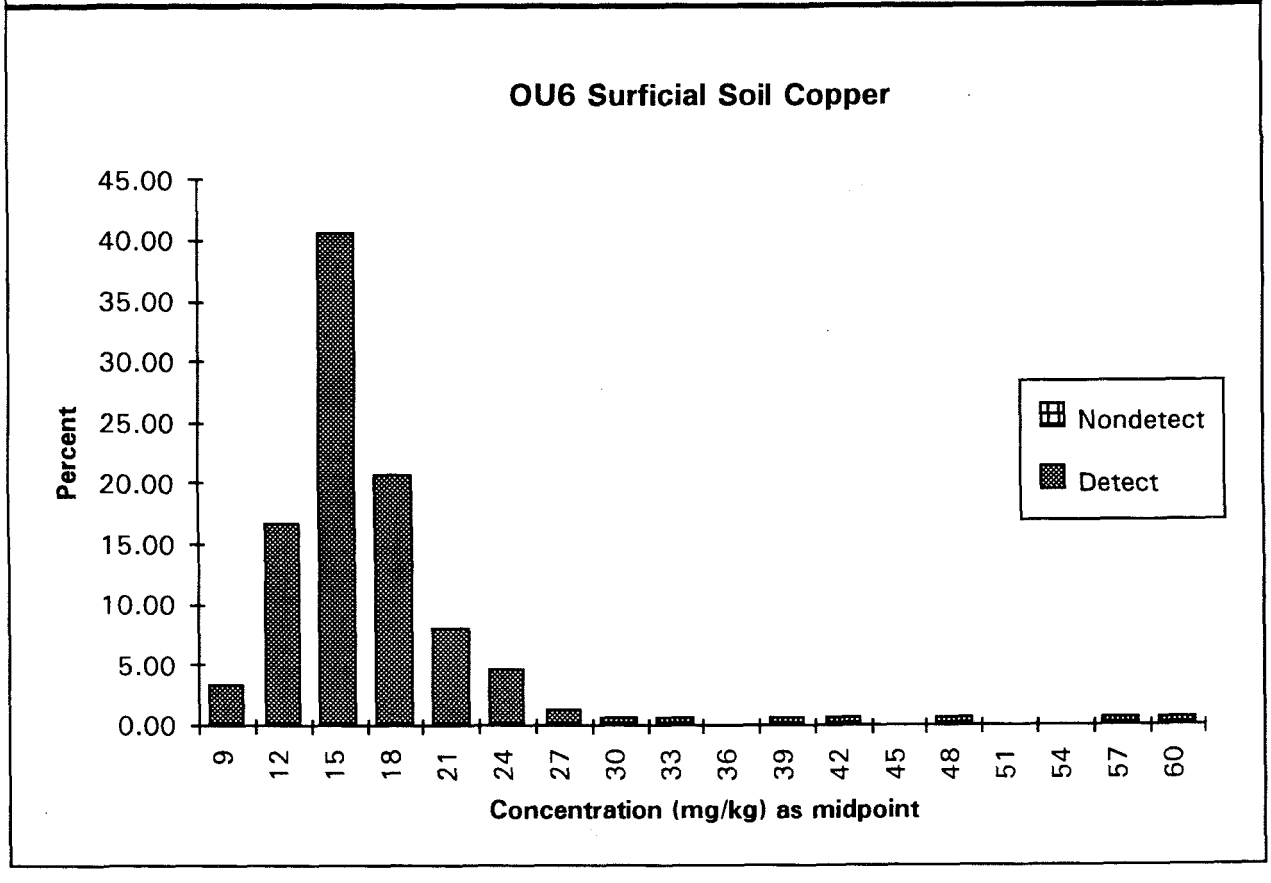
51
54
57
60
Concentration (MG/KG) as midpoint
Nondetect
Detect


OU6 Surficial Soil Copper
Percent
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40.00
35.00
30.00
25.00
20.00
15.00
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5.00
0.00
9
12
15
18
21
24
27
30
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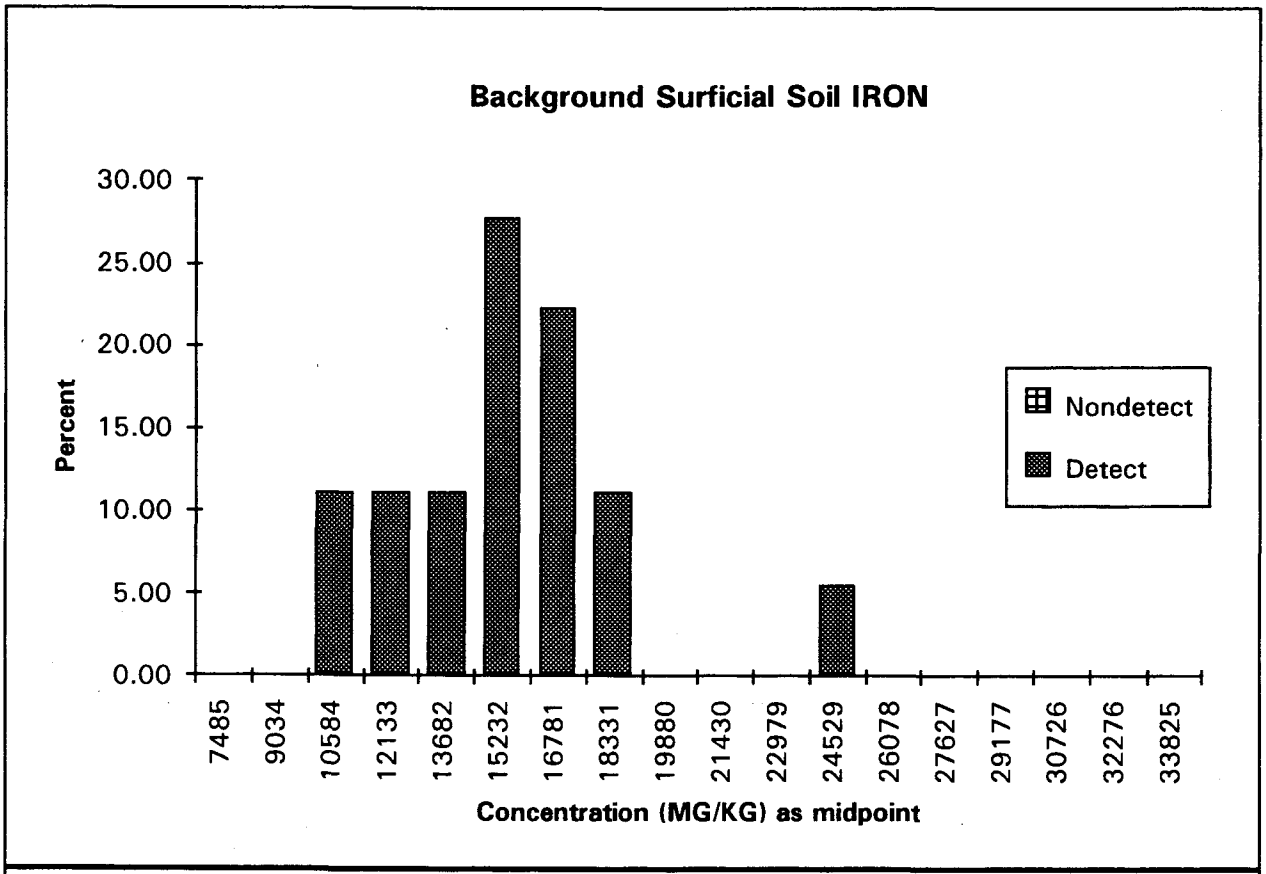
39
42
45
48
51
54
57
60
Concentration (mg/kg) as midpoint
Nondetect
Detect


Background Surficial Soil IRON
30.00
25.00
20.00
15.00
10.00
5.00
0.00
Percent
Nondetect
Detect
7485
9034
10584
12133
13682
15232
16781
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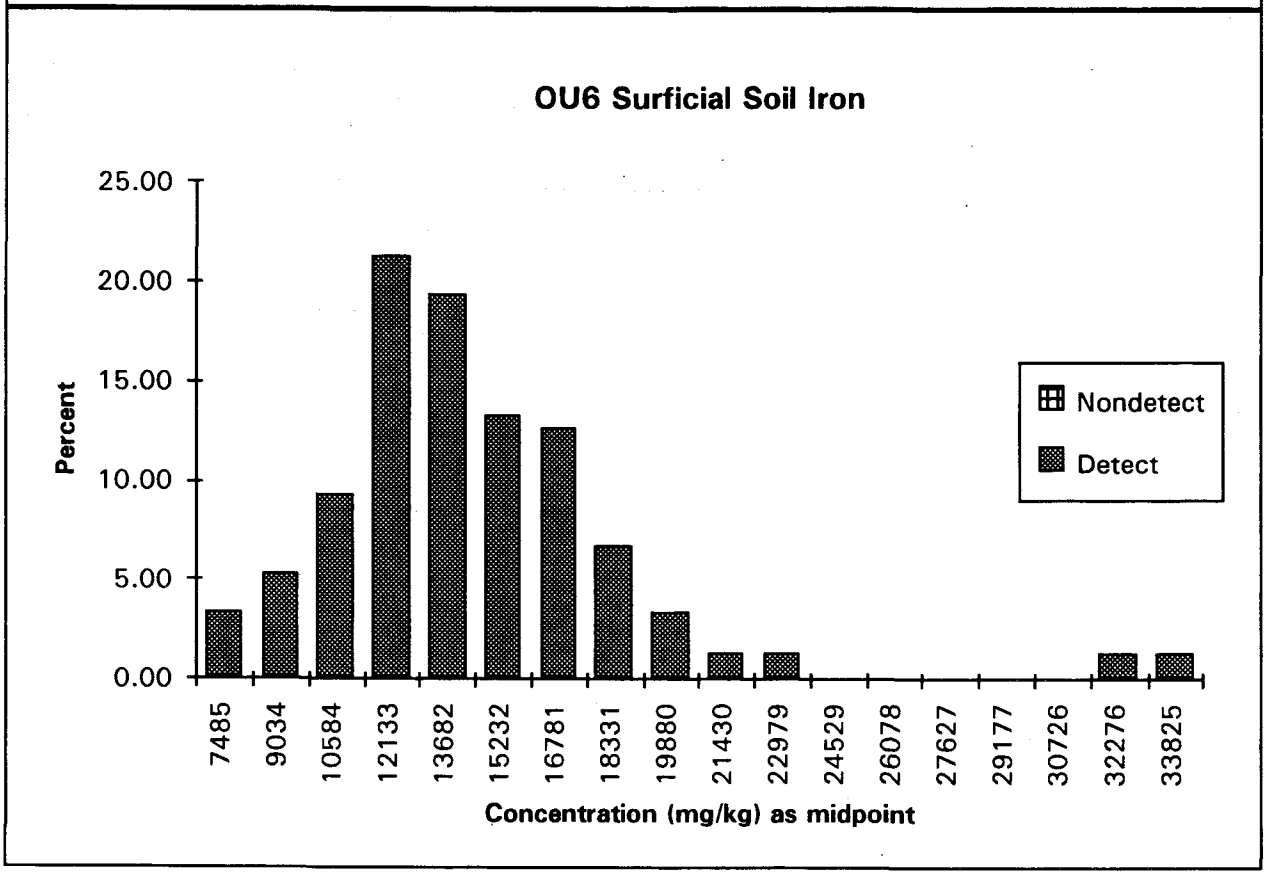
21430
22979
24529
26078
27627
29177
30726
32276
33825
Concentration (MG/KG) as midpoint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5.00
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Percent
Nondetect
Detect
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9034
10584
12133
13682
15232
16781
18331
19880
21430
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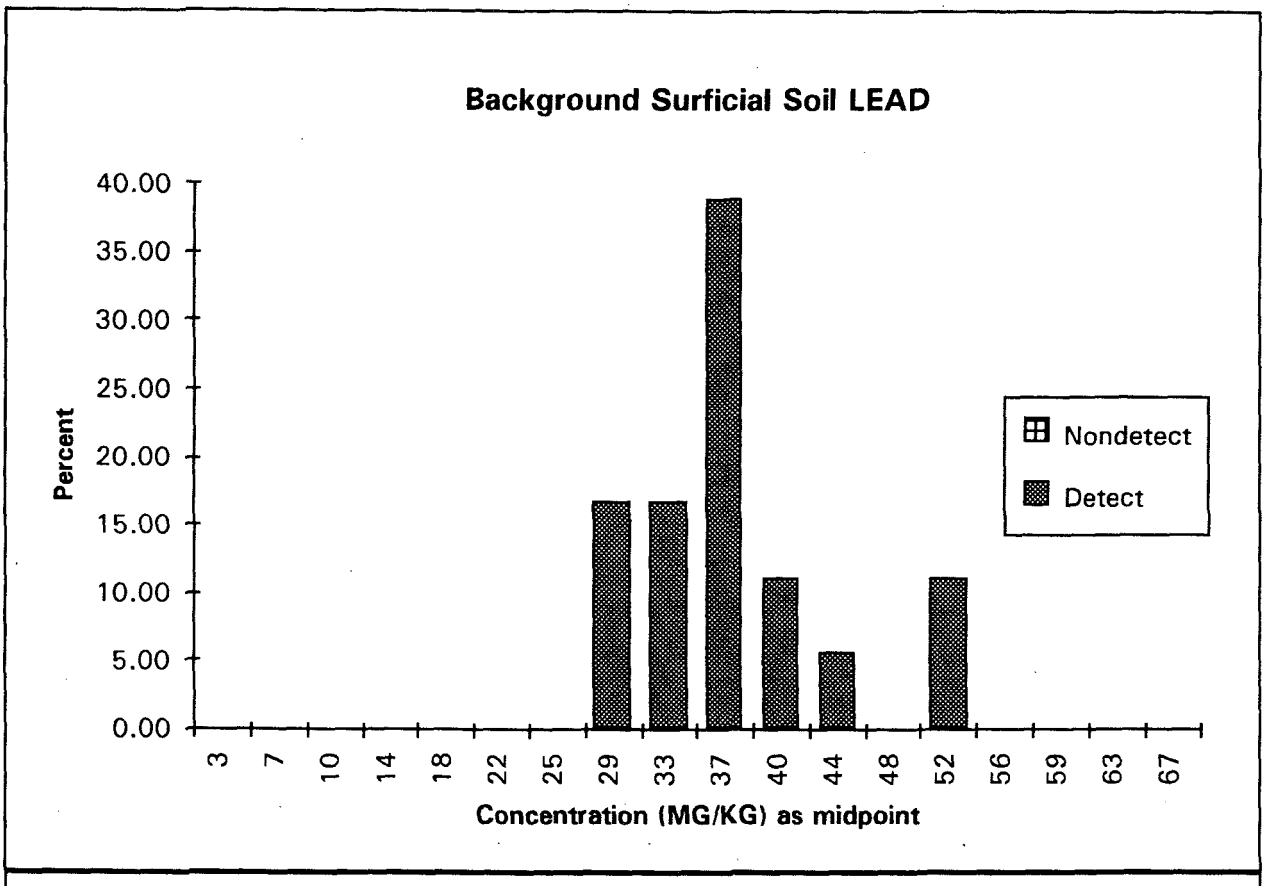
24529
26078
27627
29177
30726
32276
33825
Concentration (mg/kg) as midpoint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7
10
14
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40
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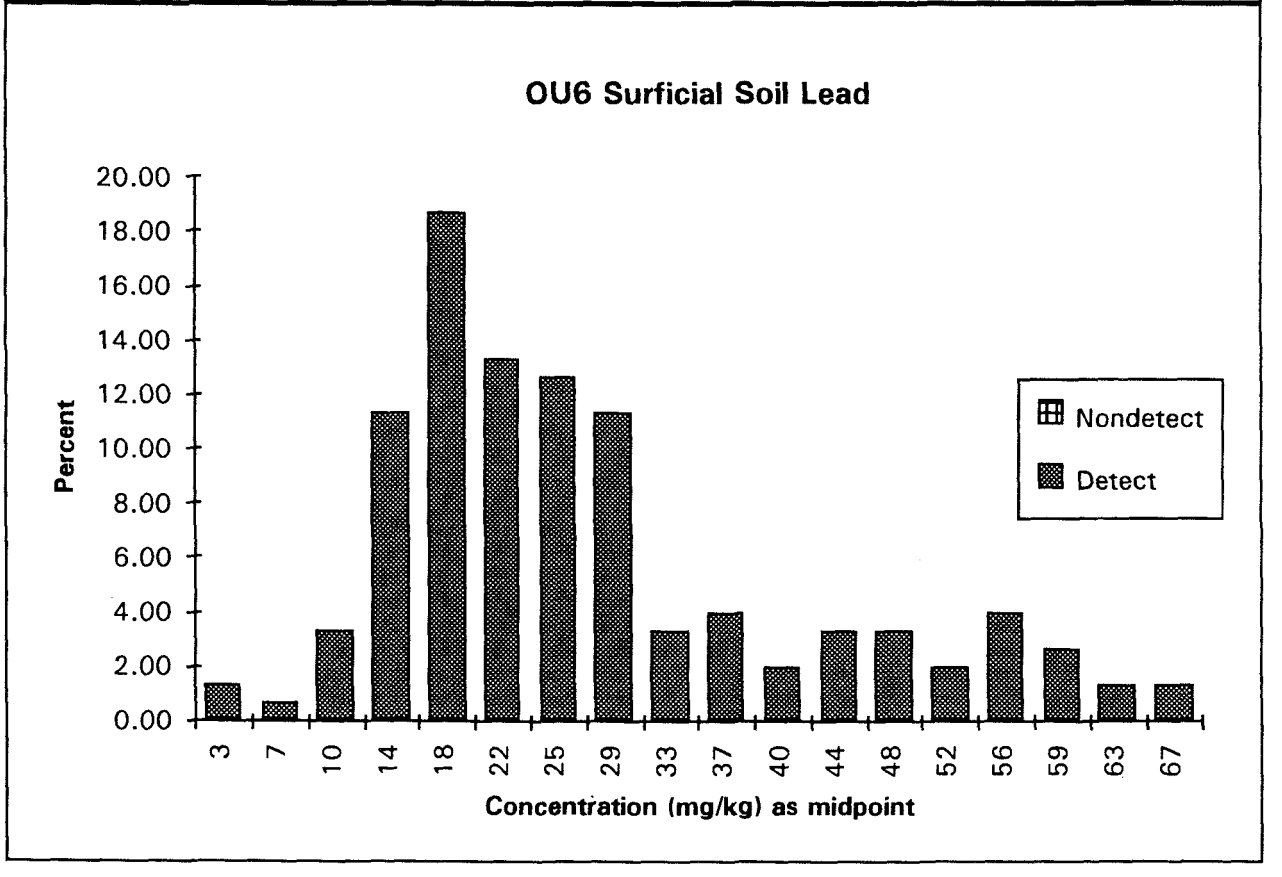
63
67
Concentration (MG/KG) as midpoint
Nondetect
Detect


OU6 Surficial Soil Lead
Percent
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10.00
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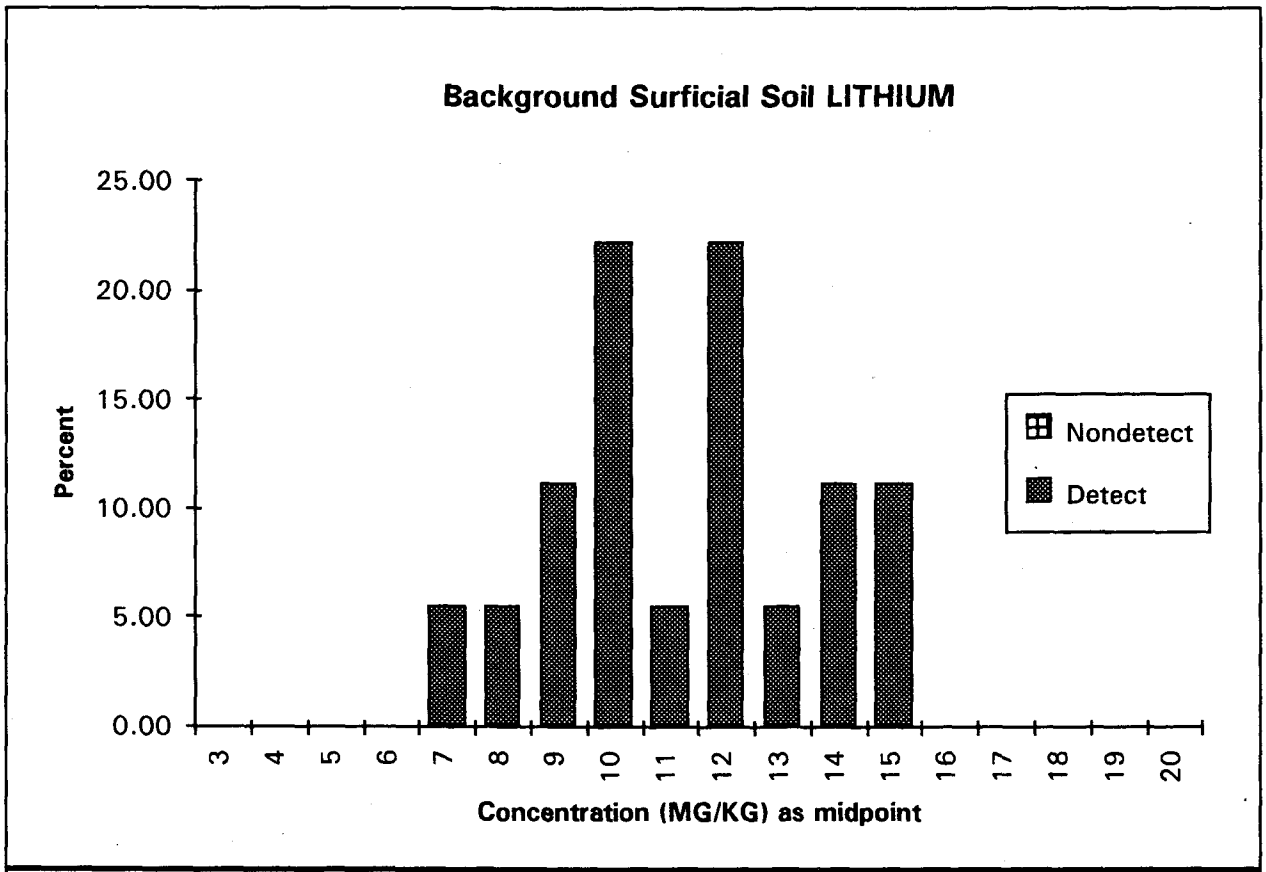
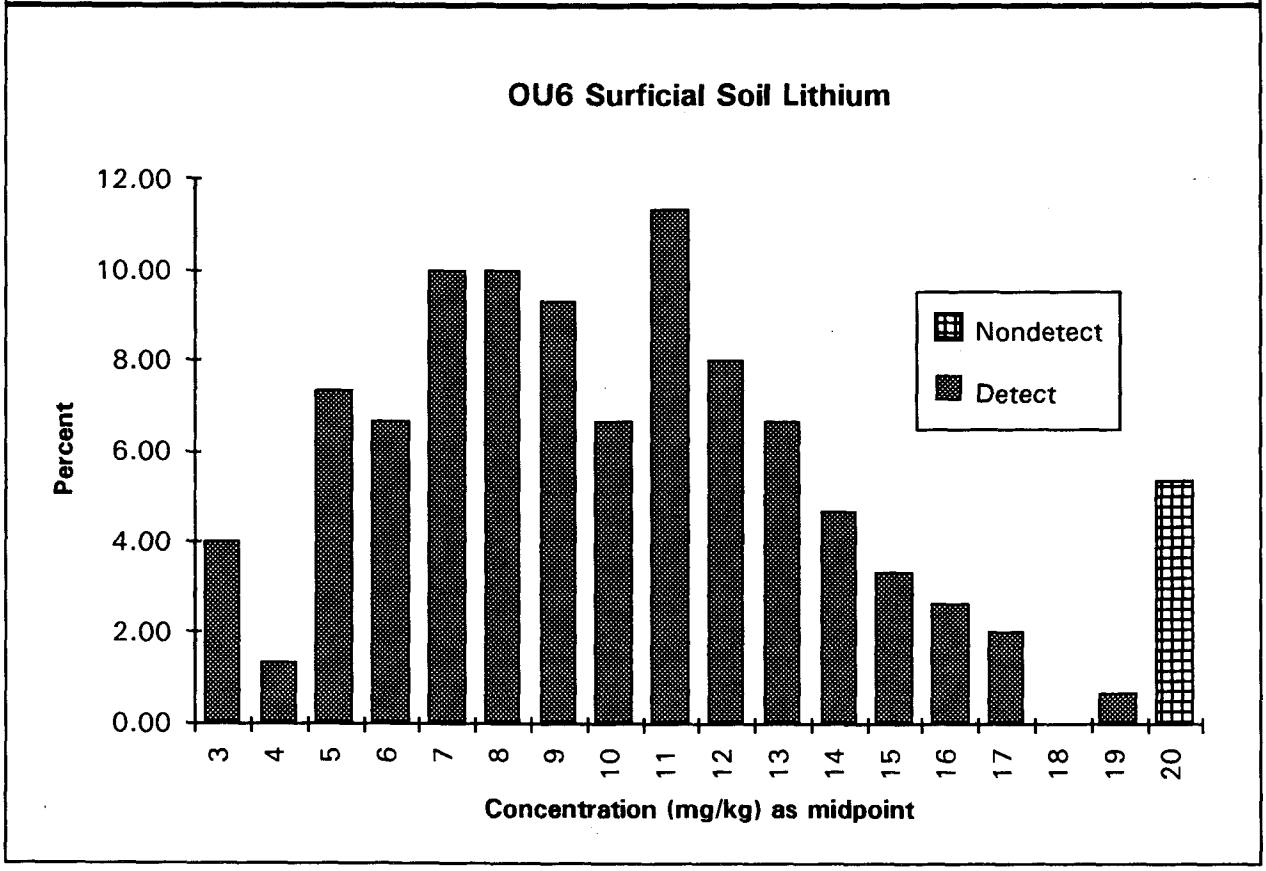
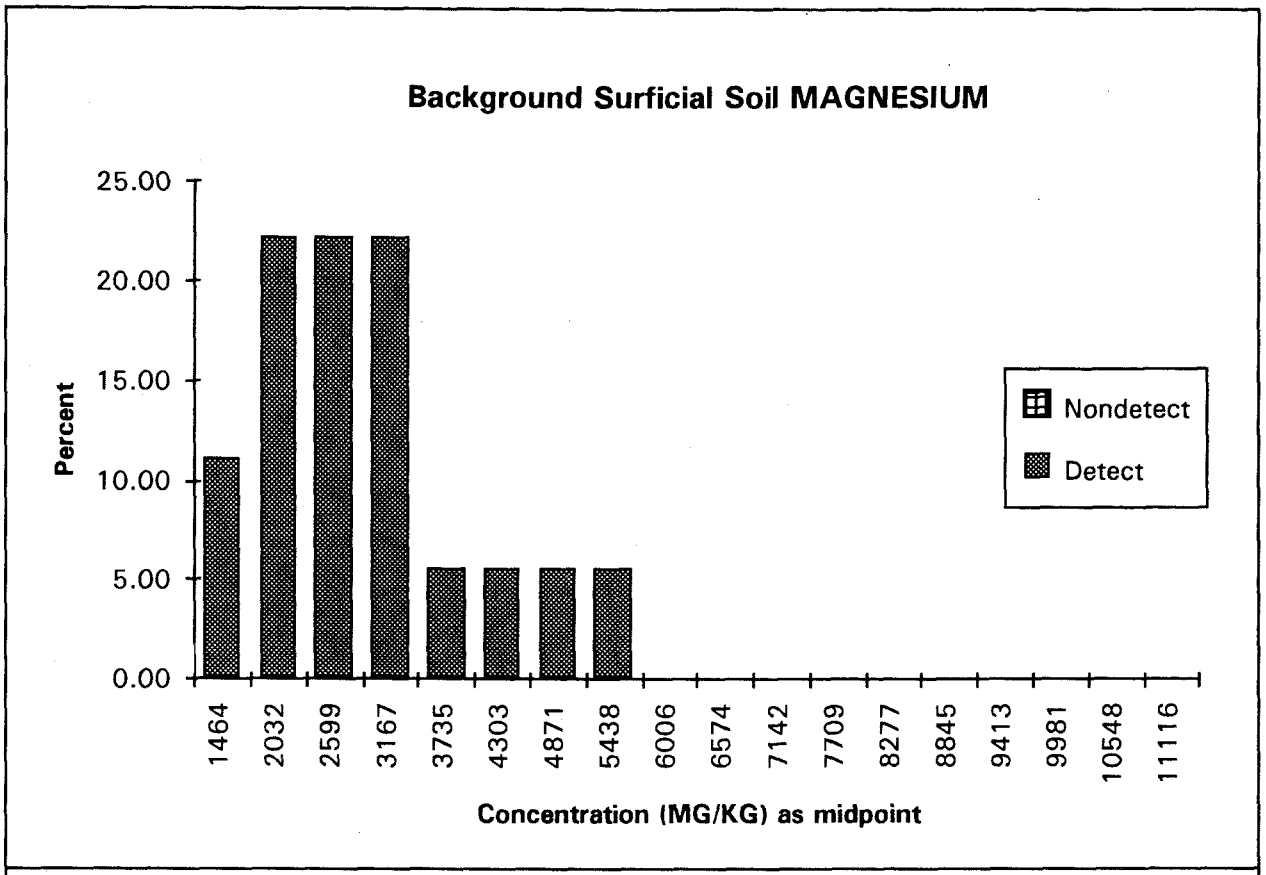
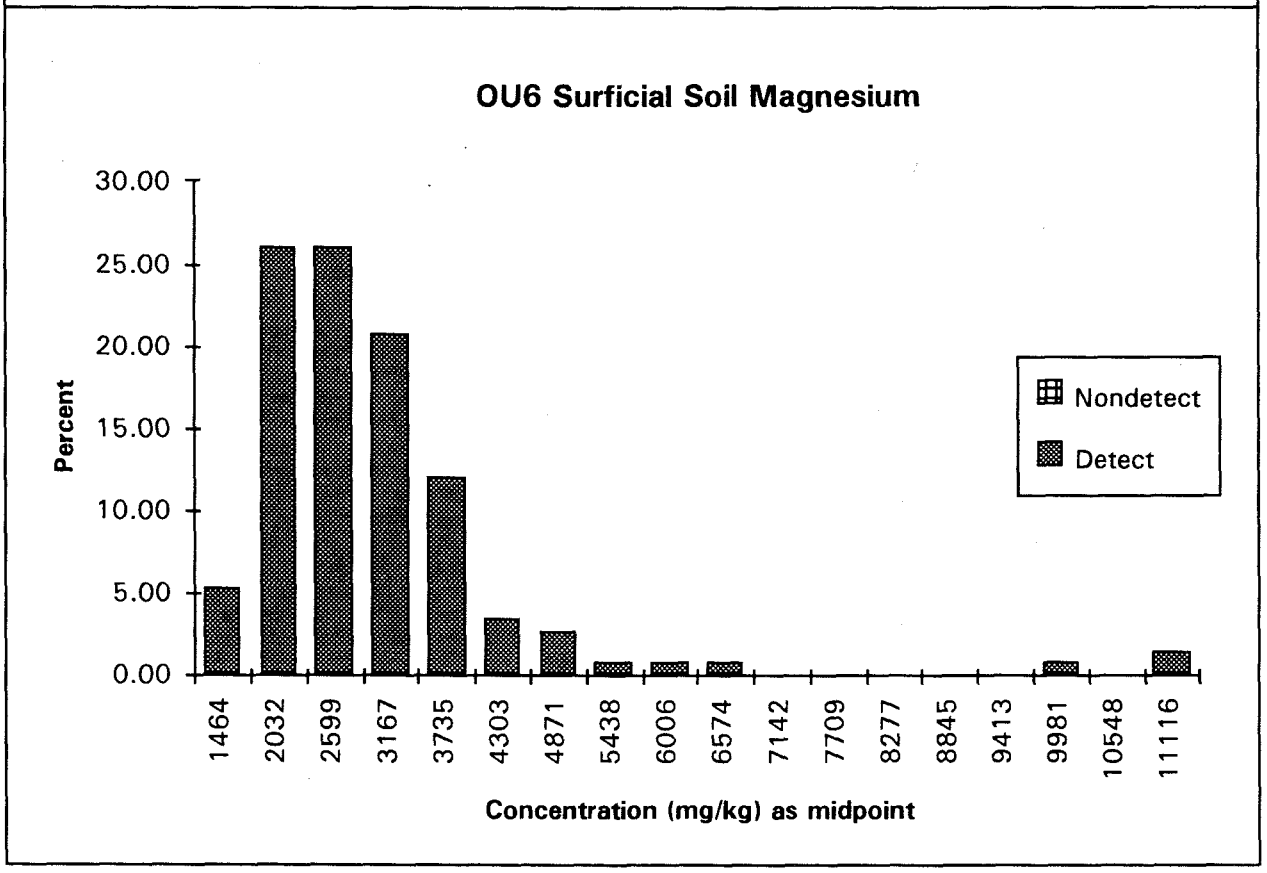
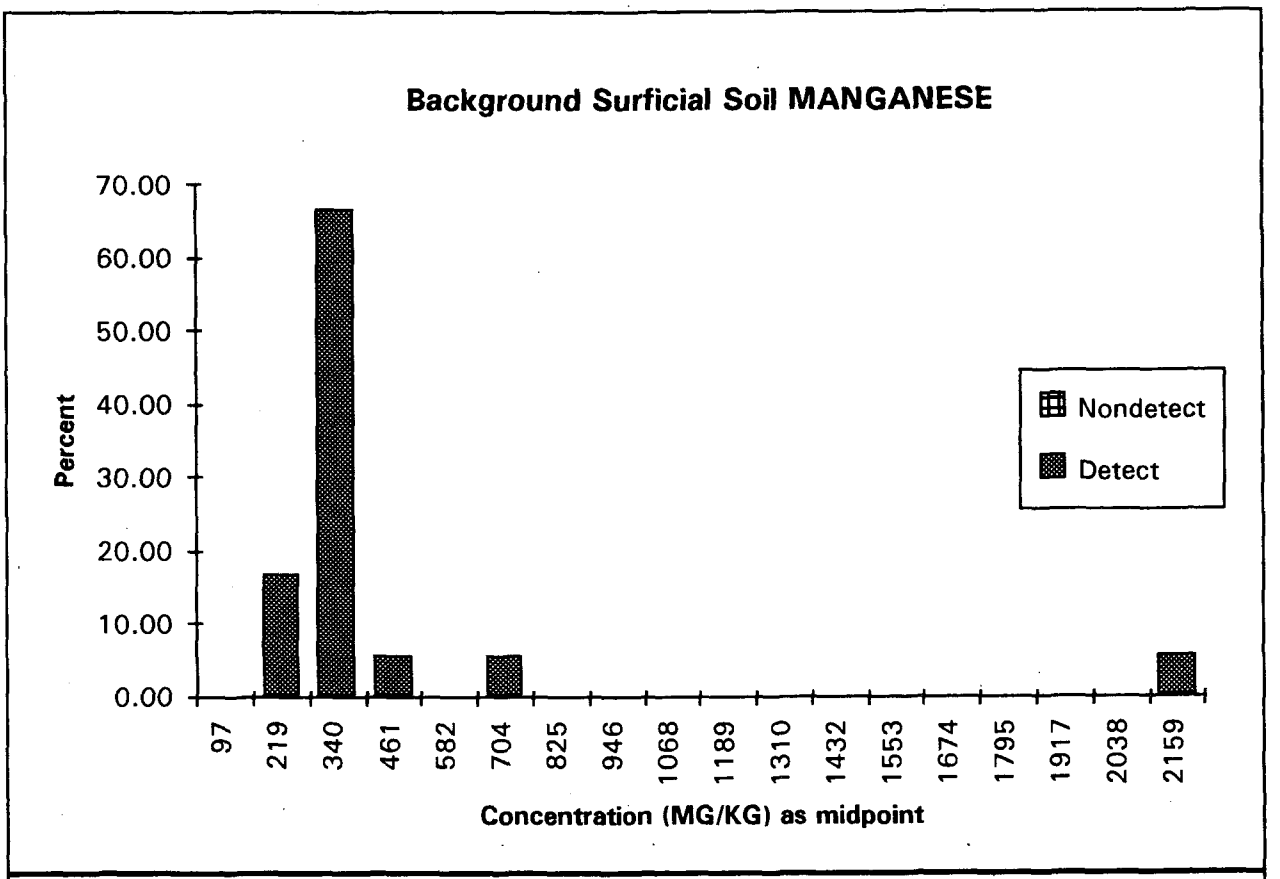
6.00
4.00
2.00
0.00
3
7
10
14
18
22
25
29
33
37
40
44
48
52
56
59
63
67
Concentration (mg/kg) as midpoint
Nondetect
Detect

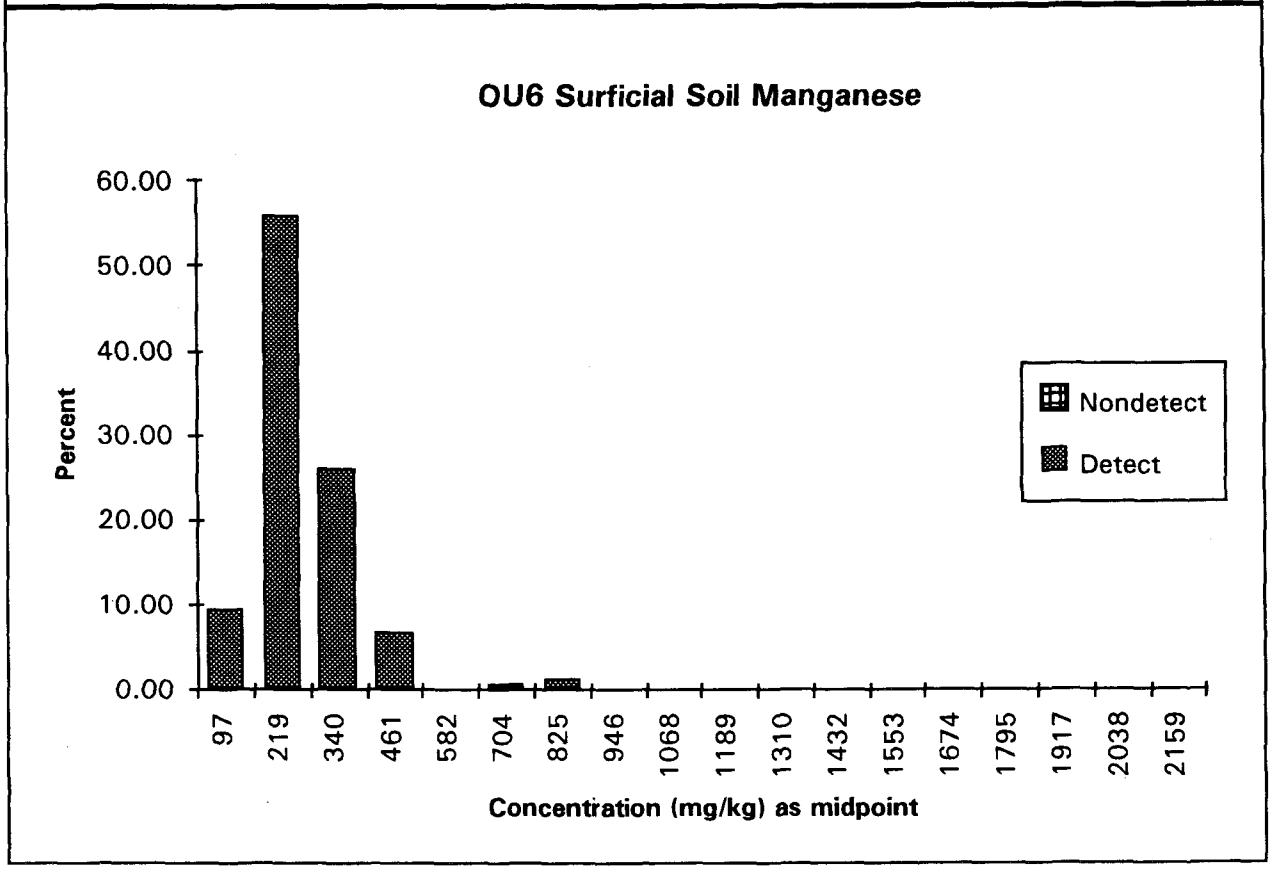

Background Surficial Soil LITHIUM
25.00
20.00
15.00
10.00
5.00
0.00
Percent
Nondetect
Detect
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
Concentration (MG/KG) as midpoint

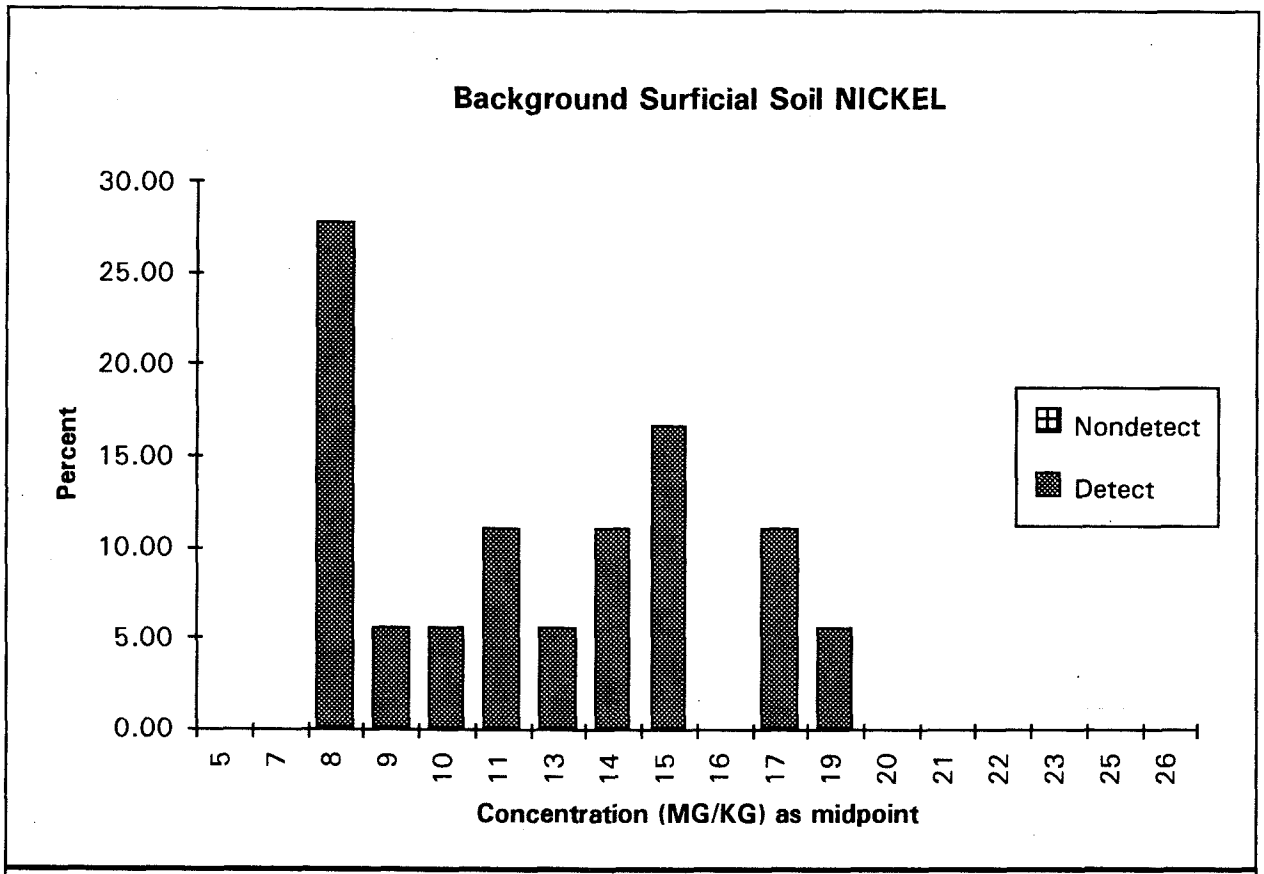

OU6 Surficial Soil Lithium
12.00
10.00
8.00
6.00
4.00
2.00
0.00
Percent
Nondetect
Detect
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
Concentration (mg/kg) as midpoint

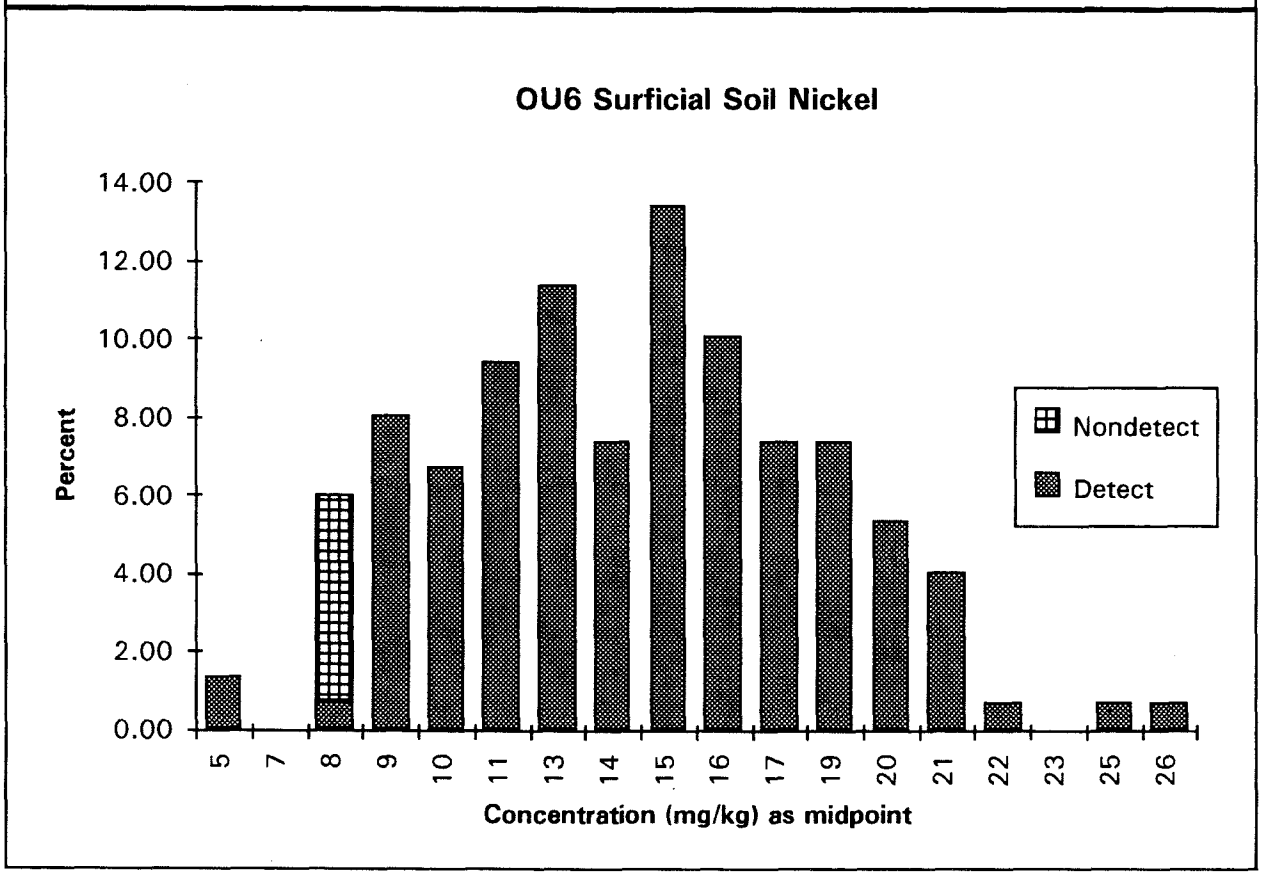

Background Surficial Soil MAGNESIUM
25.00
20.00
15.00
10.00
5.00
0.00
Percent
Nondetect
Detect
1464
2032
2599
3167
3735
4303
4871
5438
6006
6574
7142
7709
8277
8845
9413
9981
10548
11116
Concentration (MG/KG) as midpoint

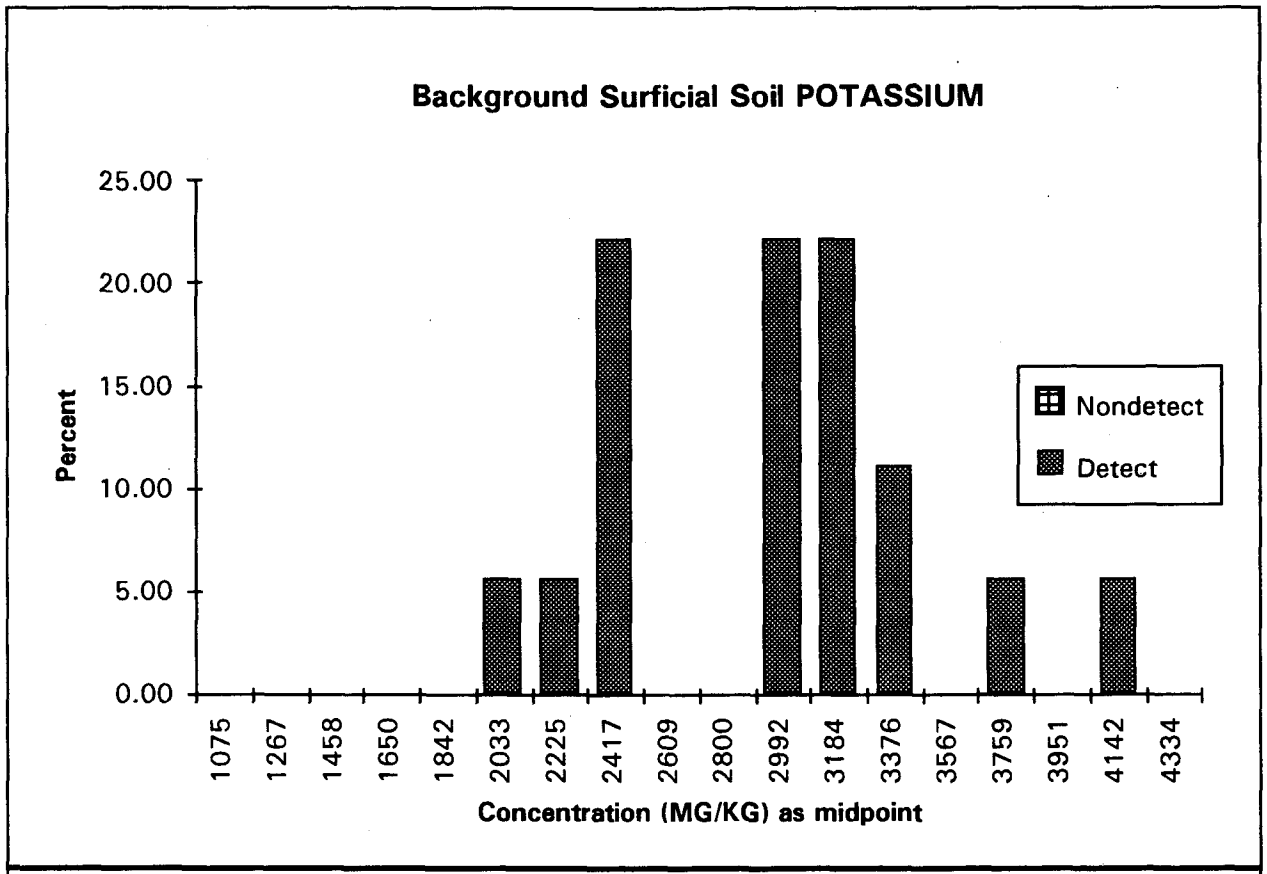

OU6 Surficial Soil Magnesium
30.00
25.00
20.00
15.00
10.00
5.00
0.00
Percent
Nondetect
Detect
1464
2032
2599
3167
3735
4303
4871
5438
6006
6574
7142
7709
8277
8845
9413
9981
10548
11116
Concentration (mg/kg) as midpoint

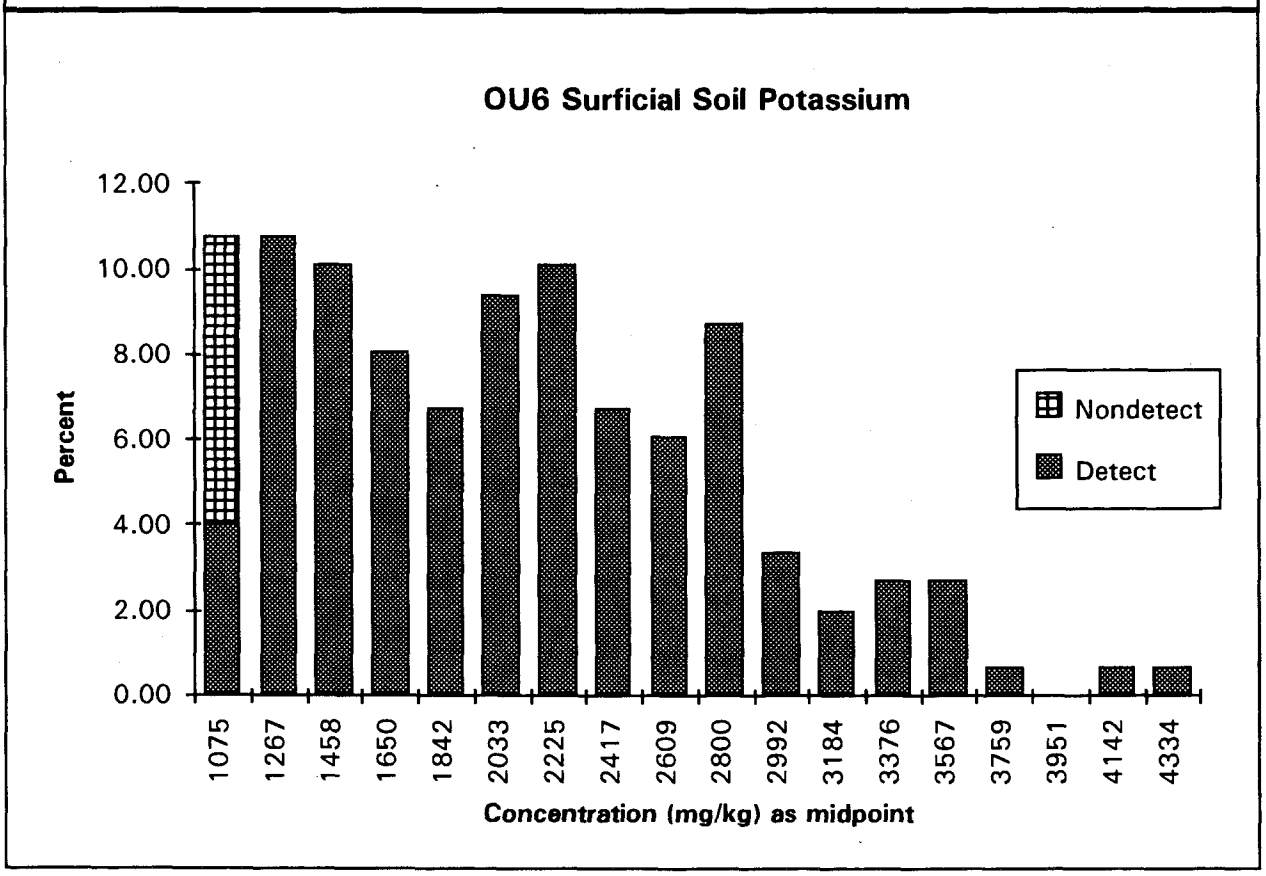

Background Surficial Soil MANGANESE
70.00
60.00
50.00
40.00
30.00
20.00
10.00
0.00
Percent
Nondetect
Detect
97
219
340
461
582
704
825
946
1068
1189
1310
1432
1553
1674
1795
1917
2038
2159
Concentration (MG/KG) as midpoint

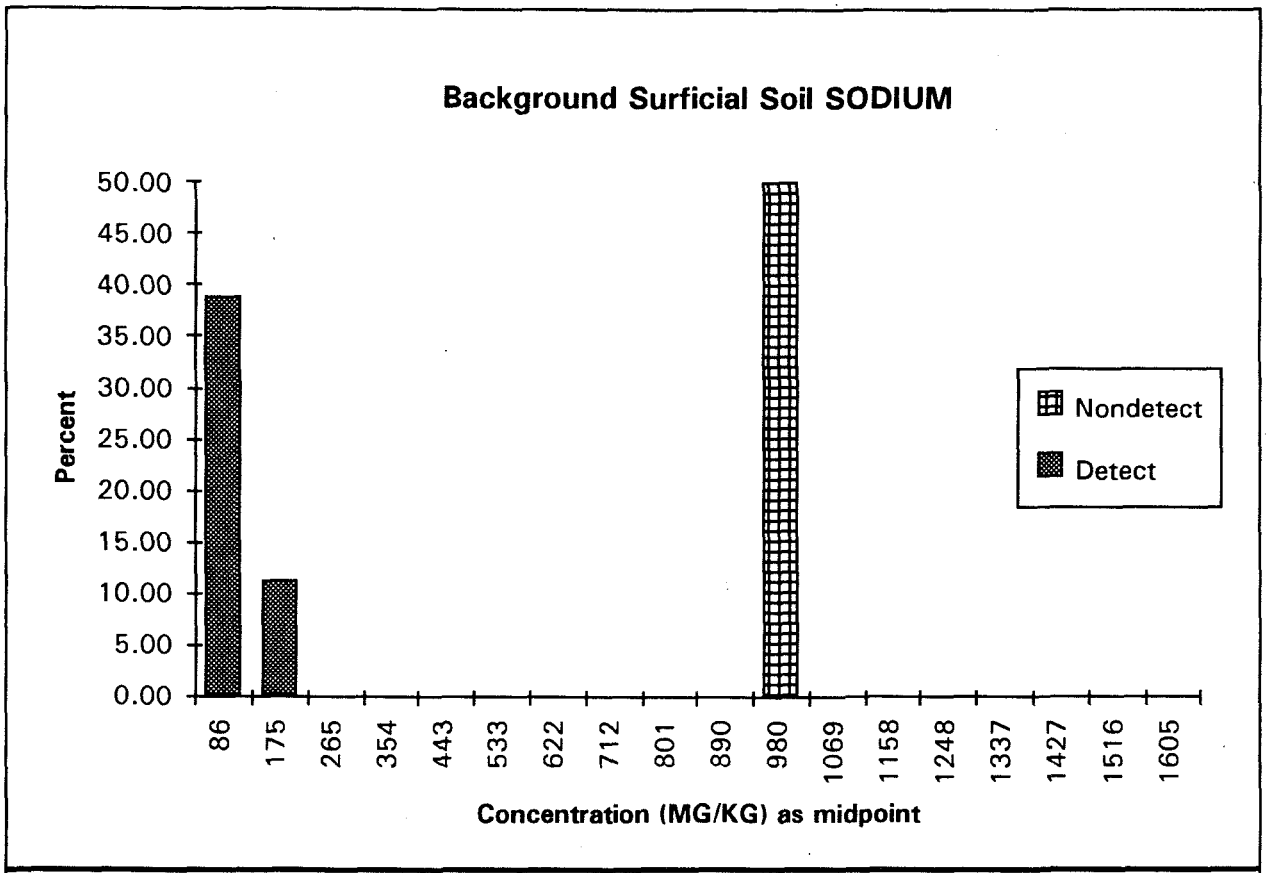

OU6 Surficial Soil Manganese
60.00
50.00
40.00
30.00
20.00
10.00
0.00
Percent
Nondetect
Detect
97
219
340
461
582
704
825
946
1068
1189
1310
1432
1553
1674
1795
1917
2038
2159
Concentration (mg/kg) as midpoint

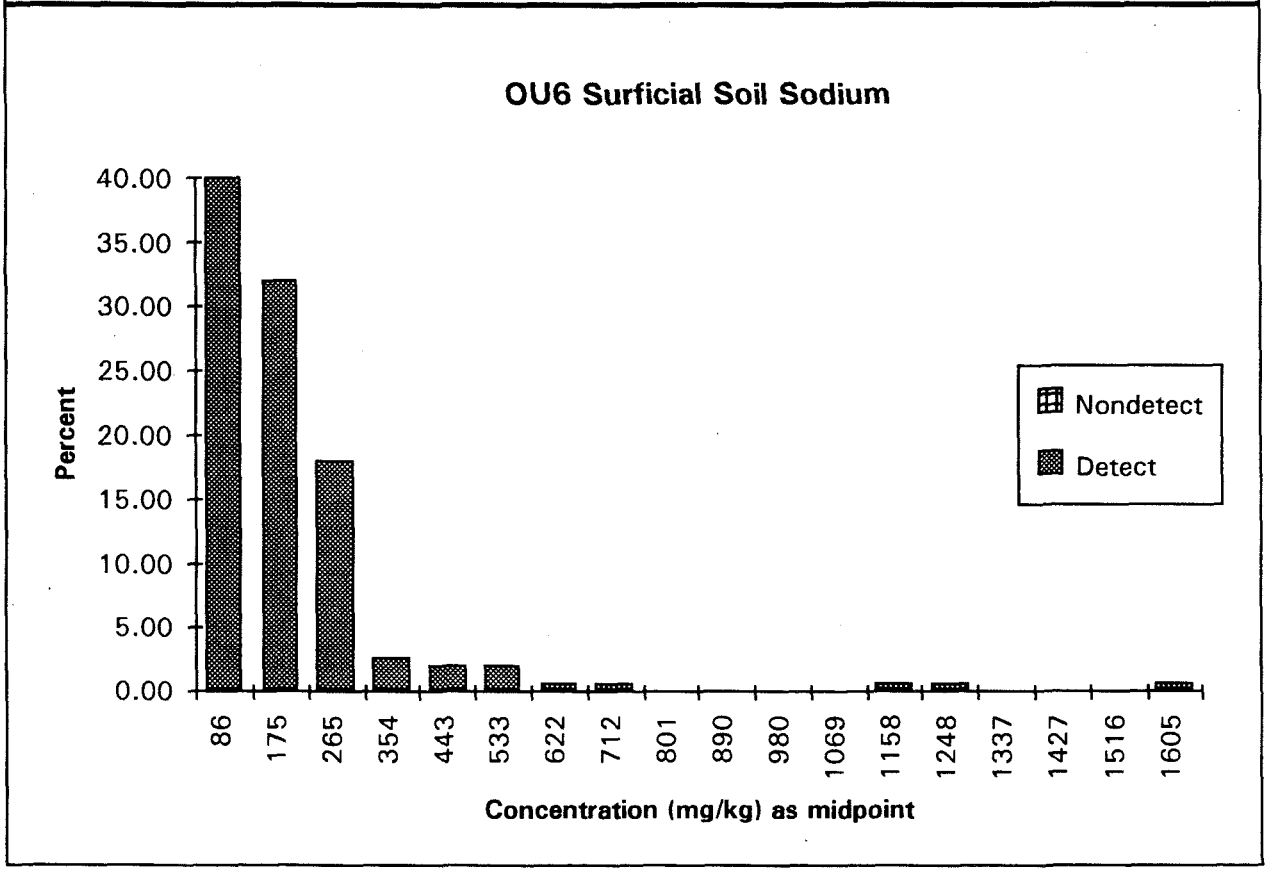

Background Surficial Soil NICKEL
30.00
25.00
20.00
15.00
10.00
5.00
0.00
Percent
5
7
8
9
10
11
13
14
15
16
17
19
20
21
22
23
25
26
Concentration (MG/KG) as midpoint
Nondetect
Detect

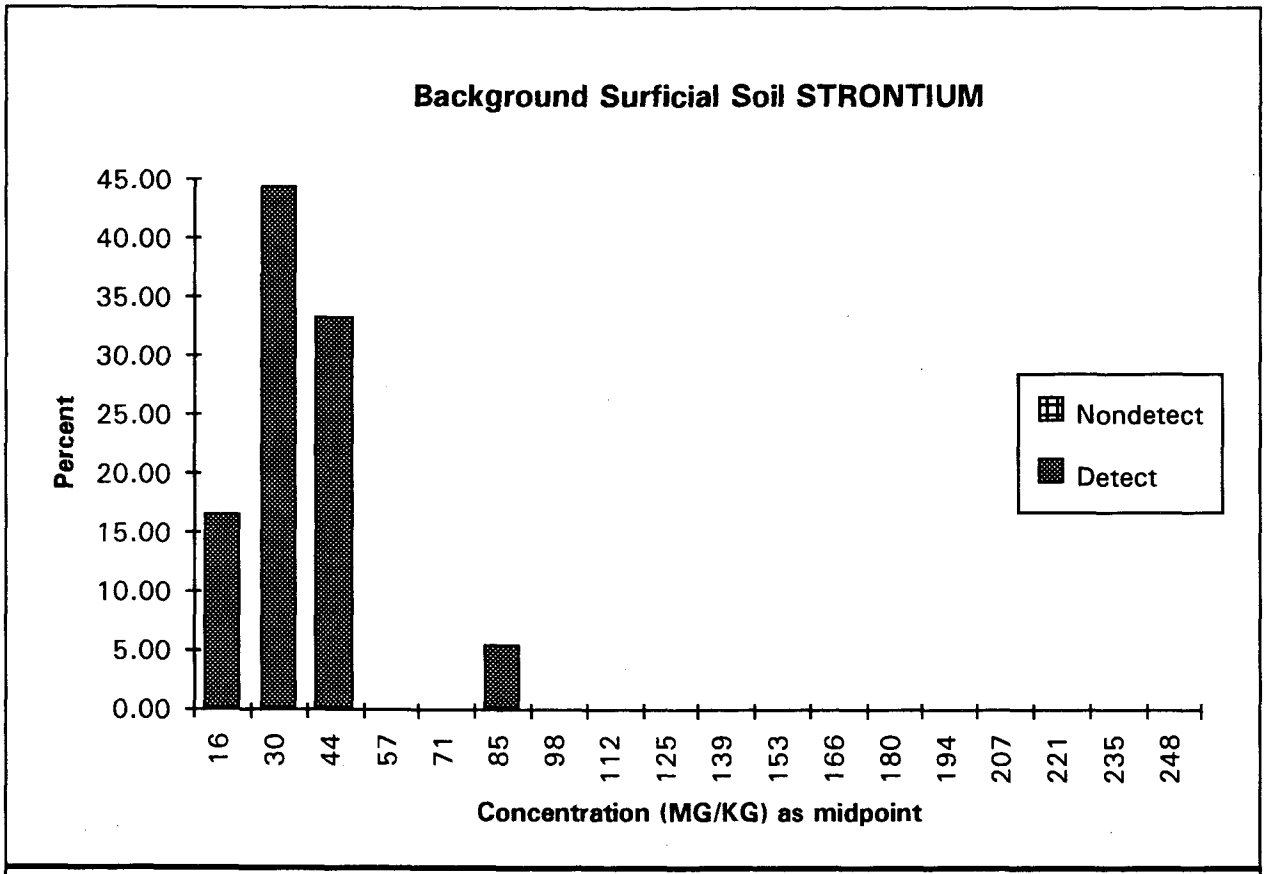

OU6 Surficial Soil Nickel
14.00
12.00
10.00
8.00
6.00
4.00
2.00
0.00
Percent
5
7
8
9
10
11
13
14
15
16
17
19
20
21
22
23
25
26
Concentration (mg/kg) as midpoint
Nondetect
Detect

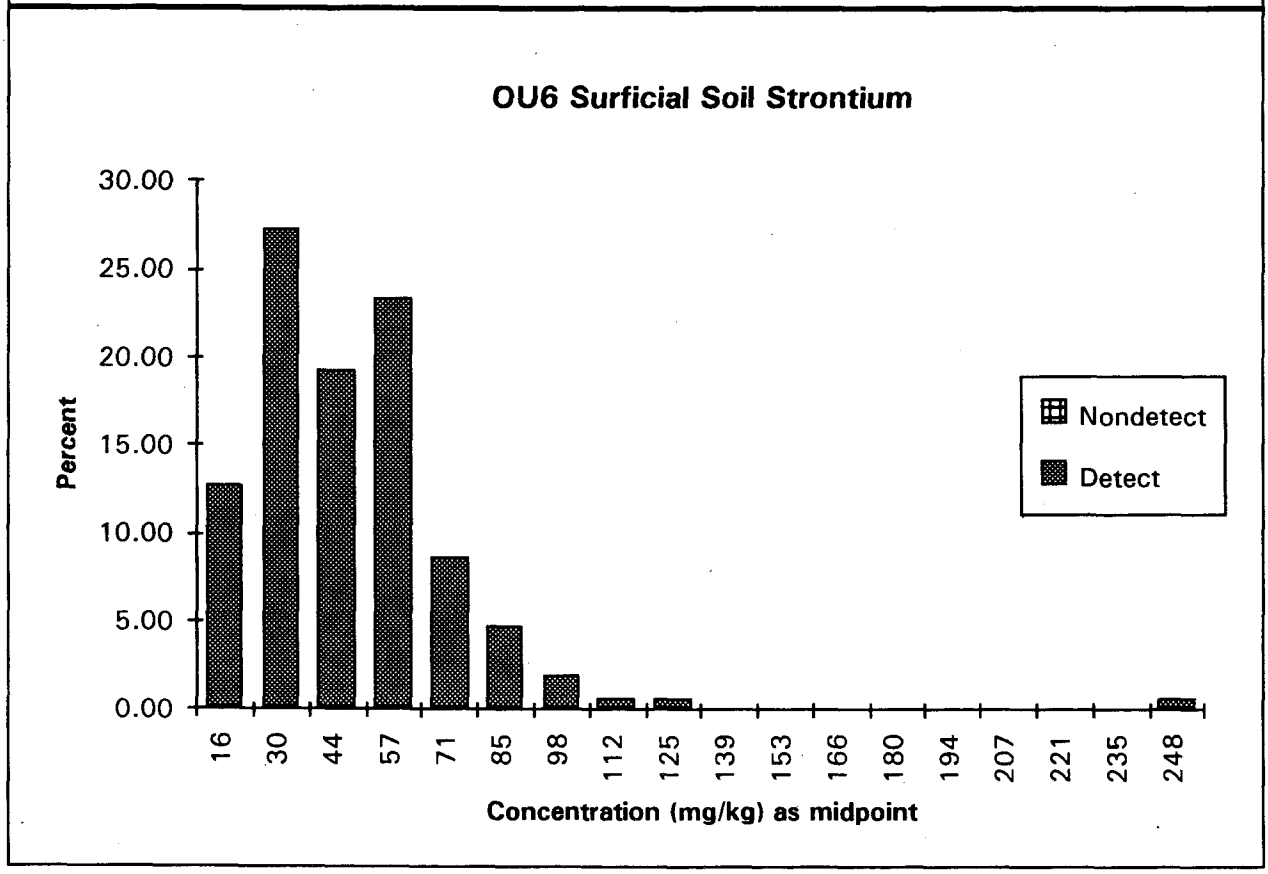

Background Surficial Soil POTASSIUM
25.00
20.00
15.00
10.00
5.00
0.00
Percent
Nondetect
Detect
1075
1267
1458
1650
1842
2033
2225
2417
2609
2800
2992
3184
3376
3567
3759
3951
4142
4334
Concentration (MG/KG) as midpoint

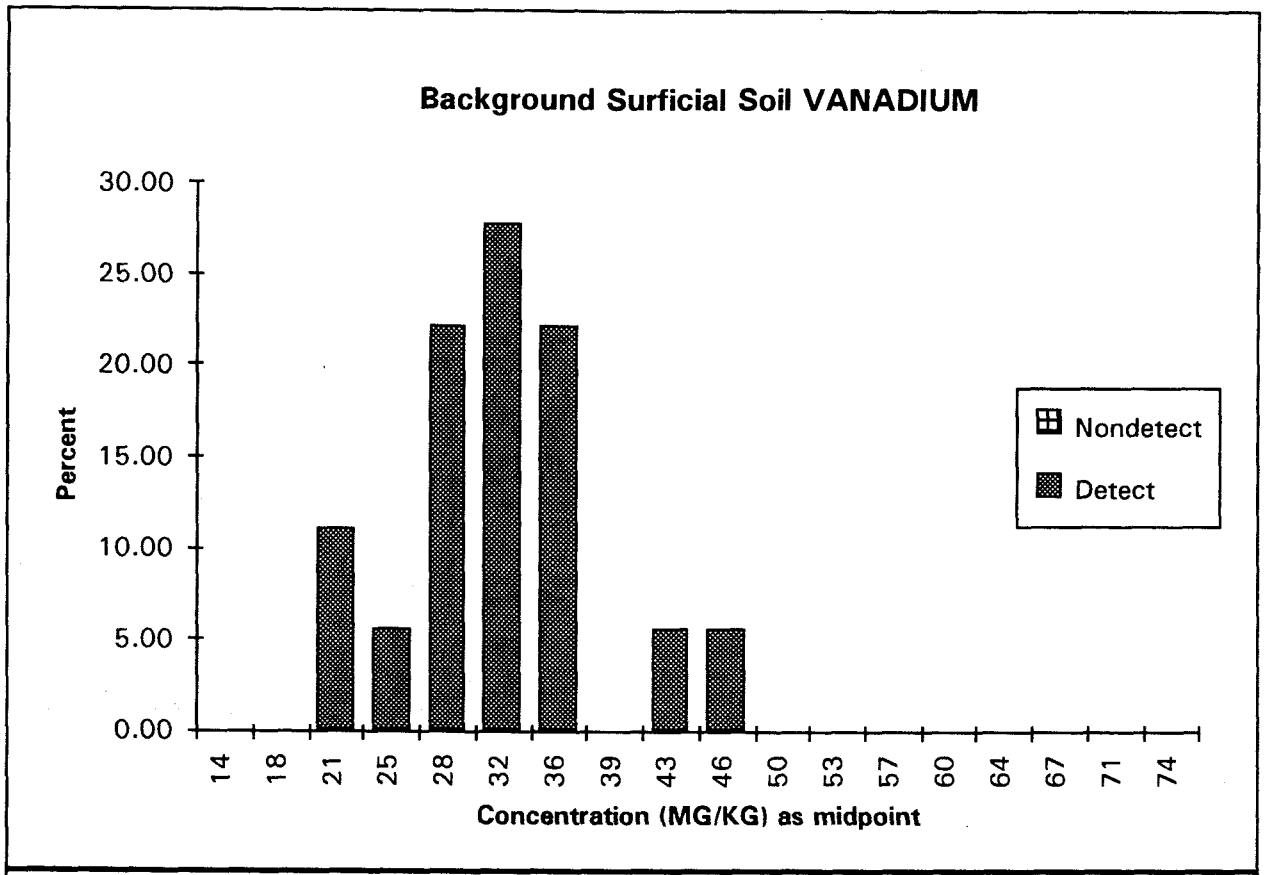

OU6 Surficial Soil Potassium
12.00
10.00
8.00
6.00
4.00
2.00
0.00
Percent
Nondetect
Detect
1075
1267
1458
1650
1842
2033
2225
2417
2609
2800
2992
3184
3376
3567
3759
3951
4142
4334
Concentration (mg/kg) as midpoint

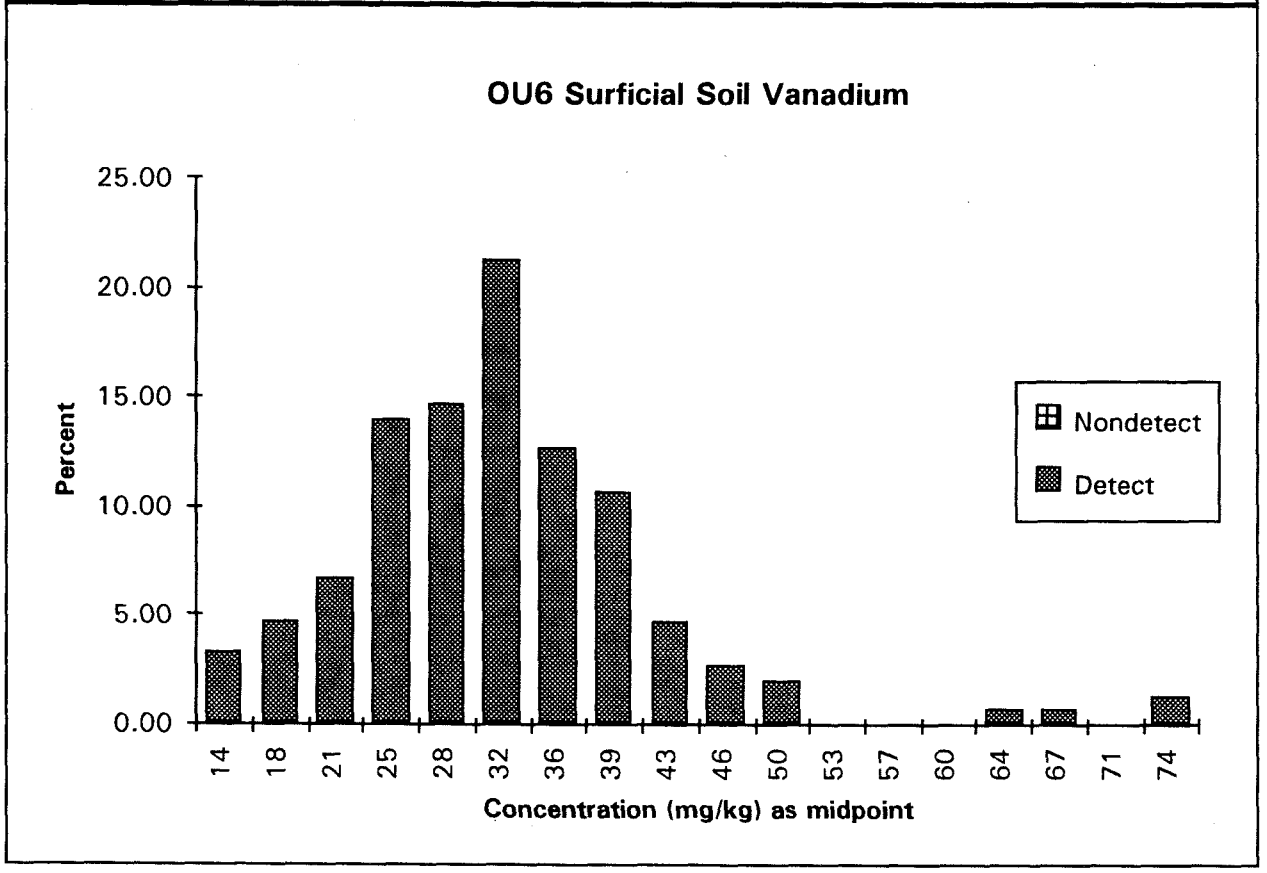

Background Surficial Soil SODIUM
Percent
50.00
45.00
40.00
35.00
30.00
25.00
20.00
15.00
10.00
5.00
0.00
86
175
265
354
443
533
622
712
801
890
980
1069
1158
1248
1337
1427
1516
1605
Concentration (MG/KG) as midpoint
Nondetect
Detect

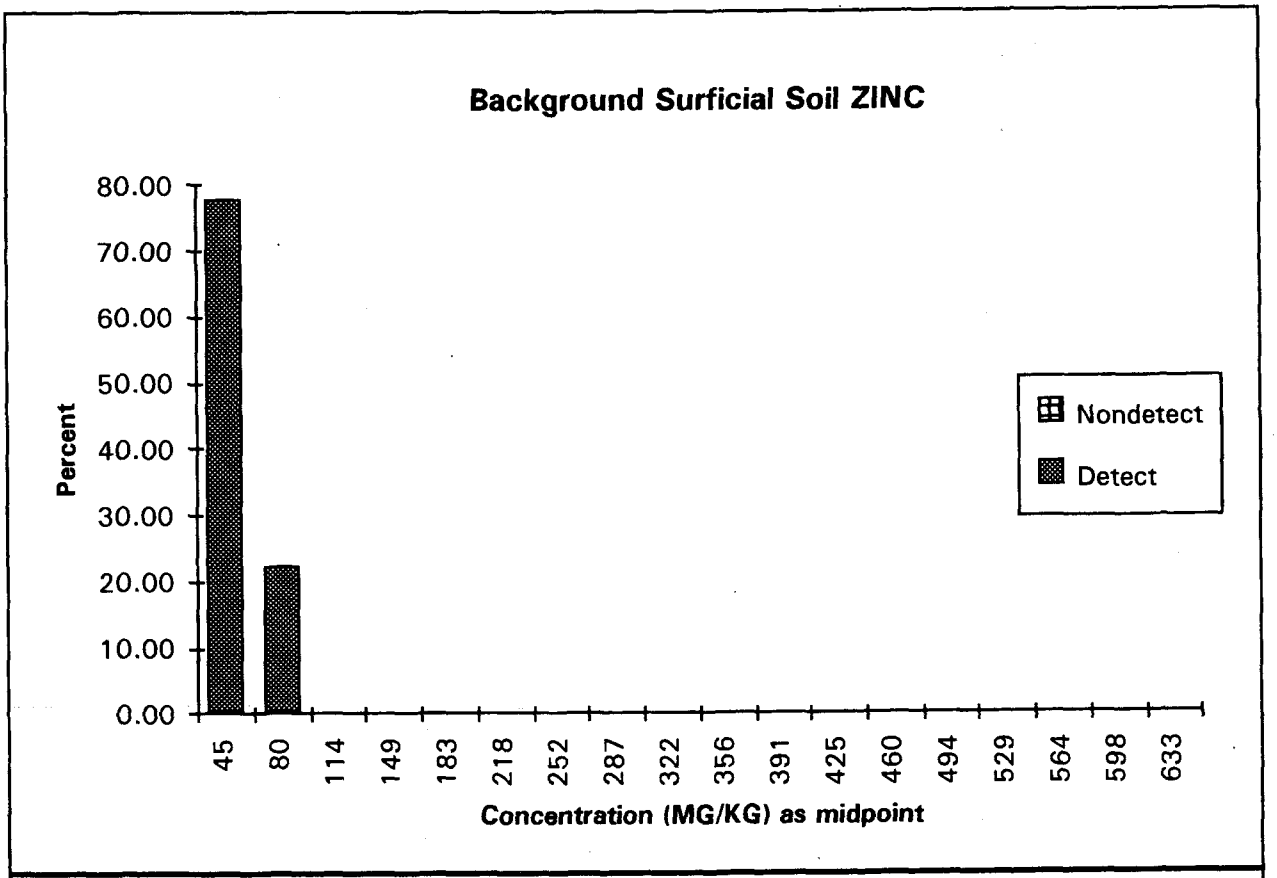

OU6 Surficial Soil Sodium
Percent
40.00
35.00
30.00
25.00
20.00
15.00
10.00
5.00
0.00
86
175
265
354
443
533
622
712
801
890
980
1069
1158
1248
1337
1427
1516
1605
Concentration (mg/kg) as midpoint
Nondetect
Detect

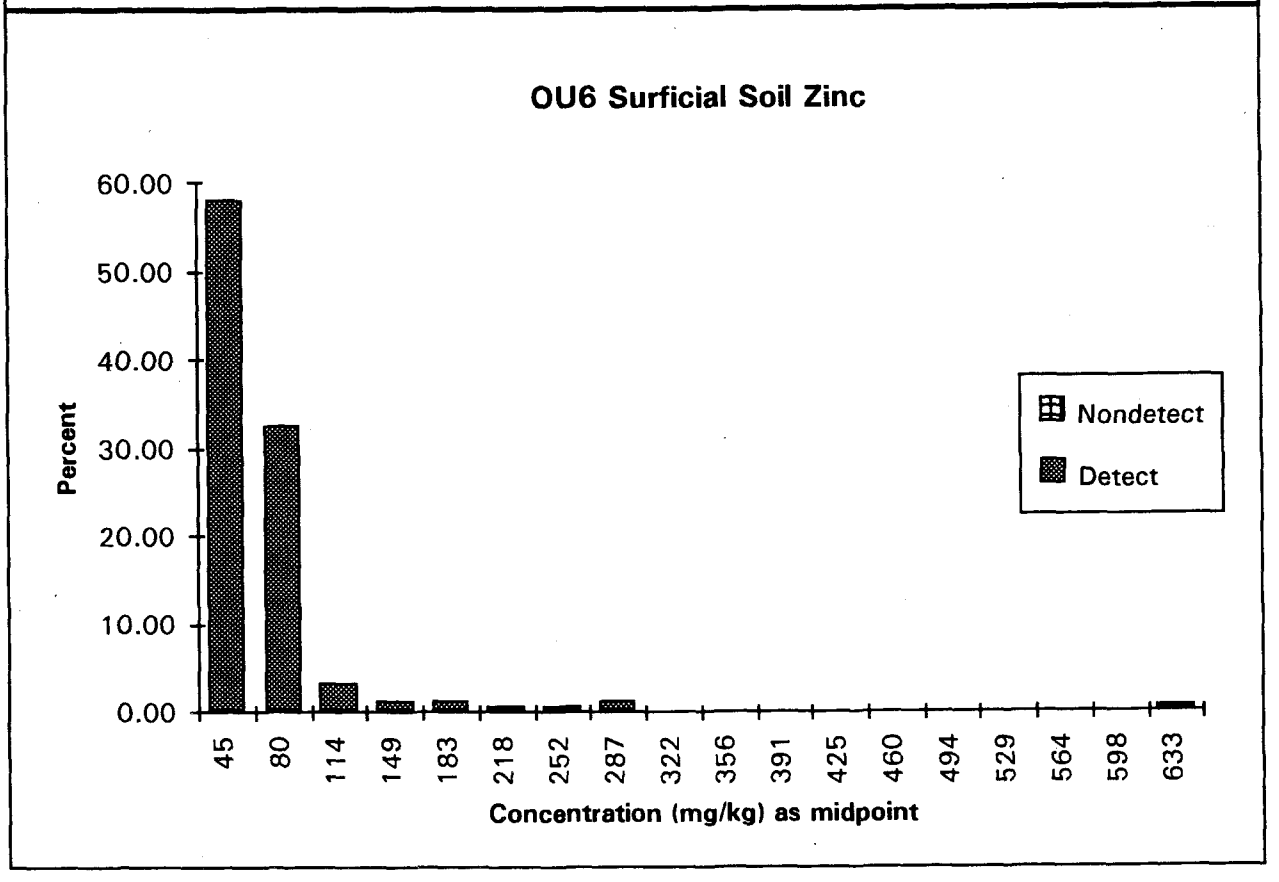

Background Surficial Soil STRONTIUM
Percent
45.00
40.00
35.00
30.00
25.00
20.00
15.00
10.00
5.00
0.00
16
30
44
57
71
85
98
112
125
139
153
166
180
194
207
221
235
248
Concentration (MG/KG) as midpoint
Nondetect
Detect

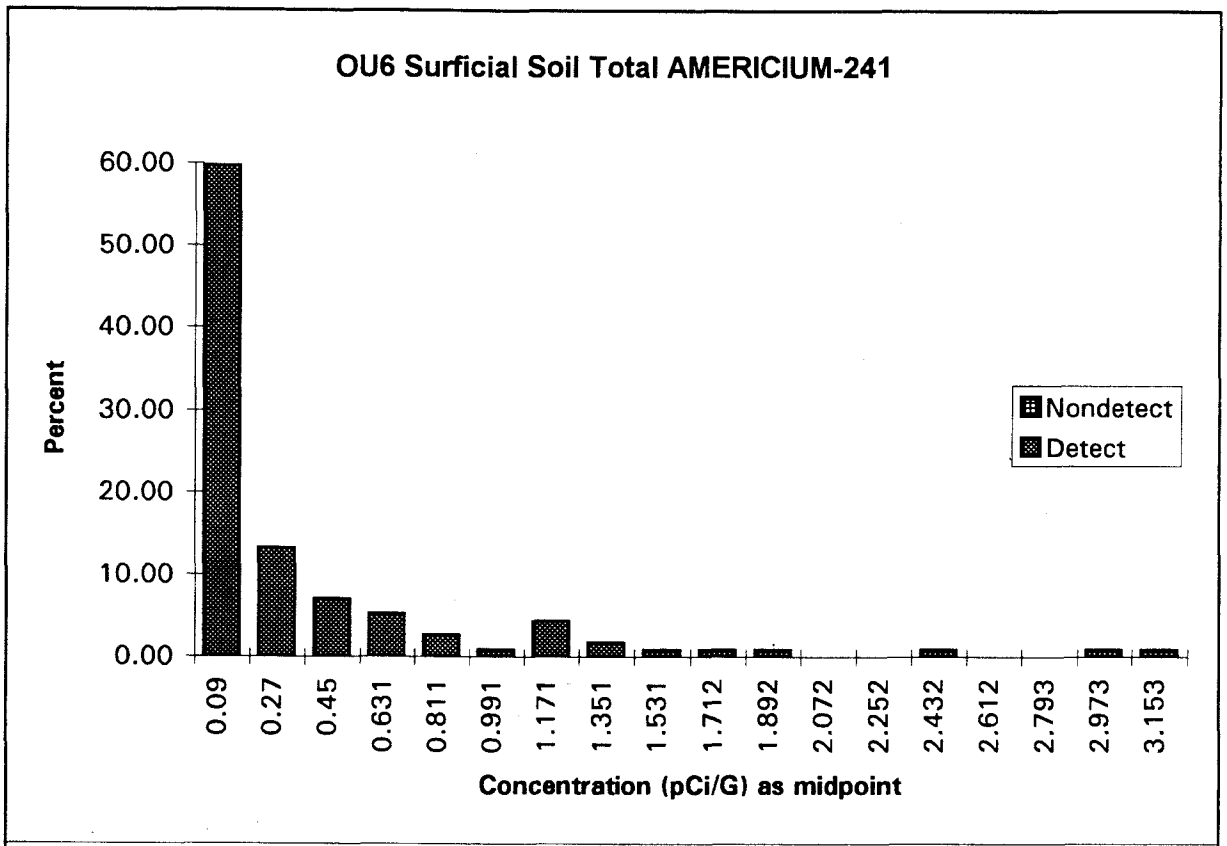

OU6 Surficial Soil Strontium
Percent
30.00
25.00
20.00
15.00
10.00
5.00
0.00
16
30
44
57
71
85
98
112
125
139
153
166
180
194
207
221
235
248
Concentration (mg/kg) as midpoint
Nondetect
Detect

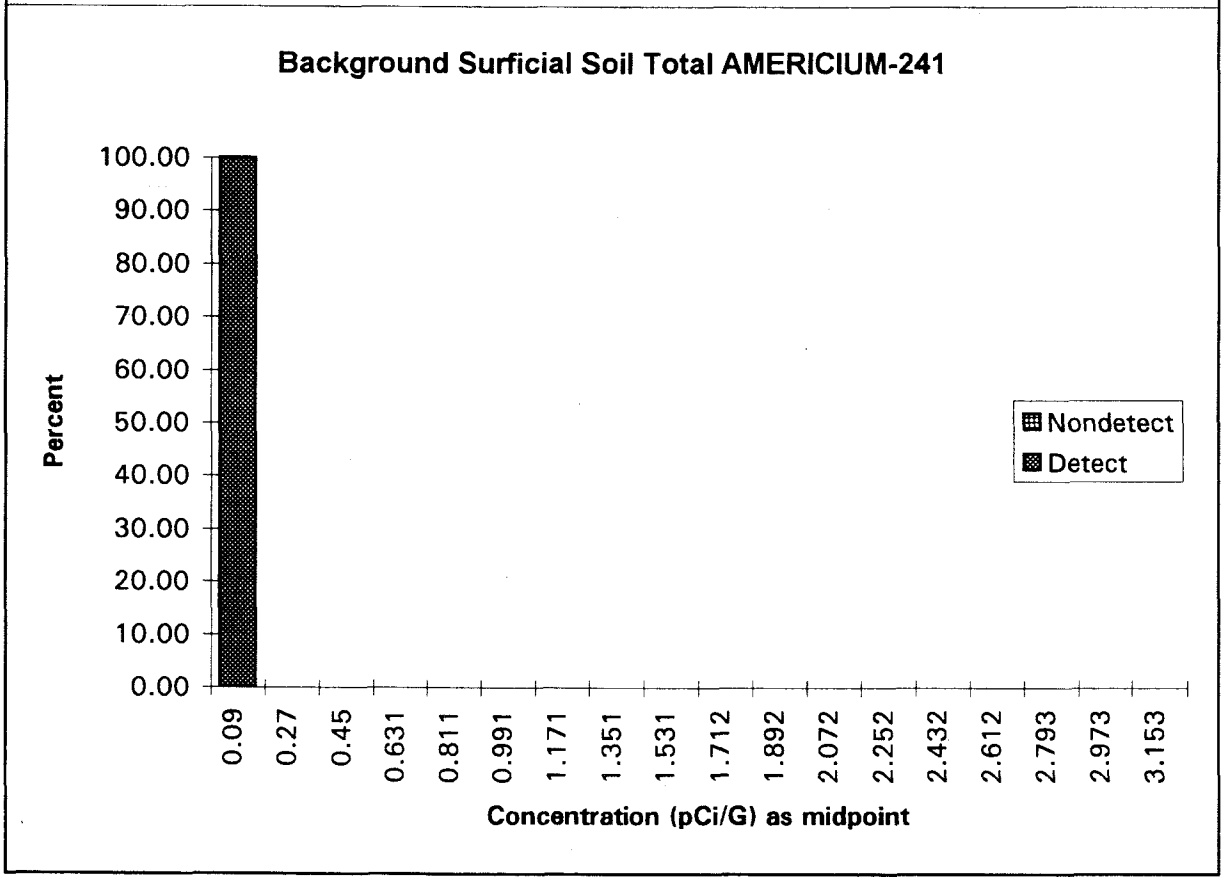

Background Surficial Soil VANADIUM
30.00
25.00
20.00
15.00
10.00
5.00
0.00
Percent
14
18
21
25
28
32
36
39
43
46
50
53
57
60
64
67
71
74
Concentration (MG/KG) as midpoint
Nondetect
Detect

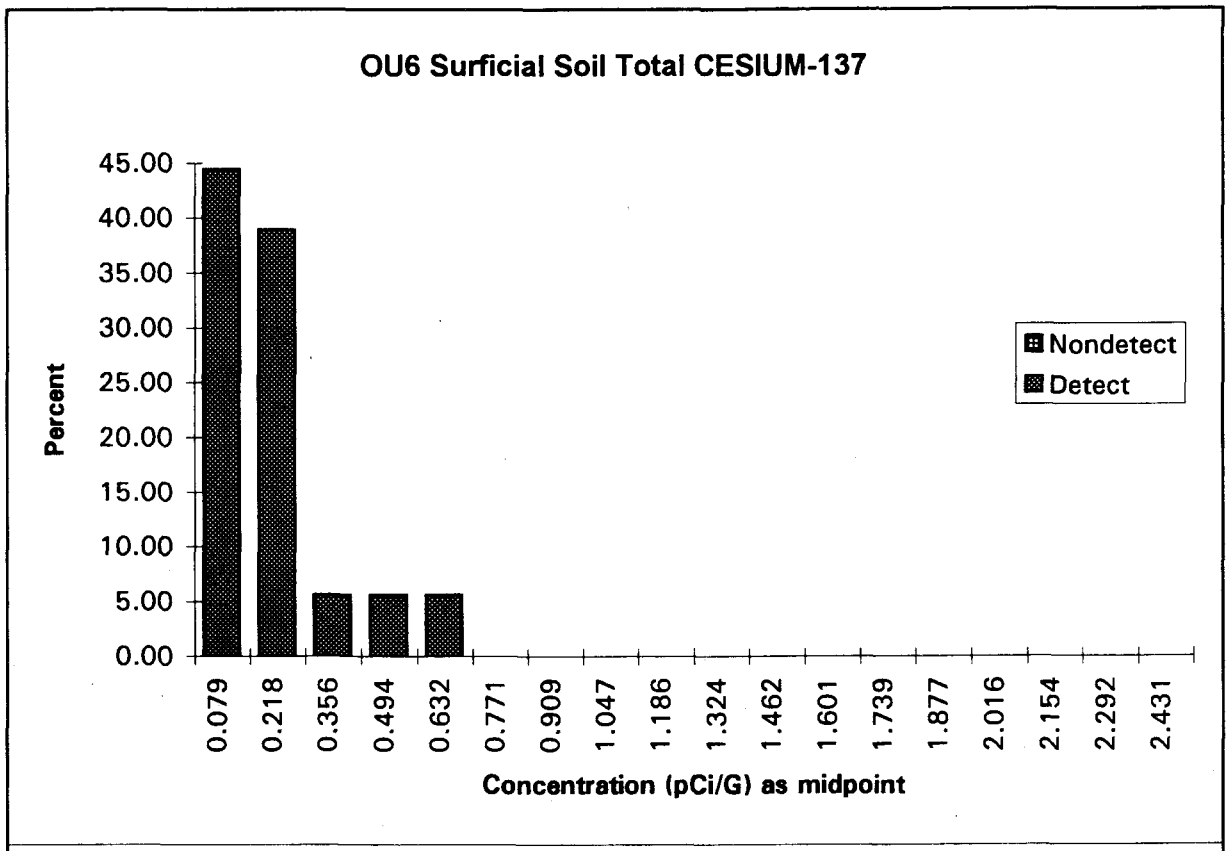

OU6 Surficial Soil Vanadium
25.00
20.00
15.00
10.00
5.00
0.00
Percent
14
18
21
25
28
32
36
39
43
46
50
53
57
60
64
67
71
74
Concentration (mg/kg) as midpoint
Nondetect
Detect

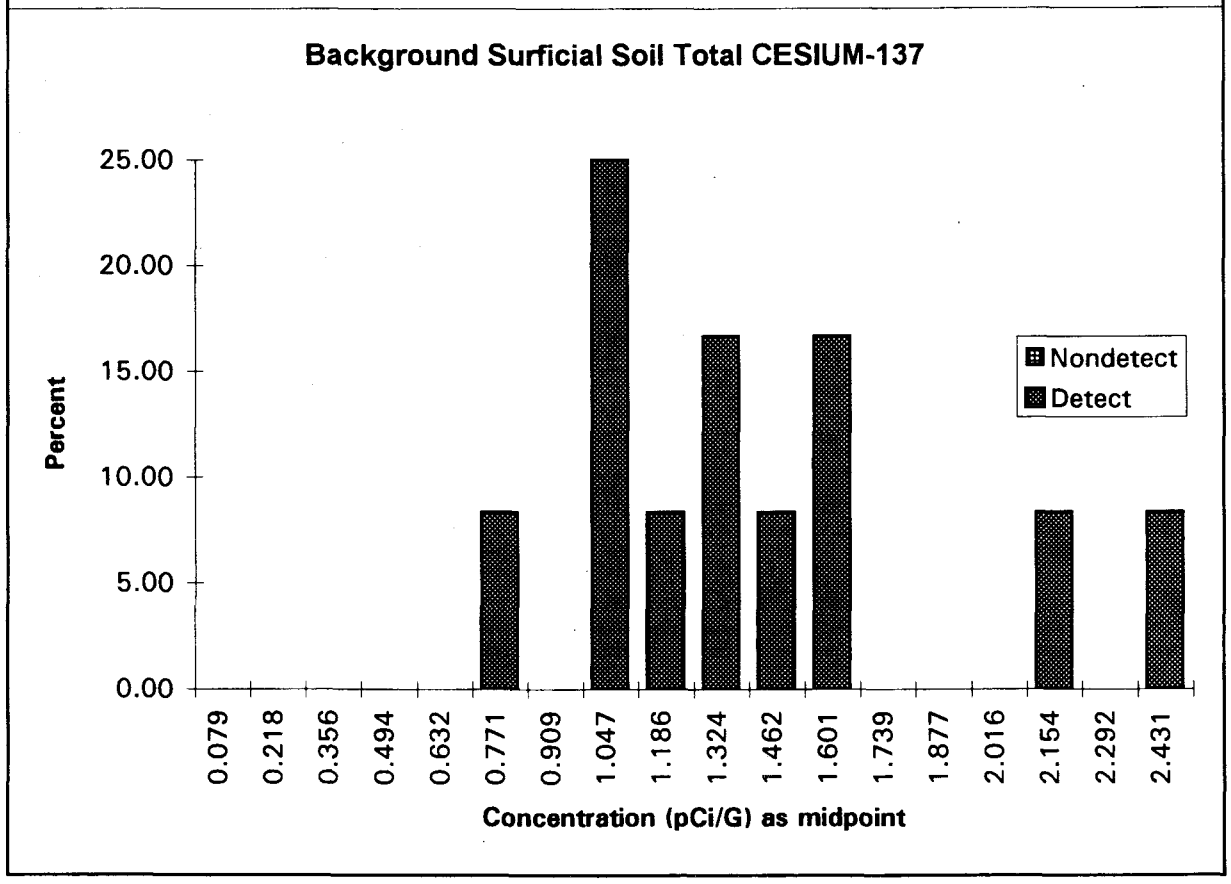

Background Surficial Soil ZINC
80.00
70.00
60.00
50.00
40.00
30.00
20.00
10.00
0.00
Percent
Nondetect
Detect
45
80
114
149
183
218
252
287
322
356
391
425
460
494
529
564
598
633
Concentration (MG/KG) as midpoint

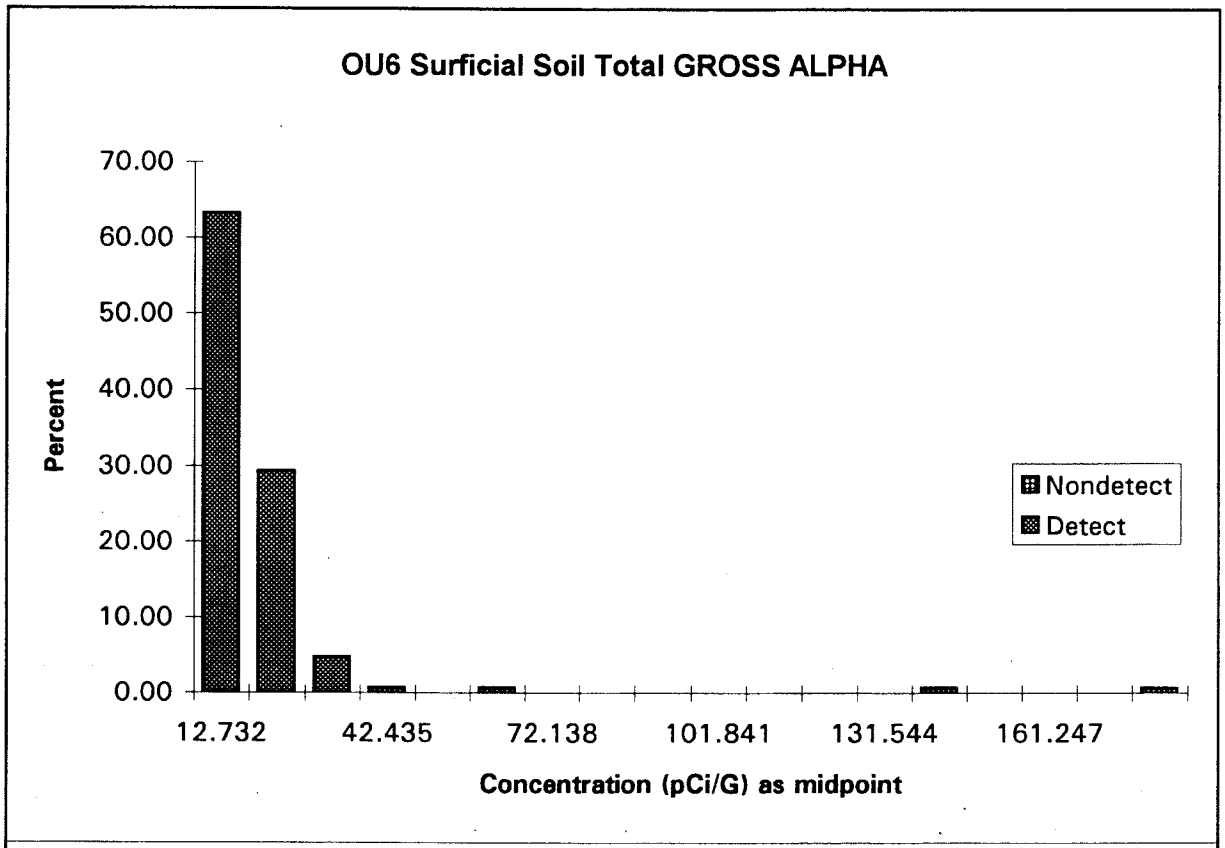

OU6 Surficial Soil Zinc
60.00
50.00
40.00
30.00
20.00
10.00
0.00
Percent
Nondetect
Detect
45
80
114
149
183
218
252
287
322
356
391
425
460
494
529
564
598
633
Concentration (mg/kg) as midpoint

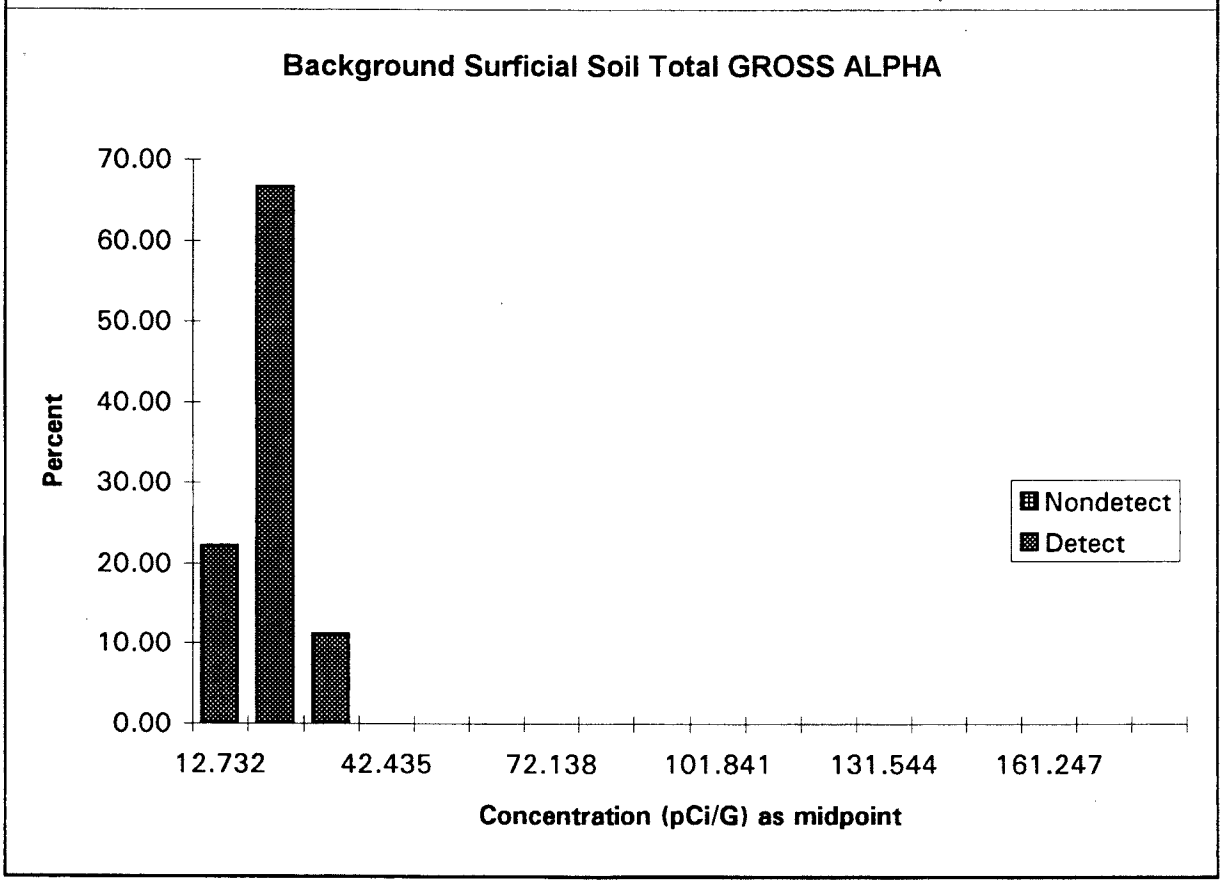

OU6 Surficial Soil Total AMERICIUM-241
Percent
60.00
50.00
40.00
30.00
20.00
10.00
0.00
Nondetect
Detect
0.09
0.27
0.45
0.631
0.811
0.991
1.171
1.351
1.531
1.712
1.892
2.072
2.252
2.432
2.612
2.793
2.973
3.153
Concentration (pCi/G) as midpoint

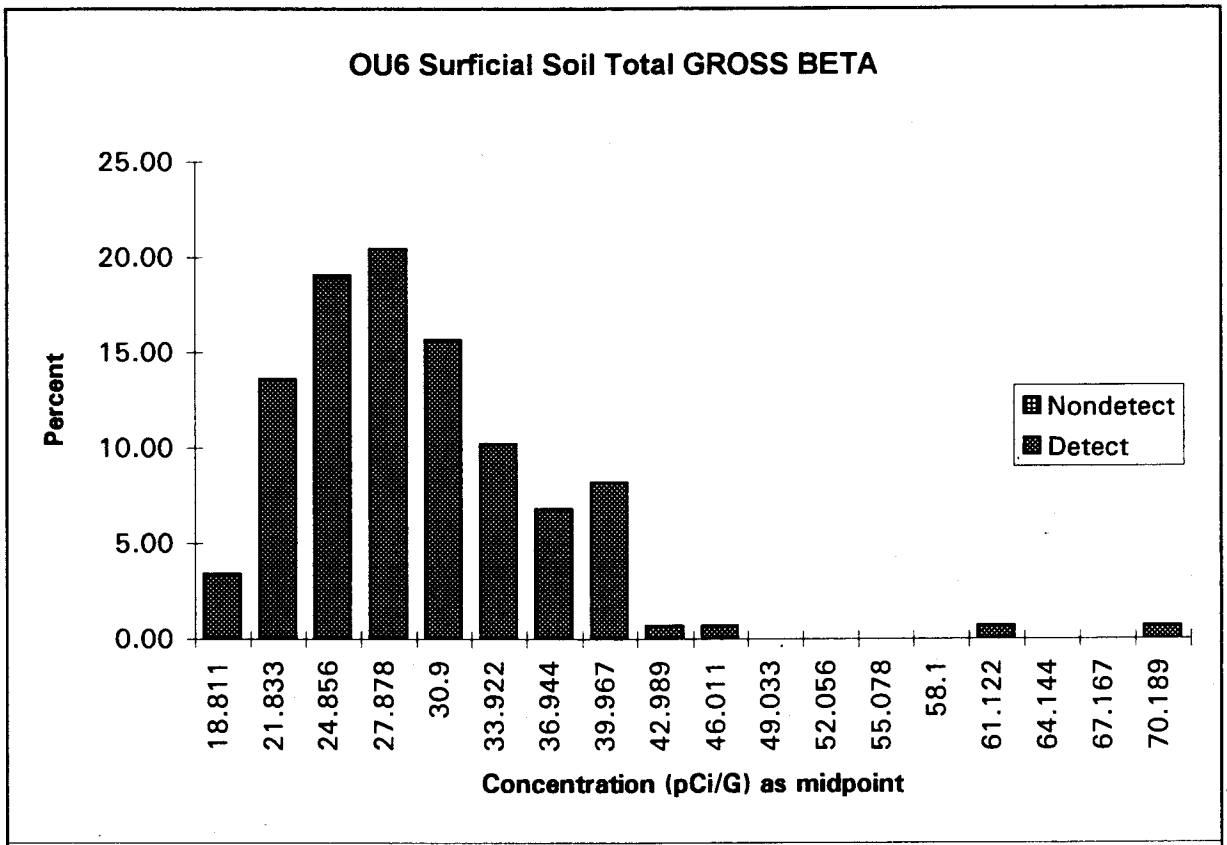

Background Surficial Soil Total AMERICIUM-241
Percent
100.00
90.00
80.00
70.00
60.00
50.00
40.00
30.00
20.00
10.00
0.00
Nondetect
Detect
0.09
0.27
0.45
0.631
0.811
0.991
1.171
1.351
1.531
1.712
1.892
2.072
2.252
2.432
2.612
2.793
2.973
3.153
Concentration (pCi/G) as midpoint

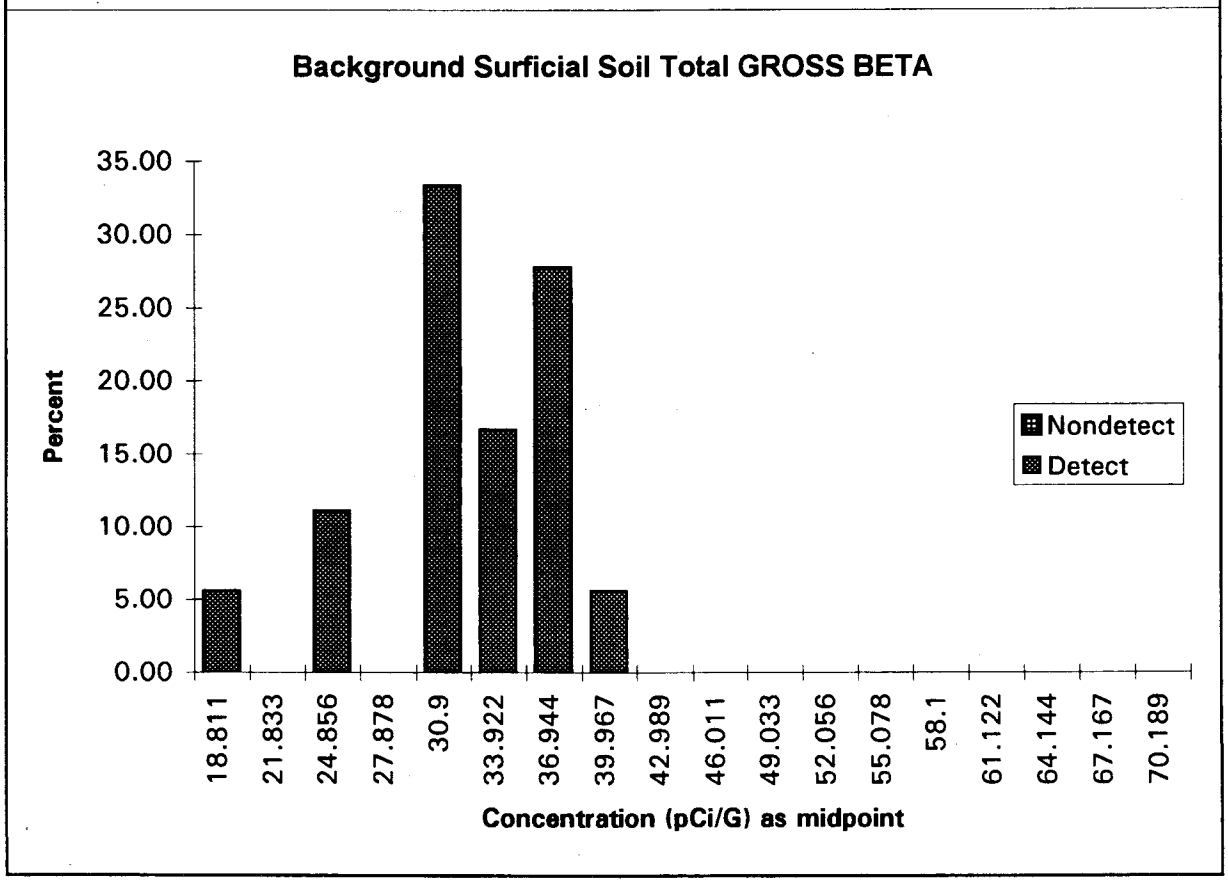

OU6 Surficial Soil Total CESIUM-137
45.00
40.00
35.00
30.00
25.00
20.00
15.00
10.00
5.00
0.00
Percent
Nondetect
Detect
0.079
0.218
0.356
0.494
0.632
0.771
0.909
1.047
1.186
1.324
1.462
1.601
1.739
1.877
2.016
2.154
2.292
2.431
Concentration (pCi/G) as midpoint

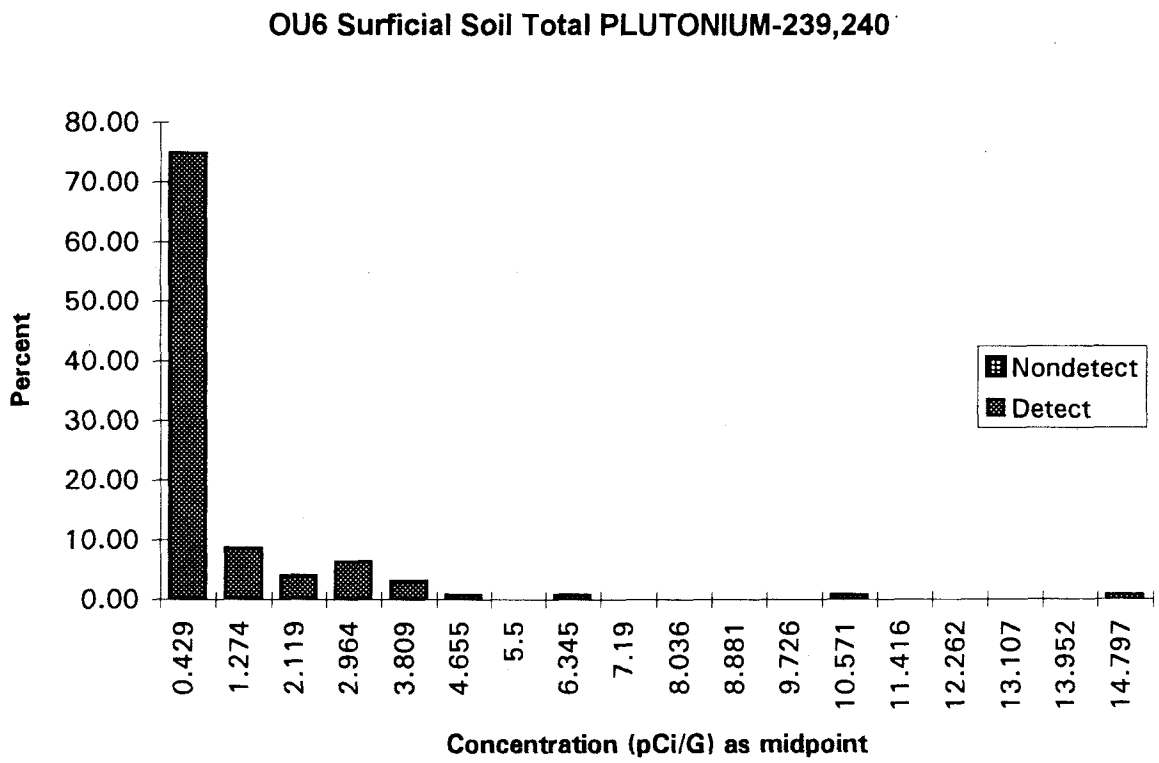

Background Surficial Soil Total CESIUM-137
25.00
20.00
15.00
10.00
5.00
0.00
Percent
Nondetect
Detect
0.079
0.218
0.356
0.494
0.632
0.771
0.909
1.047
1.186
1.324
1.462
1.601
1.739
1.877
2.016
2.154
2.292
2.431
Concentration (pCi/G) as midpoint

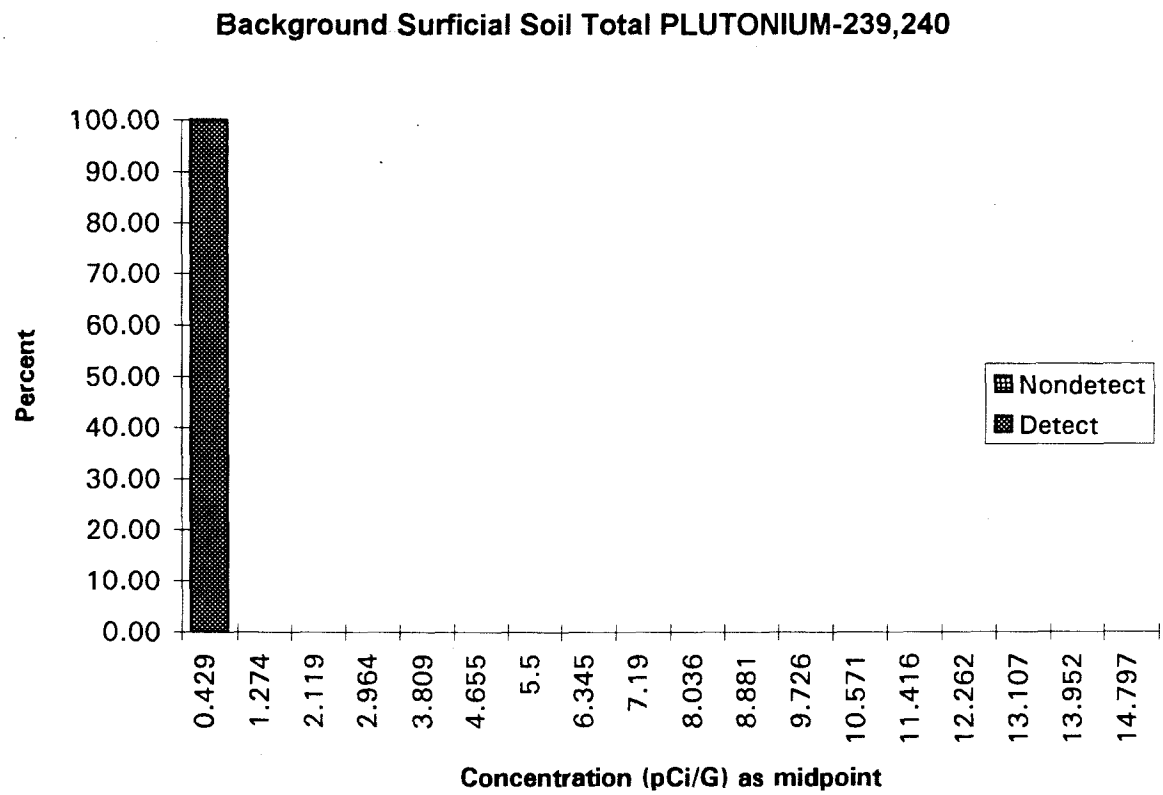

OU6 Surficial Soil Total GROSS ALPHA
70.00
60.00
50.00
40.00
30.00
20.00
10.00
0.00
Percent
12.732
42.435
72.138
101.841
131.544
161.247
Concentration (pCi/G) as midpoint
Nondetect
Detect

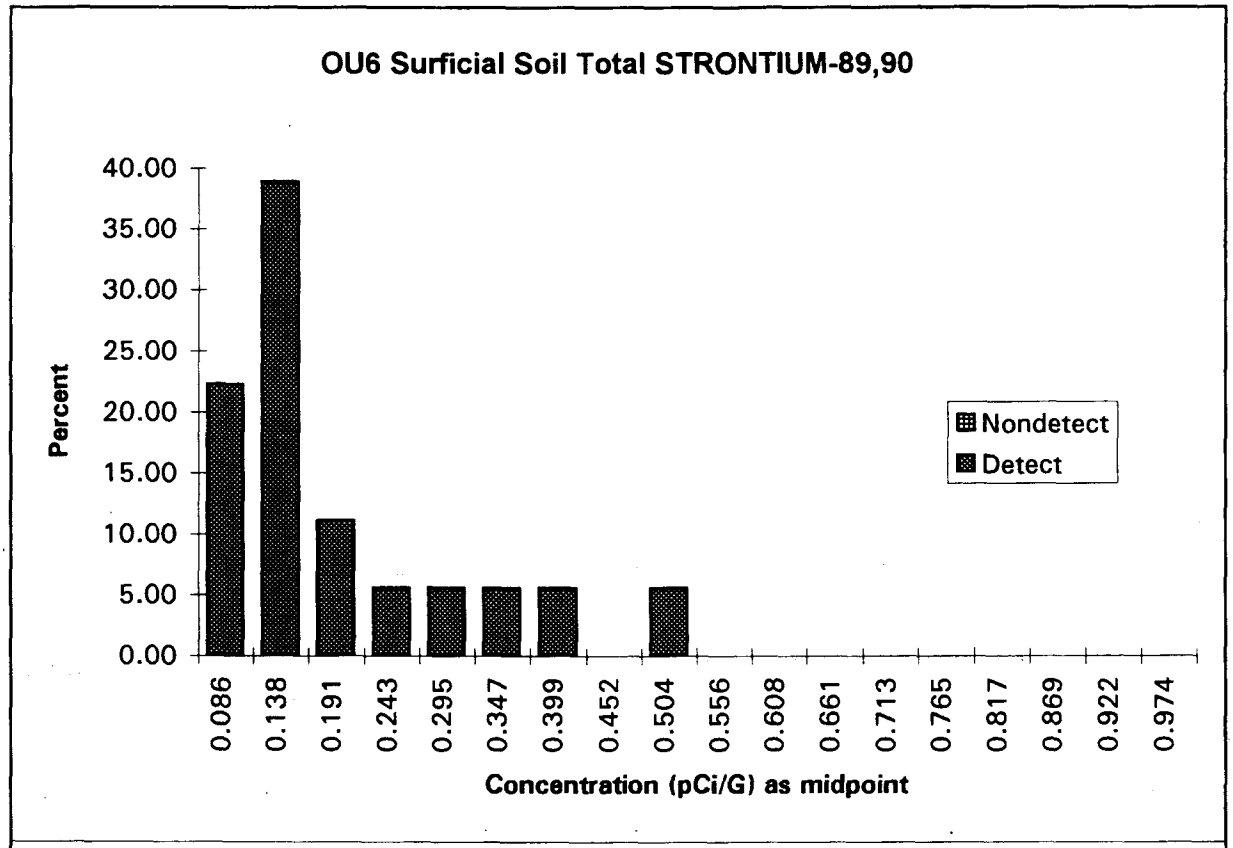

Background Surficial Soil Total GROSS ALPHA
70.00
60.00
50.00
40.00
30.00
20.00
10.00
0.00
Percent
12.732
42.435
72.138
101.841
131.544
161.247
Concentration (pCi/G) as midpoint
Nondetect
Detect

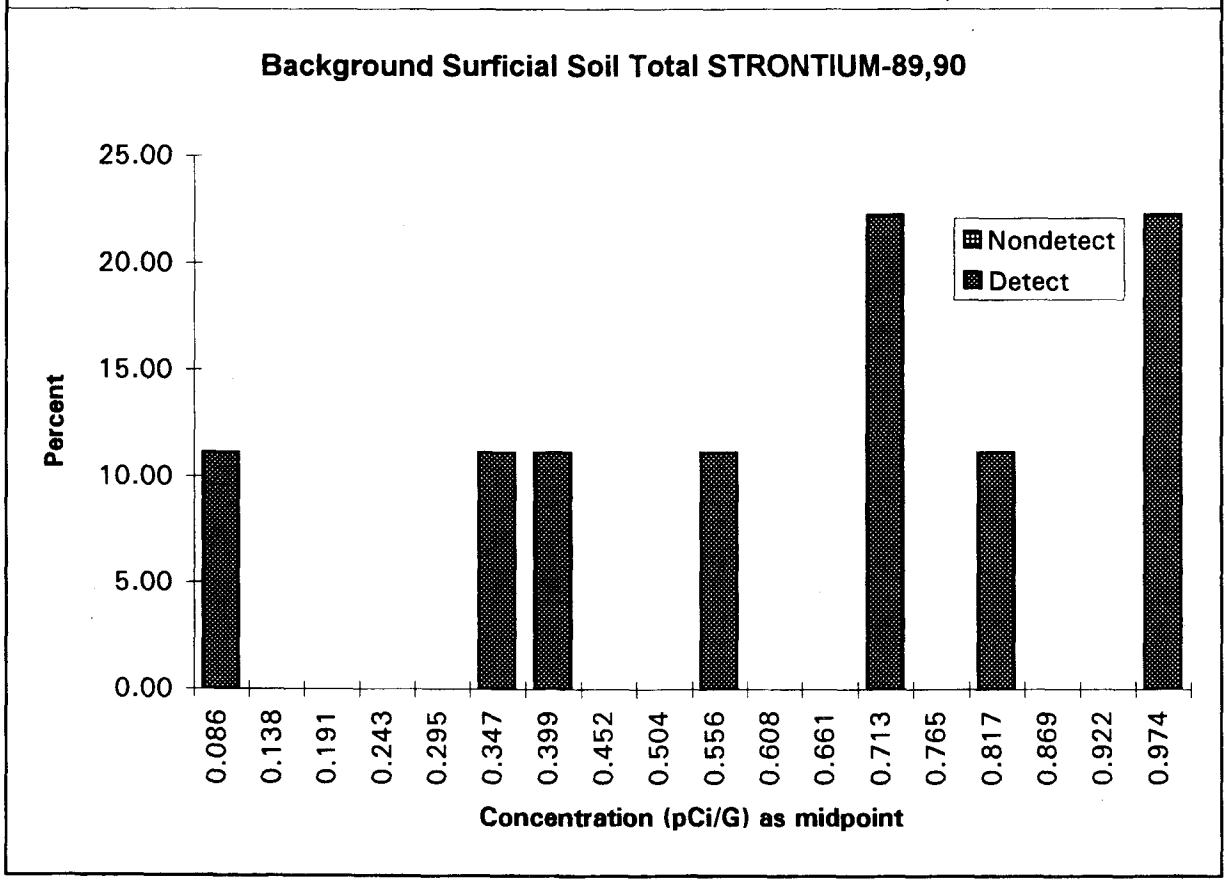

OU6 Surficial Soil Total GROSS BETA
Percent
25.00
20.00
15.00
10.00
5.00
0.00
Nondetect
Detect
18.811
21.833
24.856
27.878
30.9
33.922
36.944
39.967
42.989
46.011
49.033
52.056
55.078
58.1
61.122
64.144
67.167
70.189
Concentration (pCi/G) as midpoint

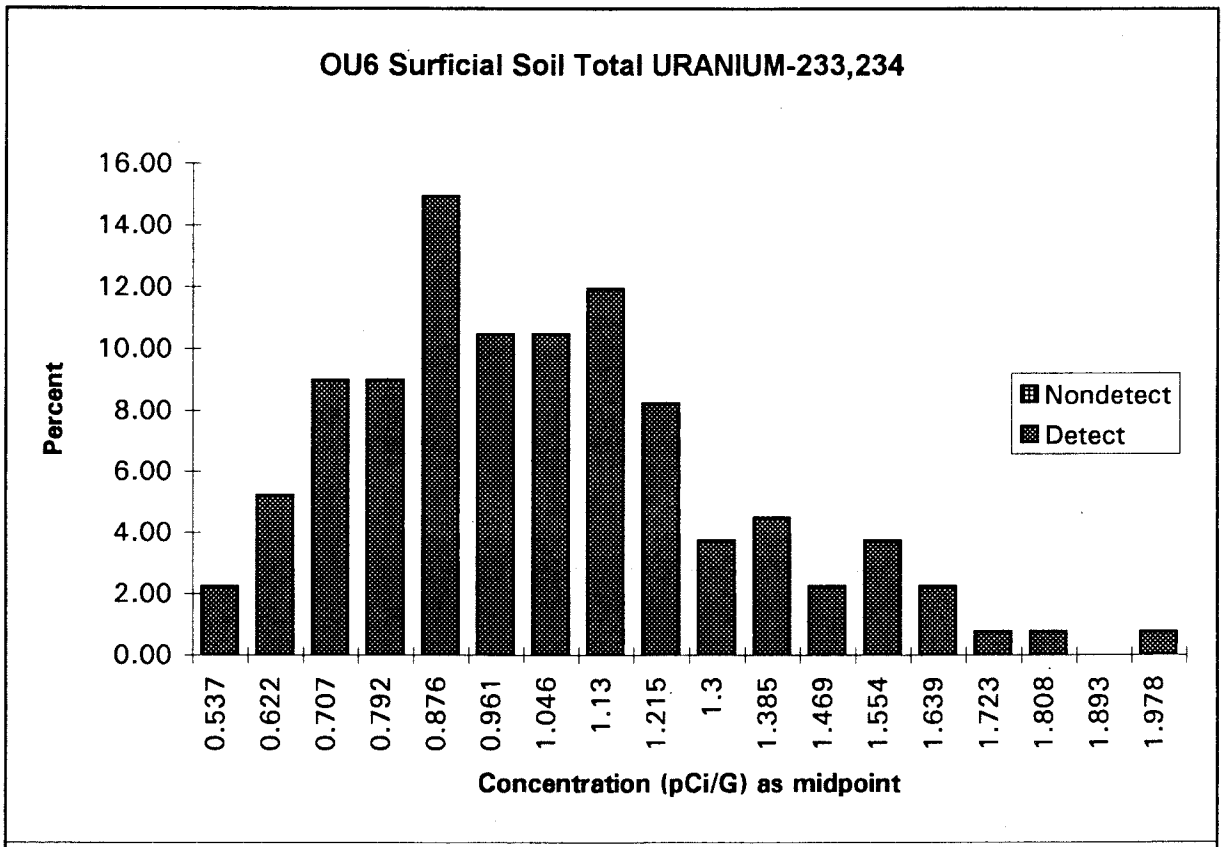

Background Surficial Soil Total GROSS BETA
Percent
35.00
30.00
25.00
20.00
15.00
10.00
5.00
0.00
Nondetect
Detect
18.811
21.833
24.856
27.878
30.9
33.922
36.944
39.967
42.989
46.011
49.033
52.056
55.078
58.1
61.122
64.144
67.167
70.189
Concentration (pCi/G) as midpoint

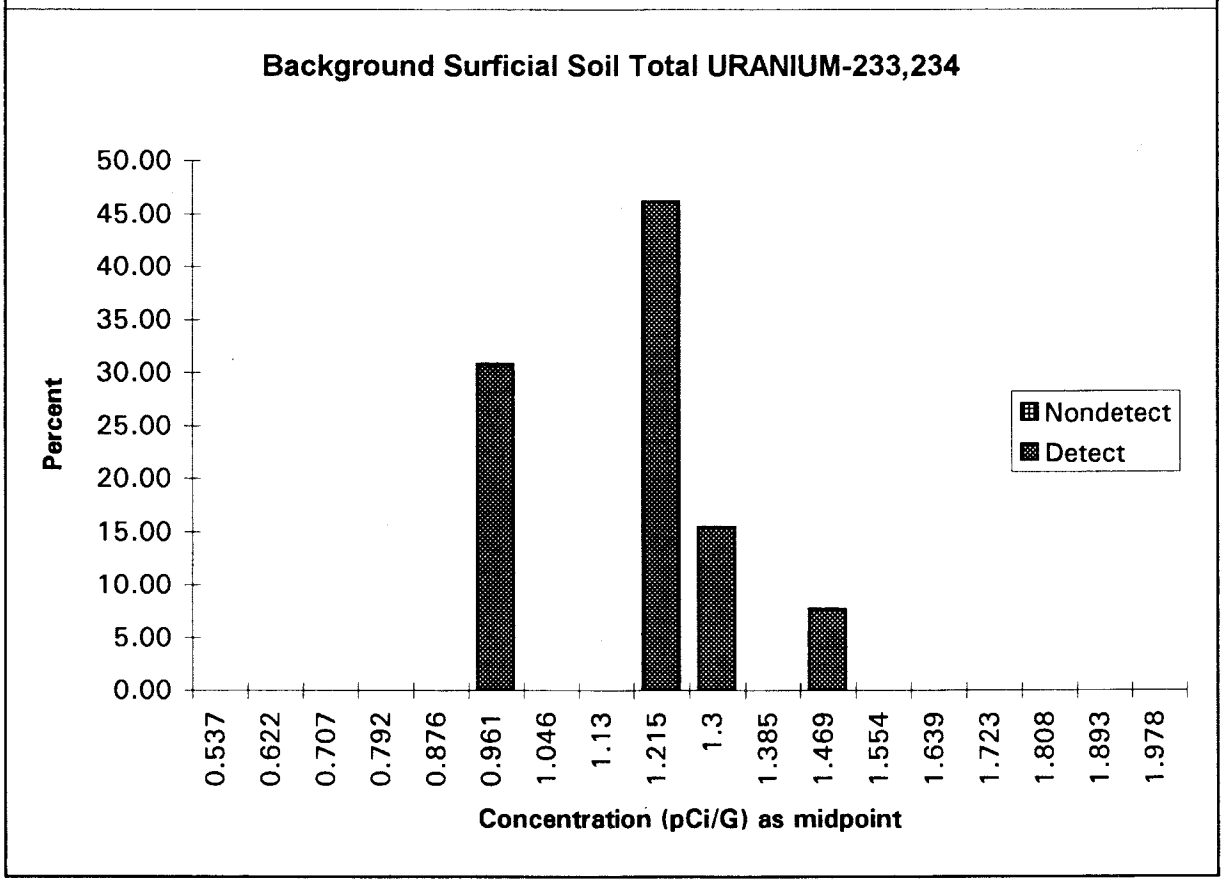

OU6 Surficial Soil Total PLUTONIUM-239,240
Percent
80.00
70.00
60.00
50.00
40.00
30.00
20.00
10.00
0.00
Nondetect
Detect
0.429
1.274
2.119
2.964
3.809
4.655
5.5
6.345
7.19
8.036
8.881
9.726
10.571
11.416
12.262
13.107
13.952
14.797
Concentration (pCi/G) as midpoint

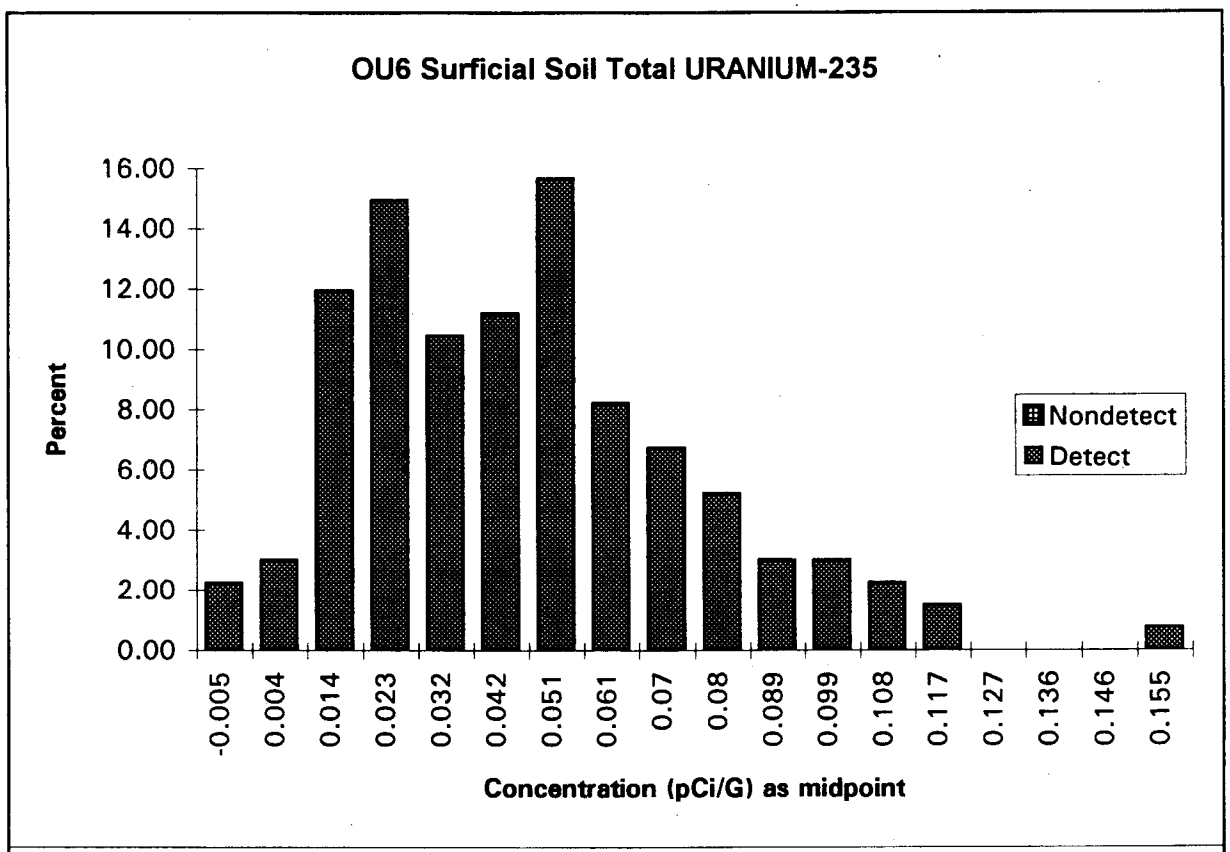

Background Surficial Soil Total PLUTONIUM-239,240
Percent
100.00
90.00
80.00
70.00
60.00
50.00
40.00
30.00
20.00
10.00
0.00
Nondetect
Detect
0.429
1.274
2.119
2.964
3.809
4.655
5.5
6.345
7.19
8.036
8.881
9.726
10.571
11.416
12.262
13.107
13.952
14.797
Concentration (pCi/G) as midpoint

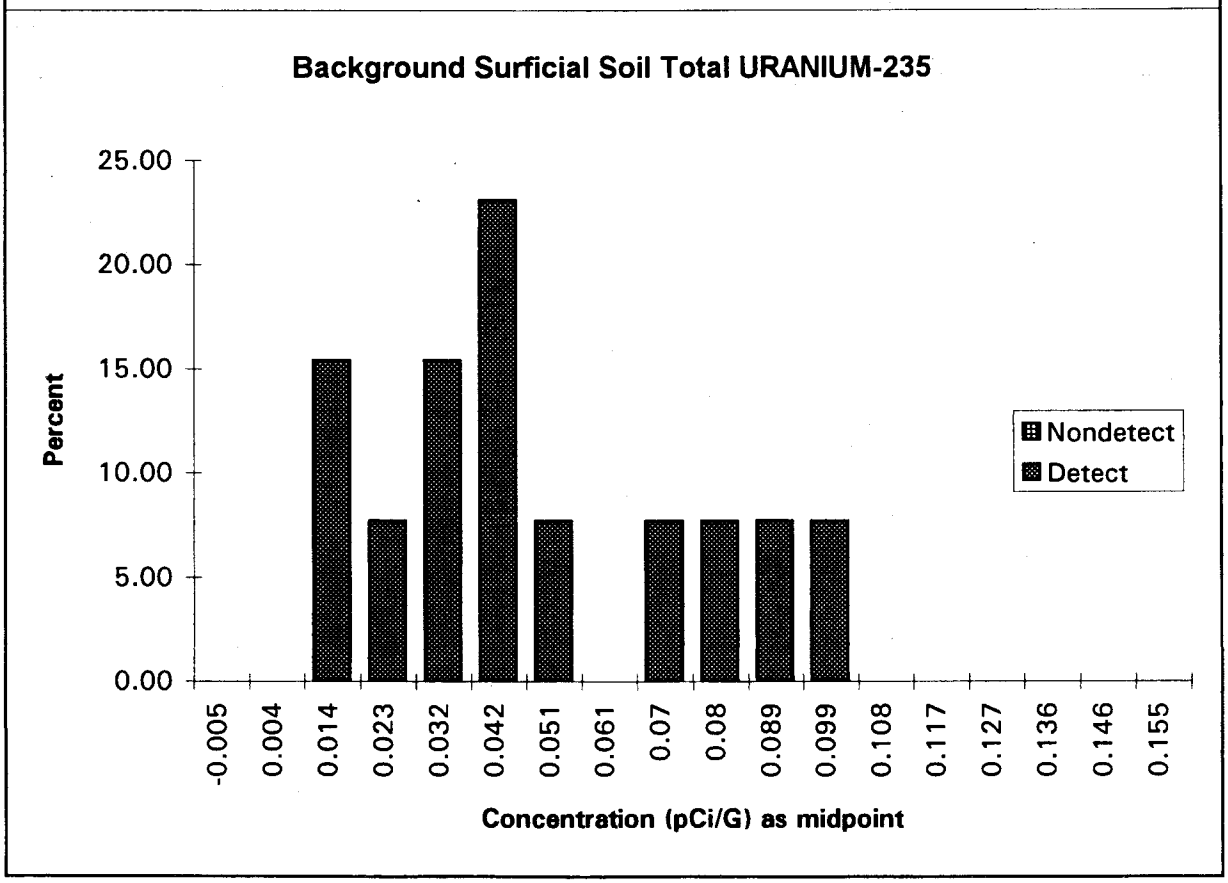

OU6 Surficial Soil Total STRONTIUM-89,90
Percent
40.00
35.00
30.00
25.00
20.00
15.00
10.00
5.00
0.00
Nondetect
Detect
0.086
0.138
0.191
0.243
0.295
0.347
0.399
0.452
0.504
0.556
0.608
0.661
0.713
0.765
0.817
0.869
0.922
0.974
Concentration (pCi/G) as midpoint

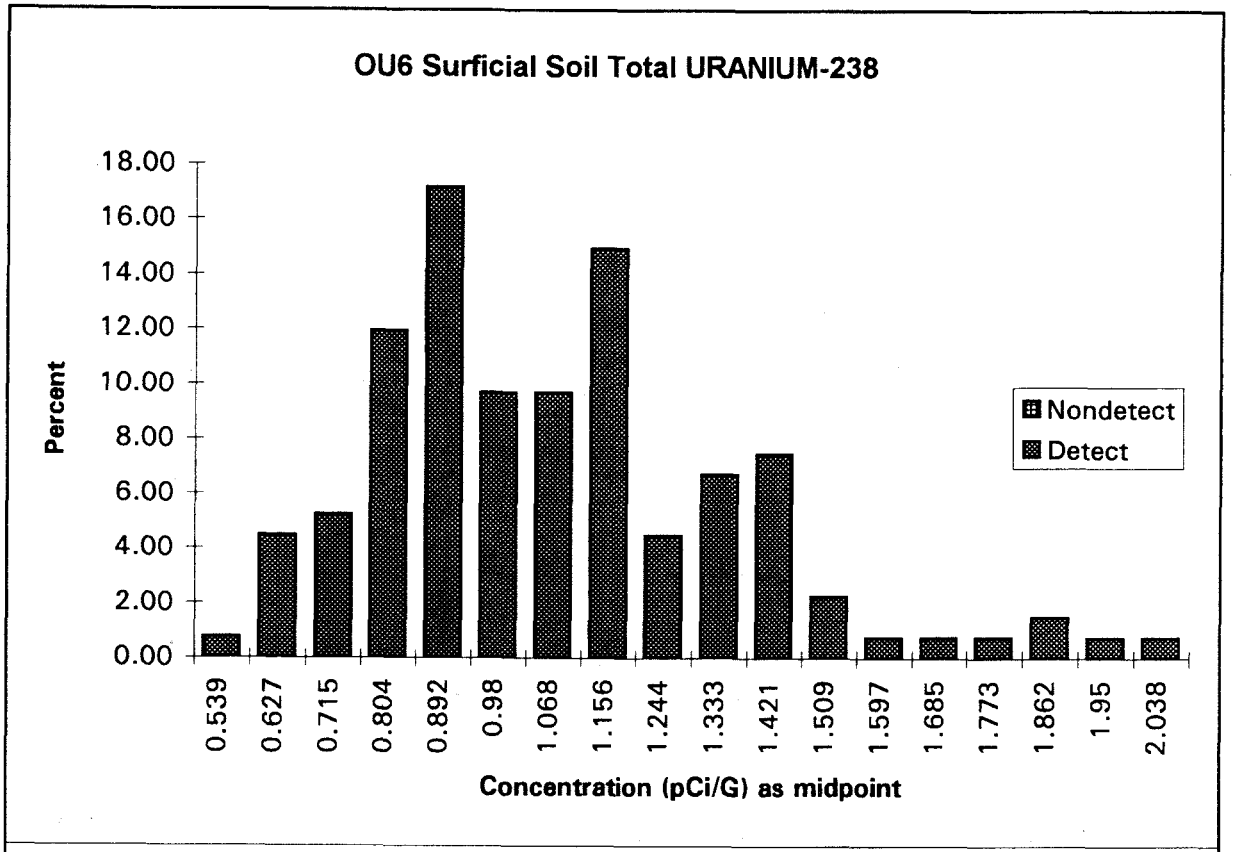

Background Surficial Soil Total STRONTIUM-89,90
Percent
25.00
20.00
15.00
10.00
5.00
0.00
Nondetect
Detect
0.086
0.138
0.191
0.243
0.295
0.347
0.399
0.452
0.504
0.556
0.608
0.661
0.713
0.765
0.817
0.869
0.922
0.974
Concentration (pCi/G) as midpoint

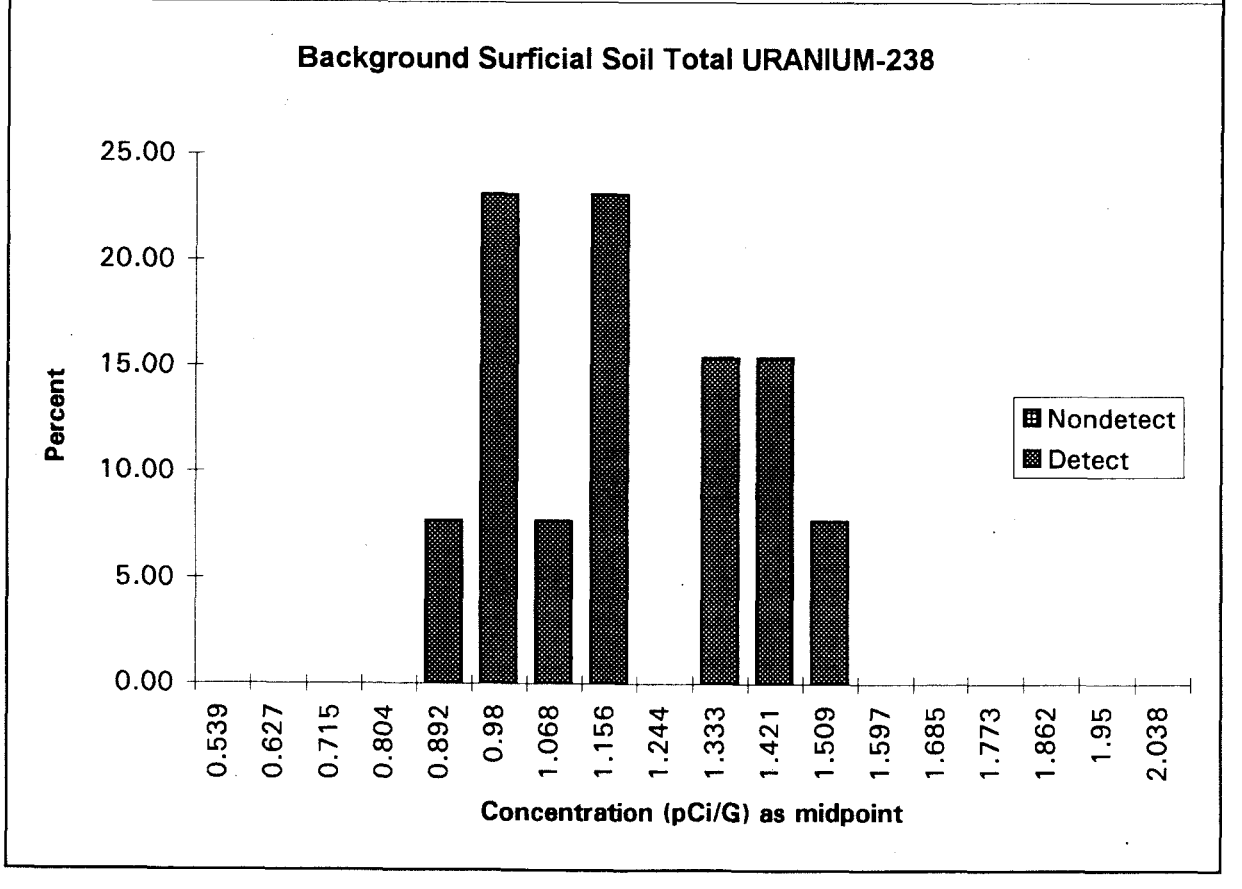

OU6 Surficial Soil Total URANIUM-233,234
Percent
16.00
14.00
12.00
10.00
8.00
6.00
4.00
2.00
0.00
Nondetect
Detect
0.537
0.622
0.707
0.792
0.876
0.961
1.046
1.13
1.215
1.3
1.385
1.469
1.554
1.639
1.723
1.808
1.893
1.978
Concentration (pCi/G) as midpoint

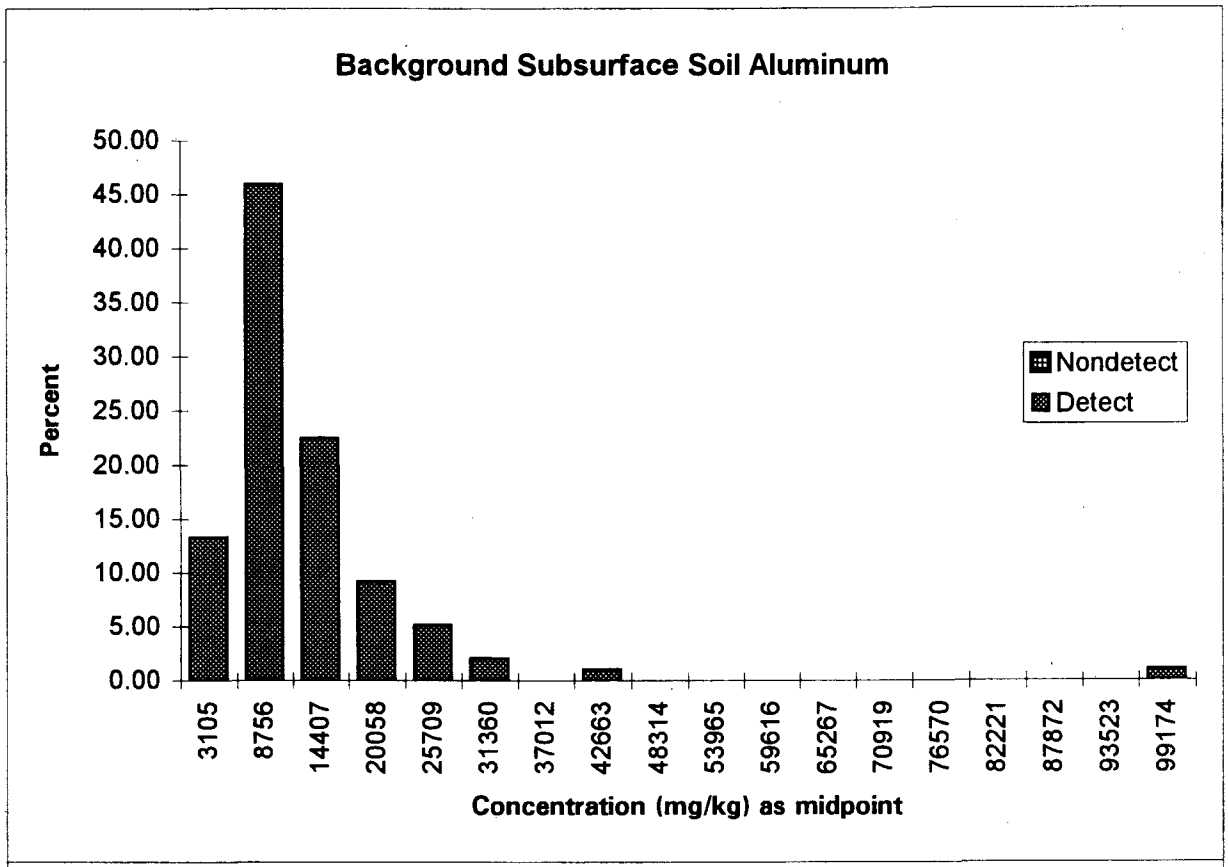

Background Surficial Soil Total URANIUM-233,234
Percent
50.00
45.00
40.00
35.00
30.00
25.00
20.00
15.00
10.00
5.00
0.00
Nondetect
Detect
0.537
0.622
0.707
0.792
0.876
0.961
1.046
1.13
1.215
1.3
1.385
1.469
1.554
1.639
1.723
1.808
1.893
1.978
Concentration (pCi/G) as midpoint

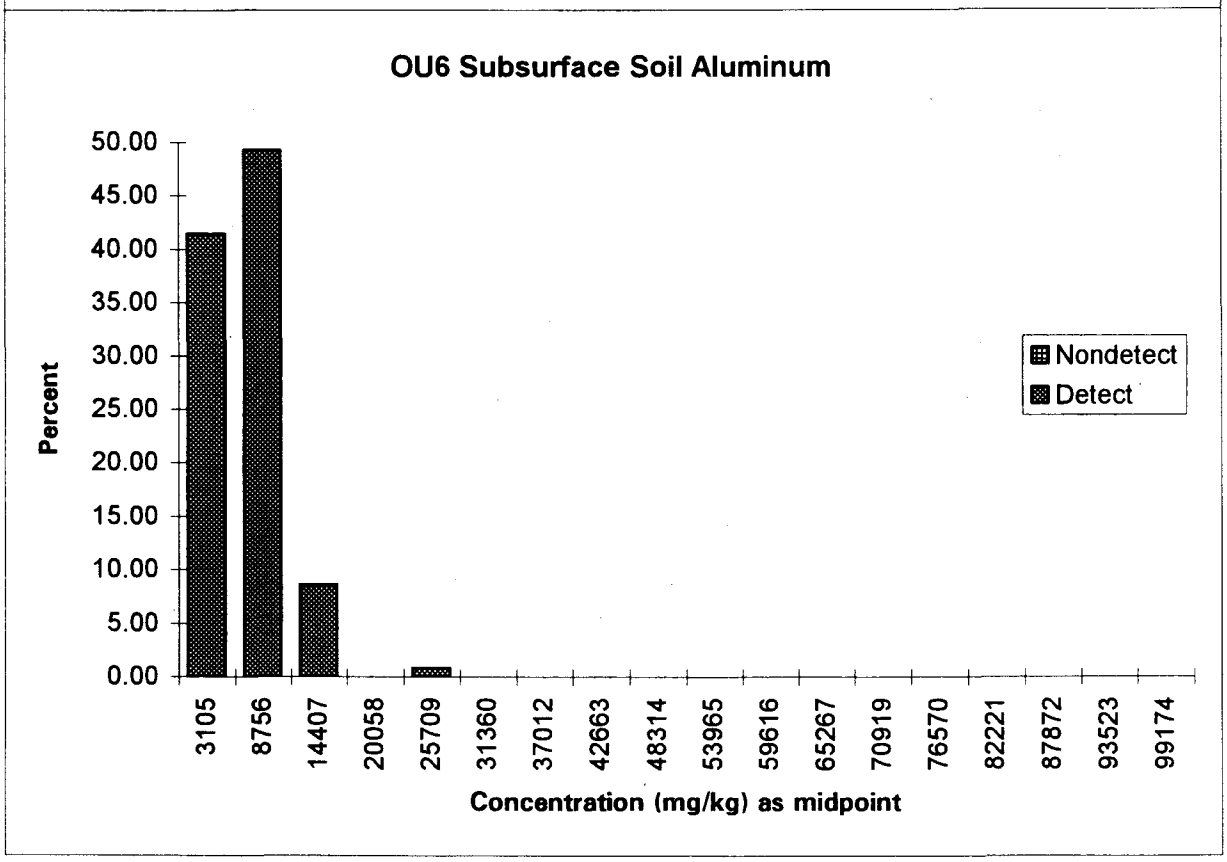

OU6 Surficial Soil Total URANIUM-235
Percent
16.00
14.00
12.00
10.00
8.00
6.00
4.00
2.00
0.00
Nondetect
Detect
-0.005
0.004
0.014
0.023
0.032
0.042
0.051
0.061
0.07
0.08
0.089
0.099
0.108
0.117
0.127
0.136
0.146
0.155
Concentration (pCi/G) as midpoint

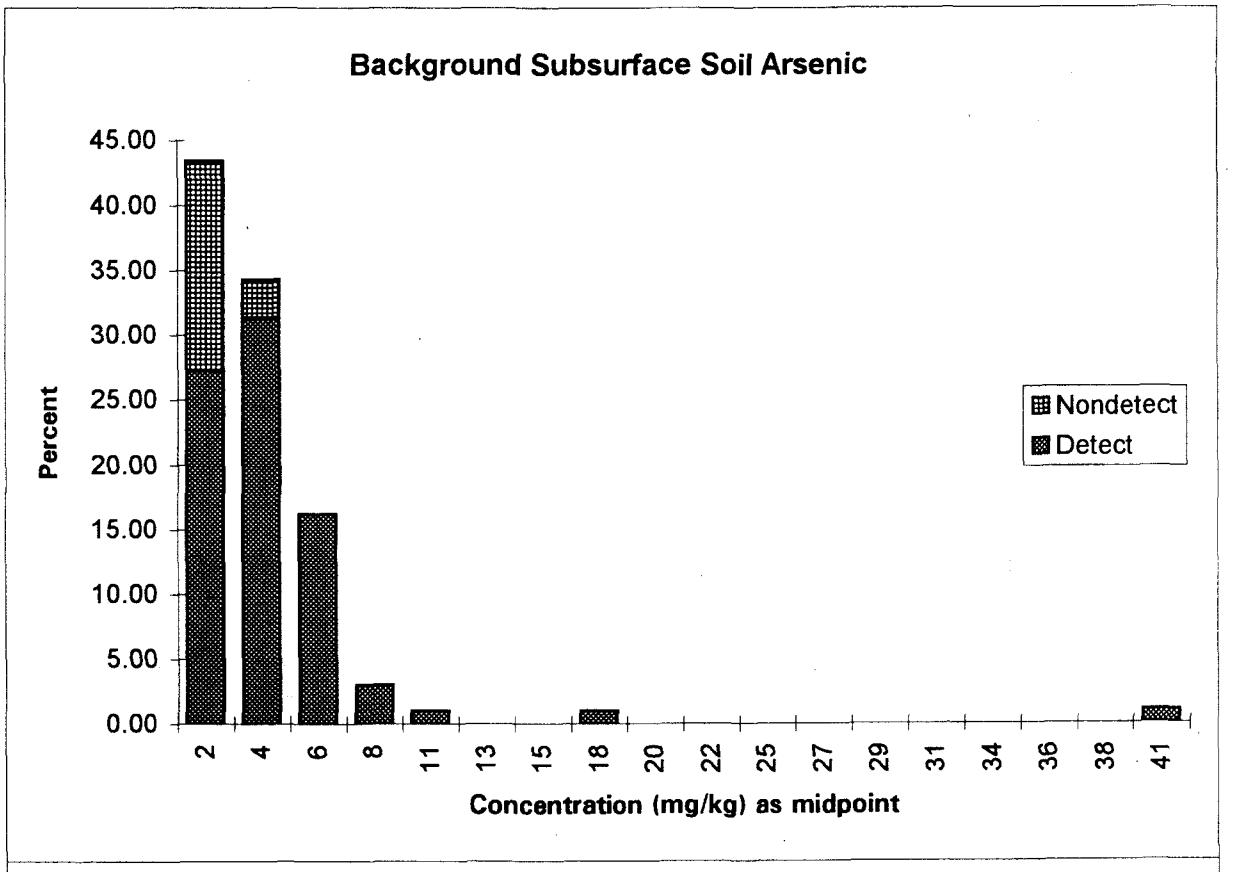

Background Surficial Soil Total URANIUM-235
Percent
25.00
20.00
15.00
10.00
5.00
0.00
Nondetect
Detect
-0.005
0.004
0.014
0.023
0.032
0.042
0.051
0.061
0.07
0.08
0.089
0.099
0.108
0.117
0.127
0.136
0.146
0.155
Concentration (pCi/G) as midpoint

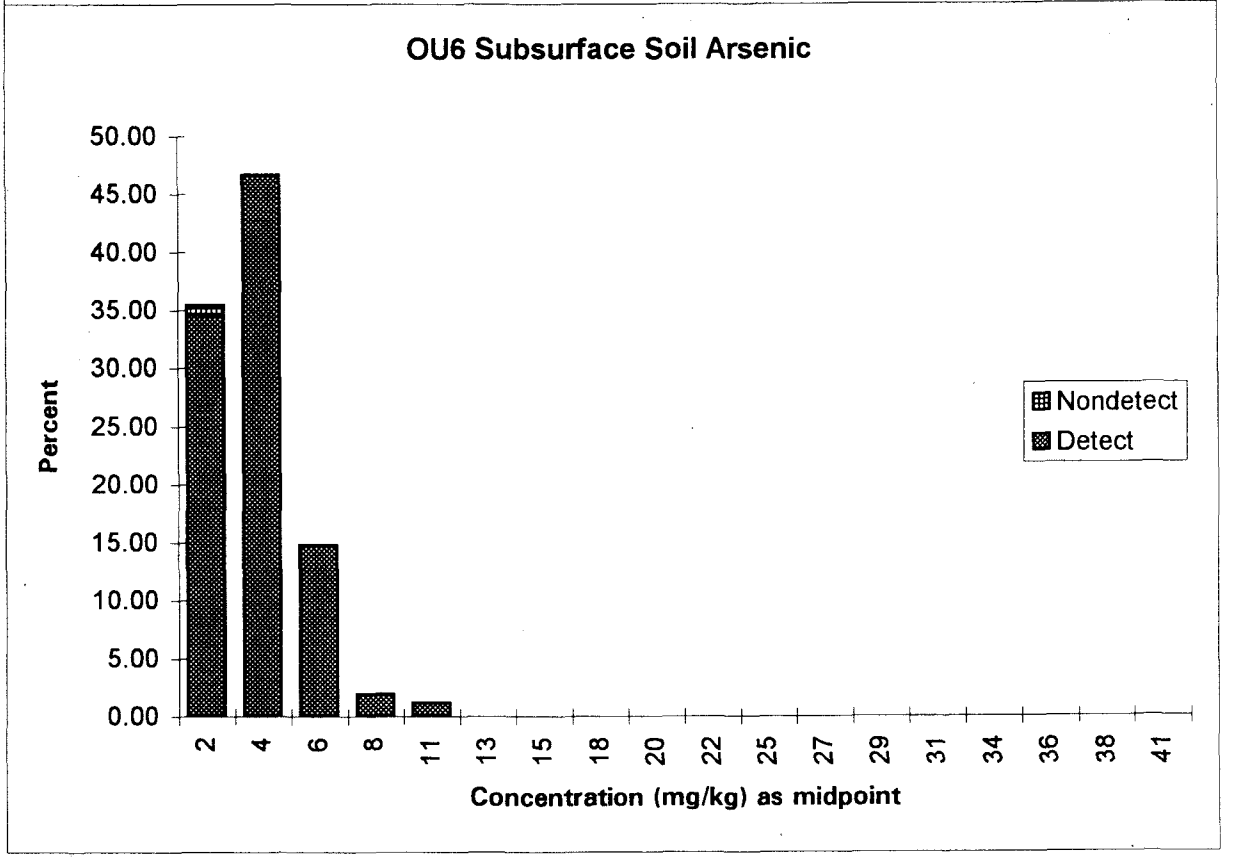

OU6 Surficial Soil Total URANIUM-238
Percent
18.00
16.00
14.00
12.00
10.00
8.00
6.00
4.00
2.00
0.00
Nondetect
Detect
0.539
0.627
0.715
0.804
0.892
0.98
1.068
1.156
1.244
1.333
1.421
1.509
1.597
1.685
1.773
1.862
1.95
2.038
Concentration (pCi/G) as midpoint

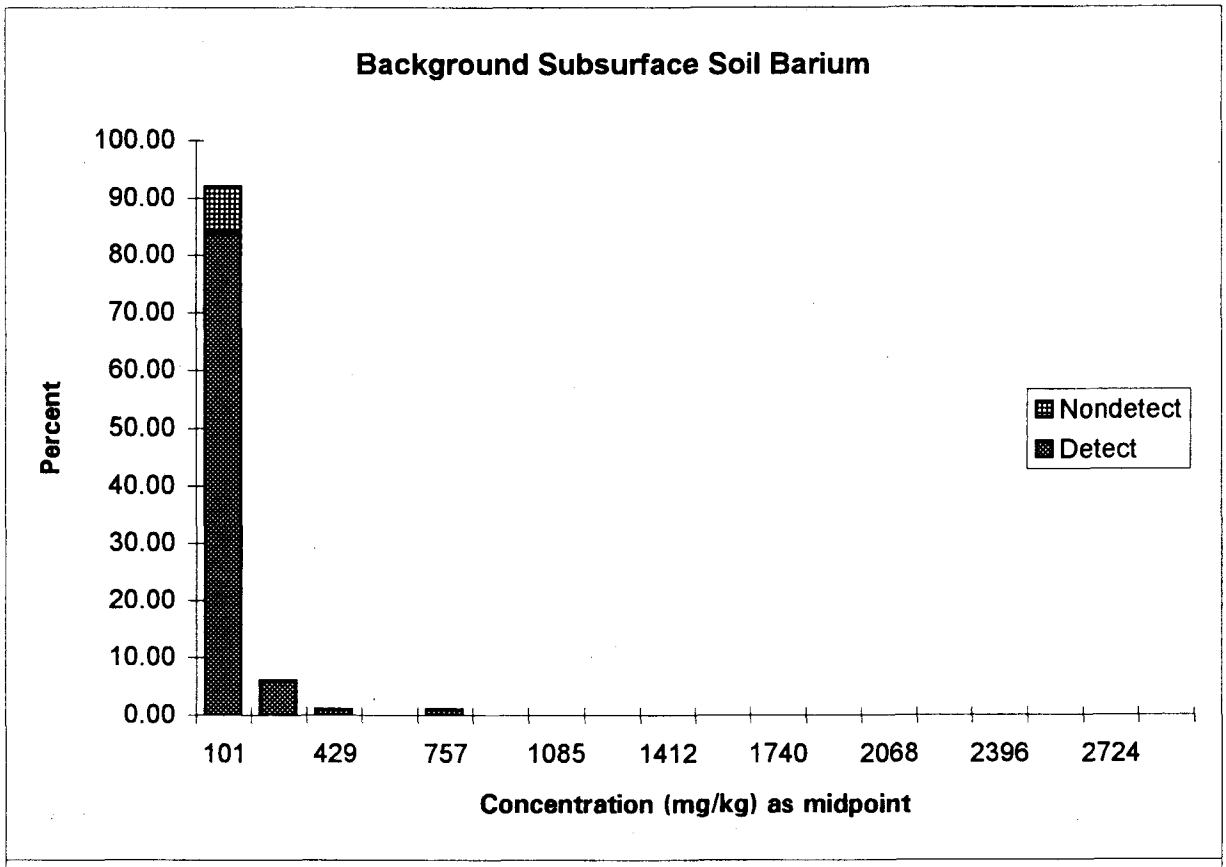

Background Surficial Soil Total URANIUM-238
Percent
25.00
20.00
15.00
10.00
5.00
0.00
Nondetect
Detect
0.539
0.627
0.715
0.804
0.892
0.98
1.068
1.156
1.244
1.333
1.421
1.509
1.597
1.685
1.773
1.862
1.95
2.038
Concentration (pCi/G) as midpoint

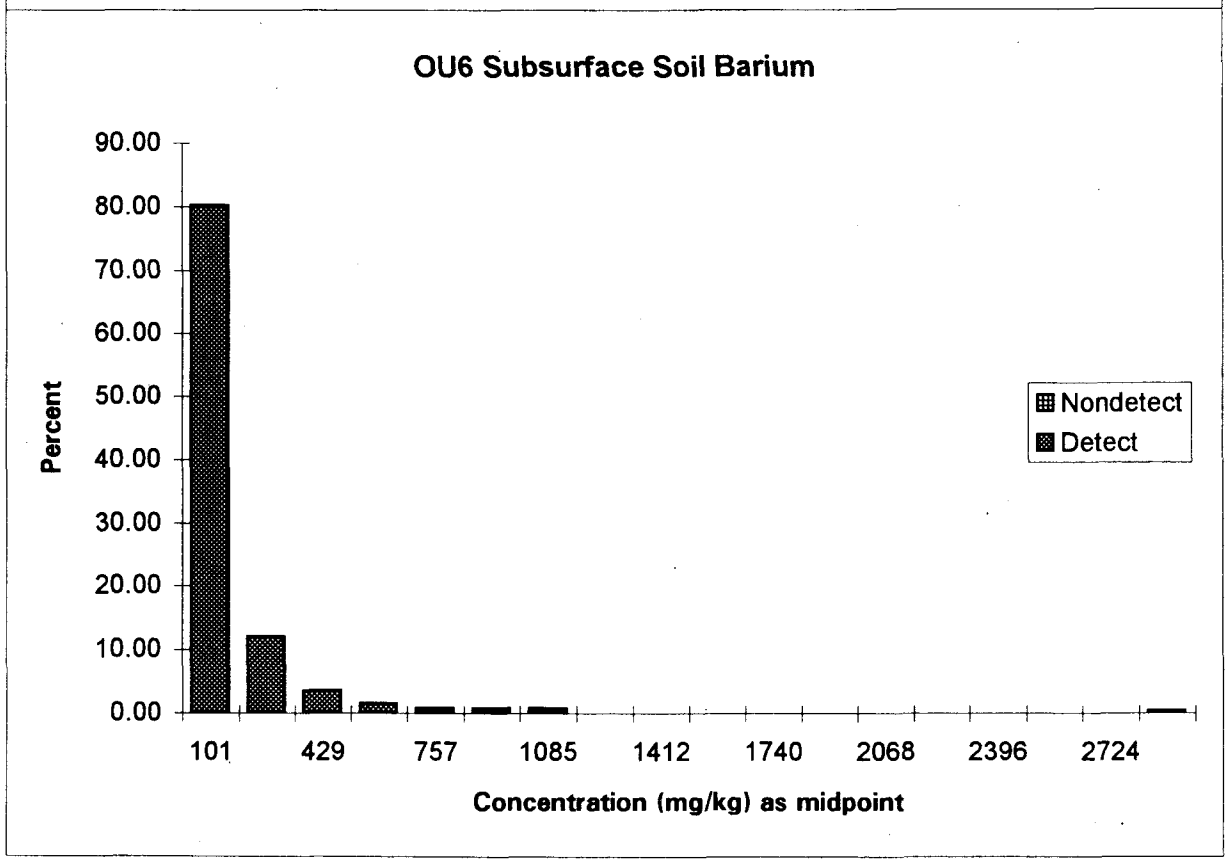

Background Subsurface Soil Aluminum
Percent
50.00
45.00
40.00
35.00
30.00
25.00
20.00
15.00
10.00
5.00
0.00
Nondetect
Detect
3105
8756
14407
20058
25709
31360
37012
42663
48314
53965
59616
65267
70919
76570
82221
87872
93523
99174
Concentration (mg/kg) as midpoint

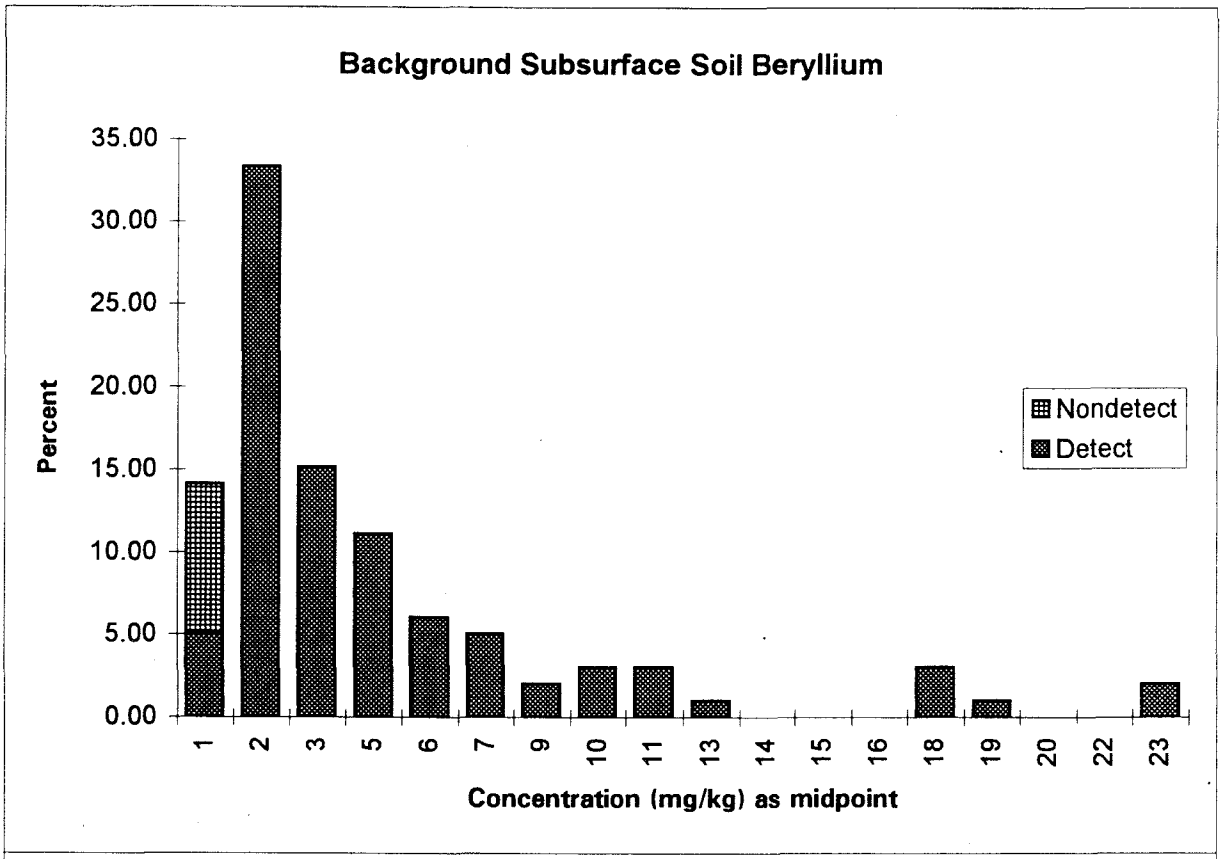

OU6 Subsurface Soil Aluminum
Percent
50.00
45.00
40.00
35.00
30.00
25.00
20.00
15.00
10.00
5.00
0.00
Nondetect
Detect
3105
8756
14407
20058
25709
31360
37012
42663
48314
53965
59616
65267
70919
76570
82221
87872
93523
99174
Concentration (mg/kg) as midpoint

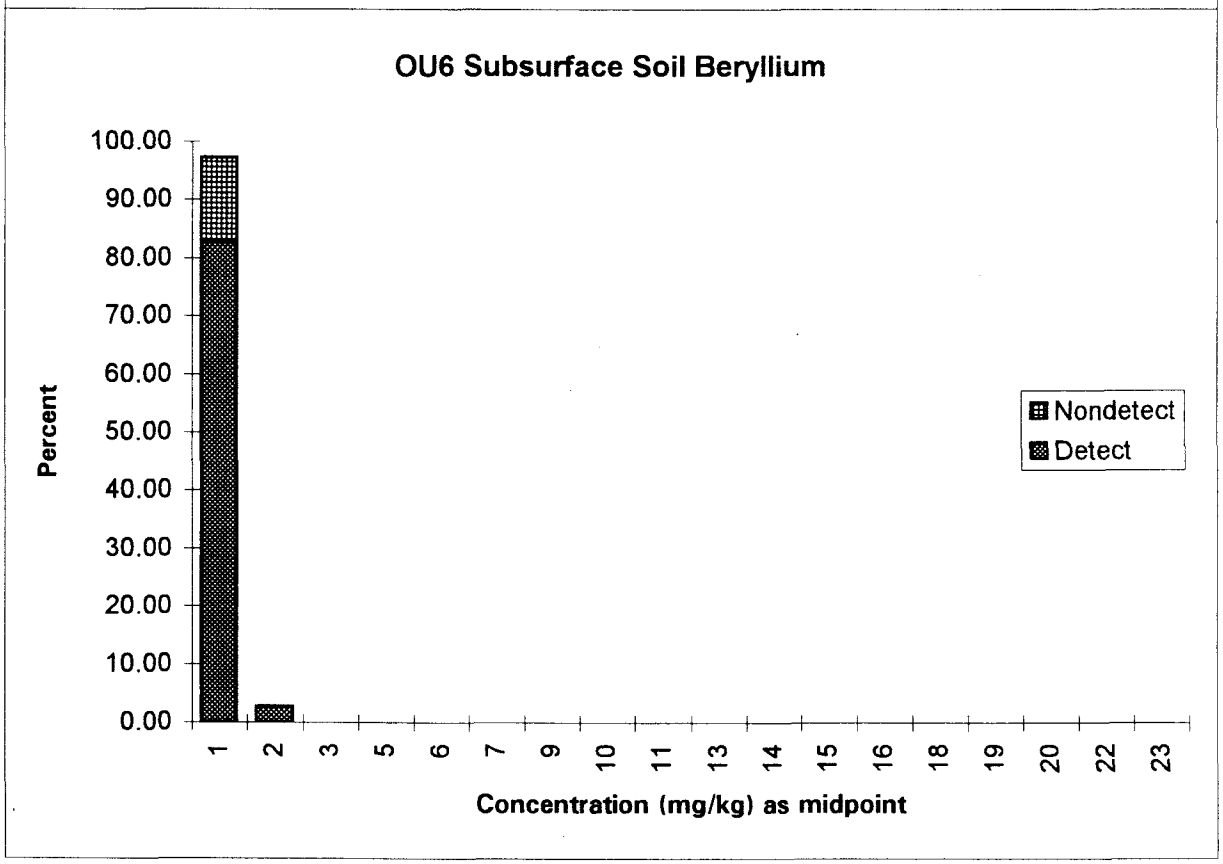

Background Subsurface Soil Arsenic
Percent
45.00
40.00
35.00
30.00
25.00
20.00
15.00
10.00
5.00
0.00
Nondetect
Detect
2
4
6
8
11
13
15
18
20
22
25
27
29
31
34
36
38
41
Concentration (mg/kg) as midpoint

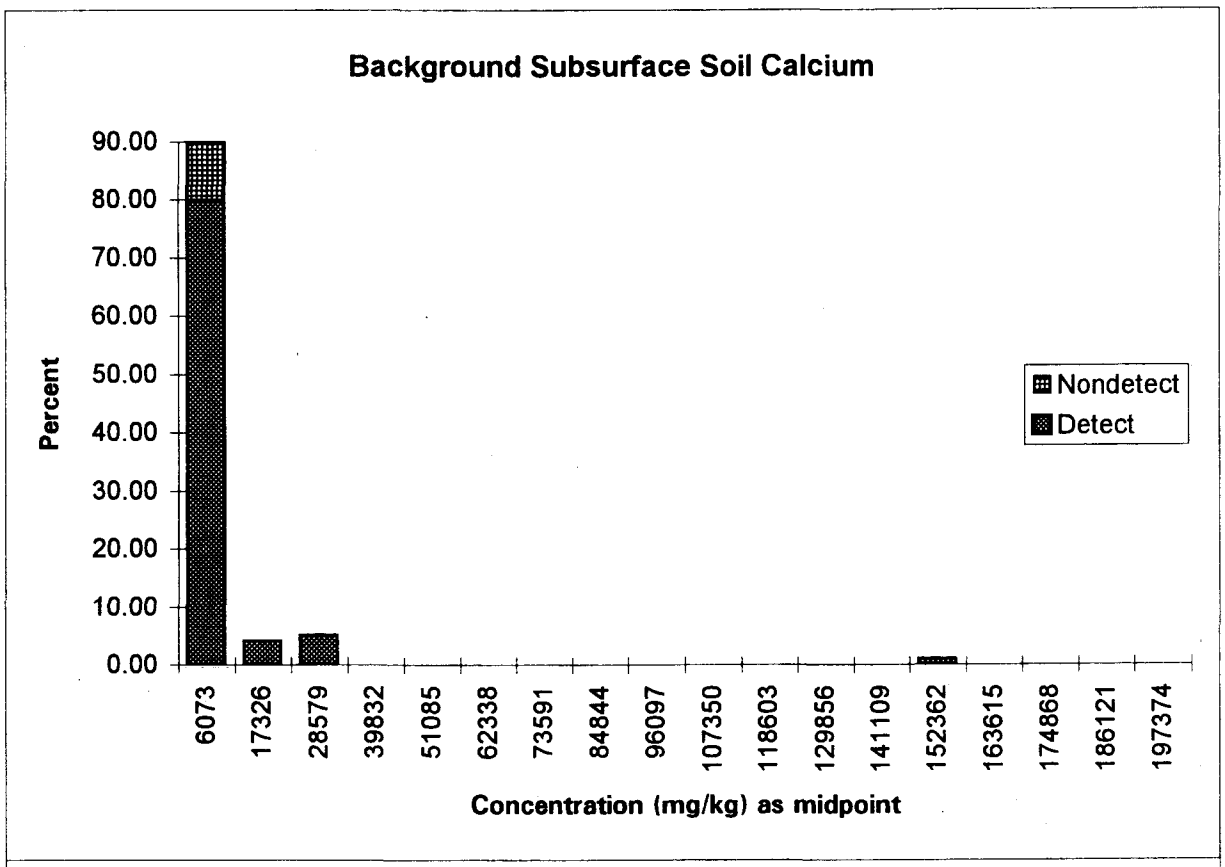

OU6 Subsurface Soil Arsenic
Percent
50.00
45.00
40.00
35.00
30.00
25.00
20.00
15.00
10.00
5.00
0.00
Nondetect
Detect
2
4
6
8
11
13
15
18
20
22
25
27
29
31
34
36
38
41
Concentration (mg/kg) as midpoint

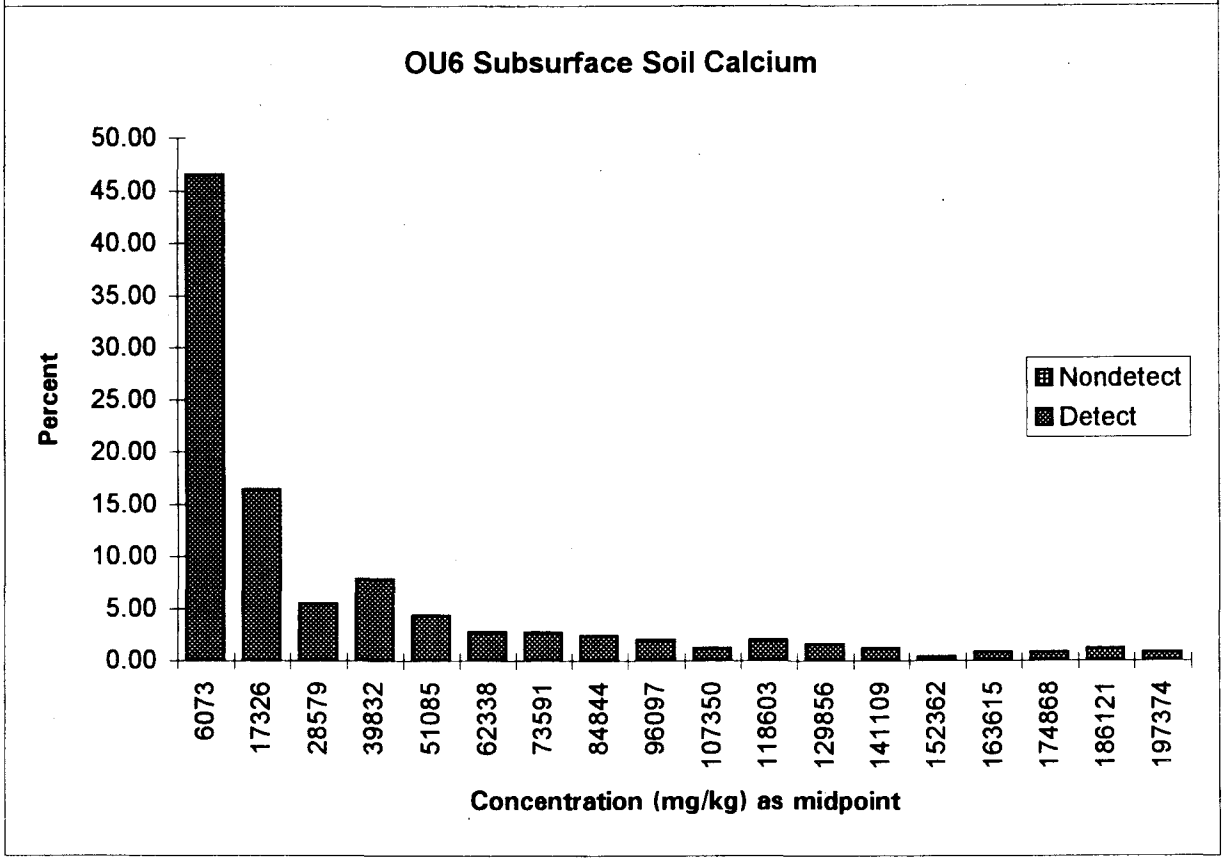

Background Subsurface Soil Barium
100.00
90.00
80.00
70.00
60.00
50.00
40.00
30.00
20.00
10.00
0.00
Percent
Nondetect
Detect
101
429
757
1085
1412
1740
2068
2396
2724
Concentration (mg/kg) as midpoint

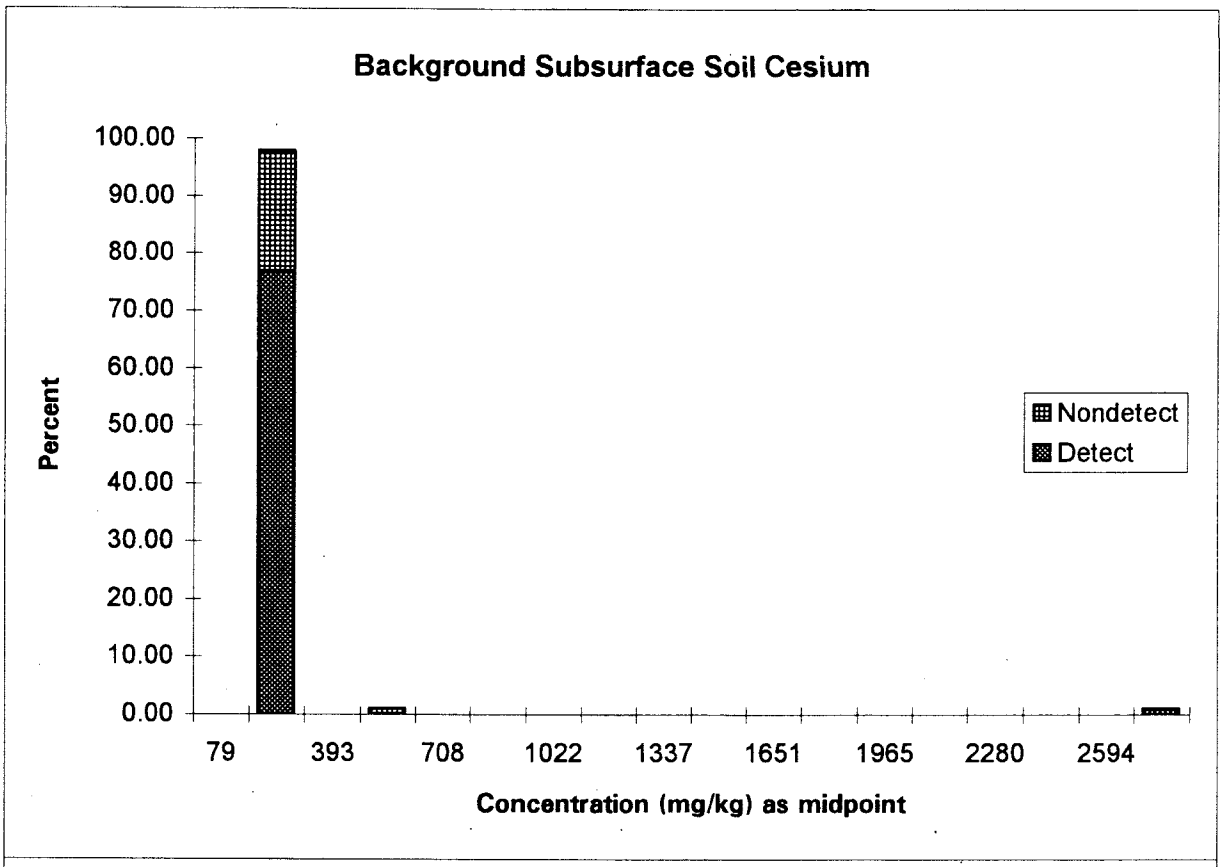

OU6 Subsurface Soil Barium
90.00
80.00
70.00
60.00
50.00
40.00
30.00
20.00
10.00
0.00
Percent
Nondetect
Detect
101
429
757
1085
1412
1740
2068
2396
2724
Concentration (mg/kg) as midpoint

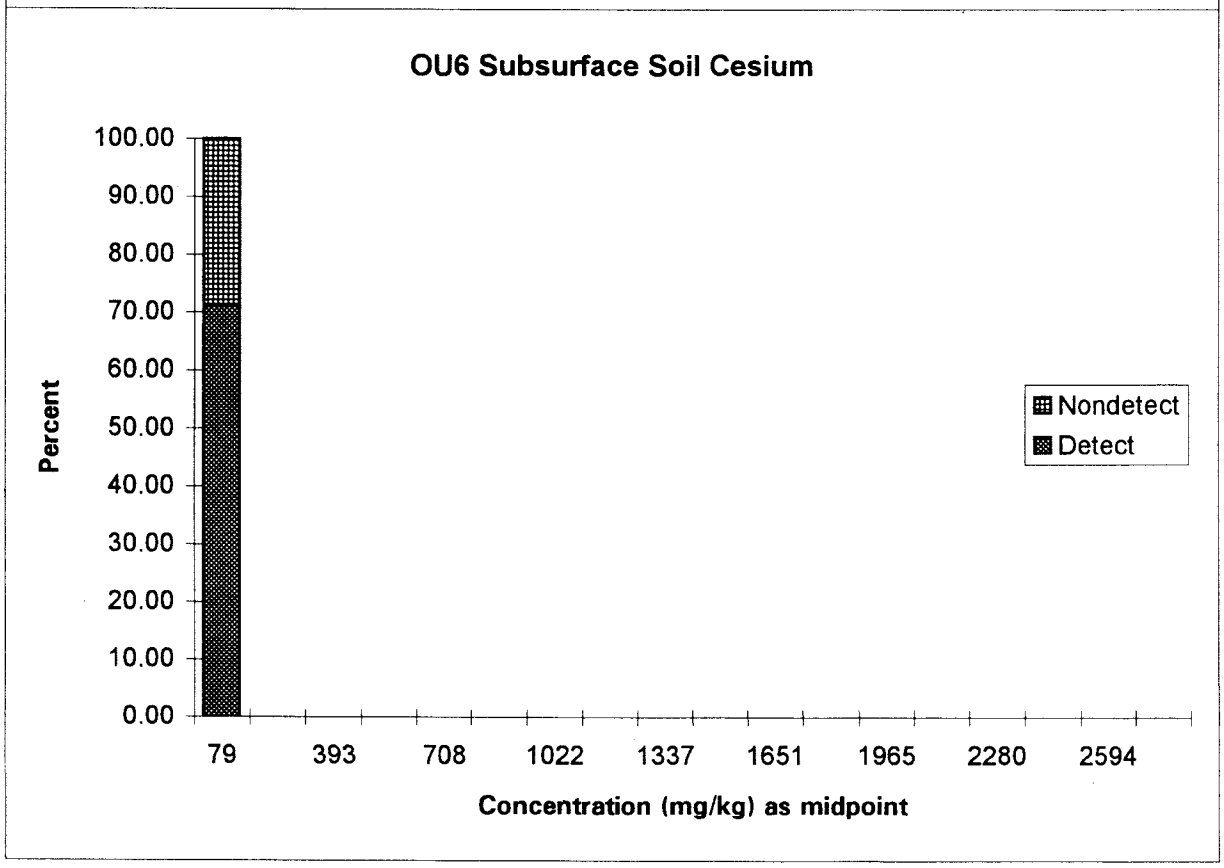

Background Subsurface Soil Beryllium
35.00
30.00
25.00
20.00
15.00
10.00
5.00
0.00
Percent
Nondetect
Detect
1
2
3
5
6
7
9
10
11
13
14
15
16
18
19
20
22
23
Concentration (mg/kg) as midpoint

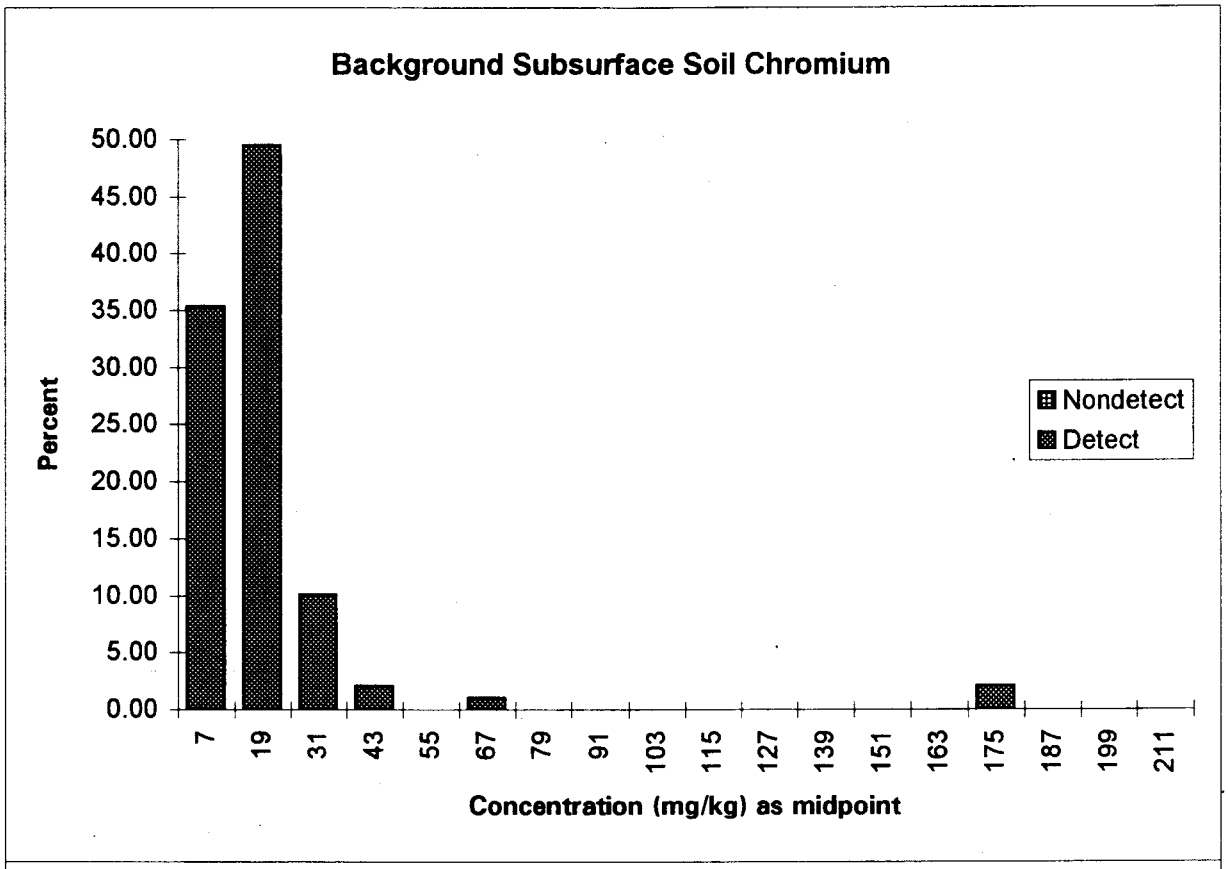

OU6 Subsurface Soil Beryllium
100.00
90.00
80.00
70.00
60.00
50.00
40.00
30.00
20.00
10.00
0.00
Percent
Nondetect
Detect
1
2
3
5
6
7
9
10
11
13
14
15
16
18
19
20
22
23
Concentration (mg/kg) as midpoint

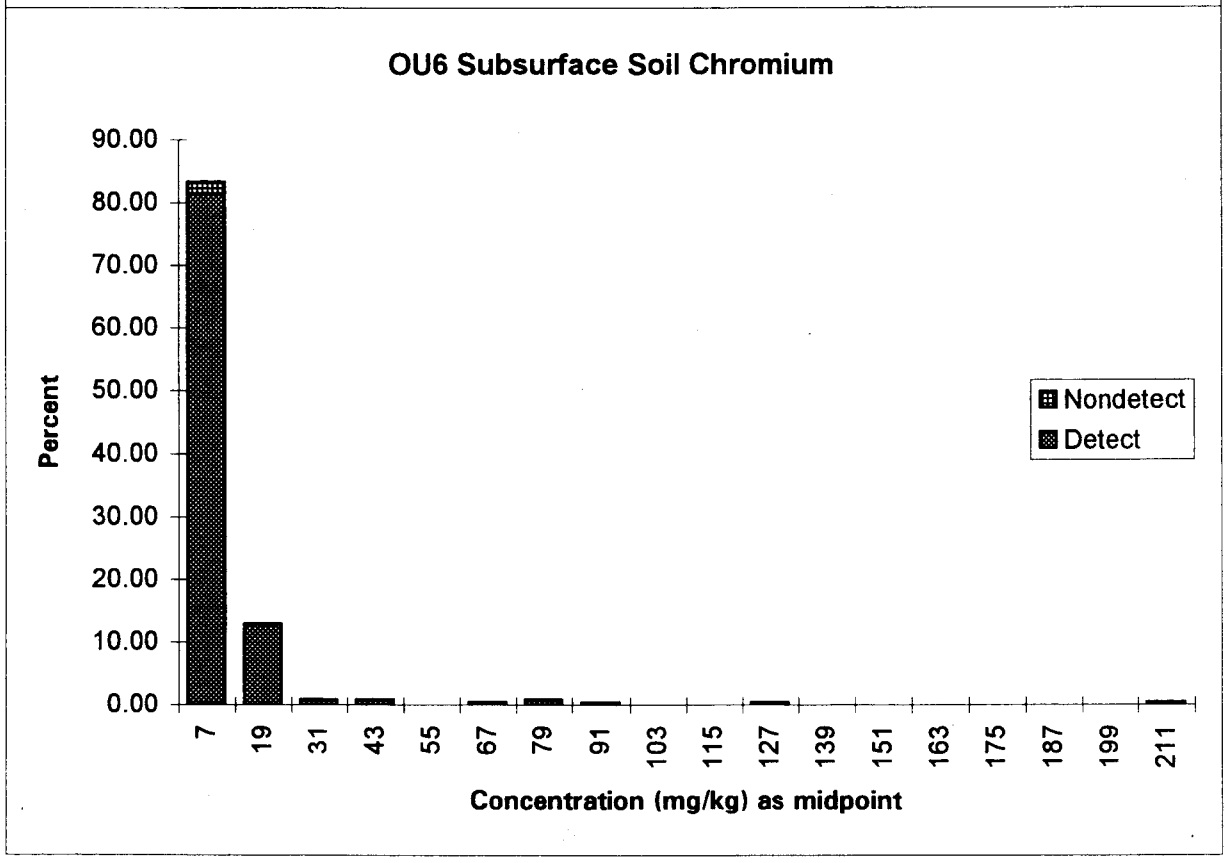

Background Subsurface Soil Calcium
Percent
90.00
80.00
70.00
60.00
50.00
40.00
30.00
20.00
10.00
0.00
Nondetect
Detect
6073
17326
28579
39832
51085
62338
73591
84844
96097
107350
118603
129856
141109
152362
163615
174868
186121
197374
Concentration (mg/kg) as midpoint

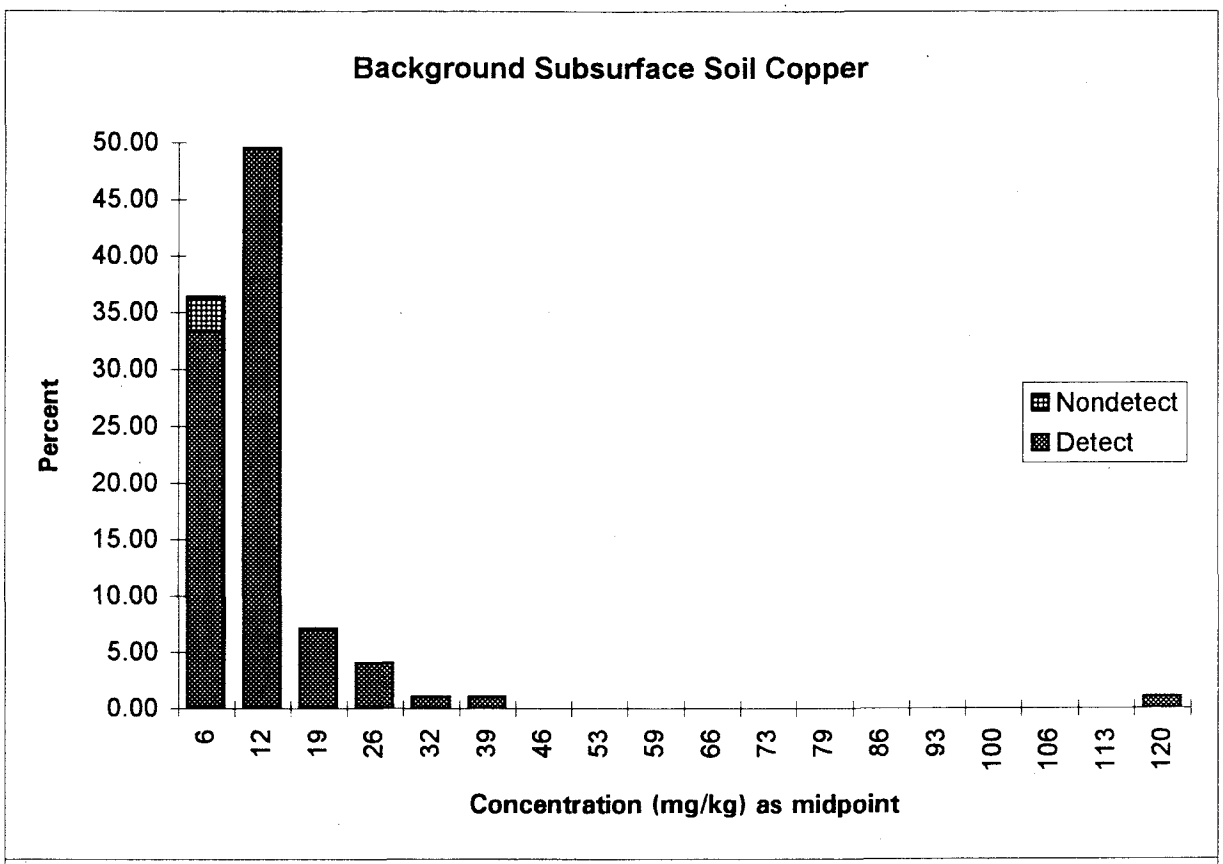

OU6 Subsurface Soil Calcium
Percent
50.00
45.00
40.00
35.00
30.00
25.00
20.00
15.00
10.00
5.00
0.00
Nondetect
Detect
6073
17326
28579
39832
51085
62338
73591
84844
96097
107350
118603
129856
141109
152362
163615
174868
186121
197374
Concentration (mg/kg) as midpoint

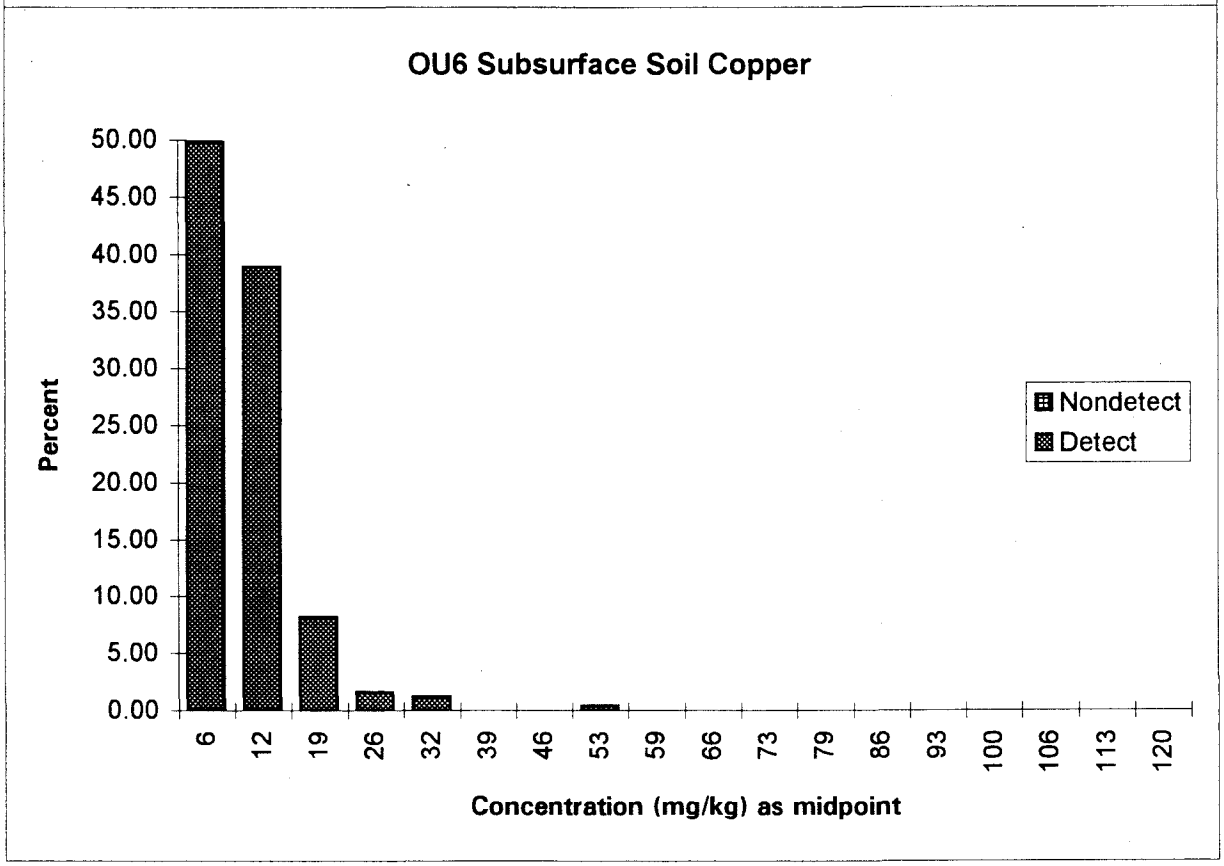

Background Subsurface Soil Cesium
100.00
90.00
80.00
70.00
60.00
50.00
40.00
30.00
20.00
10.00
0.00
Percent
Nondetect
Detect
79
393
708
1022
1337
1651
1965
2280
2594
Concentration (mg/kg) as midpoint

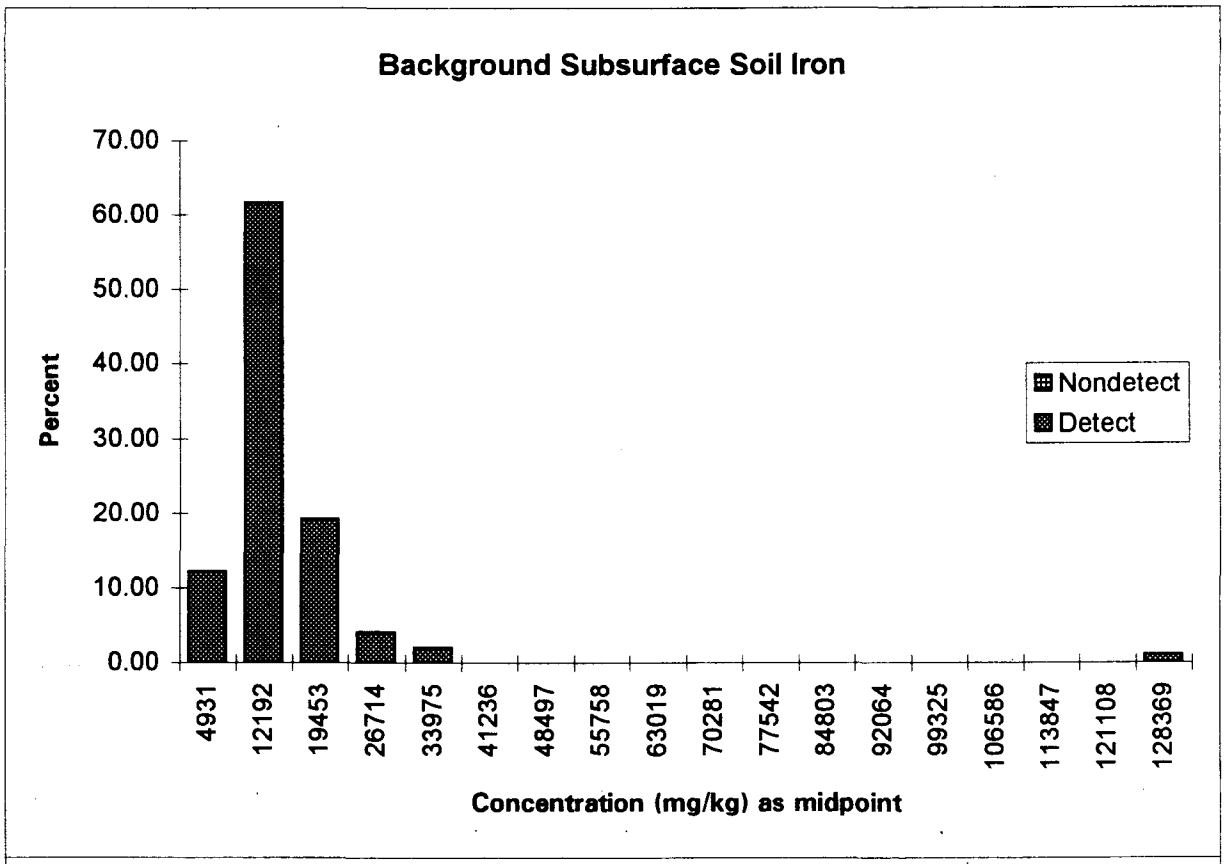

OU6 Subsurface Soil Cesium
100.00
90.00
80.00
70.00
60.00
50.00
40.00
30.00
20.00
10.00
0.00
Percent
Nondetect
Detect
79
393
708
1022
1337
1651
1965
2280
2594
Concentration (mg/kg) as midpoint

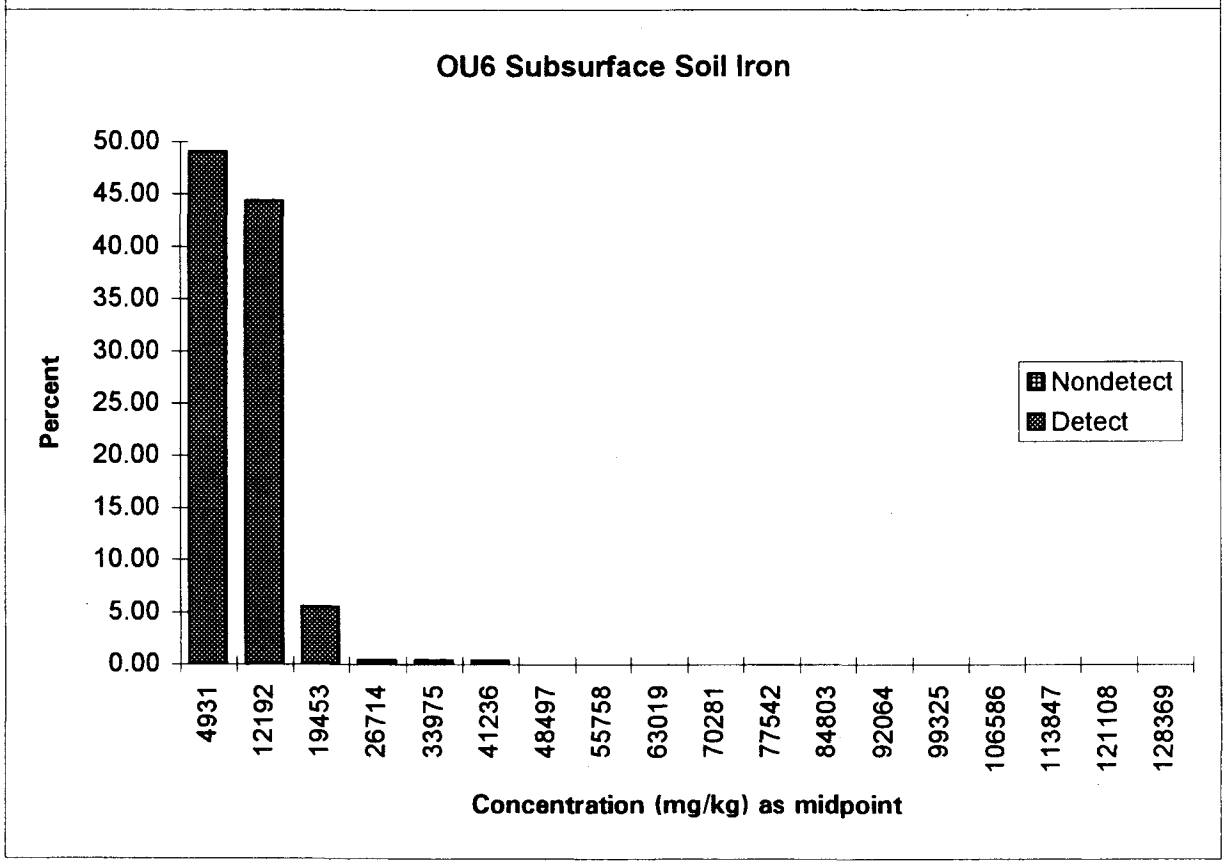

Background Subsurface Soil Chromium
Percent
50.00
45.00
40.00
35.00
30.00
25.00
20.00
15.00
10.00
5.00
0.00
7
19
31
43
55
67
79
91
103
115
127
139
151
163
175
187
199
211
Concentration (mg/kg) as midpoint
Nondetect
Detect

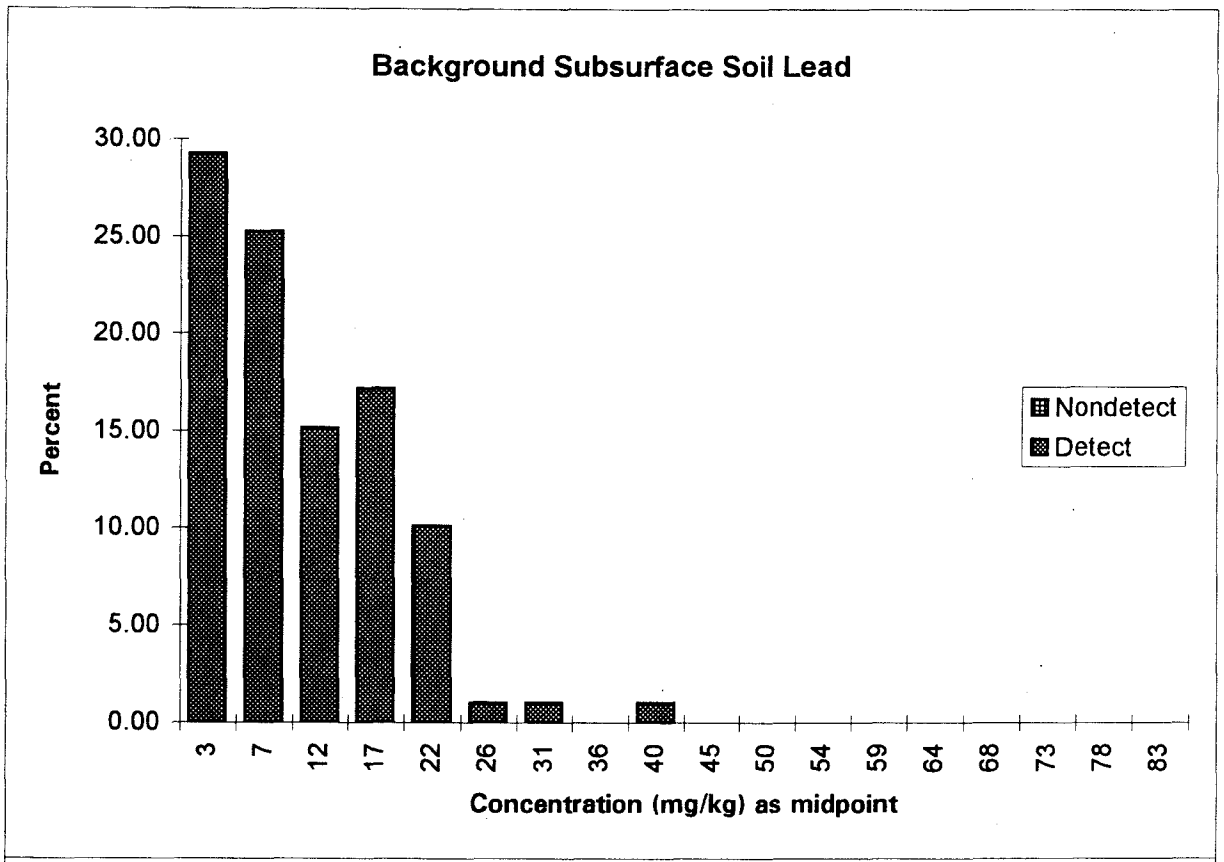

OU6 Subsurface Soil Chromium
Percent
90.00
80.00
70.00
60.00
50.00
40.00
30.00
20.00
10.00
0.00
7
19
31
43
55
67
79
91
103
115
127
139
151
163
175
187
199
211
Concentration (mg/kg) as midpoint
Nondetect
Detect

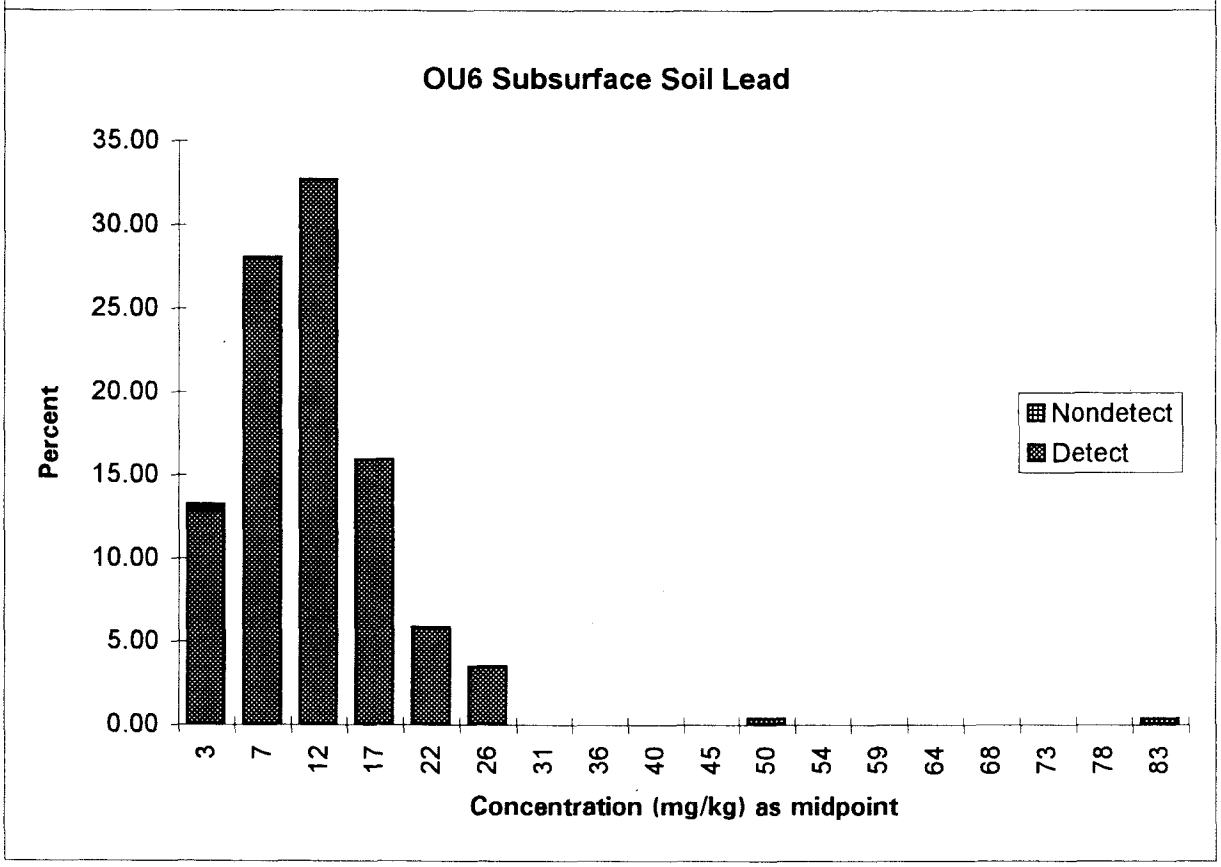

Background Subsurface Soil Copper
Percent
50.00
45.00
40.00
35.00
30.00
25.00
20.00
15.00
10.00
5.00
0.00
6
12
19
26
32
39
46
53
59
66
73
79
86
93
100
106
113
120
Concentration (mg/kg) as midpoint
Nondetect
Detect

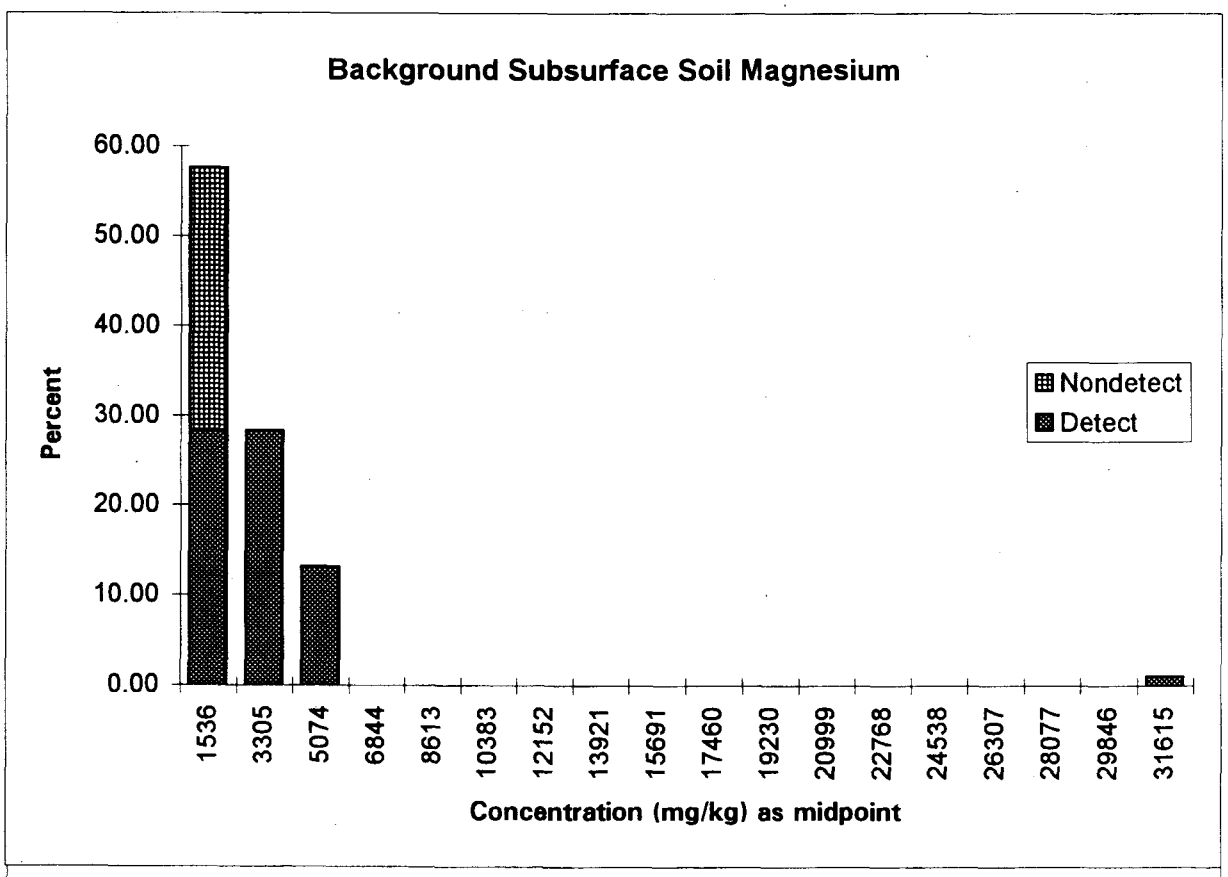

OU6 Subsurface Soil Copper
Percent
50.00
45.00
40.00
35.00
30.00
25.00
20.00
15.00
10.00
5.00
0.00
6
12
19
26
32
39
46
53
59
66
73
79
86
93
100
106
113
120
Concentration (mg/kg) as midpoint
Nondetect
Detect

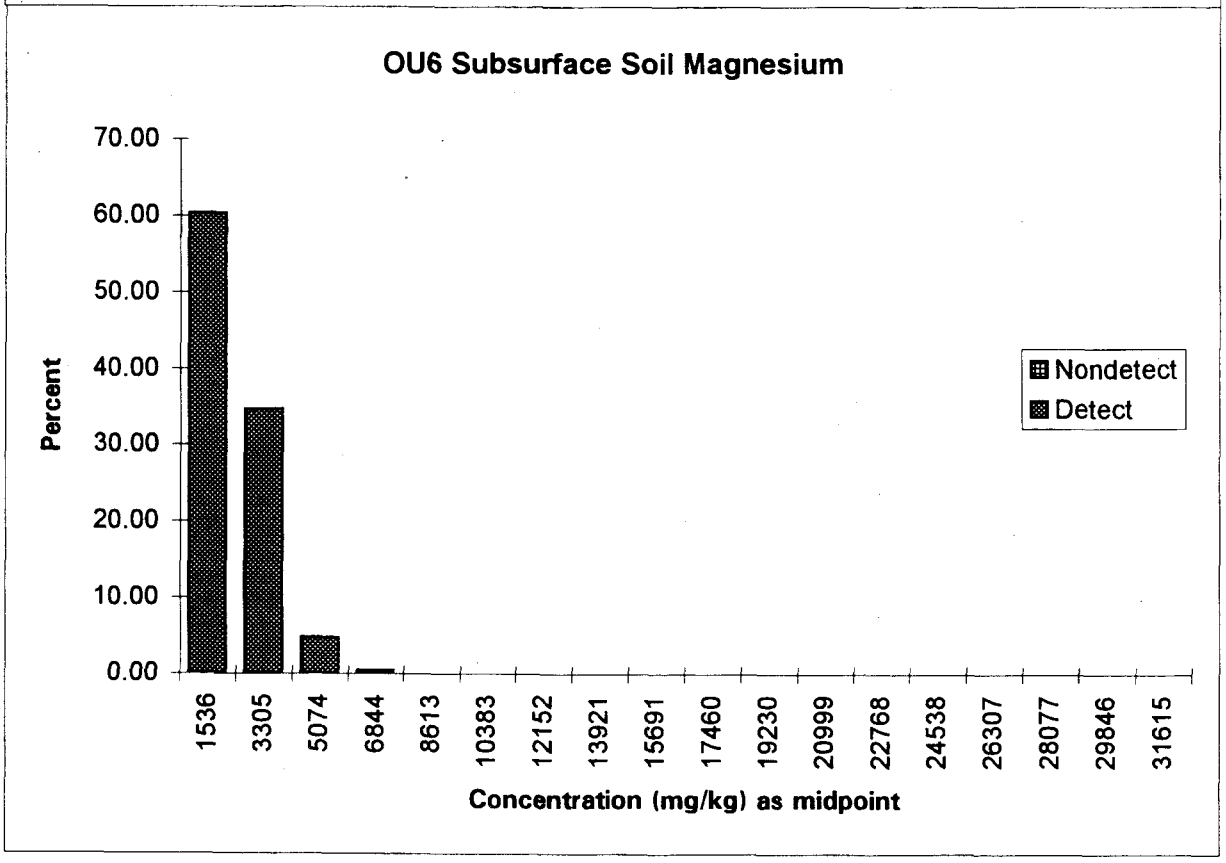

Background Subsurface Soil Iron
Percent
70.00
60.00
50.00
40.00
30.00
20.00
10.00
0.00
Nondetect
Detect
4931
12192
19453
26714
33975
41236
48497
55758
63019
70281
77542
84803
92064
99325
106586
113847
121108
128369
Concentration (mg/kg) as midpoint

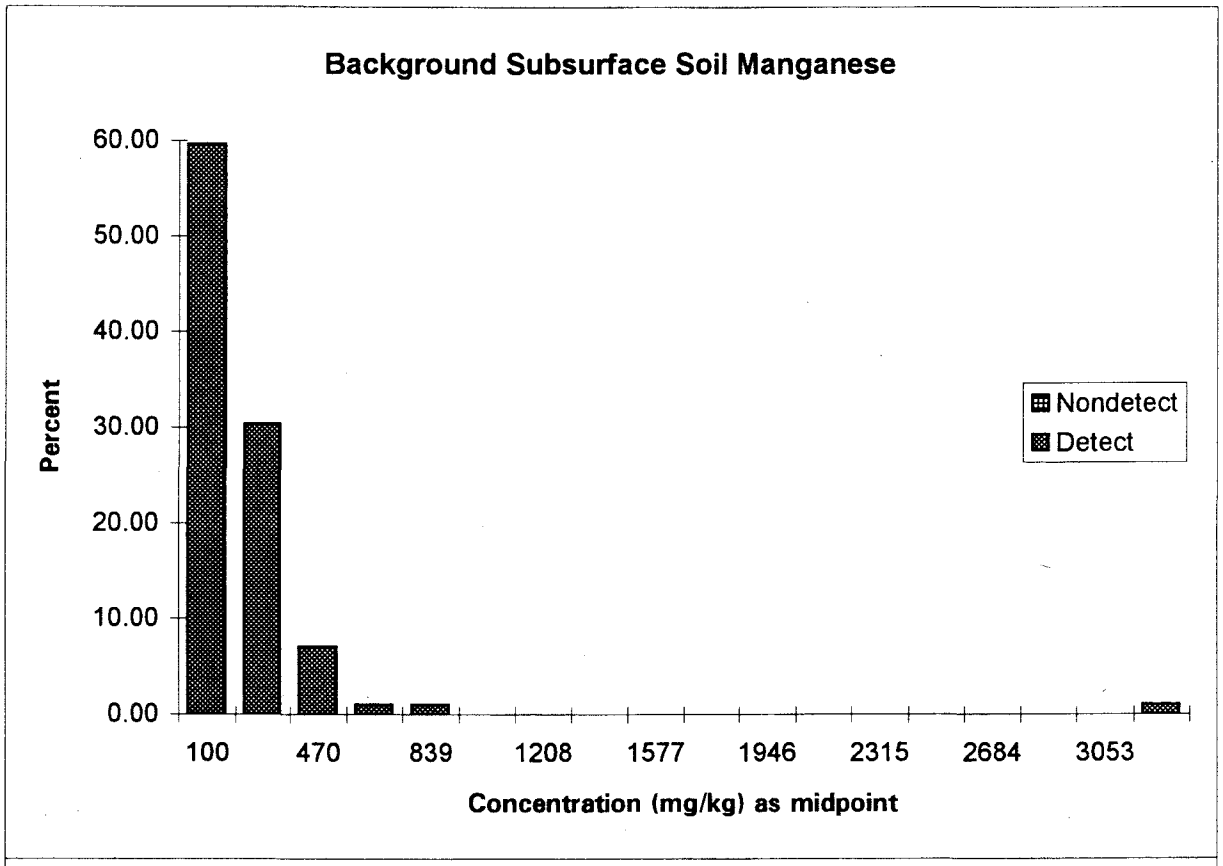

OU6 Subsurface Soil Iron
Percent
50.00
45.00
40.00
35.00
30.00
25.00
20.00
15.00
10.00
5.00
0.00
Nondetect
Detect
4931
12192
19453
26714
33975
41236
48497
55758
63019
70281
77542
84803
92064
99325
106586
113847
121108
128369
Concentration (mg/kg) as midpoint

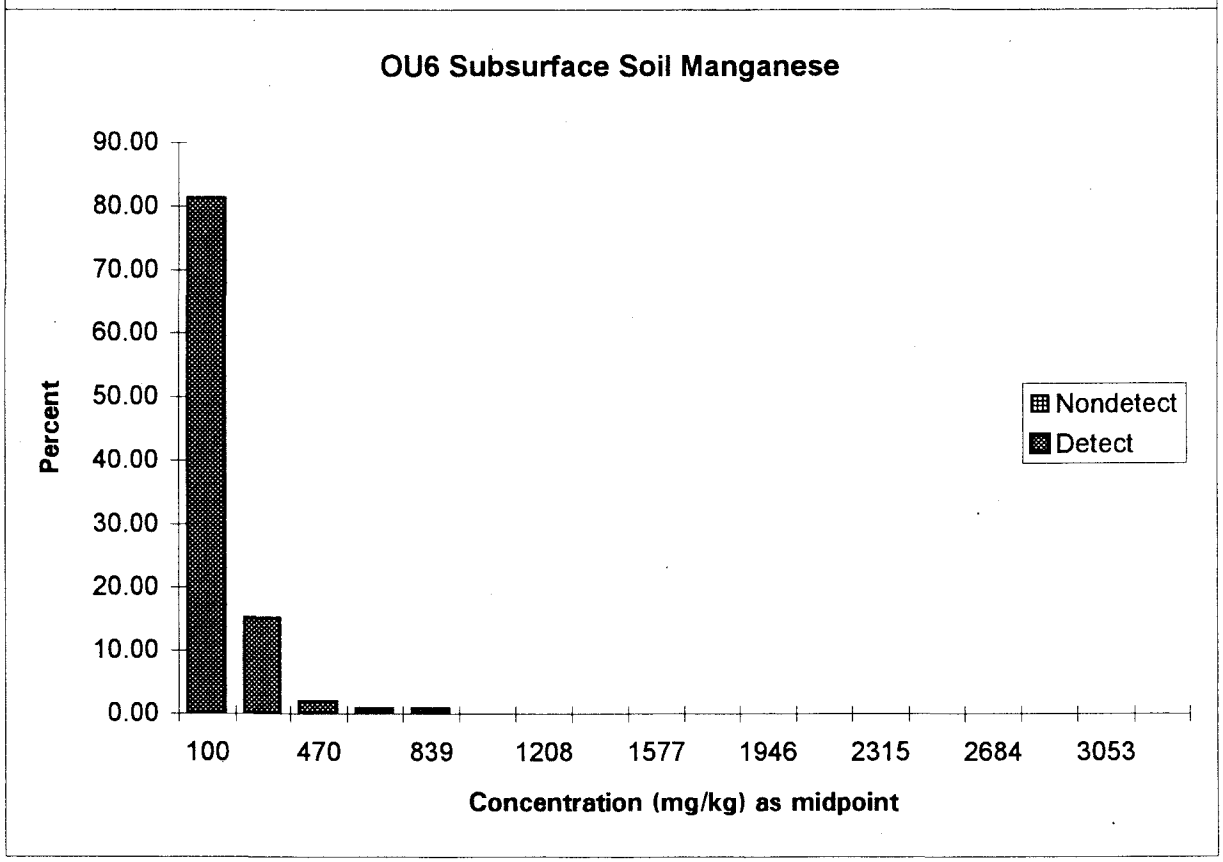

Background Subsurface Soil Lead
30.00
25.00
20.00
15.00
10.00
5.00
0.00
Percent
Nondetect
Detect
3
7
12
17
22
26
31
36
40
45
50
54
59
64
68
73
78
83
Concentration (mg/kg) as midpoint

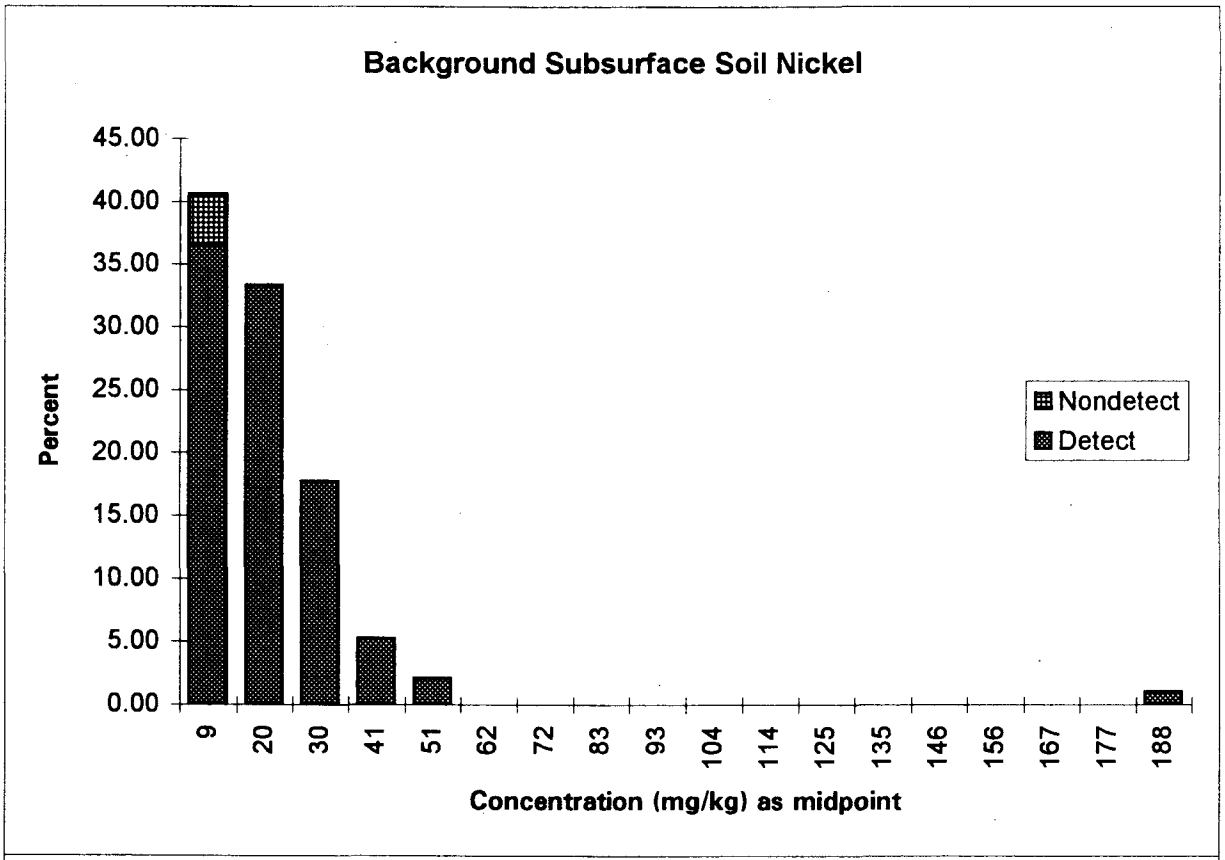

OU6 Subsurface Soil Lead
35.00
30.00
25.00
20.00
15.00
10.00
5.00
0.00
Percent
Nondetect
Detect
3
7
12
17
22
26
31
36
40
45
50
54
59
64
68
73
78
83
Concentration (mg/kg) as midpoint

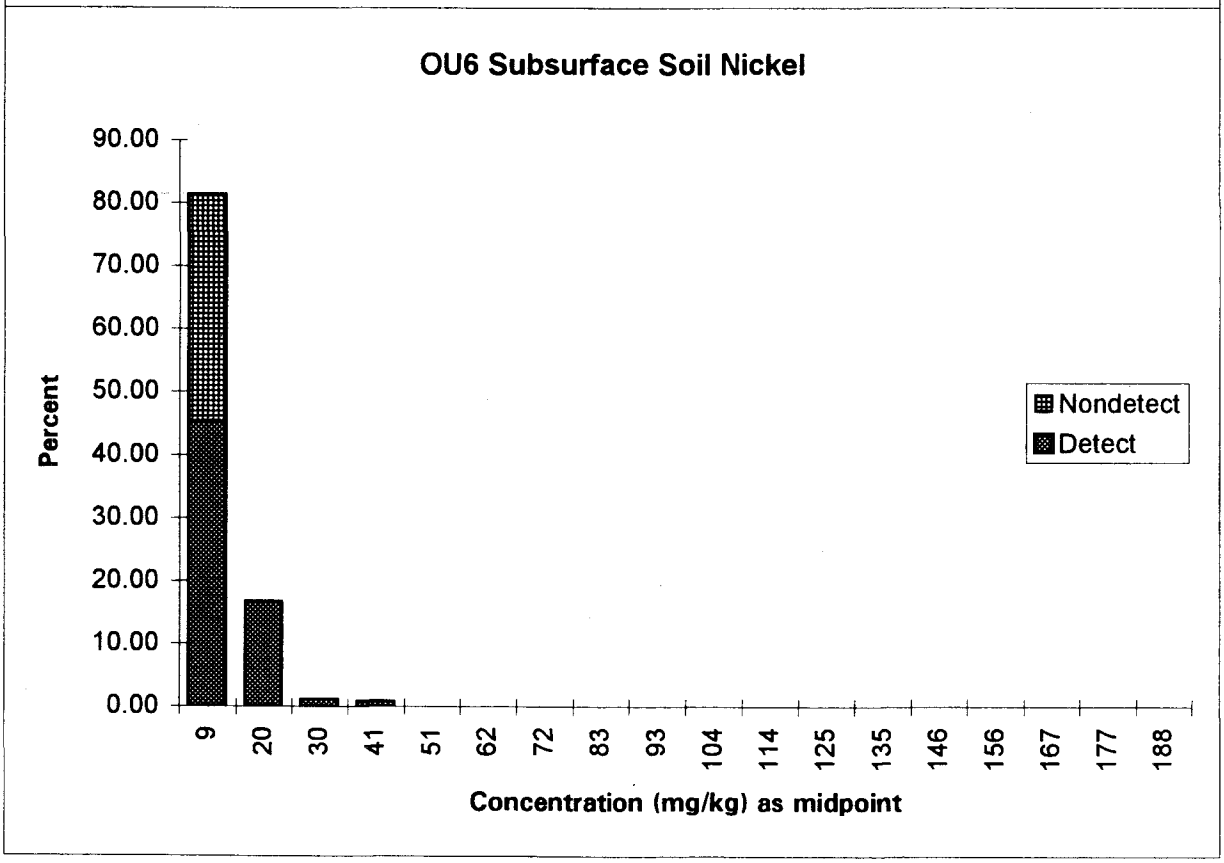

Background Subsurface Soil Magnesium
Percent
60.00
50.00
40.00
30.00
20.00
10.00
0.00
Nondetect
Detect
1536
3305
5074
6844
8613
10383
12152
13921
15691
17460
19230
20999
22768
24538
26307
28077
29846
31615
Concentration (mg/kg) as midpoint

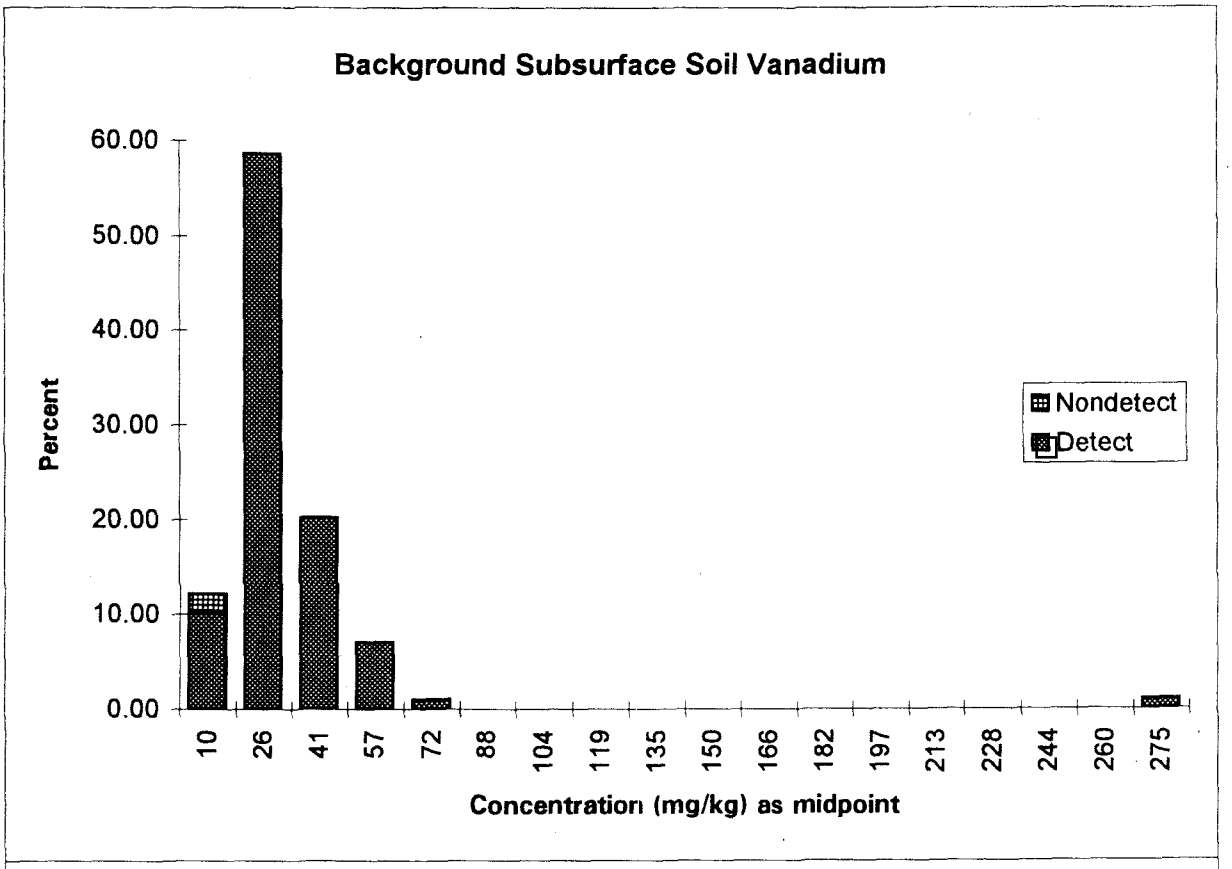

OU6 Subsurface Soil Magnesium
Percent
70.00
60.00
50.00
40.00
30.00
20.00
10.00
0.00
Nondetect
Detect
1536
3305
5074
6844
8613
10383
12152
13921
15691
17460
19230
20999
22768
24538
26307
28077
29846
31615
Concentration (mg/kg) as midpoint

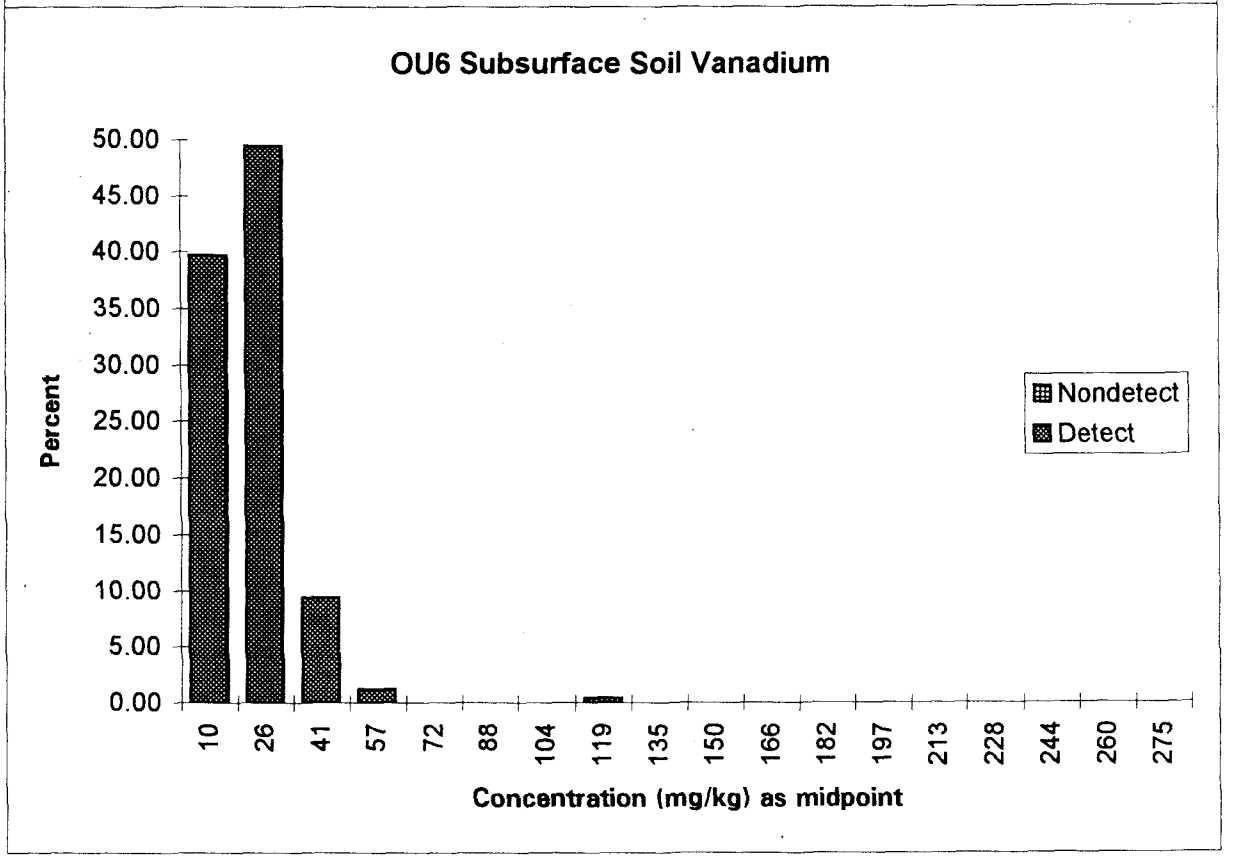

Background Subsurface Soil Manganese
60.00
50.00
40.00
30.00
20.00
10.00
0.00
Percent
Nondetect
Detect
100
470
839
1208
1577
1946
2315
2684
3053
Concentration (mg/kg) as midpoint

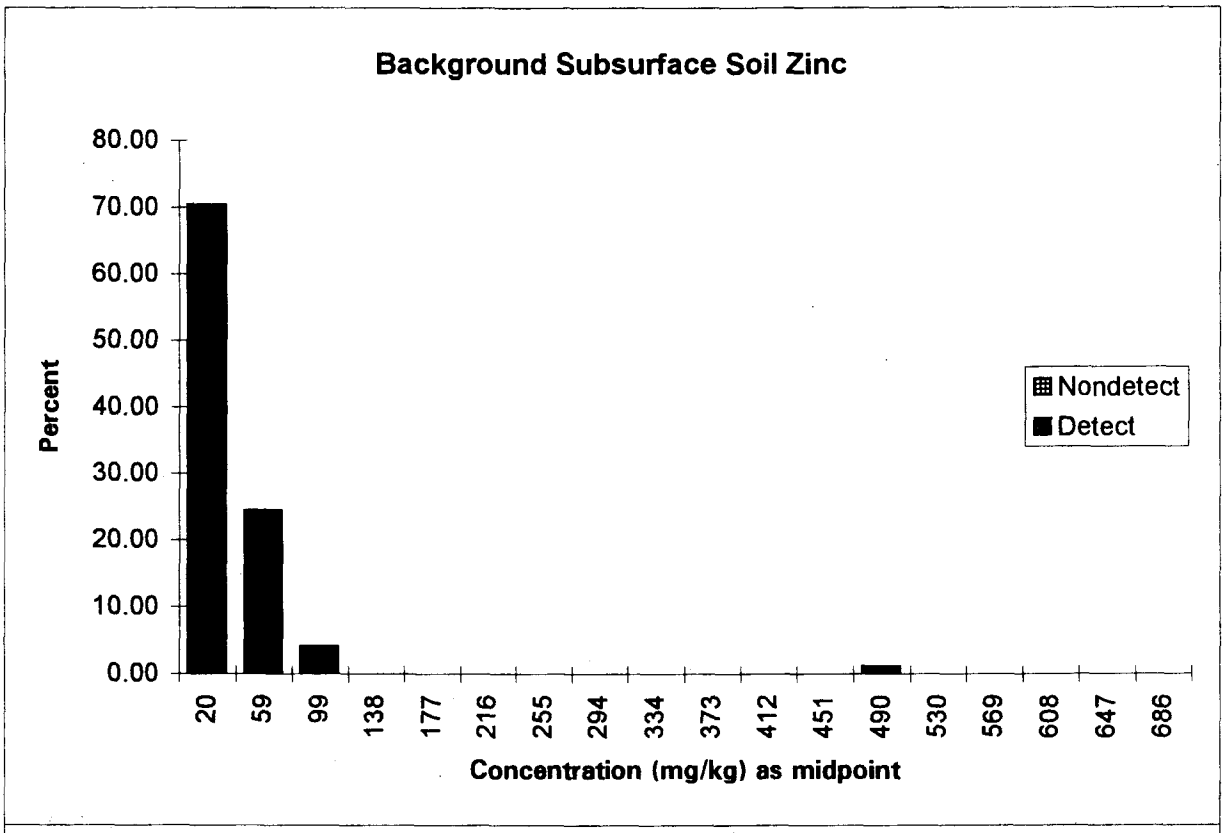

OU6 Subsurface Soil Manganese
90.00
80.00
70.00
60.00
50.00
40.00
30.00
20.00
10.00
0.00
Percent
Nondetect
Detect
100
470
839
1208
1577
1946
2315
2684
3053
Concentration (mg/kg) as midpoint

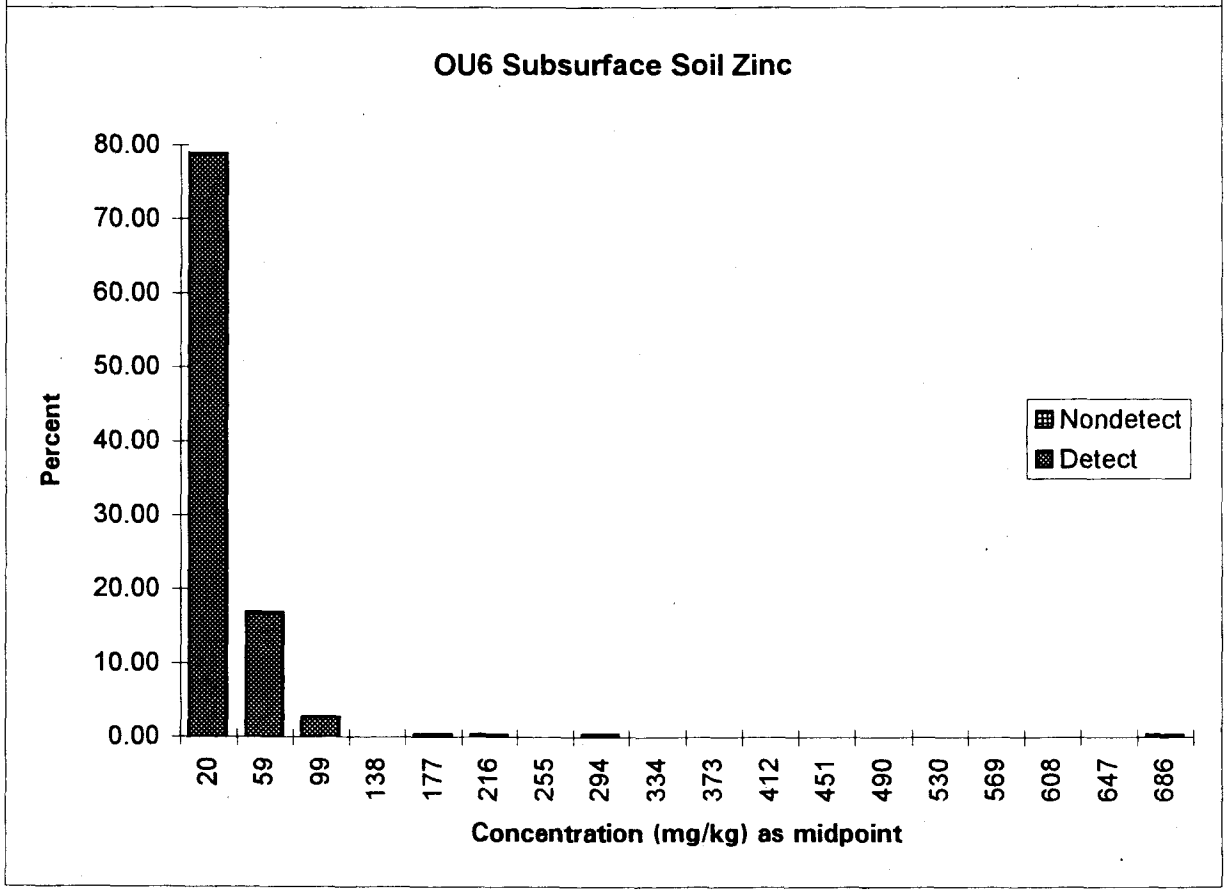

Background Subsurface Soil Nickel
45.00
40.00
35.00
30.00
25.00
20.00
15.00
10.00
5.00
0.00
Percent
Nondetect
Detect
9
20
30
41
51
62
72
83
93
104
114
125
135
146
156
167
177
188
Concentration (mg/kg) as midpoint

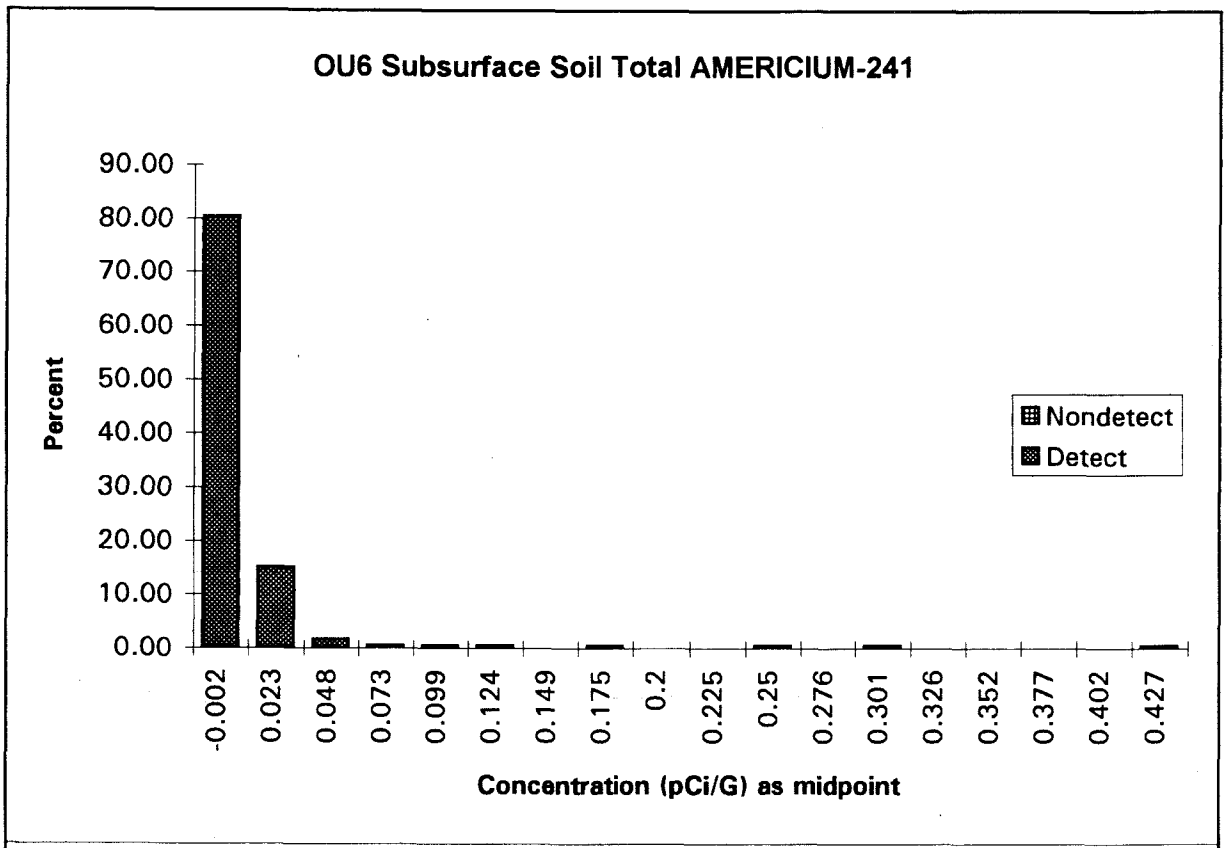

OU6 Subsurface Soil Nickel
90.00
80.00
70.00
60.00
50.00
40.00
30.00
20.00
10.00
0.00
Percent
Nondetect
Detect
9
20
30
41
51
62
72
83
93
104
114
125
135
146
156
167
177
188
Concentration (mg/kg) as midpoint

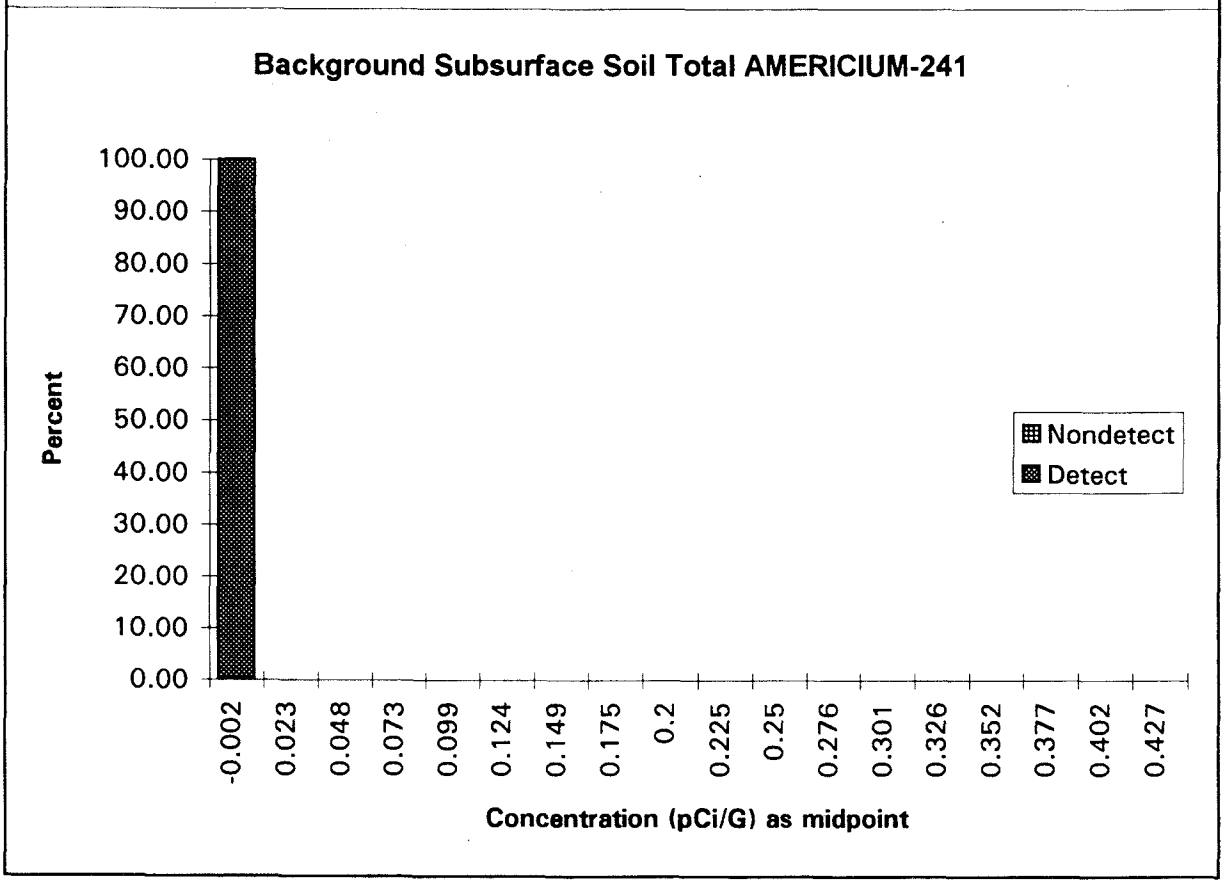

Background Subsurface Soil Vanadium
Percent
60.00
50.00
40.00
30.00
20.00
10.00
0.00
Nondetect
Detect
10
26
41
57
72
88
104
119
135
150
166
182
197
213
228
244
260
275
Concentration (mg/kg) as midpoint

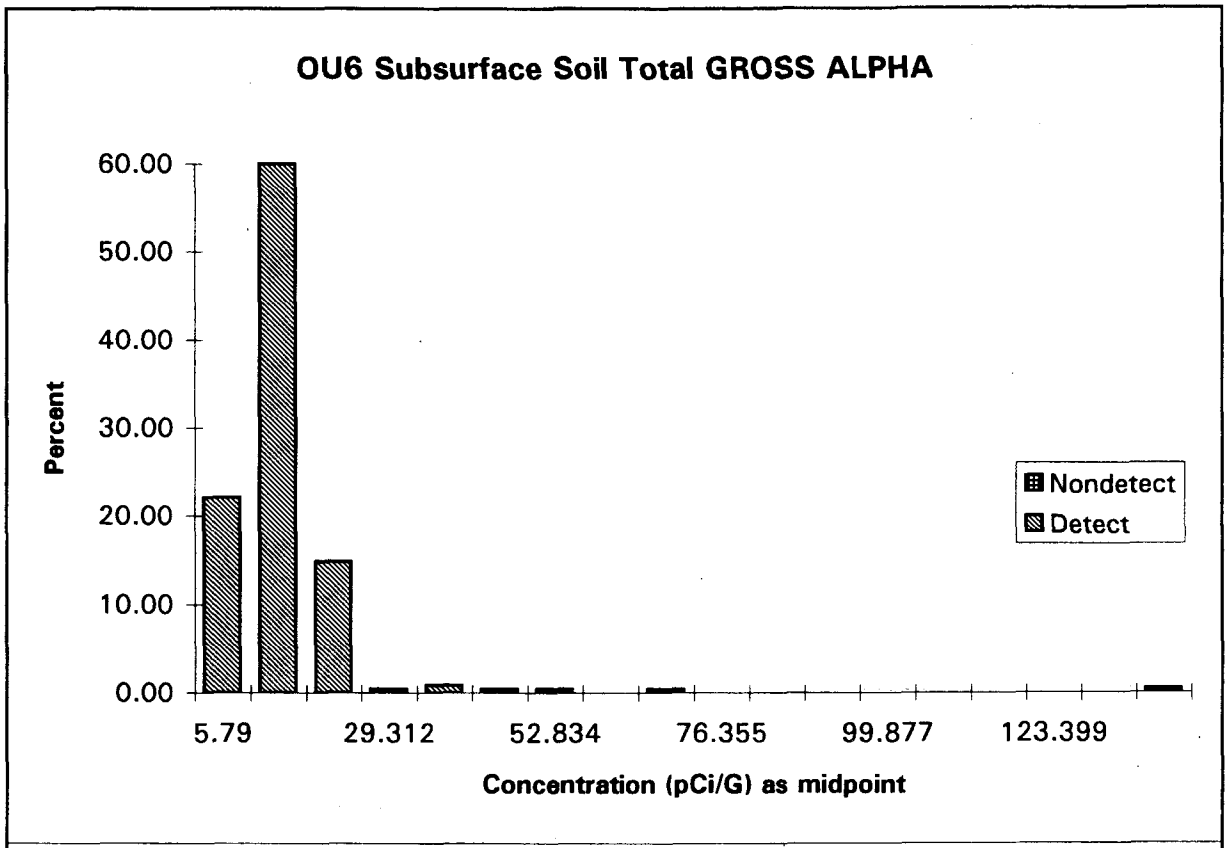

OU6 Subsurface Soil Vanadium
Percent
50.00
45.00
40.00
35.00
30.00
25.00
20.00
15.00
10.00
5.00
0.00
Nondetect
Detect
10
26
41
57
72
88
104
119
135
150
166
182
197
213
228
244
260
275
Concentration (mg/kg) as midpoint

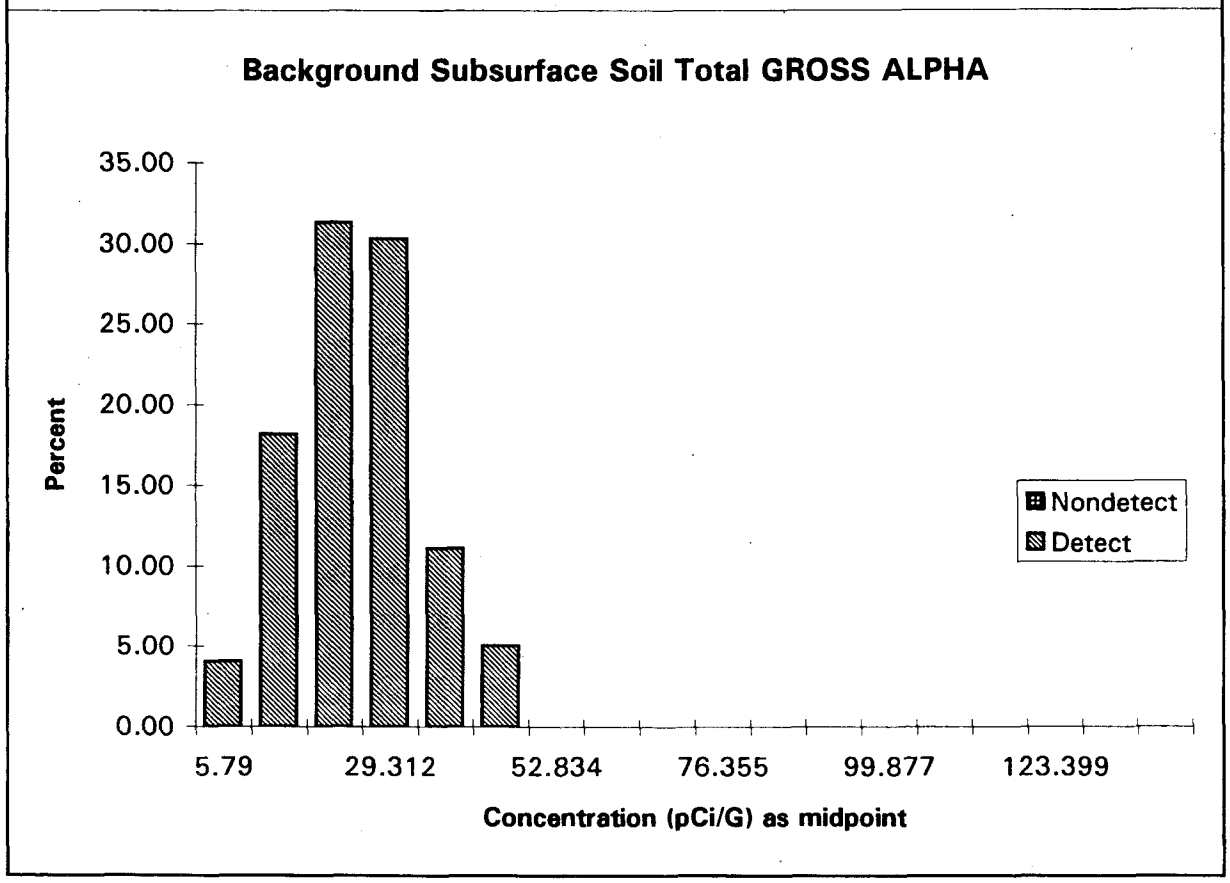

Background Subsurface Soil Zinc
80.00
70.00
60.00
50.00
40.00
30.00
20.00
10.00
0.00
Percent
Nondetect
Detect
20
59
99
138
177
216
255
294
334
373
412
451
490
530
569
608
647
686
Concentration (mg/kg) as midpoint

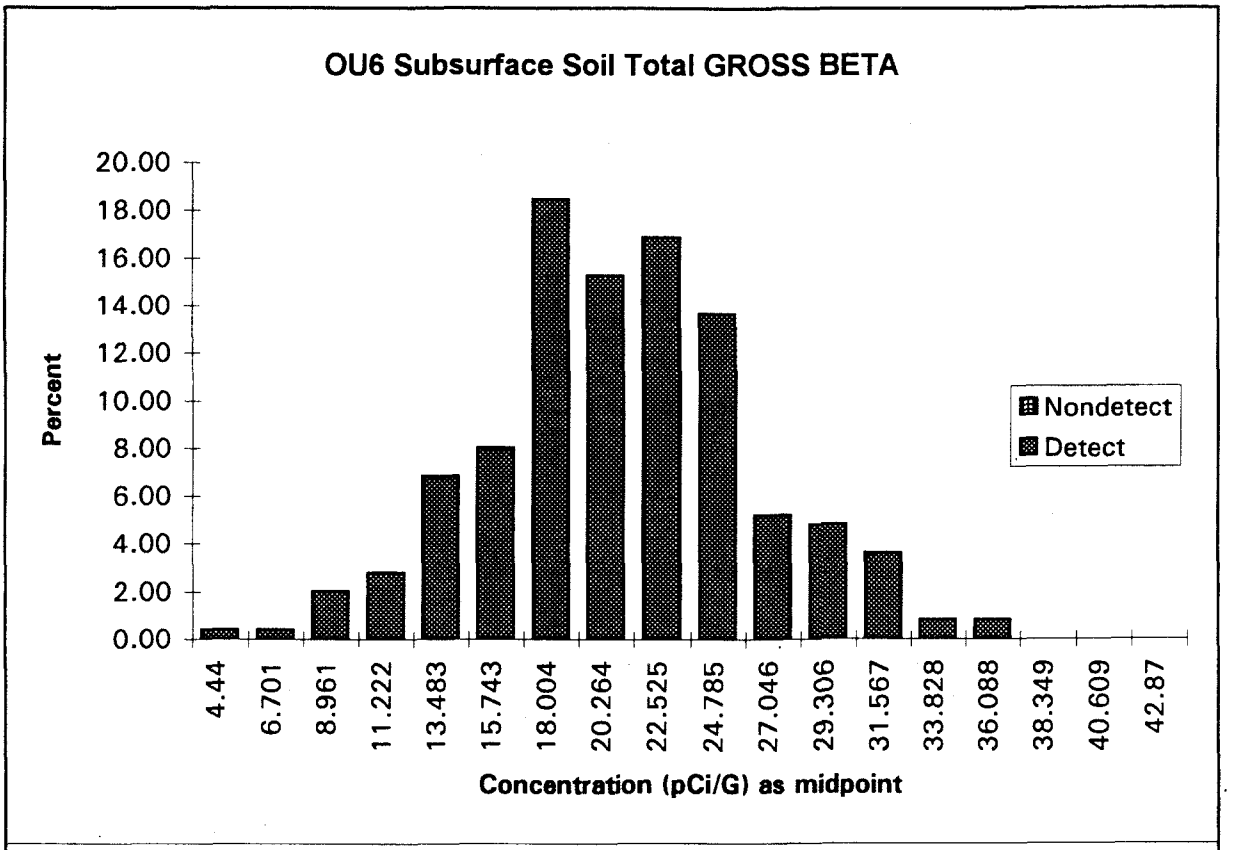

OU6 Subsurface Soil Zinc
80.00
70.00
60.00
50.00
40.00
30.00
20.00
10.00
0.00
Percent
Nondetect
Detect
20
59
99
138
177
216
255
294
334
373
412
451
490
530
569
608
647
686
Concentration (mg/kg) as midpoint

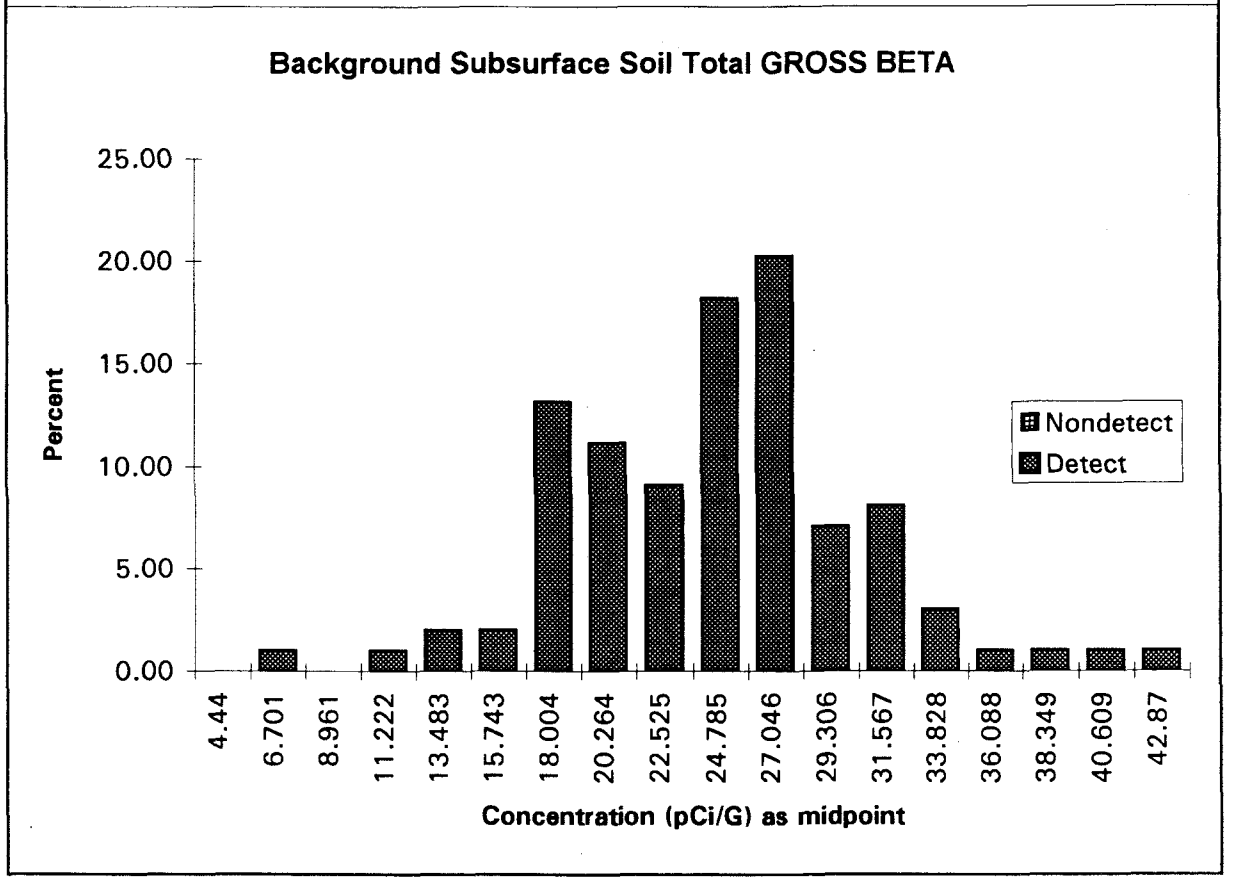

OU6 Subsurface Soil Total AMERICIUM-241
Percent
90.00
80.00
70.00
60.00
50.00
40.00
30.00
20.00
10.00
0.00
Nondetect
Detect
-0.002
0.023
0.048
0.073
0.099
0.124
0.149
0.175
0.2
0.225
0.25
0.276
0.301
0.326
0.352
0.377
0.402
0.427
Concentration (pCi/G) as midpoint

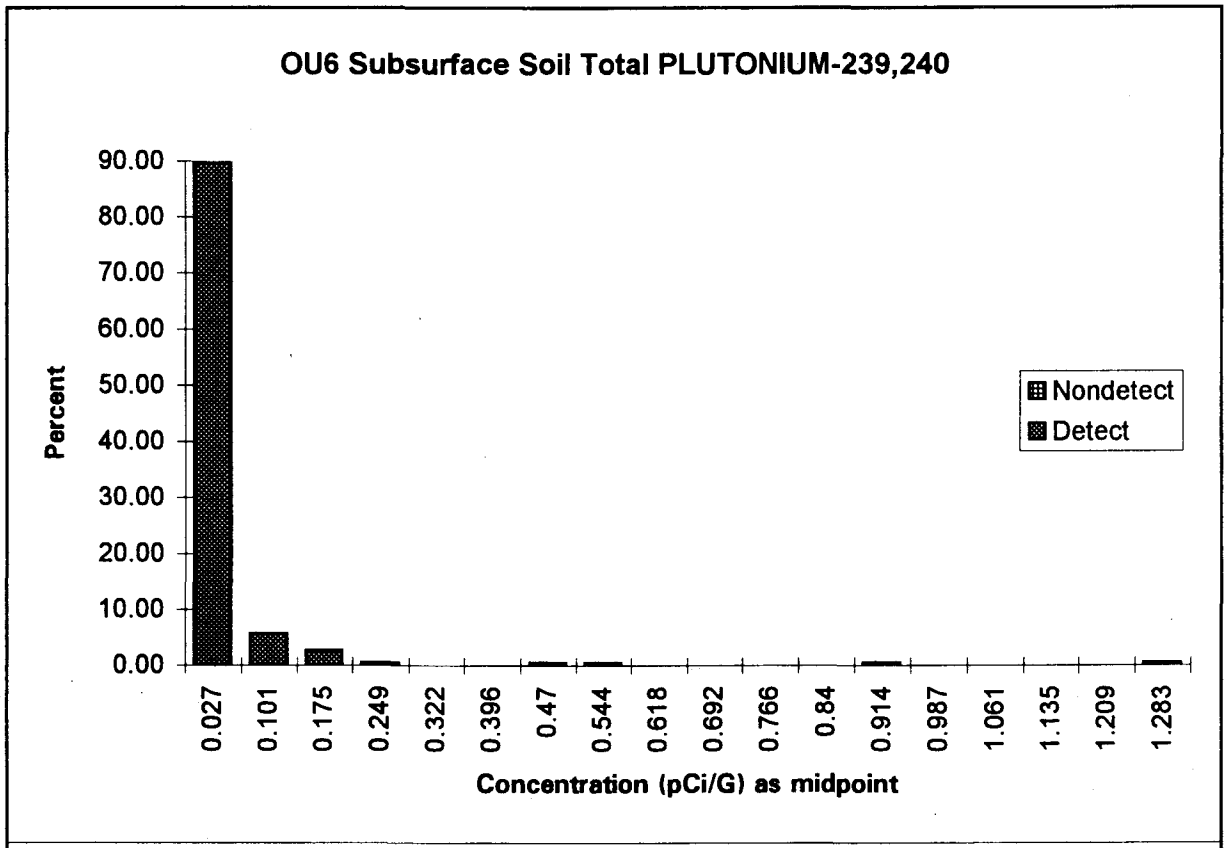

Background Subsurface Soil Total AMERICIUM-241
Percent
100.00
90.00
80.00
70.00
60.00
50.00
40.00
30.00
20.00
10.00
0.00
Nondetect
Detect
-0.002
0.023
0.048
0.073
0.099
0.124
0.149
0.175
0.2
0.225
0.25
0.276
0.301
0.326
0.352
0.377
0.402
0.427
Concentration (pCi/G) as midpoint

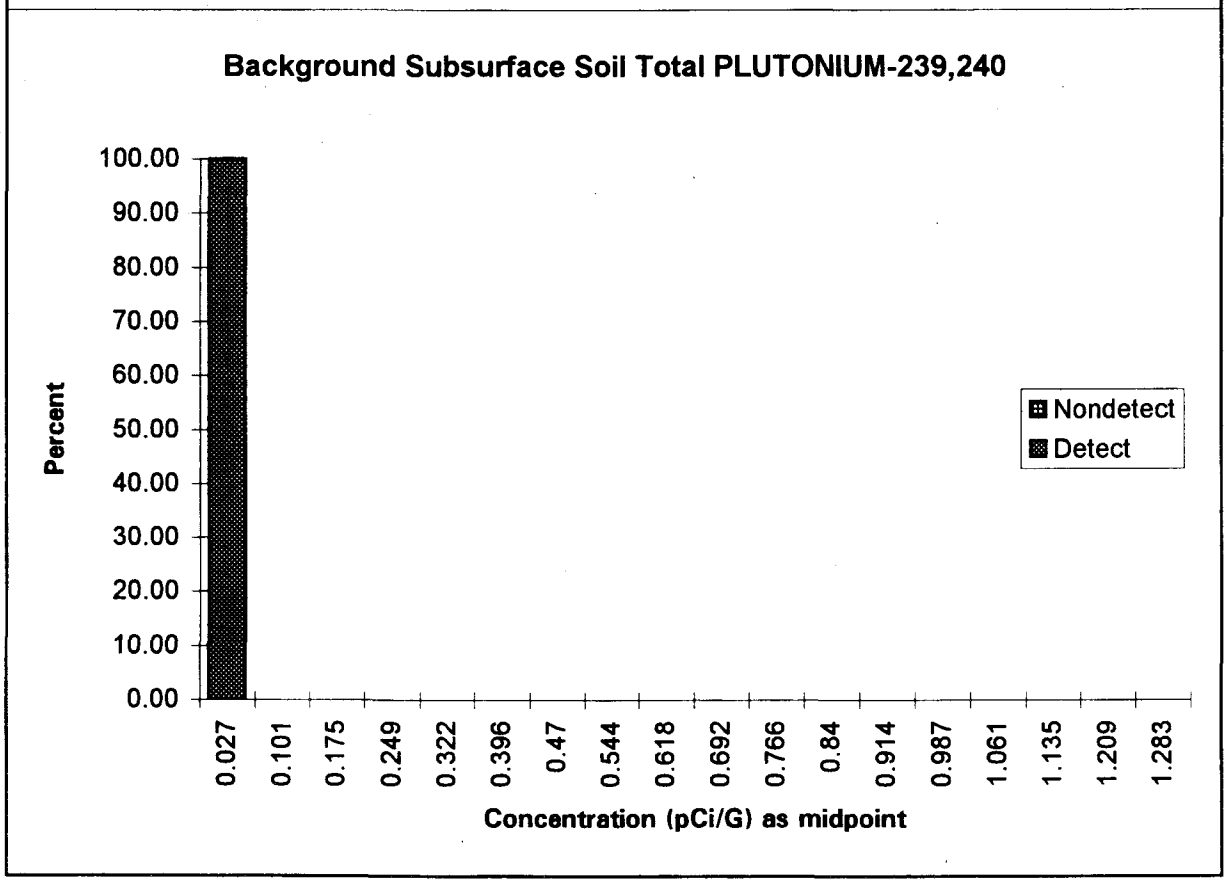

OU6 Subsurface Soil Total GROSS ALPHA
60.00
50.00
40.00
30.00
20.00
10.00
0.00
Percent
5.79
29.312
52.834
76.355
99.877
123.399
Concentration (pCi/G) as midpoint
Nondetect
Detect

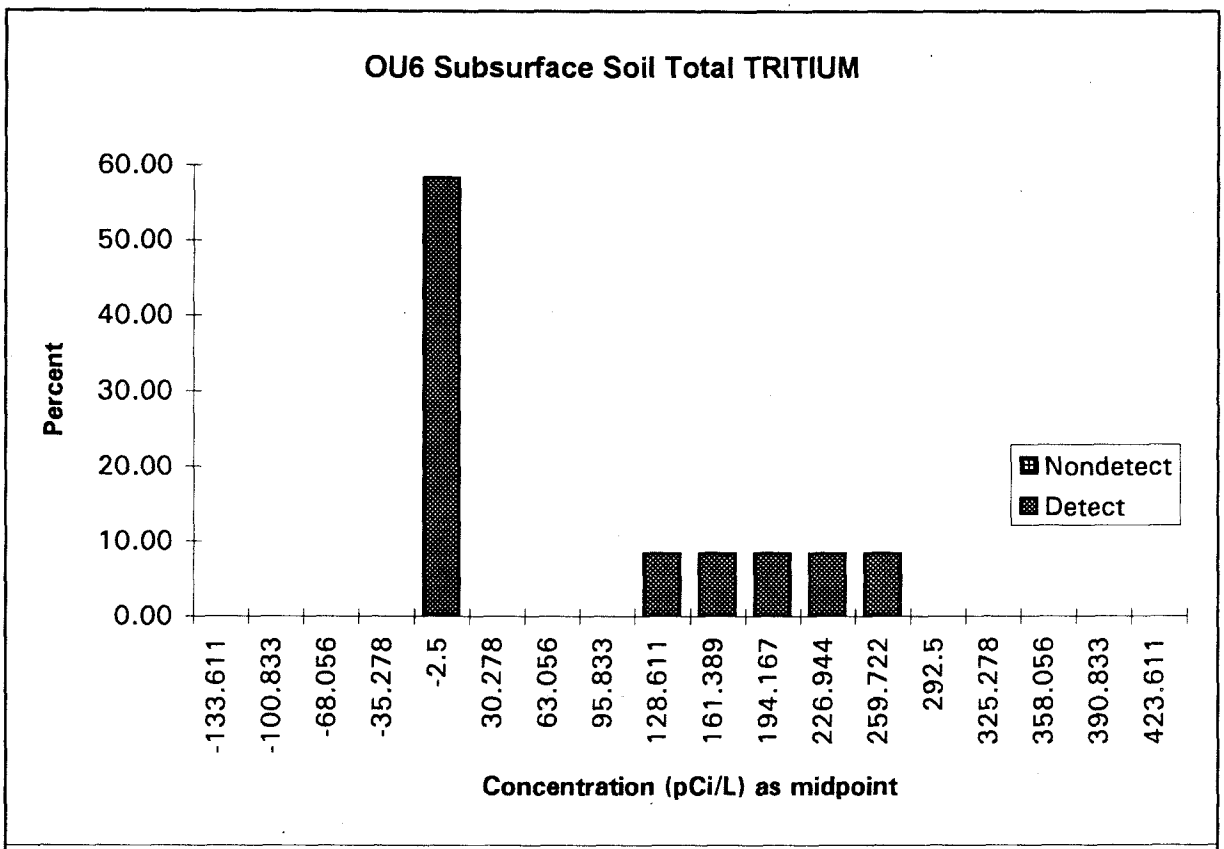

Background Subsurface Soil Total GROSS ALPHA
35.00
30.00
25.00
20.00
15.00
10.00
5.00
0.00
Percent
5.79
29.312
52.834
76.355
99.877
123.399
Concentration (pCi/G) as midpoint
Nondetect
Detect

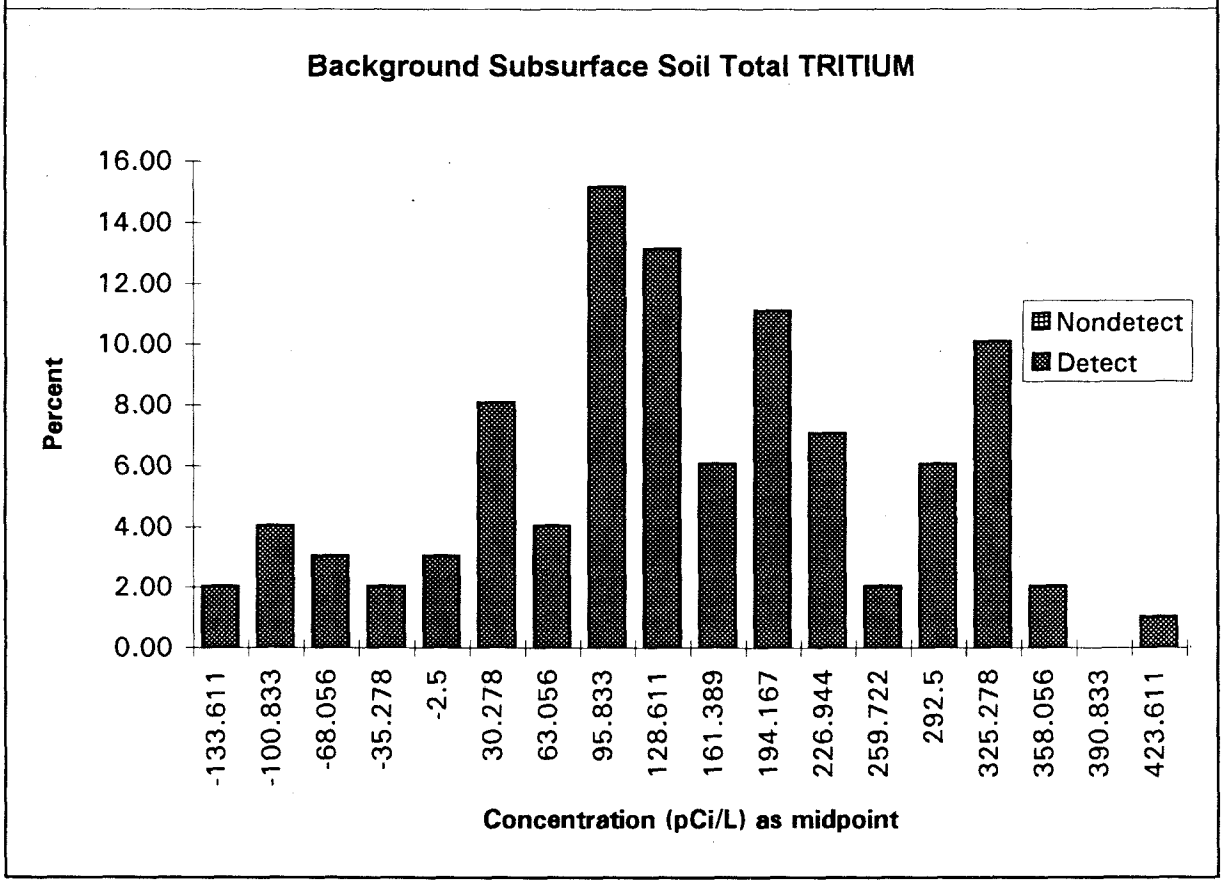

OU6 Subsurface Soil Total GROSS BETA
Percent
20.00
18.00
16.00
14.00
12.00
10.00
8.00
6.00
4.00
2.00
0.00
Nondetect
Detect
4.44
6.701
8.961
11.222
13.483
15.743
18.004
20.264
22.525
24.785
27.046
29.306
31.567
33.828
36.088
38.349
40.609
42.87
Concentration (pCi/G) as midpoint

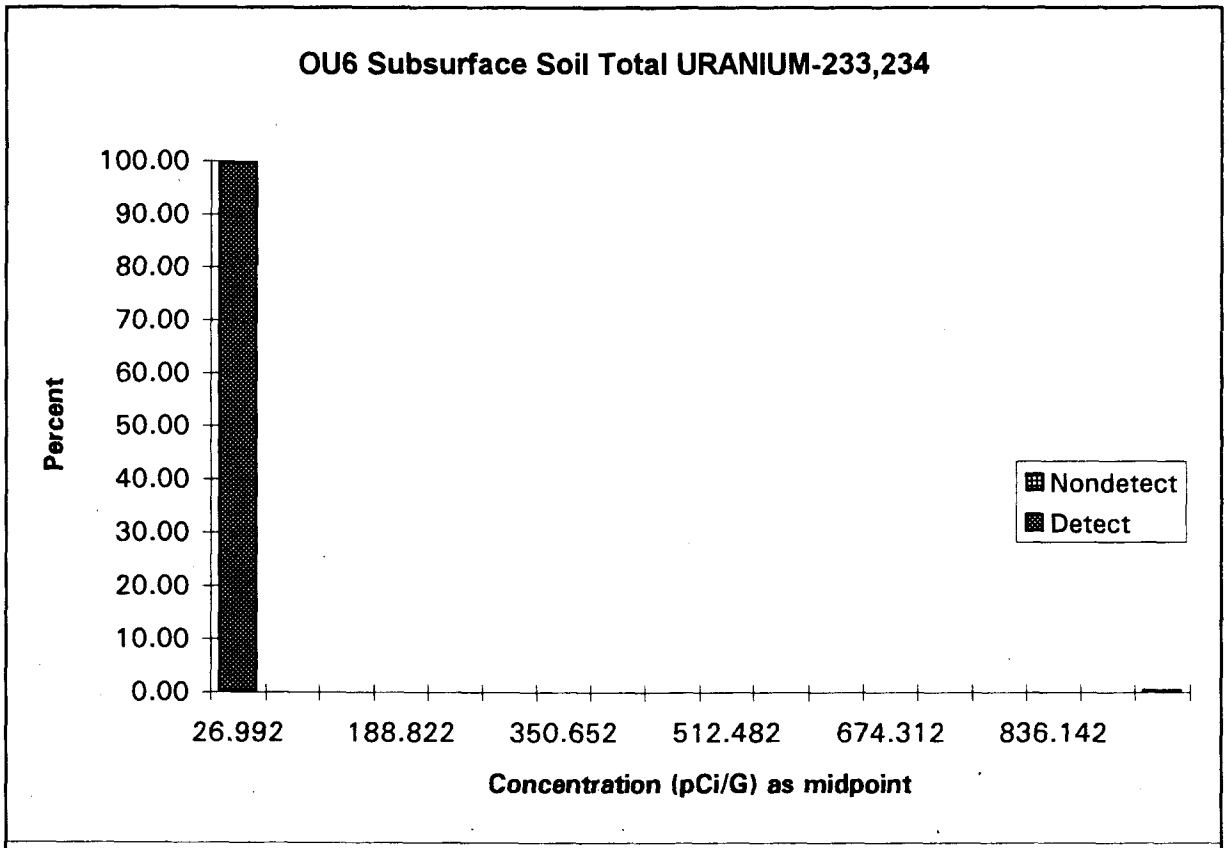

Background Subsurface Soil Total GROSS BETA
Percent
25.00
20.00
15.00
10.00
5.00
0.00
Nondetect
Detect
4.44
6.701
8.961
11.222
13.483
15.743
18.004
20.264
22.525
24.785
27.046
29.306
31.567
33.828
36.088
38.349
40.609
42.87
Concentration (pCi/G) as midpoint

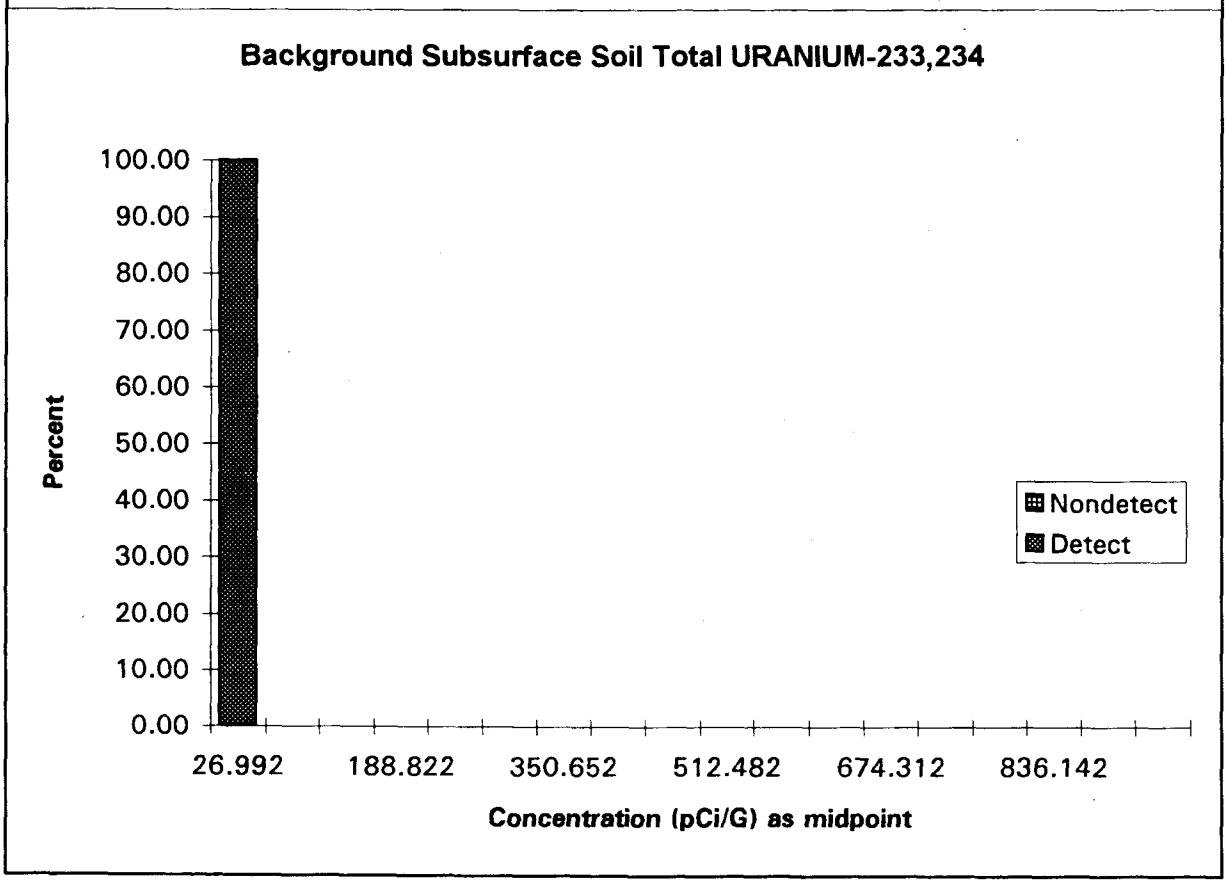

OU6 Subsurface Soil Total PLUTONIUM-239,240
Percent
90.00
80.00
70.00
60.00
50.00
40.00
30.00
20.00
10.00
0.00
Nondetect
Detect
0.027
0.101
0.175
0.249
0.322
0.396
0.47
0.544
0.618
0.692
0.766
0.84
0.914
0.987
1.061
1.135
1.209
1.283
Concentration (pCi/G) as midpoint

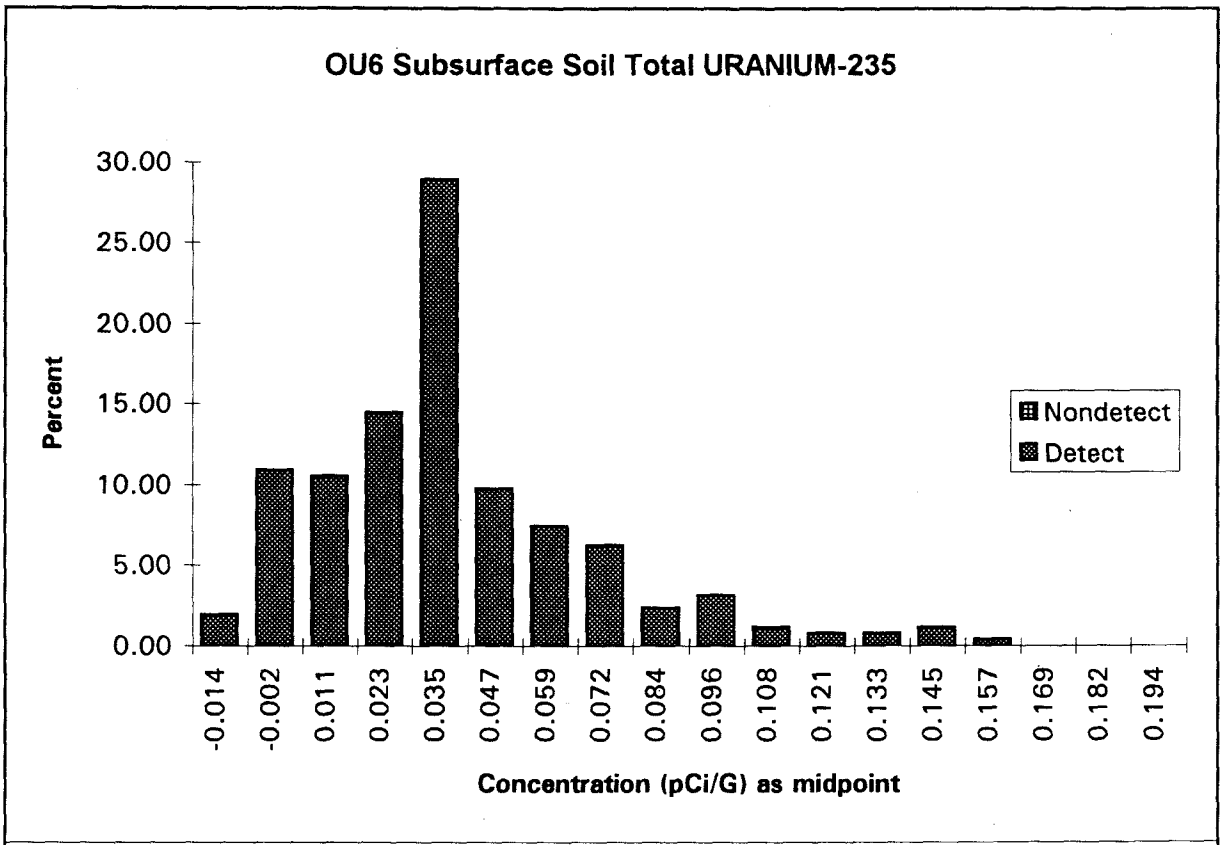

Background Subsurface Soil Total PLUTONIUM-239,240
Percent
100.00
90.00
80.00
70.00
60.00
50.00
40.00
30.00
20.00
10.00
0.00
Nondetect
Detect
0.027
0.101
0.175
0.249
0.322
0.396
0.47
0.544
0.618
0.692
0.766
0.84
0.914
0.987
1.061
1.135
1.209
1.283
Concentration (pCi/G) as midpoint

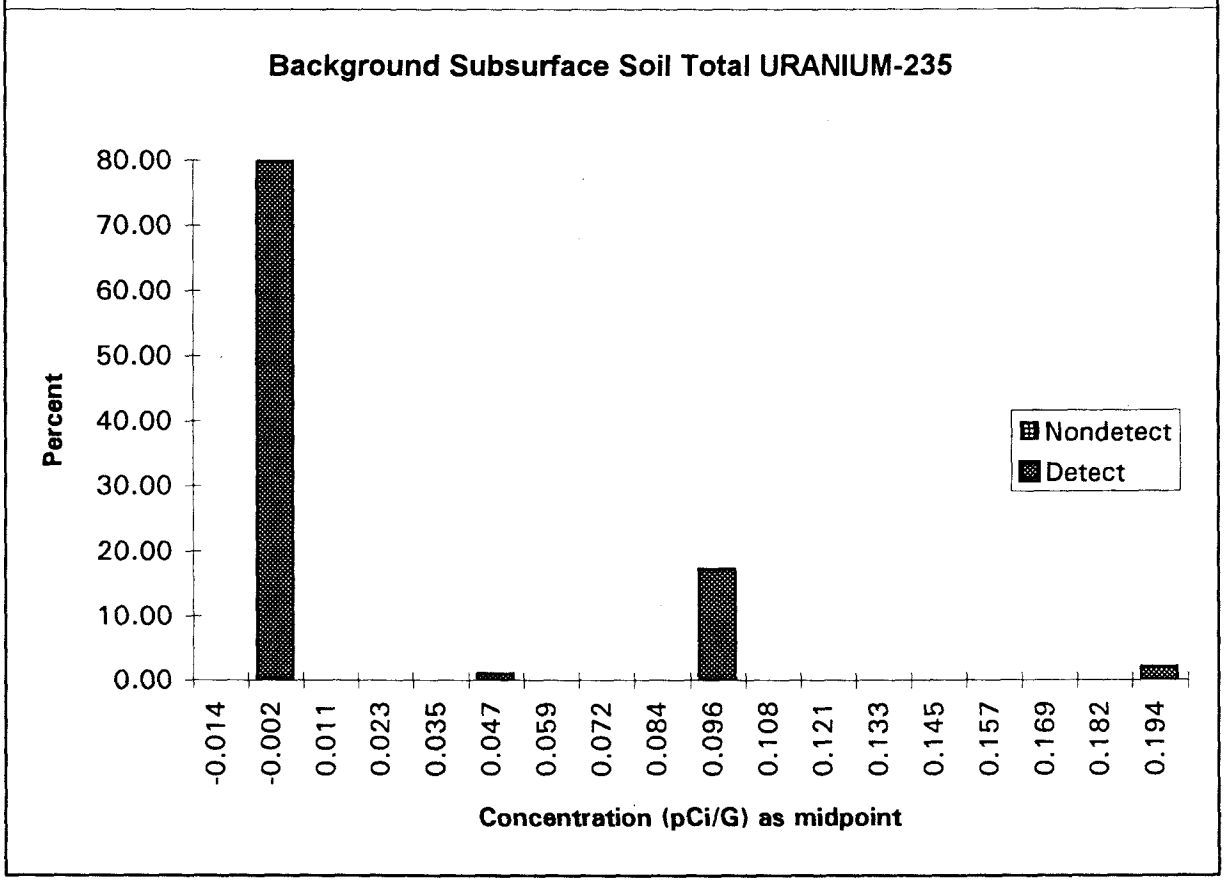

OU6 Subsurface Soil Total TRITIUM
Percent
60.00
50.00
40.00
30.00
20.00
10.00
0.00
Nondetect
Detect
-133.611
-100.833
-68.056
-35.278
-2.5
30.278
63.056
95.833
128.611
161.389
194.167
226.944
259.722
292.5
325.278
358.056
390.833
423.611
Concentration (pCi/L) as midpoint

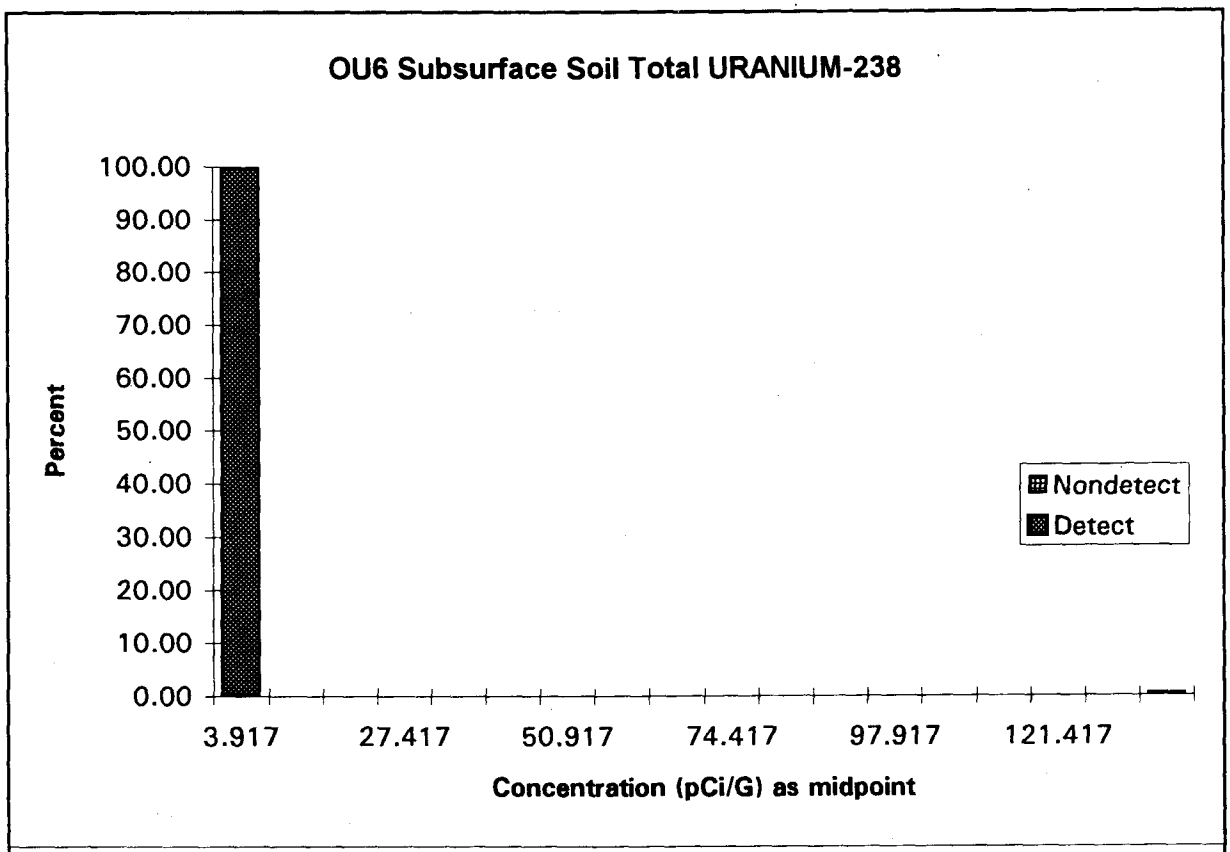

Background Subsurface Soil Total TRITIUM
Percent
16.00
14.00
12.00
10.00
8.00
6.00
4.00
2.00
0.00
Nondetect
Detect
-133.611
-100.833
-68.056
-35.278
-2.5
30.278
63.056
95.833
128.611
161.389
194.167
226.944
259.722
292.5
325.278
358.056
390.833
423.611
Concentration (pCi/L) as midpoint

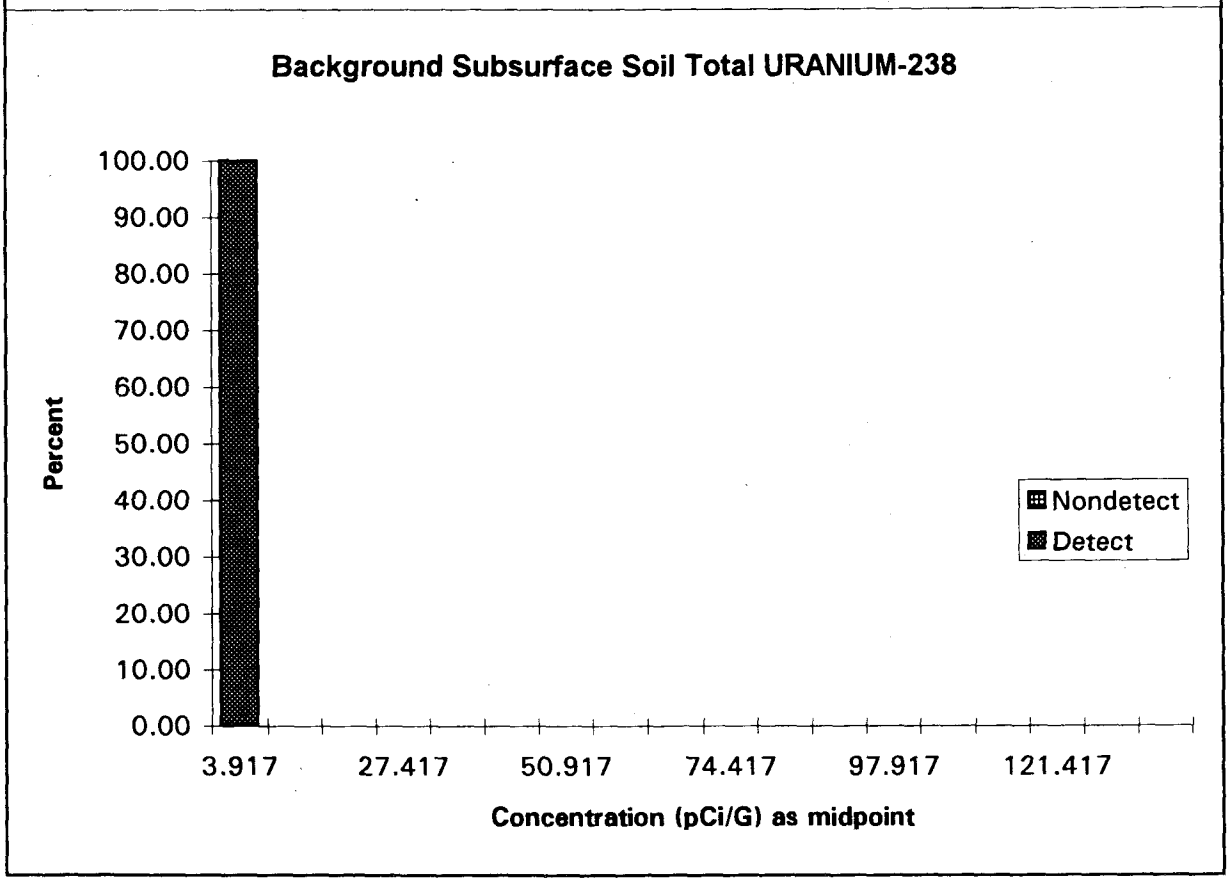

OU6 Subsurface Soil Total URANIUM-233,234
100.00
90.00
80.00
70.00
60.00
50.00
40.00
30.00
20.00
10.00
0.00
Percent
Nondetect
Detect
26.992
188.822
350.652
512.482
674.312
836.142
Concentration (pCi/G) as midpoint

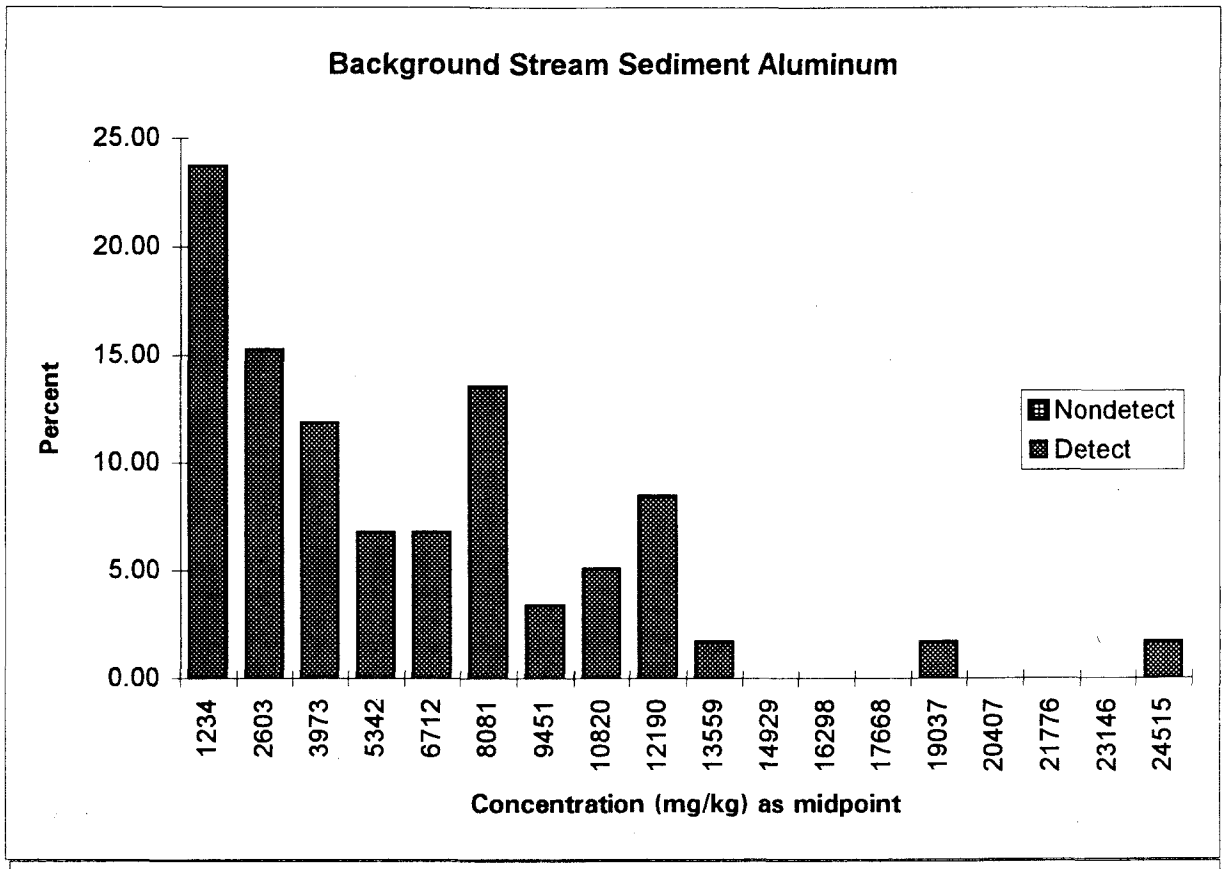

Background Subsurface Soil Total URANIUM-233,234
100.00
90.00
80.00
70.00
60.00
50.00
40.00
30.00
20.00
10.00
0.00
Percent
Nondetect
Detect
26.992
188.822
350.652
512.482
674.312
836.142
Concentration (pCi/G) as midpoint

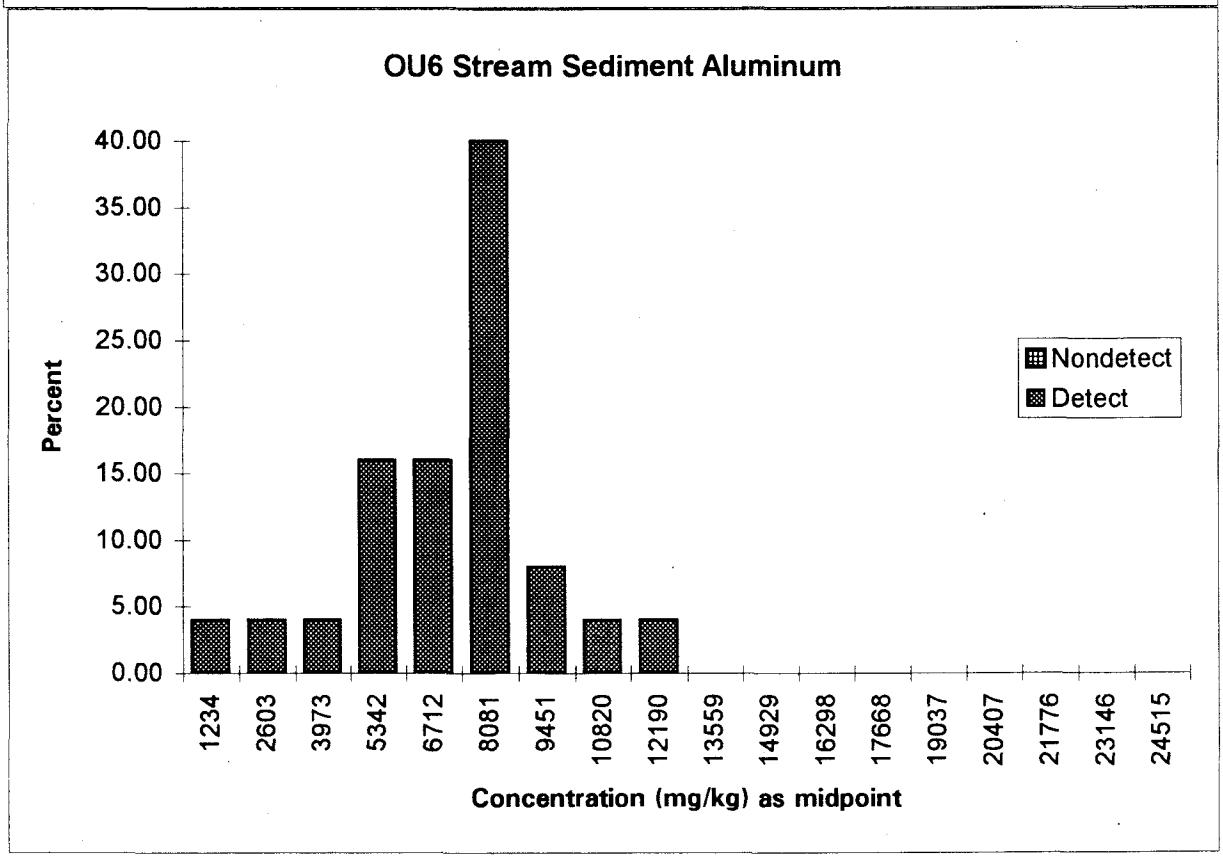

OU6 Subsurface Soil Total URANIUM-235
Percent
30.00
25.00
20.00
15.00
10.00
5.00
0.00
Nondetect
Detect
-0.014
-0.002
0.011
0.023
0.035
0.047
0.059
0.072
0.084
0.096
0.108
0.121
0.133
0.145
0.157
0.169
0.182
0.194
Concentration (pCi/G) as midpoint

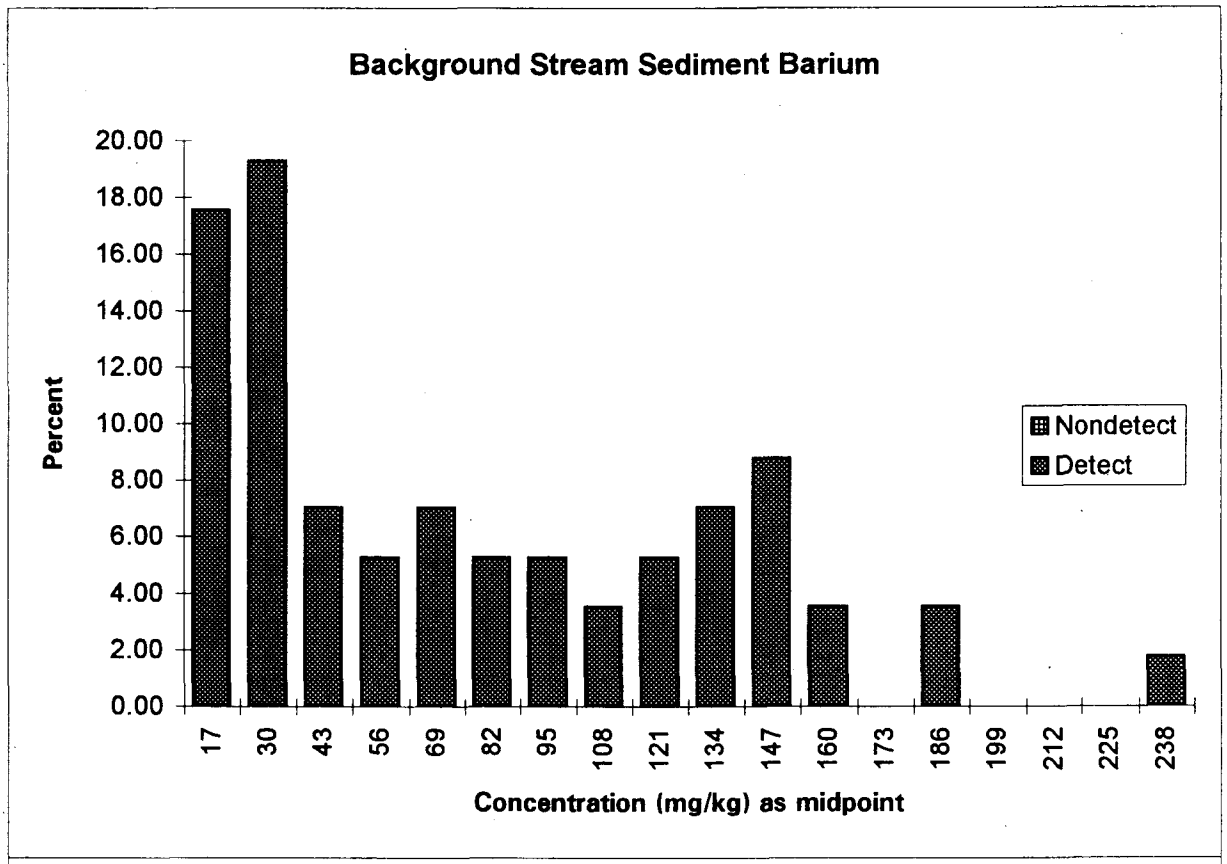

Background Subsurface Soil Total URANIUM-235
Percent
80.00
70.00
60.00
50.00
40.00
30.00
20.00
10.00
0.00
Nondetect
Detect
-0.014
-0.002
0.011
0.023
0.035
0.047
0.059
0.072
0.084
0.096
0.108
0.121
0.133
0.145
0.157
0.169
0.182
0.194
Concentration (pCi/G) as midpoint

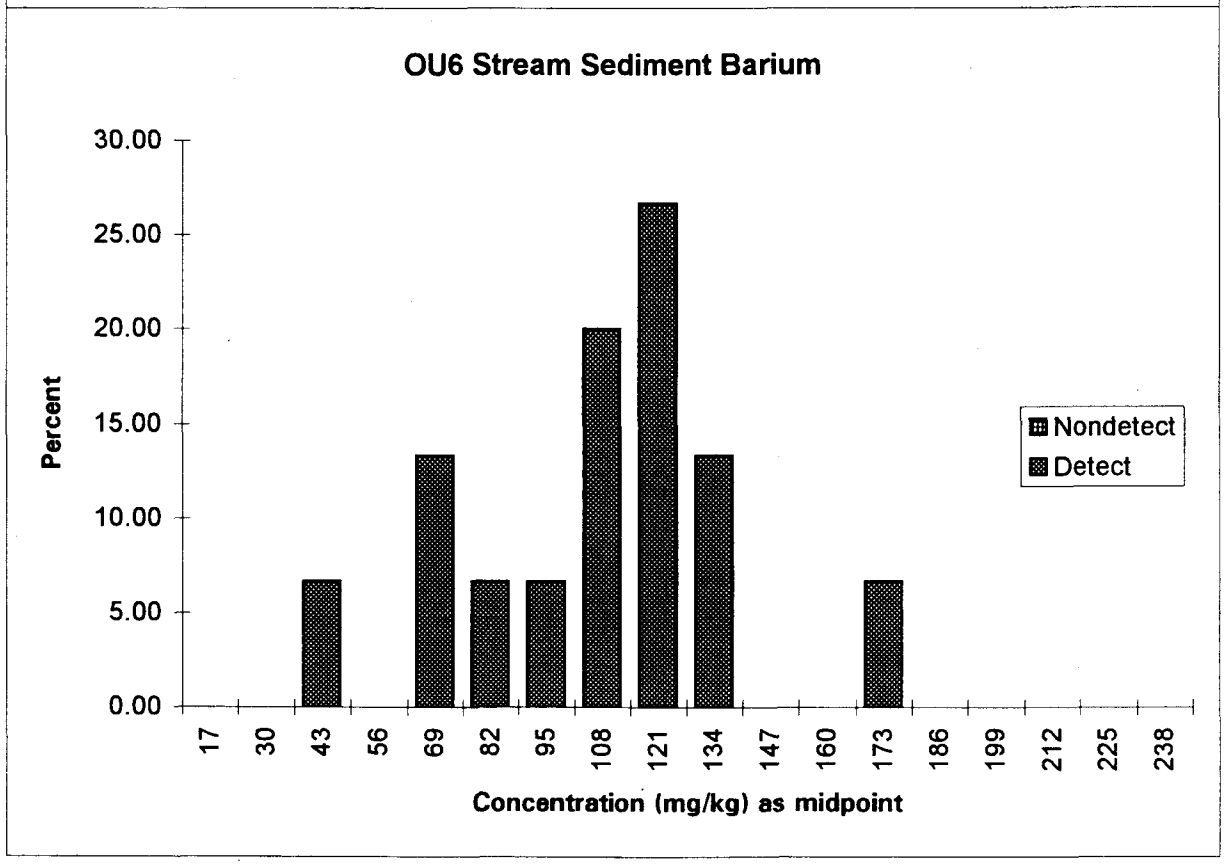

OU6 Subsurface Soil Total URANIUM-238
100.00
90.00
80.00
70.00
60.00
50.00
40.00
30.00
20.00
10.00
0.00
Percent
Nondetect
Detect
3.917
27.417
50.917
74.417
97.917
121.417
Concentration (pCi/G) as midpoint

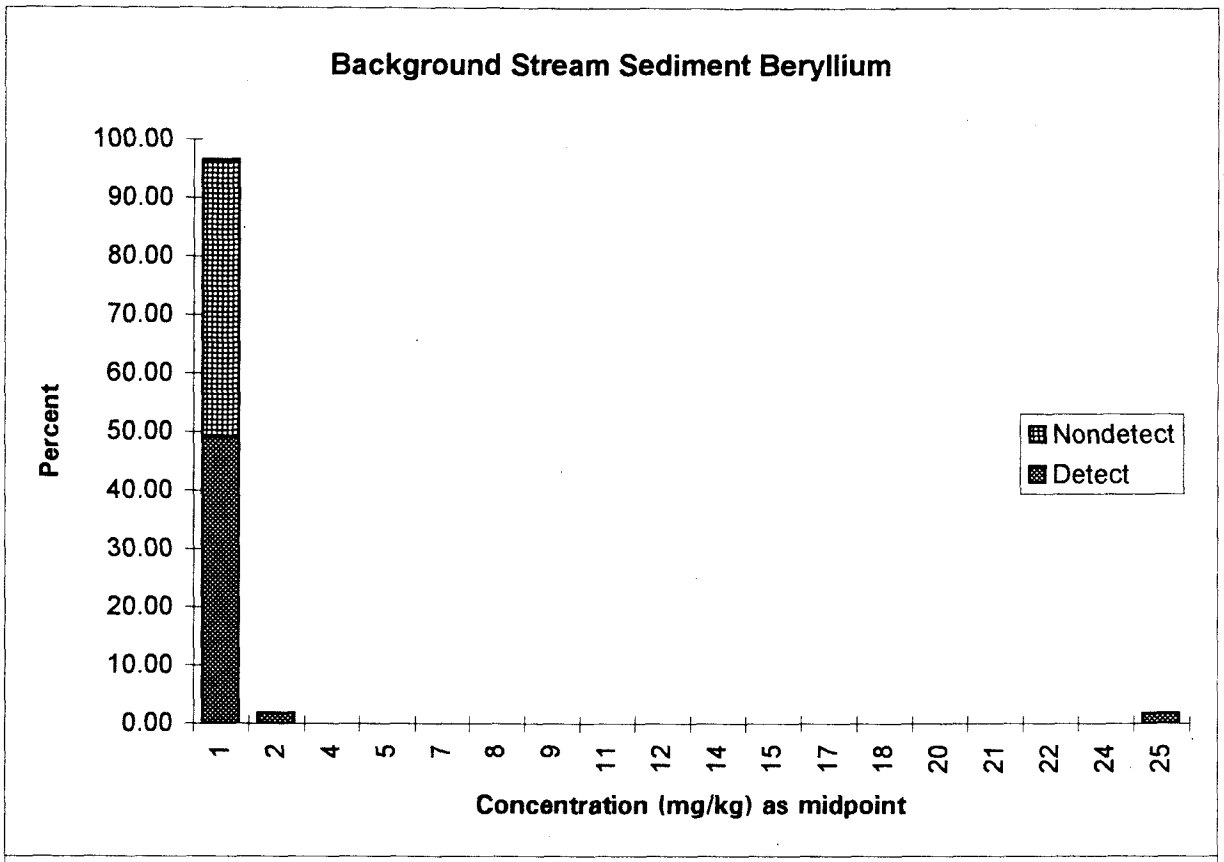

Background Subsurface Soil Total URANIUM-238
100.00
90.00
80.00
70.00
60.00
50.00
40.00
30.00
20.00
10.00
0.00
Percent
Nondetect
Detect
3.917
27.417
50.917
74.417
97.917
121.417
Concentration (pCi/G) as midpoint

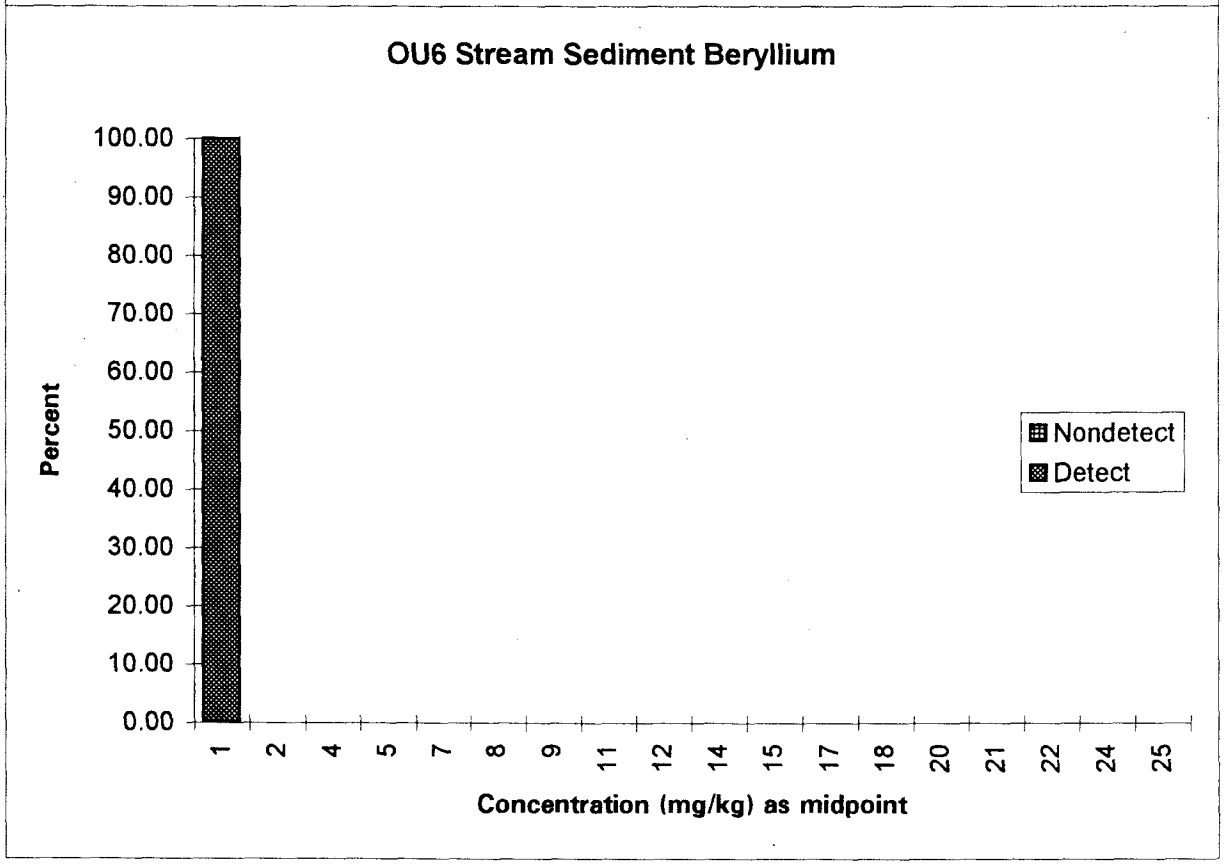

Background Stream Sediment Aluminum
Percent
25.00
20.00
15.00
10.00
5.00
0.00
Nondetect
Detect
1234
2603
3973
5342
6712
8081
9451
10820
12190
13559
14929
16298
17668
19037
20407
21776
23146
24515
Concentration (mg/kg) as midpoint

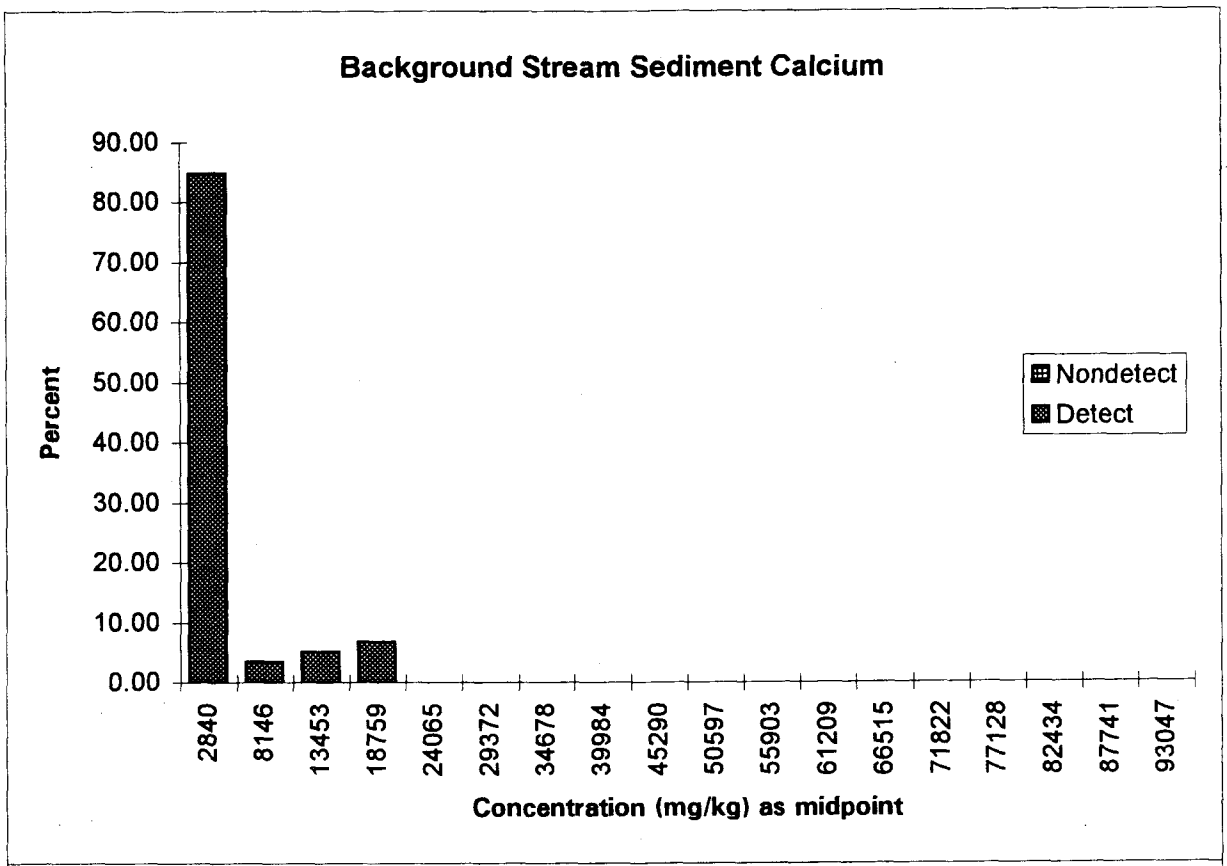

OU6 Stream Sediment Aluminum
Percent
40.00
35.00
30.00
25.00
20.00
15.00
10.00
5.00
0.00
Nondetect
Detect
1234
2603
3973
5342
6712
8081
9451
10820
12190
13559
14929
16298
17668
19037
20407
21776
23146
24515
Concentration (mg/kg) as midpoint

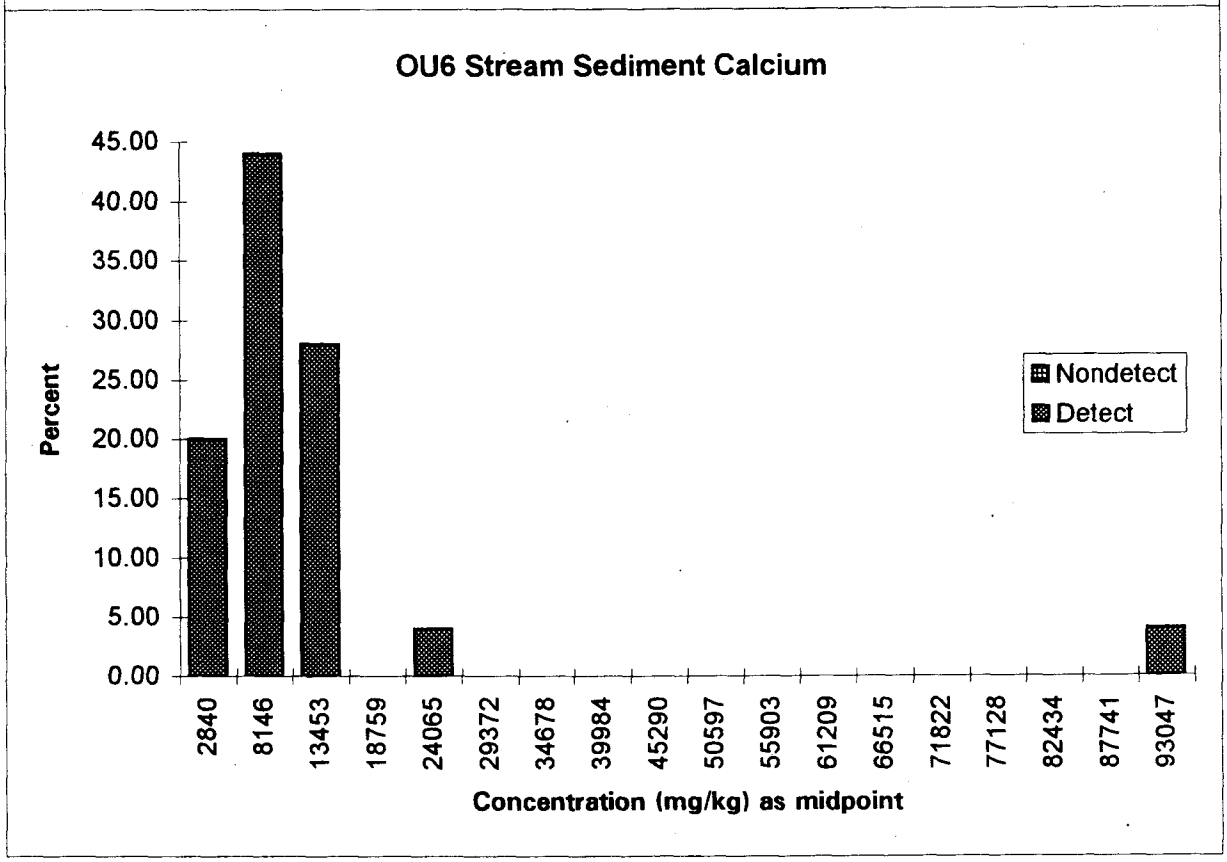

Background Stream Sediment Barium
Percent
20.00
18.00
16.00
14.00
12.00
10.00
8.00
6.00
4.00
2.00
0.00
17
30
43
56
69
82
95
108
121
134
147
160
173
186
199
212
225
238
Concentration (mg/kg) as midpoint
Nondetect
Detect

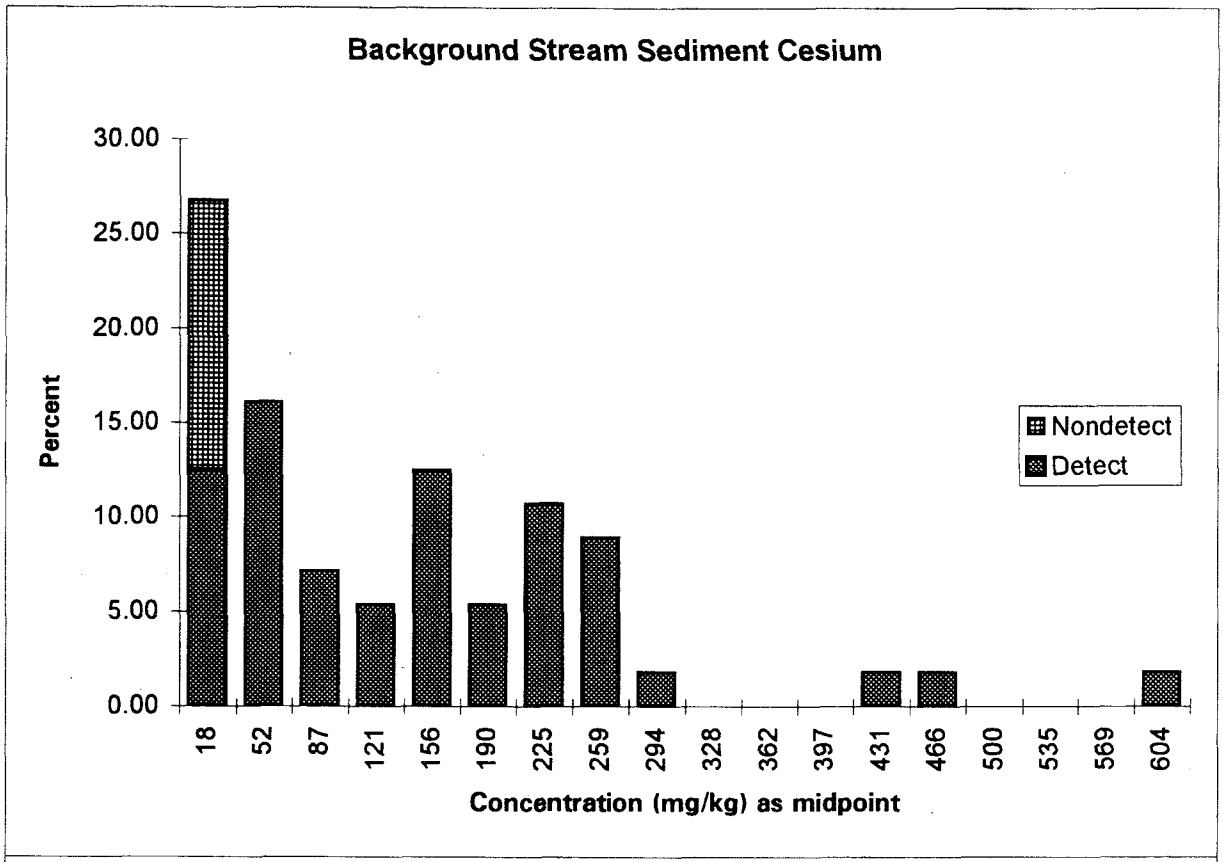

OU6 Stream Sediment Barium
Percent
30.00
25.00
20.00
15.00
10.00
5.00
0.00
17
30
43
56
69
82
95
108
121
134
147
160
173
186
199
212
225
238
Concentration (mg/kg) as midpoint
Nondetect
Detect

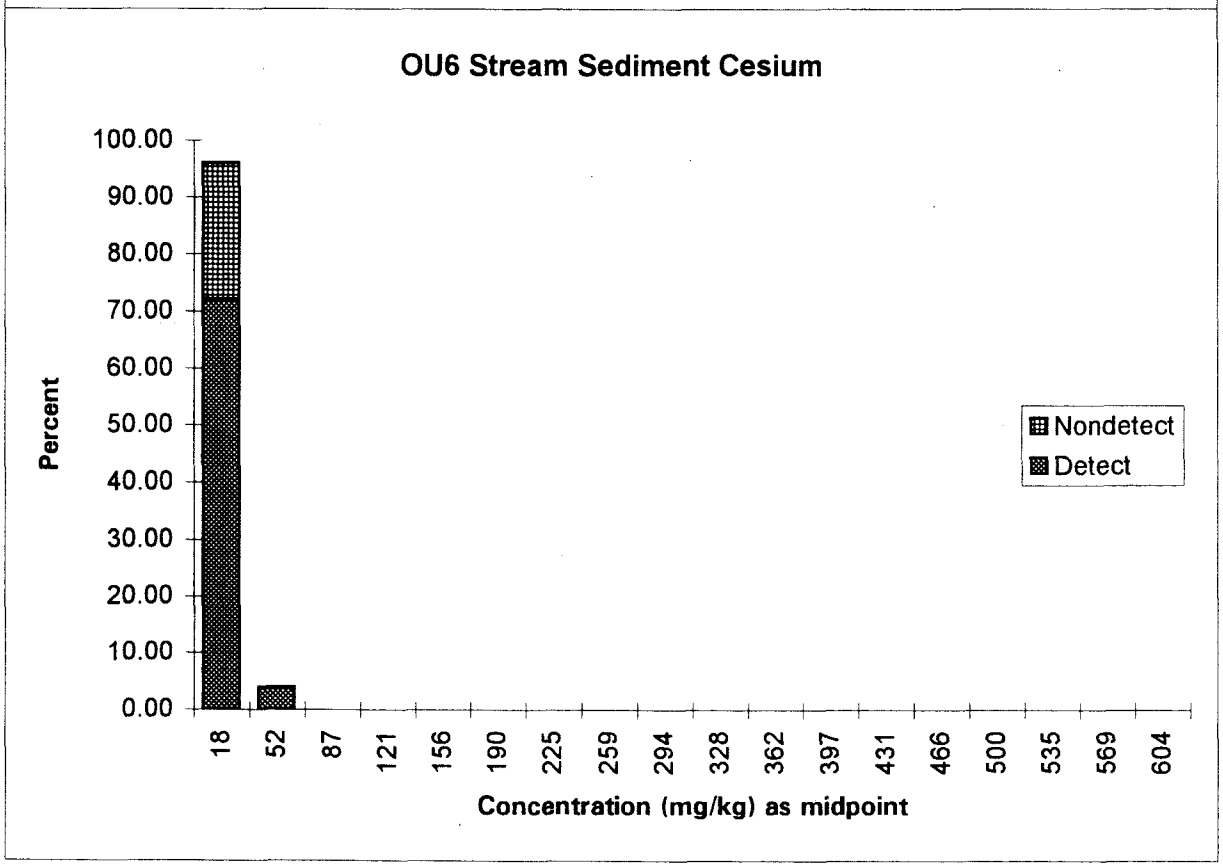

Background Stream Sediment Beryllium
100.00
90.00
80.00
70.00
60.00
50.00
40.00
30.00
20.00
10.00
0.00
Percent
Nondetect
Detect
1
2
4
5
7
8
9
11
12
14
15
17
18
20
21
22
24
25
Concentration (mg/kg) as midpoint

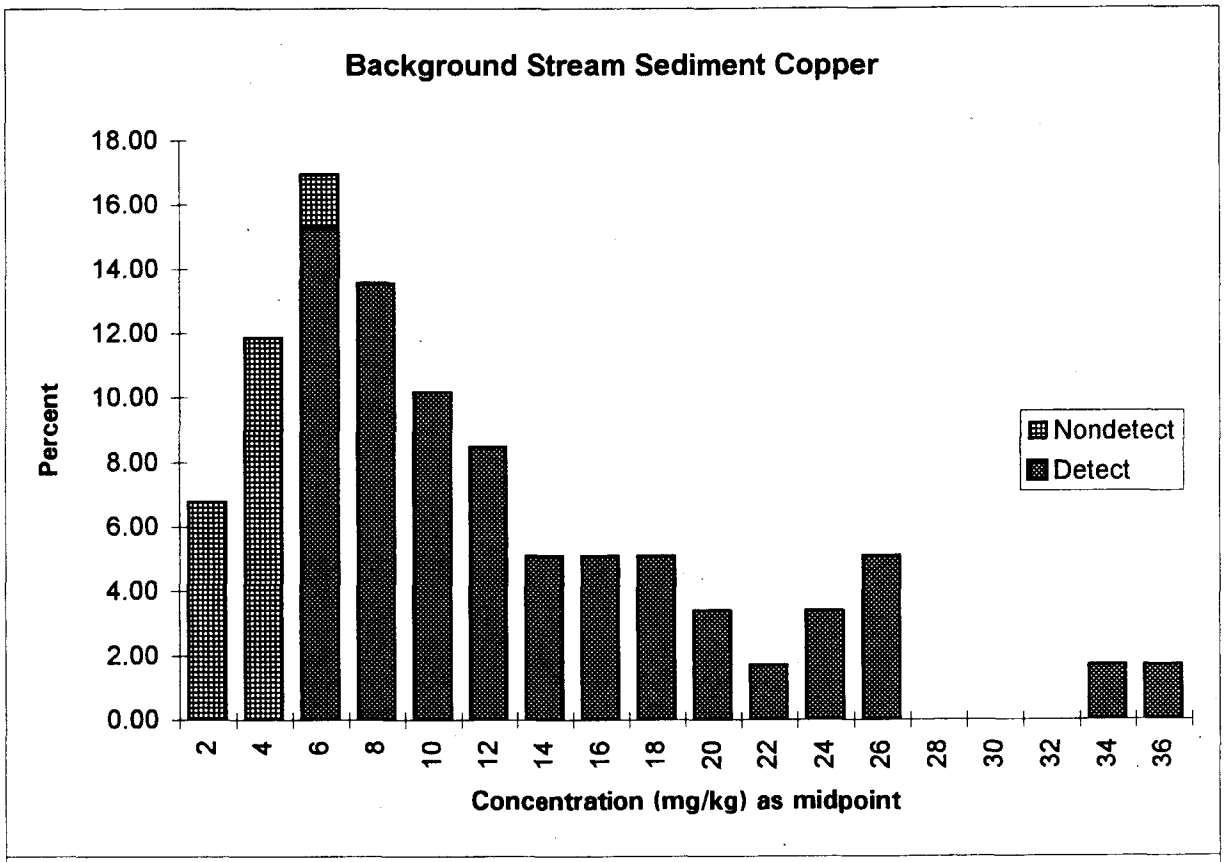

OU6 Stream Sediment Beryllium
100.00
90.00
80.00
70.00
60.00
50.00
40.00
30.00
20.00
10.00
0.00
Percent
Nondetect
Detect
1
2
4
5
7
8
9
11
12
14
15
17
18
20
21
22
24
25
Concentration (mg/kg) as midpoint

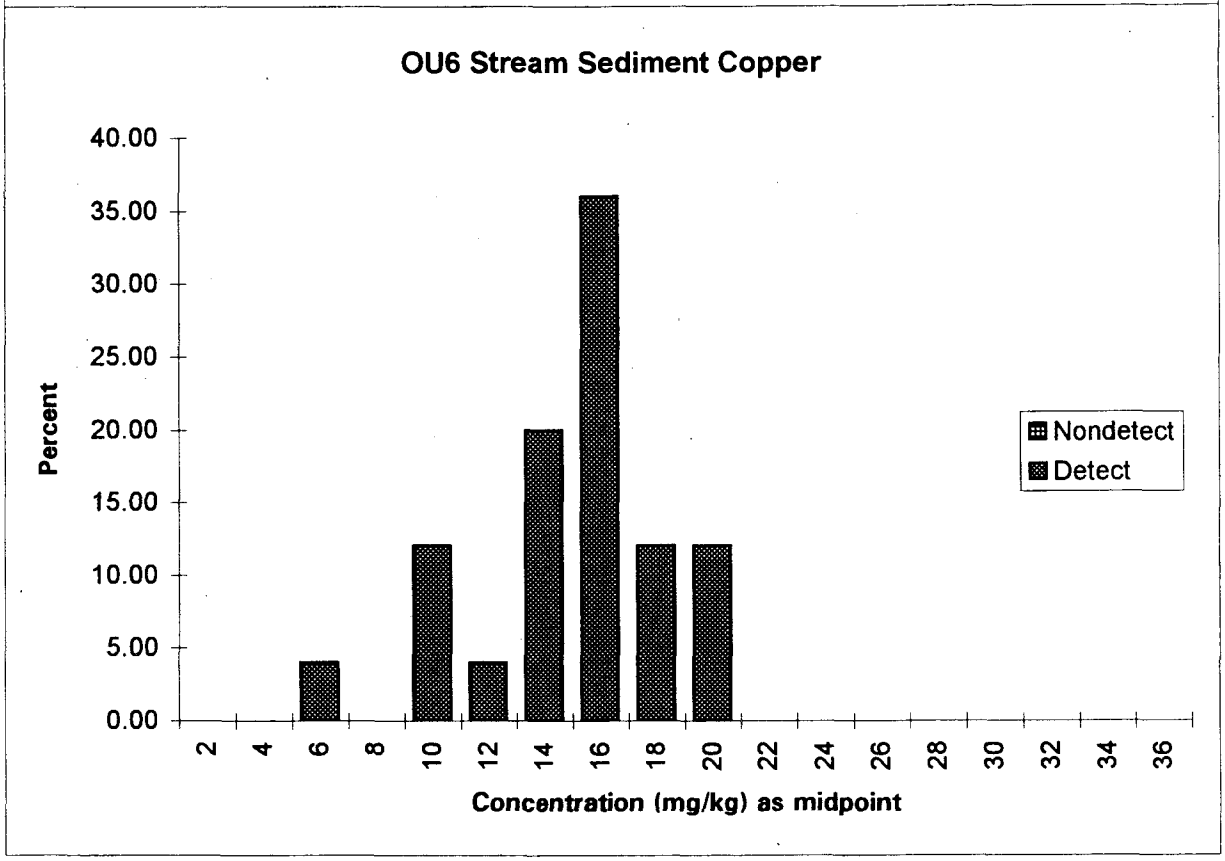

Background Stream Sediment Calcium
Percent
90.00
80.00
70.00
60.00
50.00
40.00
30.00
20.00
10.00
0.00
Nondetect
Detect
2840
8146
13453
18759
24065
29372
34678
39984
45290
50597
55903
61209
66515
71822
77128
82434
87741
93047
Concentration (mg/kg) as midpoint

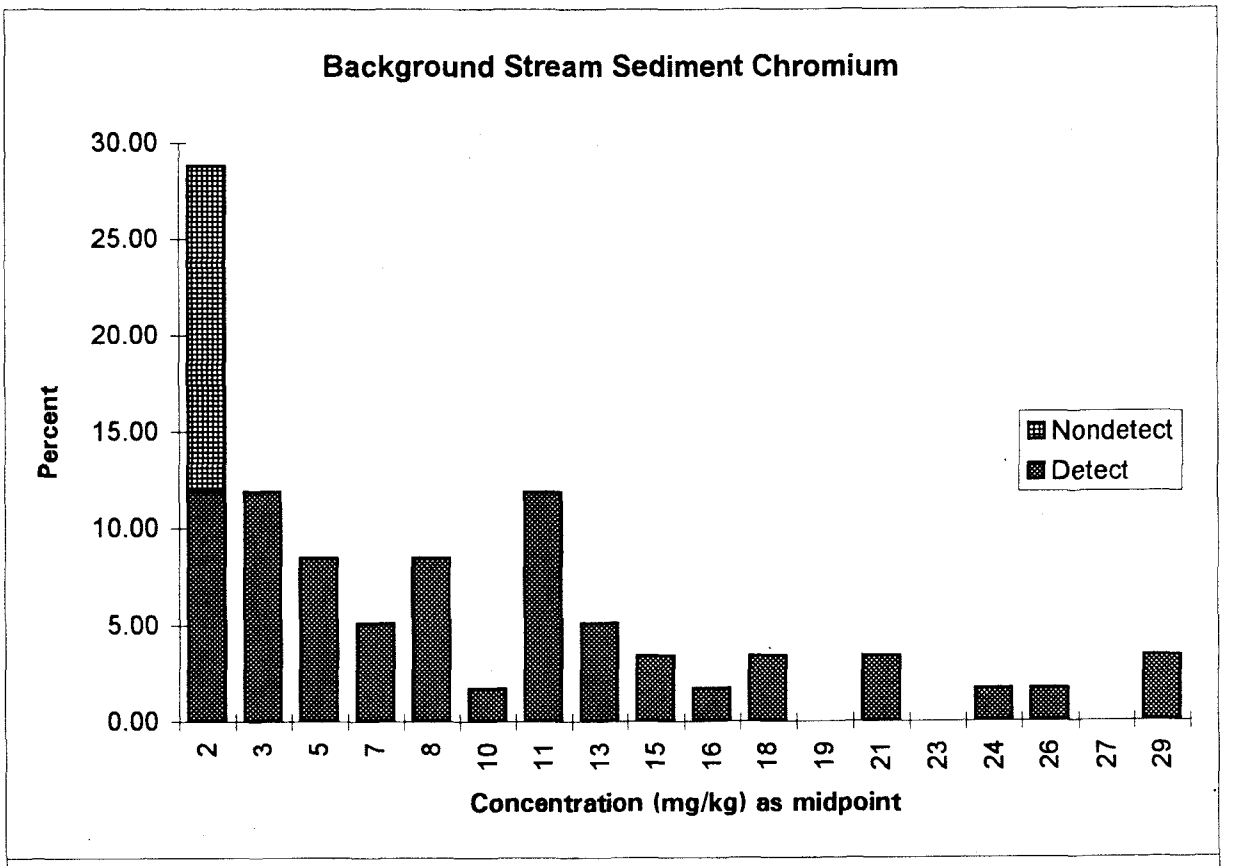

OU6 Stream Sediment Calcium
Percent
45.00
40.00
35.00
30.00
25.00
20.00
15.00
10.00
5.00
0.00
Nondetect
Detect
2840
8146
13453
18759
24065
29372
34678
39984
45290
50597
55903
61209
66515
71822
77128
82434
87741
93047
Concentration (mg/kg) as midpoint

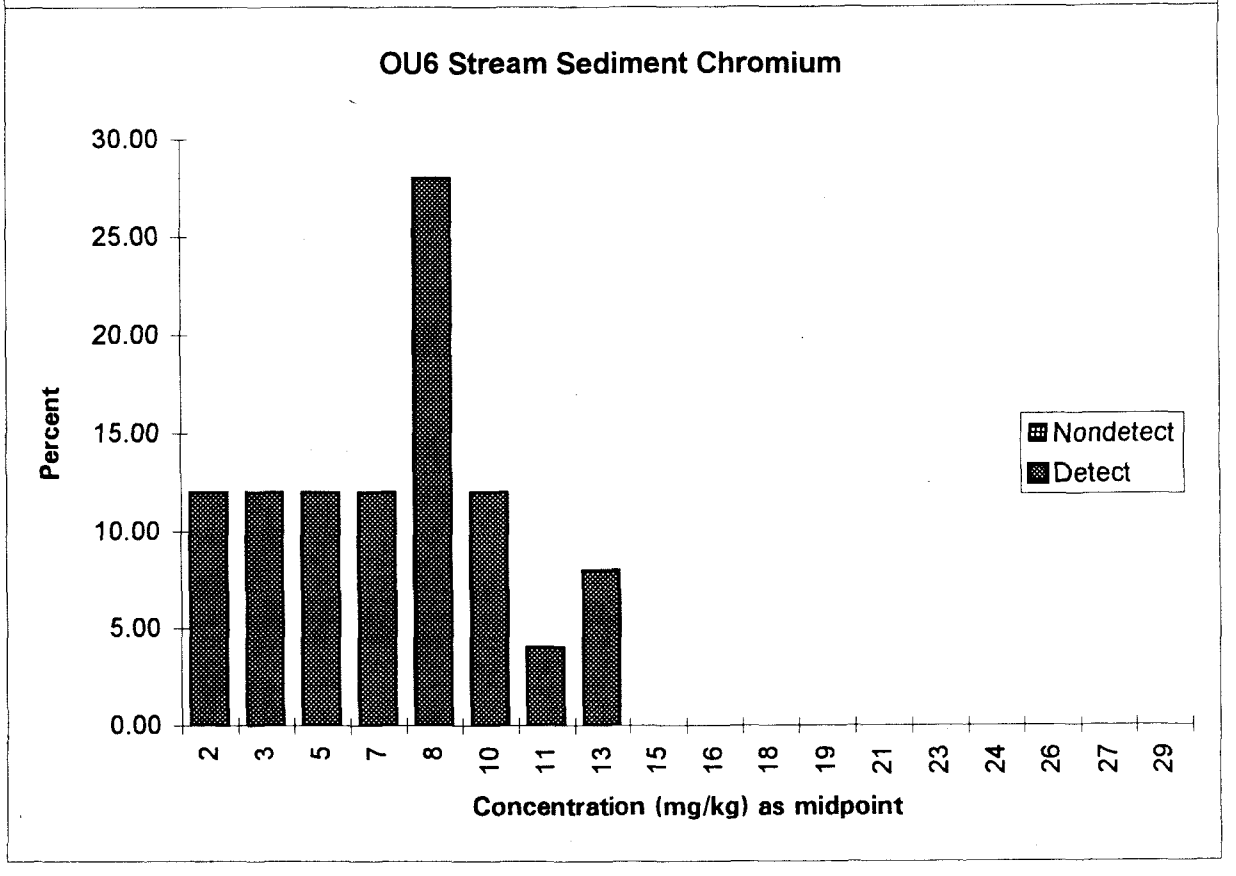

Background Stream Sediment Cesium
30.00
25.00
20.00
15.00
10.00
5.00
0.00
Percent
Nondetect
Detect
18
52
87
121
156
190
225
259
294
328
362
397
431
466
500
535
569
604
Concentration (mg/kg) as midpoint

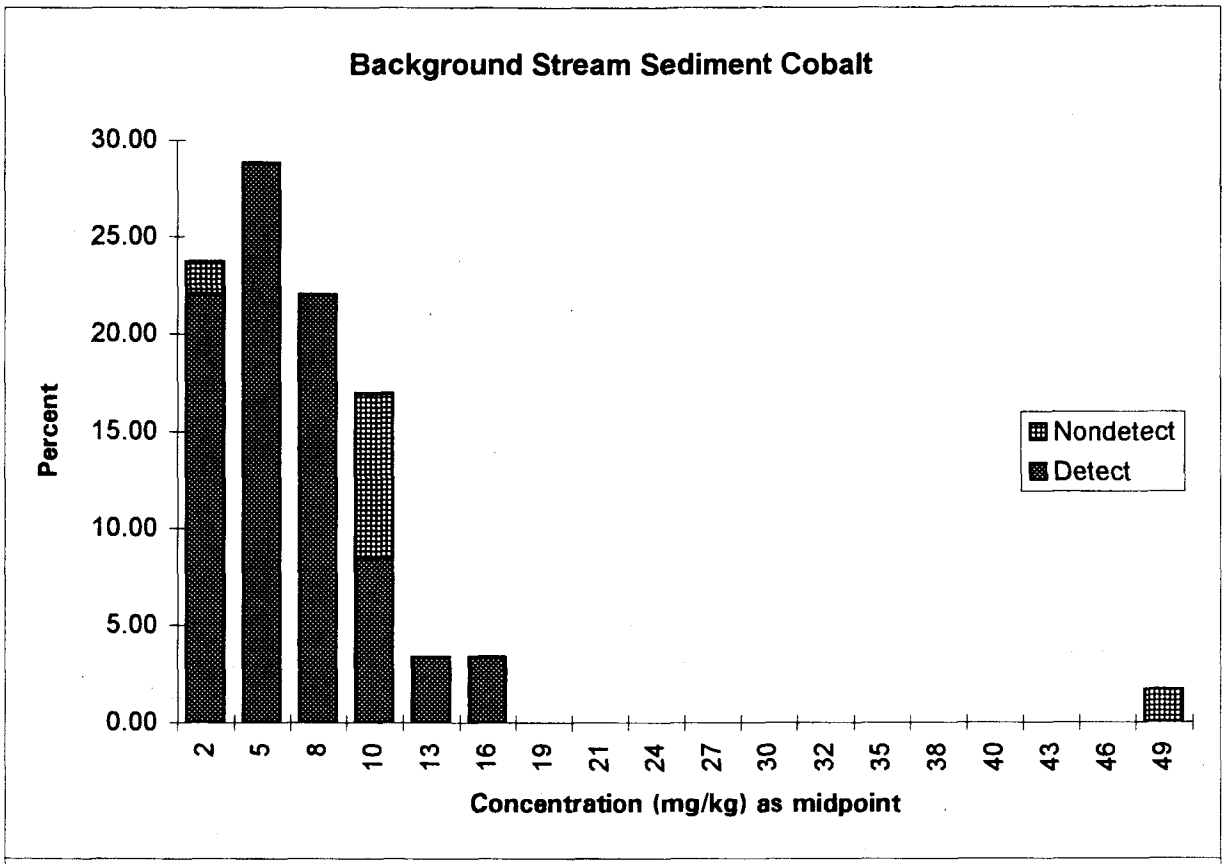

OU6 Stream Sediment Cesium
100.00
90.00
80.00
70.00
60.00
50.00
40.00
30.00
20.00
10.00
0.00
Percent
Nondetect
Detect
18
52
87
121
156
190
225
259
294
328
362
397
431
466
500
535
569
604
Concentration (mg/kg) as midpoint

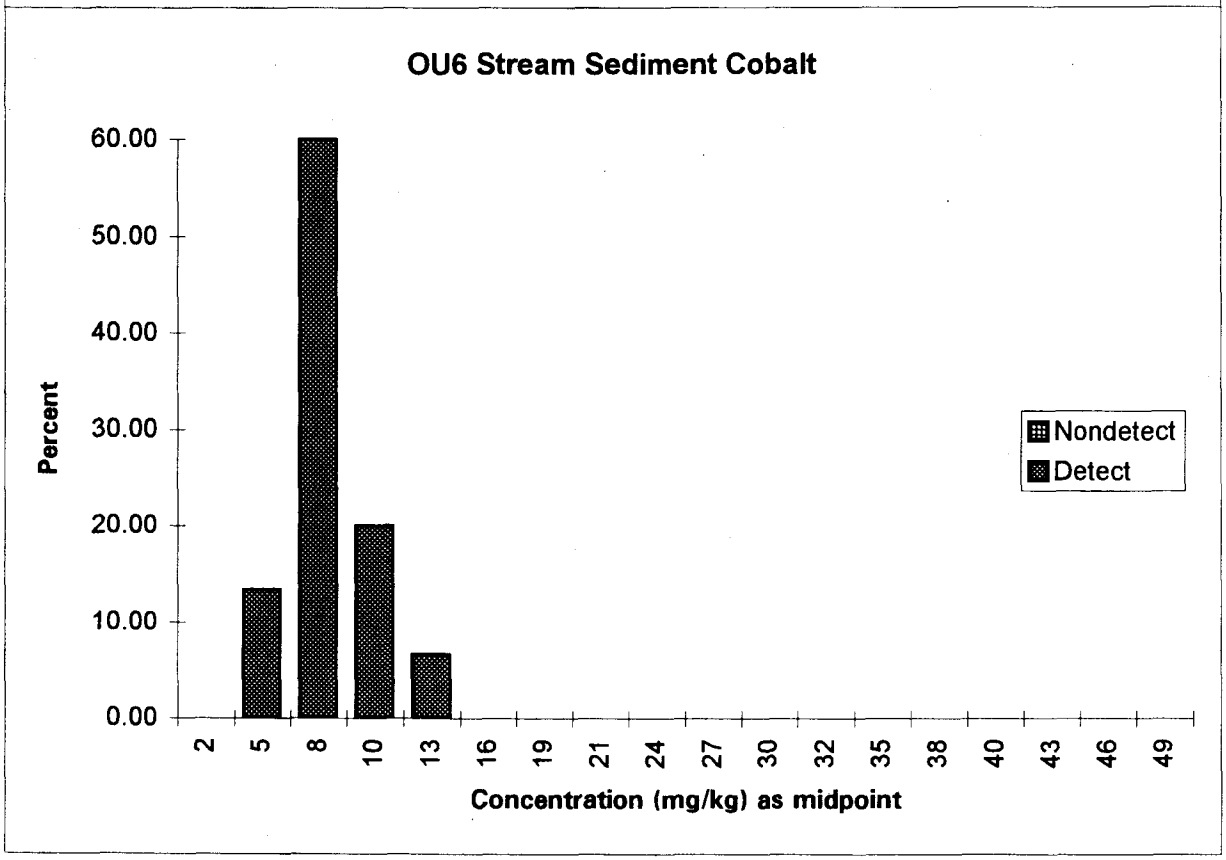

Background Stream Sediment Copper
Percent
18.00
16.00
14.00
12.00
10.00
8.00
6.00
4.00
2.00
0.00
2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36
Concentration (mg/kg) as midpoint
Nondetect
Detect

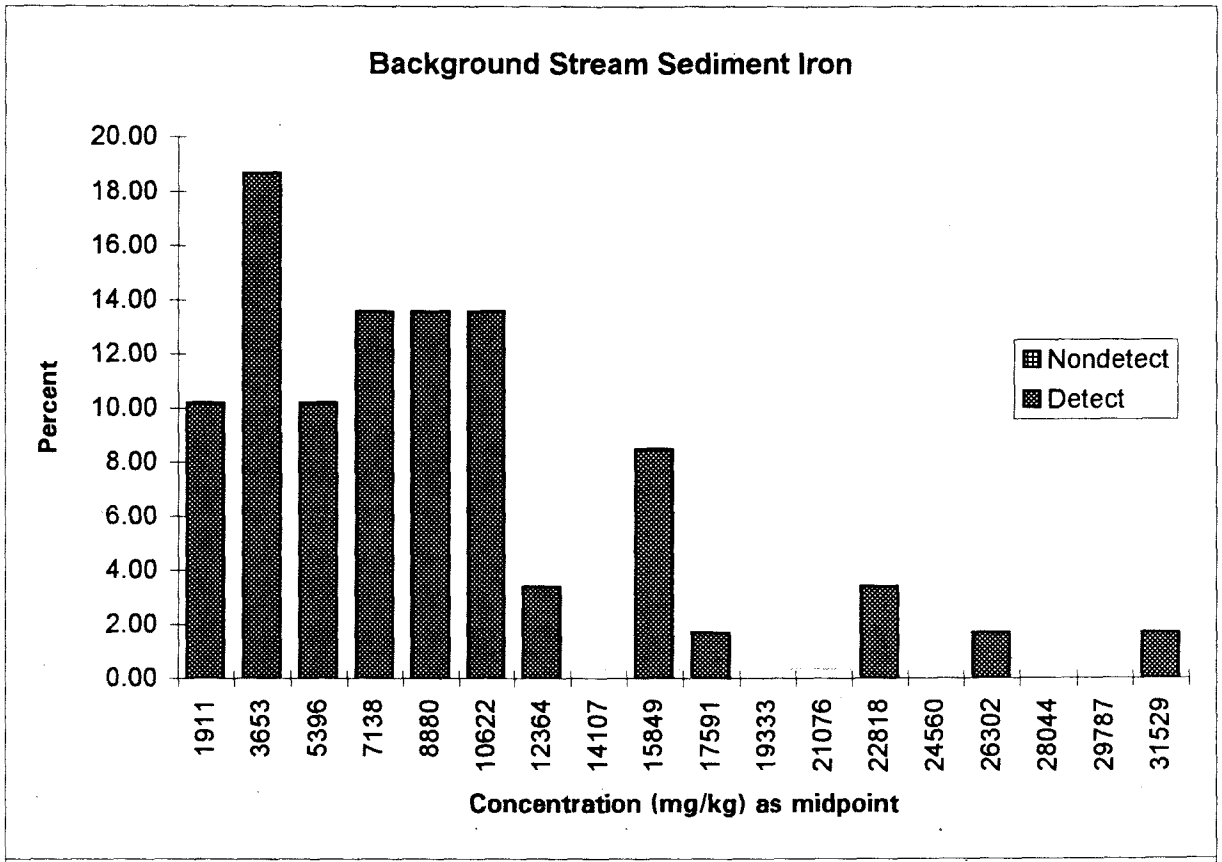

OU6 Stream Sediment Copper
Percent
40.00
35.00
30.00
25.00
20.00
15.00
10.00
5.00
0.00
2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36
Concentration (mg/kg) as midpoint
Nondetect
Detect

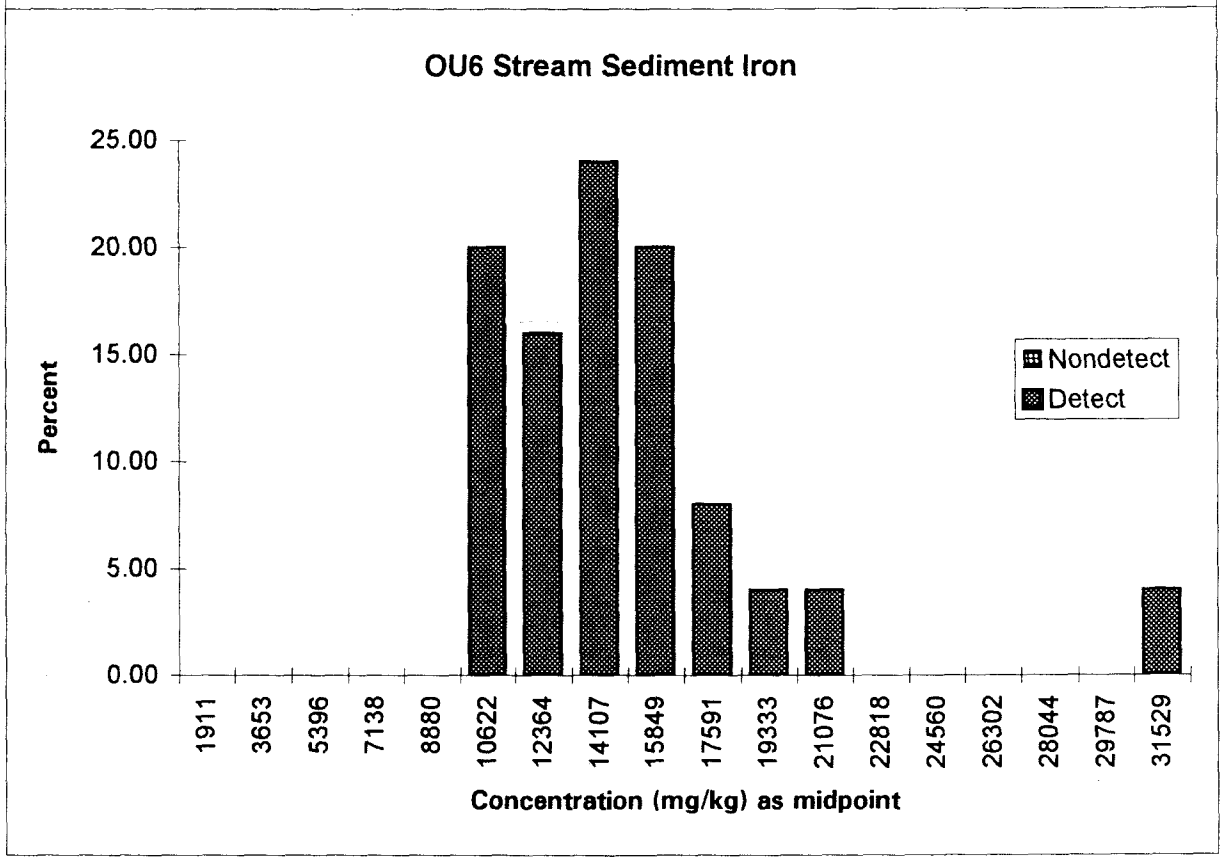

Background Stream Sediment Chromium
30.00
25.00
20.00
15.00
10.00
5.00
0.00
Percent
Nondetect
Detect
2
3
5
7
8
10
11
13
15
16
18
19
21
23
24
26
27
29
Concentration (mg/kg) as midpoint

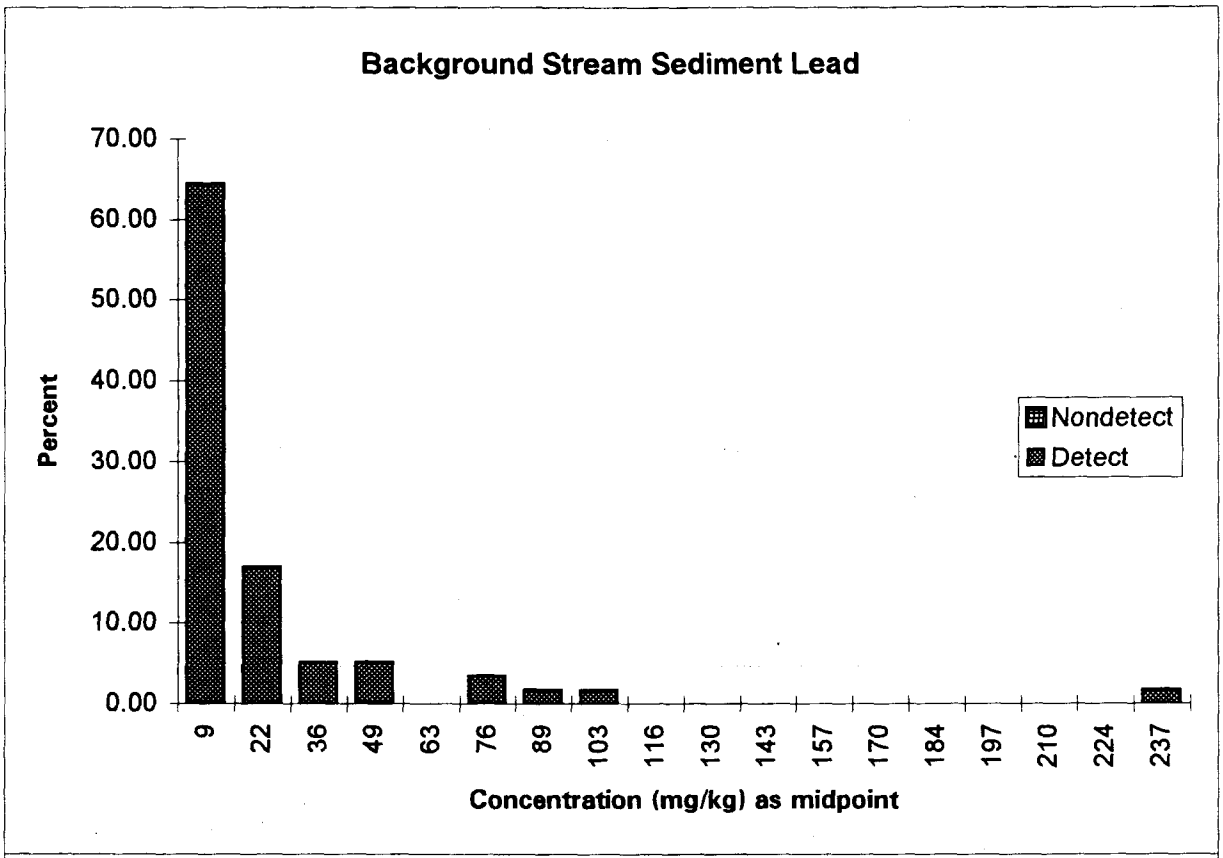

OU6 Stream Sediment Chromium
30.00
25.00
20.00
15.00
10.00
5.00
0.00
Percent
Nondetect
Detect
2
3
5
7
8
10
11
13
15
16
18
19
21
23
24
26
27
29
Concentration (mg/kg) as midpoint

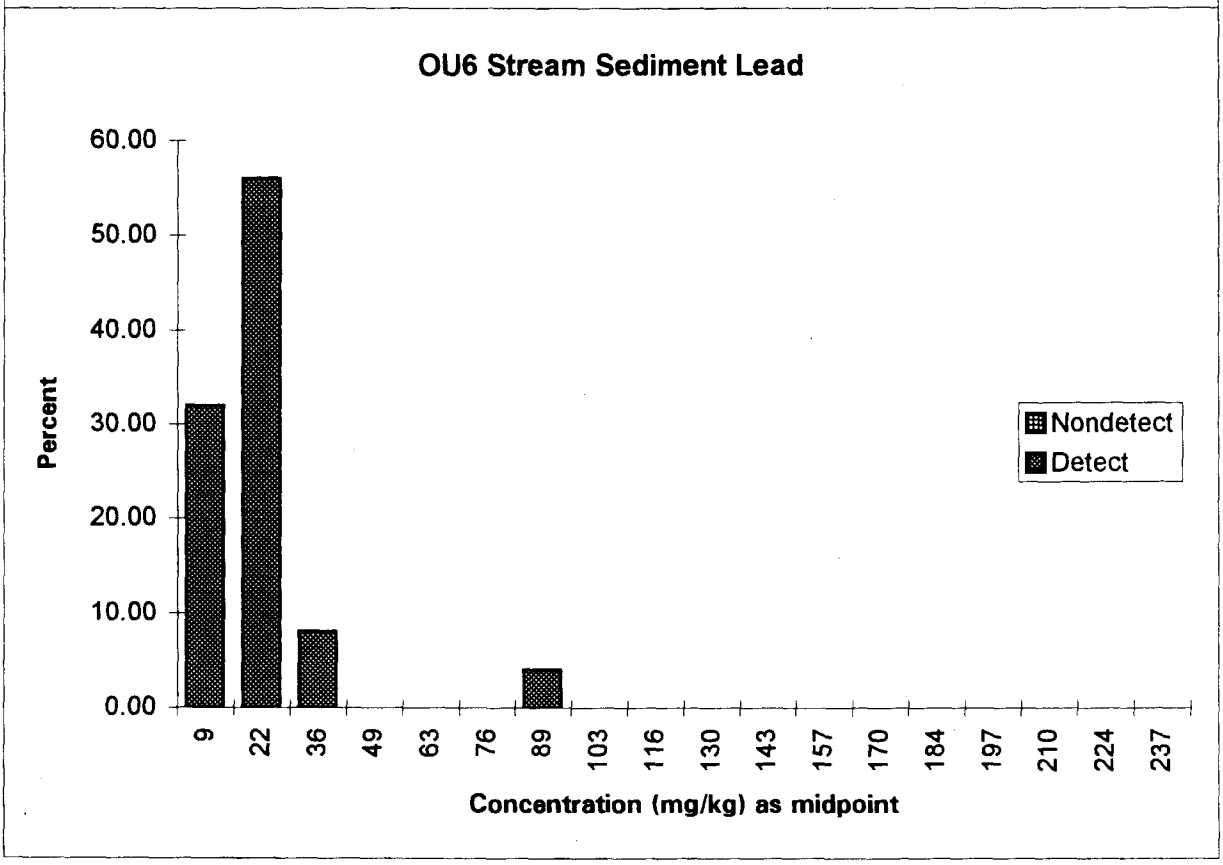

Background Stream Sediment Cobalt
30.00
25.00
20.00
15.00
10.00
5.00
0.00
Percent
Nondetect
Detect
2
5
8
10
13
16
19
21
24
27
30
32
35
38
40
43
46
49
Concentration (mg/kg) as midpoint

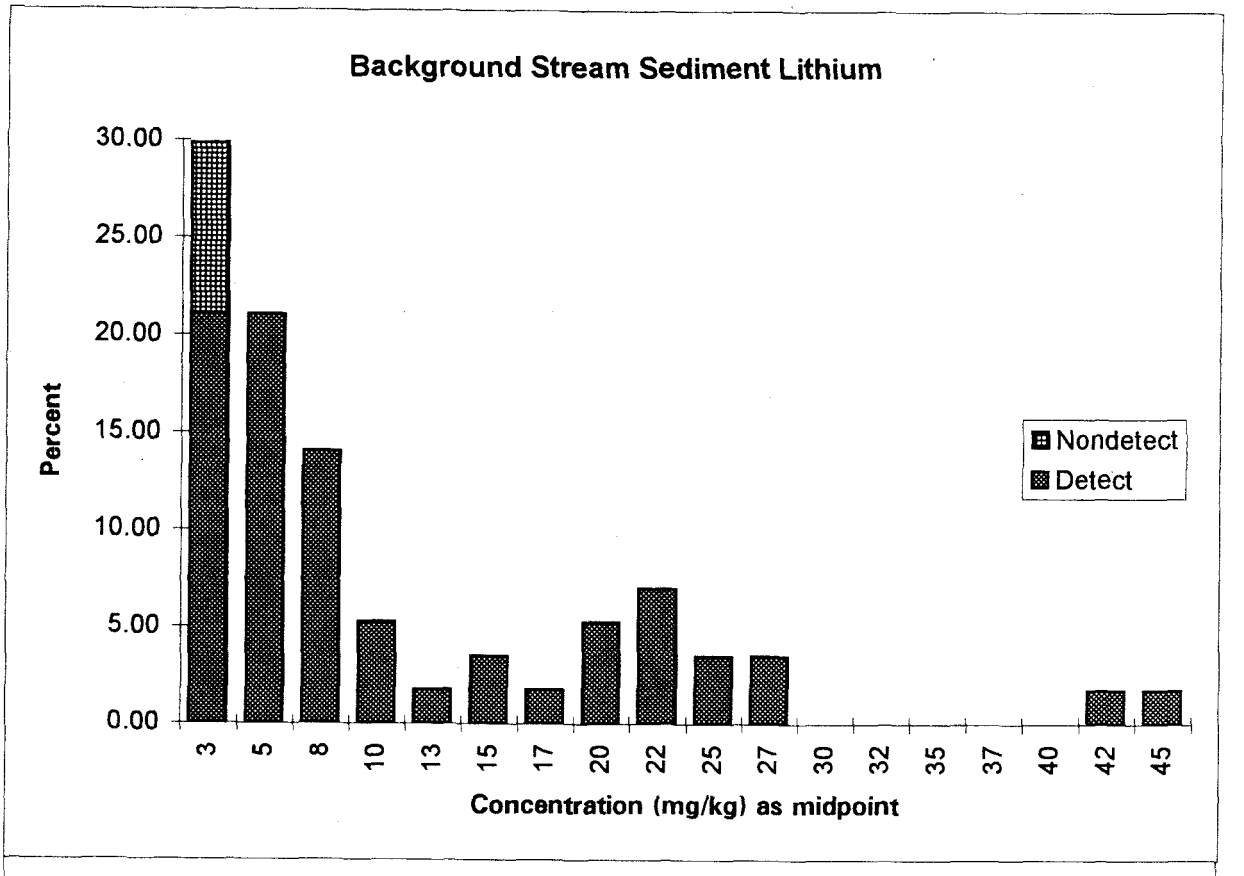

OU6 Stream Sediment Cobalt
60.00
50.00
40.00
30.00
20.00
10.00
0.00
Percent
Nondetect
Detect
2
5
8
10
13
16
19
21
24
27
30
32
35
38
40
43
46
49
Concentration (mg/kg) as midpoint

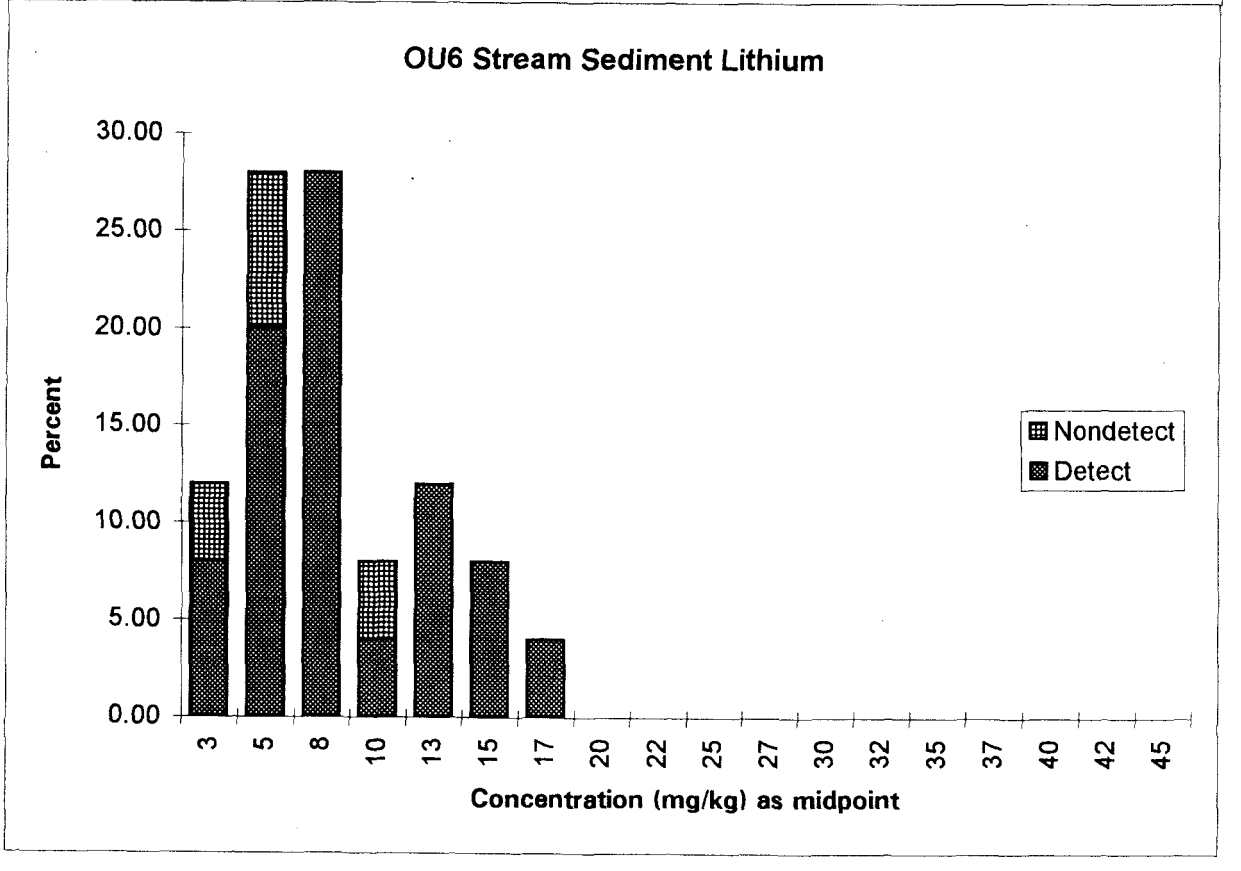

Background Stream Sediment Iron
Percent
20.00
18.00
16.00
14.00
12.00
10.00
8.00
6.00
4.00
2.00
0.00
Nondetect
Detect
1911
3653
5396
7138
8880
10622
12364
14107
15849
17591
19333
21076
22818
24560
26302
28044
29787
31529
Concentration (mg/kg) as midpoint

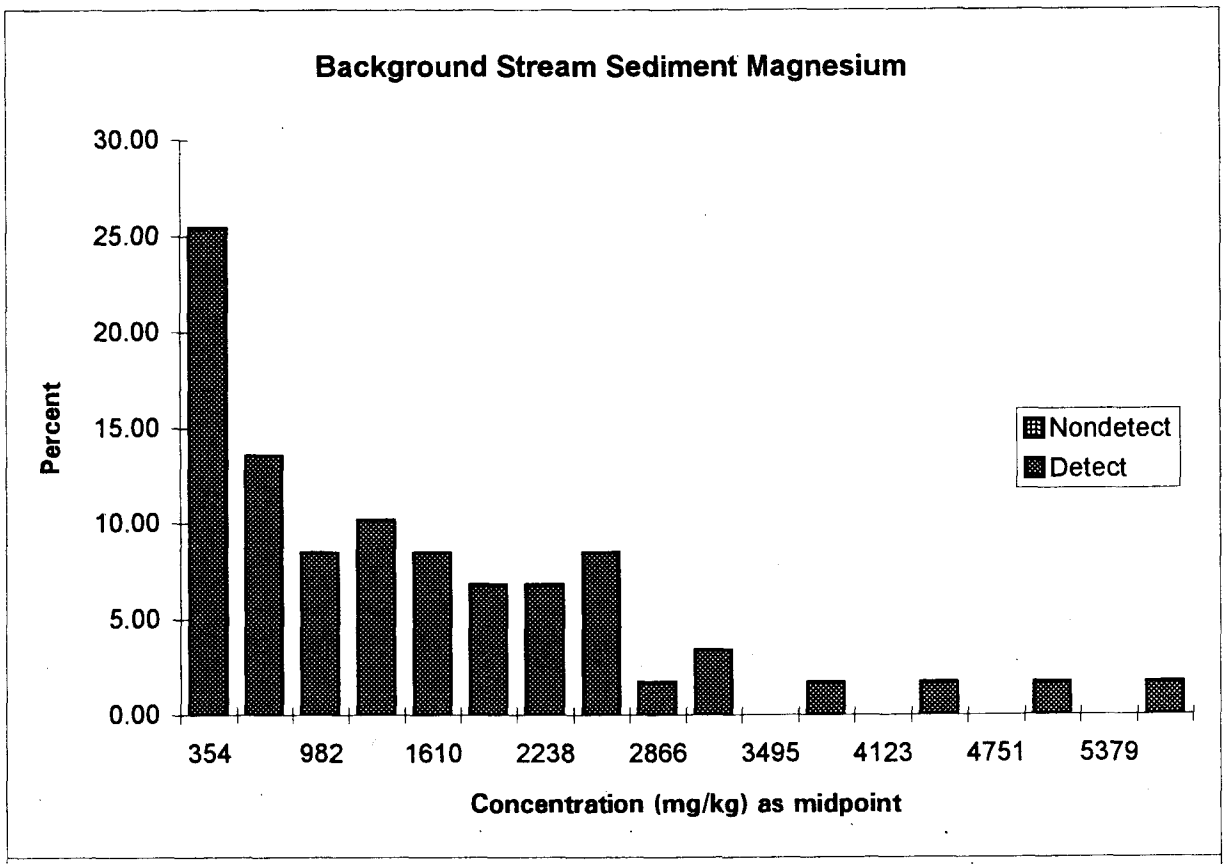

OU6 Stream Sediment Iron
Percent
25.00
20.00
15.00
10.00
5.00
0.00
Nondetect
Detect
1911
3653
5396
7138
8880
10622
12364
14107
15849
17591
19333
21076
22818
24560
26302
28044
29787
31529
Concentration (mg/kg) as midpoint

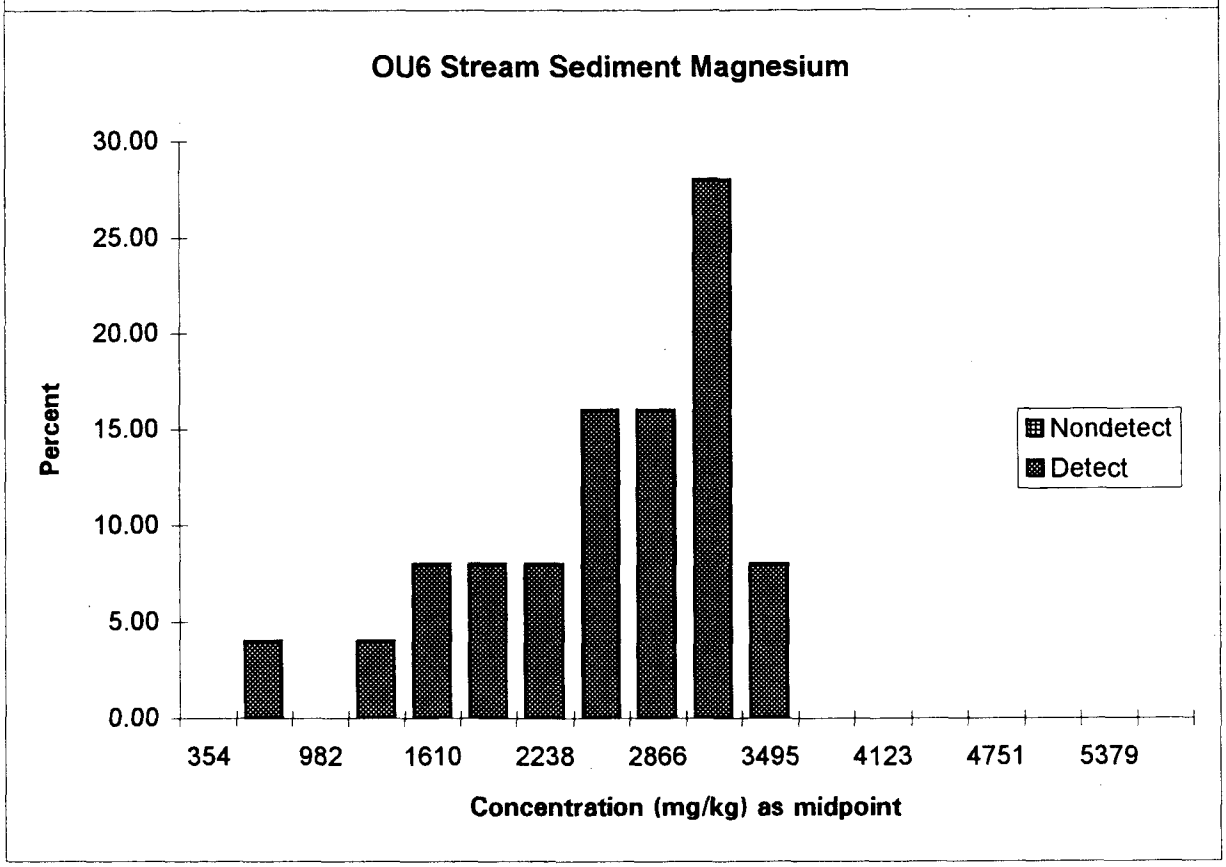

Background Stream Sediment Lead
70.00
60.00
50.00
40.00
30.00
20.00
10.00
0.00
Percent
Nondetect
Detect
9
22
36
49
63
76
89
103
116
130
143
157
170
184
197
210
224
237
Concentration (mg/kg) as midpoint

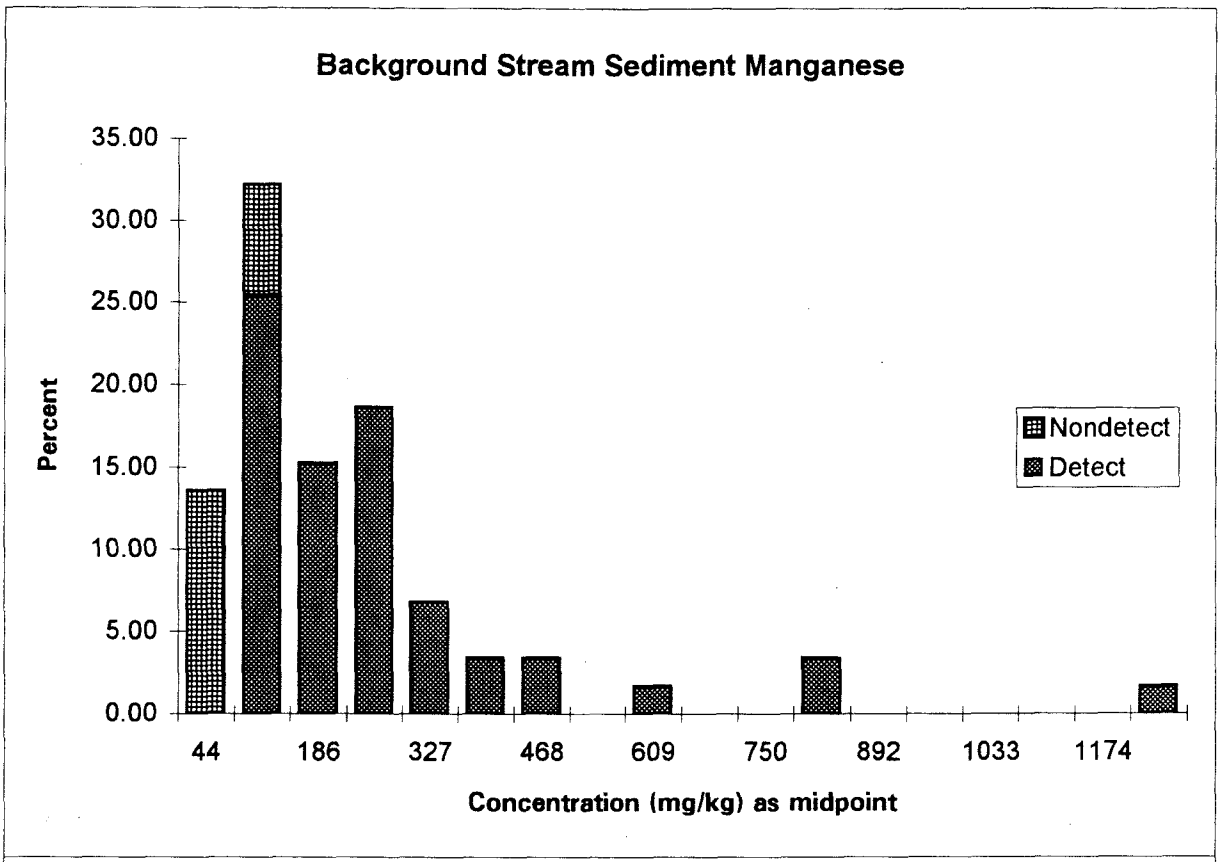

OU6 Stream Sediment Lead
60.00
50.00
40.00
30.00
20.00
10.00
0.00
Percent
Nondetect
Detect
9
22
36
49
63
76
89
103
116
130
143
157
170
184
197
210
224
237
Concentration (mg/kg) as midpoint

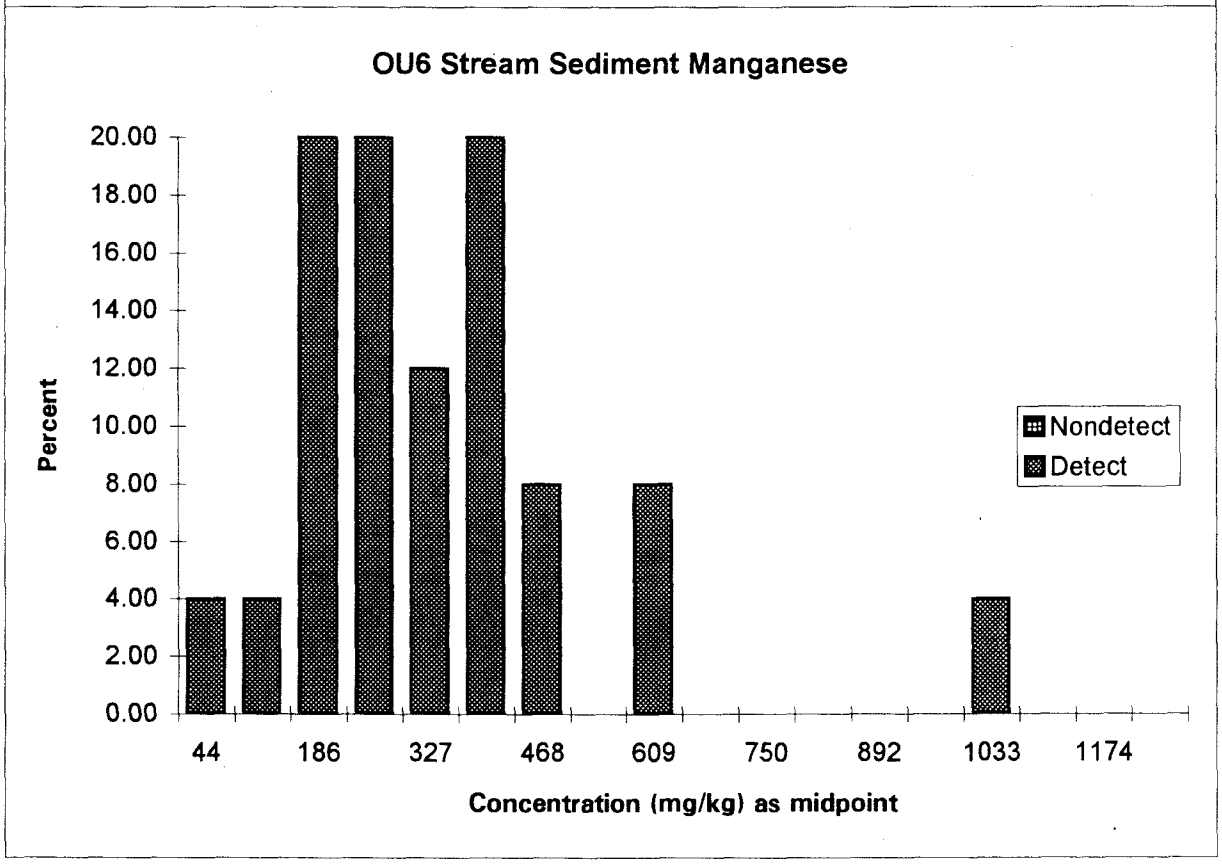

Background Stream Sediment Lithium
30.00
25.00
20.00
15.00
10.00
5.00
0.00
Percent
Nondetect
Detect
3
5
8
10
13
15
17
20
22
25
27
30
32
35
37
40
42
45
Concentration (mg/kg) as midpoint

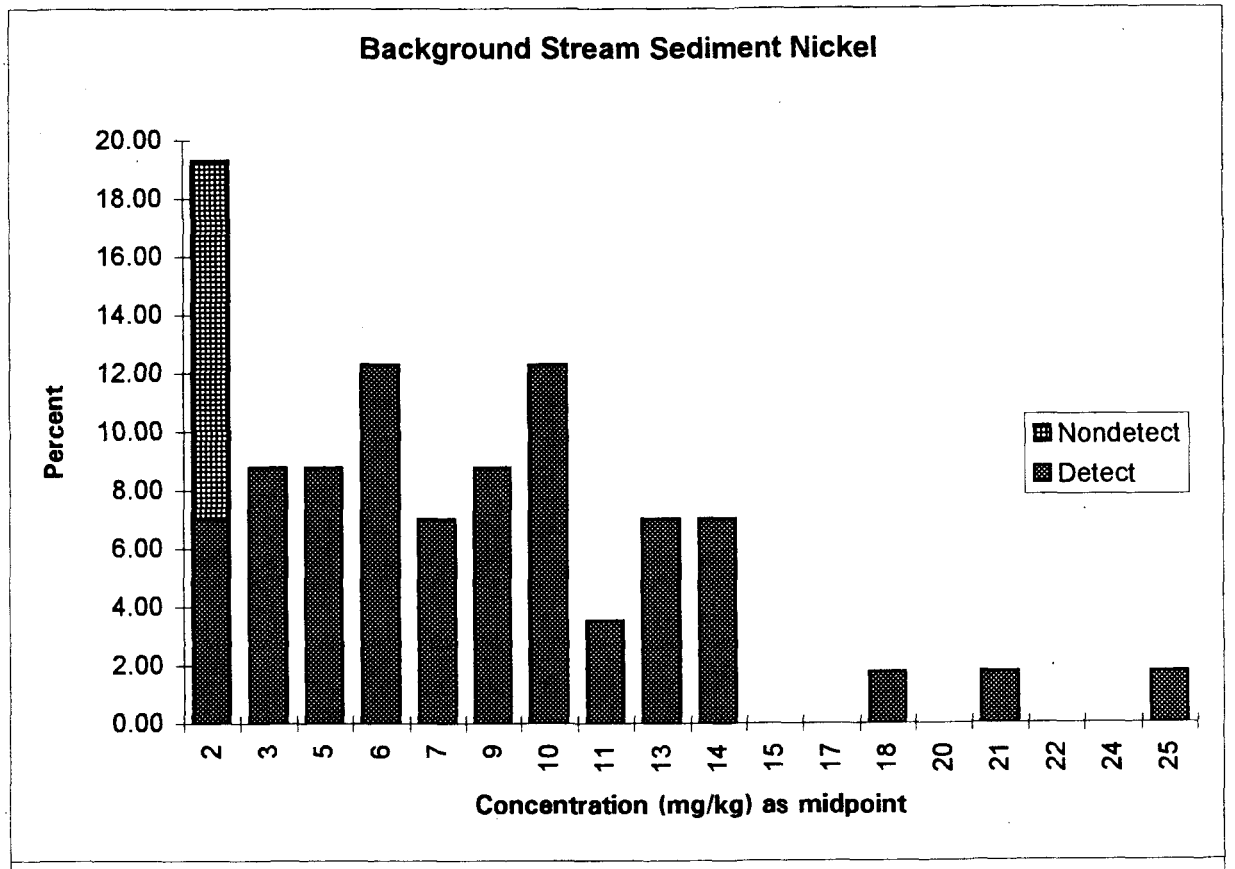

OU6 Stream Sediment Lithium
30.00
25.00
20.00
15.00
10.00
5.00
0.00
Percent
Nondetect
Detect
3
5
8
10
13
15
17
20
22
25
27
30
32
35
37
40
42
45
Concentration (mg/kg) as midpoint

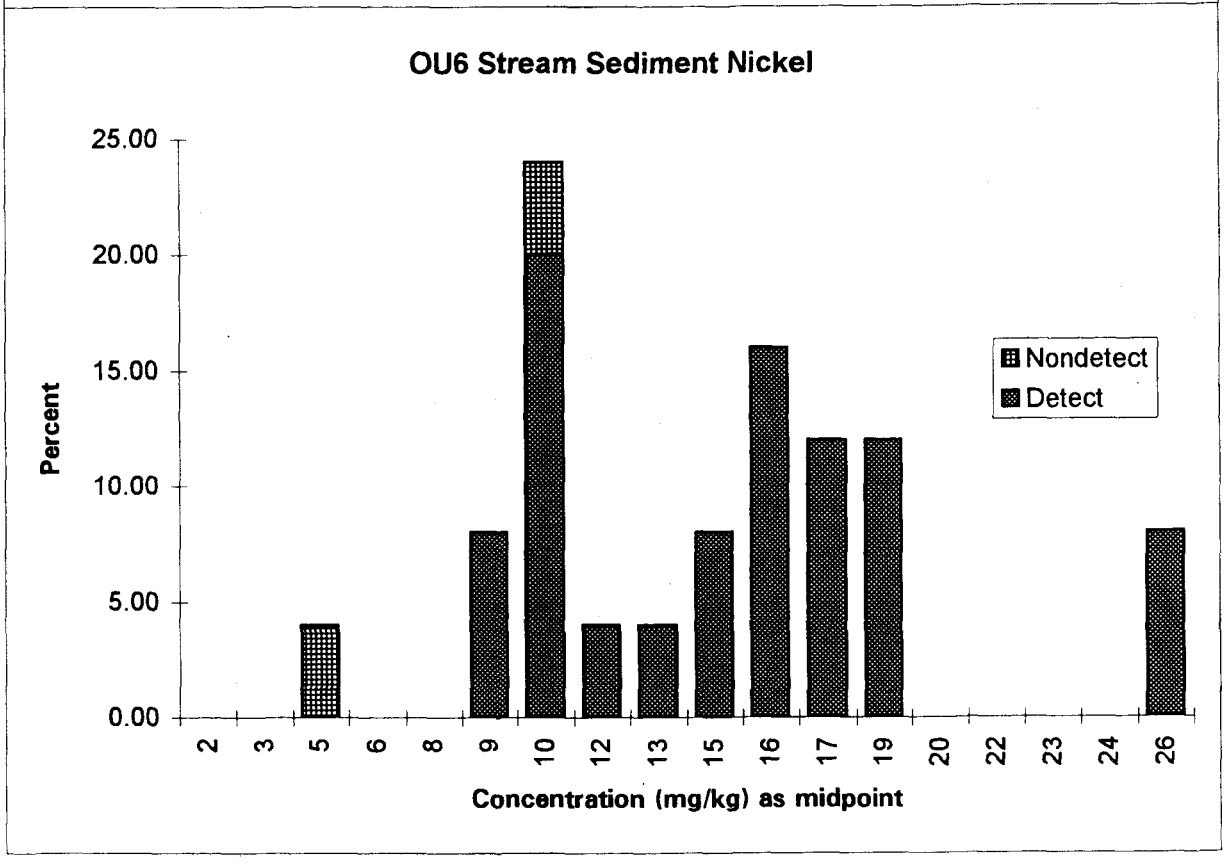

Background Stream Sediment Magnesium
30.00
25.00
20.00
15.00
10.00
5.00
0.00
Percent
Nondetect
Detect
354
982
1610
2238
2866
3495
4123
4751
5379
Concentration (mg/kg) as midpoint

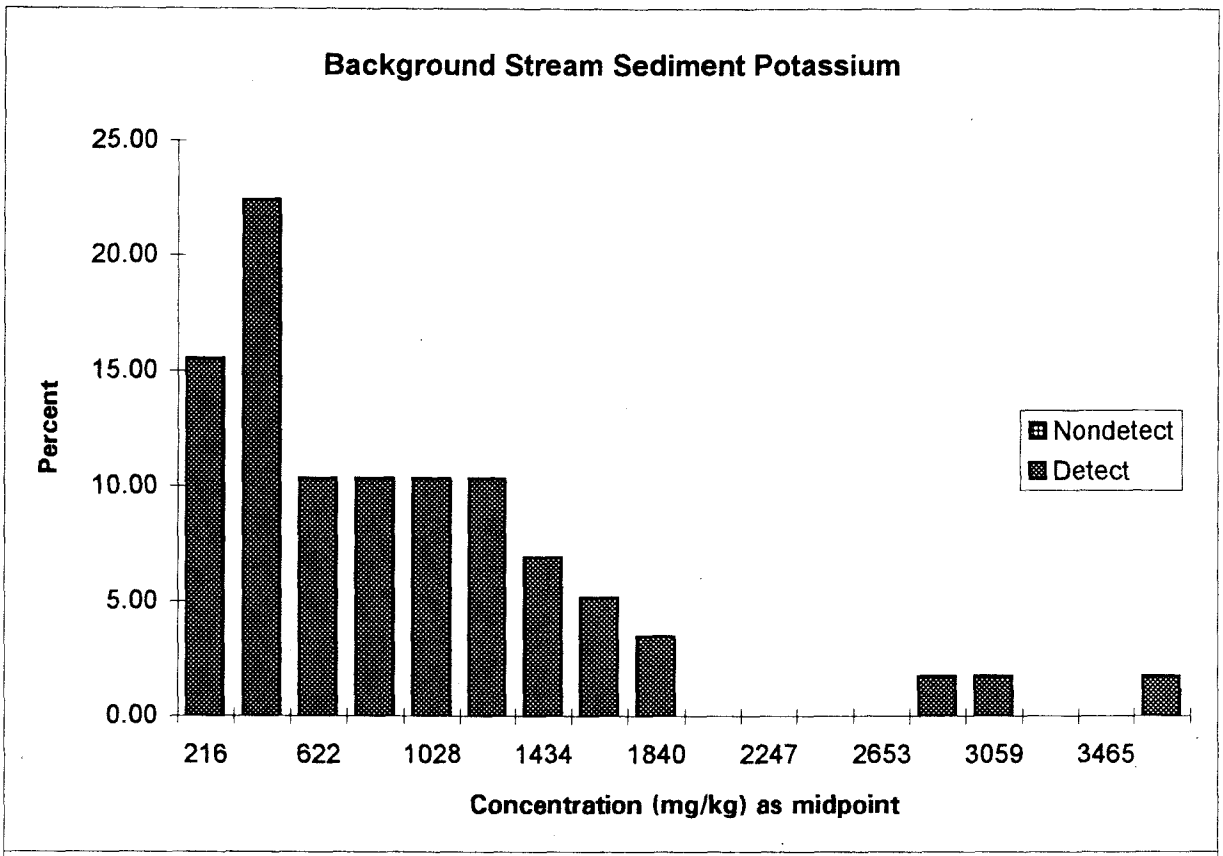

OU6 Stream Sediment Magnesium
30.00
25.00
20.00
15.00
10.00
5.00
0.00
Percent
Nondetect
Detect
354
982
1610
2238
2866
3495
4123
4751
5379
Concentration (mg/kg) as midpoint

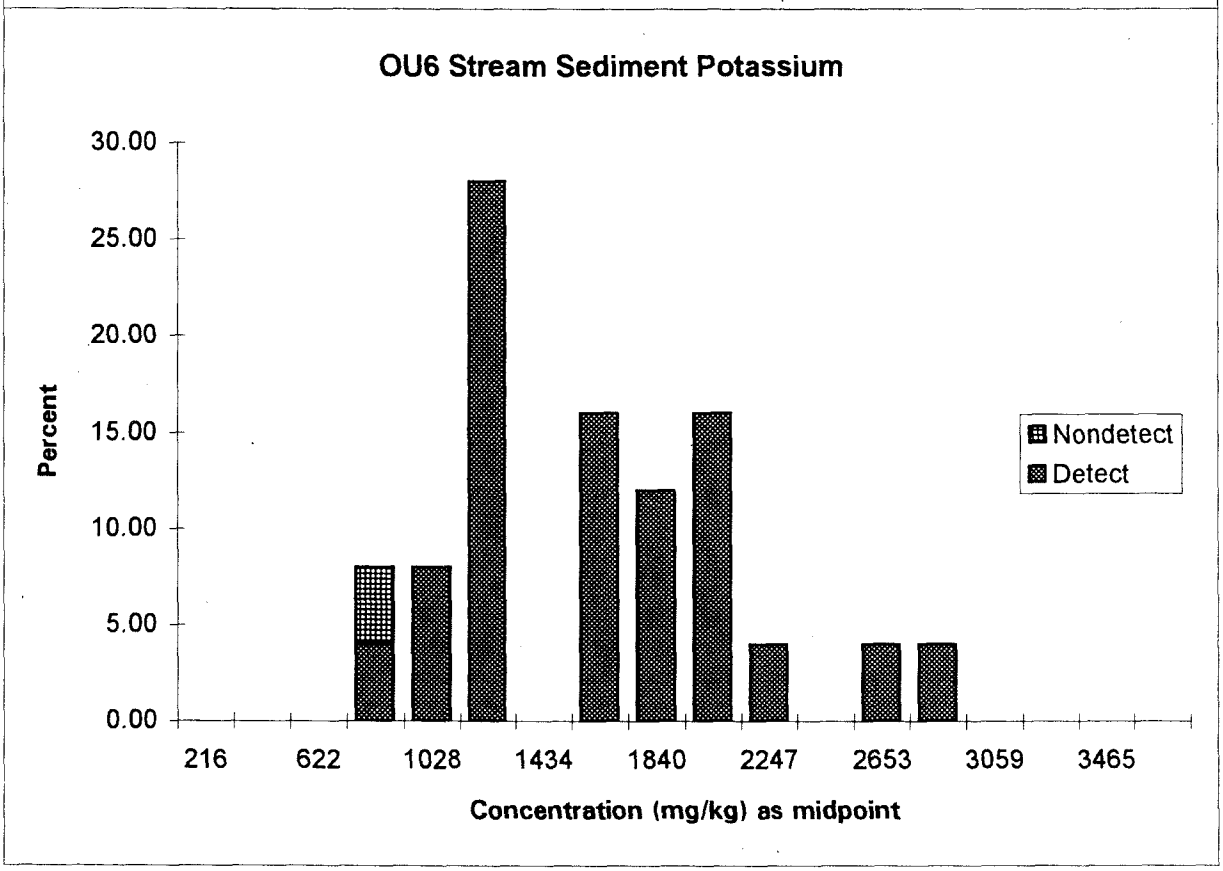

Background Stream Sediment Manganese
35.00
30.00
25.00
20.00
15.00
10.00
5.00
0.00
Percent
Nondetect
Detect
44
186
327
468
609
750
892
1033
1174
Concentration (mg/kg) as midpoint

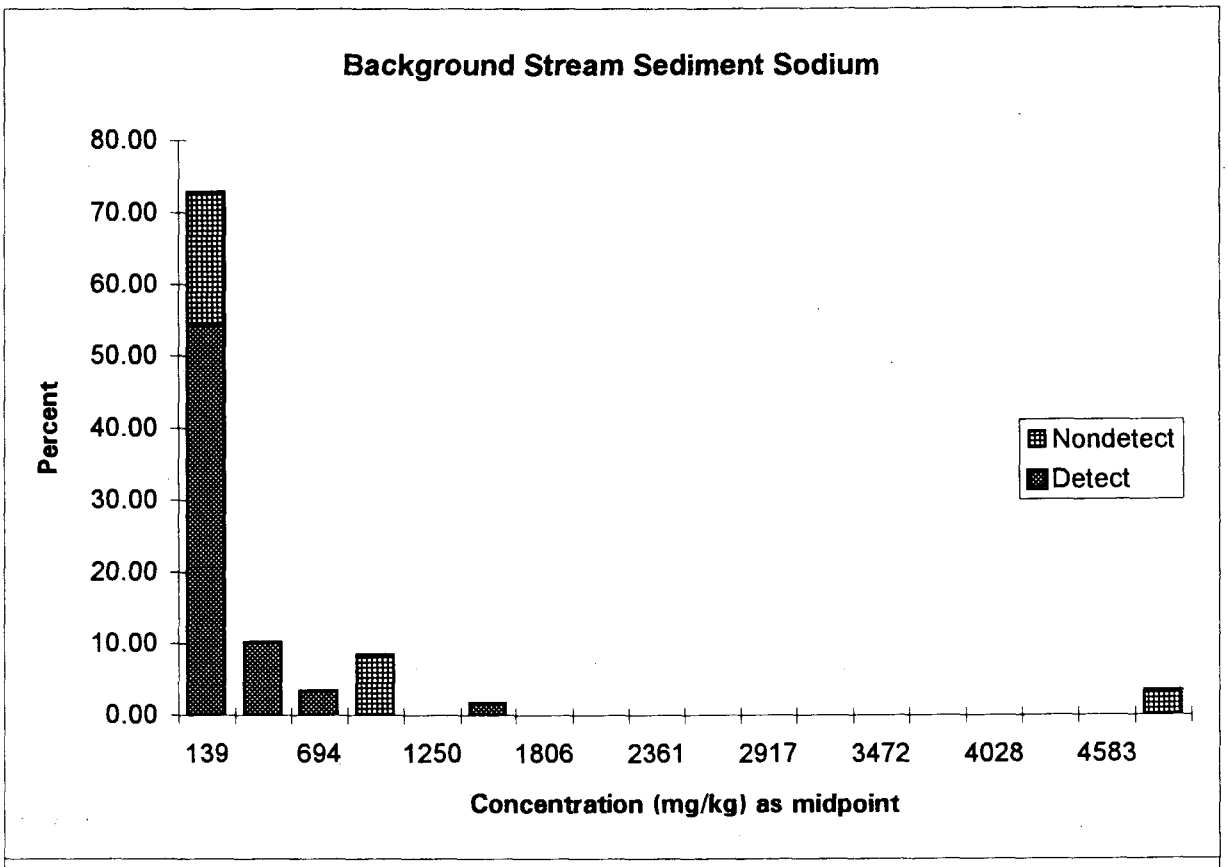

OU6 Stream Sediment Manganese
20.00
18.00
16.00
14.00
12.00
10.00
8.00
6.00
4.00
2.00
0.00
Percent
Nondetect
Detect
44
186
327
468
609
750
892
1033
1174
Concentration (mg/kg) as midpoint

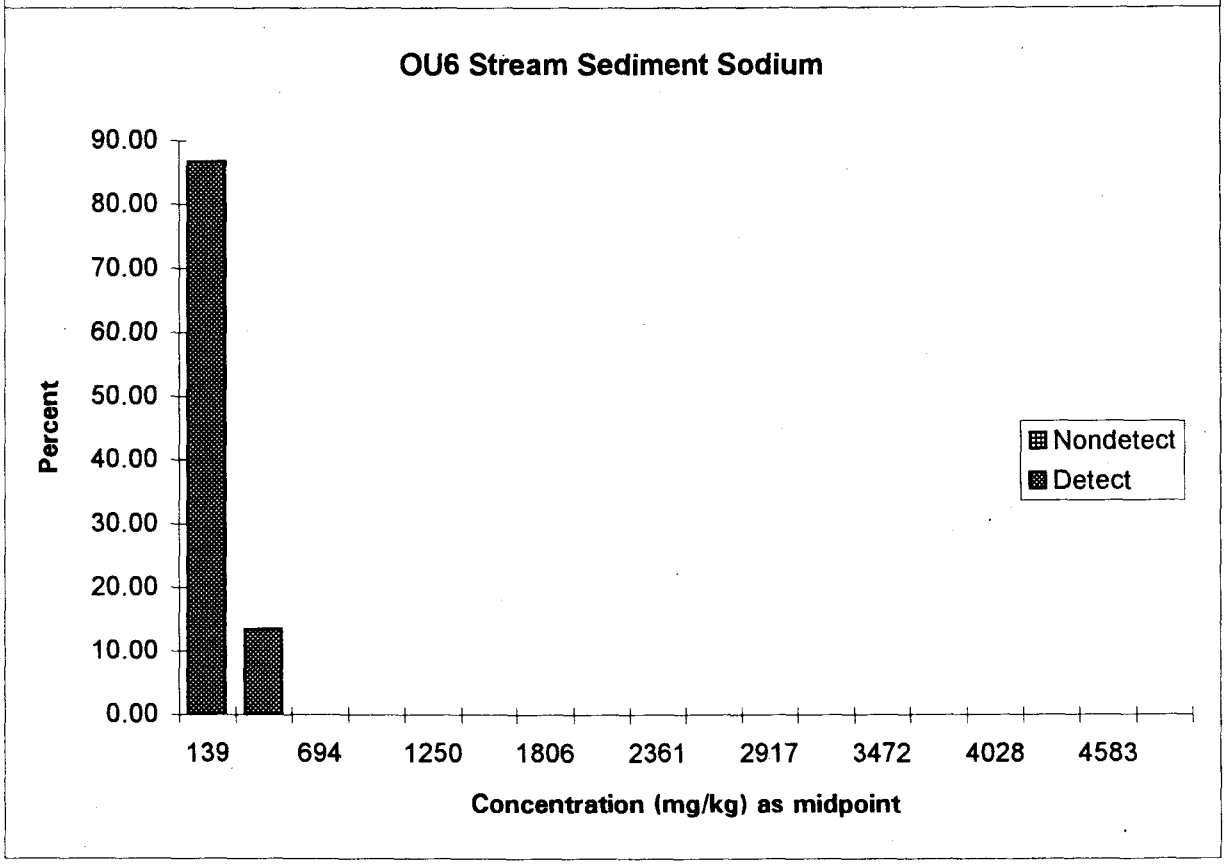

Background Stream Sediment Nickel
Percent
20.00
18.00
16.00
14.00
12.00
10.00
8.00
6.00
4.00
2.00
0.00
2
3
5
6
7
9
10
11
13
14
15
17
18
20
21
22
24
25
Concentration (mg/kg) as midpoint
Nondetect
Detect

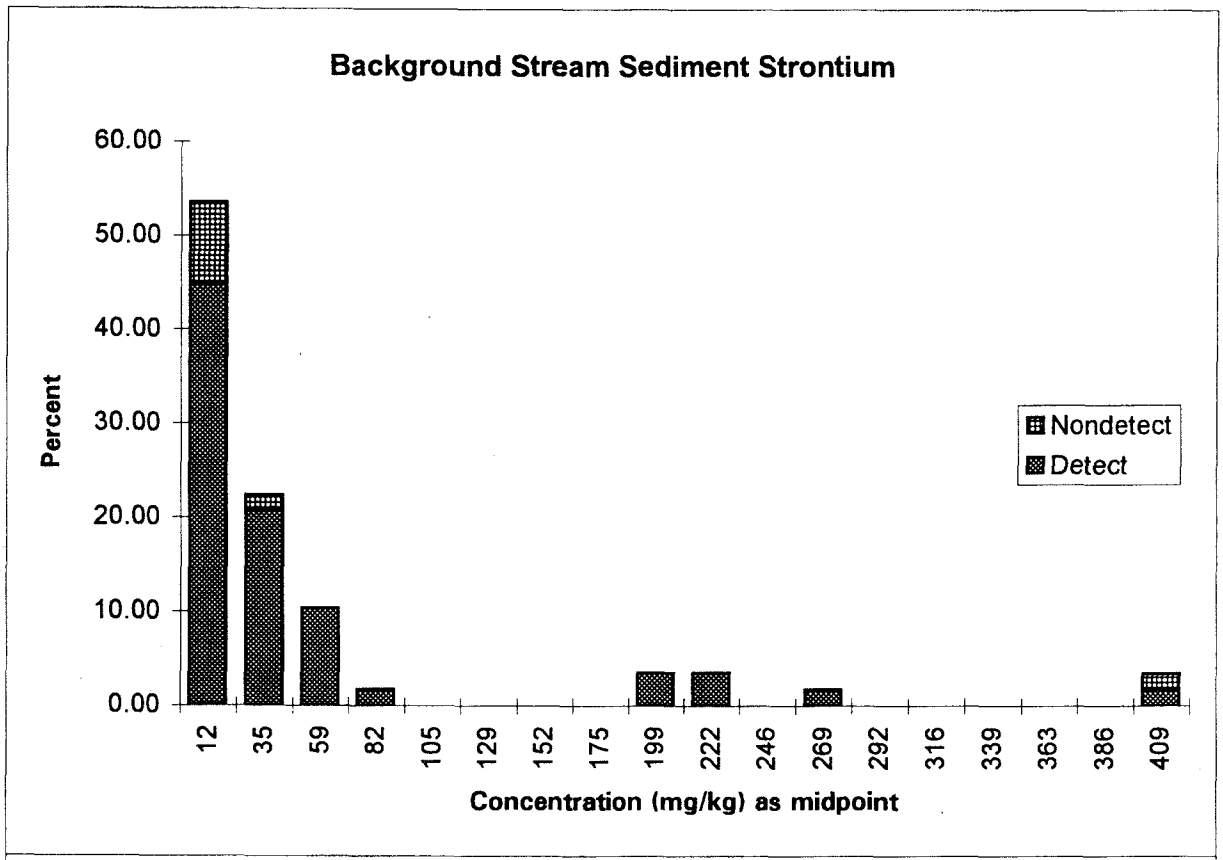

OU6 Stream Sediment Nickel
Percent
25.00
20.00
15.00
10.00
5.00
0.00
2
3
5
6
8
9
10
12
13
15
16
17
19
20
22
23
24
26
Concentration (mg/kg) as midpoint
Nondetect
Detect

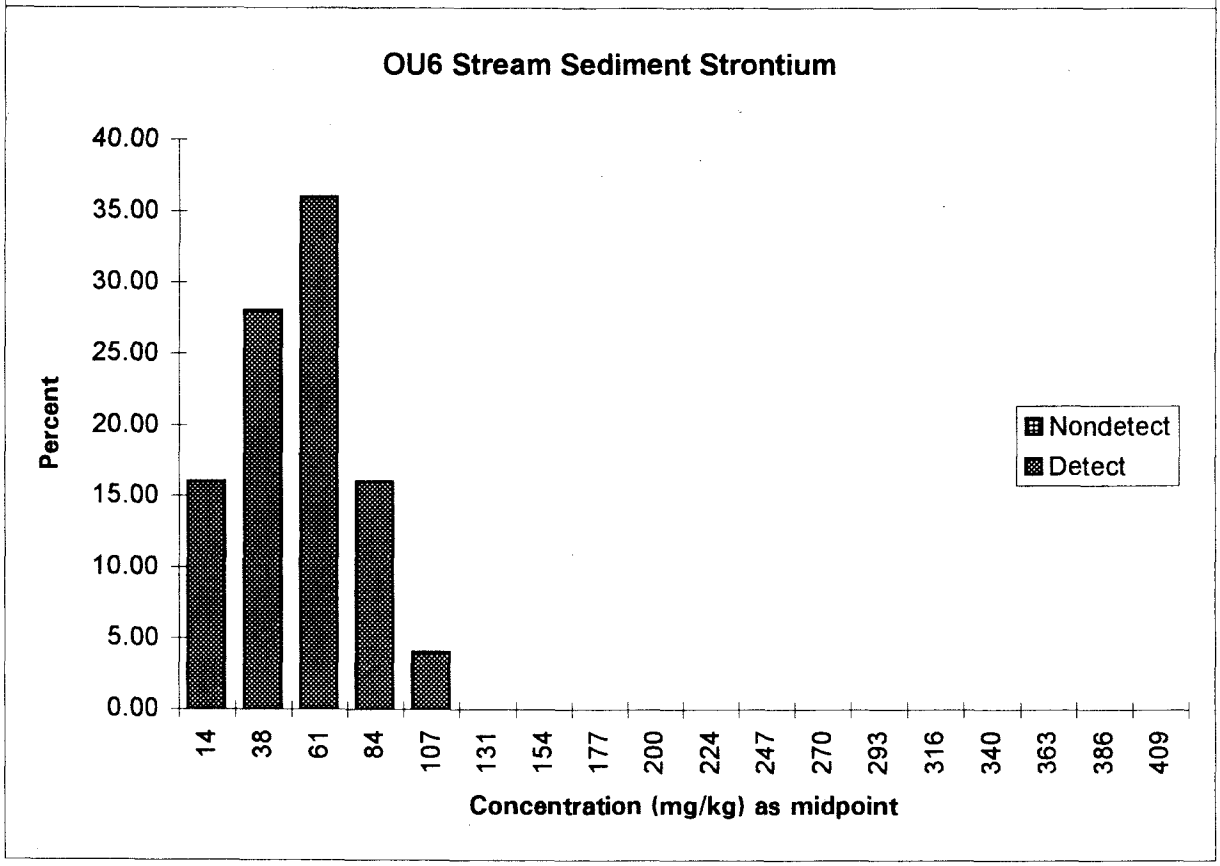

Background Stream Sediment Potassium
25.00
20.00
15.00
10.00
5.00
0.00
Percent
Nondetect
Detect
216
622
1028
1434
1840
2247
2653
3059
3465
Concentration (mg/kg) as midpoint

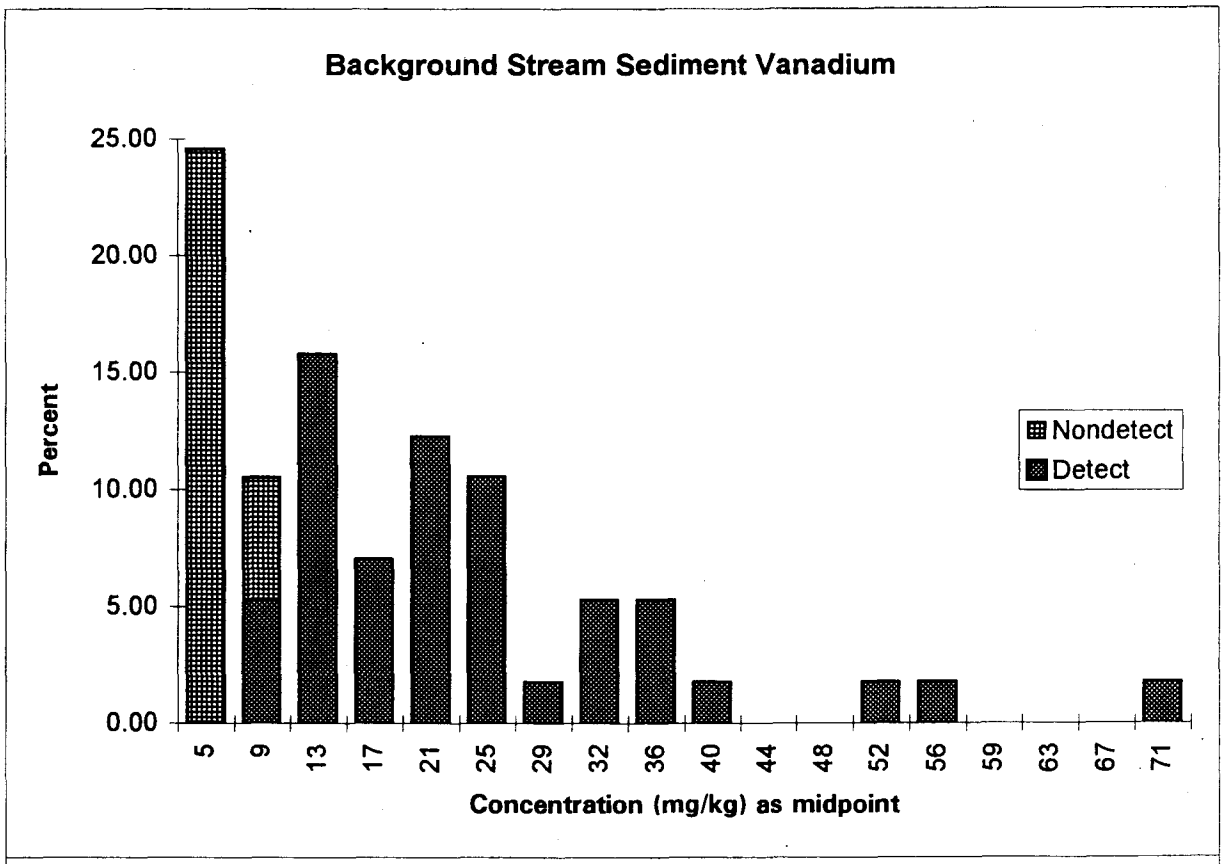

OU6 Stream Sediment Potassium
30.00
25.00
20.00
15.00
10.00
5.00
0.00
Percent
Nondetect
Detect
216
622
1028
1434
1840
2247
2653
3059
3465
Concentration (mg/kg) as midpoint

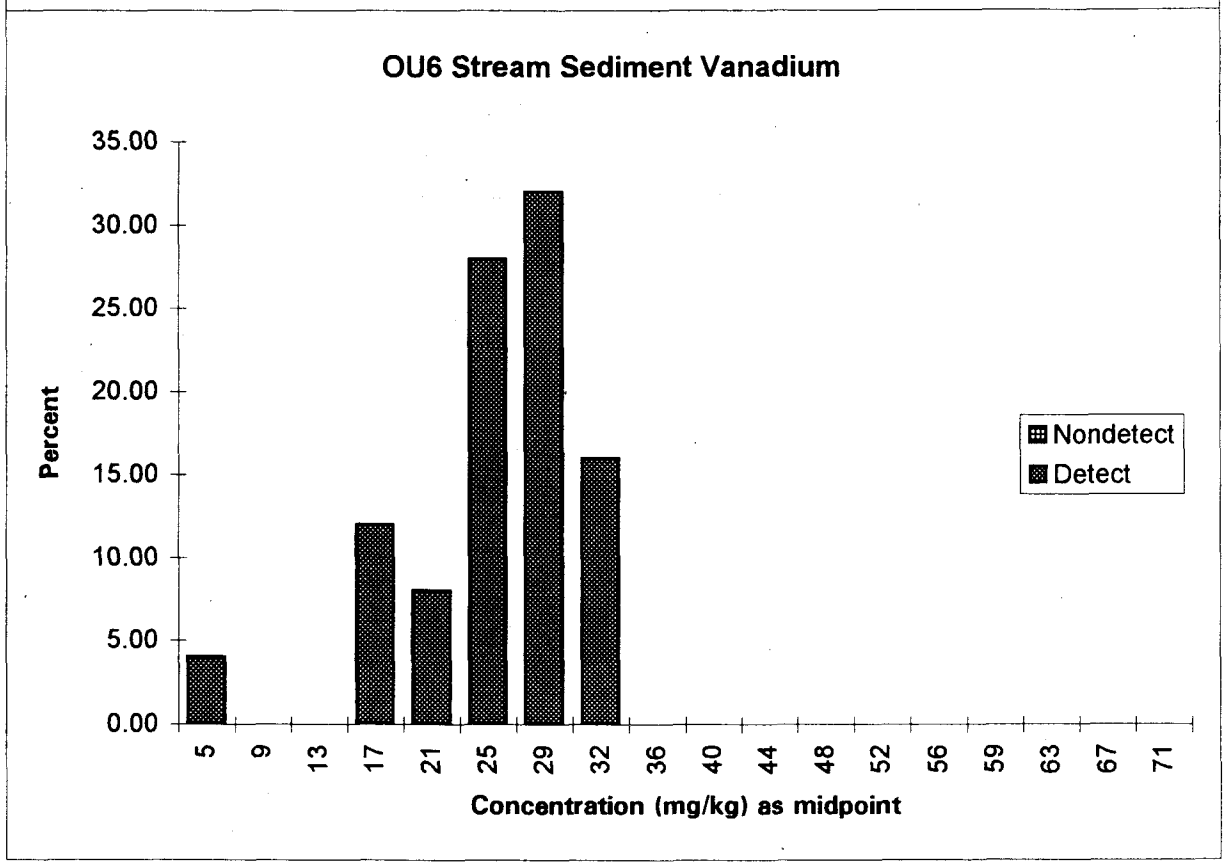

Background Stream Sediment Sodium
80.00
70.00
60.00
50.00
40.00
30.00
20.00
10.00
0.00
Percent
Nondetect
Detect
139
694
1250
1806
2361
2917
3472
4028
4583
Concentration (mg/kg) as midpoint

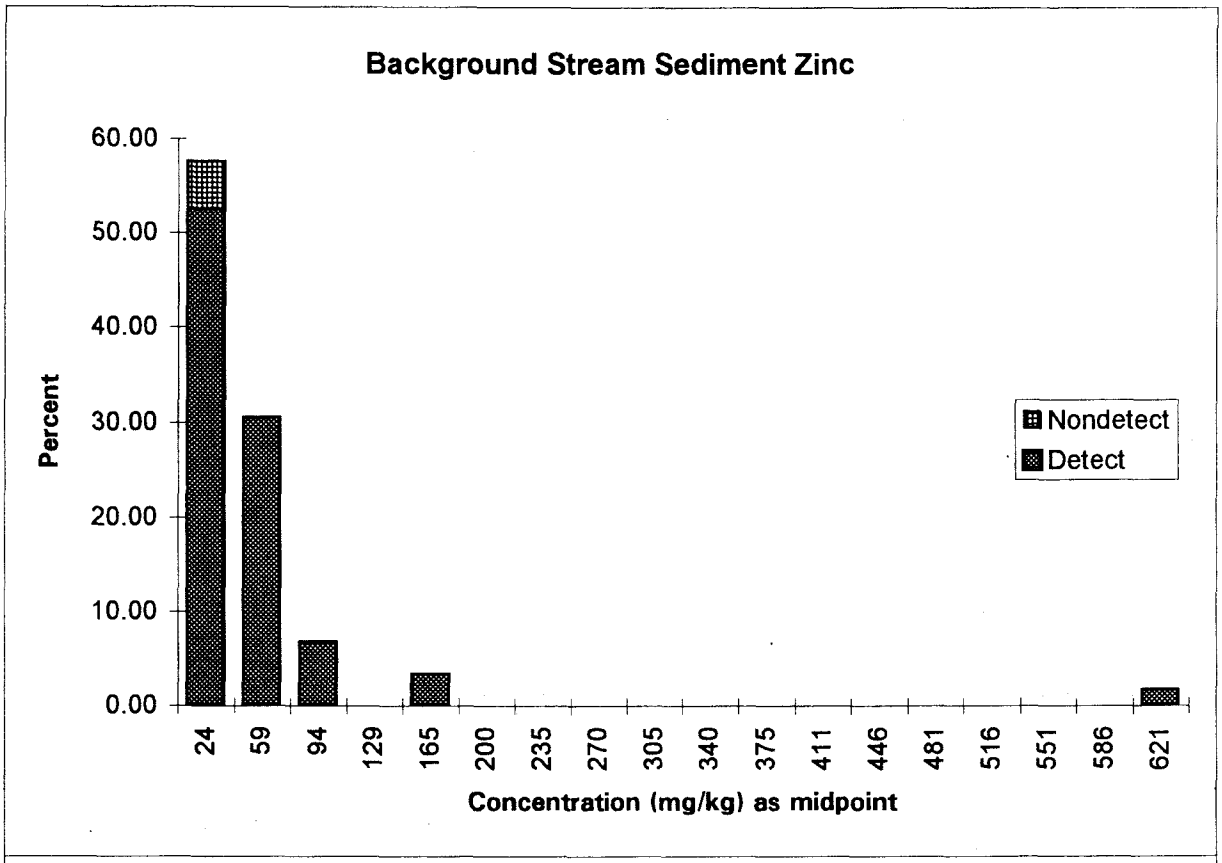

OU6 Stream Sediment Sodium
90.00
80.00
70.00
60.00
50.00
40.00
30.00
20.00
10.00
0.00
Percent
Nondetect
Detect
139
694
1250
1806
2361
2917
3472
4028
4583
Concentration (mg/kg) as midpoint

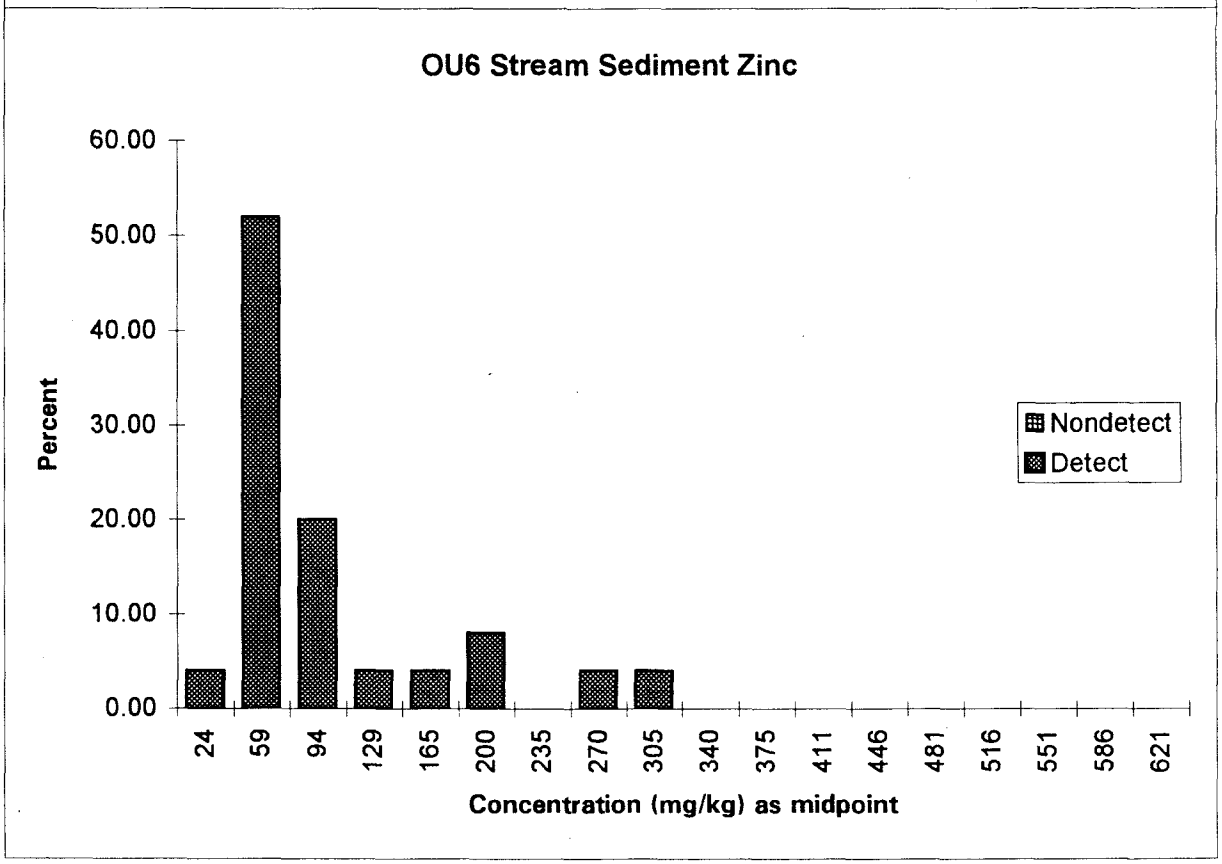

Background Stream Sediment Strontium
60.00
50.00
40.00
30.00
20.00
10.00
0.00
Percent
Nondetect
Detect
12
35
59
82
105
129
152
175
199
222
246
269
292
316
339
363
386
409
Concentration (mg/kg) as midpoint

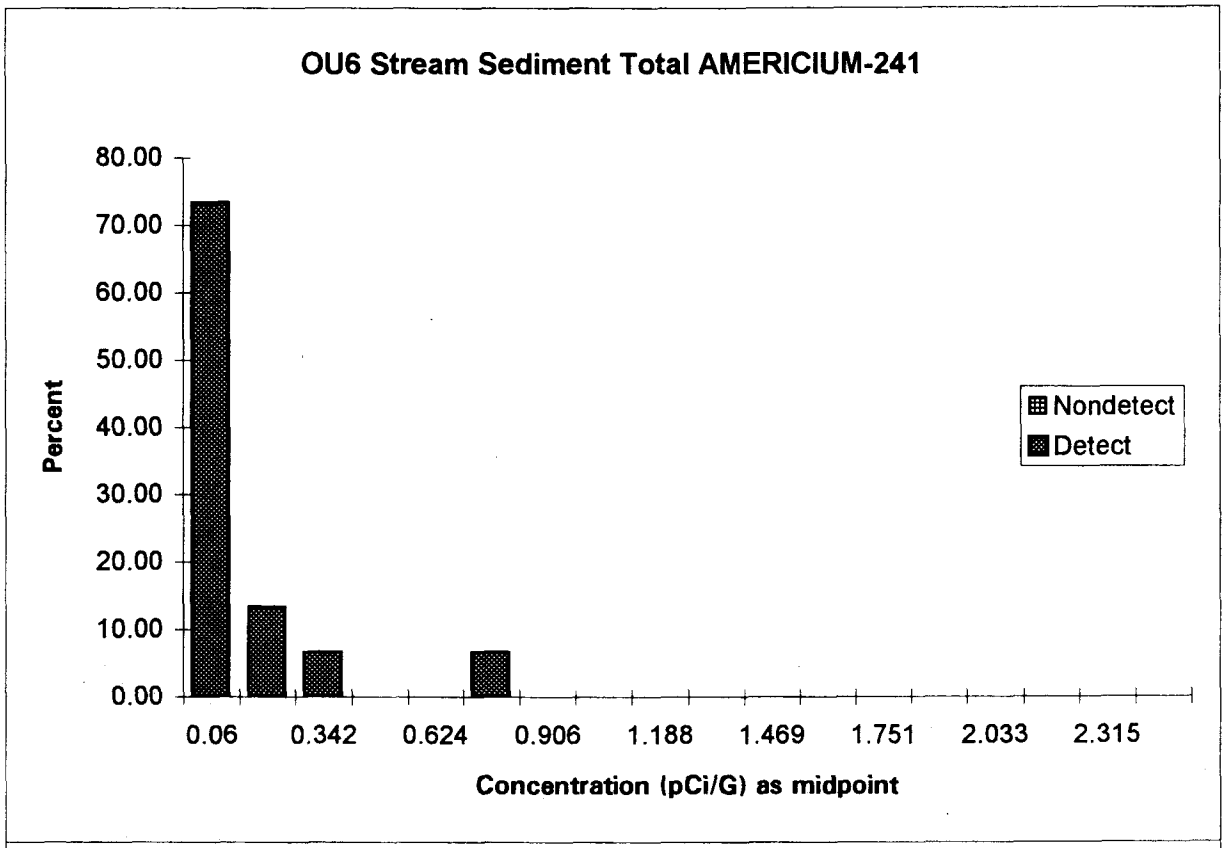

OU6 Stream Sediment Strontium
40.00
35.00
30.00
25.00
20.00
15.00
10.00
5.00
0.00
Percent
Nondetect
Detect
14
38
61
84
107
131
154
177
200
224
247
270
293
316
340
363
386
409
Concentration (mg/kg) as midpoint

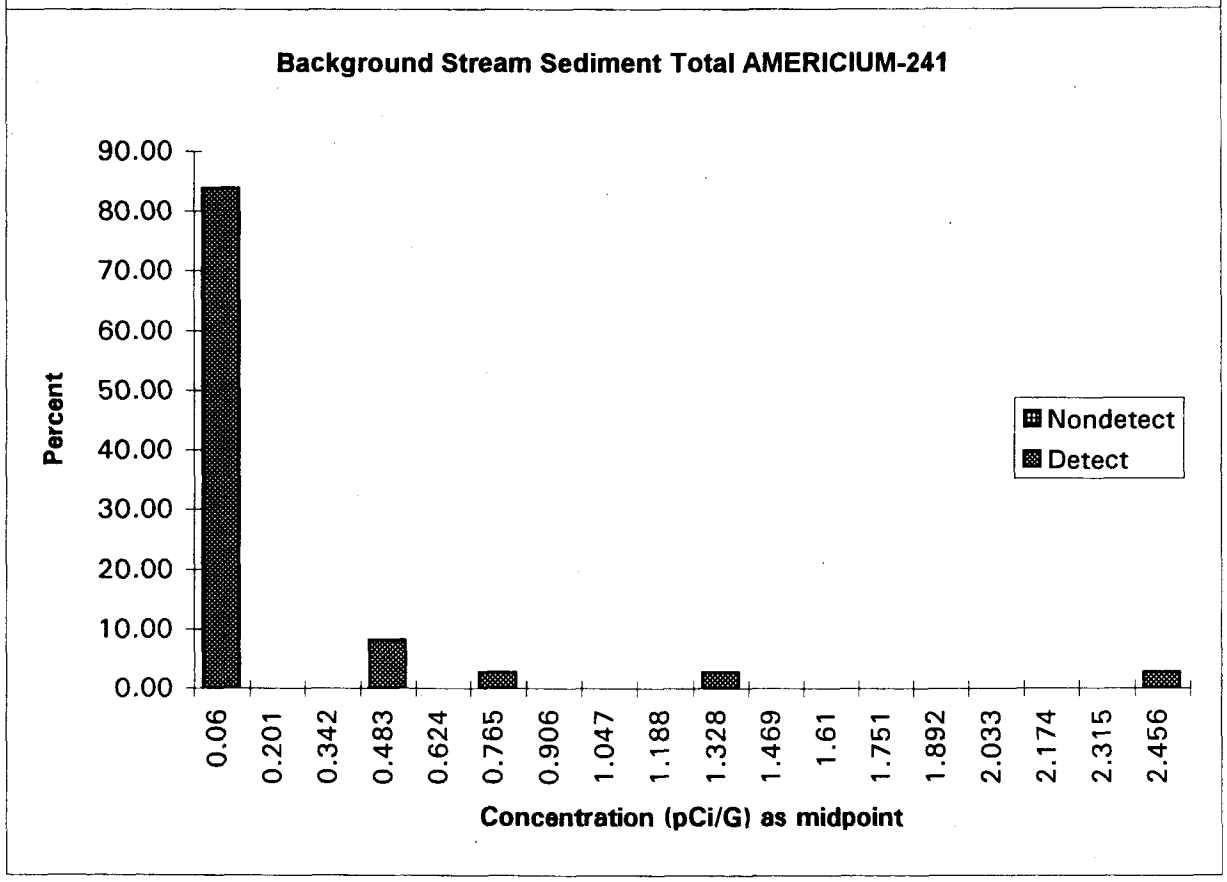

Background Stream Sediment Vanadium
Percent
25.00
20.00
15.00
10.00
5.00
0.00
Nondetect
Detect
5
9
13
17
21
25
29
32
36
40
44
48
52
56
59
63
67
71
Concentration (mg/kg) as midpoint

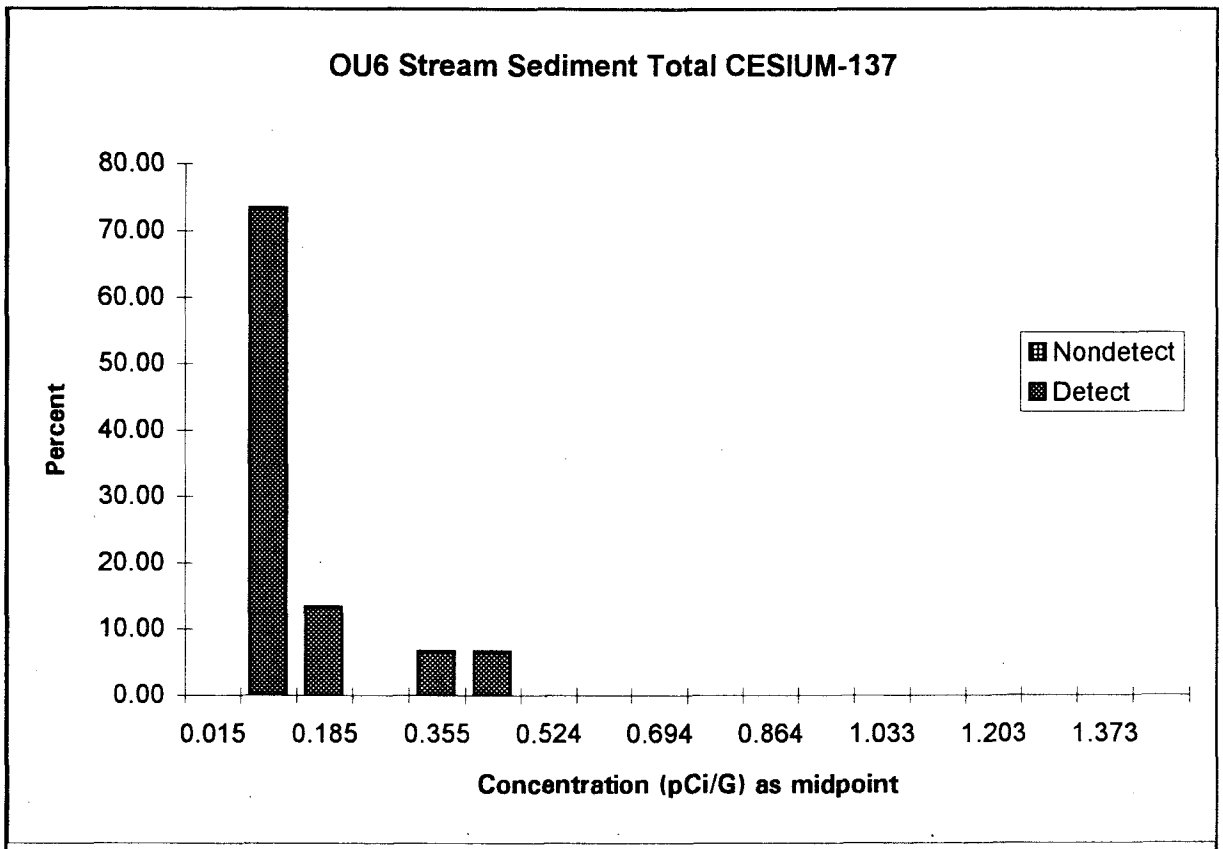

OU6 Stream Sediment Vanadium
Percent
35.00
30.00
25.00
20.00
15.00
10.00
5.00
0.00
Nondetect
Detect
5
9
13
17
21
25
29
32
36
40
44
48
52
56
59
63
67
71
Concentration (mg/kg) as midpoint

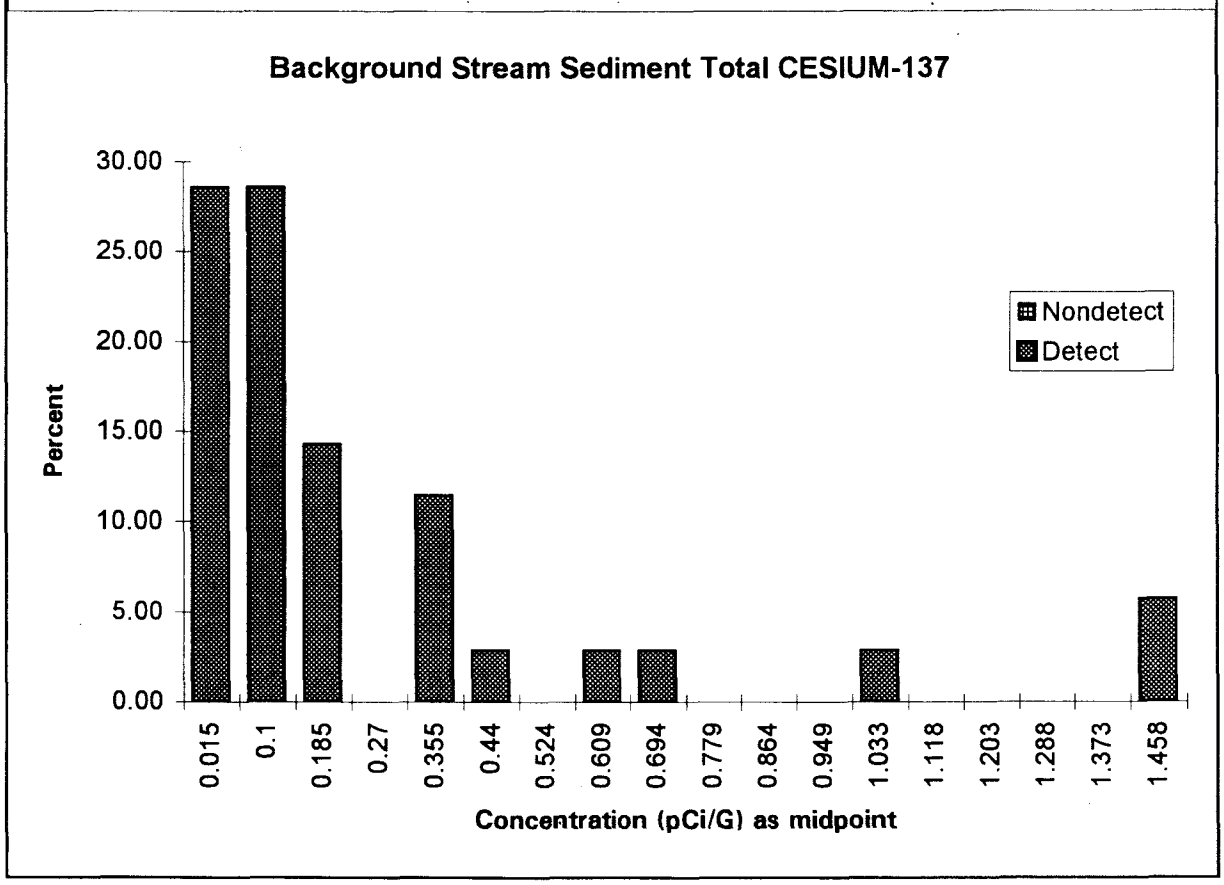

Background Stream Sediment Zinc
60.00
50.00
40.00
30.00
20.00
10.00
0.00
Percent
Nondetect
Detect
24
59
94
129
165
200
235
270
305
340
375
411
446
481
516
551
586
621
Concentration (mg/kg) as midpoint

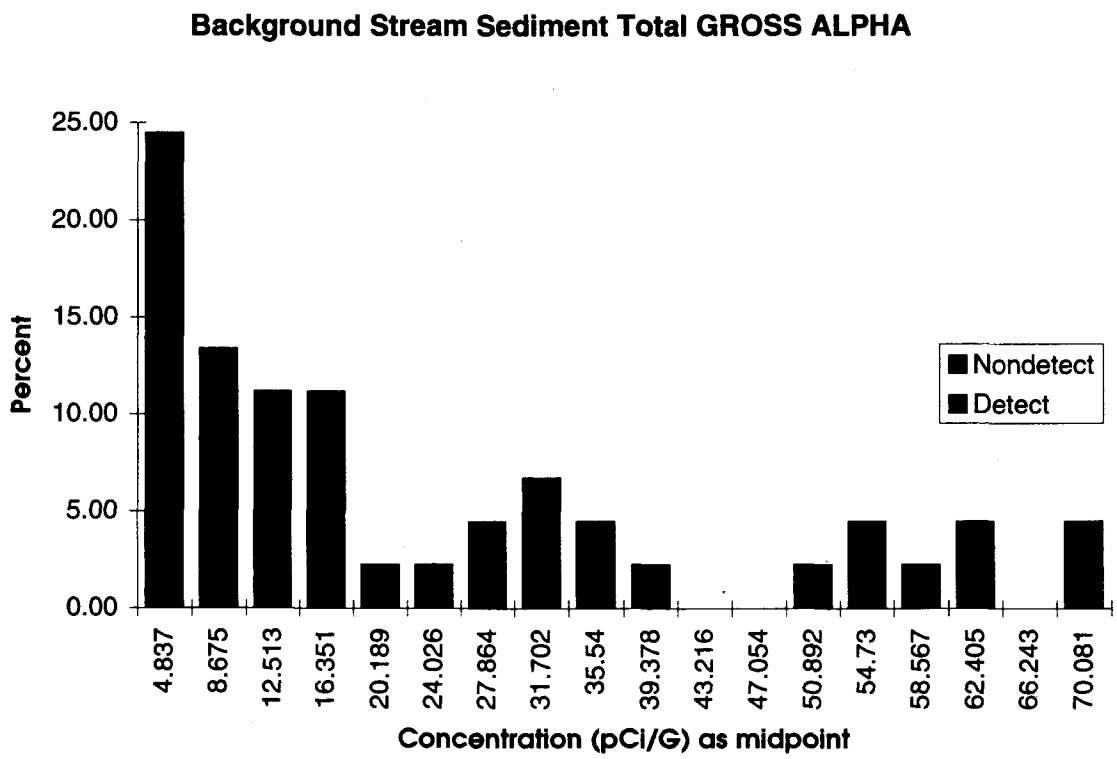

OU6 Stream Sediment Zinc
60.00
50.00
40.00
30.00
20.00
10.00
0.00
Percent
Nondetect
Detect
24
59
94
129
165
200
235
270
305
340
375
411
446
481
516
551
586
621
Concentration (mg/kg) as midpoint

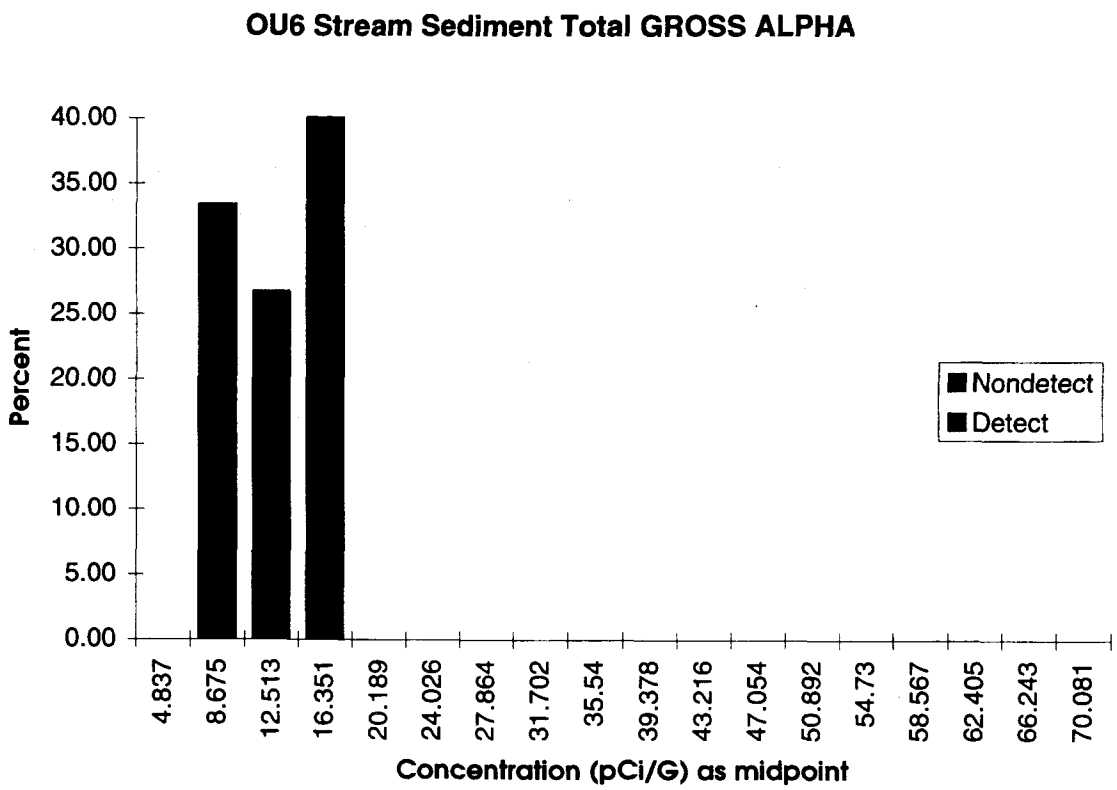

OU6 Stream Sediment Total AMERICIUM-241
Percent
80.00
70.00
60.00
50.00
40.00
30.00
20.00
10.00
0.00
0.06
0.342
0.624
0.906
1.188
1.469
1.751
2.033
2.315
Concentration (pCi/G) as midpoint
Nondetect
Detect

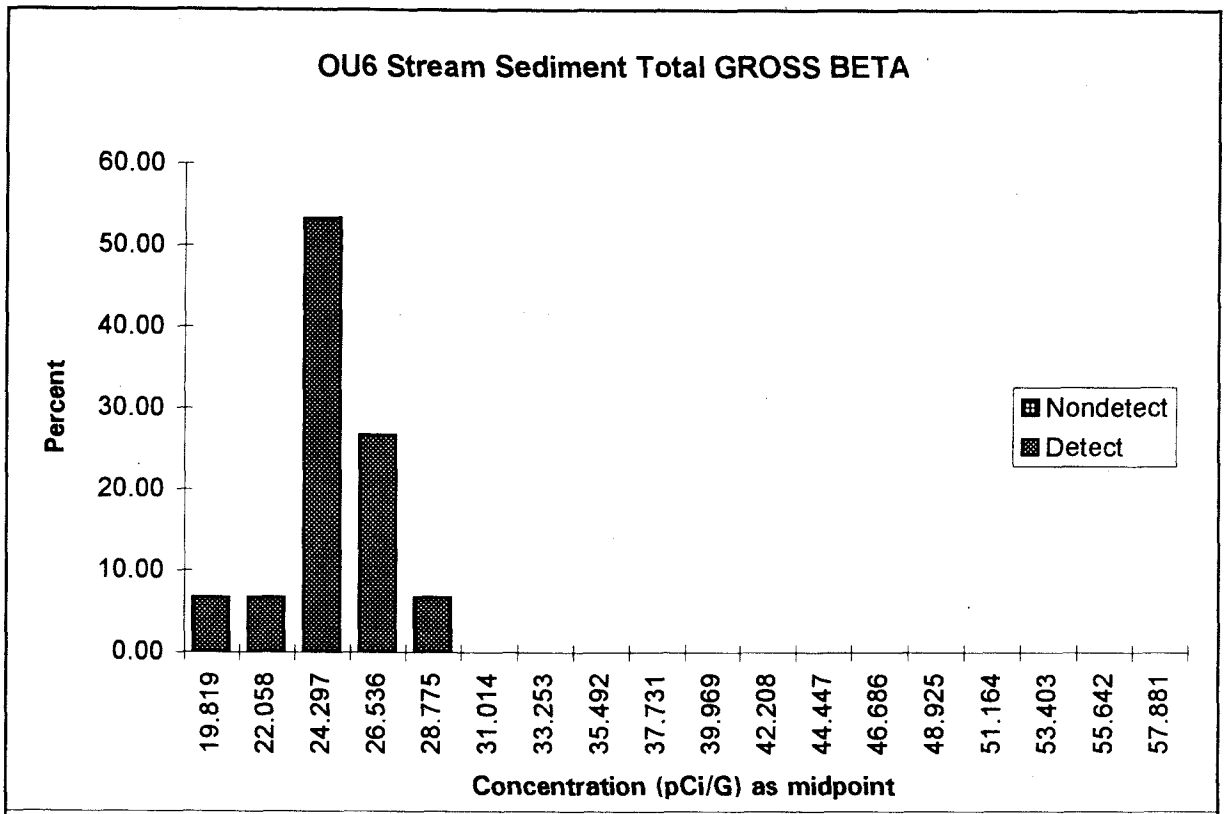

Background Stream Sediment Total AMERICIUM-241
Percent
90.00
80.00
70.00
60.00
50.00
40.00
30.00
20.00
10.00
0.00
0.06
0.201
0.342
0.483
0.624
0.765
0.906
1.047
1.188
1.328
1.469
1.61
1.751
1.892
2.033
2.174
2.315
2.456
Concentration (pCi/G) as midpoint
Nondetect
Detect

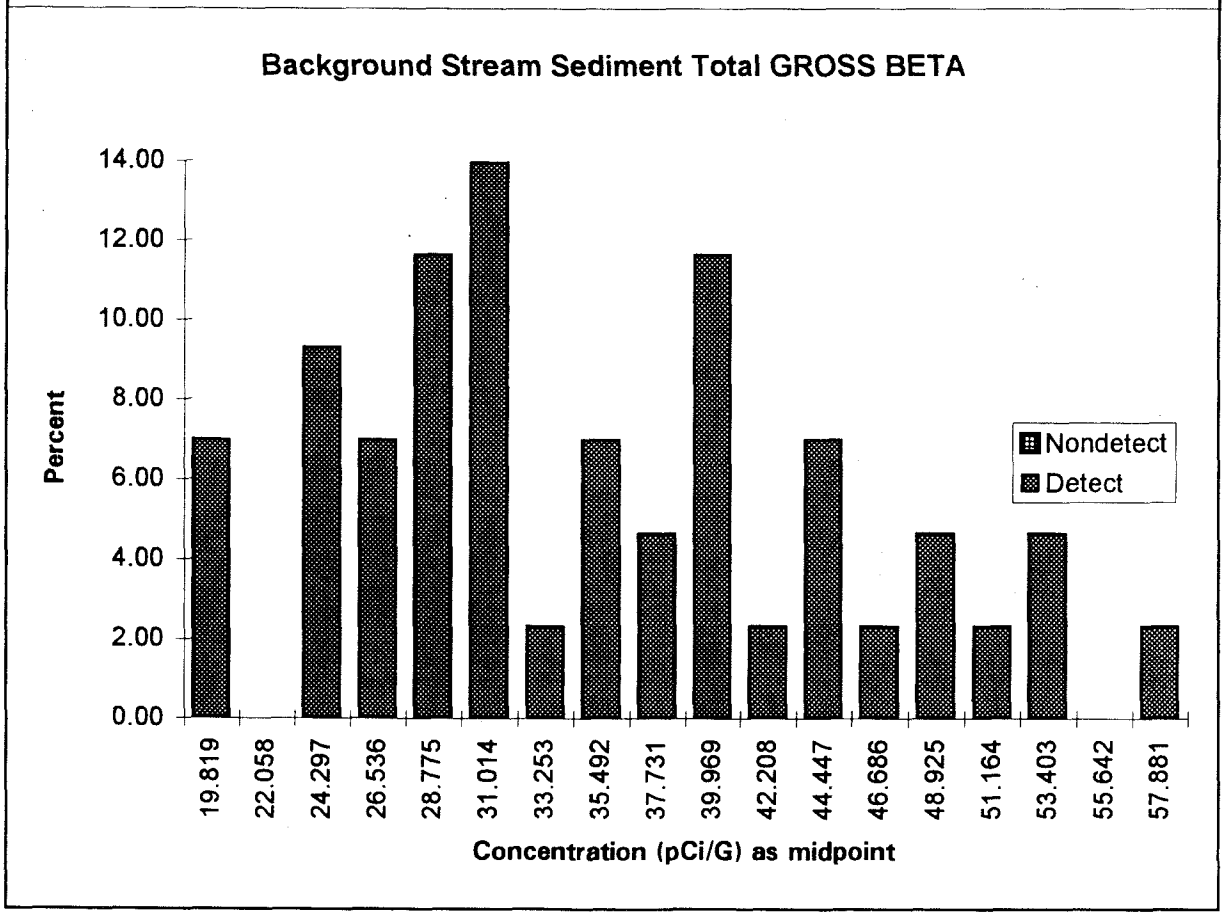

OU6 Stream Sediment Total CESIUM-137
80.00
70.00
60.00
50.00
40.00
30.00
20.00
10.00
0.00
Percent
Nondetect
Detect
0.015
0.185
0.355
0.524
0.694
0.864
1.033
1.203
1.373
Concentration (pCi/G) as midpoint

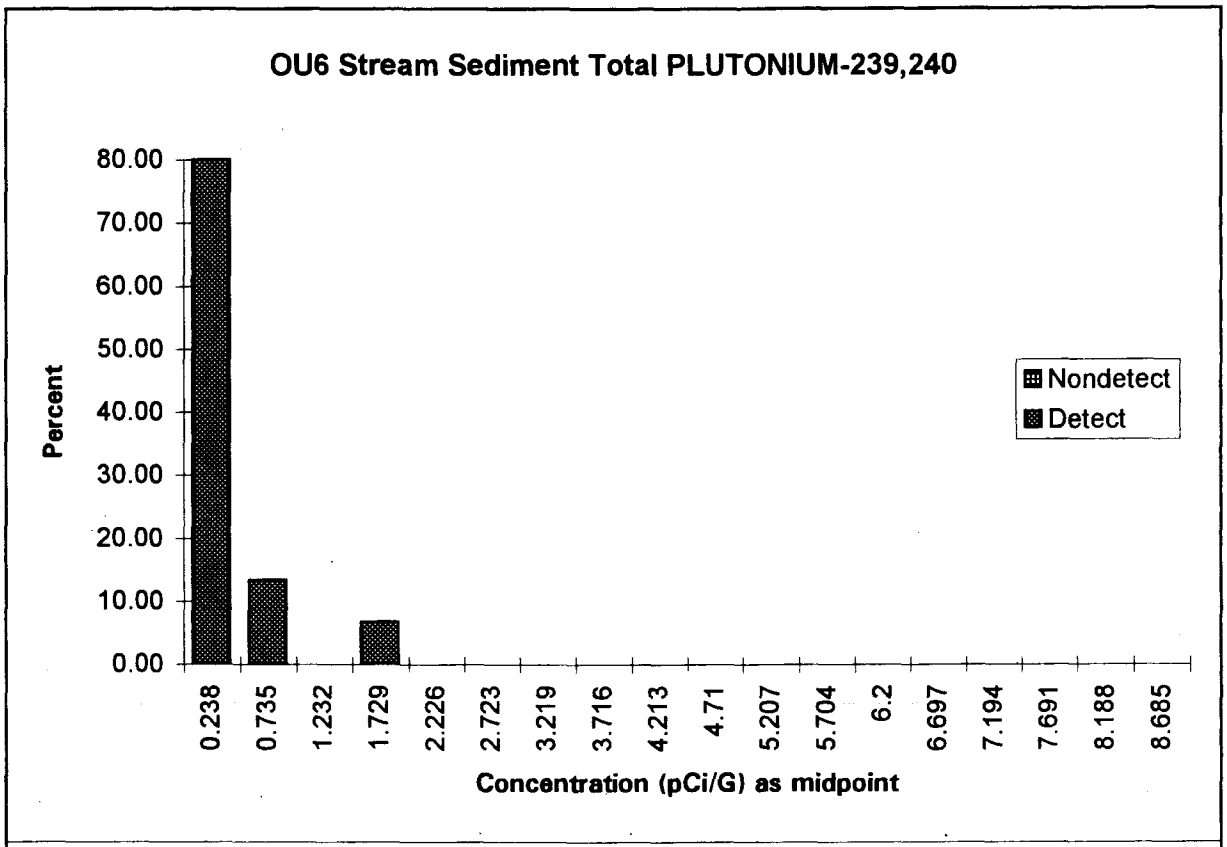

Background Stream Sediment Total CESIUM-137
30.00
25.00
20.00
15.00
10.00
5.00
0.00
Percent
Nondetect
Detect
0.015
0.1
0.185
0.27
0.355
0.44
0.524
0.609
0.694
0.779
0.864
0.949
1.033
1.118
1.203
1.288
1.373
1.458
Concentration (pCi/G) as midpoint

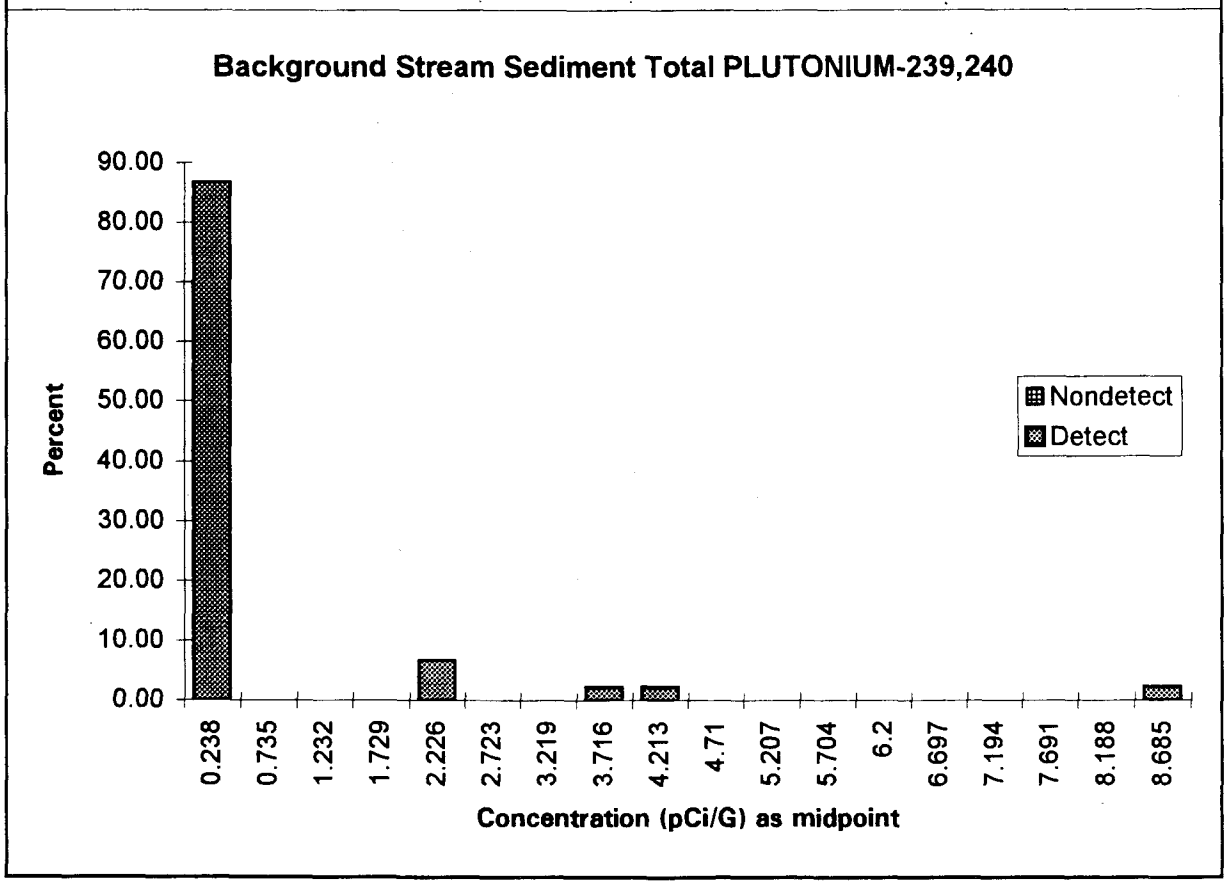

Background Stream Sediment Total GROSS ALPHA
Percent
25.00
20.00
15.00
10.00
5.00
0.00
Nondetect
Detect
4.837
8.675
12.513
16.351
20.189
24.026
27.864
31.702
35.54
39.378
43.216
47.054
50.892
54.73
58.567
62.405
66.243
70.081
Concentration (pCi/G) as midpoint

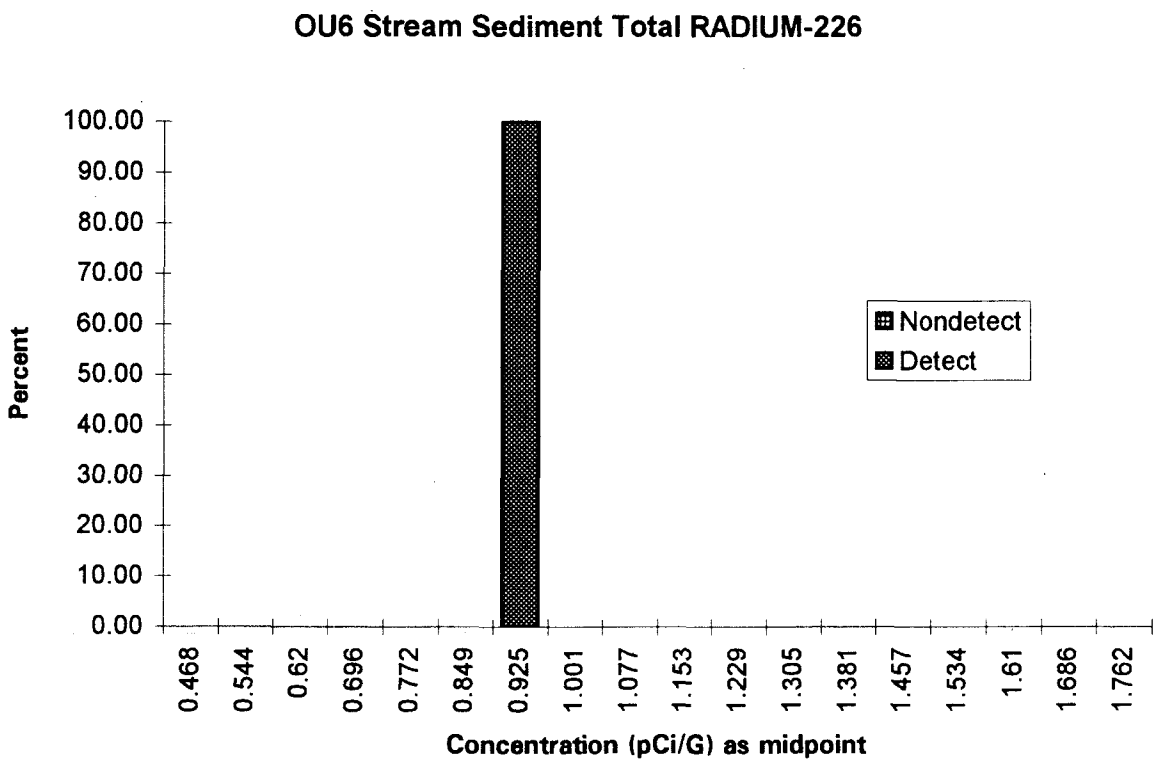

OU6 Stream Sediment Total GROSS ALPHA
Percent
40.00
35.00
30.00
25.00
20.00
15.00
10.00
5.00
0.00
Nondetect
Detect
4.837
8.675
12.513
16.351
20.189
24.026
27.864
31.702
35.54
39.378
43.216
47.054
50.892
54.73
58.567
62.405
66.243
70.081
Concentration (pCi/G) as midpoint

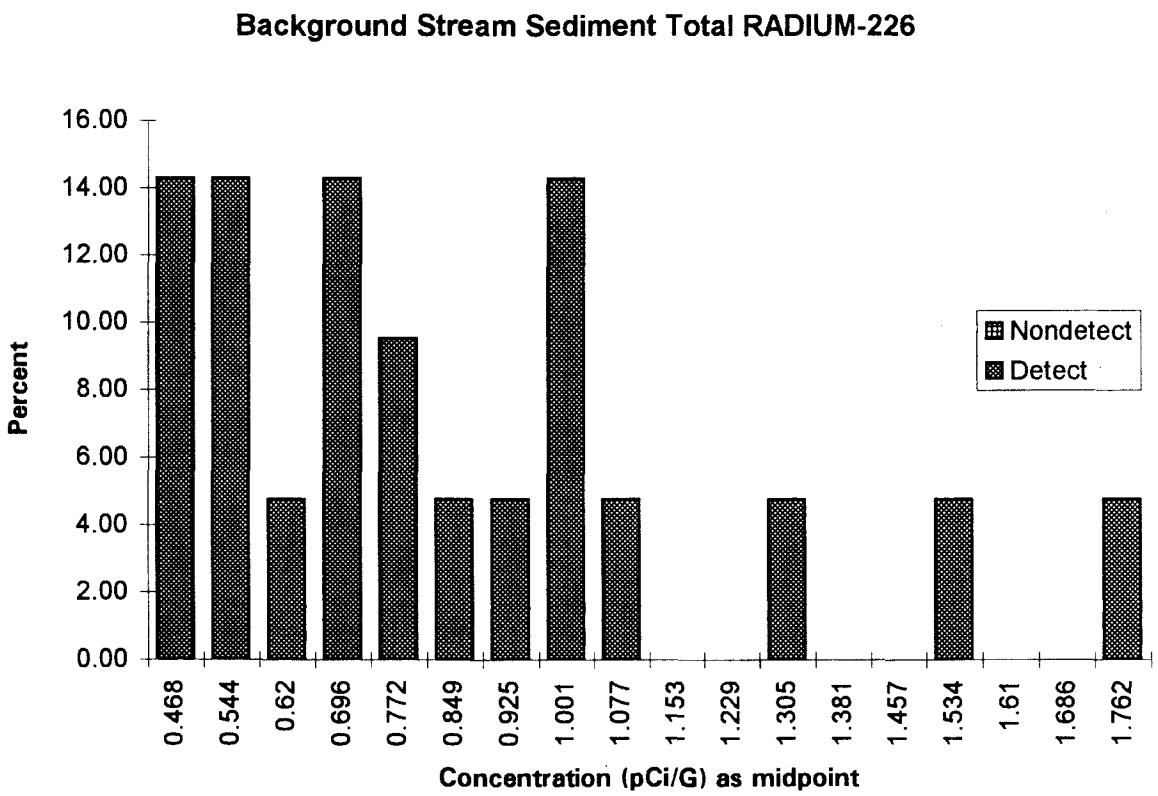

OU6 Stream Sediment Total GROSS BETA
Percent
60.00
50.00
40.00
30.00
20.00
10.00
0.00
Nondetect
Detect
19.819
22.058
24.297
26.536
28.775
31.014
33.253
35.492
37.731
39.969
42.208
44.447
46.686
48.925
51.164
53.403
55.642
57.881
Concentration (pCi/G) as midpoint

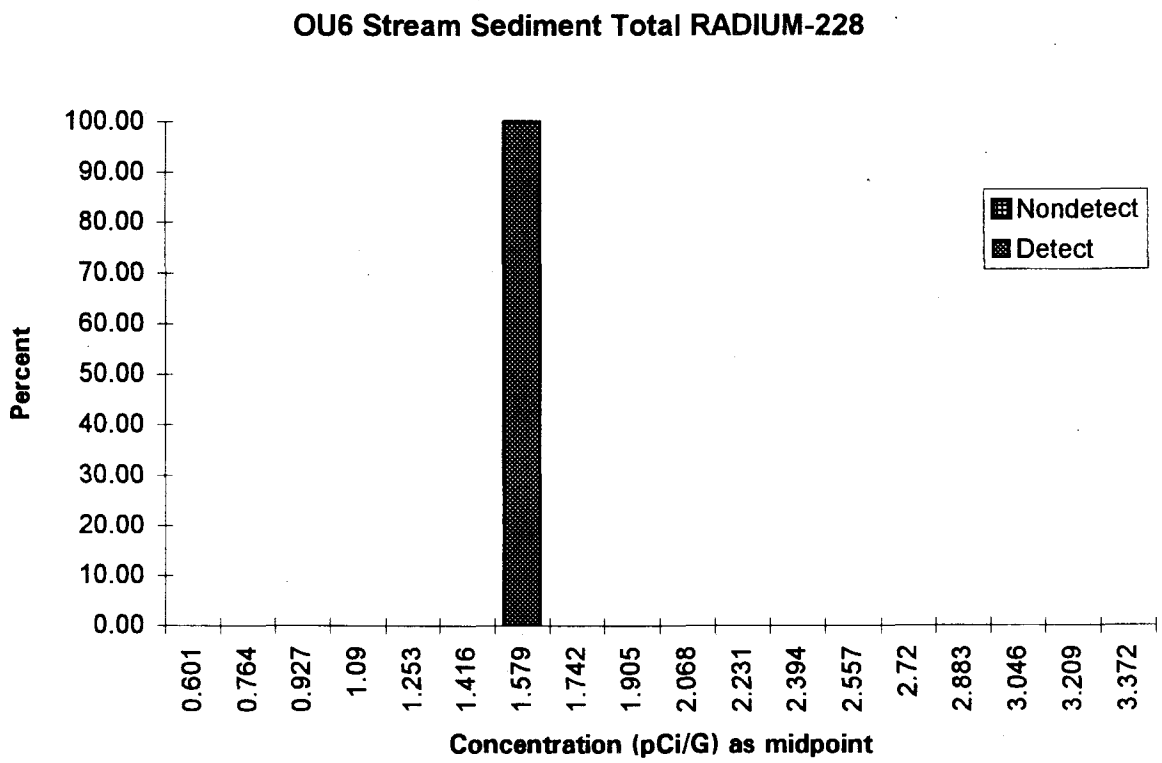

Background Stream Sediment Total GROSS BETA
Percent
14.00
12.00
10.00
8.00
6.00
4.00
2.00
0.00
Nondetect
Detect
19.819
22.058
24.297
26.536
28.775
31.014
33.253
35.492
37.731
39.969
42.208
44.447
46.686
48.925
51.164
53.403
55.642
57.881
Concentration (pCi/G) as midpoint

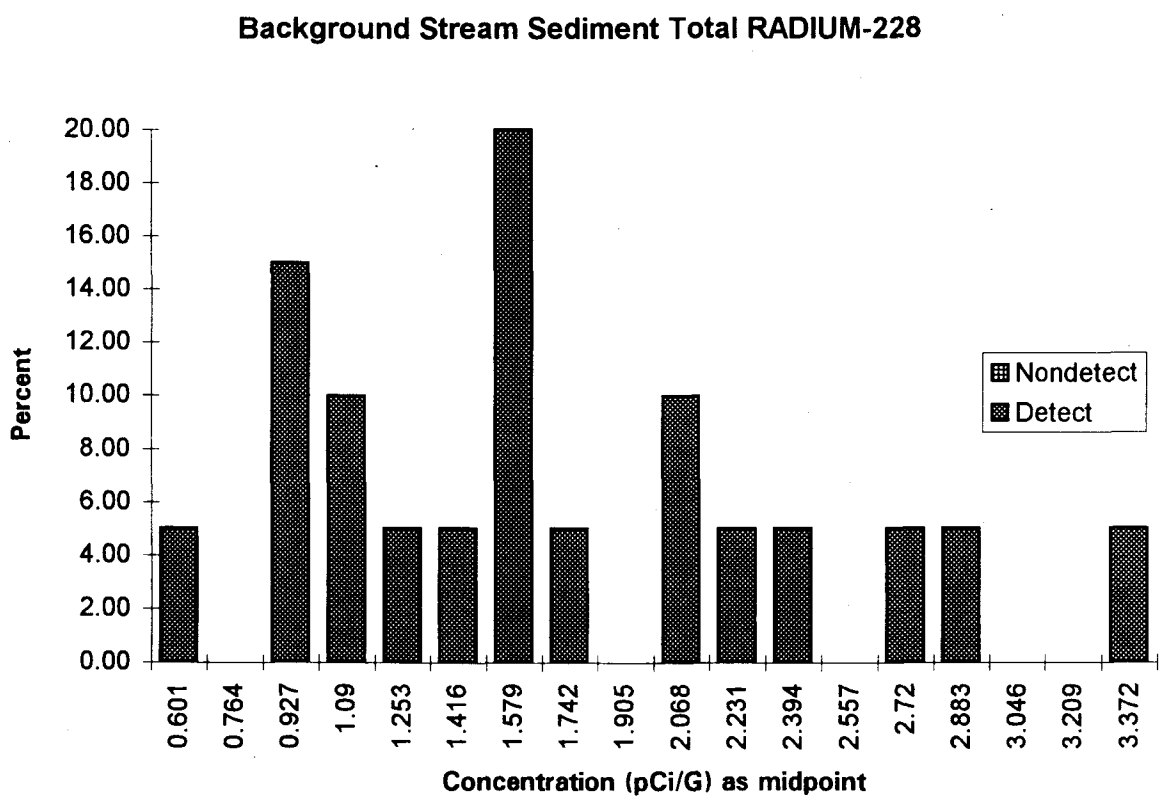

OU6 Stream Sediment Total PLUTONIUM-239,240
Percent
80.00
70.00
60.00
50.00
40.00
30.00
20.00
10.00
0.00
Nondetect
Detect
0.238
0.735
1.232
1.729
2.226
2.723
3.219
3.716
4.213
4.71
5.207
5.704
6.2
6.697
7.194
7.691
8.188
8.685
Concentration (pCi/G) as midpoint

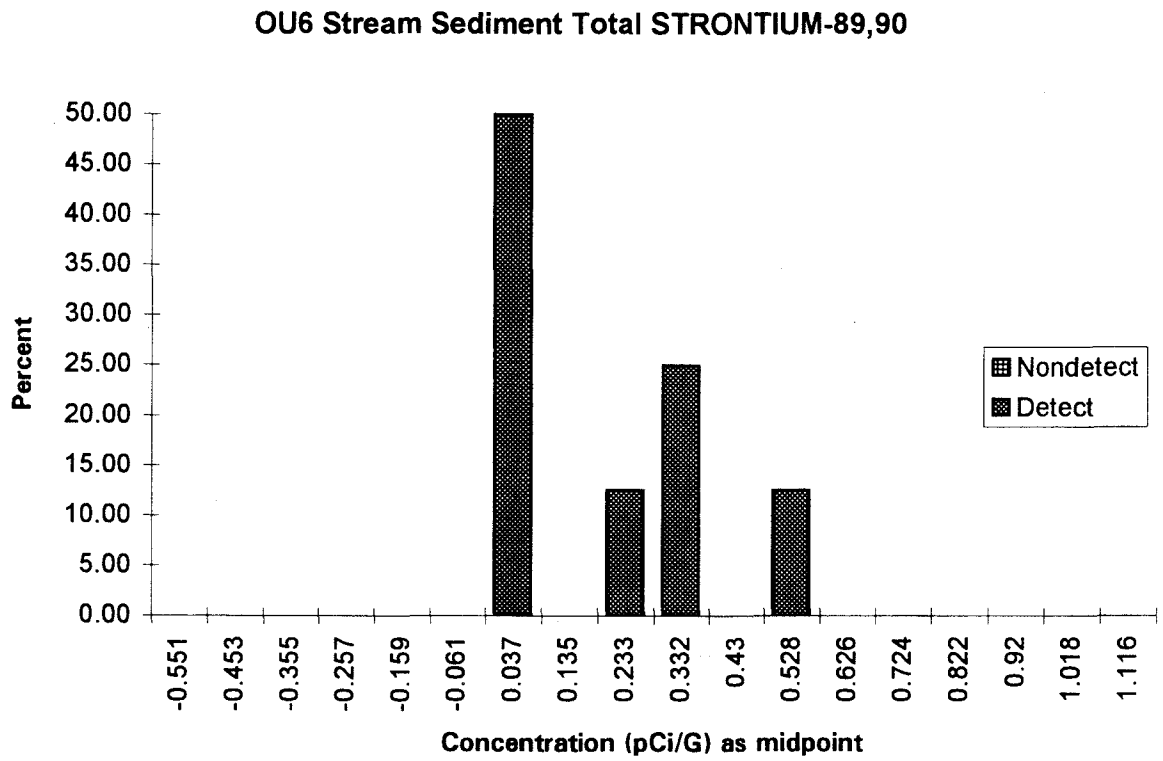

Background Stream Sediment Total PLUTONIUM-239,240
Percent
90.00
80.00
70.00
60.00
50.00
40.00
30.00
20.00
10.00
0.00
Nondetect
Detect
0.238
0.735
1.232
1.729
2.226
2.723
3.219
3.716
4.213
4.71
5.207
5.704
6.2
6.697
7.194
7.691
8.188
8.685
Concentration (pCi/G) as midpoint

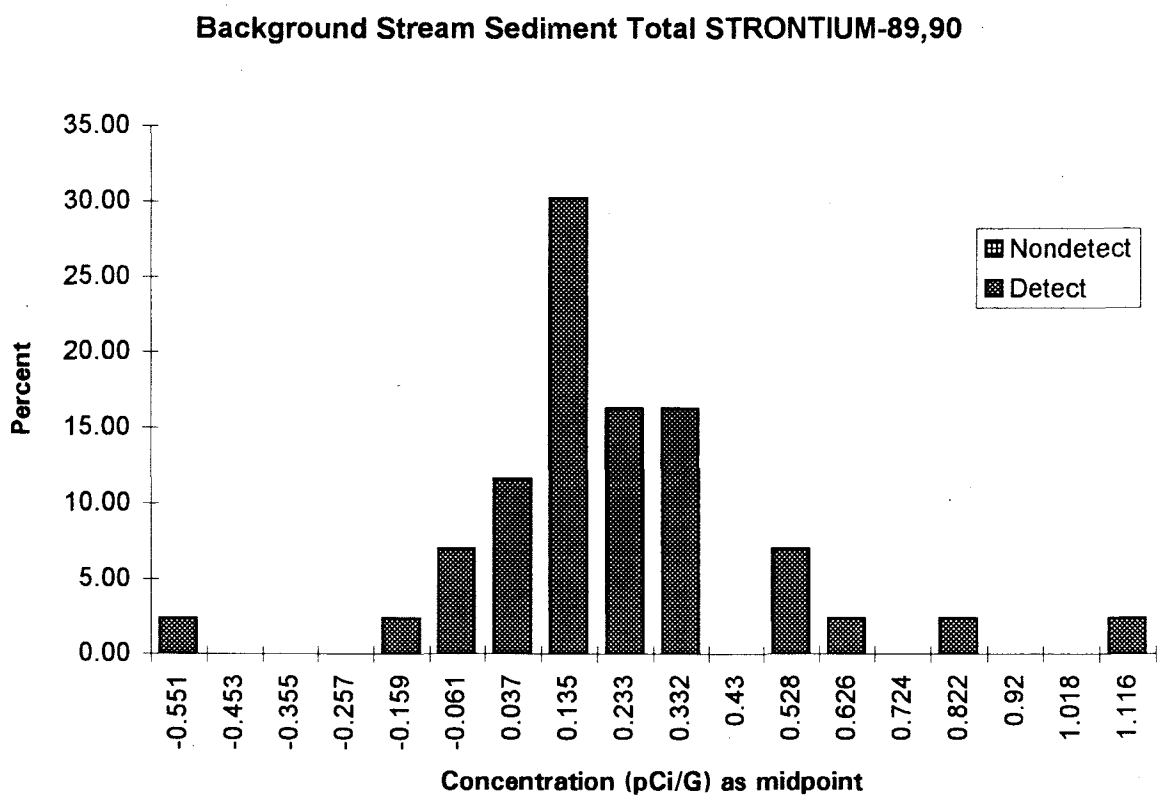

OU6 Stream Sediment Total RADIUM-226
Percent
100.00
90.00
80.00
70.00
60.00
50.00
40.00
30.00
20.00
10.00
0.00
Nondetect
Detect
0.468
0.544
0.62
0.696
0.772
0.849
0.925
1.001
1.077
1.153
1.229
1.305
1.381
1.457
1.534
1.61
1.686
1.762
Concentration (pCi/G) as midpoint

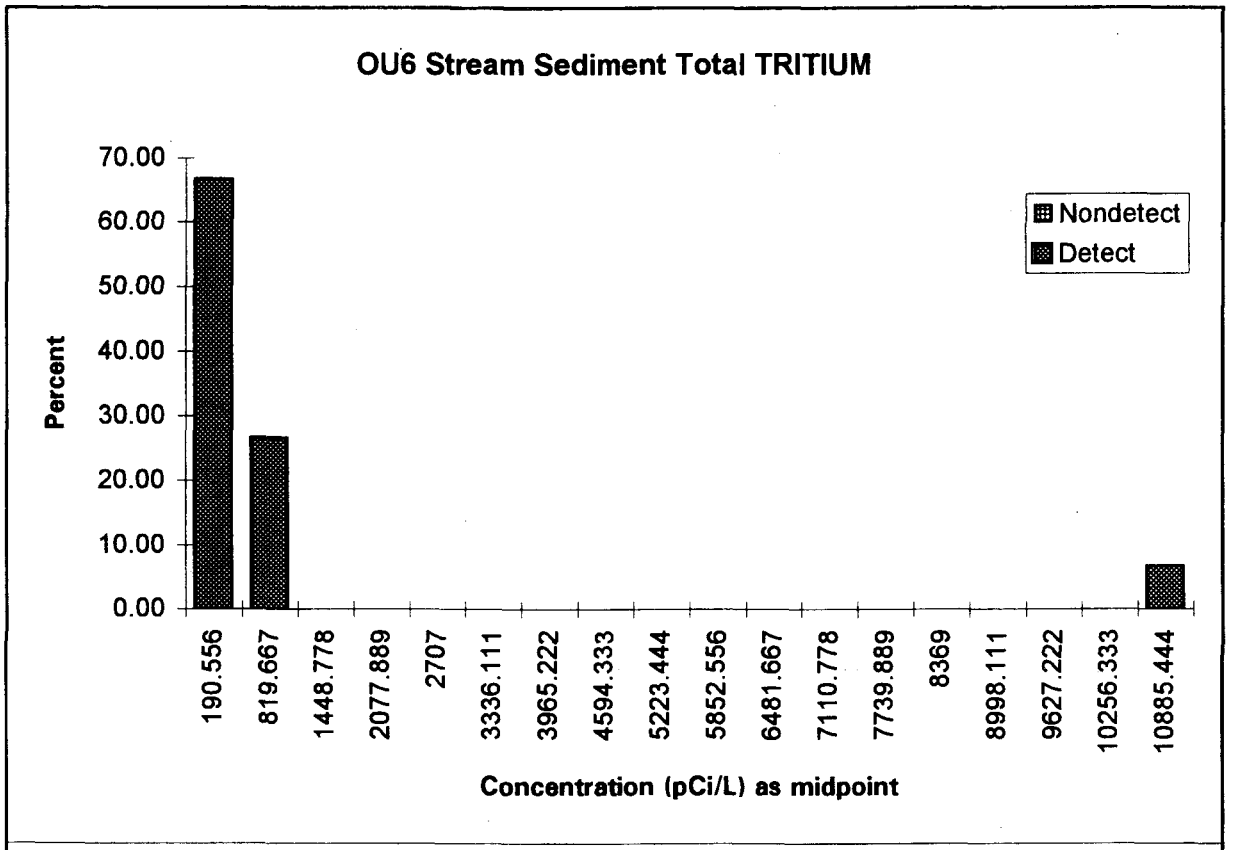

Background Stream Sediment Total RADIUM-226
Percent
16.00
14.00
12.00
10.00
8.00
6.00
4.00
2.00
0.00
Nondetect
Detect
0.468
0.544
0.62
0.696
0.772
0.849
0.925
1.001
1.077
1.153
1.229
1.305
1.381
1.457
1.534
1.61
1.686
1.762
Concentration (pCi/G) as midpoint

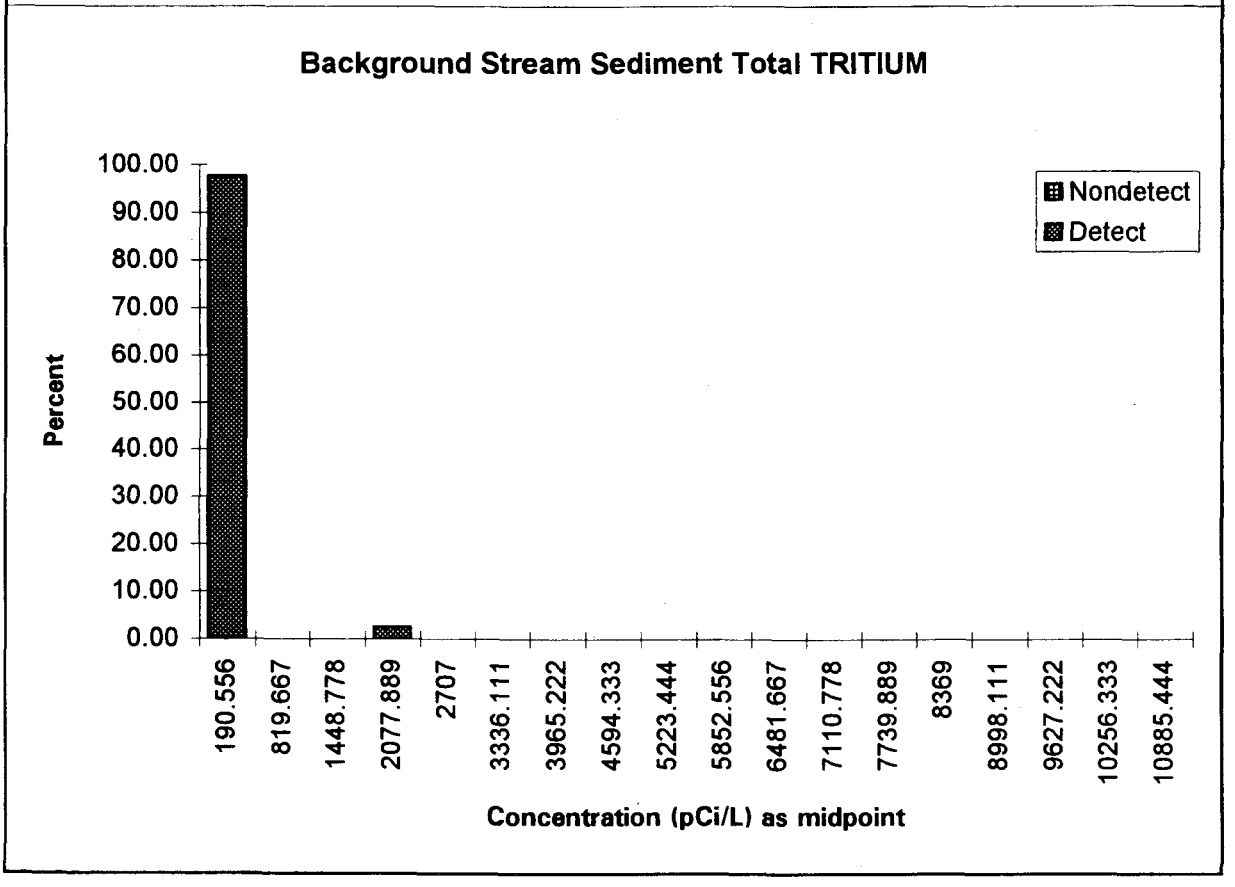

OU6 Stream Sediment Total RADIUM-228
Percent
100.00
90.00
80.00
70.00
60.00
50.00
40.00
30.00
20.00
10.00
0.00
Nondetect
Detect
0.601
0.764
0.927
1.09
1.253
1.416
1.579
1.742
1.905
2.068
2.231
2.394
2.557
2.72
2.883
3.046
3.209
3.372
Concentration (pCi/G) as midpoint

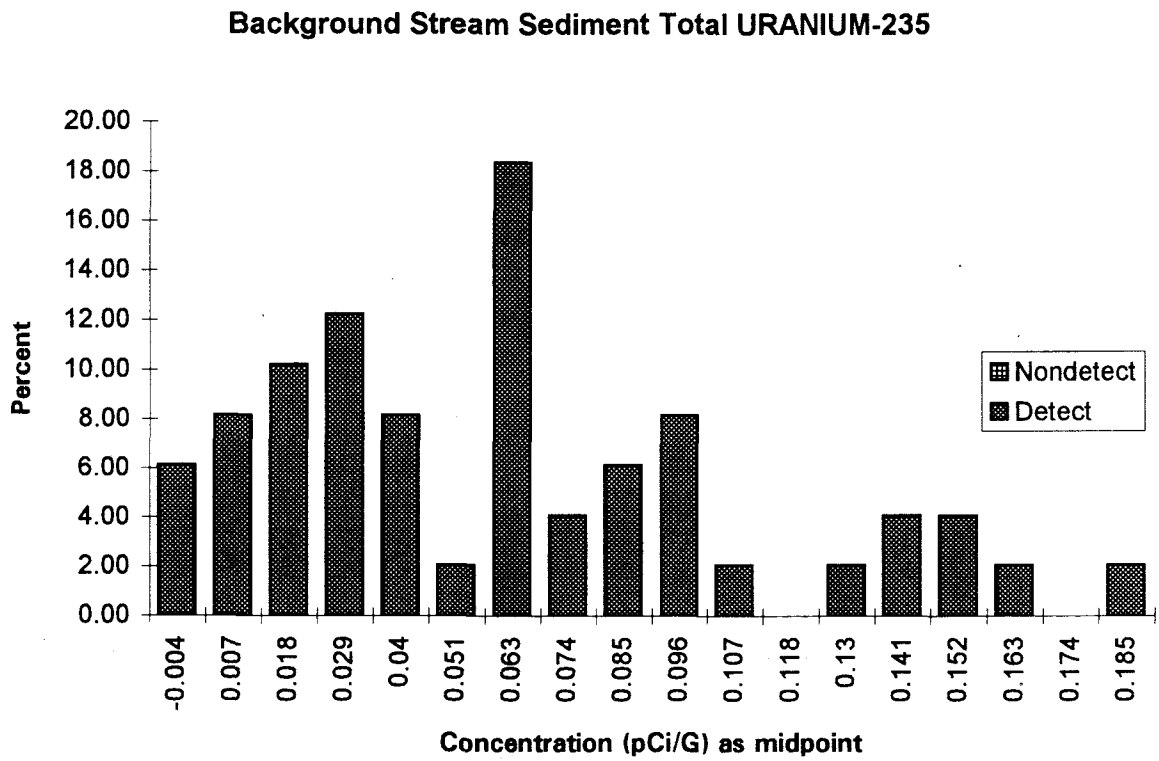

Background Stream Sediment Total RADIUM-228
Percent
20.00
18.00
16.00
14.00
12.00
10.00
8.00
6.00
4.00
2.00
0.00
Nondetect
Detect
0.601
0.764
0.927
1.09
1.253
1.416
1.579
1.742
1.905
2.068
2.231
2.394
2.557
2.72
2.883
3.046
3.209
3.372
Concentration (pCi/G) as midpoint

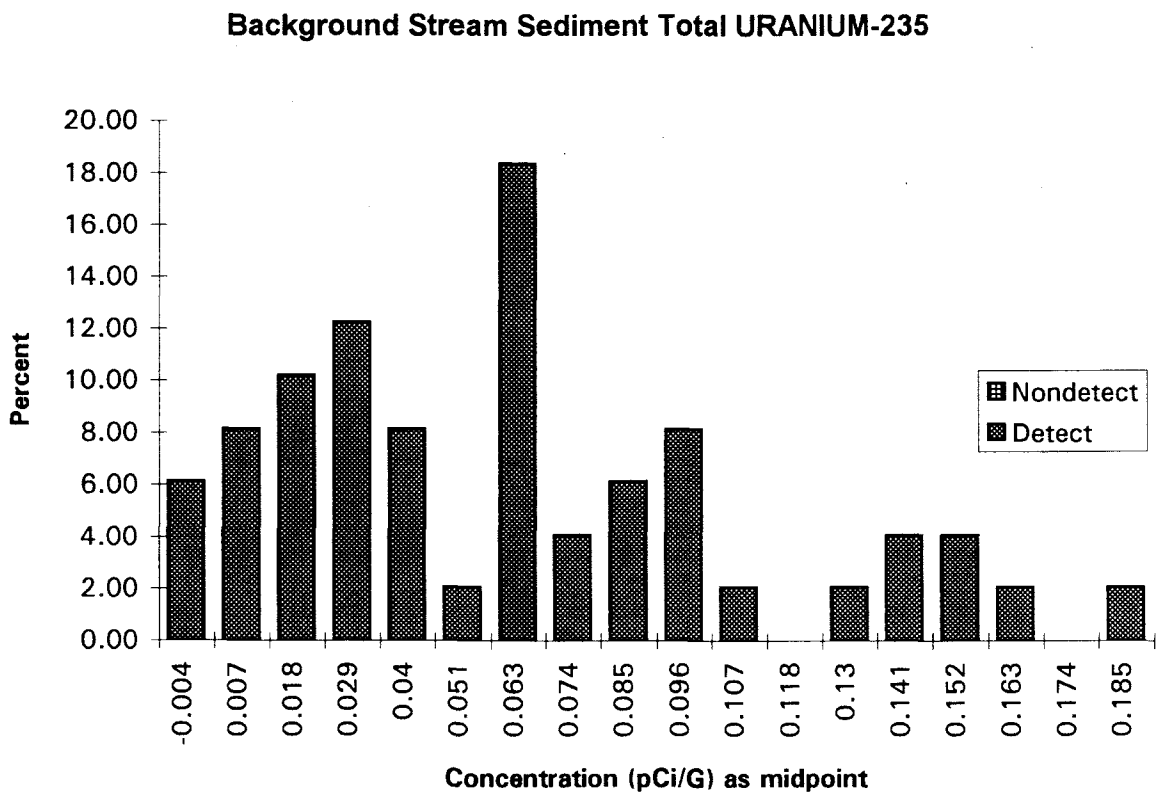

OU6 Stream Sediment Total STRONTIUM-89,90
Percent
50.00
45.00
40.00
35.00
30.00
25.00
20.00
15.00
10.00
5.00
0.00
Nondetect
Detect
-0.551
-0.453
-0.355
-0.257
-0.159
-0.061
0.037
0.135
0.233
0.332
0.43
0.528
0.626
0.724
0.822
0.92
1.018
1.116
Concentration (pCi/G) as midpoint

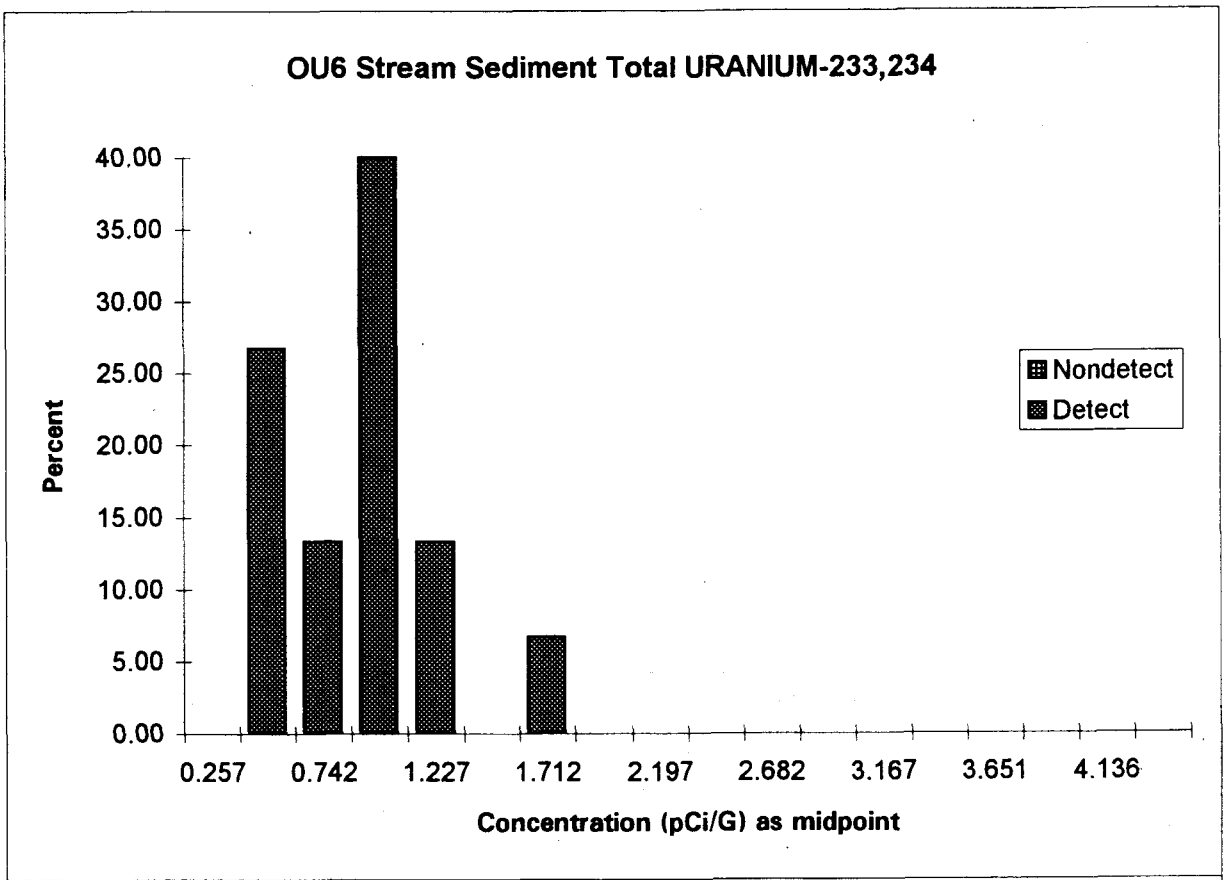

Background Stream Sediment Total STRONTIUM-89,90
Percent
35.00
30.00
25.00
20.00
15.00
10.00
5.00
0.00
Nondetect
Detect
-0.551
-0.453
-0.355
-0.257
-0.159
-0.061
0.037
0.135
0.233
0.332
0.43
0.528
0.626
0.724
0.822
0.92
1.018
1.116
Concentration (pCi/G) as midpoint

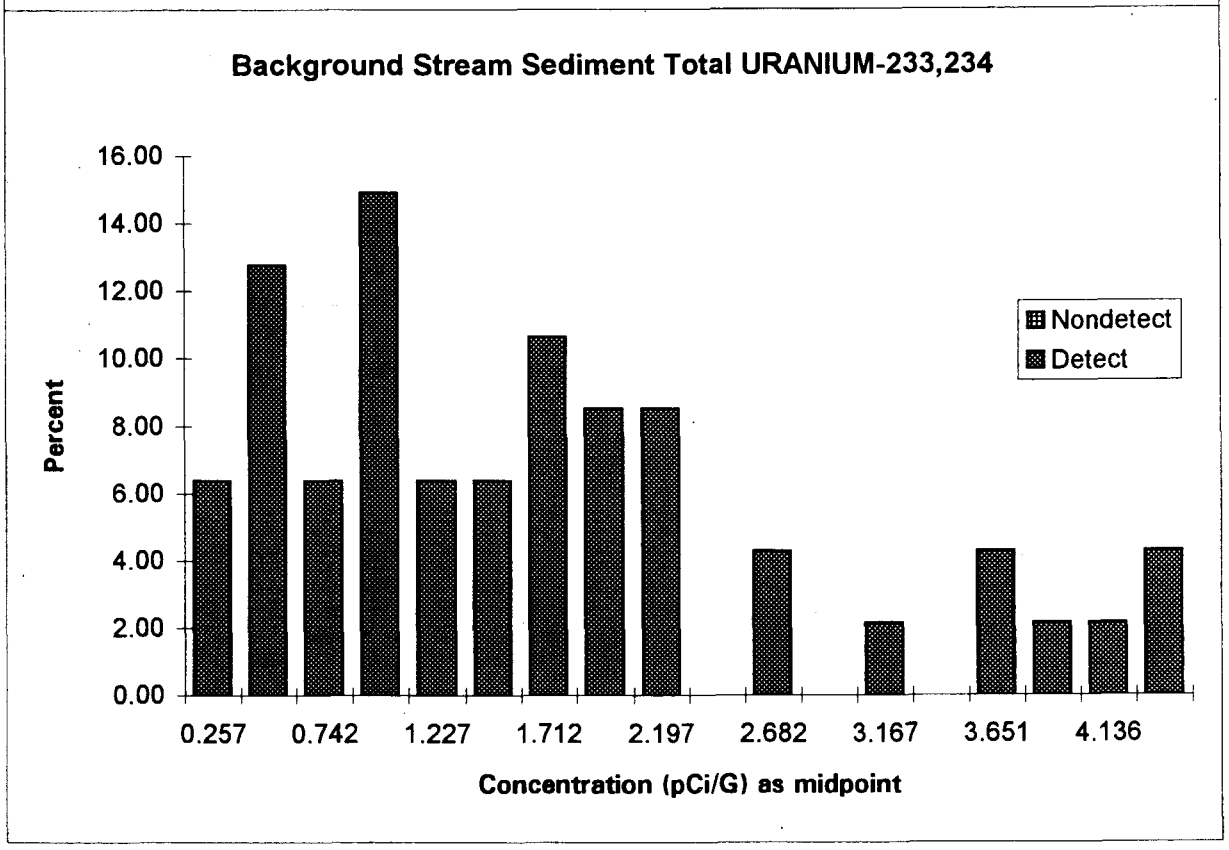

OU6 Stream Sediment Total TRITIUM
Percent
70.00
60.00
50.00
40.00
30.00
20.00
10.00
0.00
Nondetect
Detect
190.556
819.667
1448.778
2077.889
2707
3336.111
3965.222
4594.333
5223.444
5852.556
6481.667
7110.778
7739.889
8369
8998.111
9627.222
10256.333
10885.444
Concentration (pCi/L) as midpoint

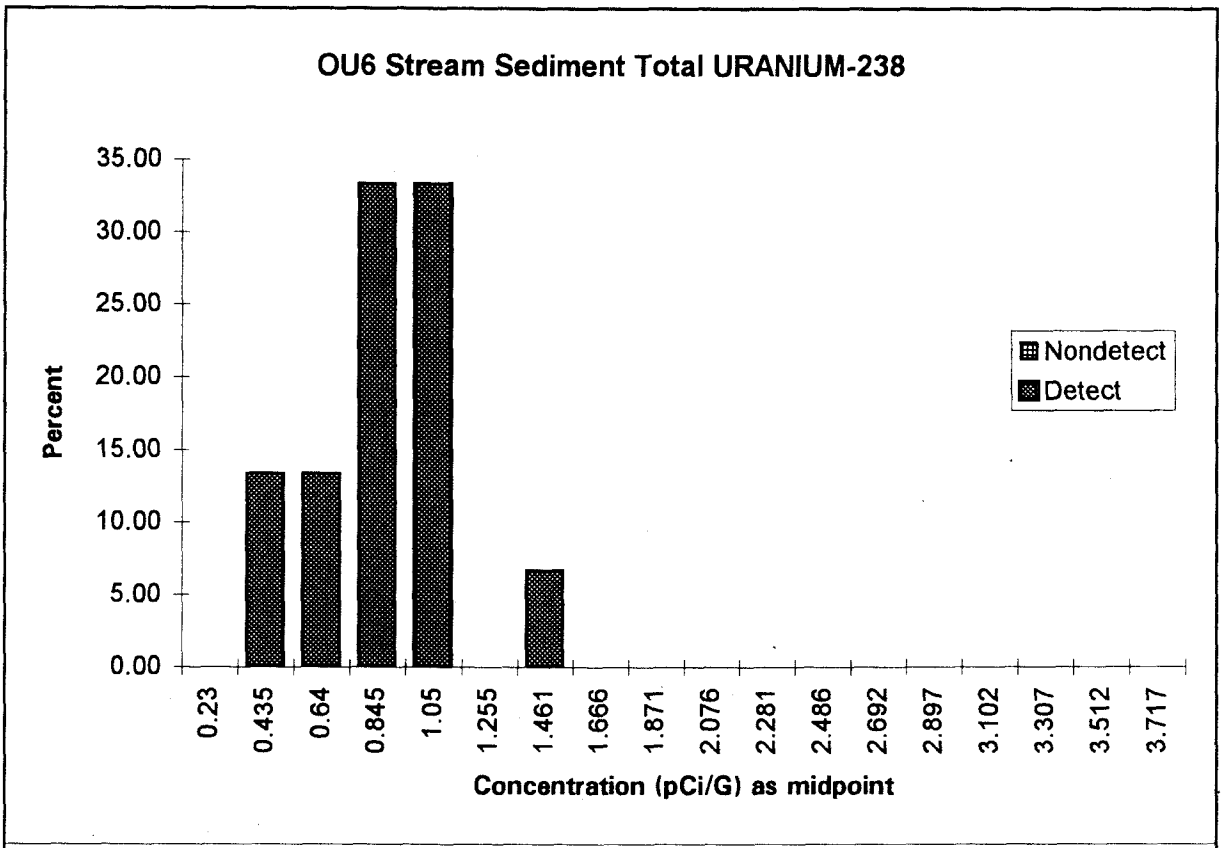

Background Stream Sediment Total TRITIUM
Percent
100.00
90.00
80.00
70.00
60.00
50.00
40.00
30.00
20.00
10.00
0.00
Nondetect
Detect
190.556
819.667
1448.778
2077.889
2707
3336.111
3965.222
4594.333
5223.444
5852.556
6481.667
7110.778
7739.889
8369
8998.111
9627.222
10256.333
10885.444
Concentration (pCi/L) as midpoint

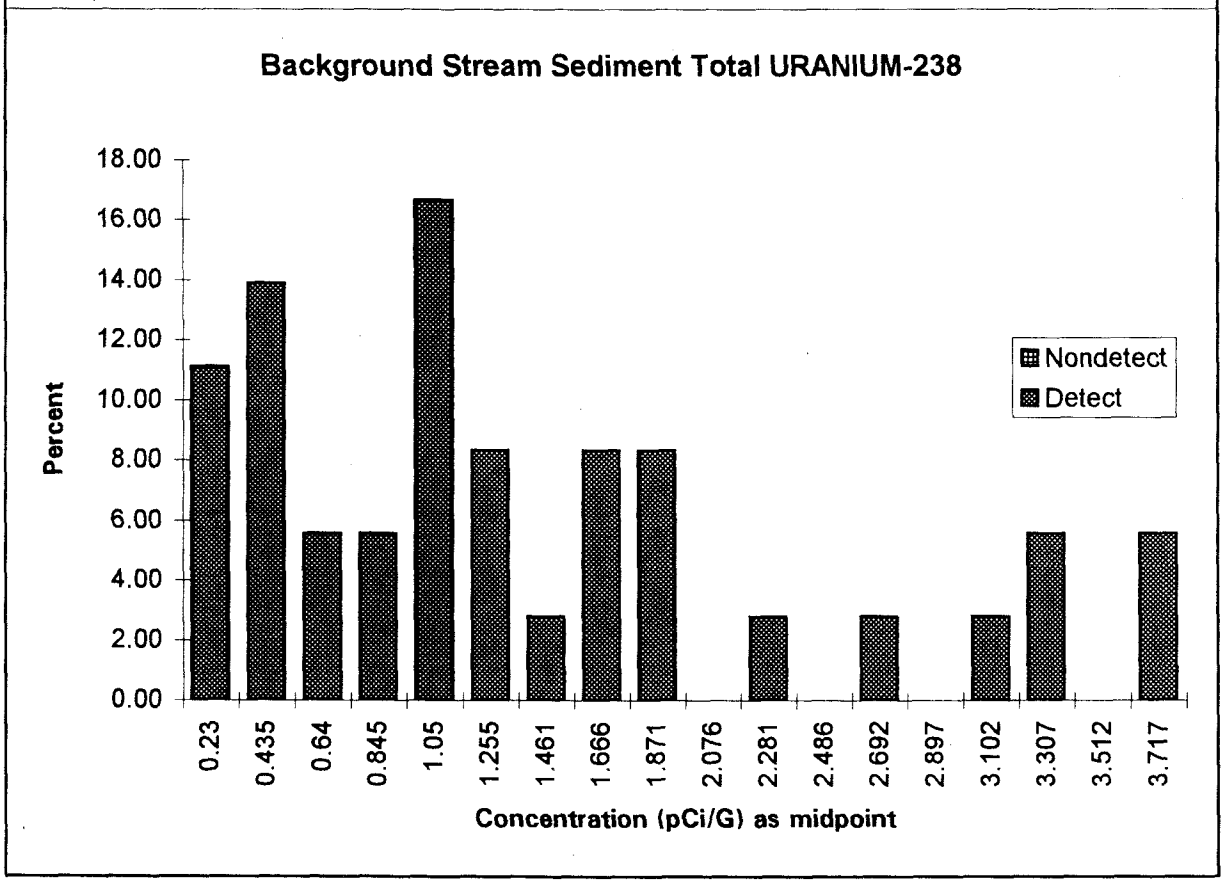

Background Stream Sediment Total URANIUM-235
Percent
20.00
18.00
16.00
14.00
12.00
10.00
8.00
6.00
4.00
2.00
0.00
-0.004
0.007
0.018
0.029
0.04
0.051
0.063
0.074
0.085
0.096
0.107
0.118
0.13
0.141
0.152
0.163
0.174
0.185
Concentration (pCi/G) as midpoint
Nondetect
Detect

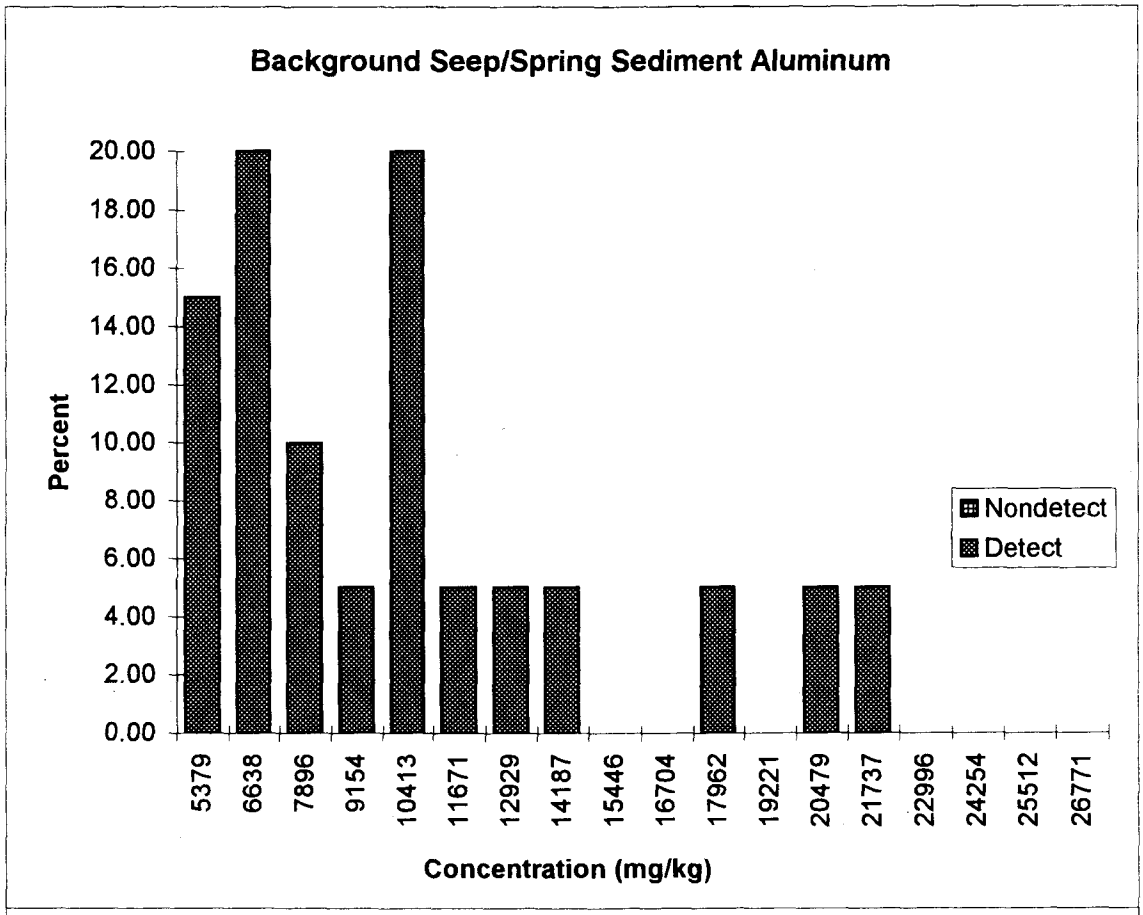

Background Stream Sediment Total URANIUM-235
Percent
20.00
18.00
16.00
14.00
12.00
10.00
8.00
6.00
4.00
2.00
0.00
-0.004
0.007
0.018
0.029
0.04
0.051
0.063
0.074
0.085
0.096
0.107
0.118
0.13
0.141
0.152
0.163
0.174
0.185
Concentration (pCi/G) as midpoint
Nondetect
Detect

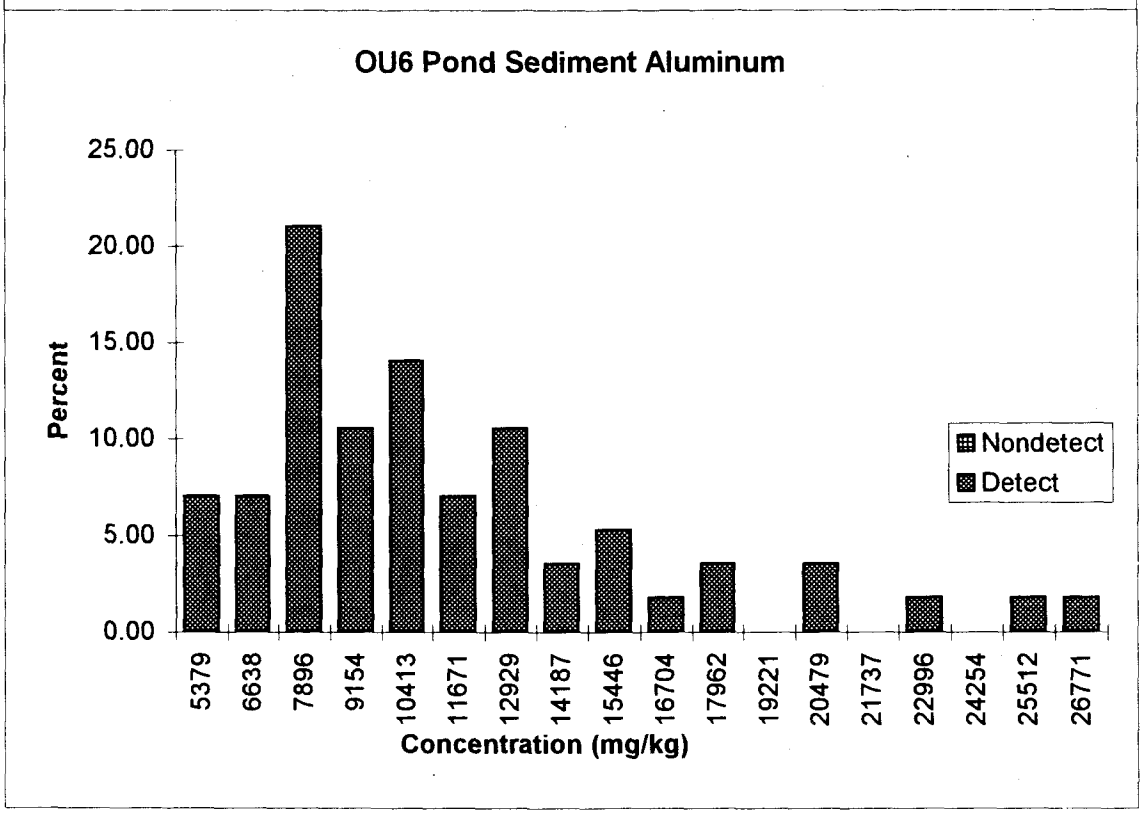

OU6 Stream Sediment Total URANIUM-233,234
Percent
40.00
35.00
30.00
25.00
20.00
15.00
10.00
5.00
0.00
0.257
0.742
1.227
1.712
2.197
2.682
3.167
3.651
4.136
Concentration (pCi/G) as midpoint
Nondetect
Detect

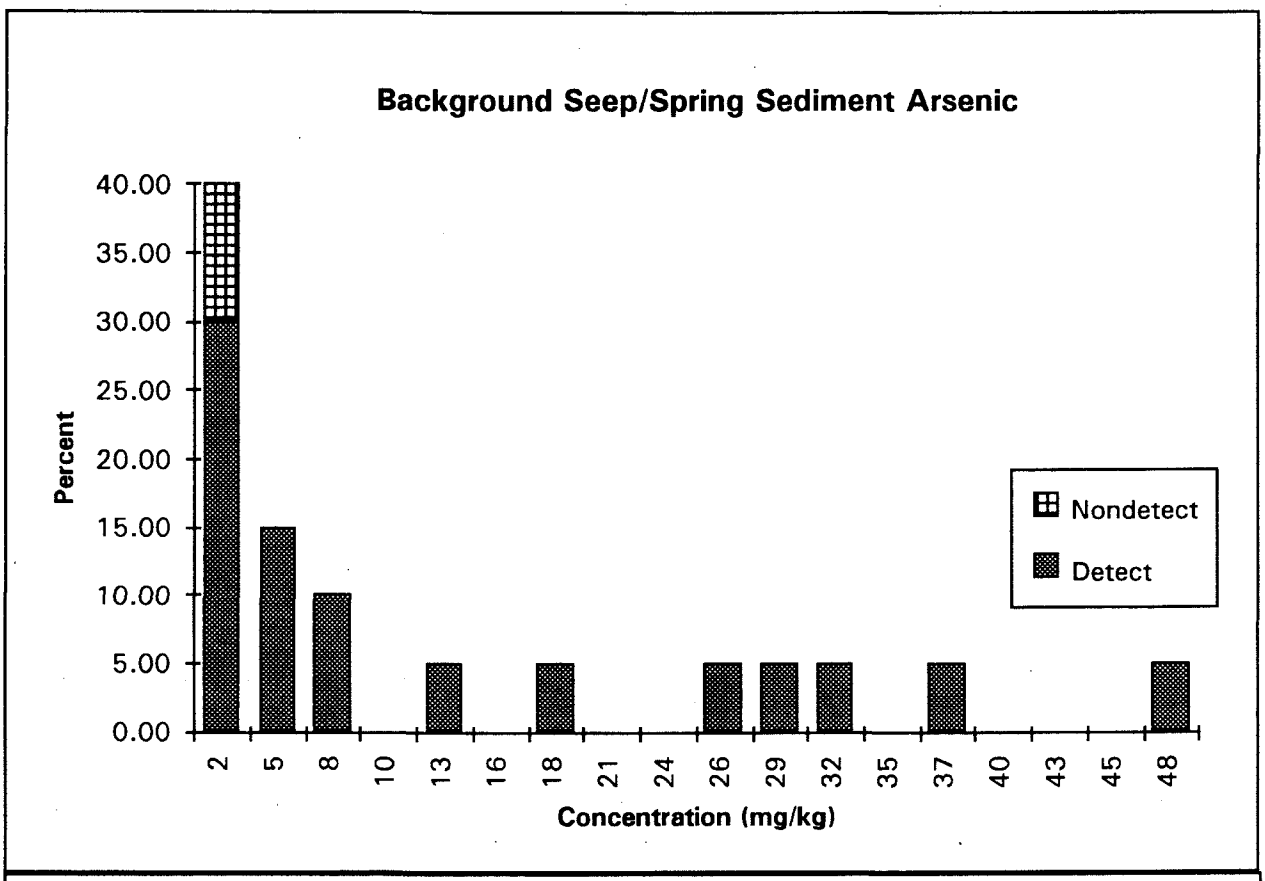

Background Stream Sediment Total URANIUM-233,234
Percent
16.00
14.00
12.00
10.00
8.00
6.00
4.00
2.00
0.00
0.257
0.742
1.227
1.712
2.197
2.682
3.167
3.651
4.136
Concentration (pCi/G) as midpoint
Nondetect
Detect

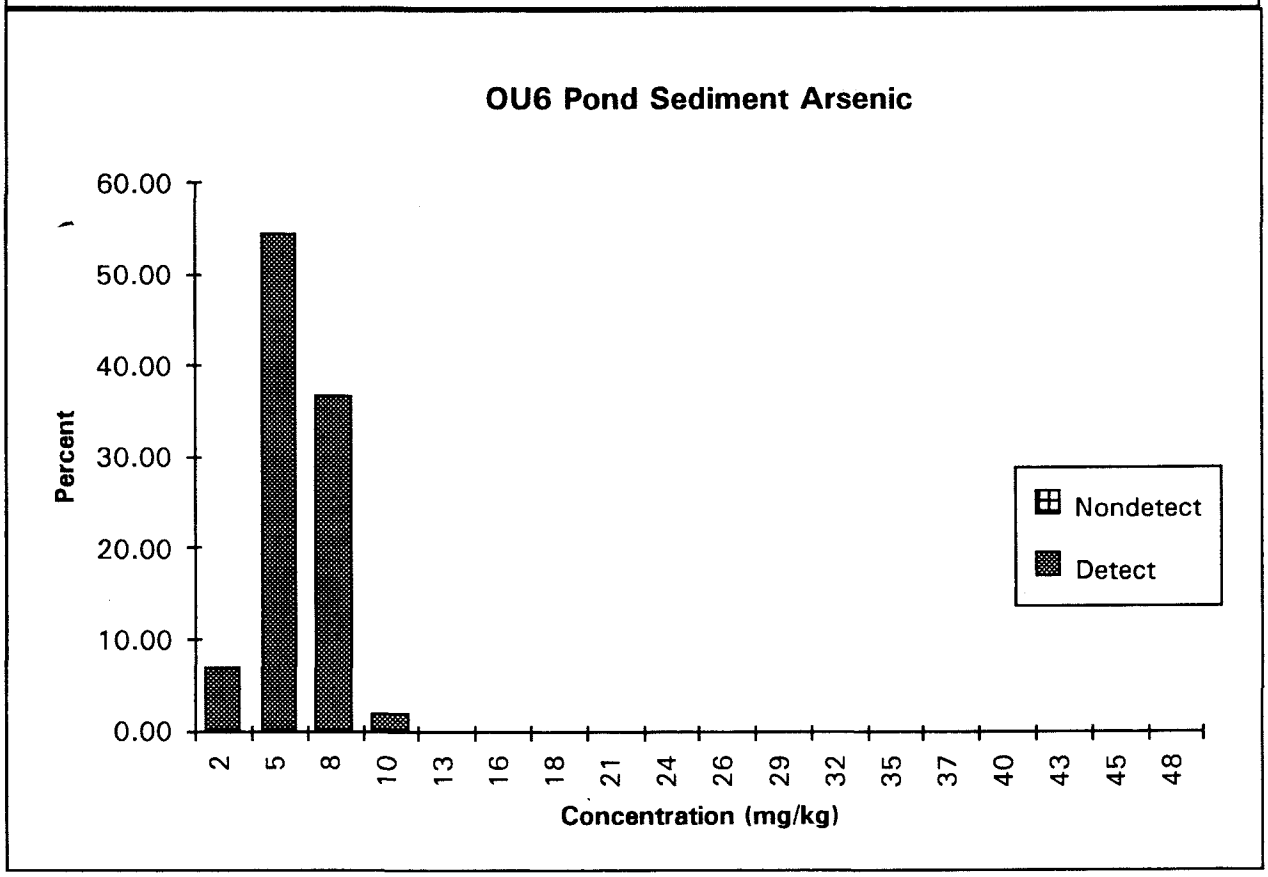

OU6 Stream Sediment Total URANIUM-238
Percent
35.00
30.00
25.00
20.00
15.00
10.00
5.00
0.00
Nondetect
Detect
0.23
0.435
0.64
0.845
1.05
1.255
1.461
1.666
1.871
2.076
2.281
2.486
2.692
2.897
3.102
3.307
3.512
3.717
Concentration (pCi/G) as midpoint

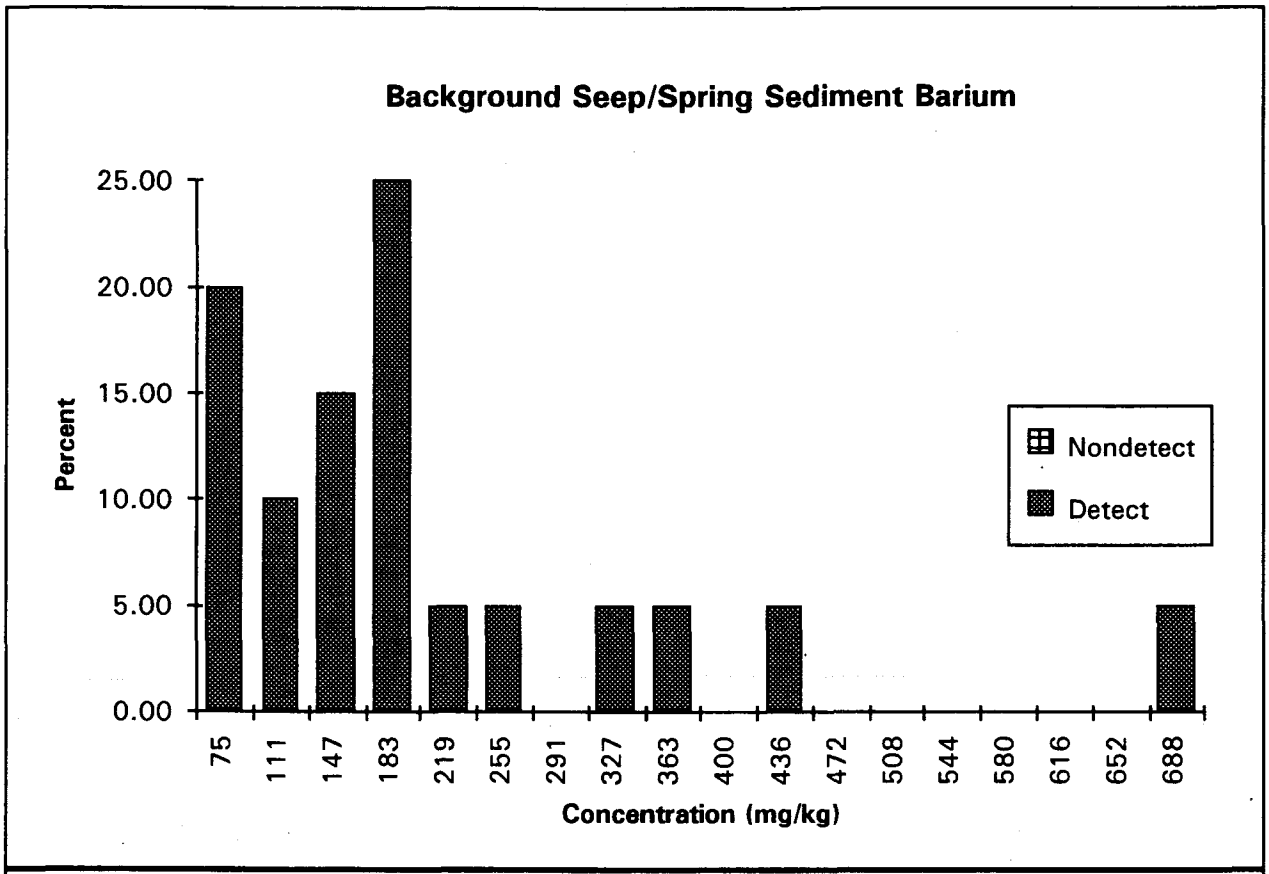

Background Stream Sediment Total URANIUM-238
Percent
18.00
16.00
14.00
12.00
10.00
8.00
6.00
4.00
2.00
0.00
Nondetect
Detect
0.23
0.435
0.64
0.845
1.05
1.255
1.461
1.666
1.871
2.076
2.281
2.486
2.692
2.897
3.102
3.307
3.512
3.717
Concentration (pCi/G) as midpoint

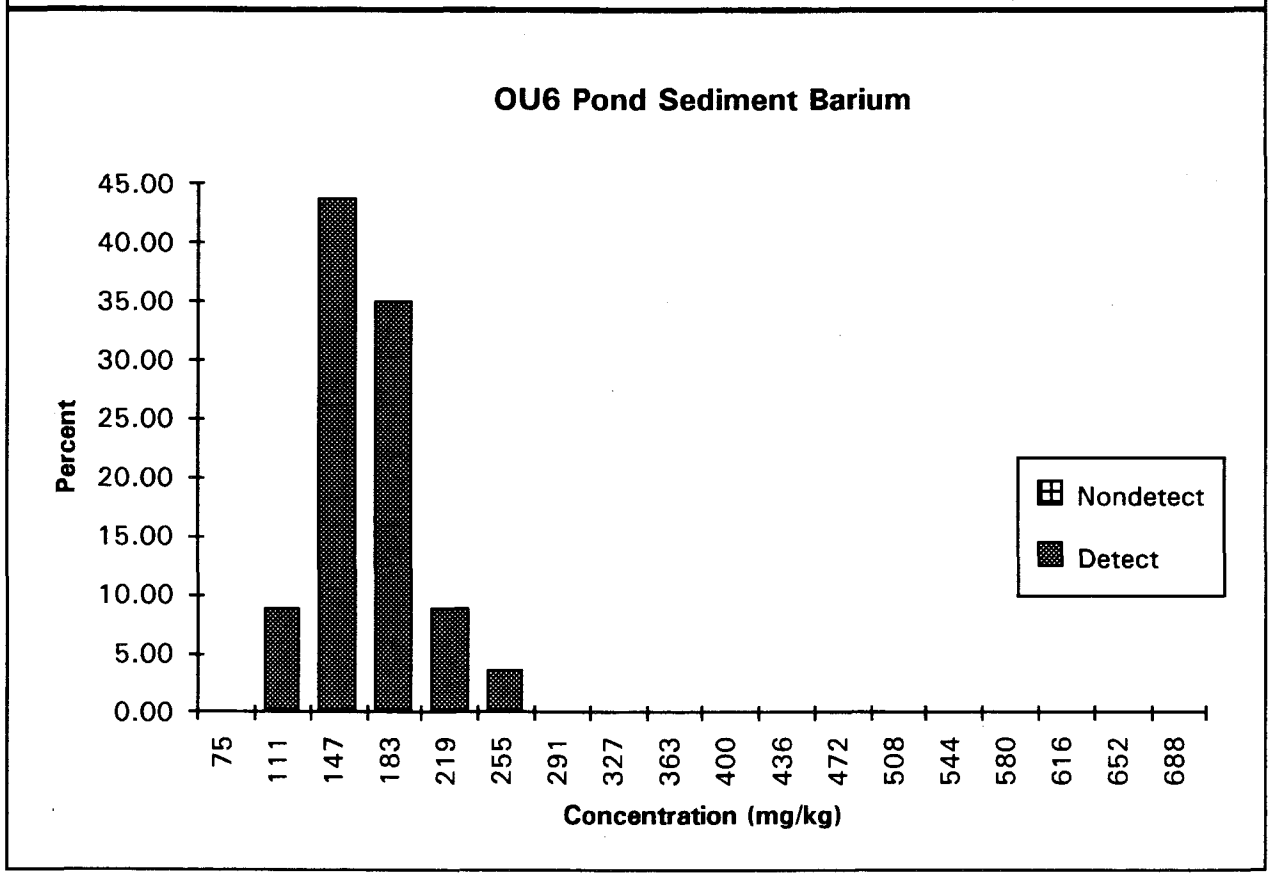

Background Seep/Spring Sediment Aluminum
Percent
20.00
18.00
16.00
14.00
12.00
10.00
8.00
6.00
4.00
2.00
0.00
Nondetect
Detect
5379
6638
7896
9154
10413
11671
12929
14187
15446
16704
17962
19221
20479
21737
22996
24254
25512
26771
Concentration (mg/kg)

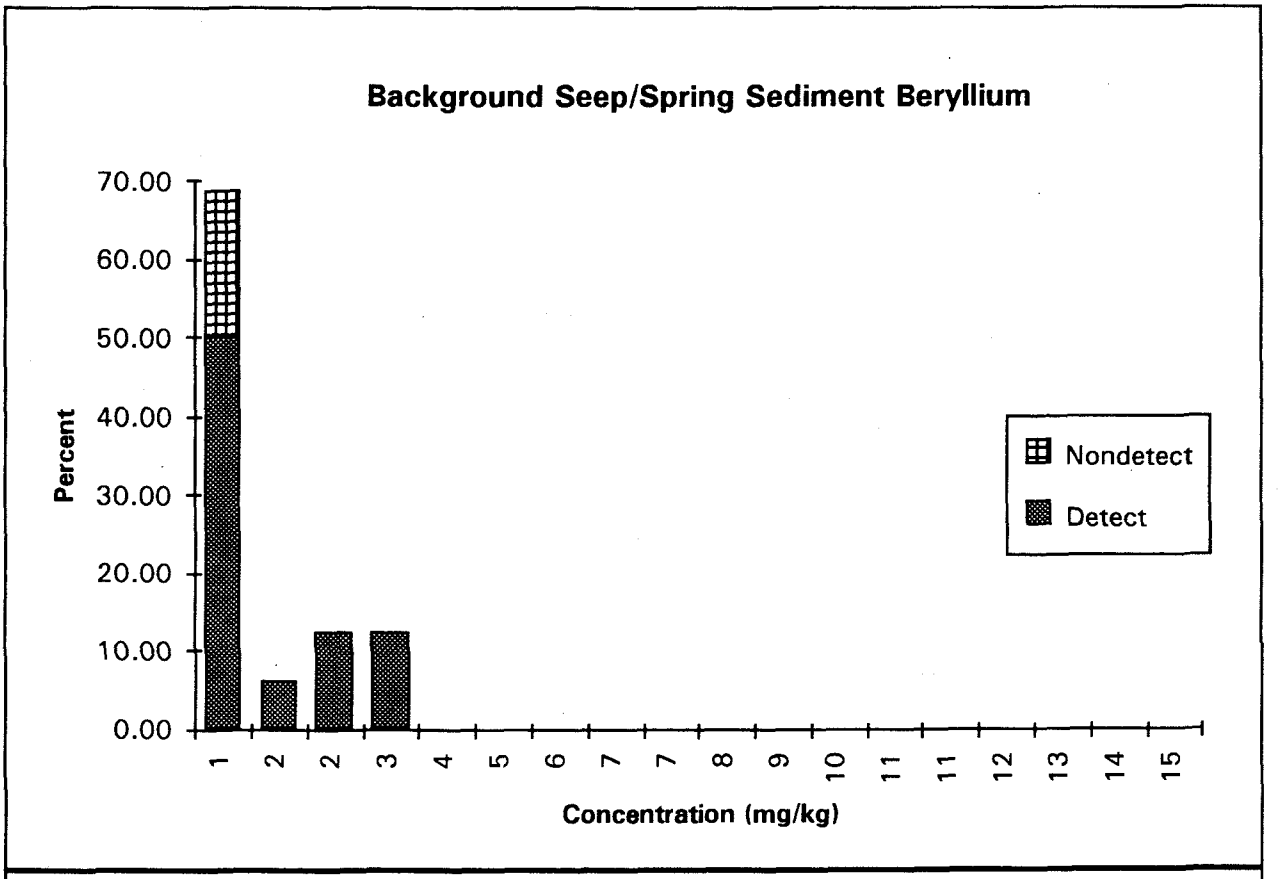

OU6 Pond Sediment Aluminum
Percent
25.00
20.00
15.00
10.00
5.00
0.00
Nondetect
Detect
5379
6638
7896
9154
10413
11671
12929
14187
15446
16704
17962
19221
20479
21737
22996
24254
25512
26771
Concentration (mg/kg)

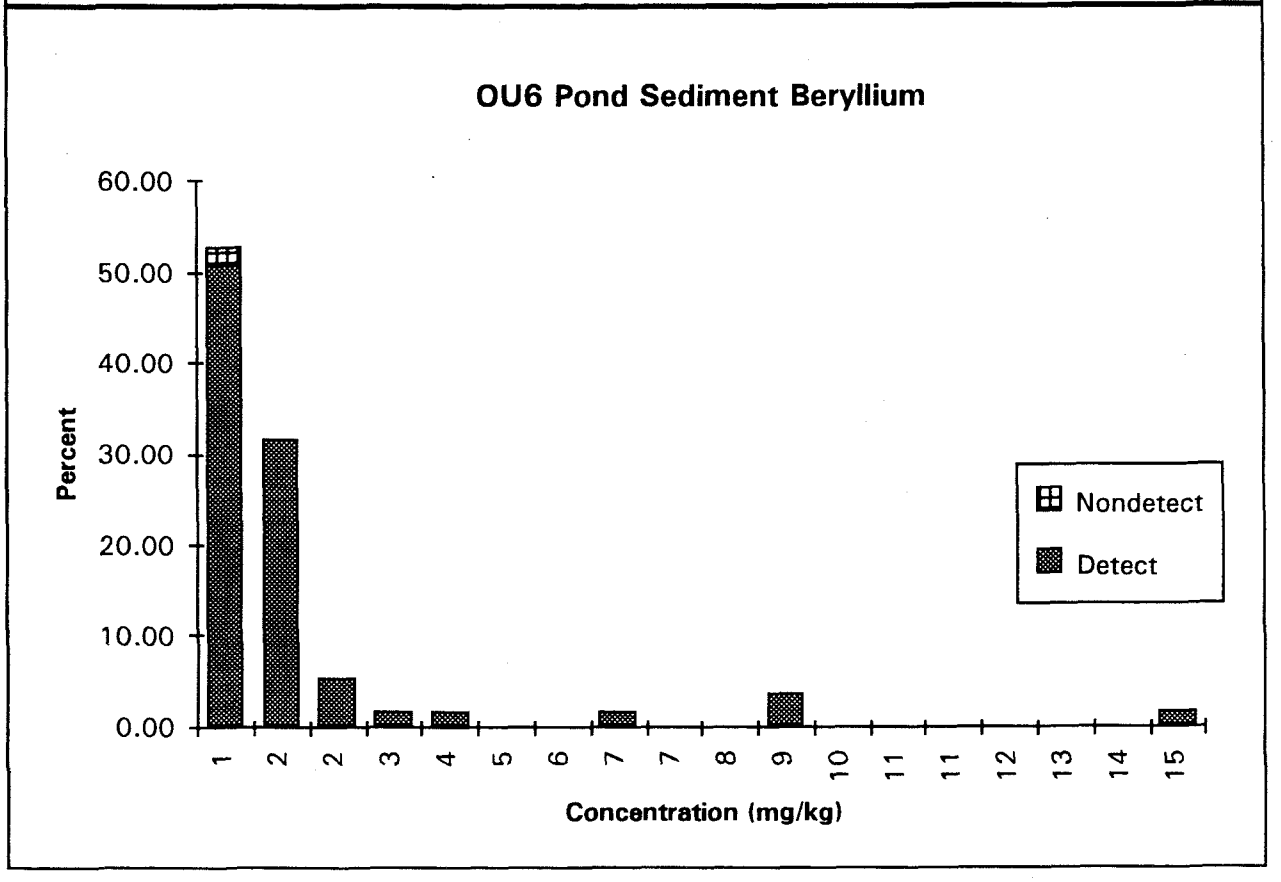

Background Seep/Spring Sediment Arsenic
Percent
40.00
35.00
30.00
25.00
20.00
15.00
10.00
5.00
0.00
2
5
8
10
13
16
18
21
24
26
29
32
35
37
40
43
45
48
Concentration (mg/kg)
Nondetect
Detect

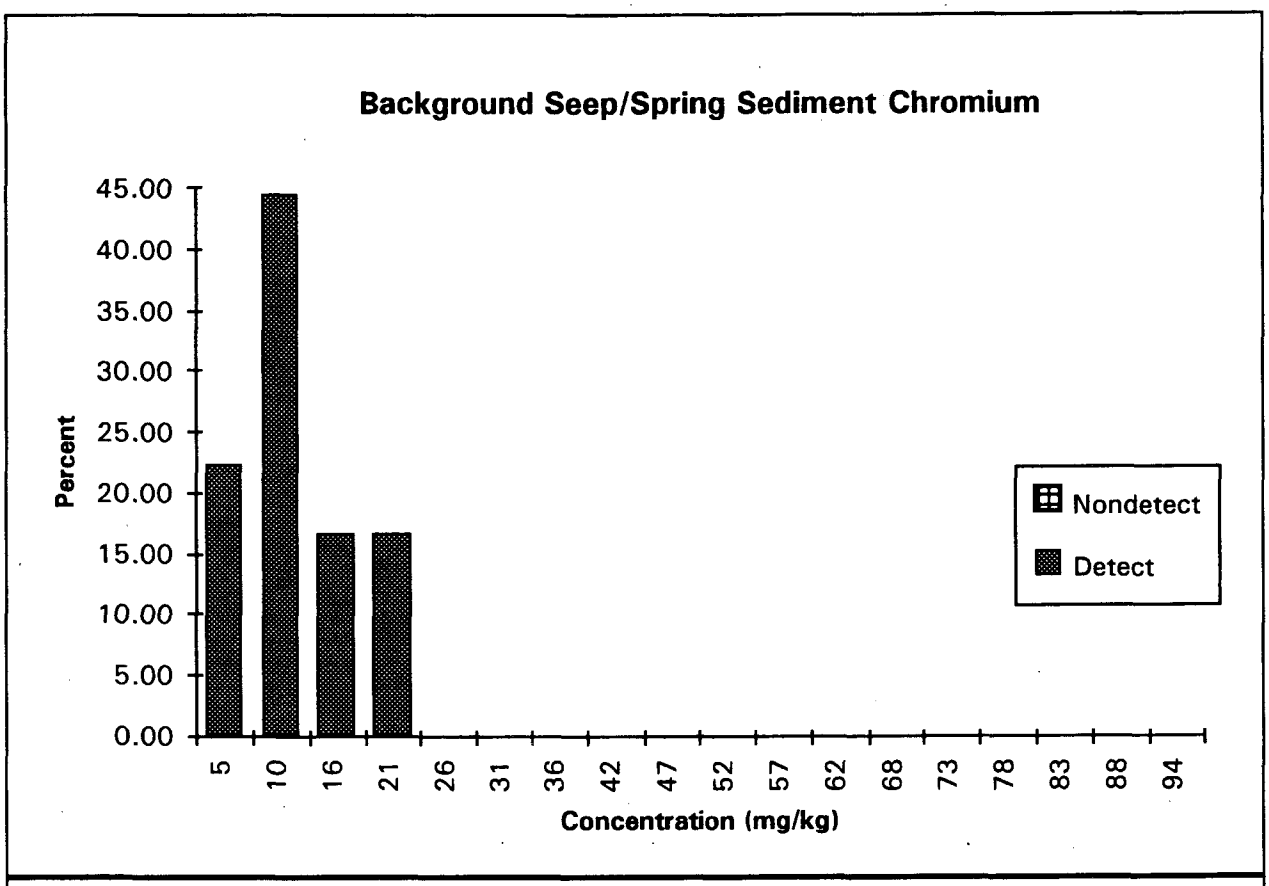

OU6 Pond Sediment Arsenic
Percent
60.00
50.00
40.00
30.00
20.00
10.00
0.00
2
5
8
10
13
16
18
21
24
26
29
32
35
37
40
43
45
48
Concentration (mg/kg)
Nondetect
Detect

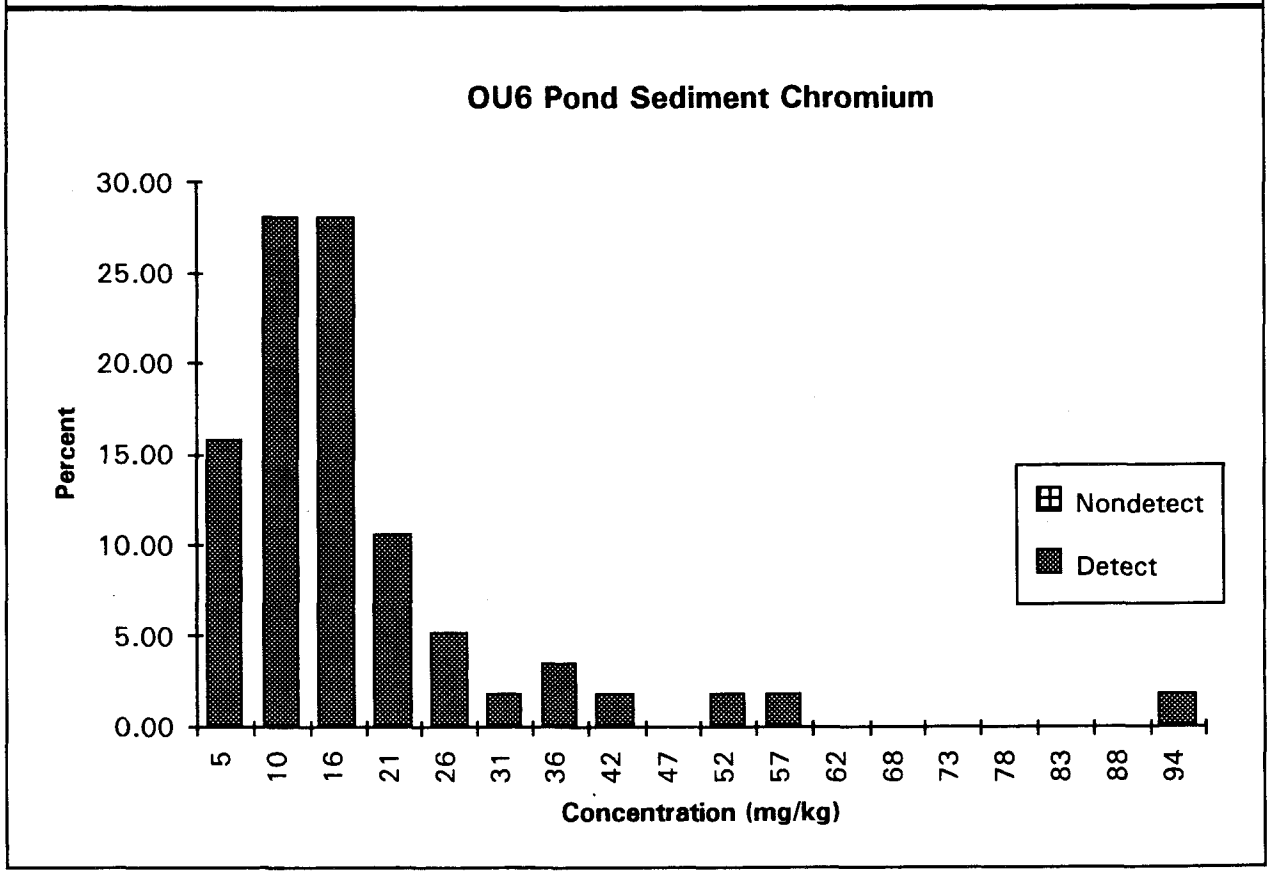

Background Seep/Spring Sediment Barium
25.00
20.00
15.00
10.00
5.00
0.00
Percent
Nondetect
Detect
75
111
147
183
219
255
291
327
363
400
436
472
508
544
580
616
652
688
Concentration (mg/kg)

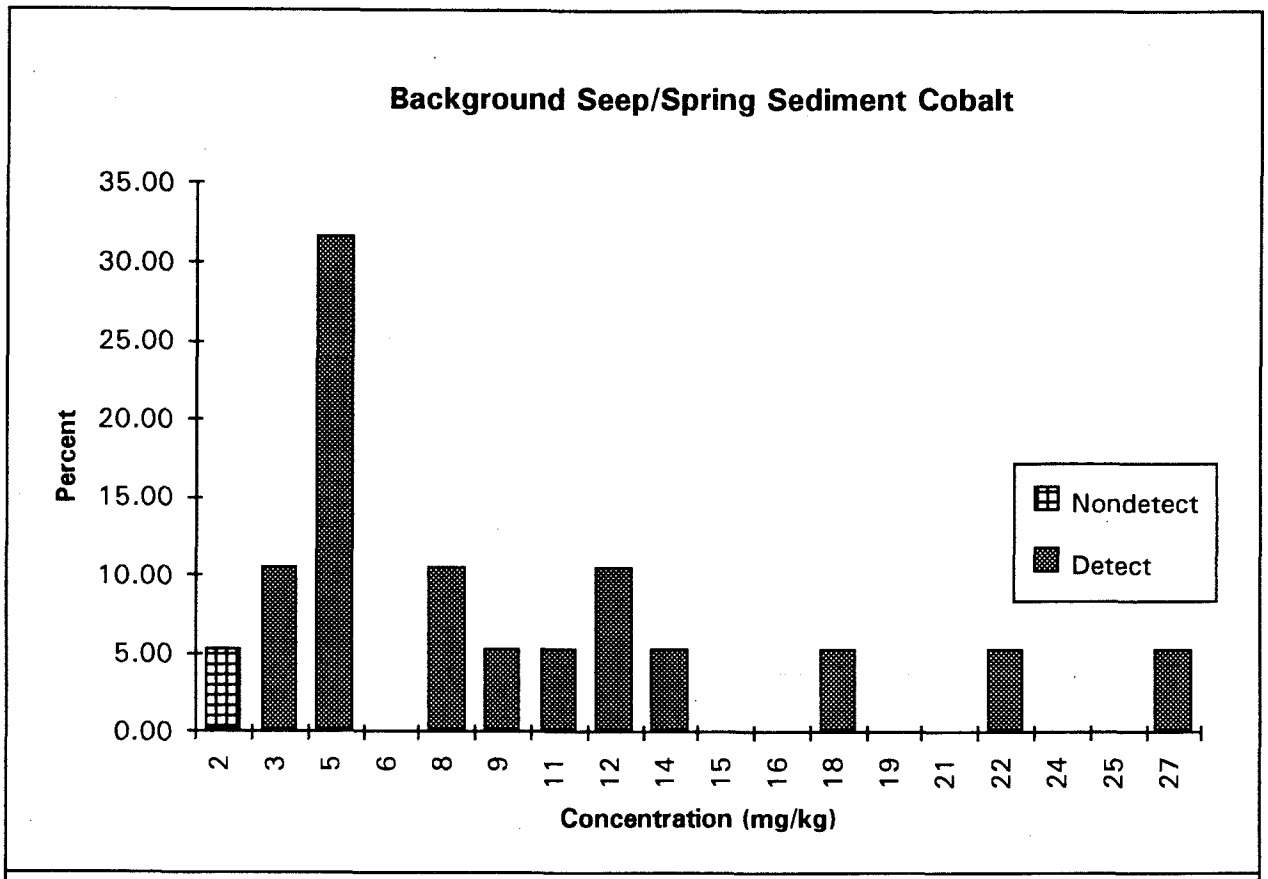

OU6 Pond Sediment Barium
45.00
40.00
35.00
30.00
25.00
20.00
15.00
10.00
5.00
0.00
Percent
Nondetect
Detect
75
111
147
183
219
255
291
327
363
400
436
472
508
544
580
616
652
688
Concentration (mg/kg)

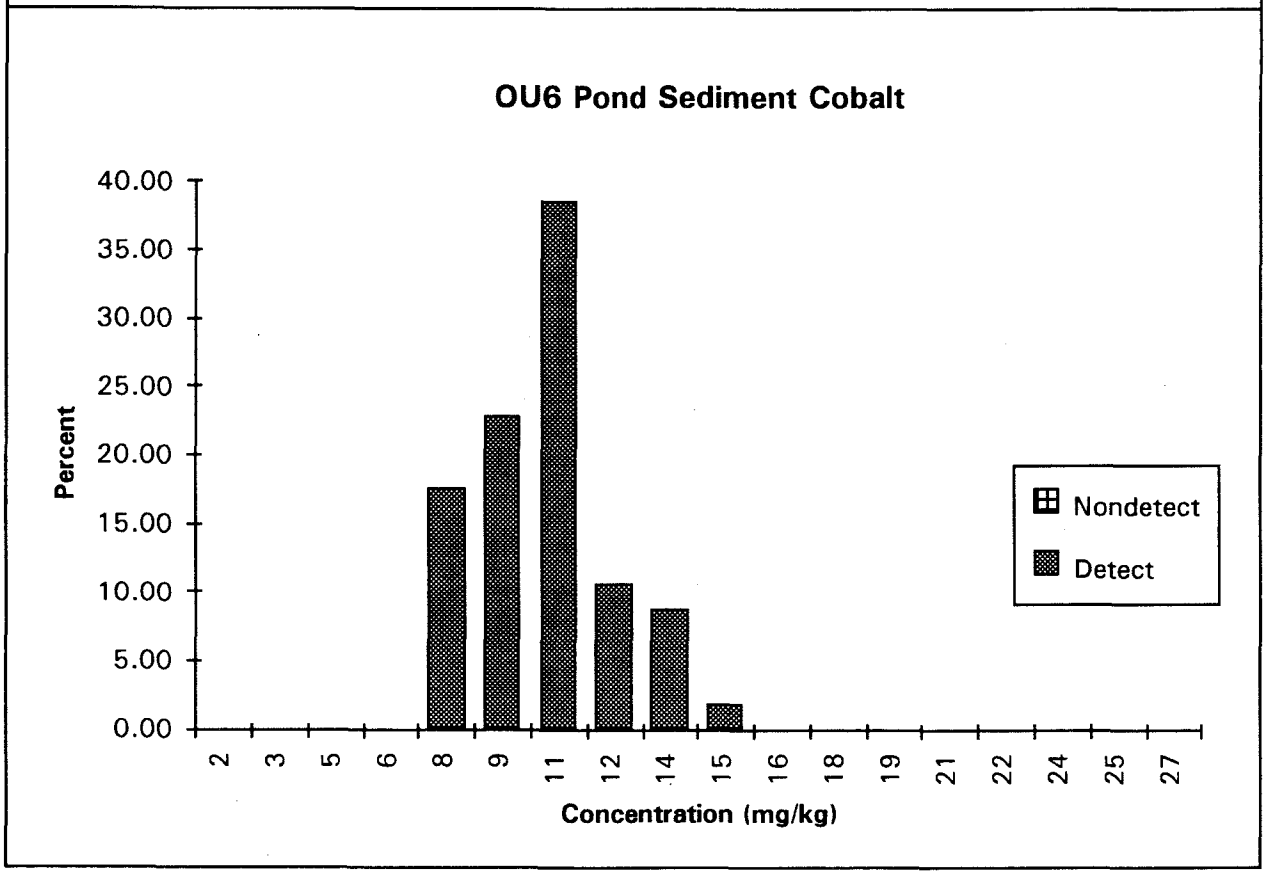

Background Seep/Spring Sediment Beryllium
70.00
60.00
50.00
40.00
30.00
20.00
10.00
0.00
Percent
Nondetect
Detect
1 2 2 3 4 5 6 7 7 8 9 10 11 11 12 13 14 15
Concentration (mg/kg)

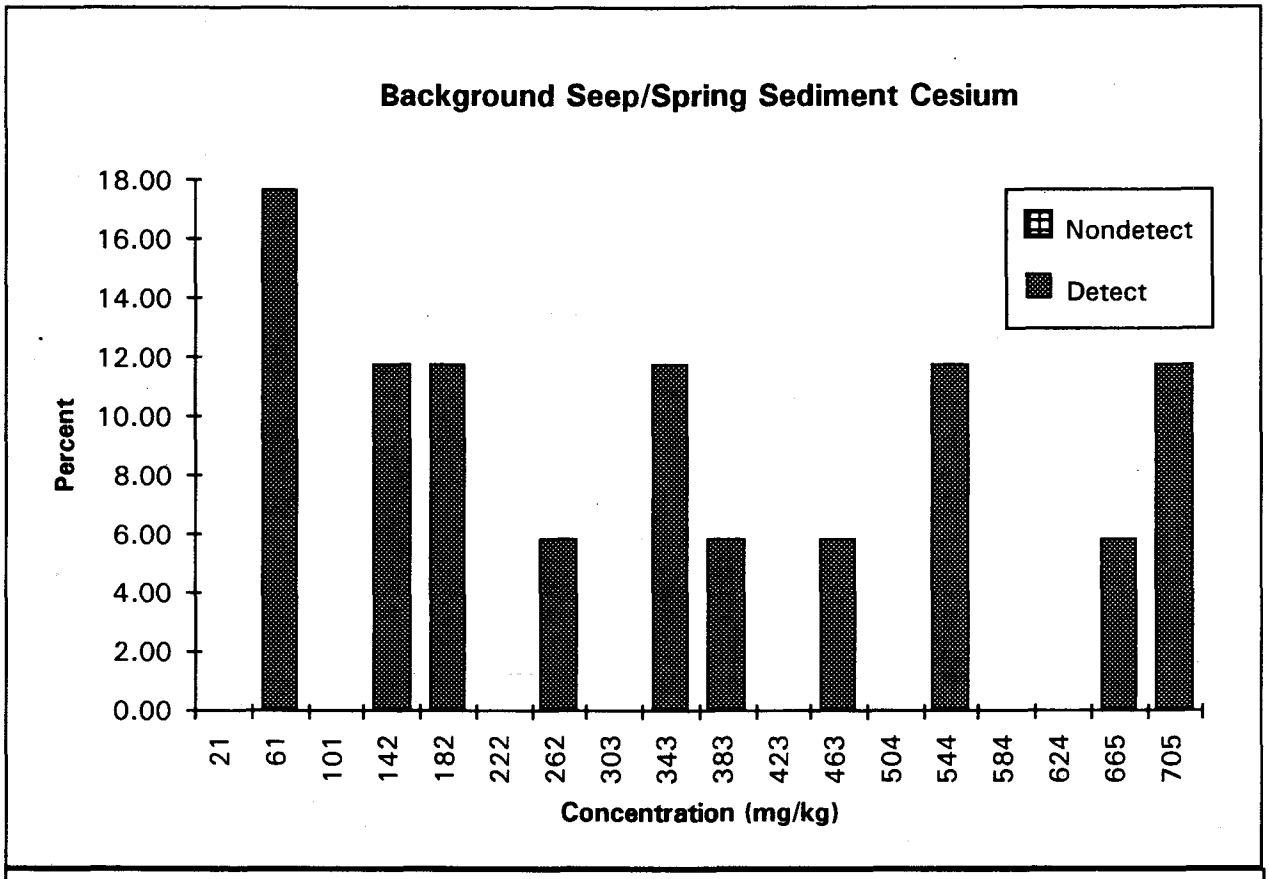

OU6 Pond Sediment Beryllium
60.00
50.00
40.00
30.00
20.00
10.00
0.00
Percent
Nondetect
Detect
1 2 2 3 4 5 6 7 7 8 9 10 11 11 12 13 14 15
Concentration (mg/kg)

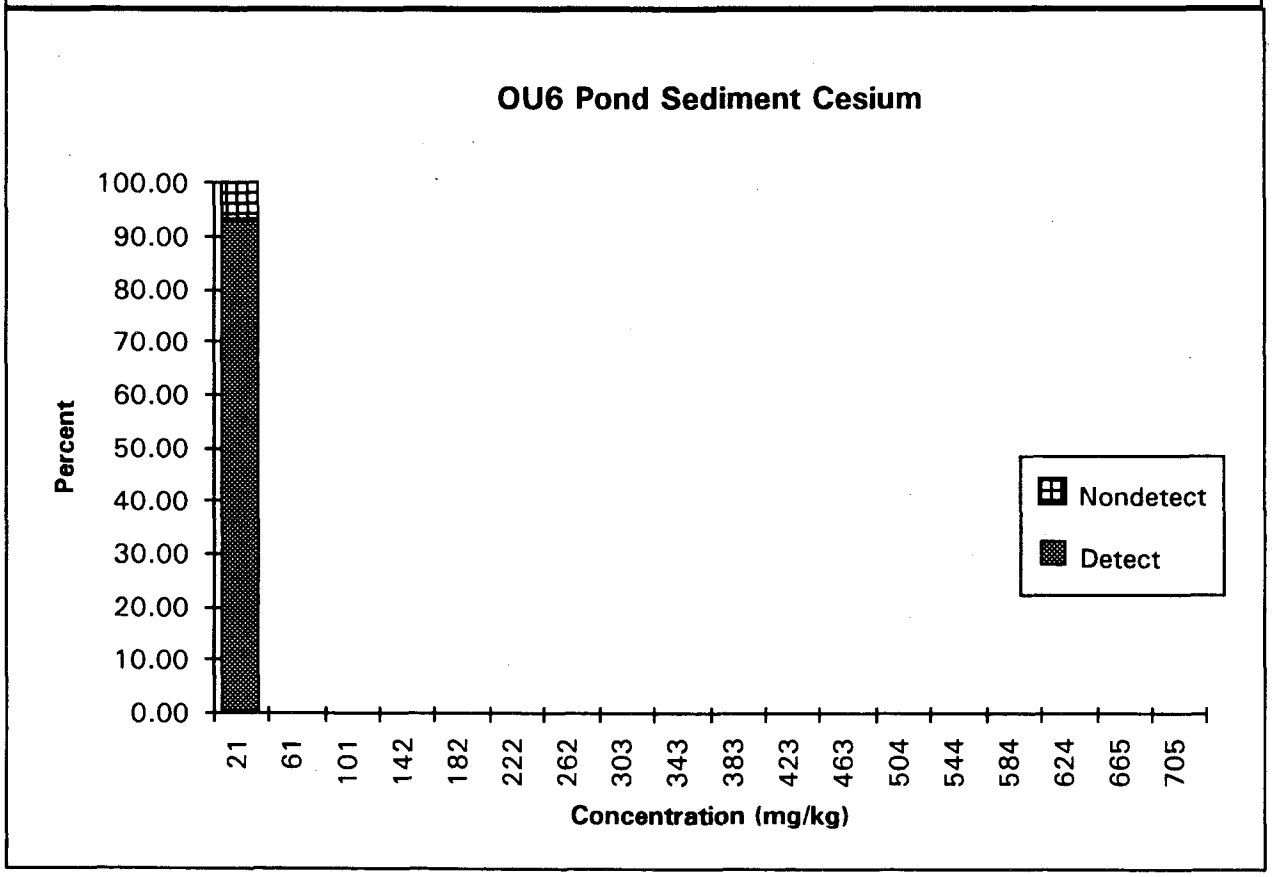

Background Seep/Spring Sediment Chromium
45.00
40.00
35.00
30.00
25.00
20.00
15.00
10.00
5.00
0.00
Percent
5
10
16
21
26
31
36
42
47
52
57
62
68
73
78
83
88
94
Concentration (mg/kg)
Nondetect
Detect

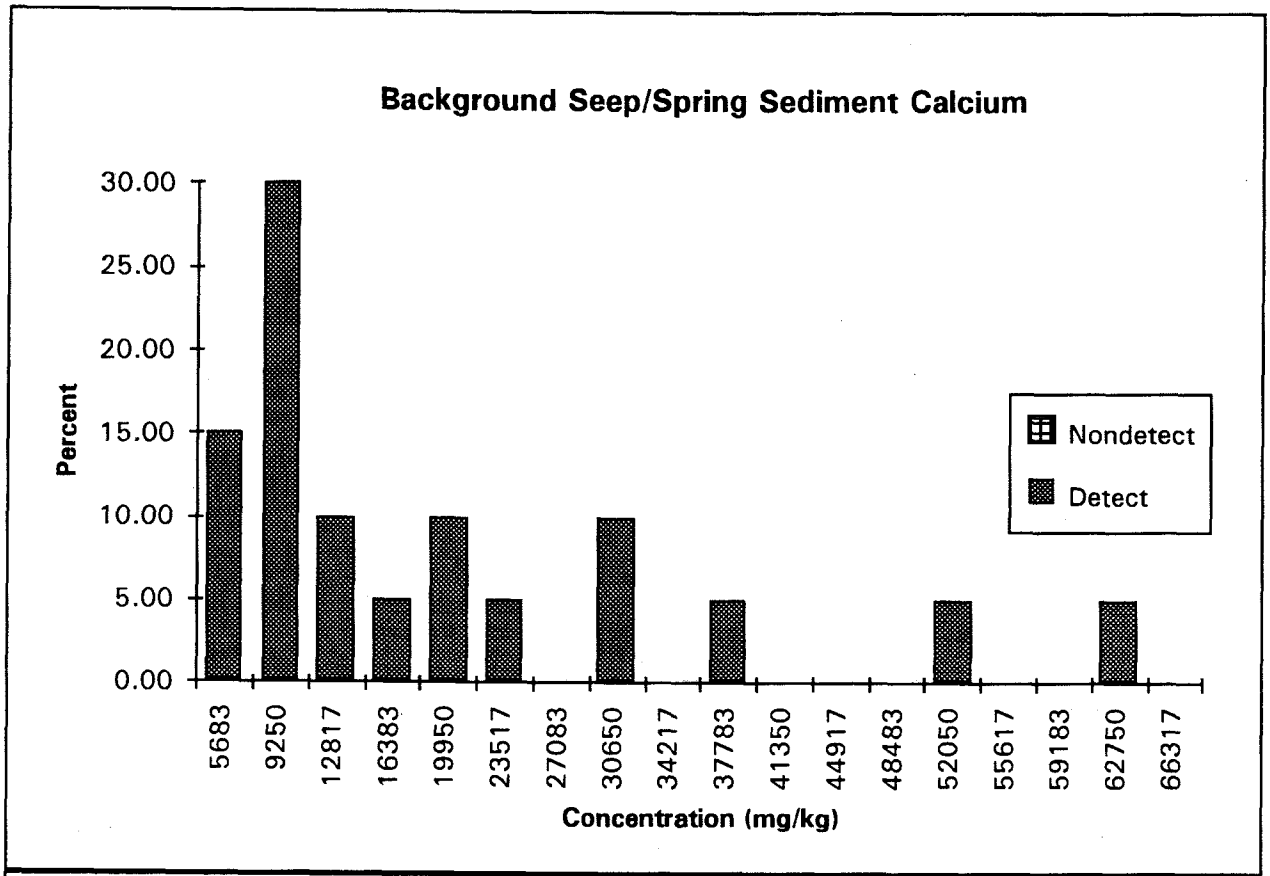

OU6 Pond Sediment Chromium
30.00
25.00
20.00
15.00
10.00
5.00
0.00
Percent
5
10
16
21
26
31
36
42
47
52
57
62
68
73
78
83
88
94
Concentration (mg/kg)
Nondetect
Detect

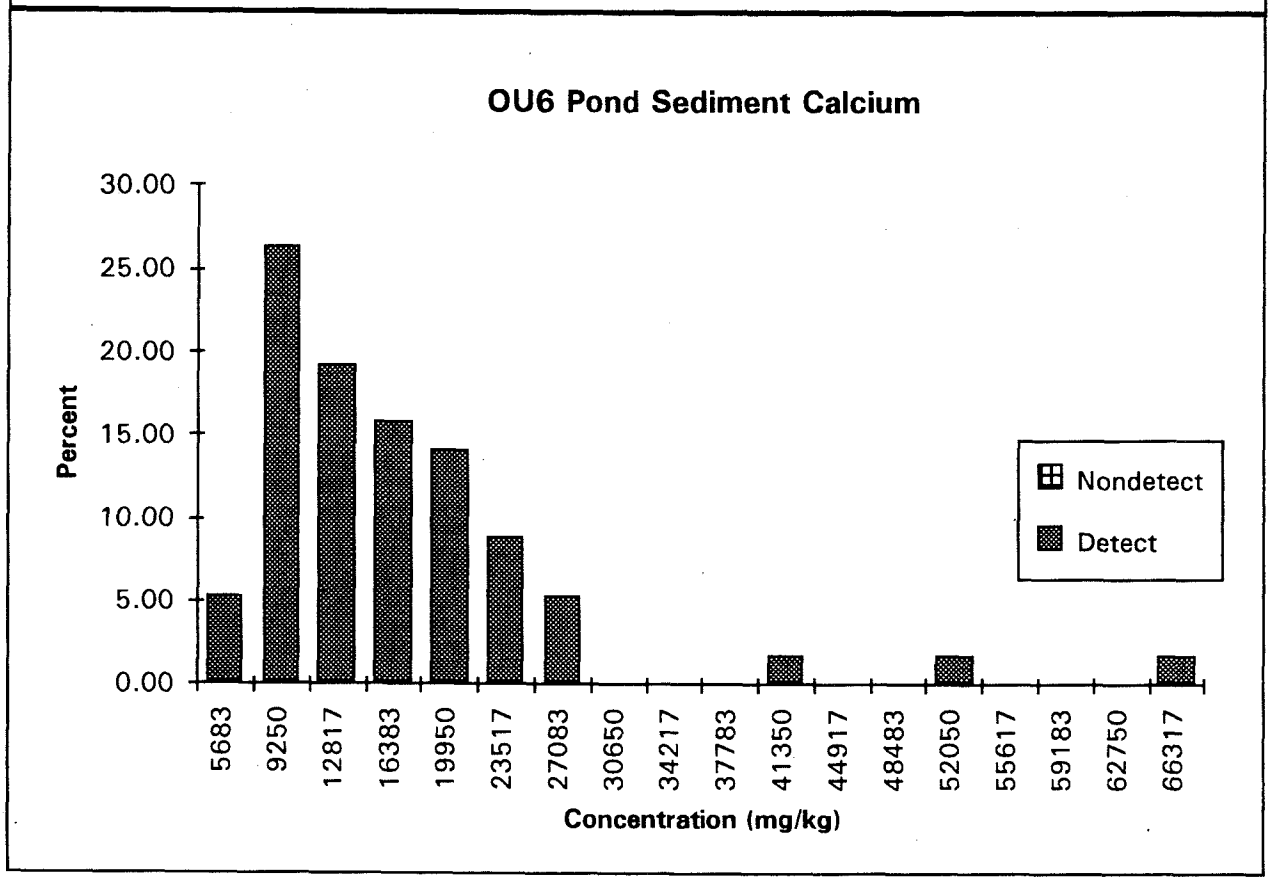

Background Seep/Spring Sediment Cobalt
35.00
30.00
25.00
20.00
15.00
10.00
5.00
0.00
Percent
2
3
5
6
8
9
11
12
14
15
16
18
19
21
22
24
25
27
Concentration (mg/kg)
Nondetect
Detect

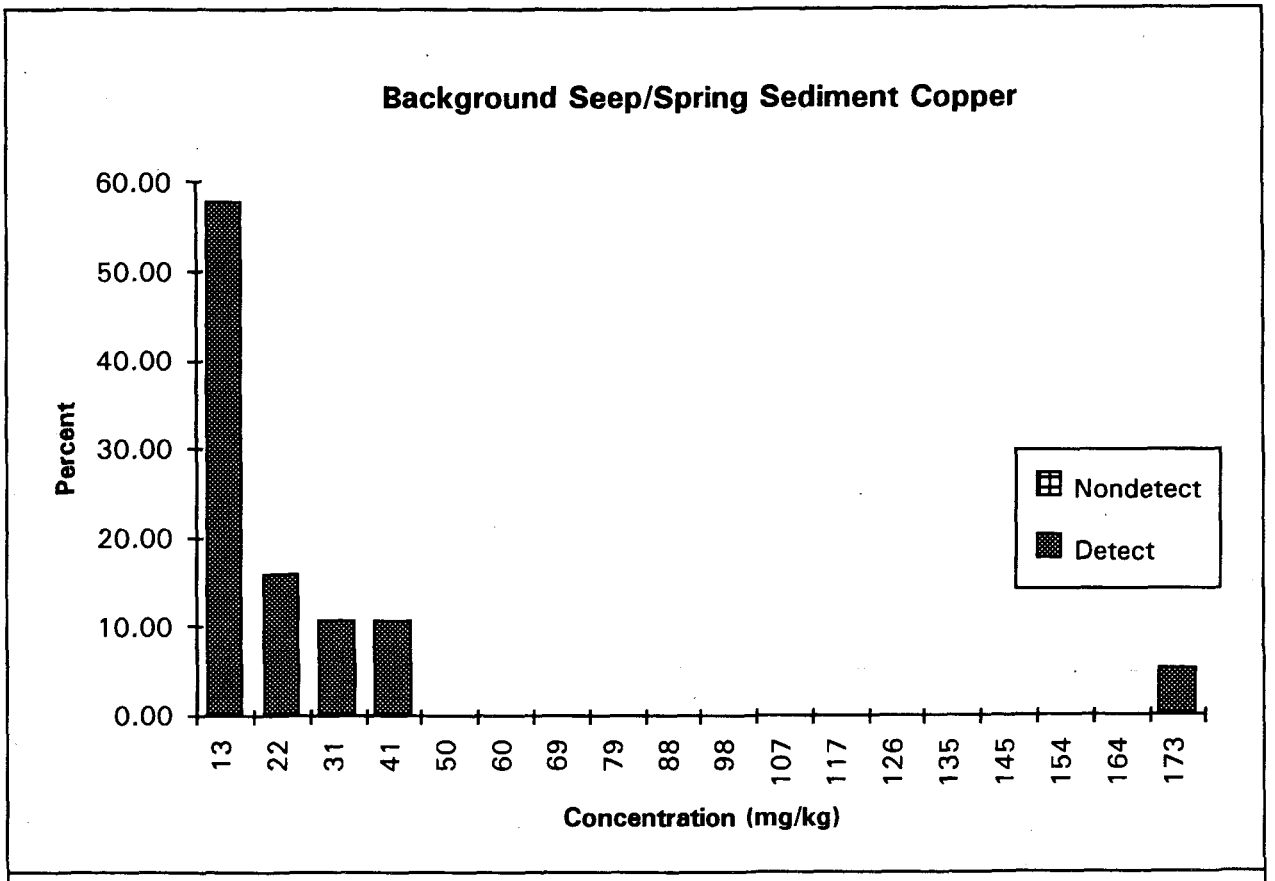

OU6 Pond Sediment Cobalt
40.00
35.00
30.00
25.00
20.00
15.00
10.00
5.00
0.00
Percent
2
3
5
6
8
9
11
12
14
15
16
18
19
21
22
24
25
27
Concentration (mg/kg)
Nondetect
Detect

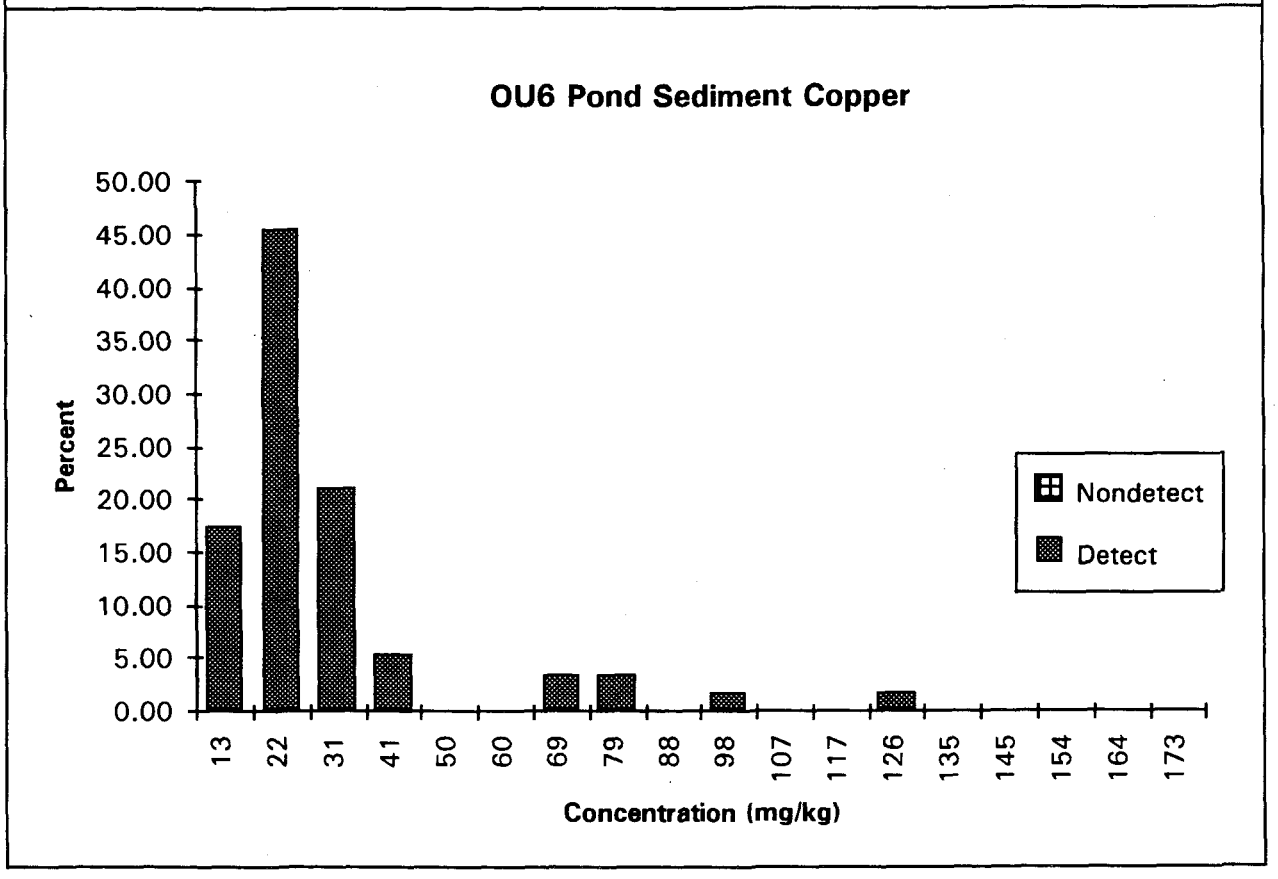

Background Seep/Spring Sediment Cesium
Percent
18.00
16.00
14.00
12.00
10.00
8.00
6.00
4.00
2.00
0.00
Nondetect
Detect
21
61
101
142
182
222
262
303
343
383
423
463
504
544
584
624
665
705
Concentration (mg/kg)

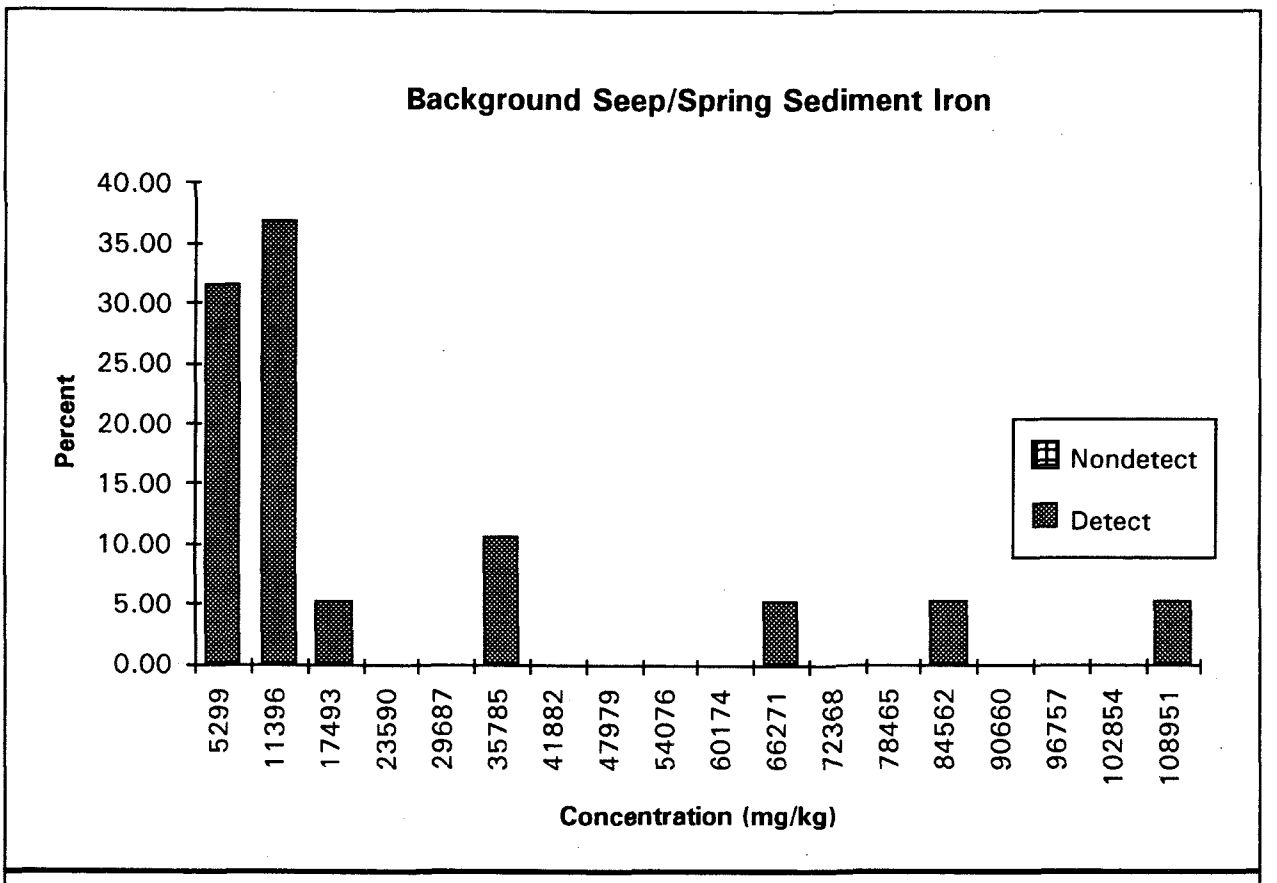

OU6 Pond Sediment Cesium
Percent
100.00
90.00
80.00
70.00
60.00
50.00
40.00
30.00
20.00
10.00
0.00
Nondetect
Detect
21
61
101
142
182
222
262
303
343
383
423
463
504
544
584
624
665
705
Concentration (mg/kg)

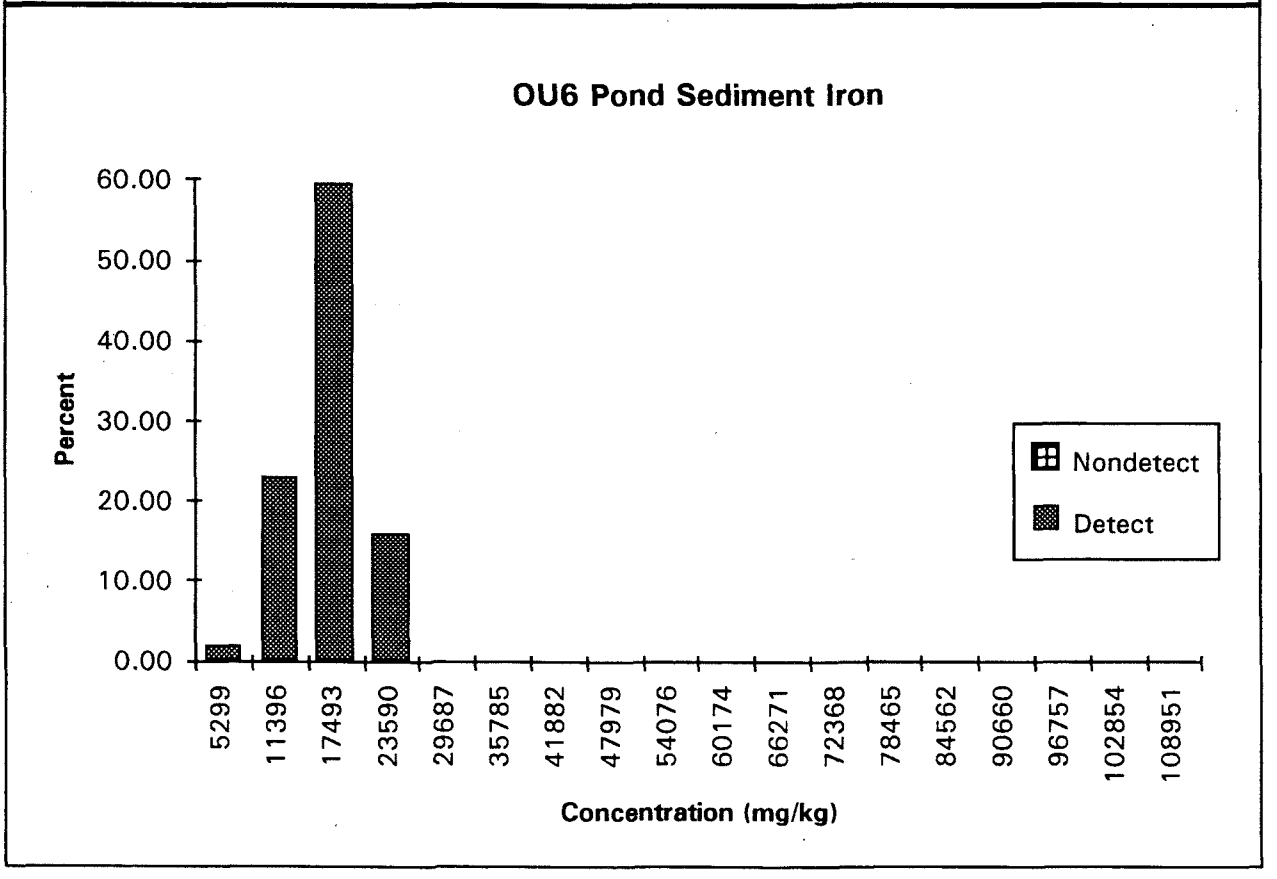

Background Seep/Spring Sediment Calcium
30.00
25.00
20.00
15.00
10.00
5.00
0.00
Percent
Nondetect
Detect
5683
9250
12817
16383
19950
23517
27083
30650
34217
37783
41350
44917
48483
52050
55617
59183
62750
66317
Concentration (mg/kg)

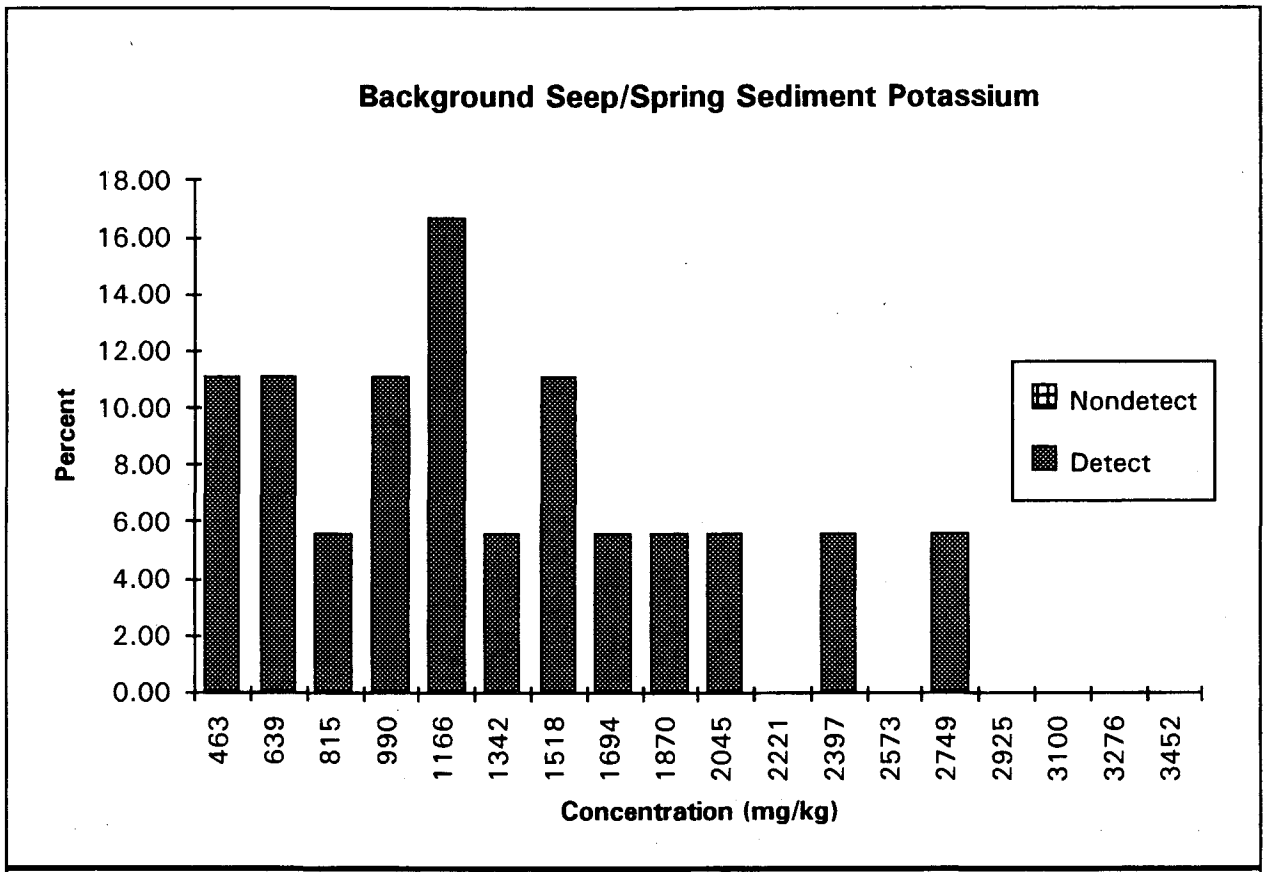

OU6 Pond Sediment Calcium
30.00
25.00
20.00
15.00
10.00
5.00
0.00
Percent
Nondetect
Detect
5683
9250
12817
16383
19950
23517
27083
30650
34217
37783
41350
44917
48483
52050
55617
59183
62750
66317
Concentration (mg/kg)

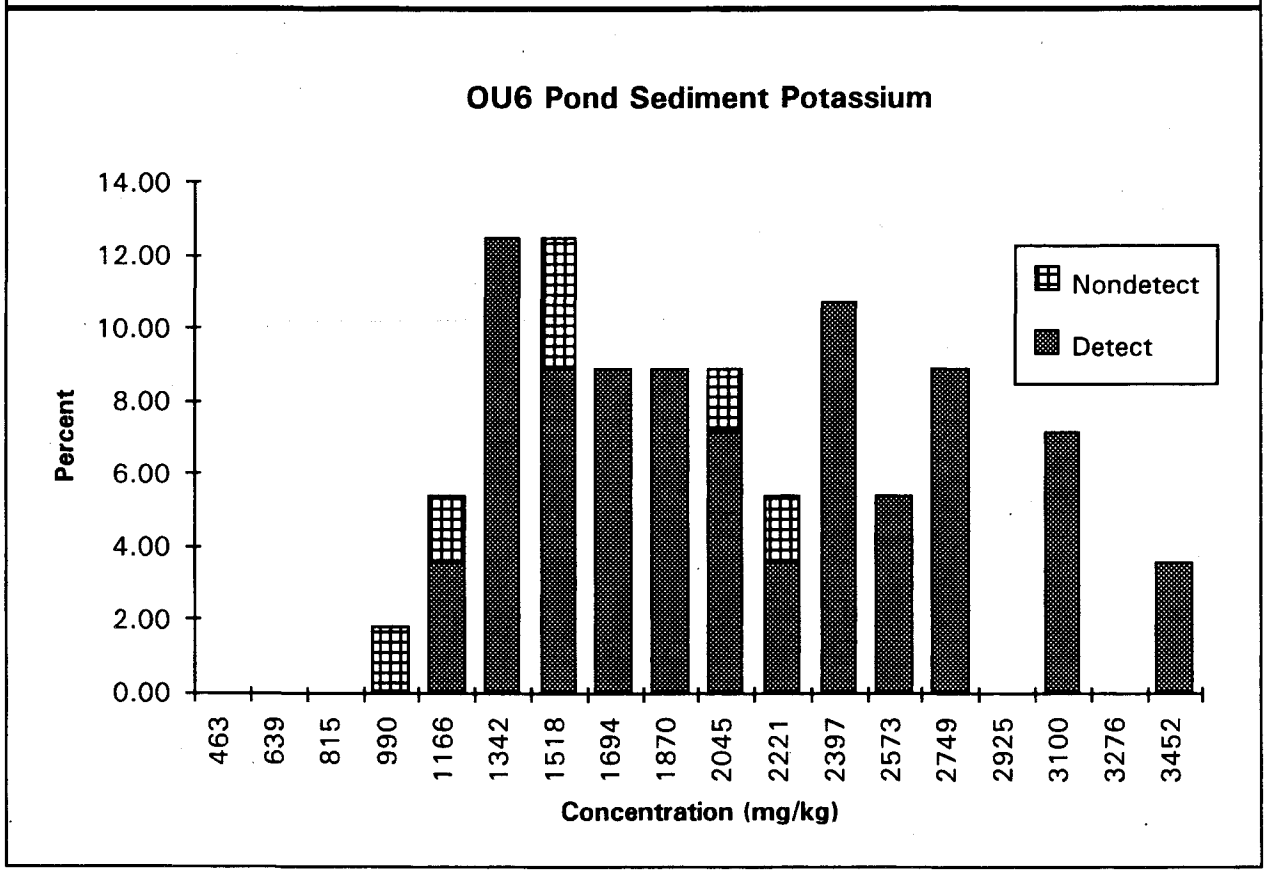

Background Seep/Spring Sediment Copper
60.00
50.00
40.00
30.00
20.00
10.00
0.00
Percent
13
22
31
41
50
60
69
79
88
98
107
117
126
135
145
154
164
173
Concentration (mg/kg)
Nondetect
Detect

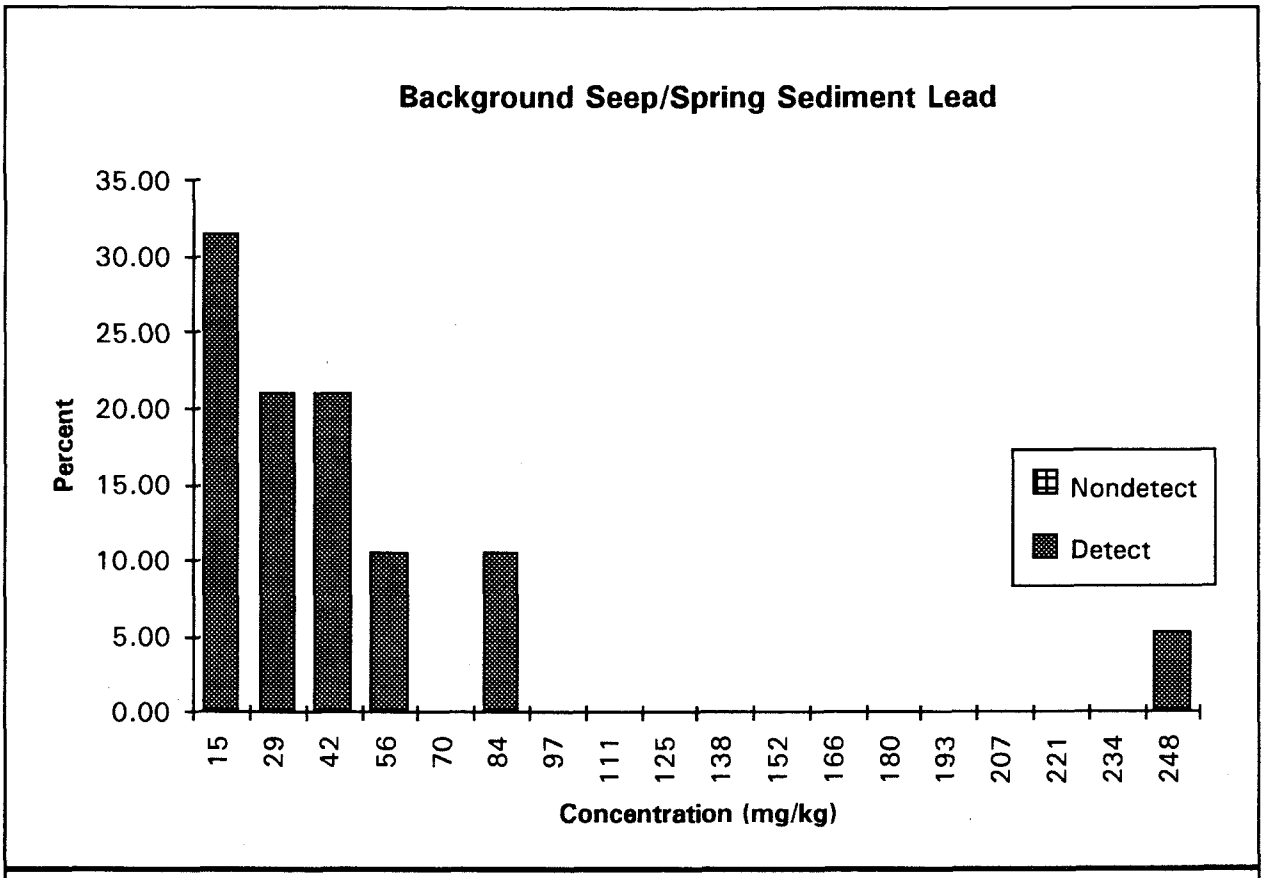

OU6 Pond Sediment Copper
50.00
45.00
40.00
35.00
30.00
25.00
20.00
15.00
10.00
5.00
0.00
Percent
13
22
31
41
50
60
69
79
88
98
107
117
126
135
145
154
164
173
Concentration (mg/kg)
Nondetect
Detect

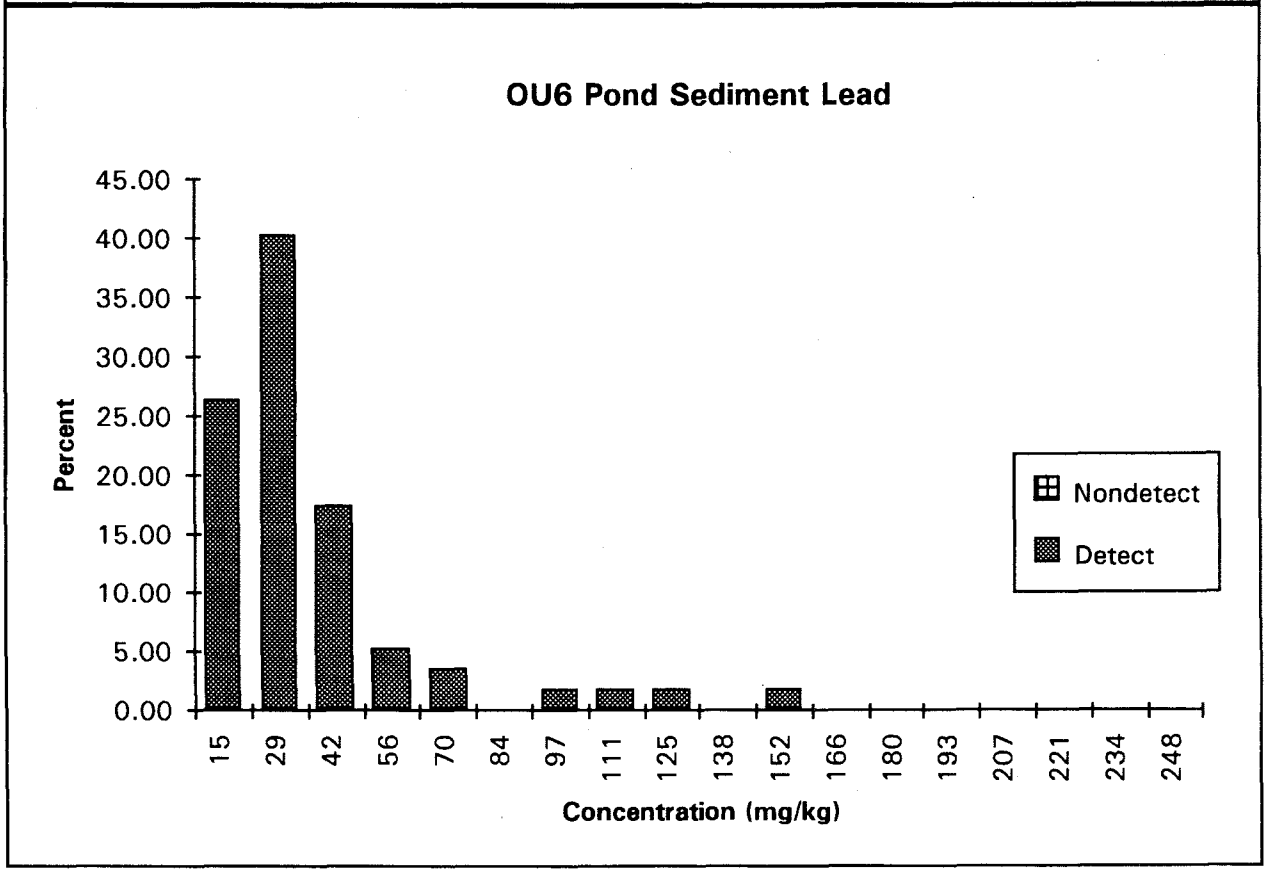

Background Seep/Spring Sediment Iron
Percent
40.00
35.00
30.00
25.00
20.00
15.00
10.00
5.00
0.00
5299
11396
17493
23590
29687
35785
41882
47979
54076
60174
66271
72368
78465
84562
90660
96757
102854
108951
Concentration (mg/kg)
Nondetect
Detect

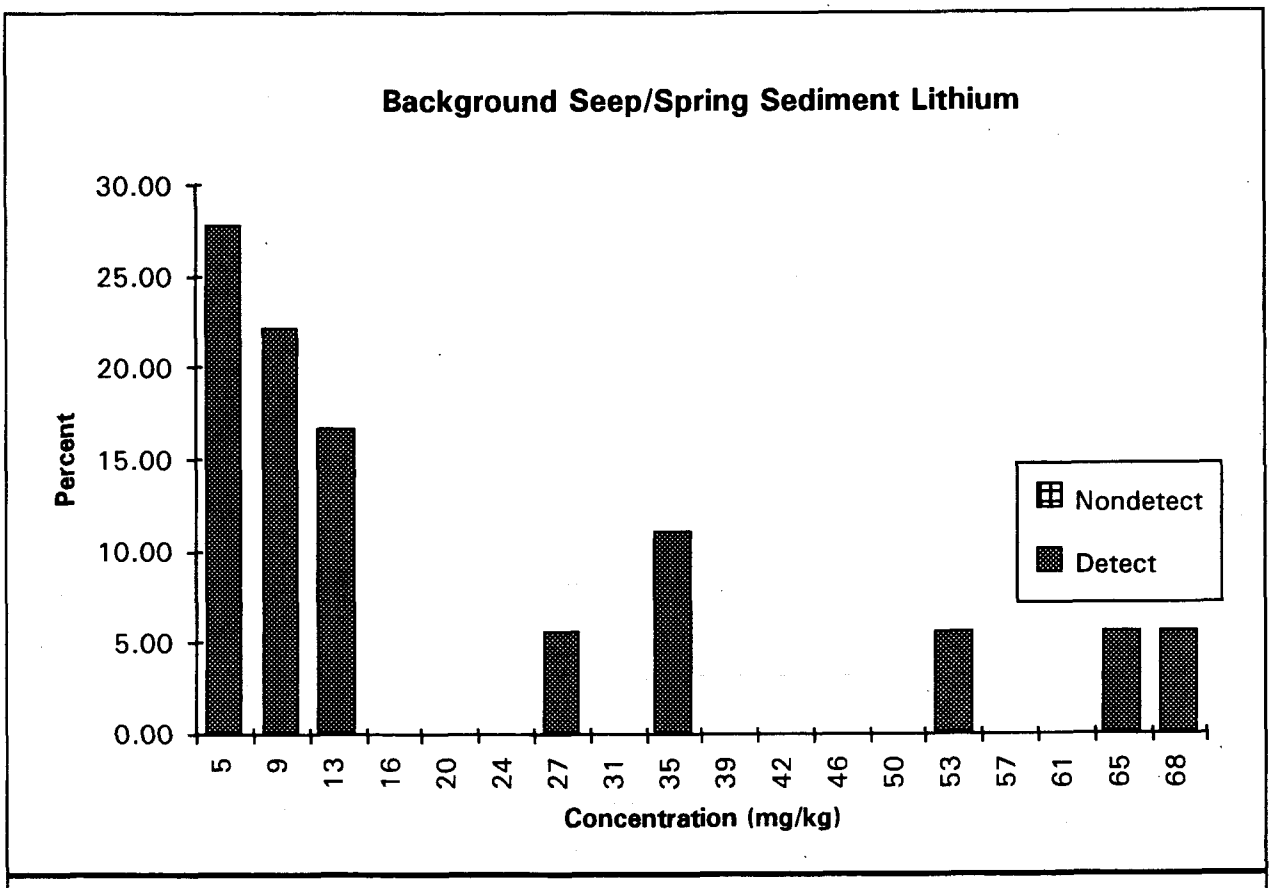

OU6 Pond Sediment Iron
Percent
60.00
50.00
40.00
30.00
20.00
10.00
0.00
5299
11396
17493
23590
29687
35785
41882
47979
54076
60174
66271
72368
78465
84562
90660
96757
102854
108951
Concentration (mg/kg)
Nondetect
Detect

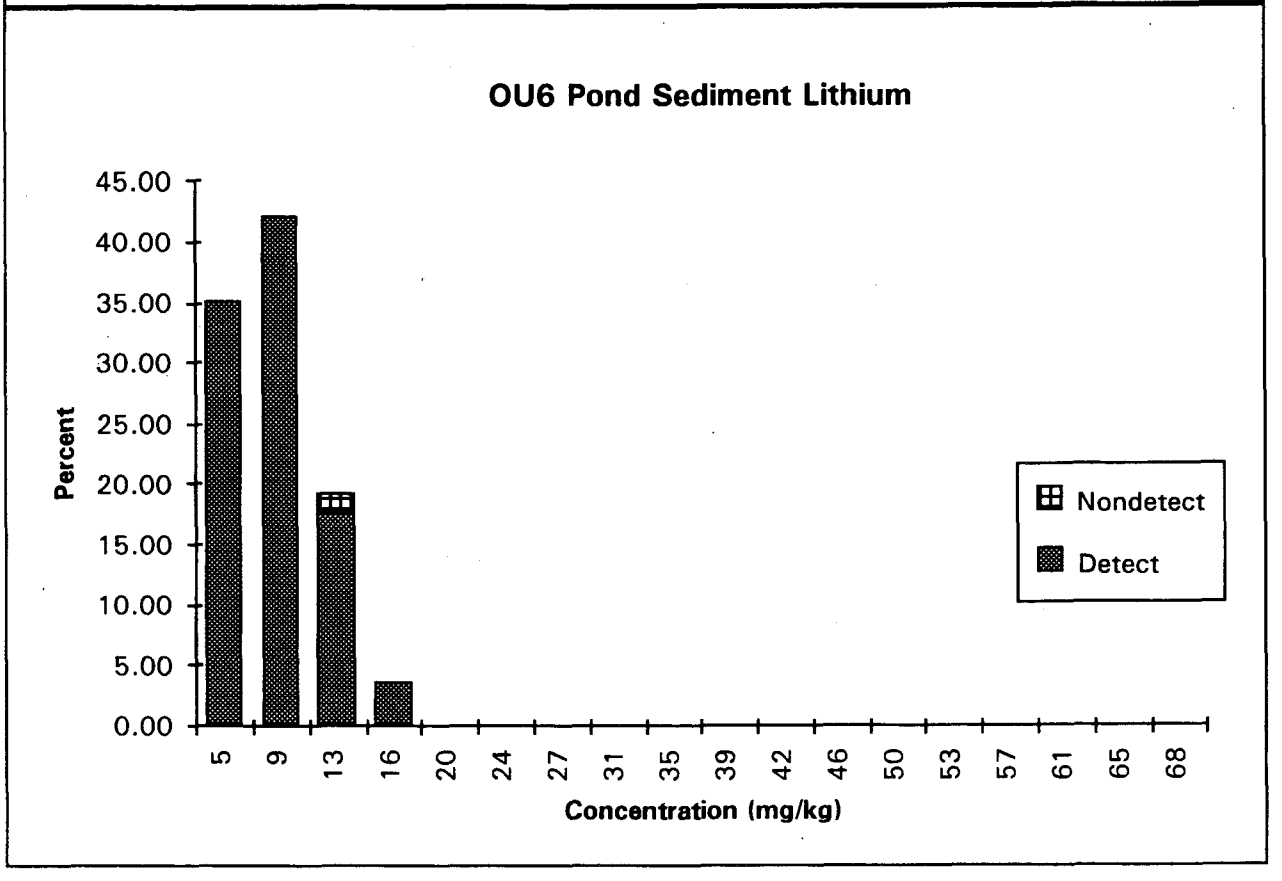

Background Seep/Spring Sediment Potassium
Percent
18.00
16.00
14.00
12.00
10.00
8.00
6.00
4.00
2.00
0.00
463
639
815
990
1166
1342
1518
1694
1870
2045
2221
2397
2573
2749
2925
3100
3276
3452
Concentration (mg/kg)
Nondetect
Detect

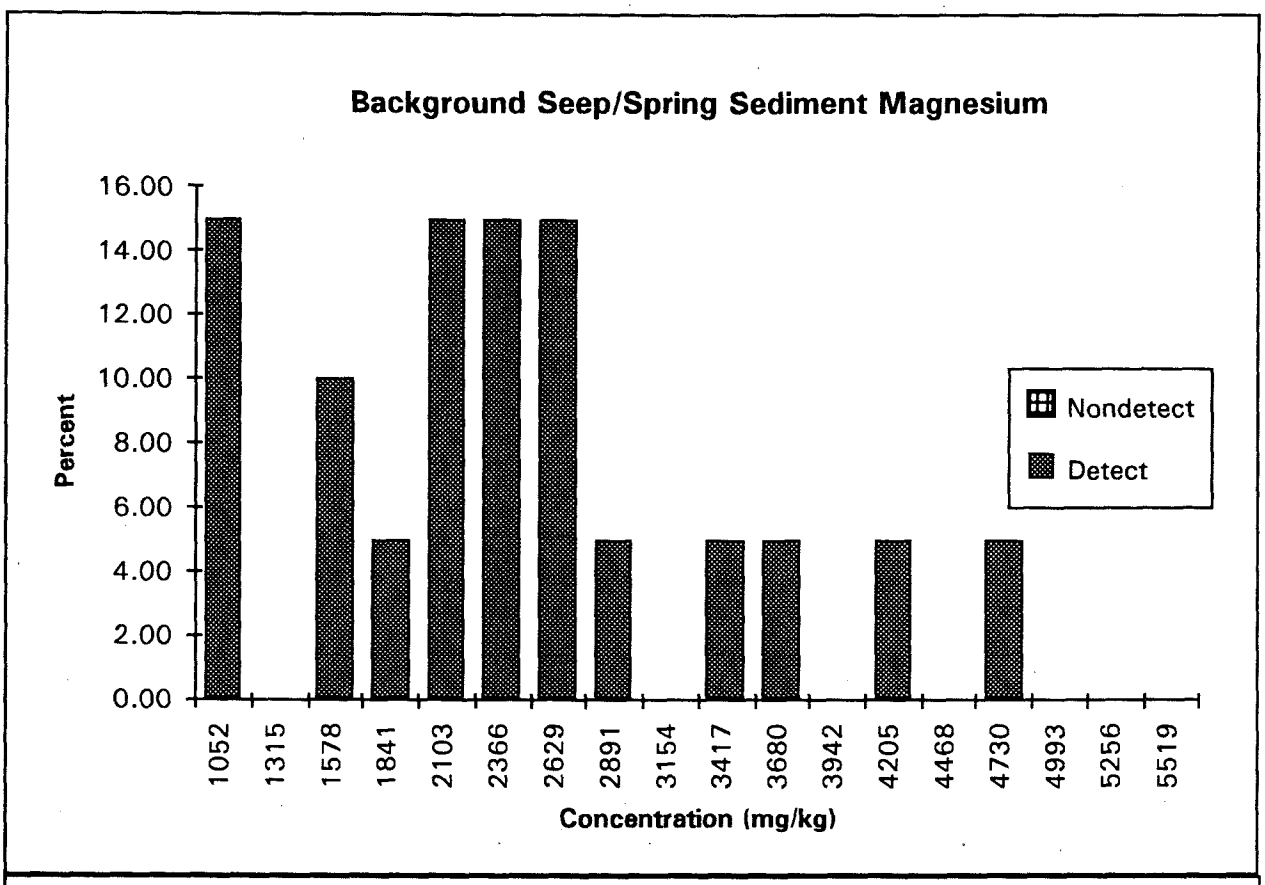

OU6 Pond Sediment Potassium
Percent
14.00
12.00
10.00
8.00
6.00
4.00
2.00
0.00
463
639
815
990
1166
1342
1518
1694
1870
2045
2221
2397
2573
2749
2925
3100
3276
3452
Concentration (mg/kg)
Nondetect
Detect

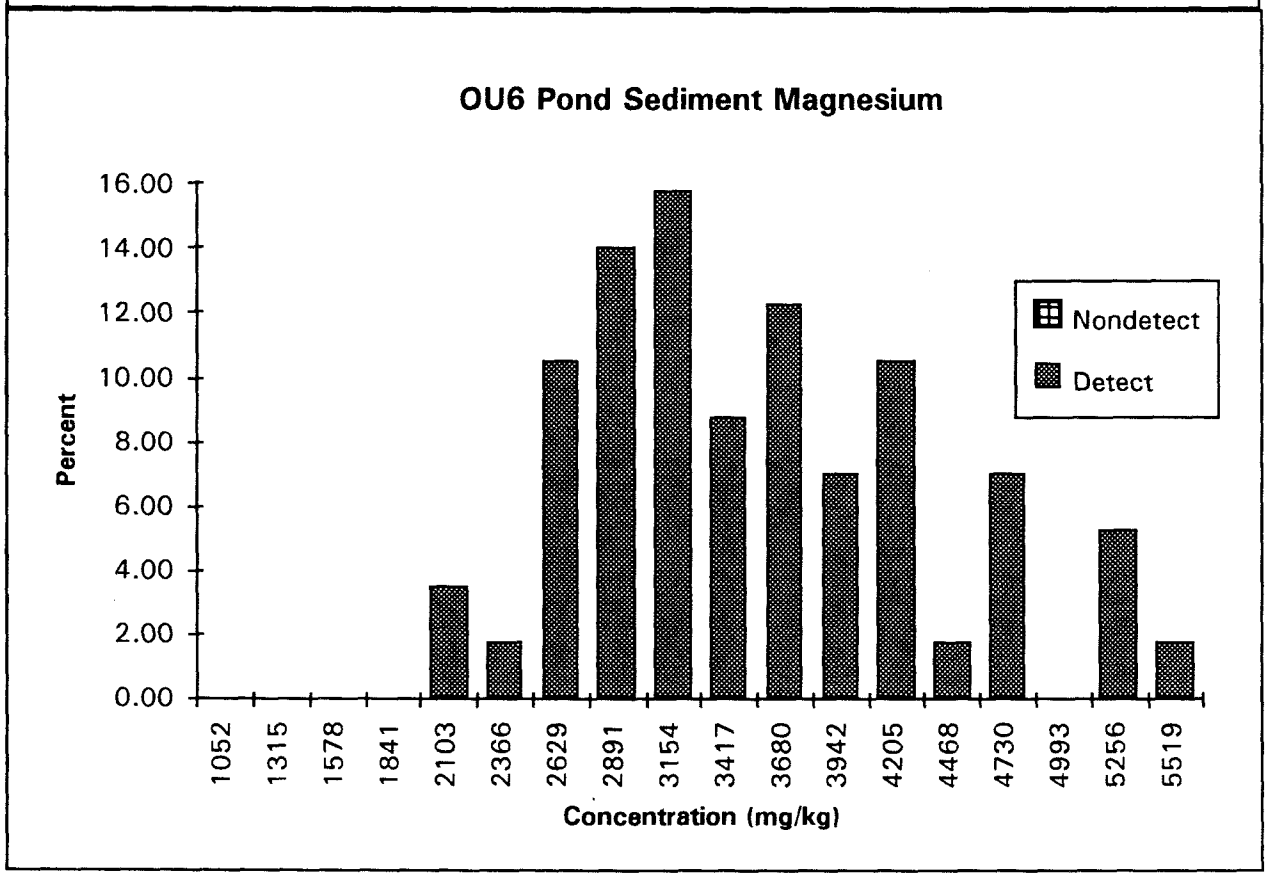

Background Seep/Spring Sediment Lead
35.00
30.00
25.00
20.00
15.00
10.00
5.00
0.00
Percent
15
29
42
56
70
84
97
111
125
138
152
166
180
193
207
221
234
248
Concentration (mg/kg)
Nondetect
Detect

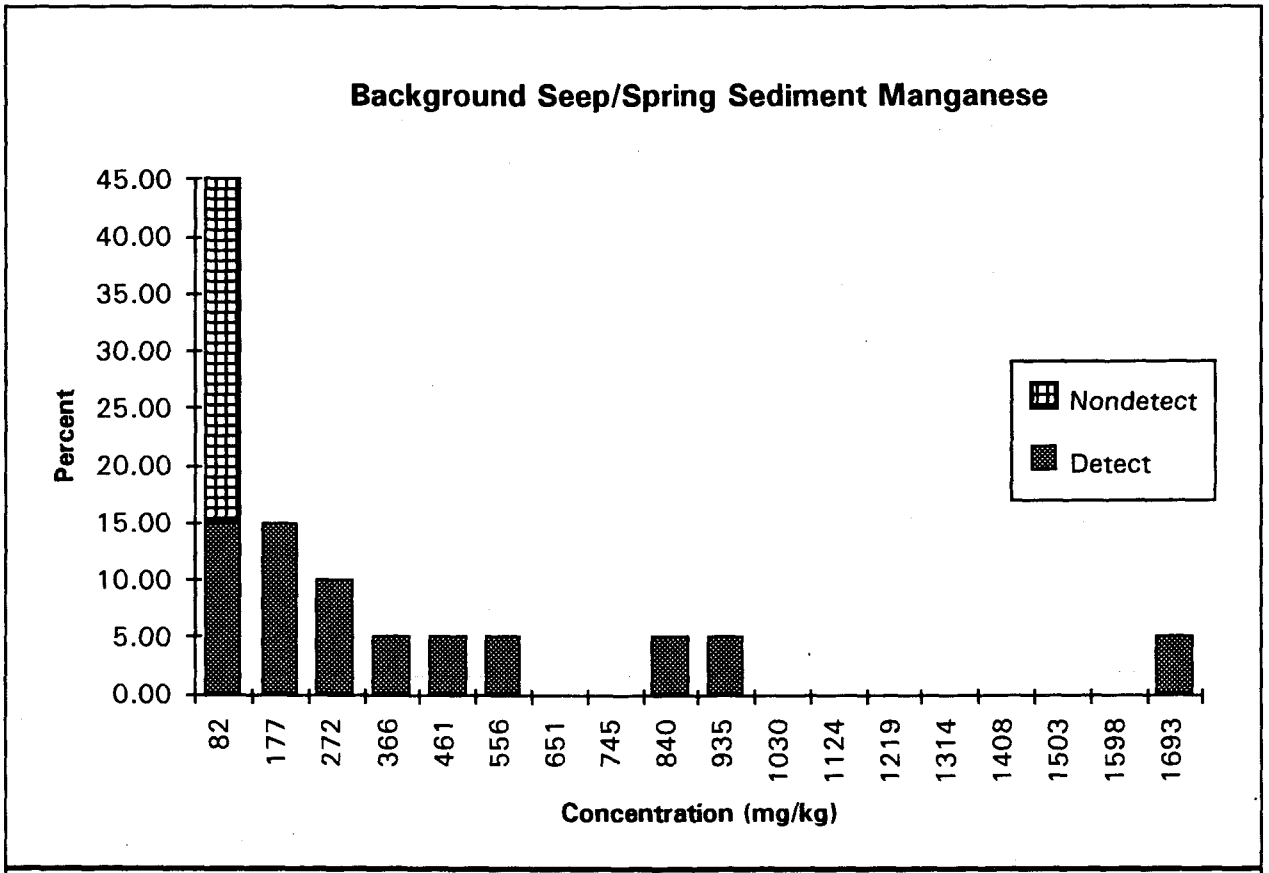

OU6 Pond Sediment Lead
45.00
40.00
35.00
30.00
25.00
20.00
15.00
10.00
5.00
0.00
Percent
15
29
42
56
70
84
97
111
125
138
152
166
180
193
207
221
234
248
Concentration (mg/kg)
Nondetect
Detect

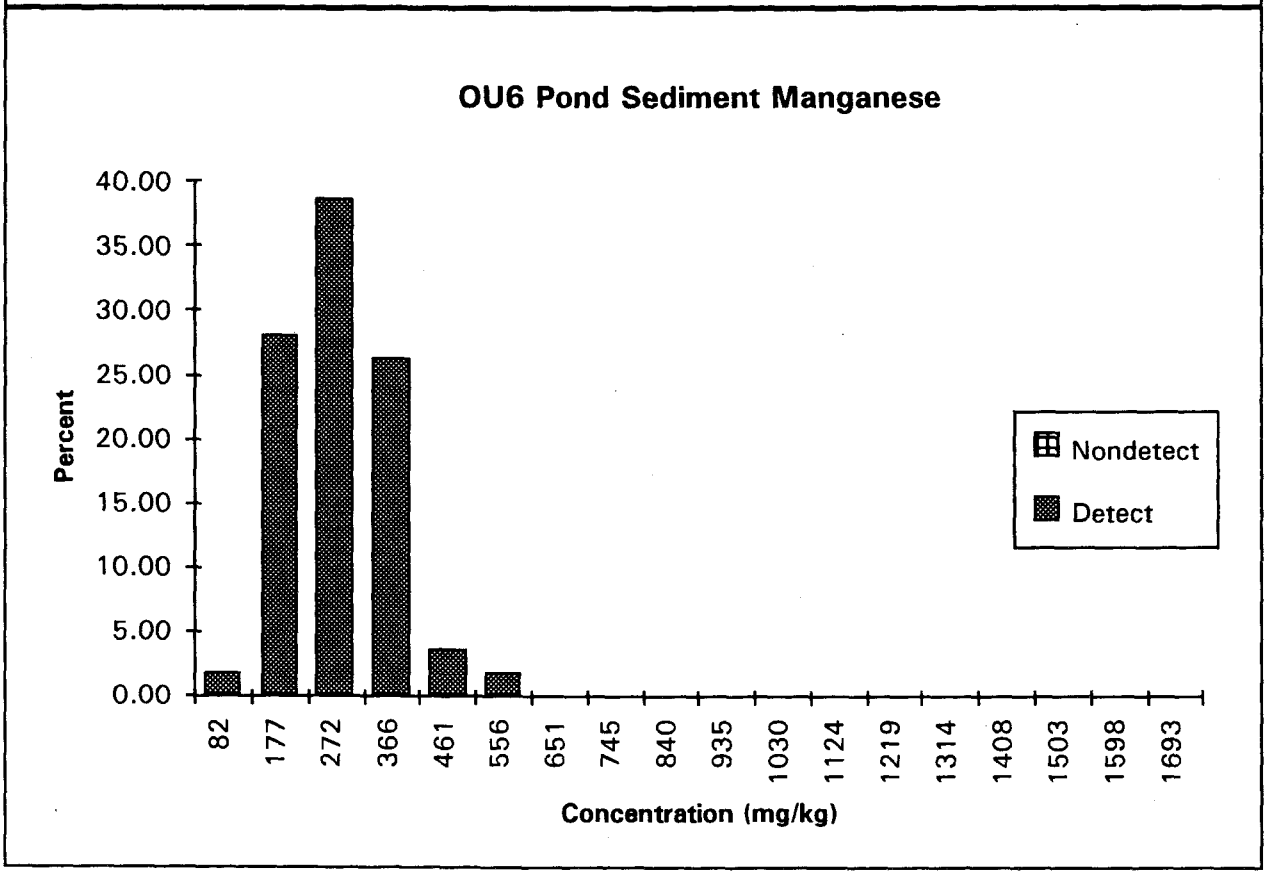

Background Seep/Spring Sediment Lithium
Percent
30.00
25.00
20.00
15.00
10.00
5.00
0.00
5
9
13
16
20
24
27
31
35
39
42
46
50
53
57
61
65
68
Concentration (mg/kg)
Nondetect
Detect

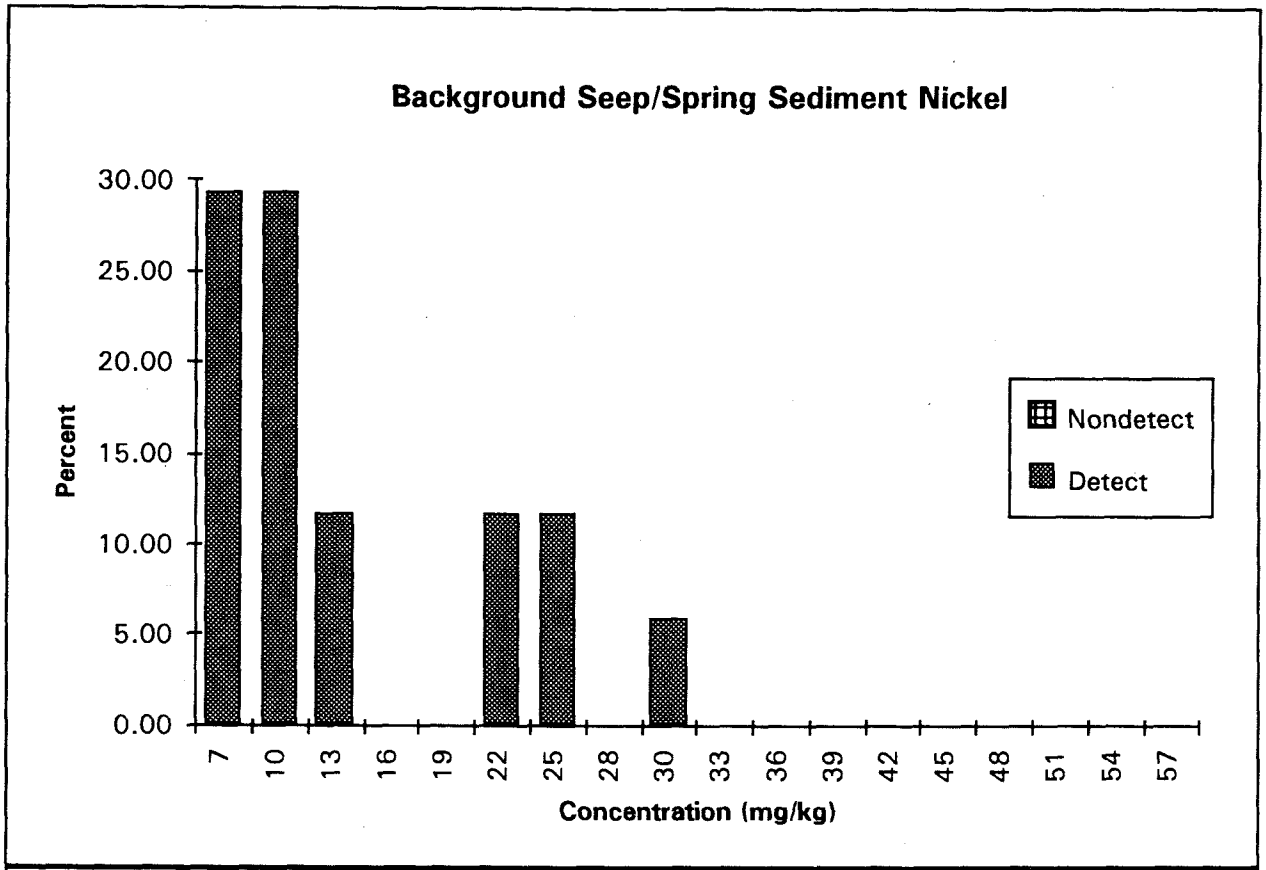

OU6 Pond Sediment Lithium
Percent
45.00
40.00
35.00
30.00
25.00
20.00
15.00
10.00
5.00
0.00
5
9
13
16
20
24
27
31
35
39
42
46
50
53
57
61
65
68
Concentration (mg/kg)
Nondetect
Detect

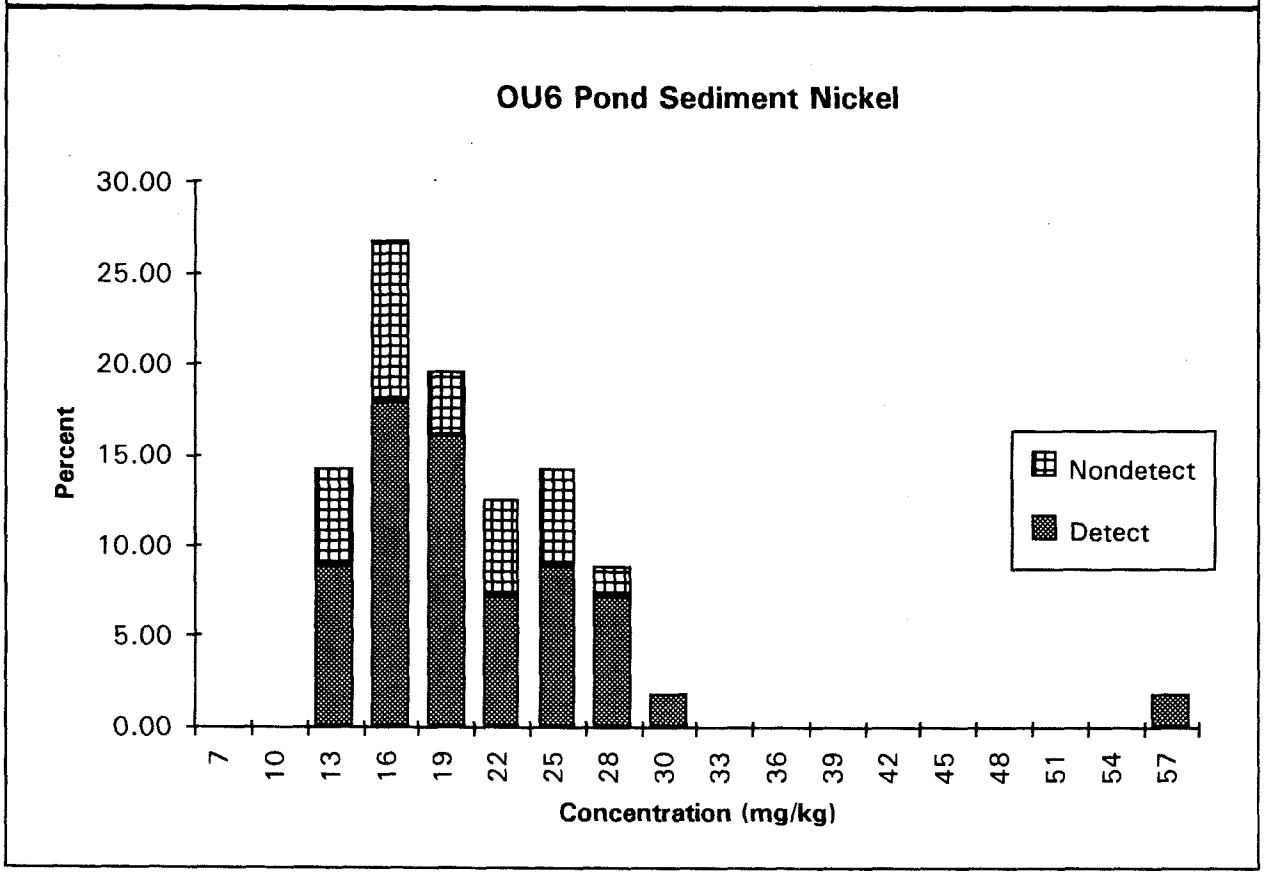

Background Seep/Spring Sediment Magnesium
16.00
14.00
12.00
10.00
8.00
6.00
4.00
2.00
0.00
Percent
Nondetect
Detect
1052
1315
1578
1841
2103
2366
2629
2891
3154
3417
3680
3942
4205
4468
4730
4993
5256
5519
Concentration (mg/kg)

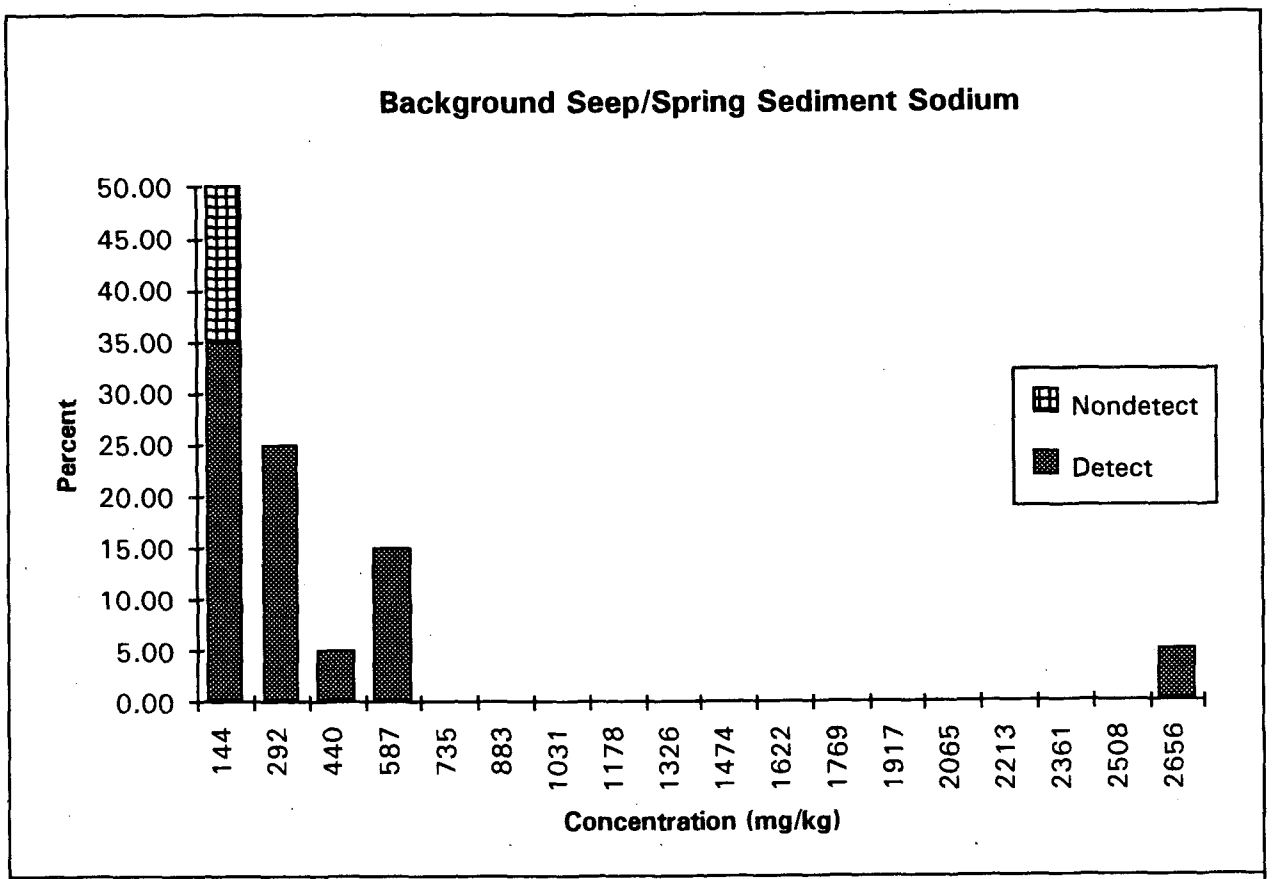

OU6 Pond Sediment Magnesium
16.00
14.00
12.00
10.00
8.00
6.00
4.00
2.00
0.00
Percent
Nondetect
Detect
1052
1315
1578
1841
2103
2366
2629
2891
3154
3417
3680
3942
4205
4468
4730
4993
5256
5519
Concentration (mg/kg)

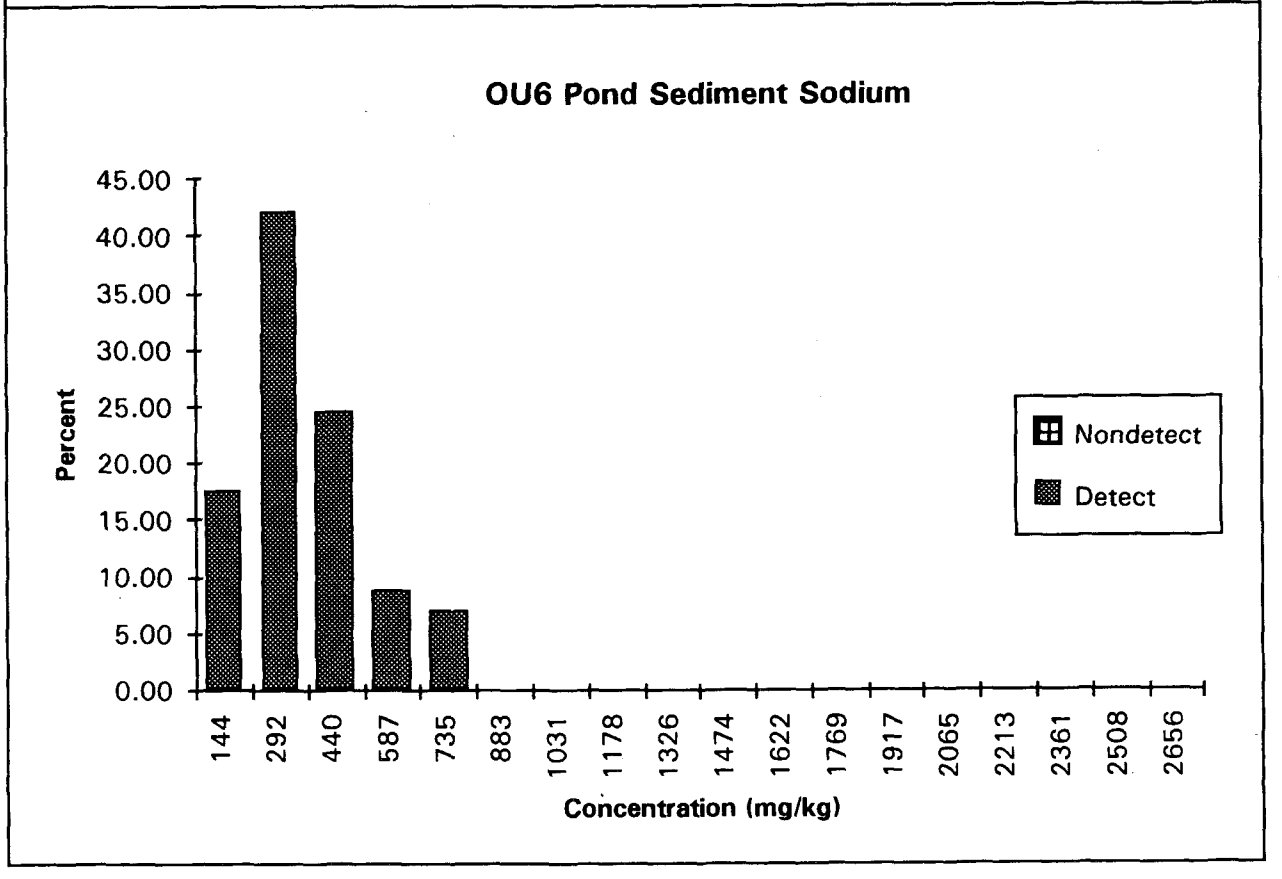

Background Seep/Spring Sediment Manganese
Percent
45.00
40.00
35.00
30.00
25.00
20.00
15.00
10.00
5.00
0.00
82
177
272
366
461
556
651
745
840
935
1030
1124
1219
1314
1408
1503
1598
1693
Concentration (mg/kg)
Nondetect
Detect

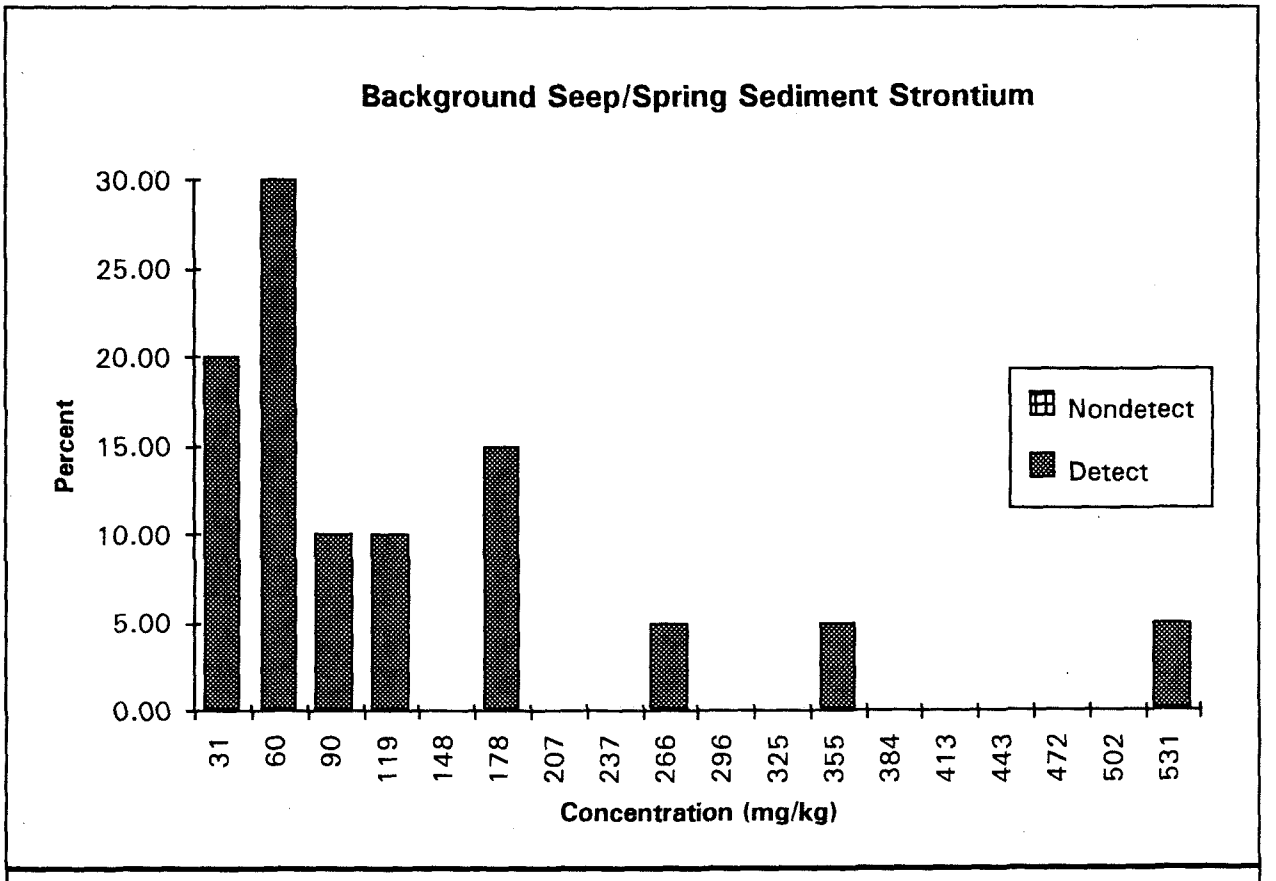

OU6 Pond Sediment Manganese
Percent
40.00
35.00
30.00
25.00
20.00
15.00
10.00
5.00
0.00
82
177
272
366
461
556
651
745
840
935
1030
1124
1219
1314
1408
1503
1598
1693
Concentration (mg/kg)
Nondetect
Detect

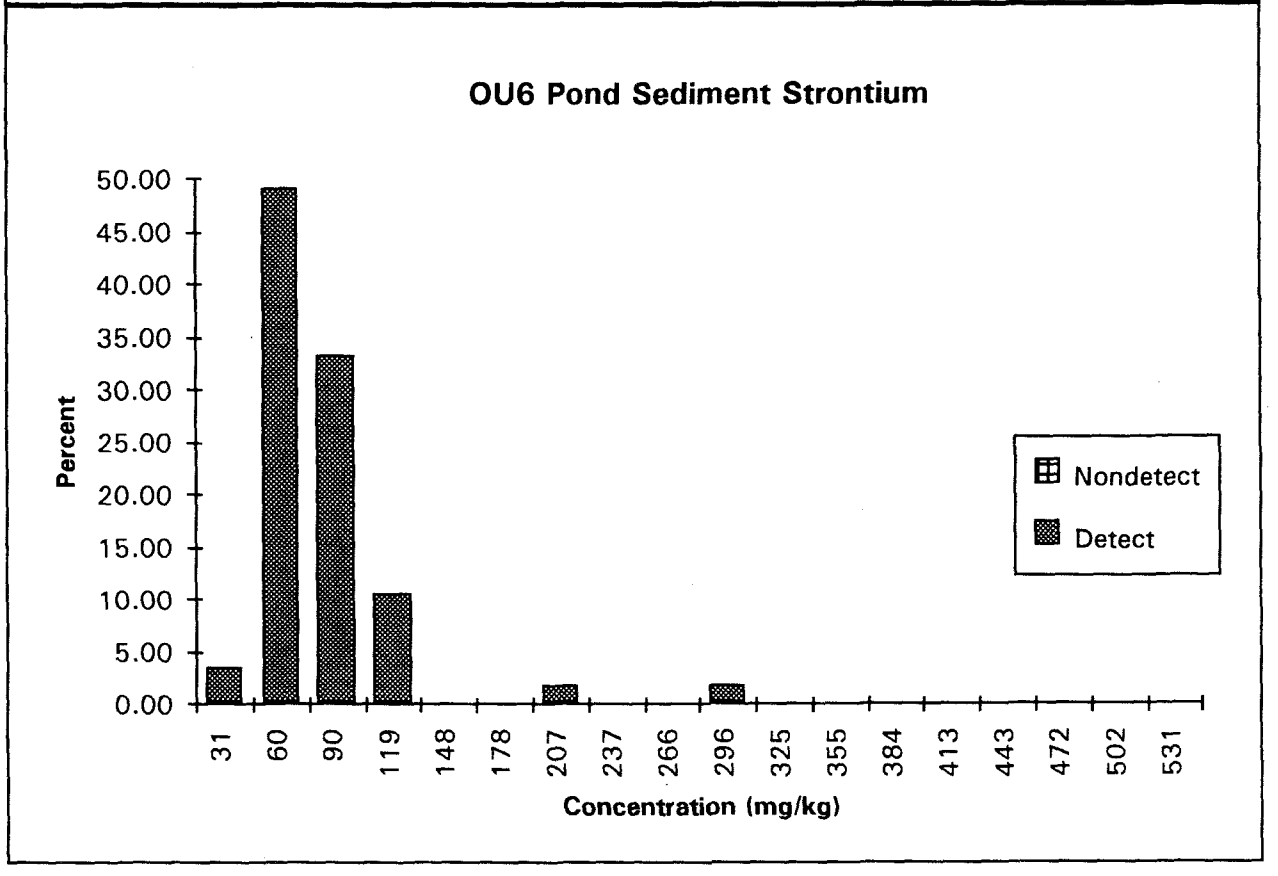

Background Seep/Spring Sediment Nickel
30.00
25.00
20.00
15.00
10.00
5.00
0.00
Percent
7
10
13
16
19
22
25
28
30
33
36
39
42
45
48
51
54
57
Concentration (mg/kg)
Nondetect
Detect

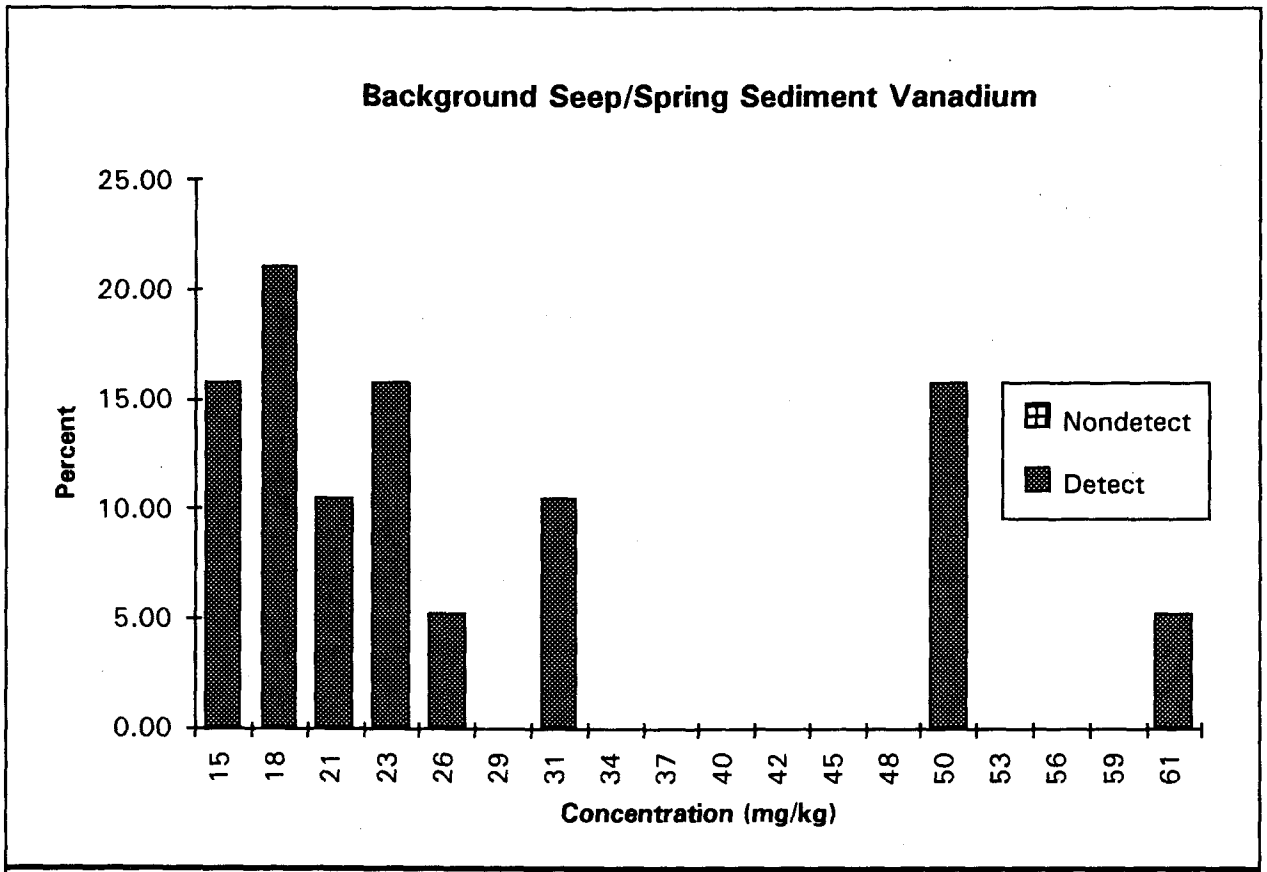

OU6 Pond Sediment Nickel
30.00
25.00
20.00
15.00
10.00
5.00
0.00
Percent
7
10
13
16
19
22
25
28
30
33
36
39
42
45
48
51
54
57
Concentration (mg/kg)
Nondetect
Detect

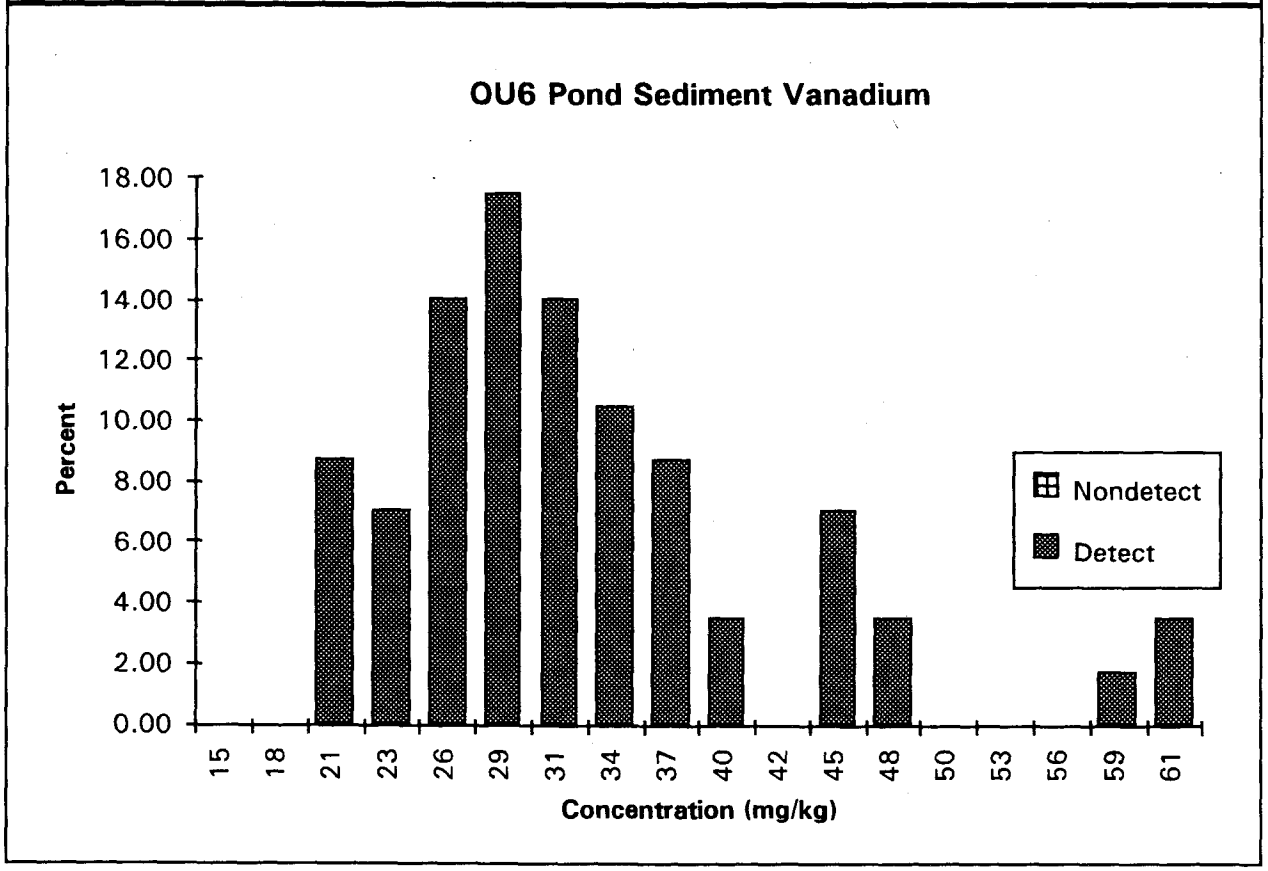

Background Seep/Spring Sediment Sodium
Percent
50.00
45.00
40.00
35.00
30.00
25.00
20.00
15.00
10.00
5.00
0.00
144
292
440
587
735
883
1031
1178
1326
1474
1622
1769
1917
2065
2213
2361
2508
2656
Concentration (mg/kg)
Nondetect
Detect

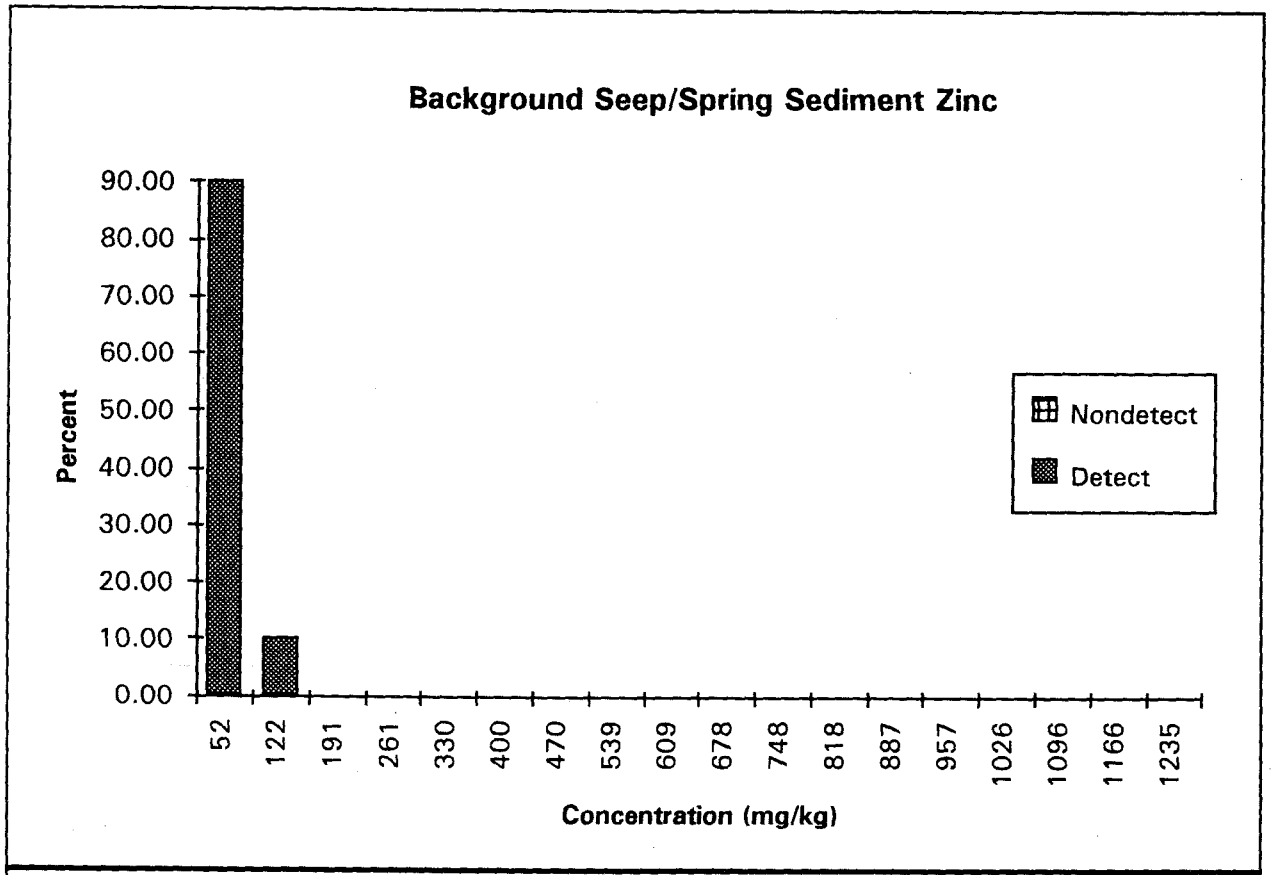

OU6 Pond Sediment Sodium
Percent
45.00
40.00
35.00
30.00
25.00
20.00
15.00
10.00
5.00
0.00
144
292
440
587
735
883
1031
1178
1326
1474
1622
1769
1917
2065
2213
2361
2508
2656
Concentration (mg/kg)
Nondetect
Detect

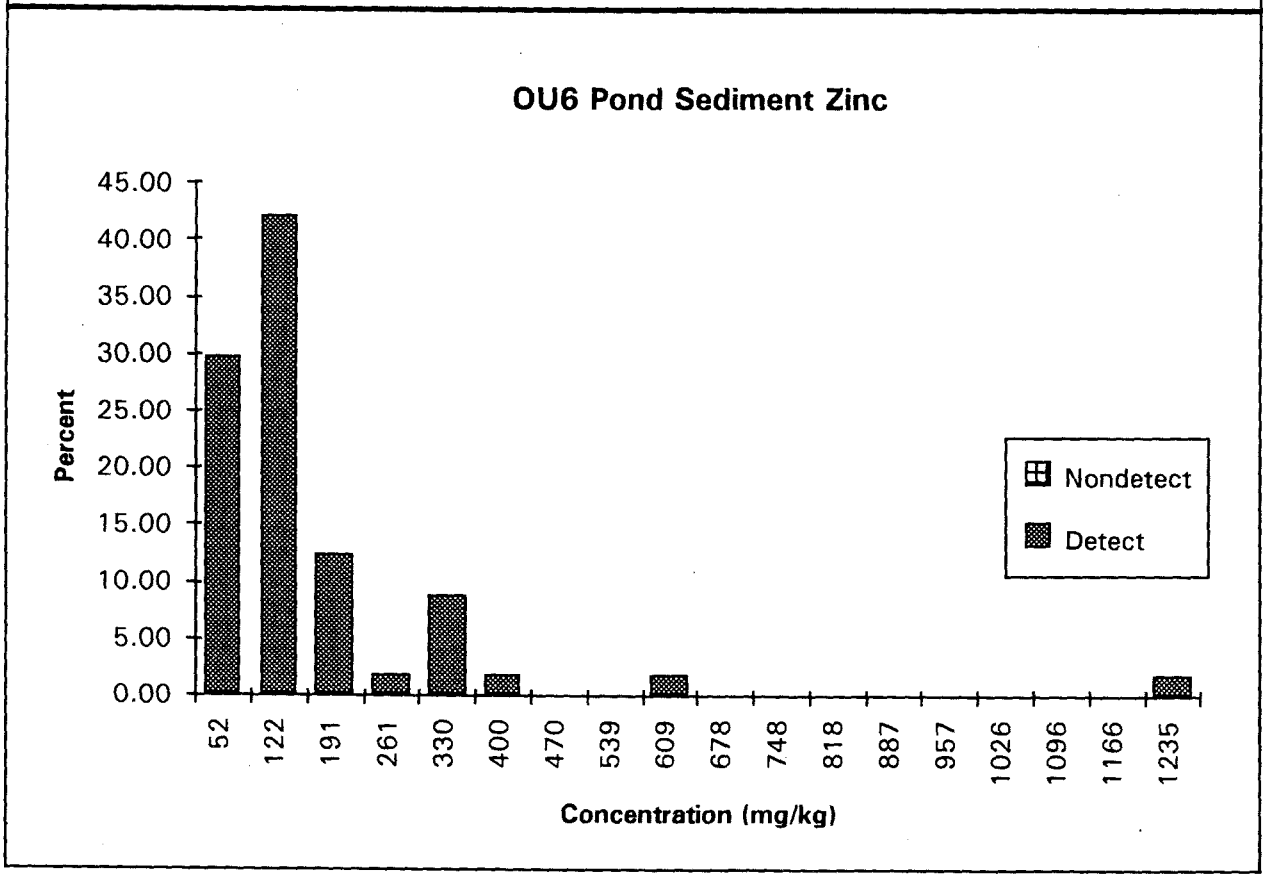

Background Seep/Spring Sediment Strontium
30.00
25.00
20.00
15.00
10.00
5.00
0.00
Percent
Nondetect
Detect
31
60
90
119
148
178
207
237
266
296
325
355
384
413
443
472
502
531
Concentration (mg/kg)

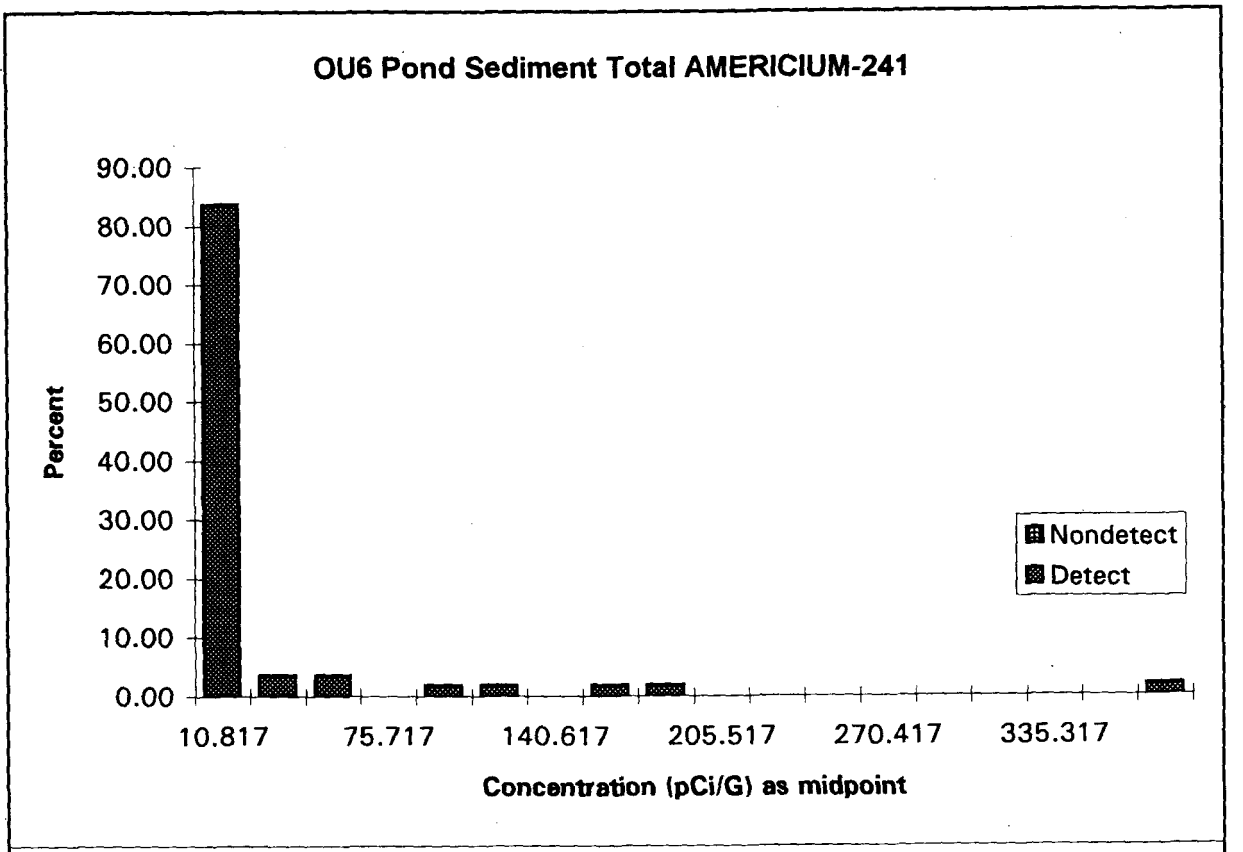

OU6 Pond Sediment Strontium
50.00
45.00
40.00
35.00
30.00
25.00
20.00
15.00
10.00
5.00
0.00
Percent
Nondetect
Detect
31
60
90
119
148
178
207
237
266
296
325
355
384
413
443
472
502
531
Concentration (mg/kg)

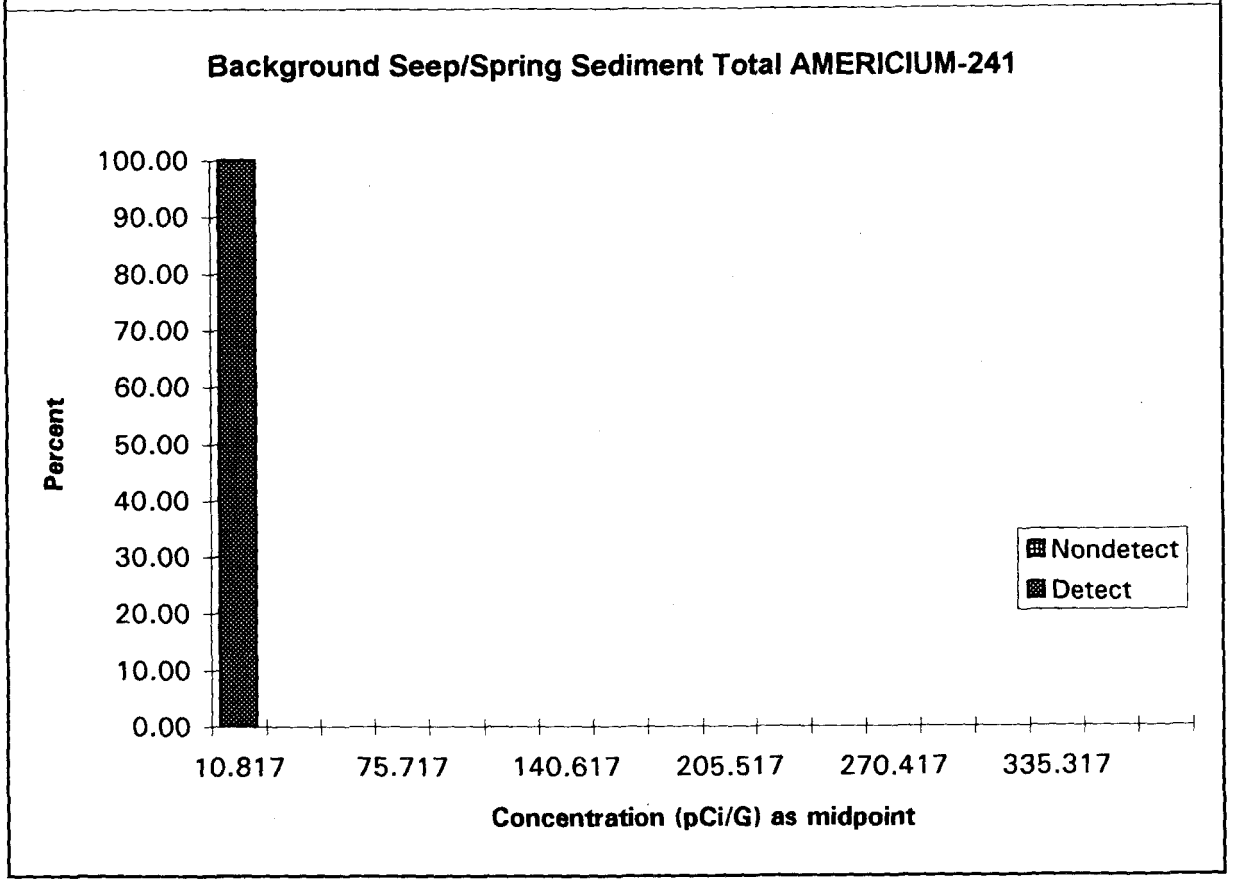

Background Seep/Spring Sediment Vanadium
25.00
20.00
15.00
10.00
5.00
0.00
Percent
15
18
21
23
26
29
31
34
37
40
42
45
48
50
53
56
59
61
Concentration (mg/kg)
Nondetect
Detect

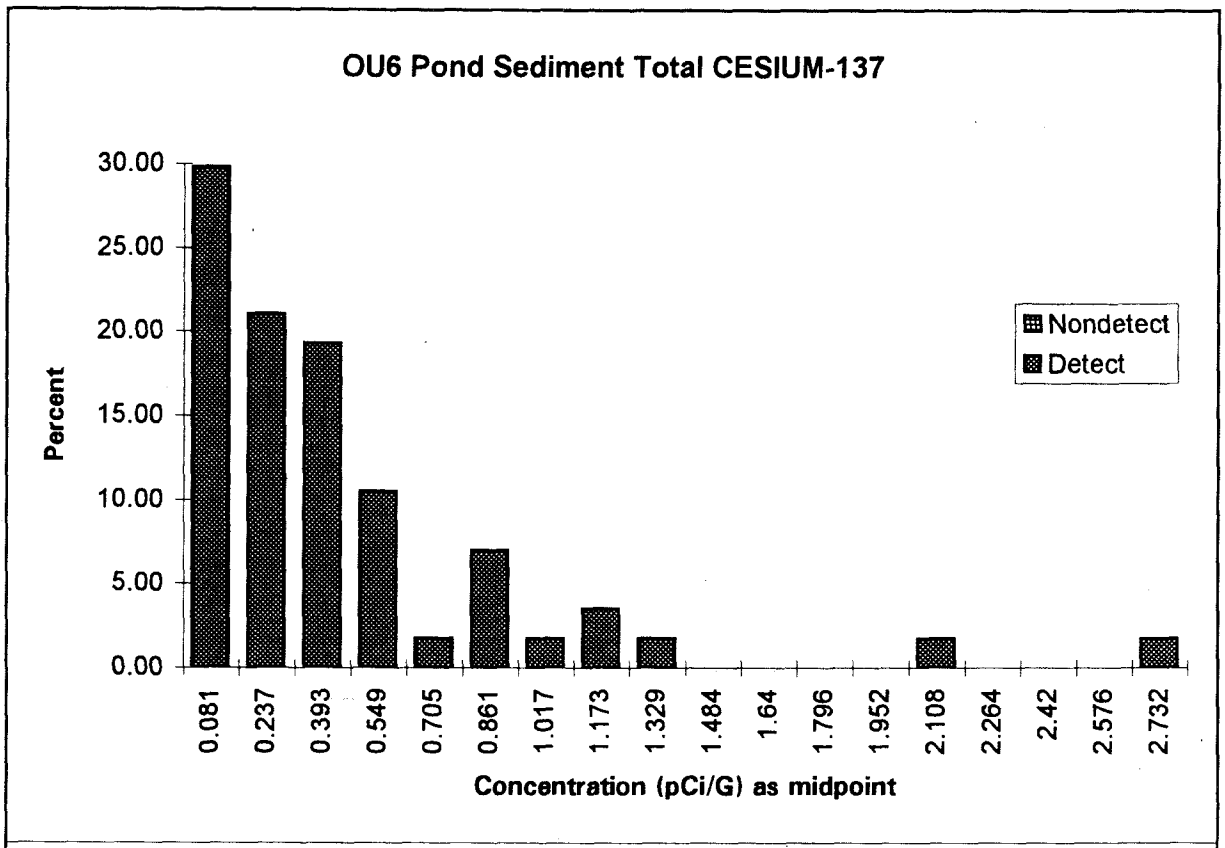

OU6 Pond Sediment Vanadium
18.00
16.00
14.00
12.00
10.00
8.00
6.00
4.00
2.00
0.00
Percent
15
18
21
23
26
29
31
34
37
40
42
45
48
50
53
56
59
61
Concentration (mg/kg)
Nondetect
Detect

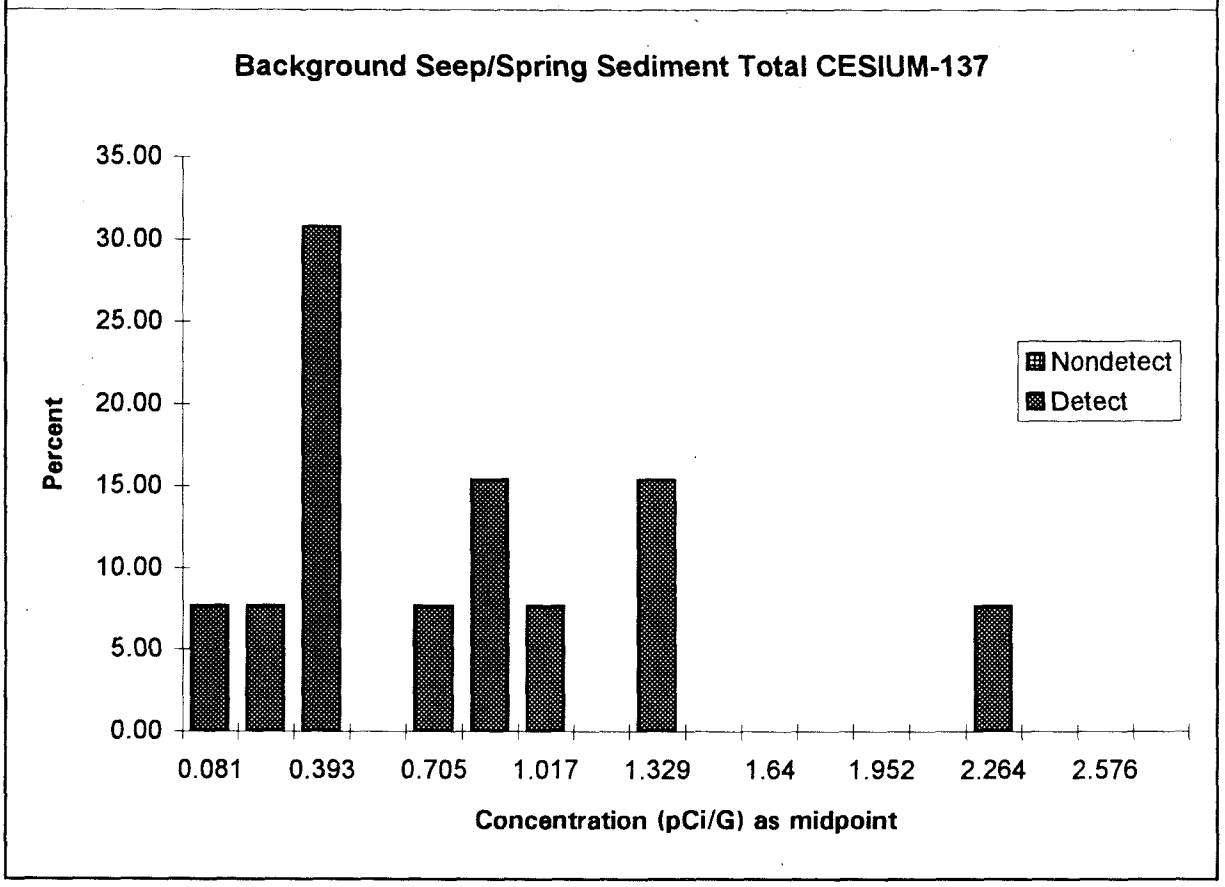

Background Seep/Spring Sediment Zinc
90.00
80.00
70.00
60.00
50.00
40.00
30.00
20.00
10.00
0.00
Percent
52
122
191
261
330
400
470
539
609
678
748
818
887
957
1026
1096
1166
1235
Concentration (mg/kg)
Nondetect
Detect

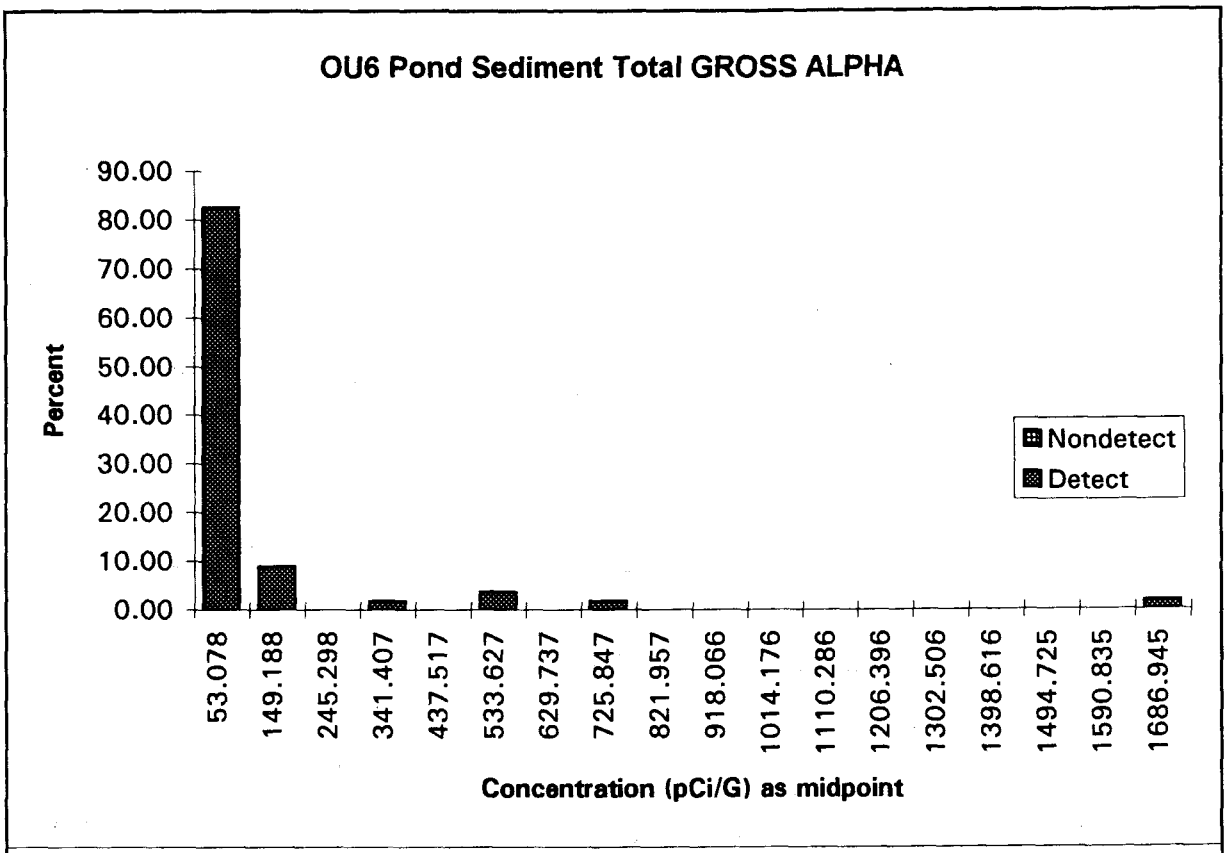

OU6 Pond Sediment Zinc
45.00
40.00
35.00
30.00
25.00
20.00
15.00
10.00
5.00
0.00
Percent
52
122
191
261
330
400
470
539
609
678
748
818
887
957
1026
1096
1166
1235
Concentration (mg/kg)
Nondetect
Detect

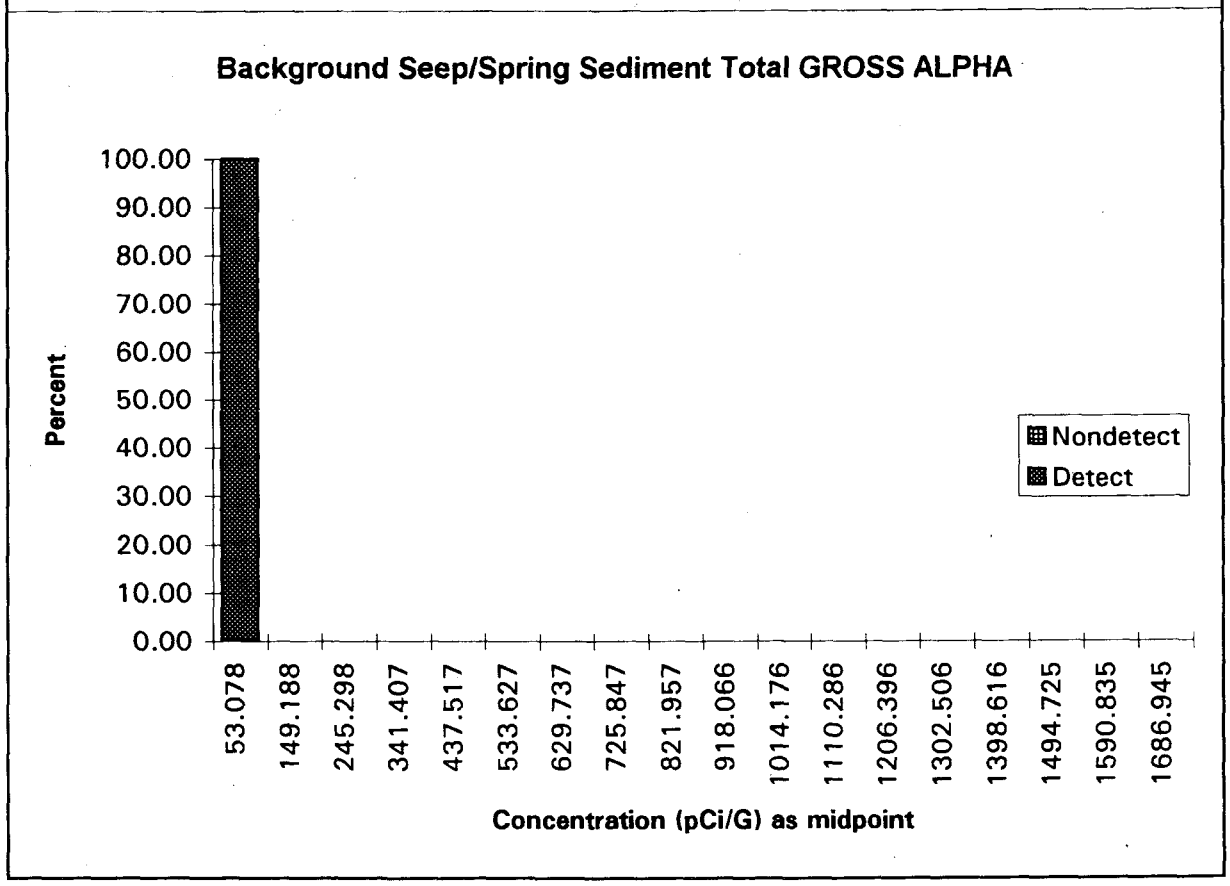

OU6 Pond Sediment Total AMERICIUM-241
90.00
80.00
70.00
60.00
50.00
40.00
30.00
20.00
10.00
0.00
Percent
Nondetect
Detect
10.817
75.717
140.617
205.517
270.417
335.317
Concentration (pCi/G) as midpoint

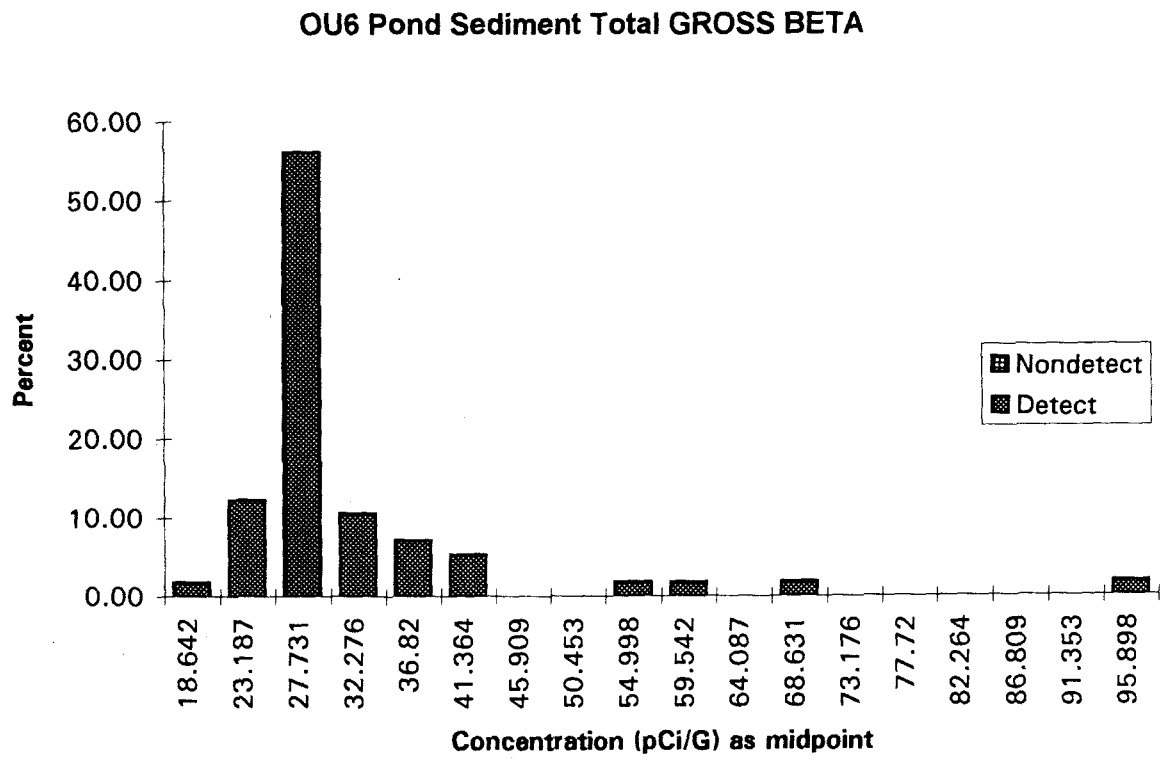

Background Seep/Spring Sediment Total AMERICIUM-241
100.00
90.00
80.00
70.00
60.00
50.00
40.00
30.00
20.00
10.00
0.00
Percent
Nondetect
Detect
10.817
75.717
140.617
205.517
270.417
335.317
Concentration (pCi/G) as midpoint

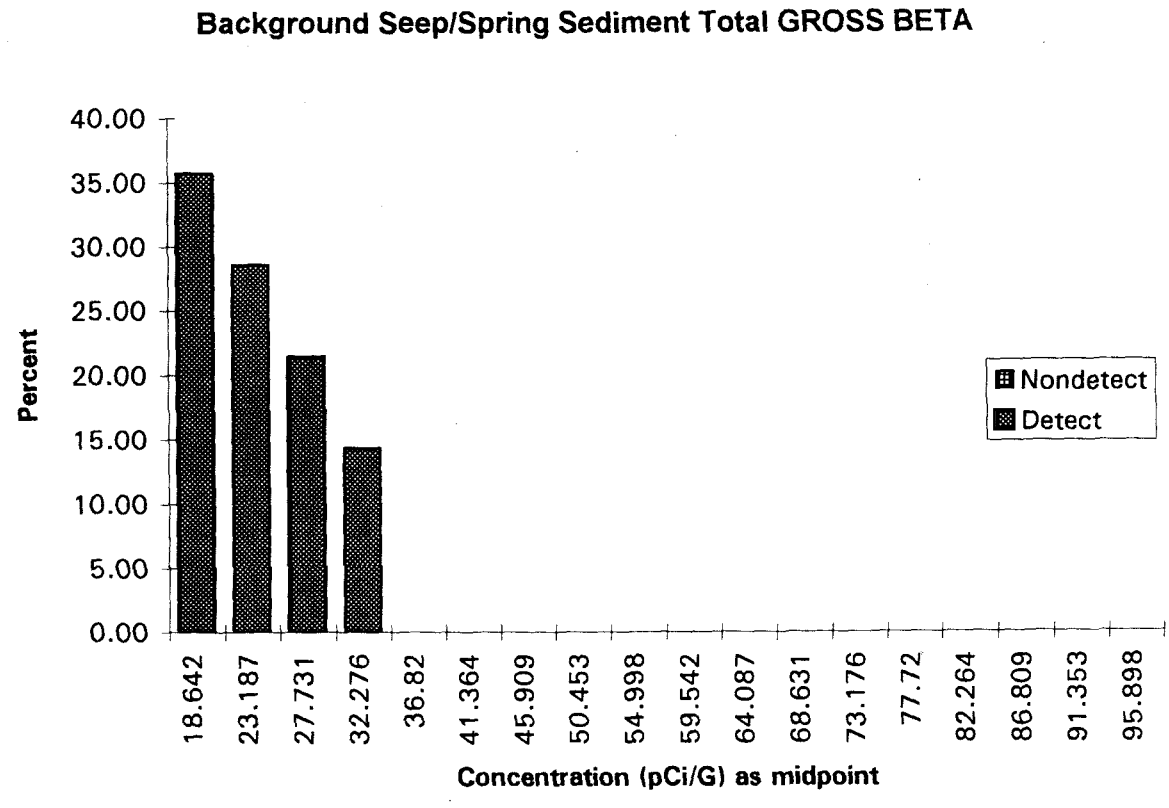

OU6 Pond Sediment Total CESIUM-137
30.00
25.00
20.00
15.00
10.00
5.00
0.00
Percent
Nondetect
Detect
0.081
0.237
0.393
0.549
0.705
0.861
1.017
1.173
1.329
1.484
1.64
1.796
1.952
2.108
2.264
2.42
2.576
2.732
Concentration (pCi/G) as midpoint

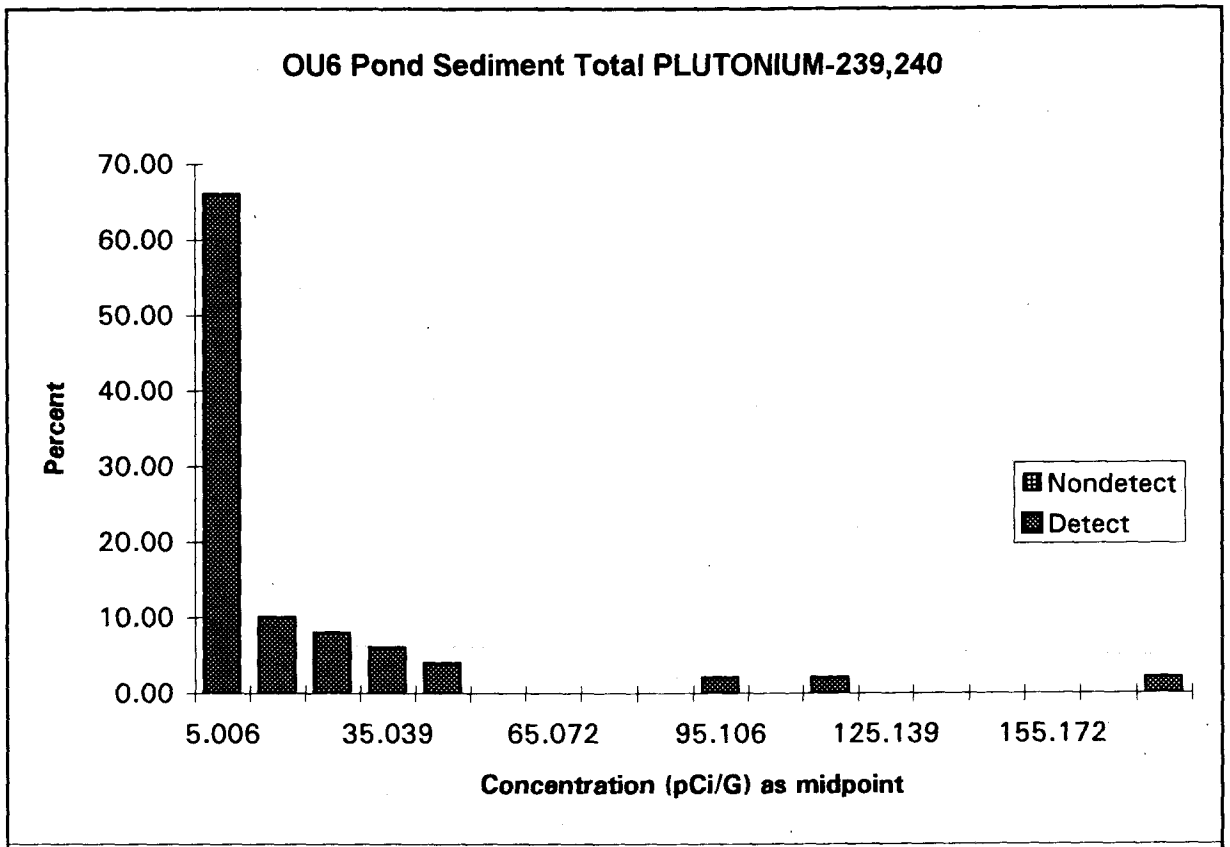

Background Seep/Spring Sediment Total CESIUM-137
35.00
30.00
25.00
20.00
15.00
10.00
5.00
0.00
Percent
Nondetect
Detect
0.081
0.393
0.705
1.017
1.329
1.64
1.952
2.264
2.576
Concentration (pCi/G) as midpoint

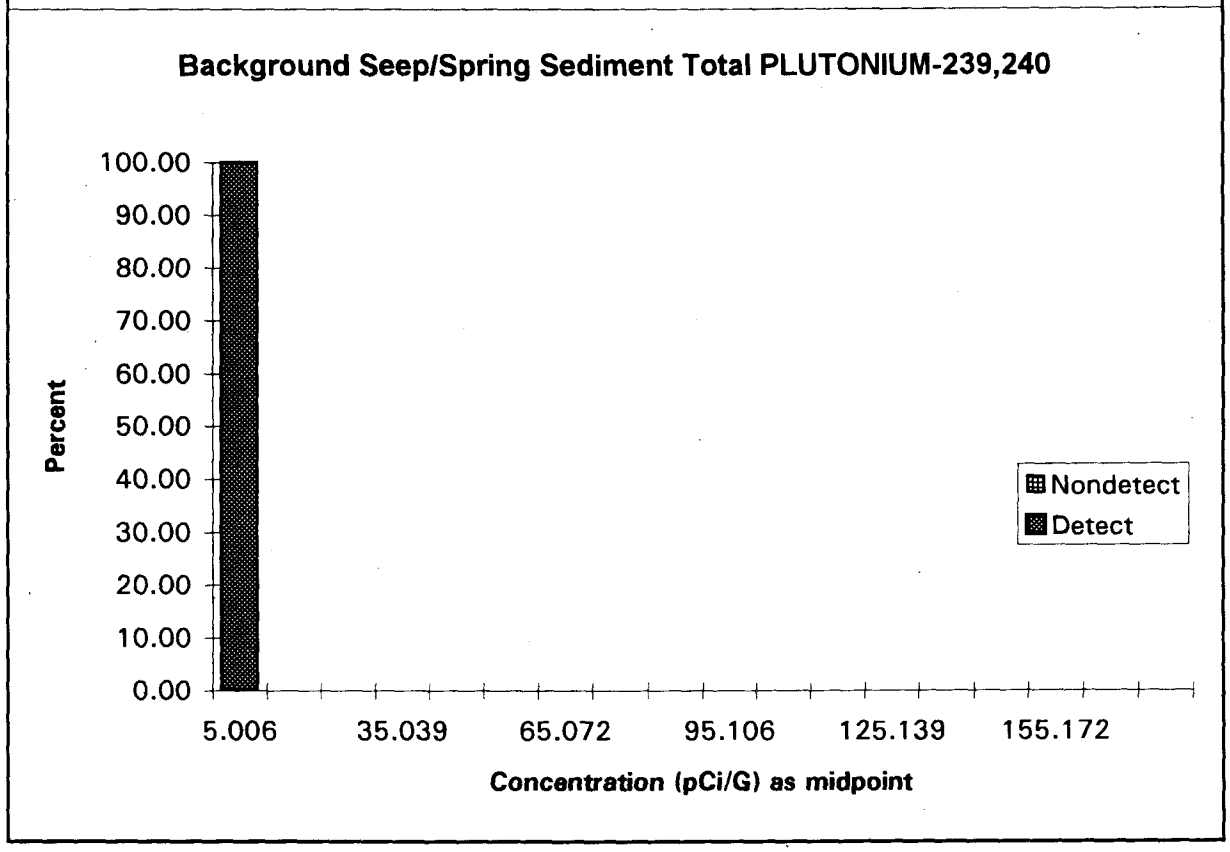

OU6 Pond Sediment Total GROSS ALPHA
Percent
90.00
80.00
70.00
60.00
50.00
40.00
30.00
20.00
10.00
0.00
Nondetect
Detect
53.078
149.188
245.298
341.407
437.517
533.627
629.737
725.847
821.957
918.066
1014.176
1110.286
1206.396
1302.506
1398.616
1494.725
1590.835
1686.945
Concentration (pCi/G) as midpoint

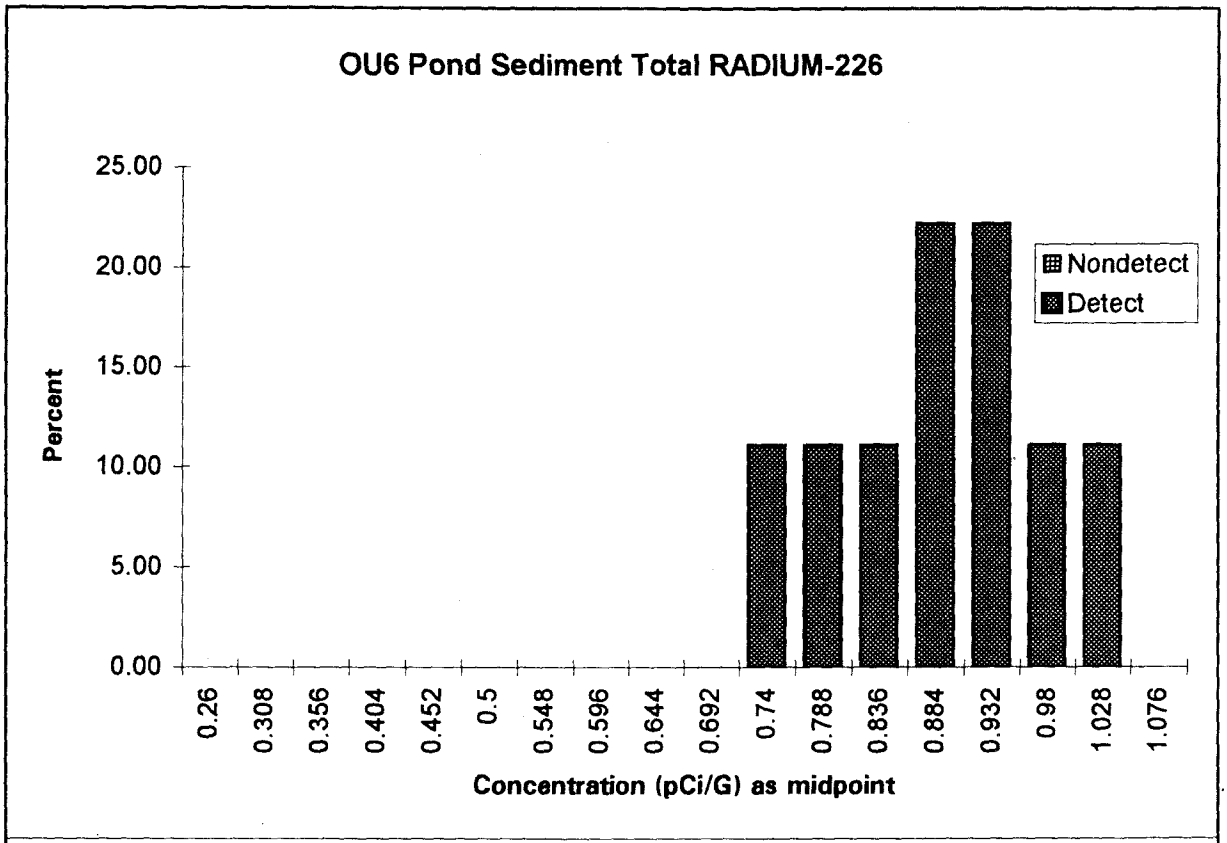

Background Seep/Spring Sediment Total GROSS ALPHA
Percent
100.00
90.00
80.00
70.00
60.00
50.00
40.00
30.00
20.00
10.00
0.00
Nondetect
Detect
53.078
149.188
245.298
341.407
437.517
533.627
629.737
725.847
821.957
918.066
1014.176
1110.286
1206.396
1302.506
1398.616
1494.725
1590.835
1686.945
Concentration (pCi/G) as midpoint

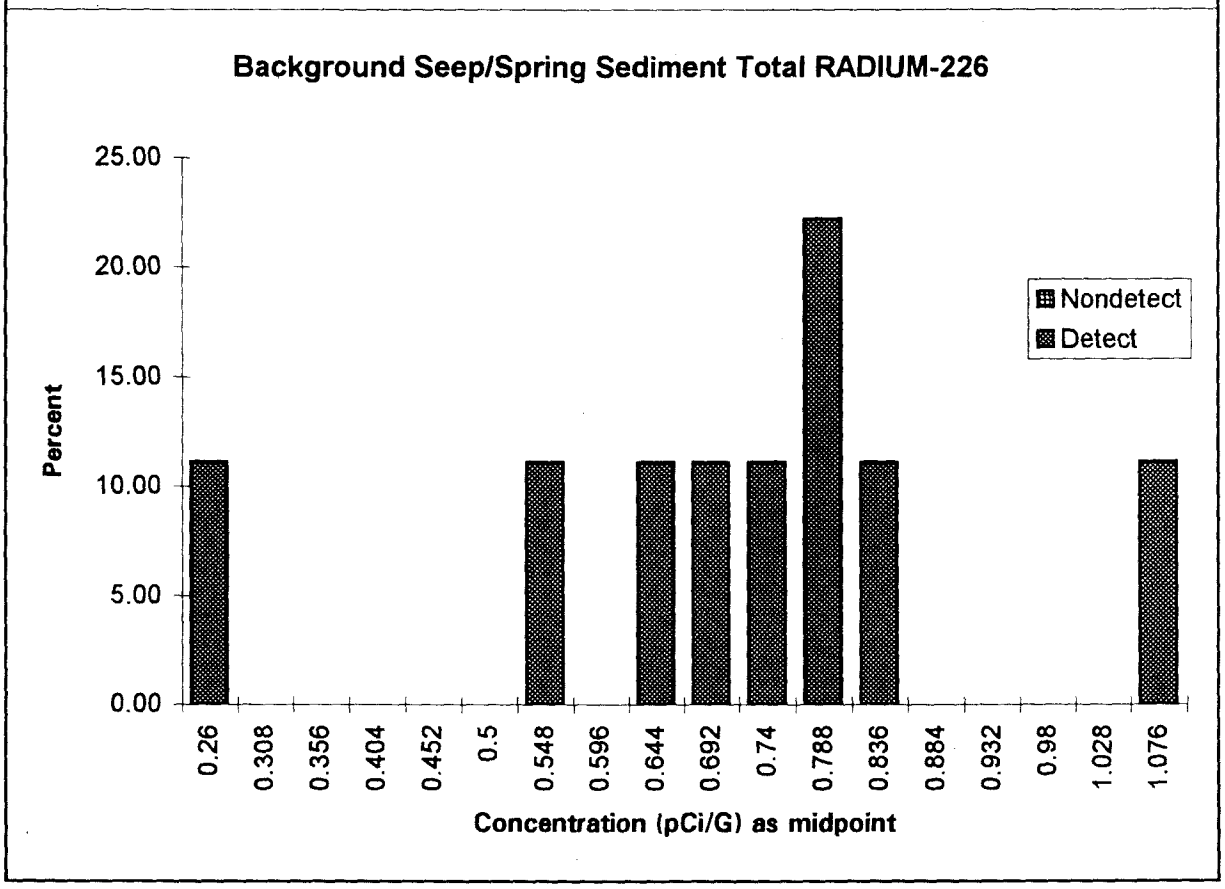

OU6 Pond Sediment Total GROSS BETA
Percent
60.00
50.00
40.00
30.00
20.00
10.00
0.00
Nondetect
Detect
18.642
23.187
27.731
32.276
36.82
41.364
45.909
50.453
54.998
59.542
64.087
68.631
73.176
77.72
82.264
86.809
91.353
95.898
Concentration (pCi/G) as midpoint

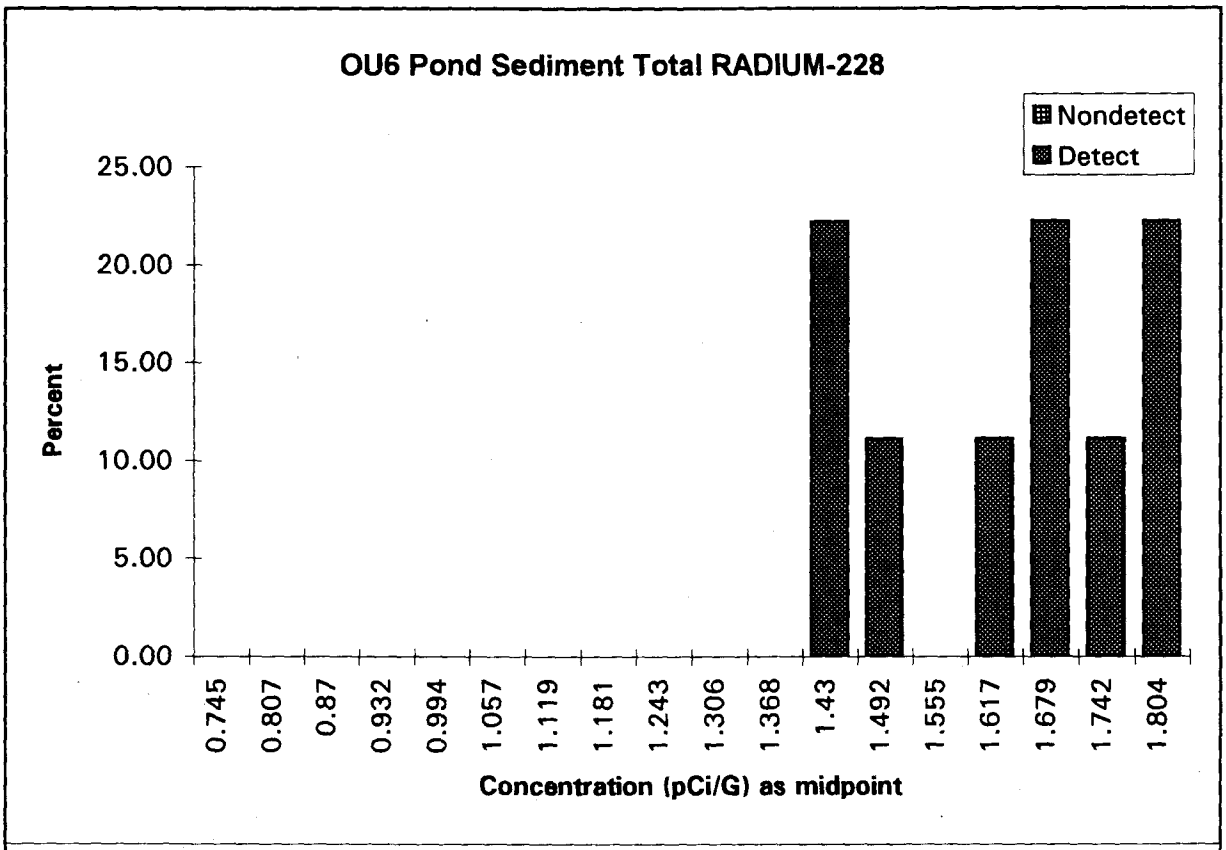

Background Seep/Spring Sediment Total GROSS BETA
Percent
40.00
35.00
30.00
25.00
20.00
15.00
10.00
5.00
0.00
Nondetect
Detect
18.642
23.187
27.731
32.276
36.82
41.364
45.909
50.453
54.998
59.542
64.087
68.631
73.176
77.72
82.264
86.809
91.353
95.898
Concentration (pCi/G) as midpoint

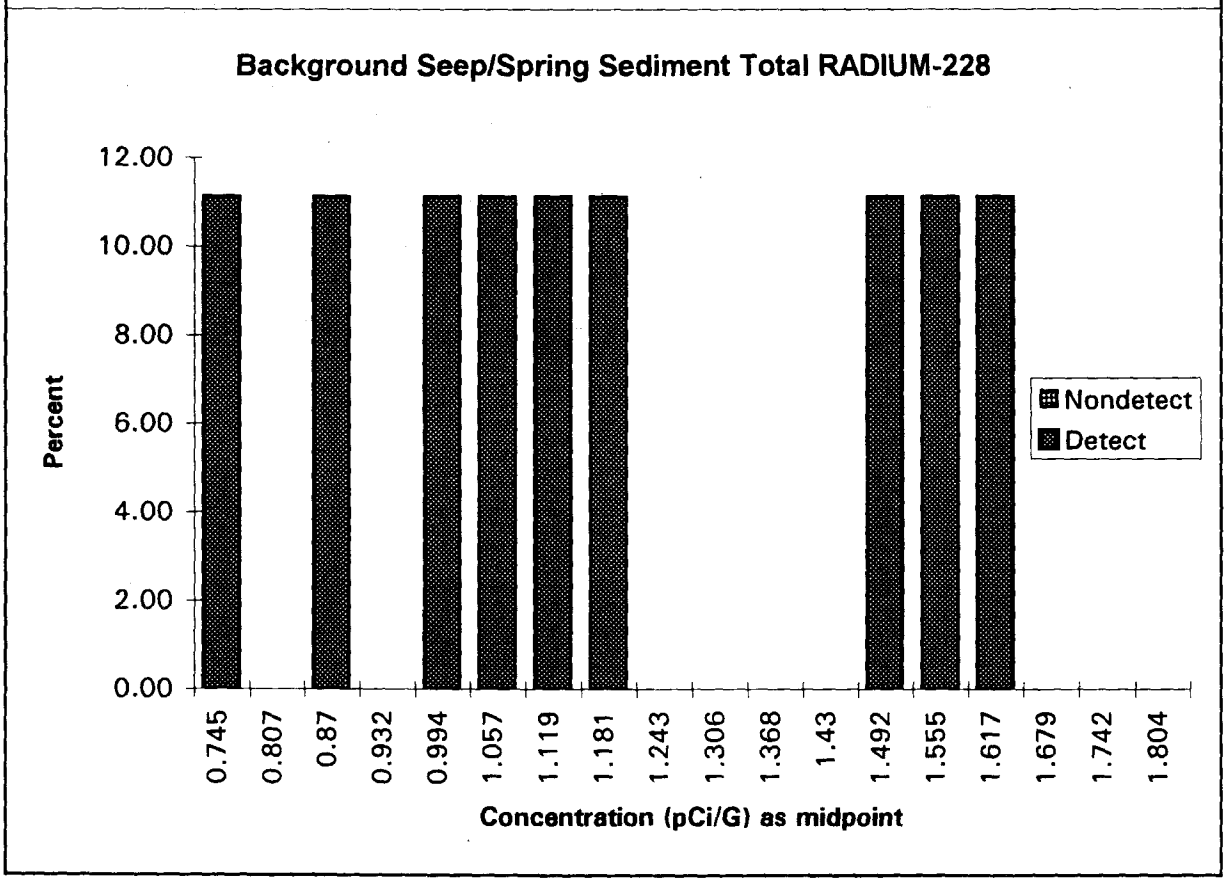

OU6 Pond Sediment Total PLUTONIUM-239,240
70.00
60.00
50.00
40.00
30.00
20.00
10.00
0.00
Percent
Nondetect
Detect
5.006
35.039
65.072
95.106
125.139
155.172
Concentration (pCi/G) as midpoint

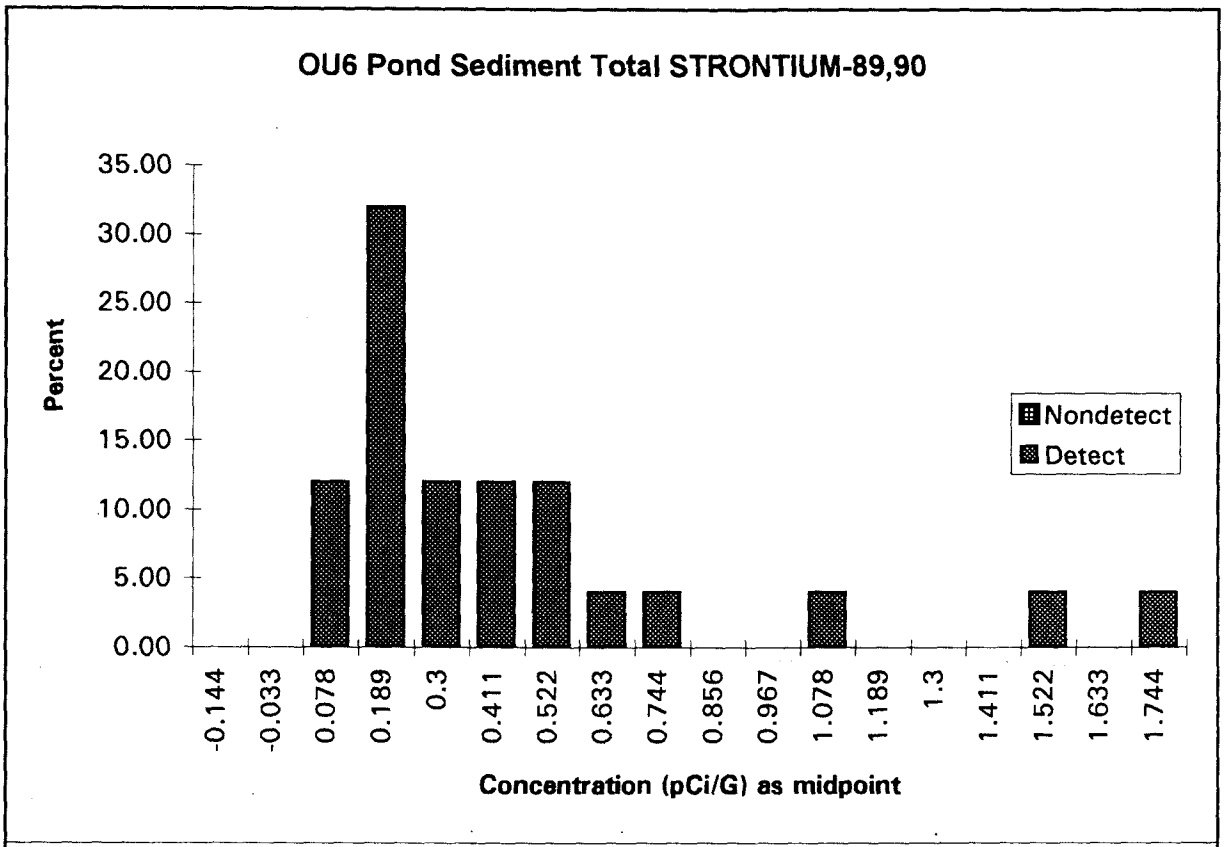

Background Seep/Spring Sediment Total PLUTONIUM-239,240
100.00
90.00
80.00
70.00
60.00
50.00
40.00
30.00
20.00
10.00
0.00
Percent
Nondetect
Detect
5.006
35.039
65.072
95.106
125.139
155.172
Concentration (pCi/G) as midpoint

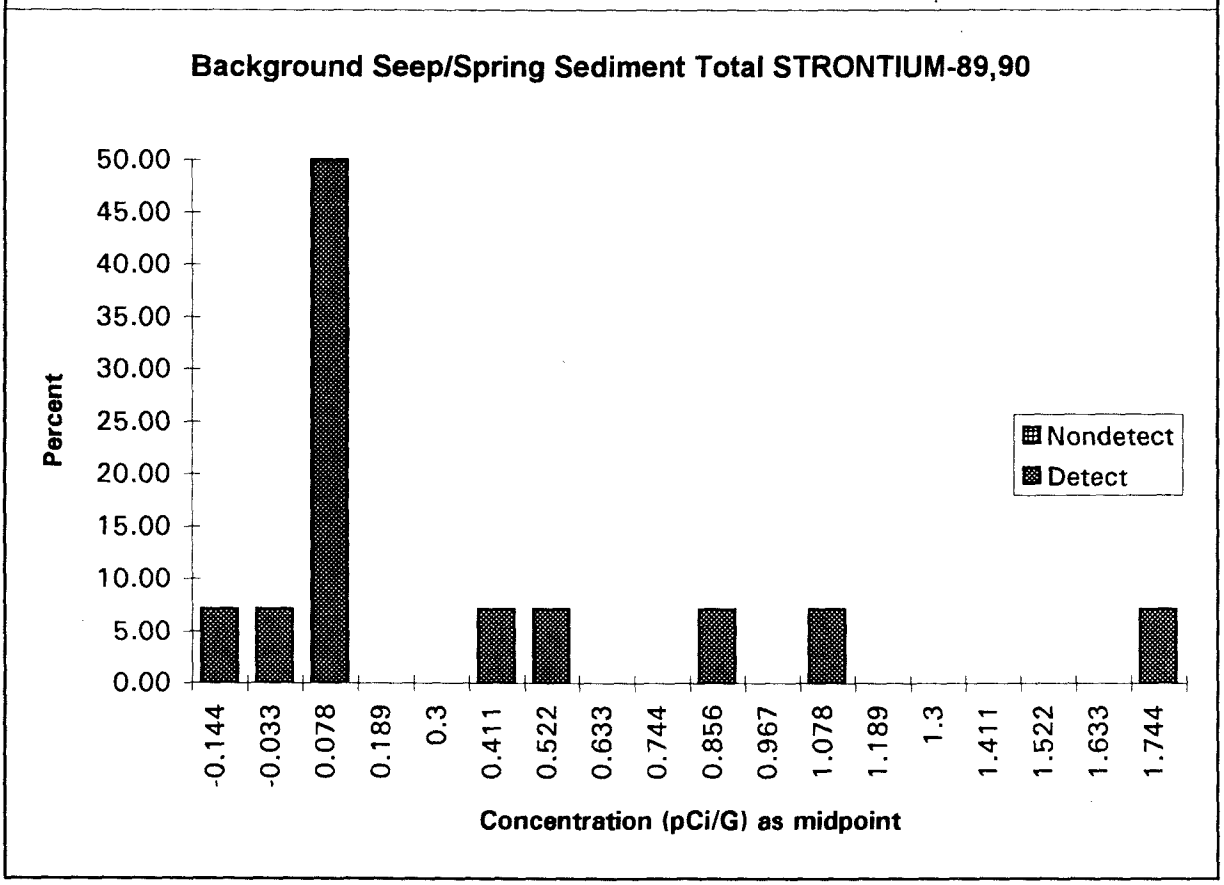

OU6 Pond Sediment Total RADIUM-226
25.00
20.00
15.00
10.00
5.00
0.00
Percent
Nondetect
Detect
0.26
0.308
0.356
0.404
0.452
0.5
0.548
0.596
0.644
0.692
0.74
0.788
0.836
0.884
0.932
0.98
1.028
1.076
Concentration (pCi/G) as midpoint

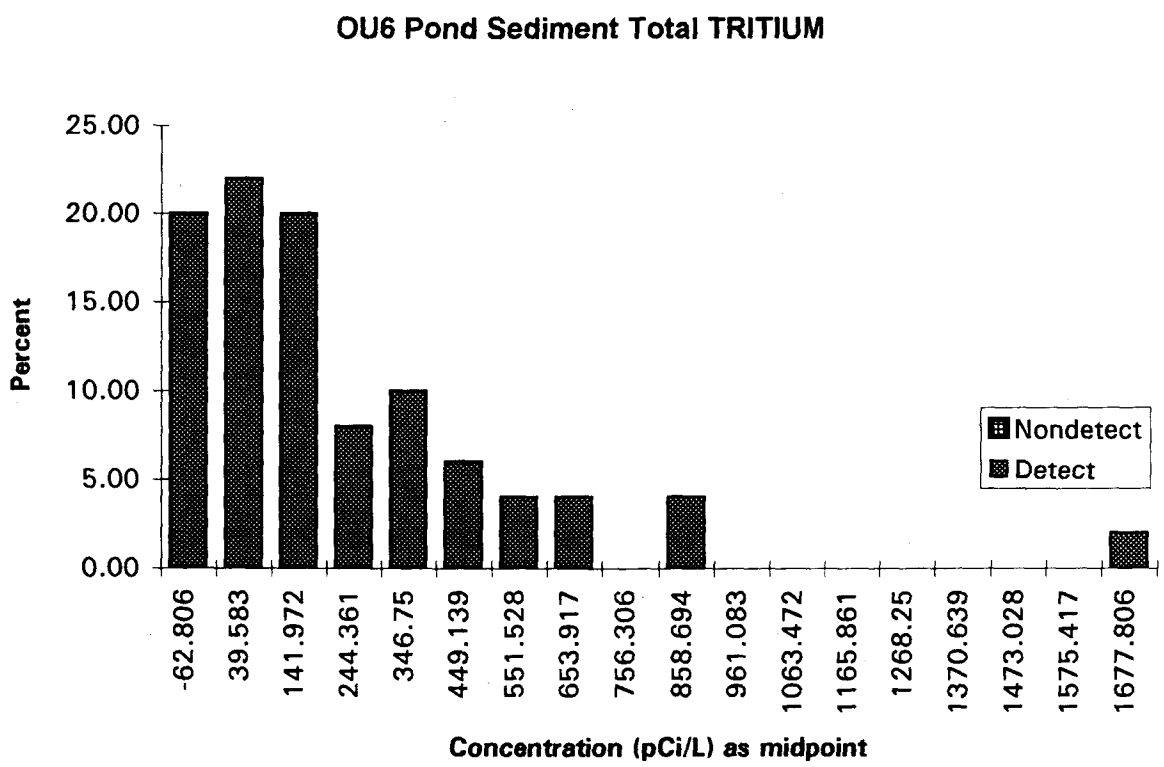

Background Seep/Spring Sediment Total RADIUM-226
25.00
20.00
15.00
10.00
5.00
0.00
Percent
Nondetect
Detect
0.26
0.308
0.356
0.404
0.452
0.5
0.548
0.596
0.644
0.692
0.74
0.788
0.836
0.884
0.932
0.98
1.028
1.076
Concentration (pCi/G) as midpoint

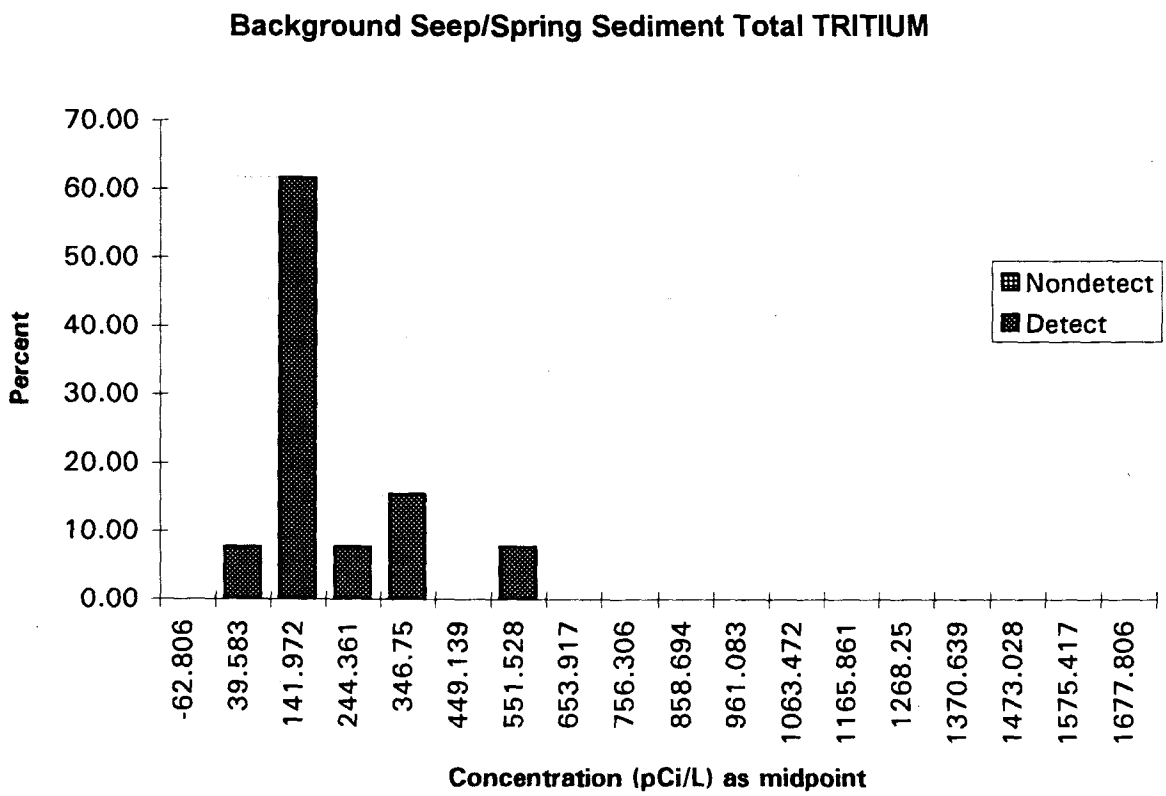

OU6 Pond Sediment Total RADIUM-228
Nondetect
Detect
Percent
25.00
20.00
15.00
10.00
5.00
0.00
0.745
0.807
0.87
0.932
0.994
1.057
1.119
1.181
1.243
1.306
1.368
1.43
1.492
1.555
1.617
1.679
1.742
1.804
Concentration (pCi/G) as midpoint

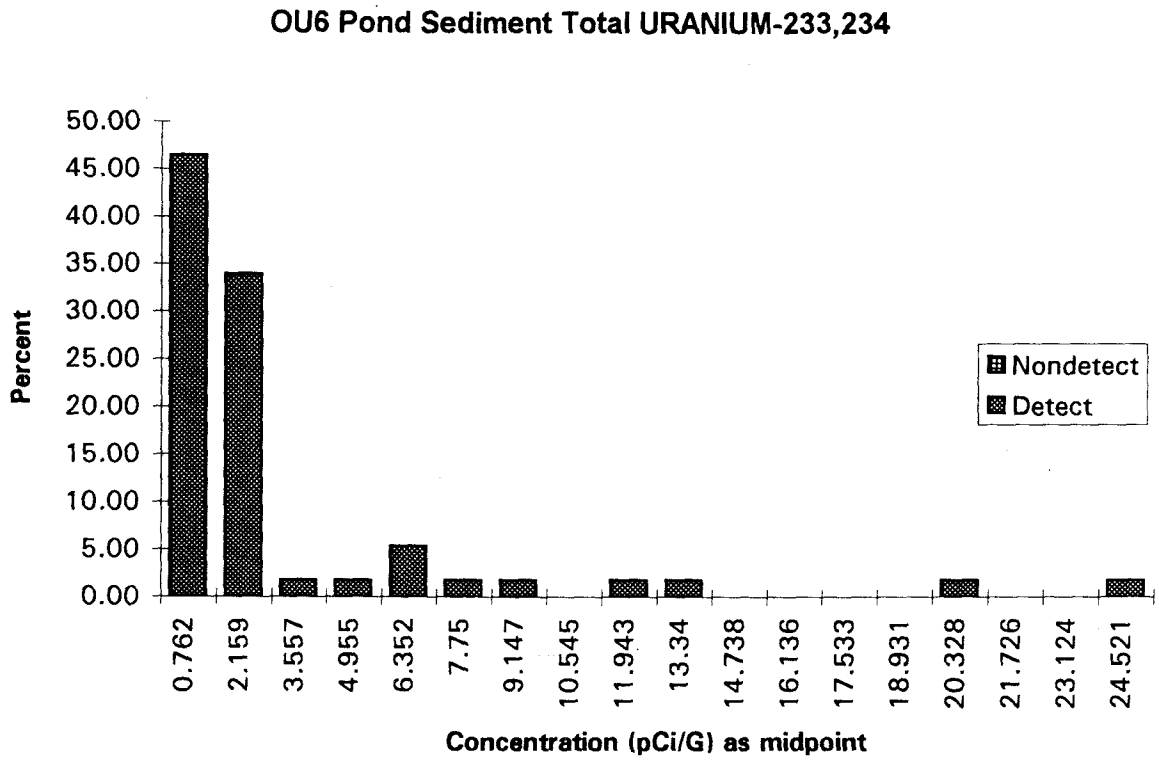

Background Seep/Spring Sediment Total RADIUM-228
Percent
12.00
10.00
8.00
6.00
4.00
2.00
0.00
Nondetect
Detect
0.745
0.807
0.87
0.932
0.994
1.057
1.119
1.181
1.243
1.306
1.368
1.43
1.492
1.555
1.617
1.679
1.742
1.804
Concentration (pCi/G) as midpoint

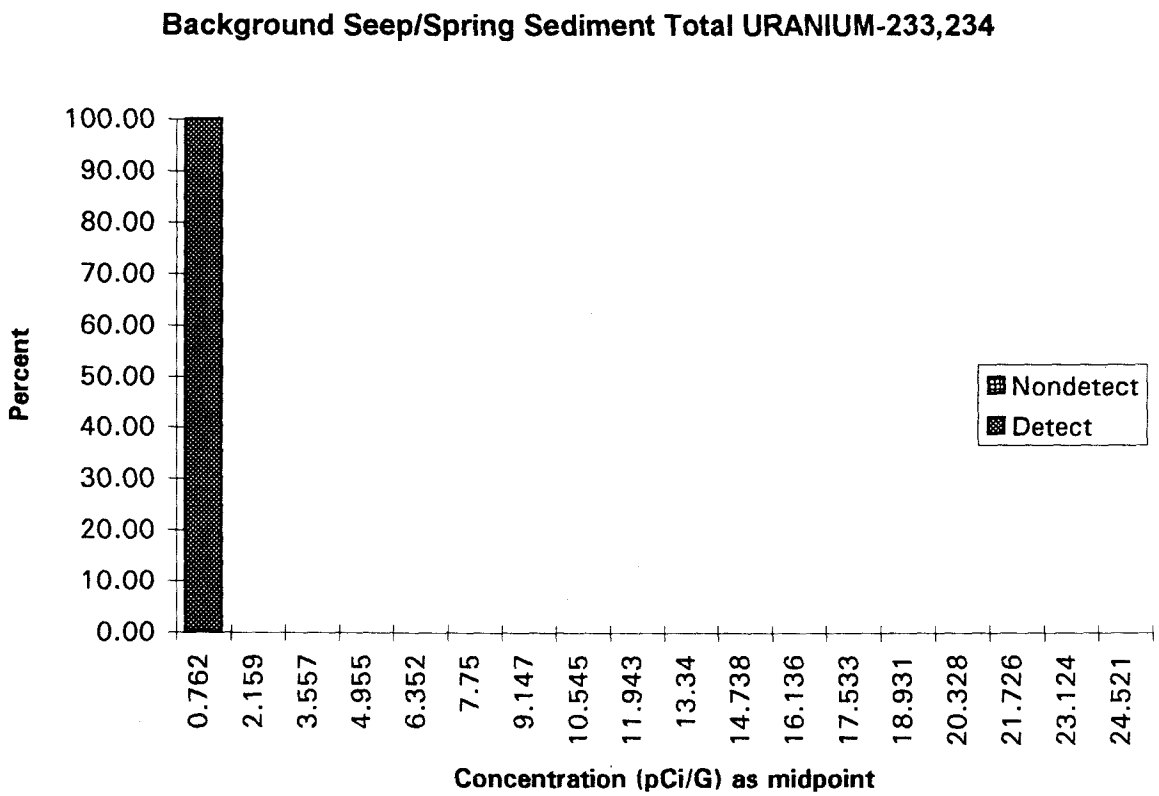

OU6 Pond Sediment Total STRONTIUM-89,90
Percent
35.00
30.00
25.00
20.00
15.00
10.00
5.00
0.00
Nondetect
Detect
-0.144
-0.033
0.078
0.189
0.3
0.411
0.522
0.633
0.744
0.856
0.967
1.078
1.189
1.3
1.411
1.522
1.633
1.744
Concentration (pCi/G) as midpoint

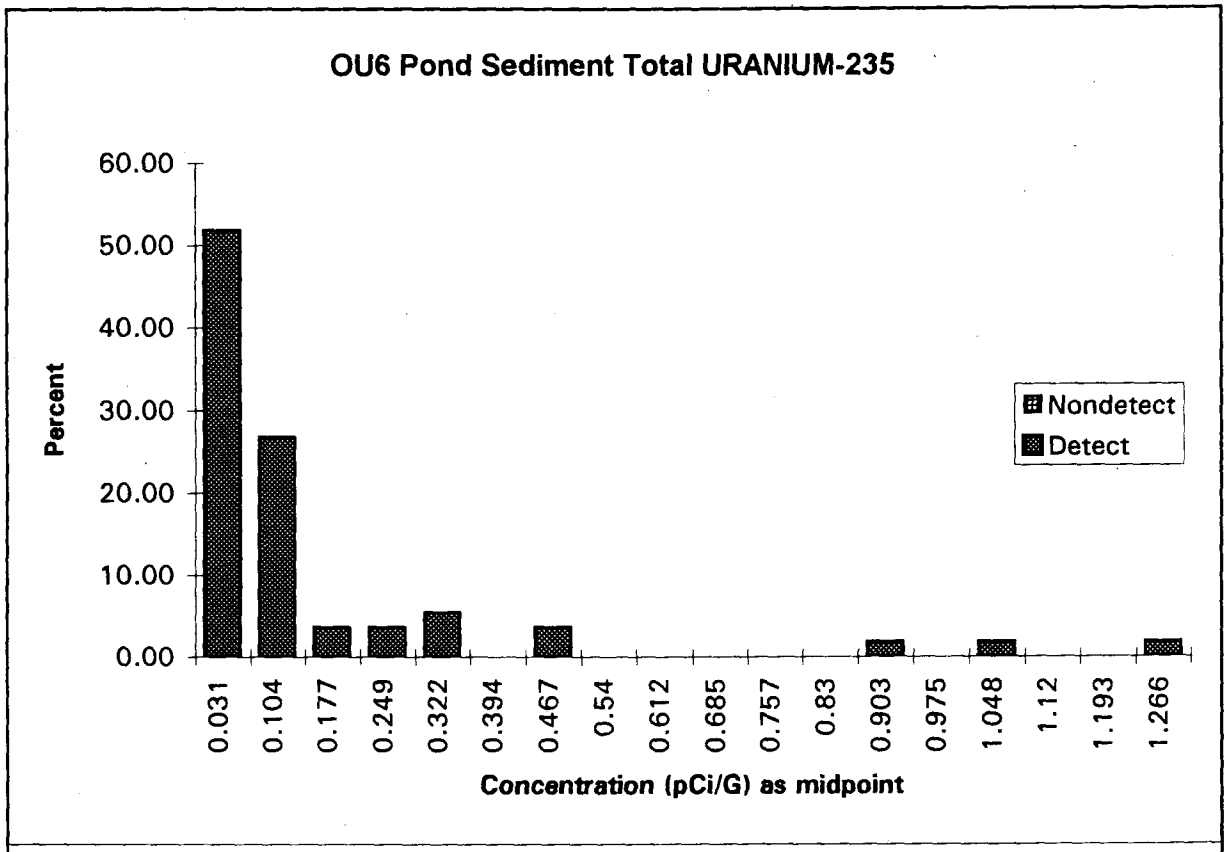

Background Seep/Spring Sediment Total STRONTIUM-89,90
Percent
50.00
45.00
40.00
35.00
30.00
25.00
20.00
15.00
10.00
5.00
0.00
Nondetect
Detect
-0.144
-0.033
0.078
0.189
0.3
0.411
0.522
0.633
0.744
0.856
0.967
1.078
1.189
1.3
1.411
1.522
1.633
1.744
Concentration (pCi/G) as midpoint

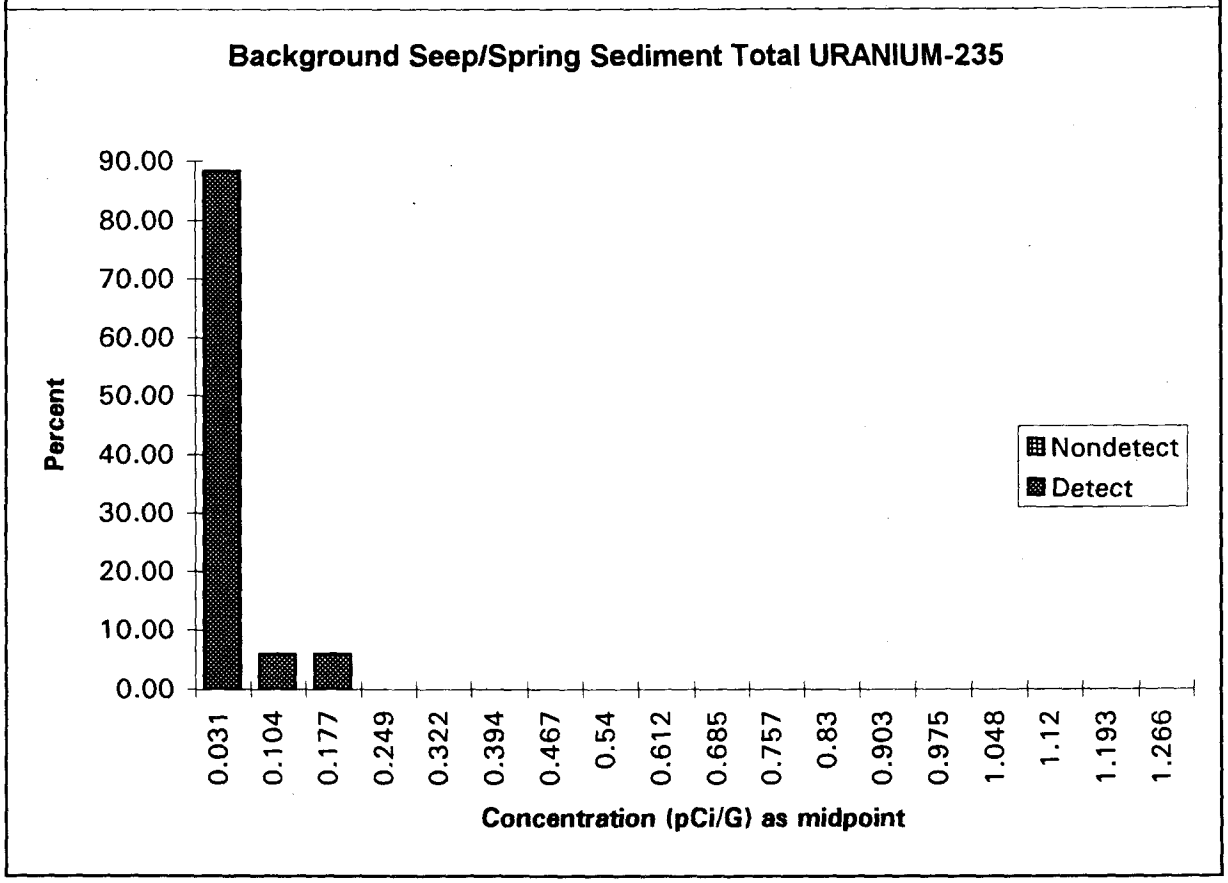

OU6 Pond Sediment Total TRITIUM
Percent
25.00
20.00
15.00
10.00
5.00
0.00
Nondetect
Detect
-62.806
39.583
141.972
244.361
346.75
449.139
551.528
653.917
756.306
858.694
961.083
1063.472
1165.861
1268.25
1370.639
1473.028
1575.417
1677.806
Concentration (pCi/L) as midpoint

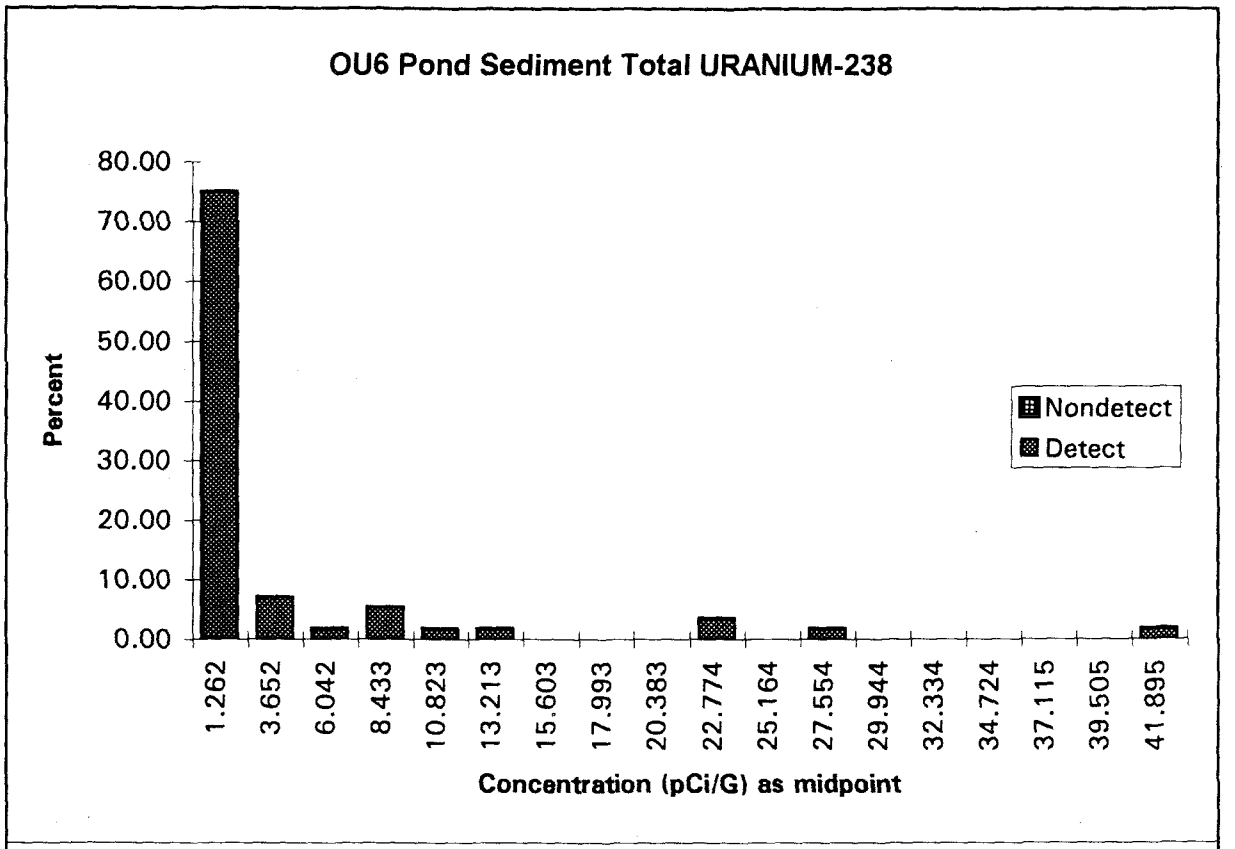

Background Seep/Spring Sediment Total TRITIUM
Percent
70.00
60.00
50.00
40.00
30.00
20.00
10.00
0.00
Nondetect
Detect
-62.806
39.583
141.972
244.361
346.75
449.139
551.528
653.917
756.306
858.694
961.083
1063.472
1165.861
1268.25
1370.639
1473.028
1575.417
1677.806
Concentration (pCi/L) as midpoint

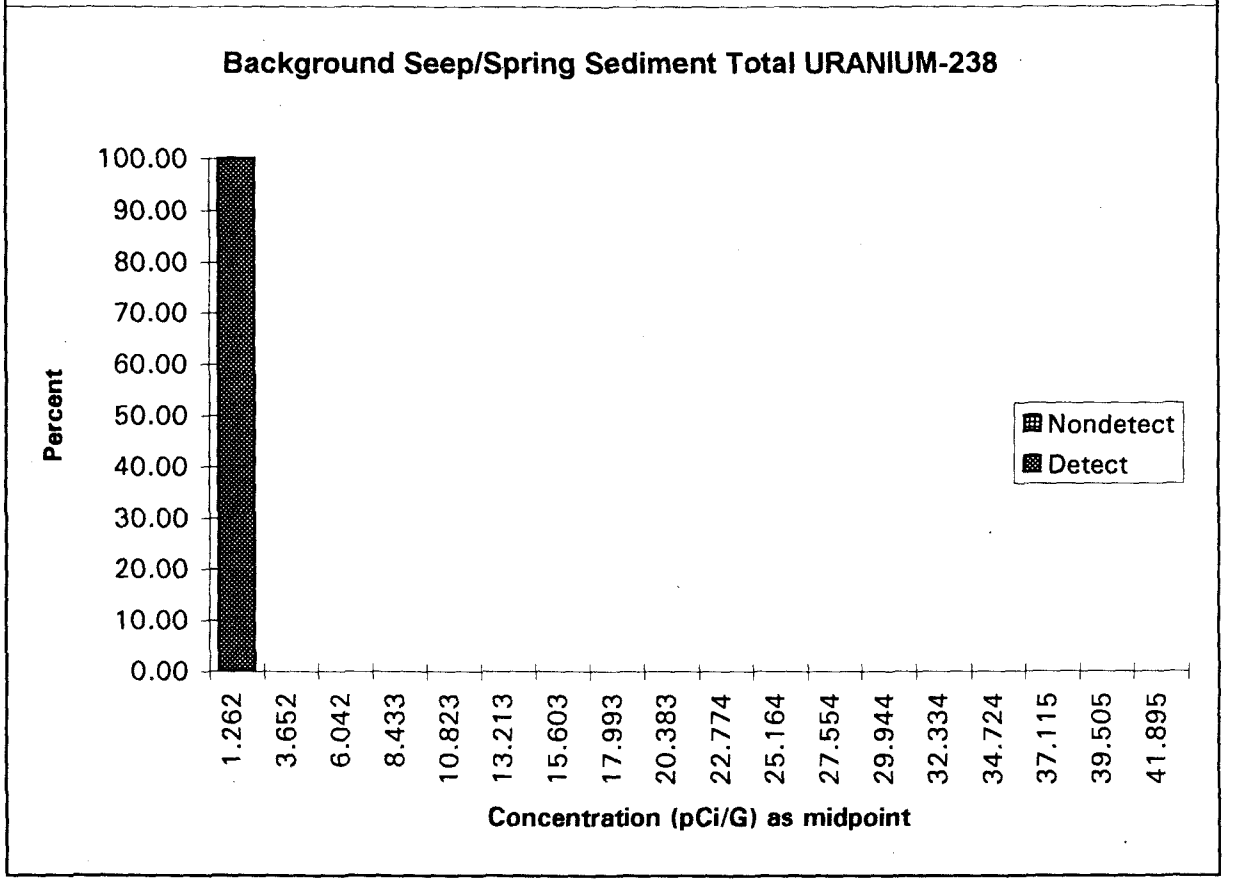

OU6 Pond Sediment Total URANIUM-233,234
Percent
50.00
45.00
40.00
35.00
30.00
25.00
20.00
15.00
10.00
5.00
0.00
0.762
2.159
3.557
4.955
6.352
7.75
9.147
10.545
11.943
13.34
14.738
16.136
17.533
18.931
20.328
21.726
23.124
24.521
Concentration (pCi/G) as midpoint
Nondetect
Detect

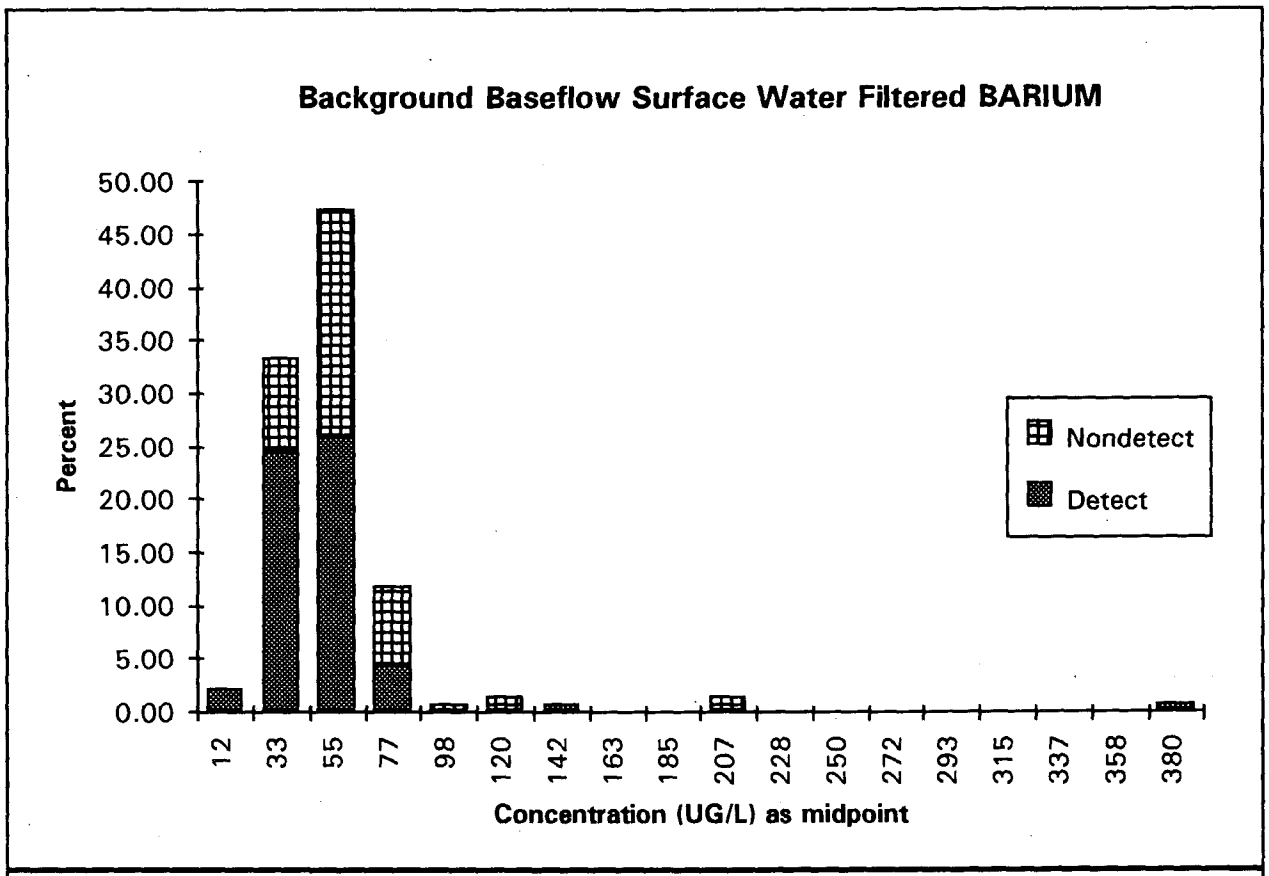

Background Seep/Spring Sediment Total URANIUM-233,234
Percent
100.00
90.00
80.00
70.00
60.00
50.00
40.00
30.00
20.00
10.00
0.00
0.762
2.159
3.557
4.955
6.352
7.75
9.147
10.545
11.943
13.34
14.738
16.136
17.533
18.931
20.328
21.726
23.124
24.521
Concentration (pCi/G) as midpoint
Nondetect
Detect

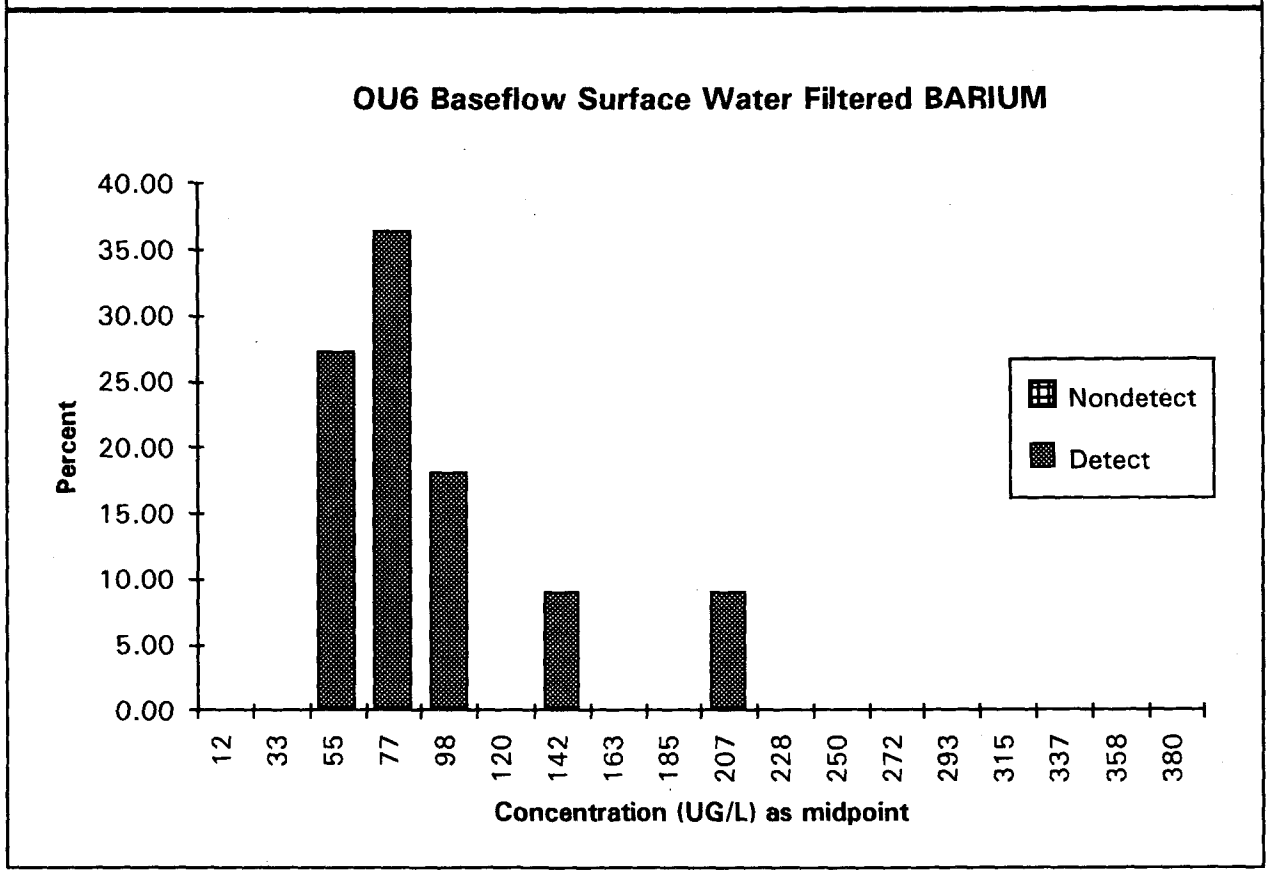

OU6 Pond Sediment Total URANIUM-235
Percent
60.00
50.00
40.00
30.00
20.00
10.00
0.00
Nondetect
Detect
0.031
0.104
0.177
0.249
0.322
0.394
0.467
0.54
0.612
0.685
0.757
0.83
0.903
0.975
1.048
1.12
1.193
1.266
Concentration (pCi/G) as midpoint

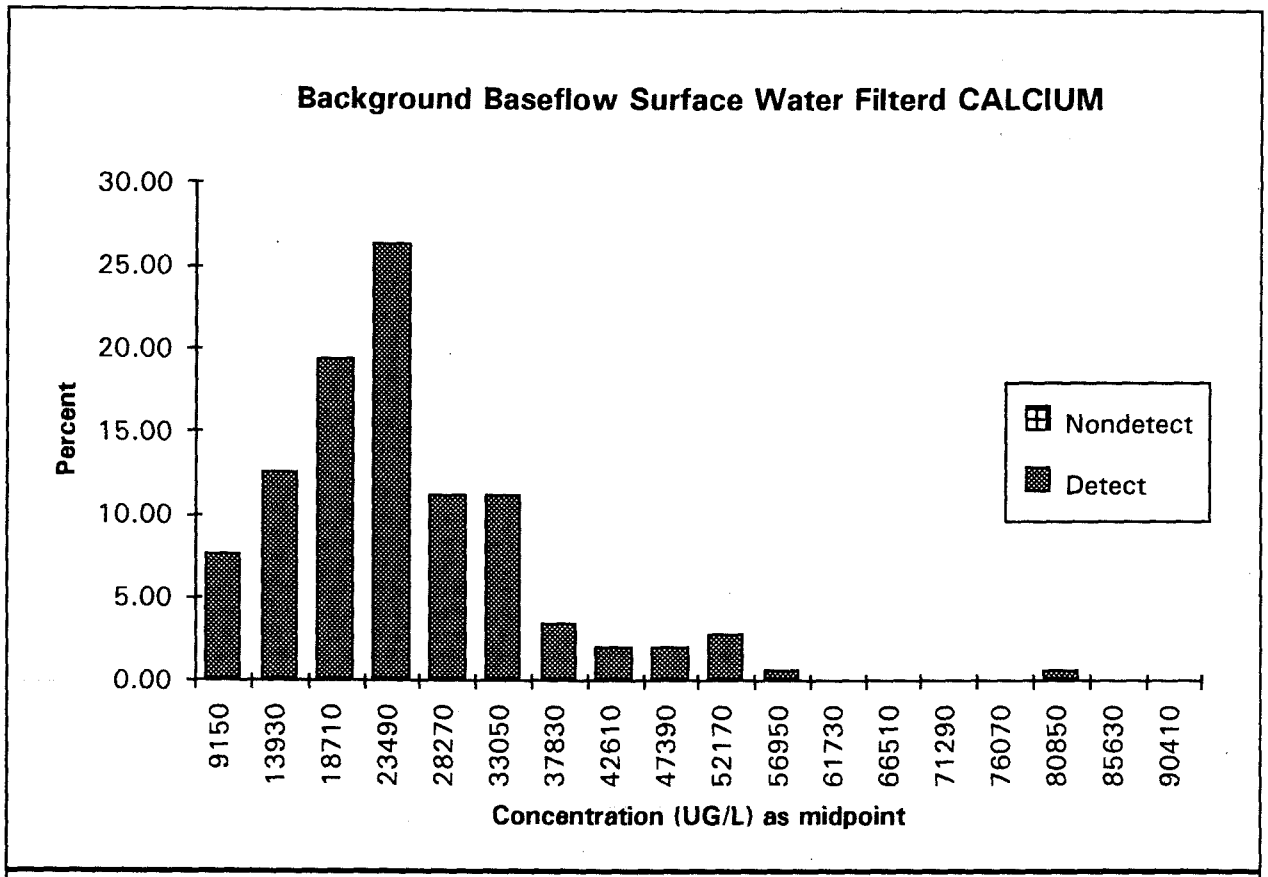

Background Seep/Spring Sediment Total URANIUM-235
Percent
90.00
80.00
70.00
60.00
50.00
40.00
30.00
20.00
10.00
0.00
Nondetect
Detect
0.031
0.104
0.177
0.249
0.322
0.394
0.467
0.54
0.612
0.685
0.757
0.83
0.903
0.975
1.048
1.12
1.193
1.266
Concentration (pCi/G) as midpoint

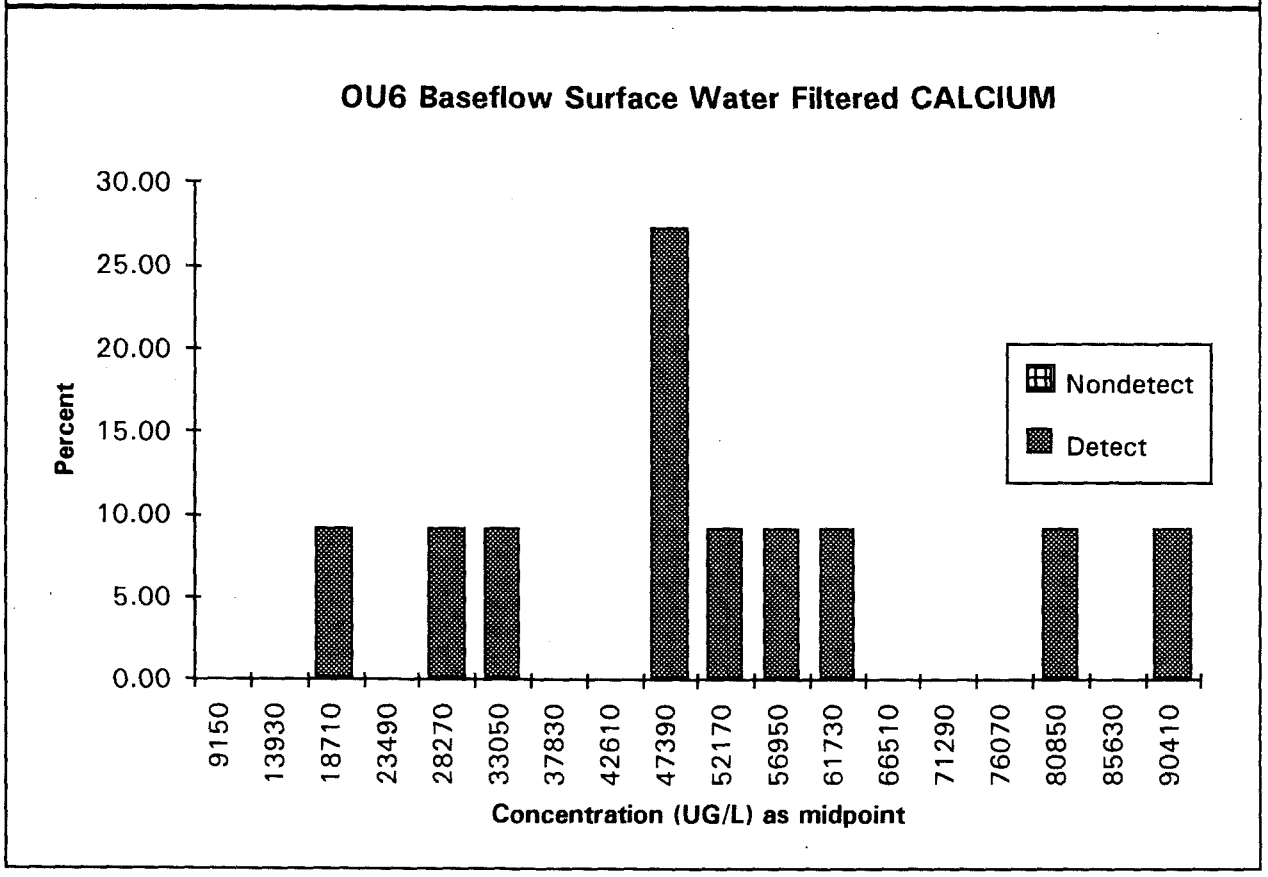

OU6 Pond Sediment Total URANIUM-238
Percent
80.00
70.00
60.00
50.00
40.00
30.00
20.00
10.00
0.00
Nondetect
Detect
1.262
3.652
6.042
8.433
10.823
13.213
15.603
17.993
20.383
22.774
25.164
27.554
29.944
32.334
34.724
37.115
39.505
41.895
Concentration (pCi/G) as midpoint

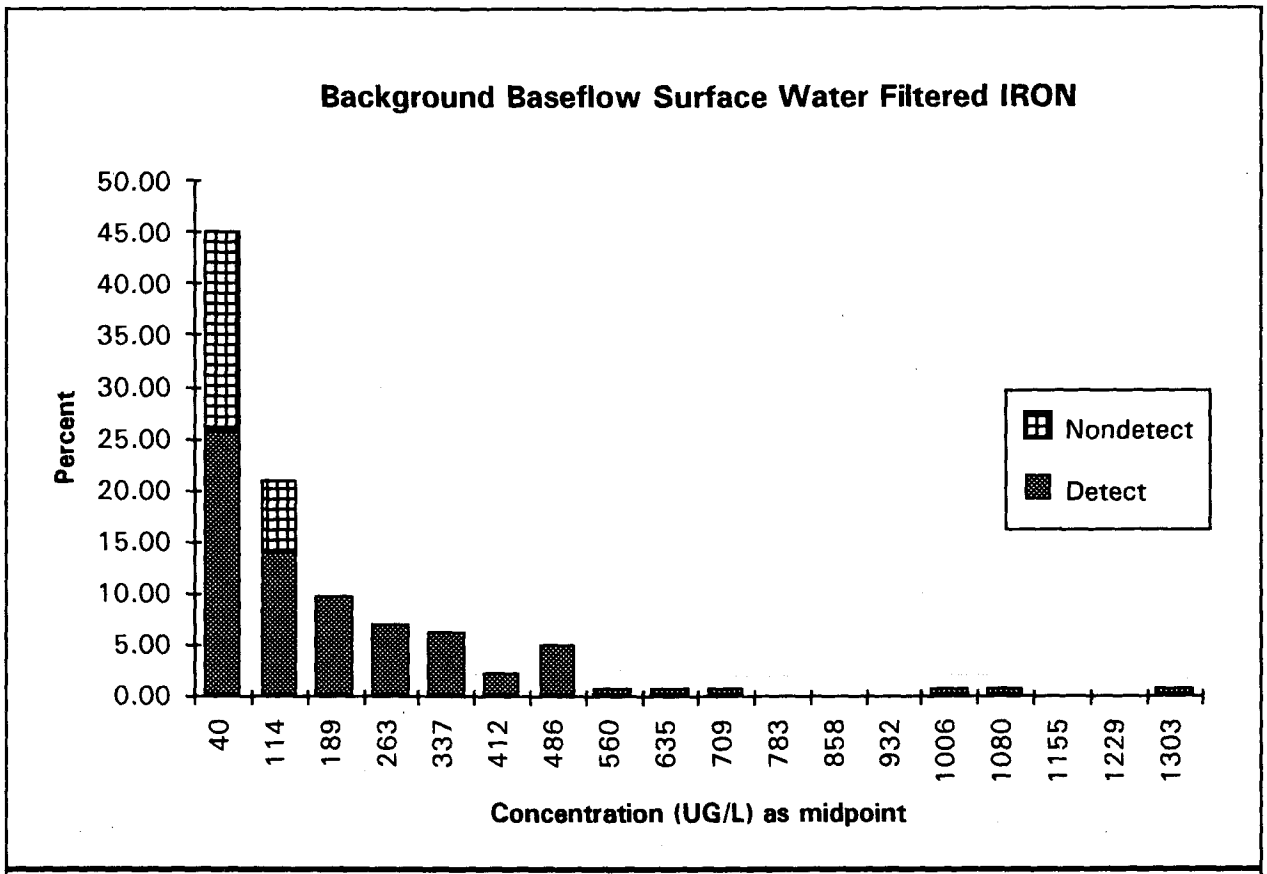

Background Seep/Spring Sediment Total URANIUM-238
Percent
100.00
90.00
80.00
70.00
60.00
50.00
40.00
30.00
20.00
10.00
0.00
Nondetect
Detect
1.262
3.652
6.042
8.433
10.823
13.213
15.603
17.993
20.383
22.774
25.164
27.554
29.944
32.334
34.724
37.115
39.505
41.895
Concentration (pCi/G) as midpoint

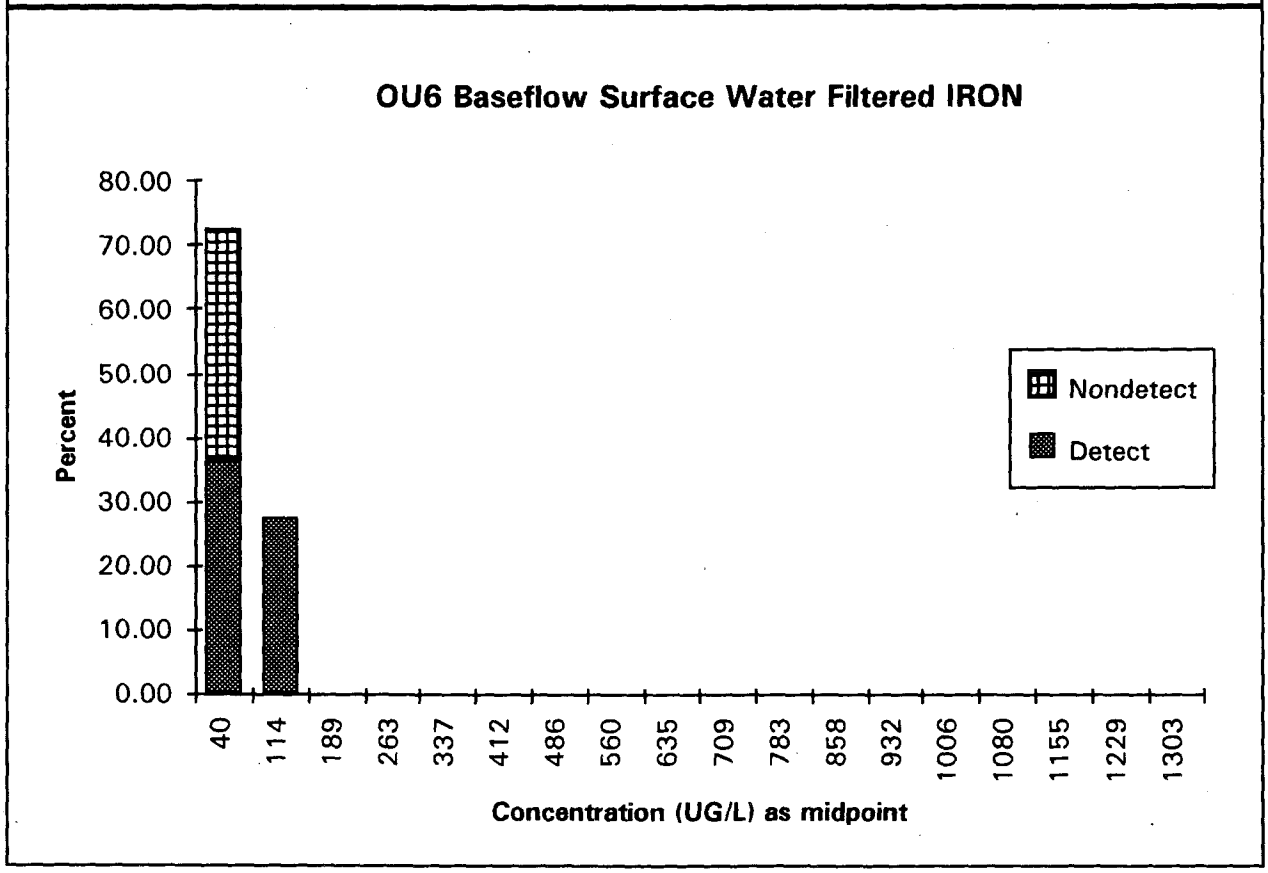

Background Baseflow Surface Water Filtered BARIUM
Percent
50.00
45.00
40.00
35.00
30.00
25.00
20.00
15.00
10.00
5.00
0.00
12
33
55
77
98
120
142
163
185
207
228
250
272
293
315
337
358
380
Concentration (UG/L) as midpoint
Nondetect
Detect

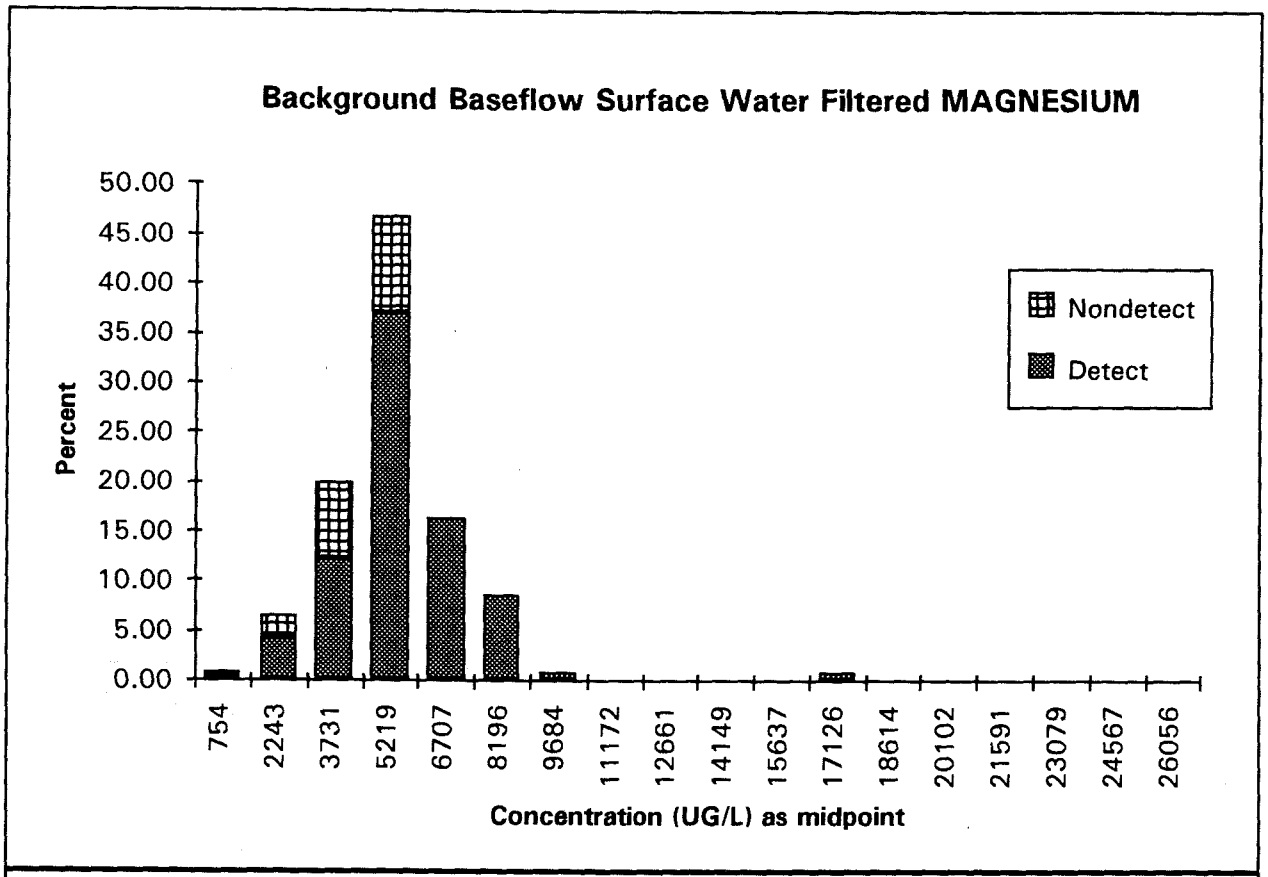

OU6 Baseflow Surface Water Filtered BARIUM
Percent
40.00
35.00
30.00
25.00
20.00
15.00
10.00
5.00
0.00
12
33
55
77
98
120
142
163
185
207
228
250
272
293
315
337
358
380
Concentration (UG/L) as midpoint
Nondetect
Detect

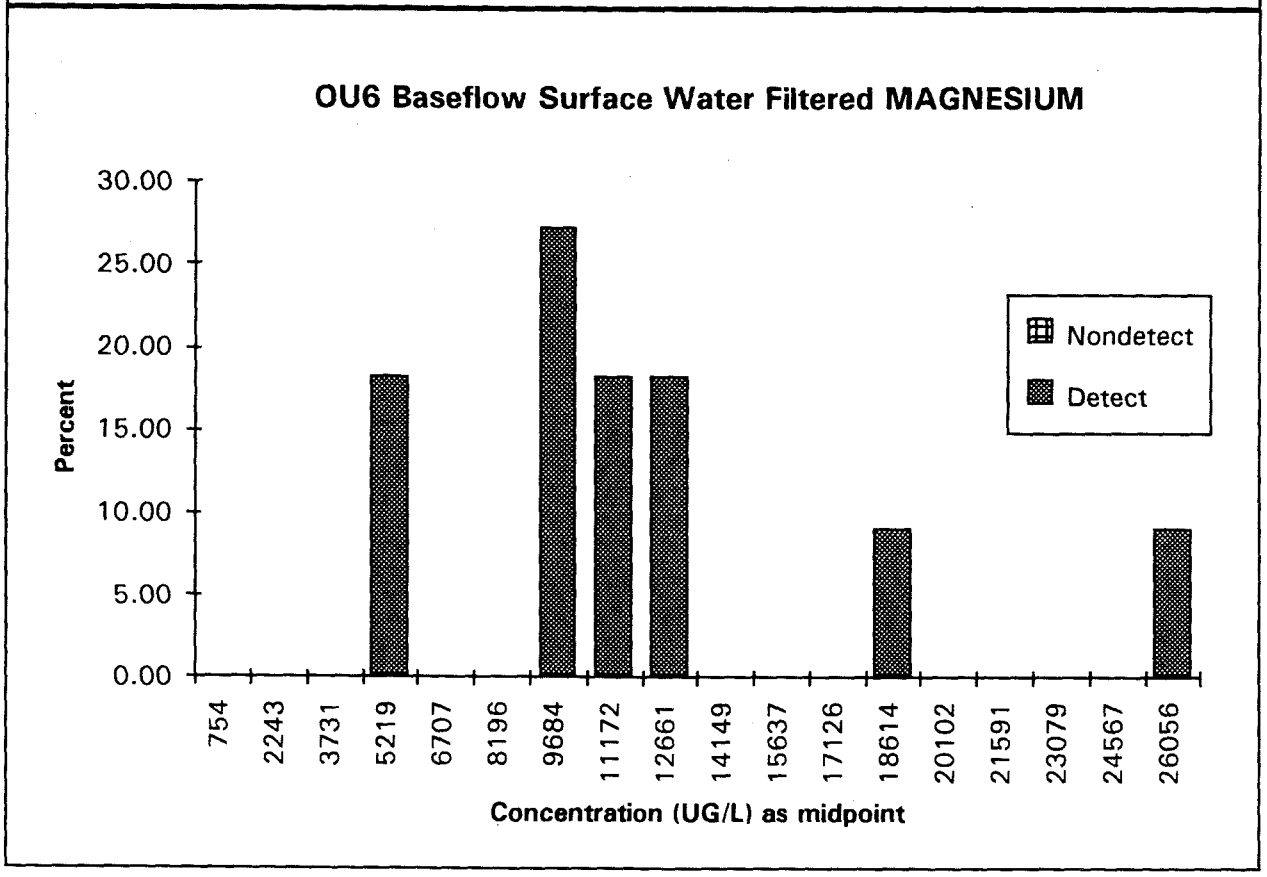

Background Baseflow Surface Water Filterd CALCIUM
30.00
25.00
20.00
15.00
10.00
5.00
0.00
Percent
Nondetect
Detect
9150
13930
18710
23490
28270
33050
37830
42610
47390
52170
56950
61730
66510
71290
76070
80850
85630
90410
Concentration (UG/L) as midpoint

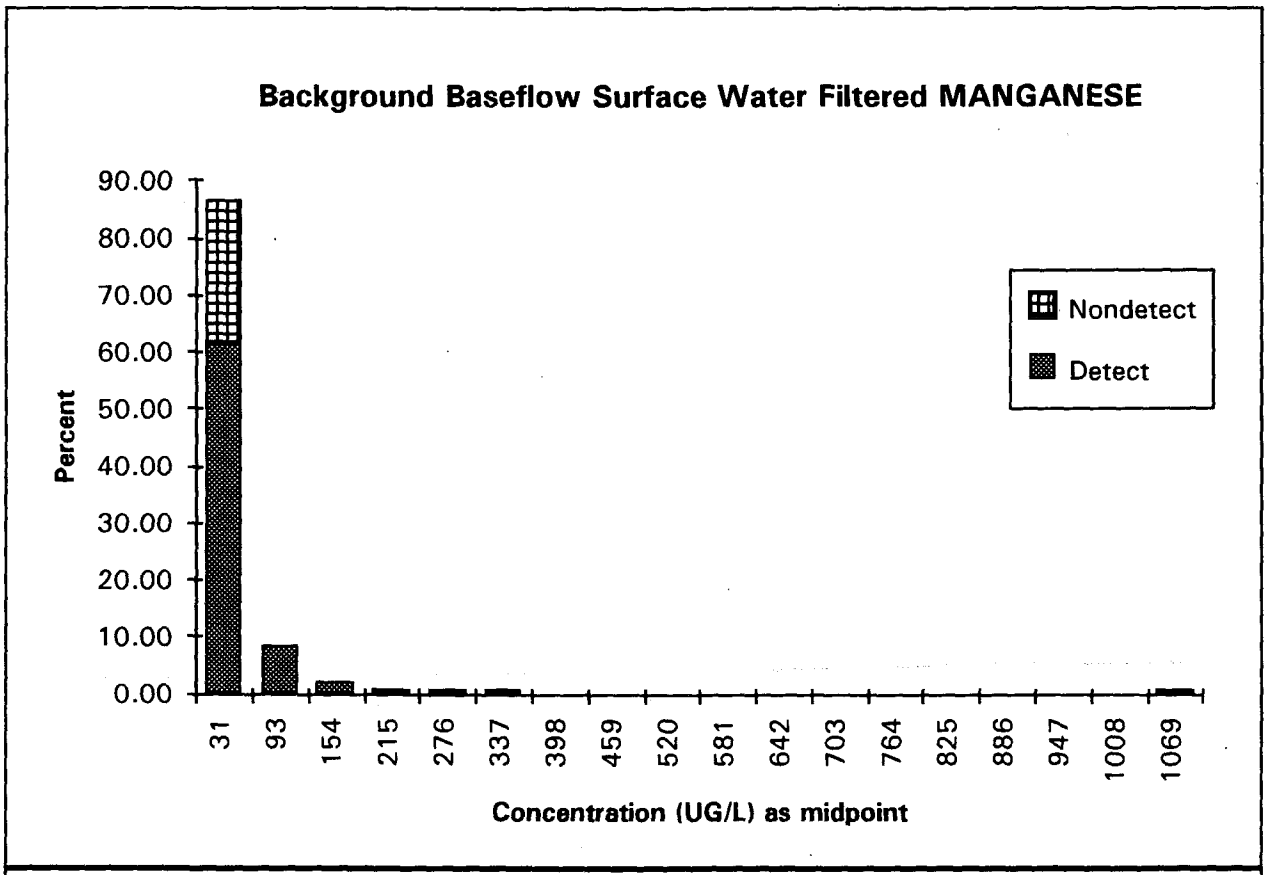

OU6 Baseflow Surface Water Filtered CALCIUM
30.00
25.00
20.00
15.00
10.00
5.00
0.00
Percent
Nondetect
Detect
9150
13930
18710
23490
28270
33050
37830
42610
47390
52170
56950
61730
66510
71290
76070
80850
85630
90410
Concentration (UG/L) as midpoint

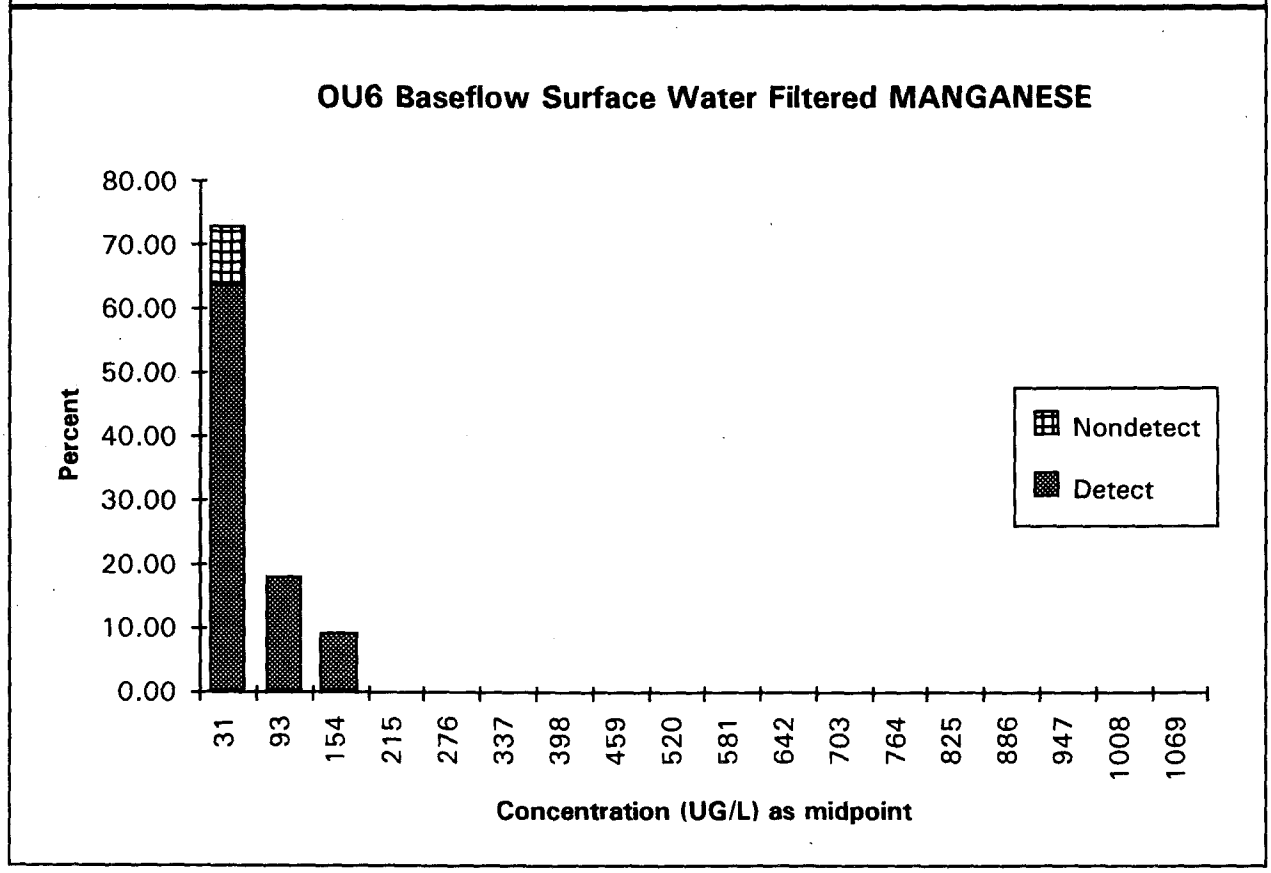

Background Baseflow Surface Water Filtered IRON
Percent
50.00
45.00
40.00
35.00
30.00
25.00
20.00
15.00
10.00
5.00
0.00
40
114
189
263
337
412
486
560
635
709
783
858
932
1006
1080
1155
1229
1303
Concentration (UG/L) as midpoint
Nondetect
Detect

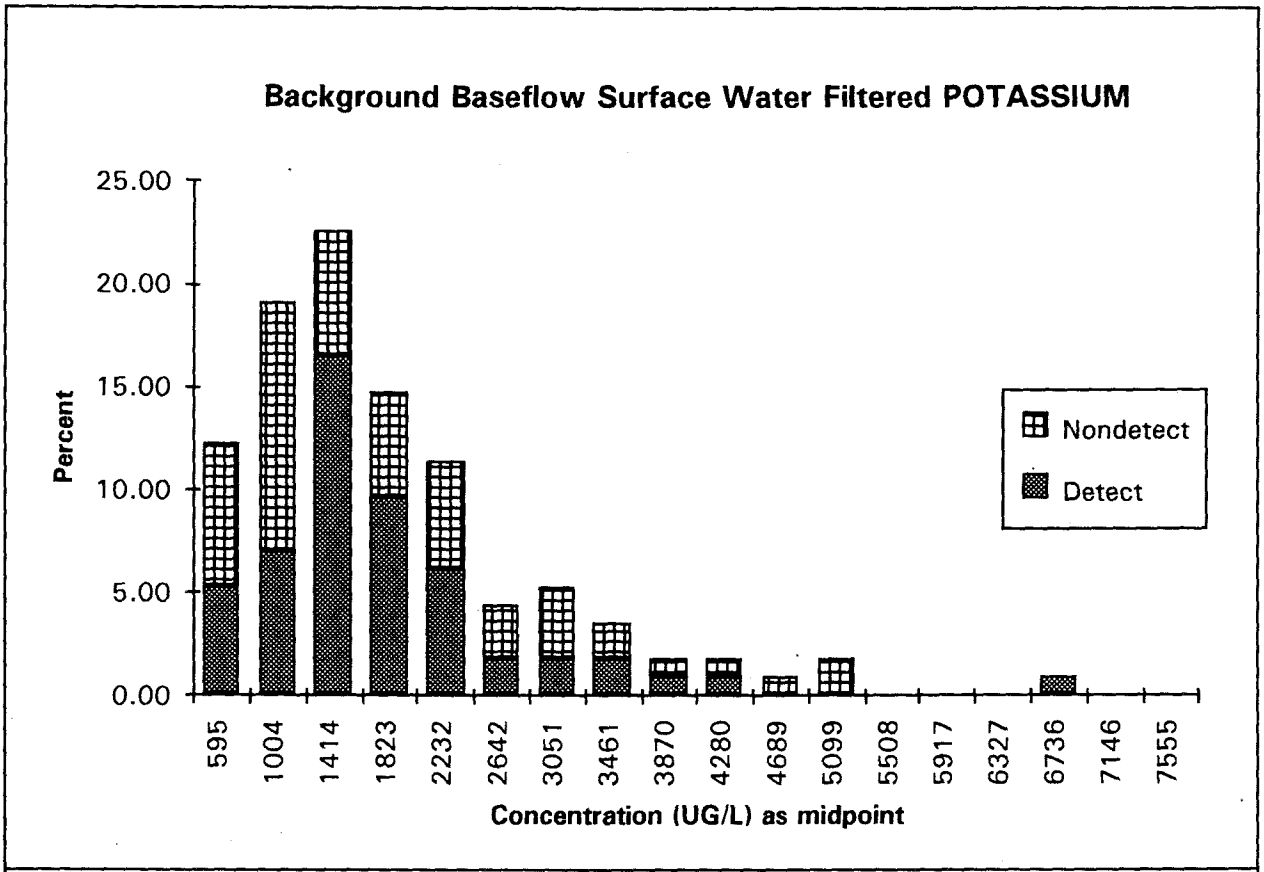

OU6 Baseflow Surface Water Filtered IRON
Percent
80.00
70.00
60.00
50.00
40.00
30.00
20.00
10.00
0.00
40
114
189
263
337
412
486
560
635
709
783
858
932
1006
1080
1155
1229
1303
Concentration (UG/L) as midpoint
Nondetect
Detect

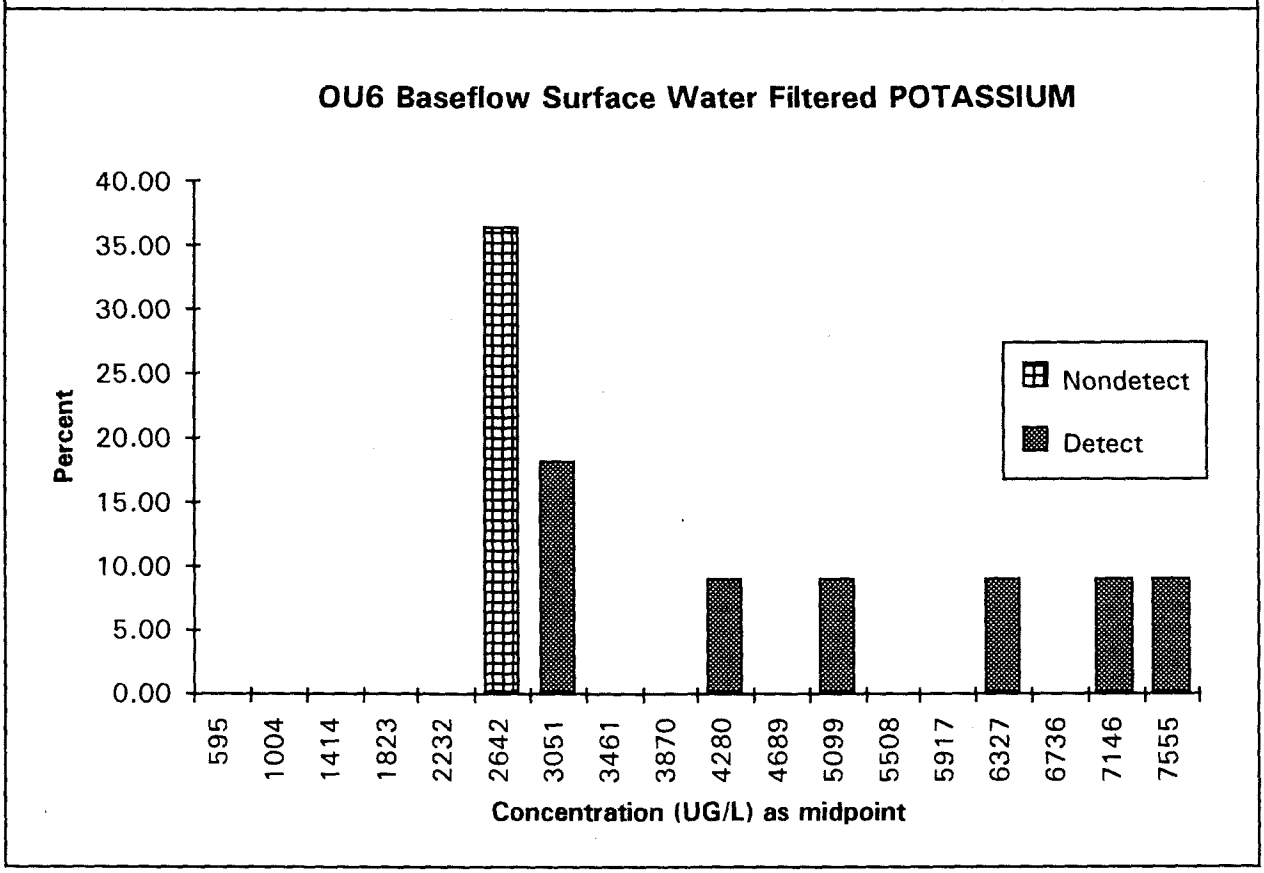

Background Baseflow Surface Water Filtered MAGNESIUM
Percent
50.00
45.00
40.00
35.00
30.00
25.00
20.00
15.00
10.00
5.00
0.00
Nondetect
Detect
754
2243
3731
5219
6707
8196
9684
11172
12661
14149
15637
17126
18614
20102
21591
23079
24567
26056
Concentration (UG/L) as midpoint

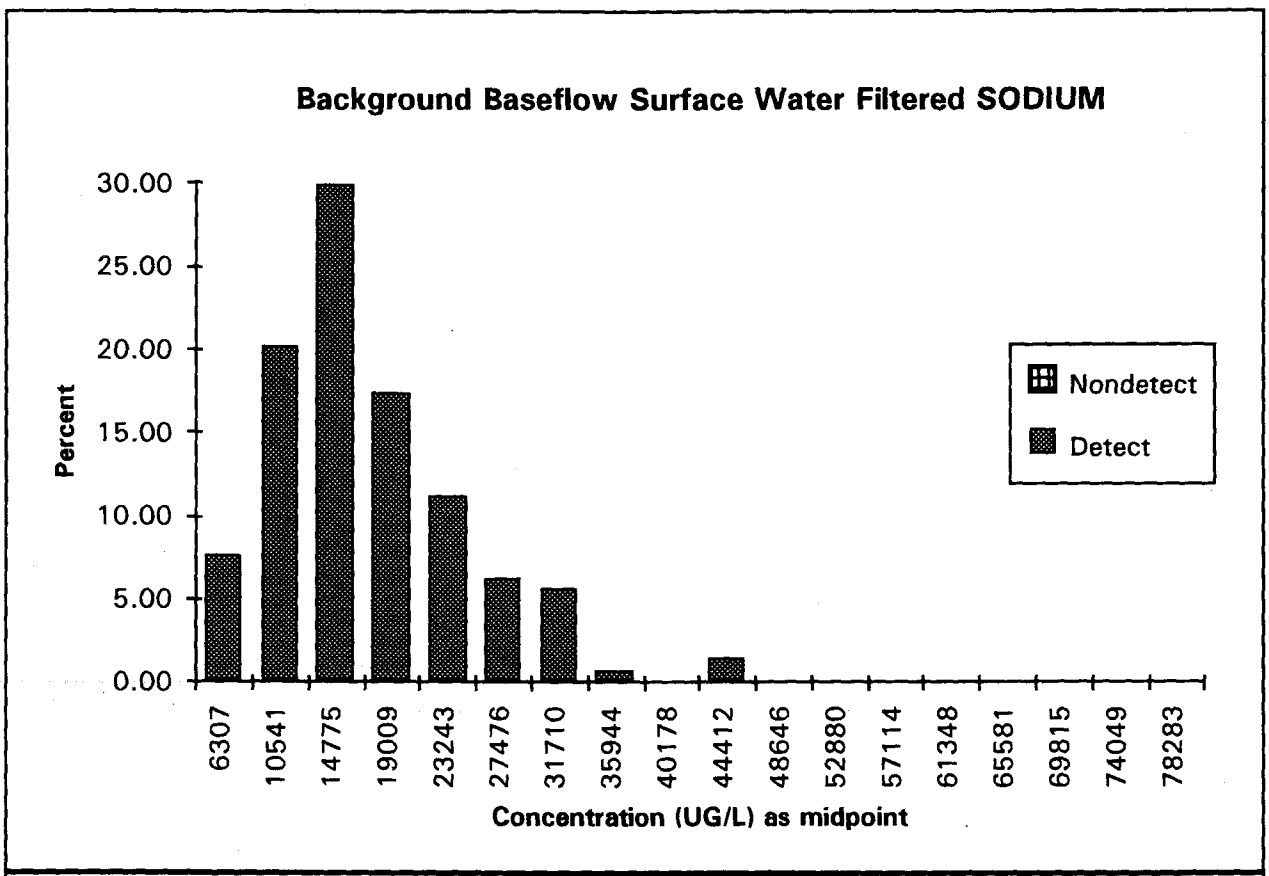

OU6 Baseflow Surface Water Filtered MAGNESIUM
Percent
30.00
25.00
20.00
15.00
10.00
5.00
0.00
Nondetect
Detect
754
2243
3731
5219
6707
8196
9684
11172
12661
14149
15637
17126
18614
20102
21591
23079
24567
26056
Concentration (UG/L) as midpoint

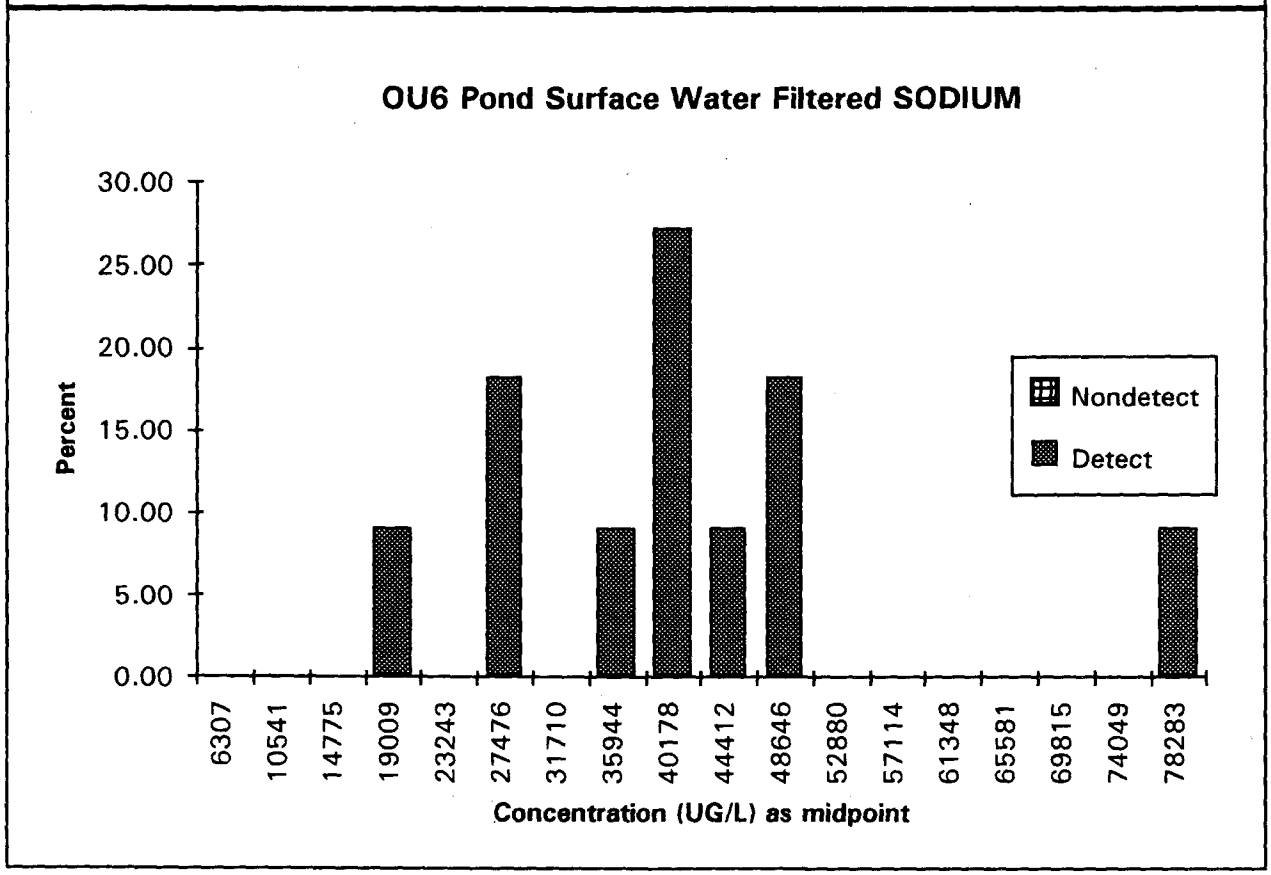

Background Baseflow Surface Water Filtered MANGANESE
90.00
80.00
70.00
60.00
50.00
40.00
30.00
20.00
10.00
0.00
Percent
Nondetect
Detect
31
93
154
215
276
337
398
459
520
581
642
703
764
825
886
947
1008
1069
Concentration (UG/L) as midpoint

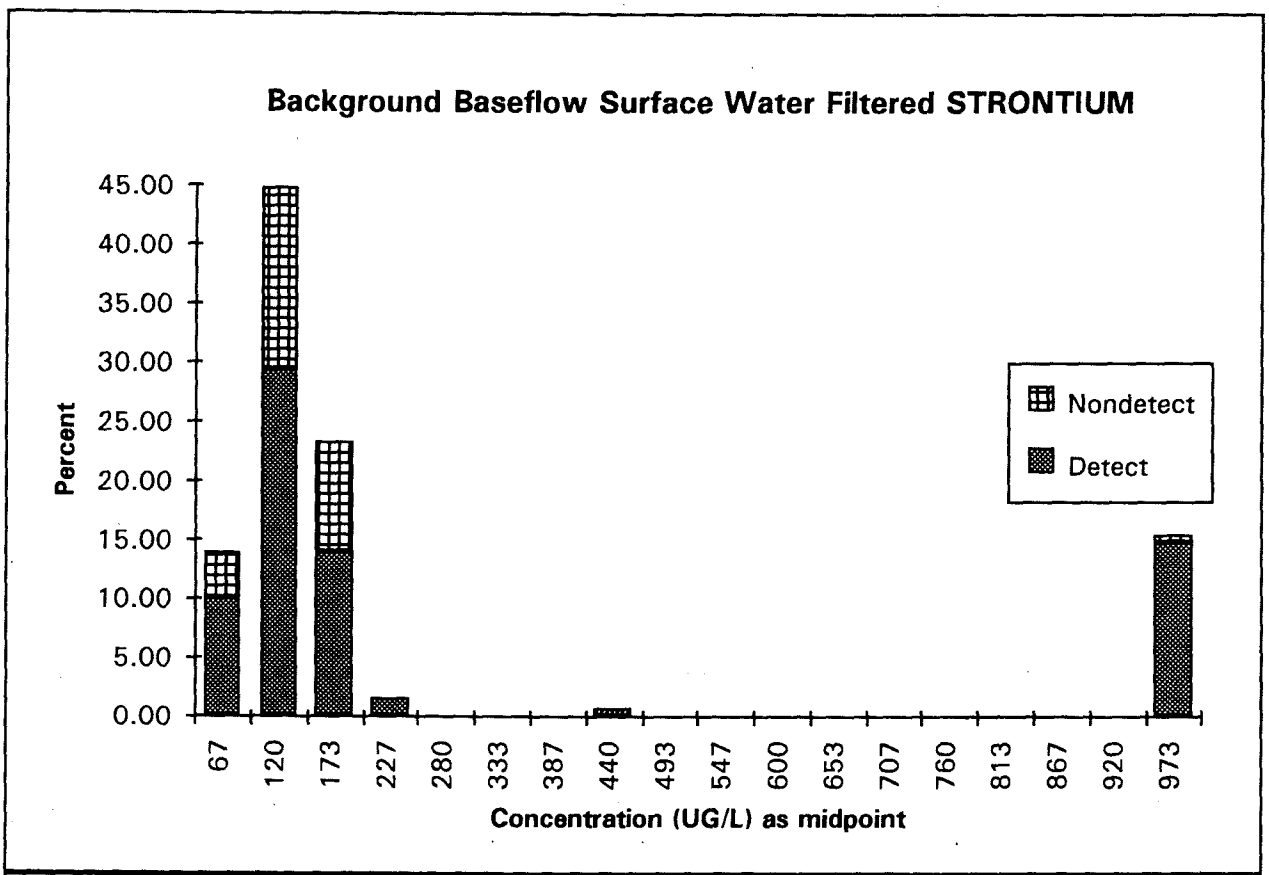

OU6 Baseflow Surface Water Filtered MANGANESE
80.00
70.00
60.00
50.00
40.00
30.00
20.00
10.00
0.00
Percent
Nondetect
Detect
31
93
154
215
276
337
398
459
520
581
642
703
764
825
886
947
1008
1069
Concentration (UG/L) as midpoint

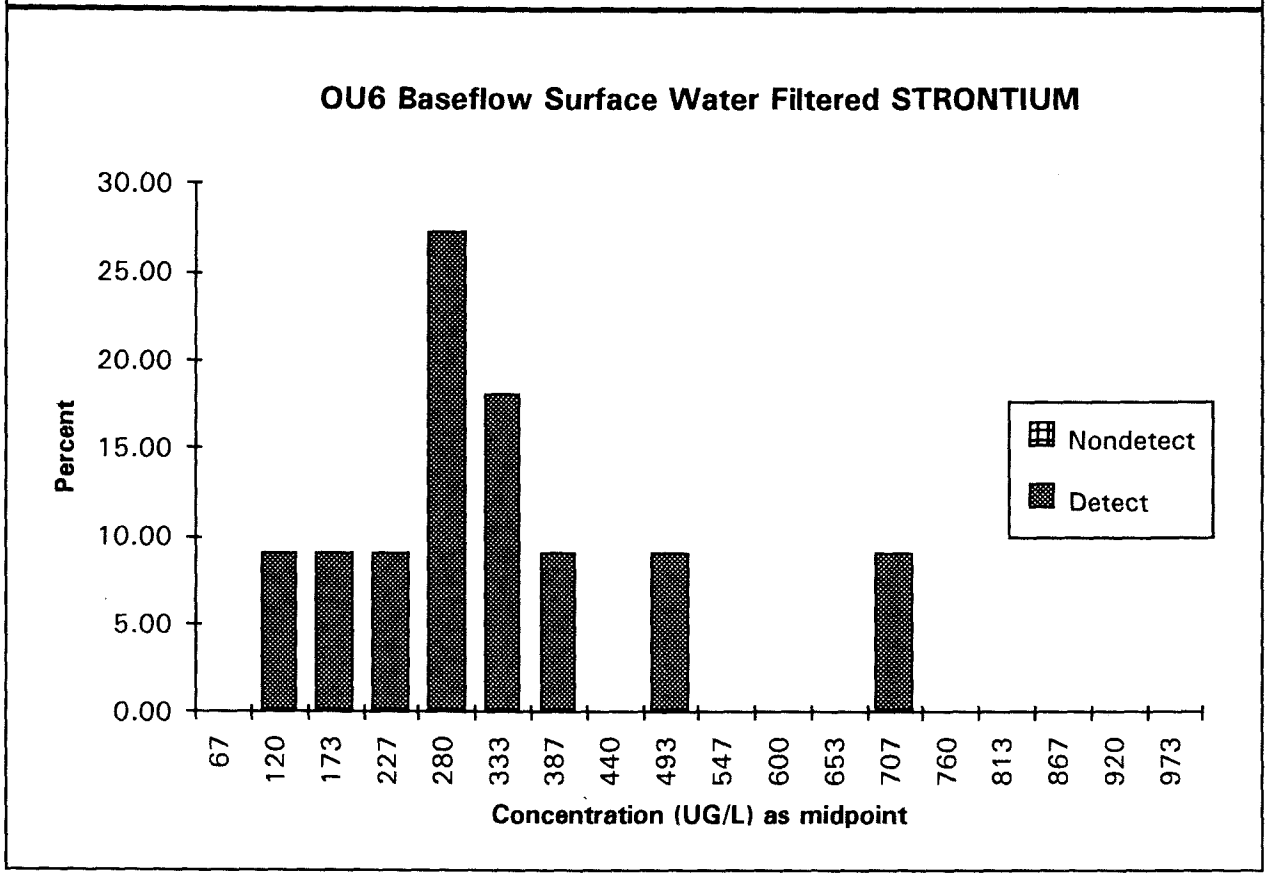

Background Baseflow Surface Water Filtered POTASSIUM
Percent
25.00
20.00
15.00
10.00
5.00
0.00
Nondetect
Detect
595
1004
1414
1823
2232
2642
3051
3461
3870
4280
4689
5099
5508
5917
6327
6736
7146
7555
Concentration (UG/L) as midpoint

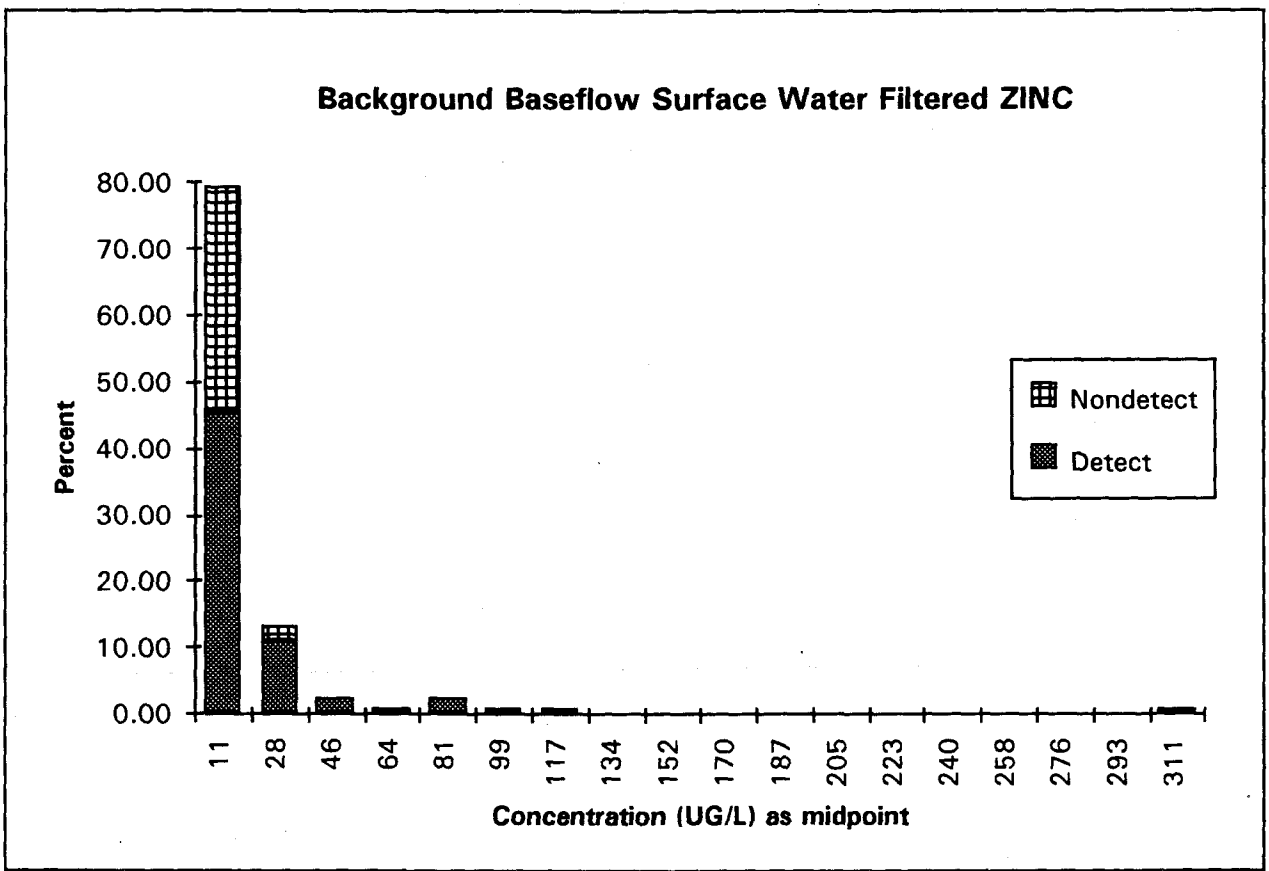

OU6 Baseflow Surface Water Filtered POTASSIUM
Percent
40.00
35.00
30.00
25.00
20.00
15.00
10.00
5.00
0.00
Nondetect
Detect
595
1004
1414
1823
2232
2642
3051
3461
3870
4280
4689
5099
5508
5917
6327
6736
7146
7555
Concentration (UG/L) as midpoint

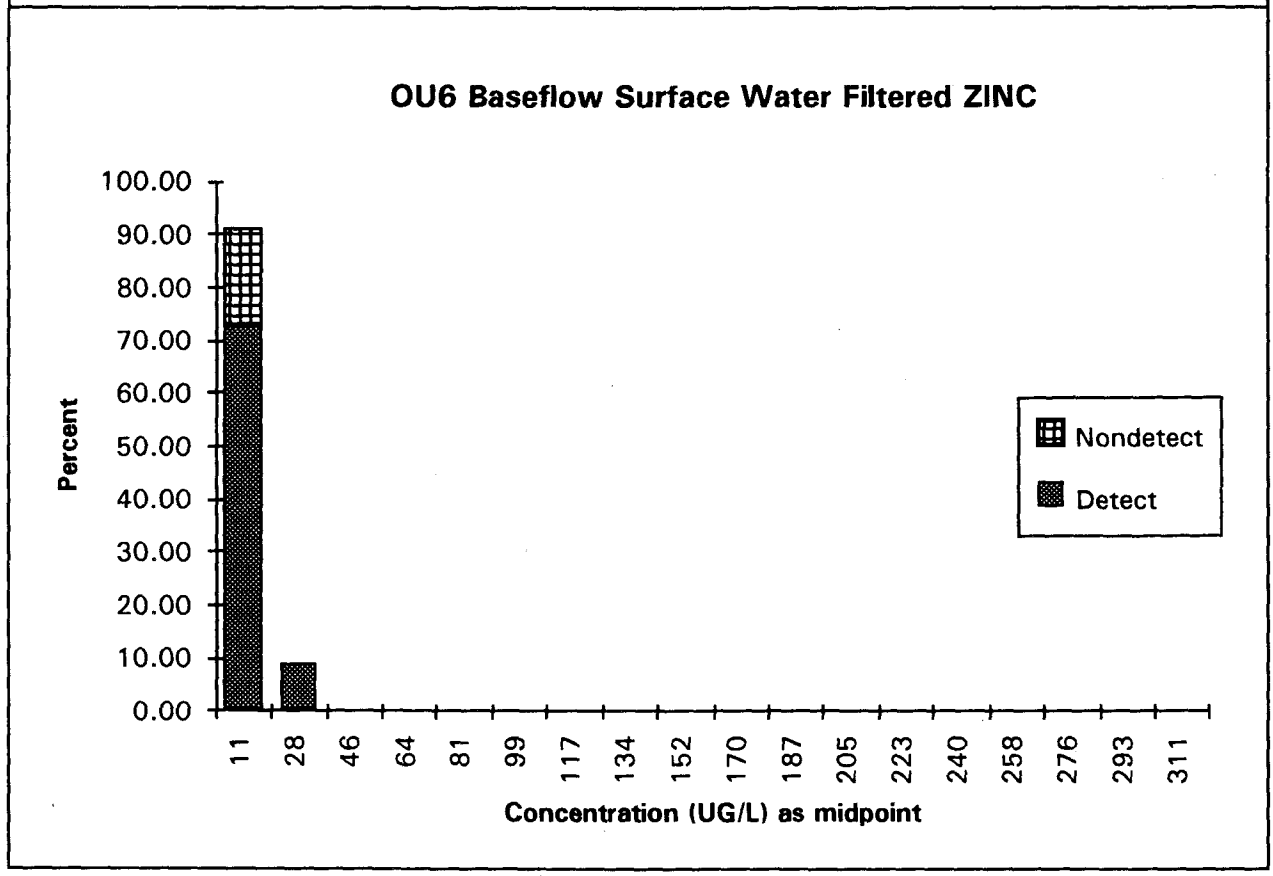

Background Baseflow Surface Water Filtered SODIUM
30.00
25.00
20.00
15.00
10.00
5.00
0.00
Percent
Nondetect
Detect
6307
10541
14775
19009
23243
27476
31710
35944
40178
44412
48646
52880
57114
61348
65581
69815
74049
78283
Concentration (UG/L) as midpoint

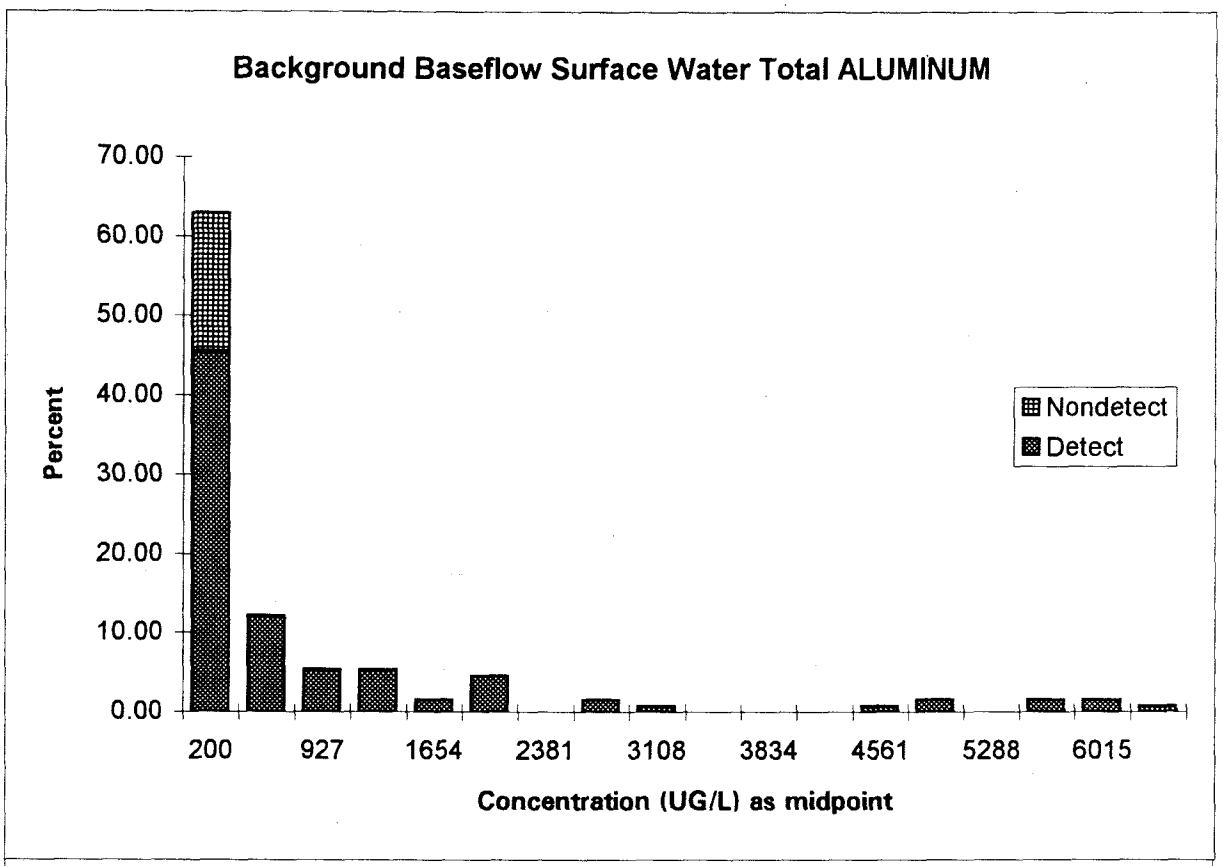

OU6 Pond Surface Water Filtered SODIUM
30.00
25.00
20.00
15.00
10.00
5.00
0.00
Percent
Nondetect
Detect
6307
10541
14775
19009
23243
27476
31710
35944
40178
44412
48646
52880
57114
61348
65581
69815
74049
78283
Concentration (UG/L) as midpoint

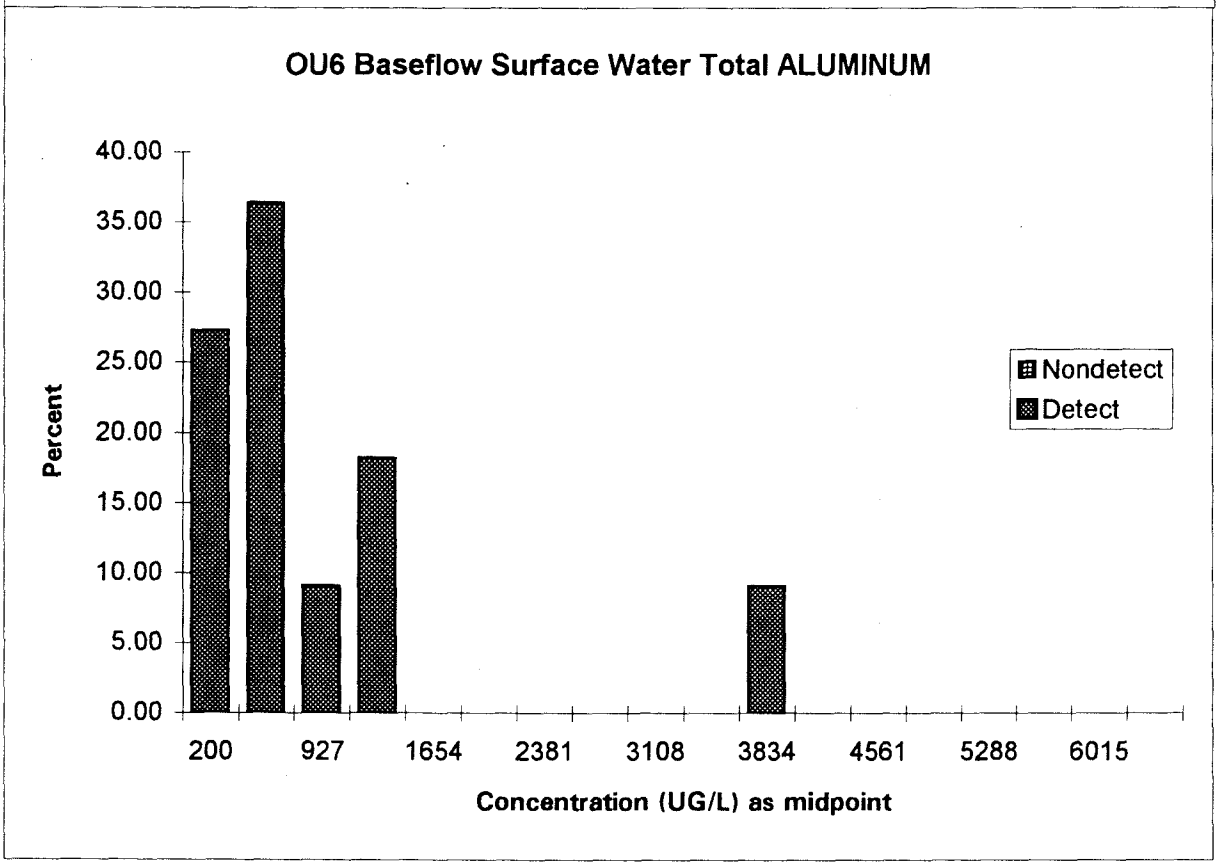

Background Baseflow Surface Water Filtered STRONTIUM
45.00
40.00
35.00
30.00
25.00
20.00
15.00
10.00
5.00
0.00
Percent
Nondetect
Detect
67
120
173
227
280
333
387
440
493
547
600
653
707
760
813
867
920
973
Concentration (UG/L) as midpoint

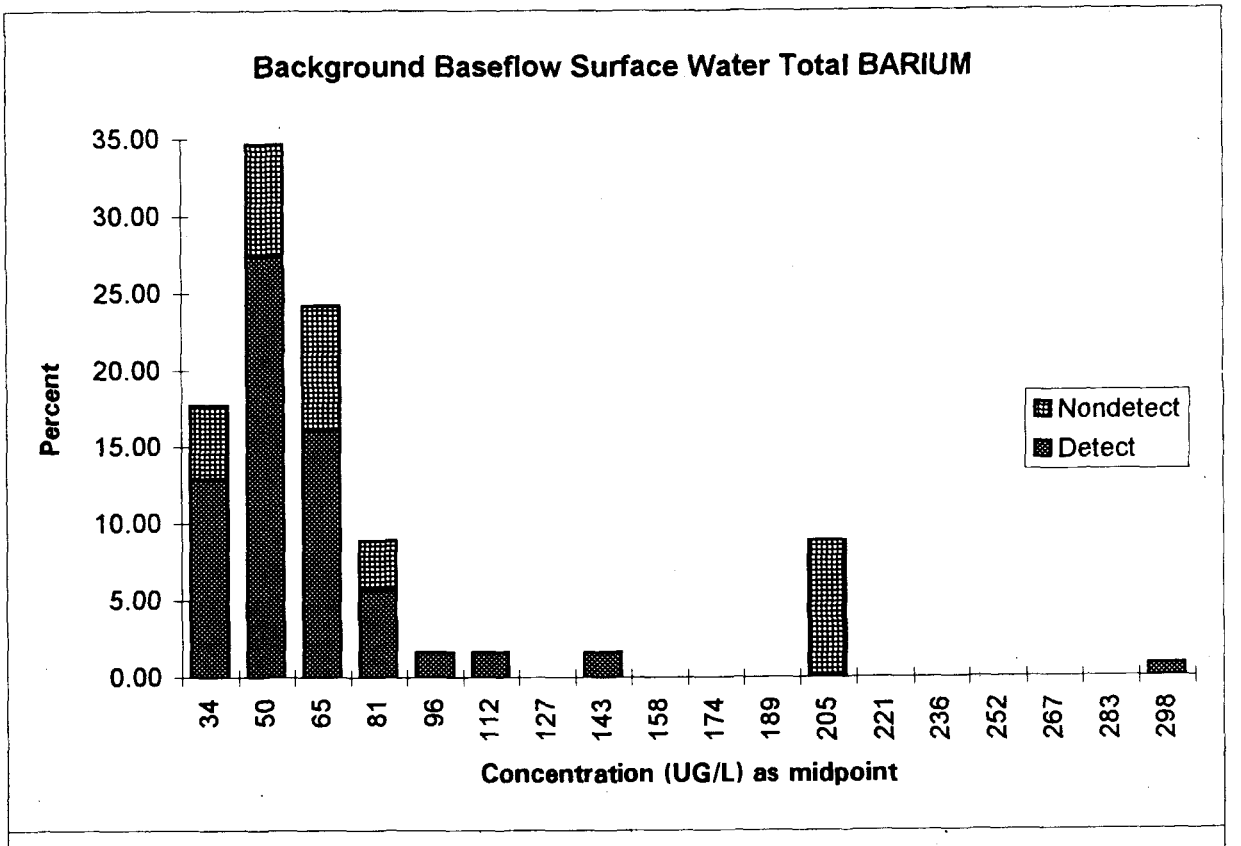

OU6 Baseflow Surface Water Filtered STRONTIUM
30.00
25.00
20.00
15.00
10.00
5.00
0.00
Percent
Nondetect
Detect
67
120
173
227
280
333
387
440
493
547
600
653
707
760
813
867
920
973
Concentration (UG/L) as midpoint

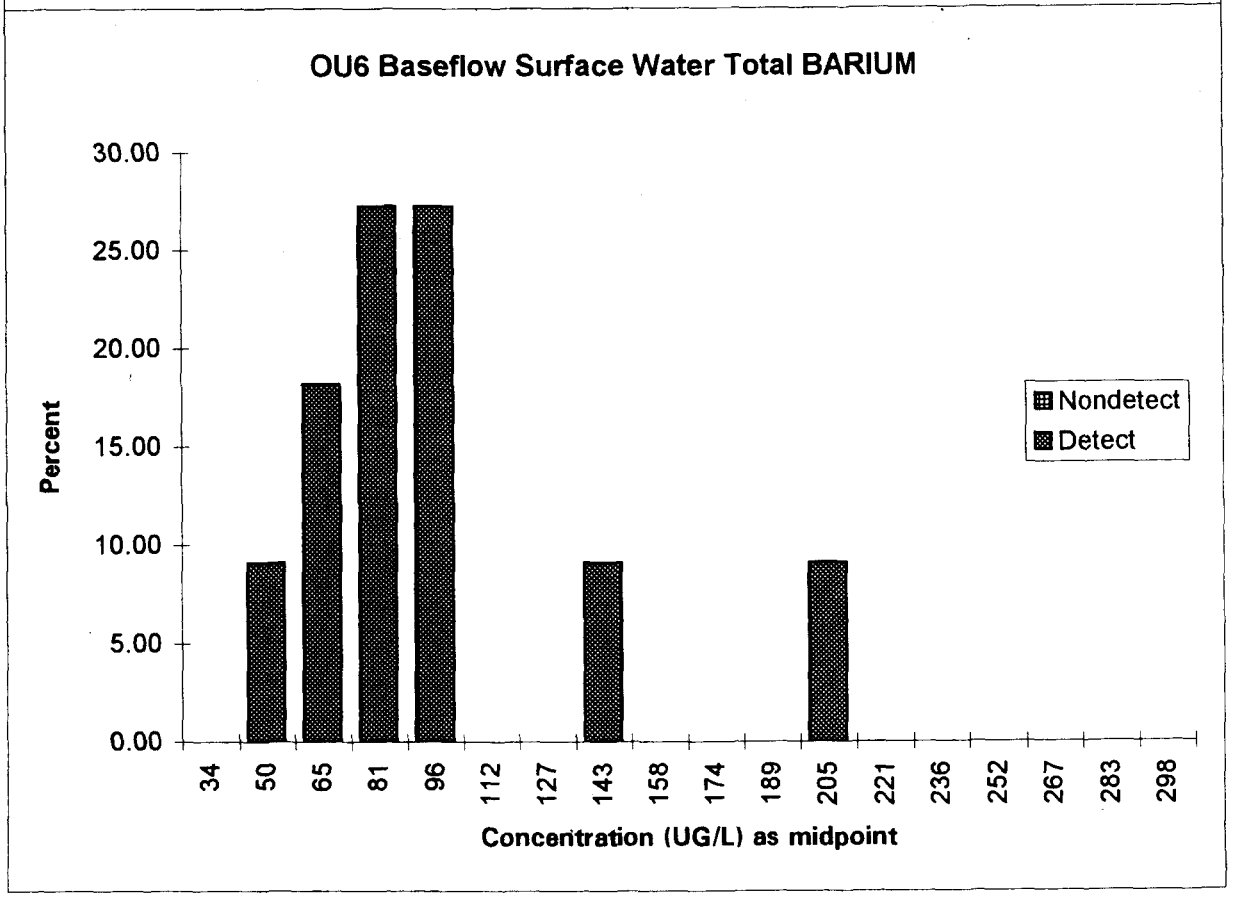

Background Baseflow Surface Water Filtered ZINC
Percent
80.00
70.00
60.00
50.00
40.00
30.00
20.00
10.00
0.00
11
28
46
64
81
99
117
134
152
170
187
205
223
240
258
276
293
311
Concentration (UG/L) as midpoint
Nondetect
Detect

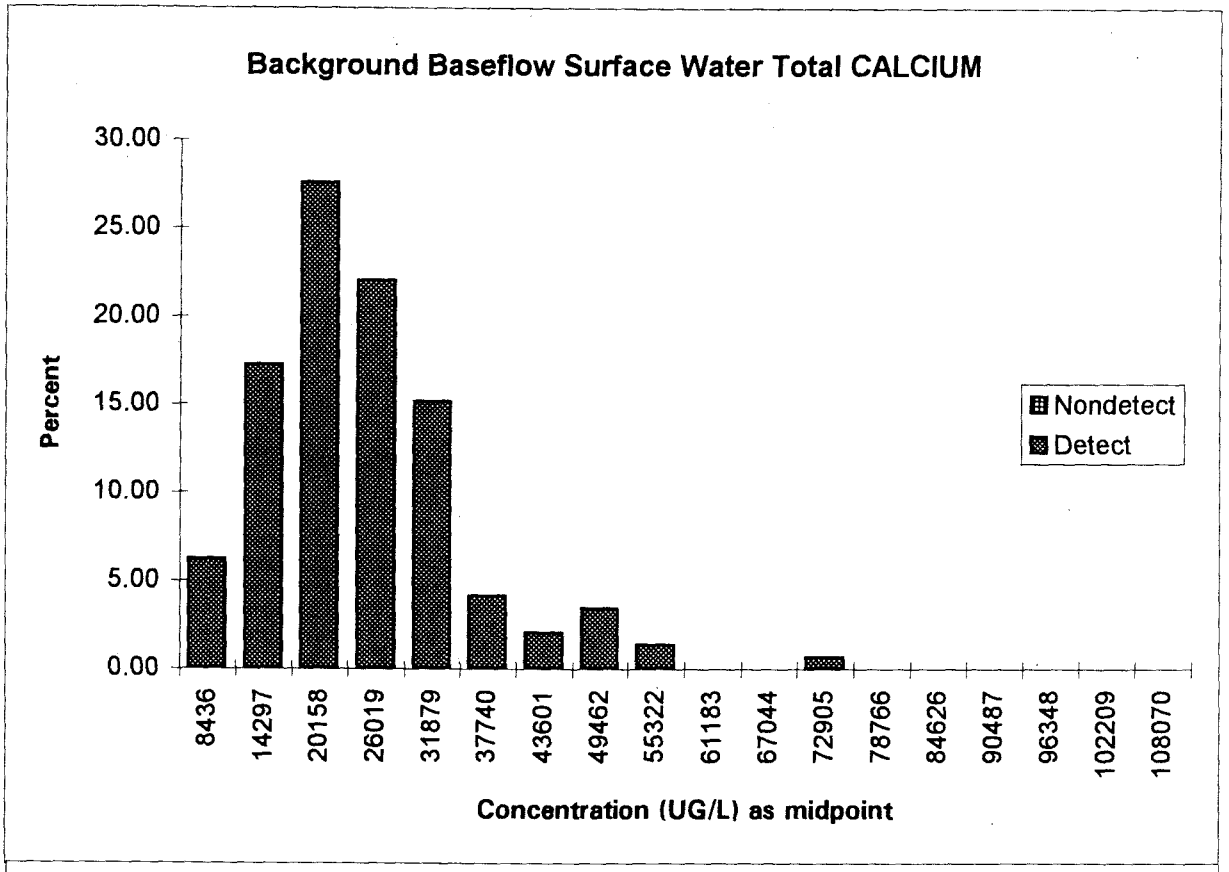

OU6 Baseflow Surface Water Filtered ZINC
Percent
100.00
90.00
80.00
70.00
60.00
50.00
40.00
30.00
20.00
10.00
0.00
11
28
46
64
81
99
117
134
152
170
187
205
223
240
258
276
293
311
Concentration (UG/L) as midpoint
Nondetect
Detect

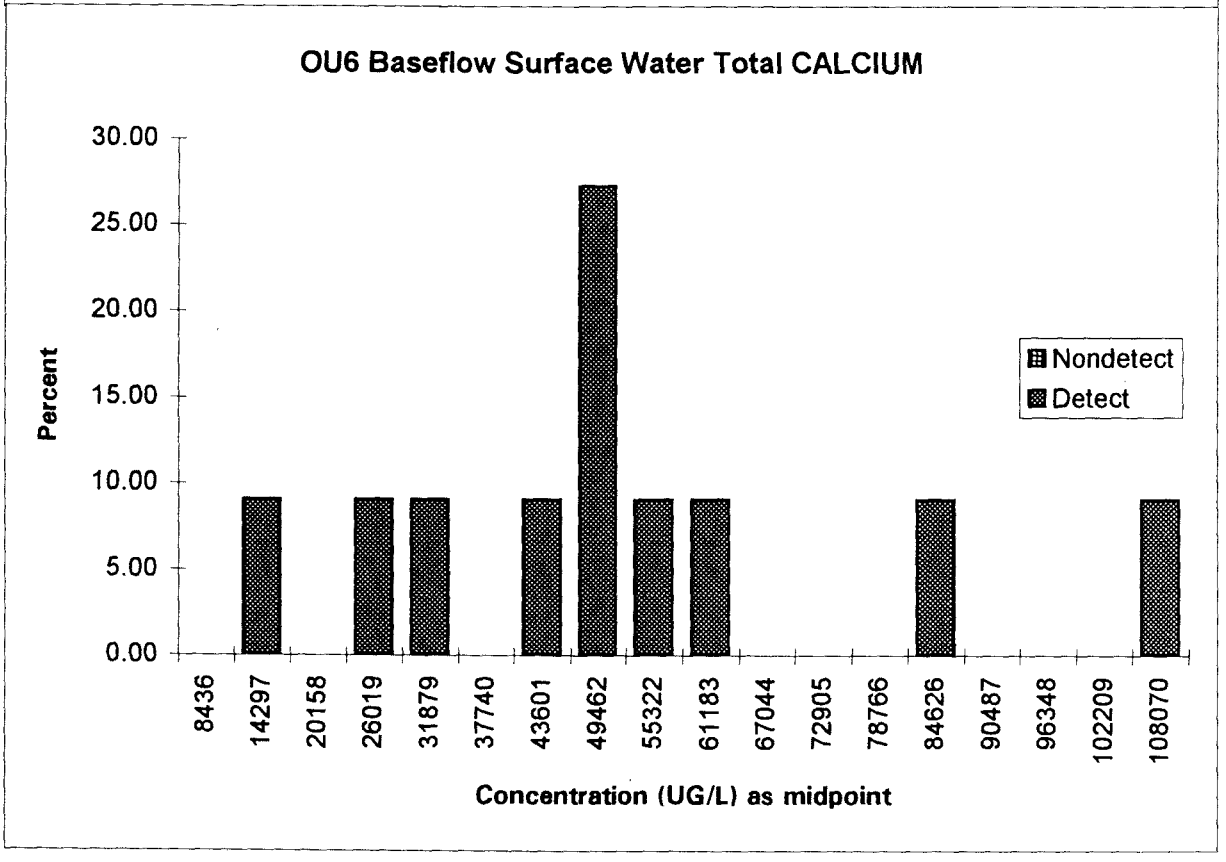

Background Baseflow Surface Water Total ALUMINUM
70.00
60.00
50.00
40.00
30.00
20.00
10.00
0.00
Percent
Nondetect
Detect
200
927
1654
2381
3108
3834
4561
5288
6015
Concentration (UG/L) as midpoint

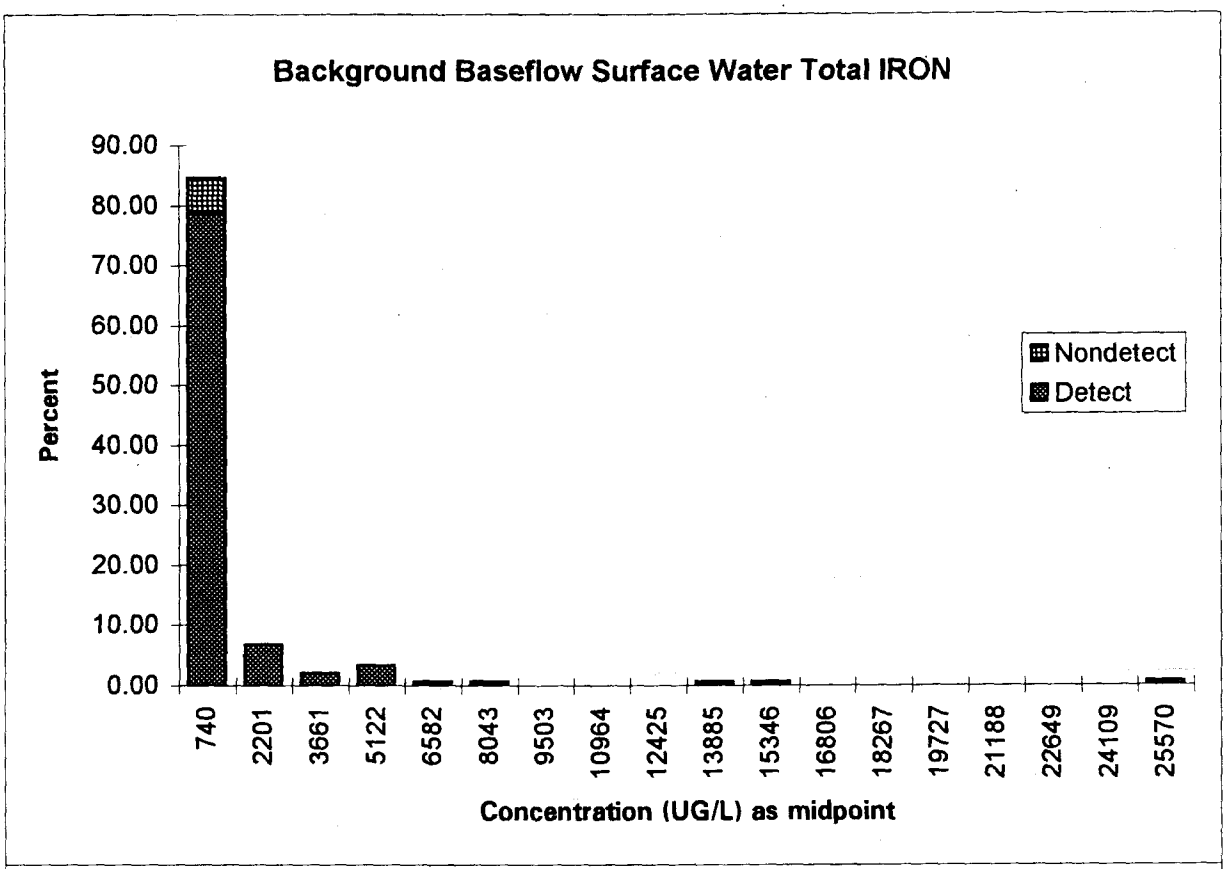

OU6 Baseflow Surface Water Total ALUMINUM
40.00
35.00
30.00
25.00
20.00
15.00
10.00
5.00
0.00
Percent
Nondetect
Detect
200
927
1654
2381
3108
3834
4561
5288
6015
Concentration (UG/L) as midpoint

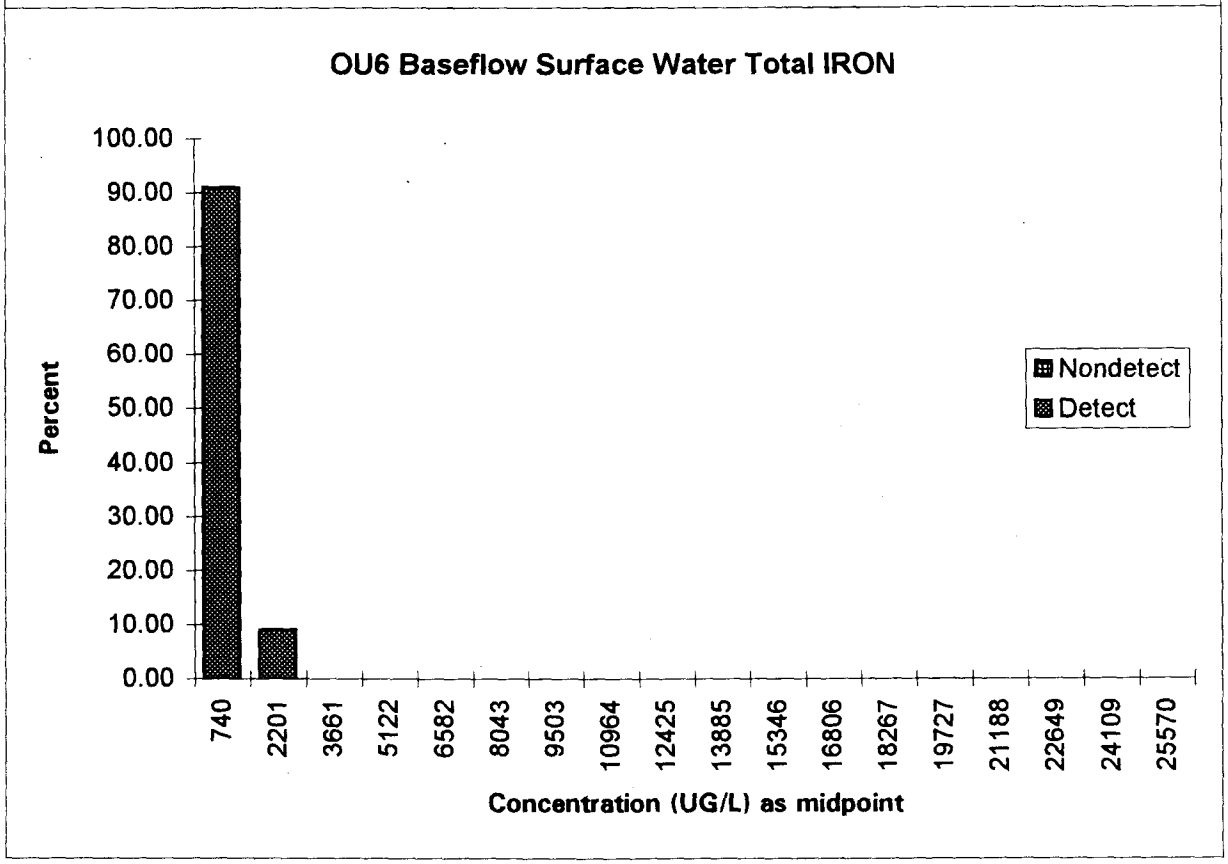

Background Baseflow Surface Water Total BARIUM
35.00
30.00
25.00
20.00
15.00
10.00
5.00
0.00
Percent
Nondetect
Detect
34
50
65
81
96
112
127
143
158
174
189
205
221
236
252
267
283
298
Concentration (UG/L) as midpoint

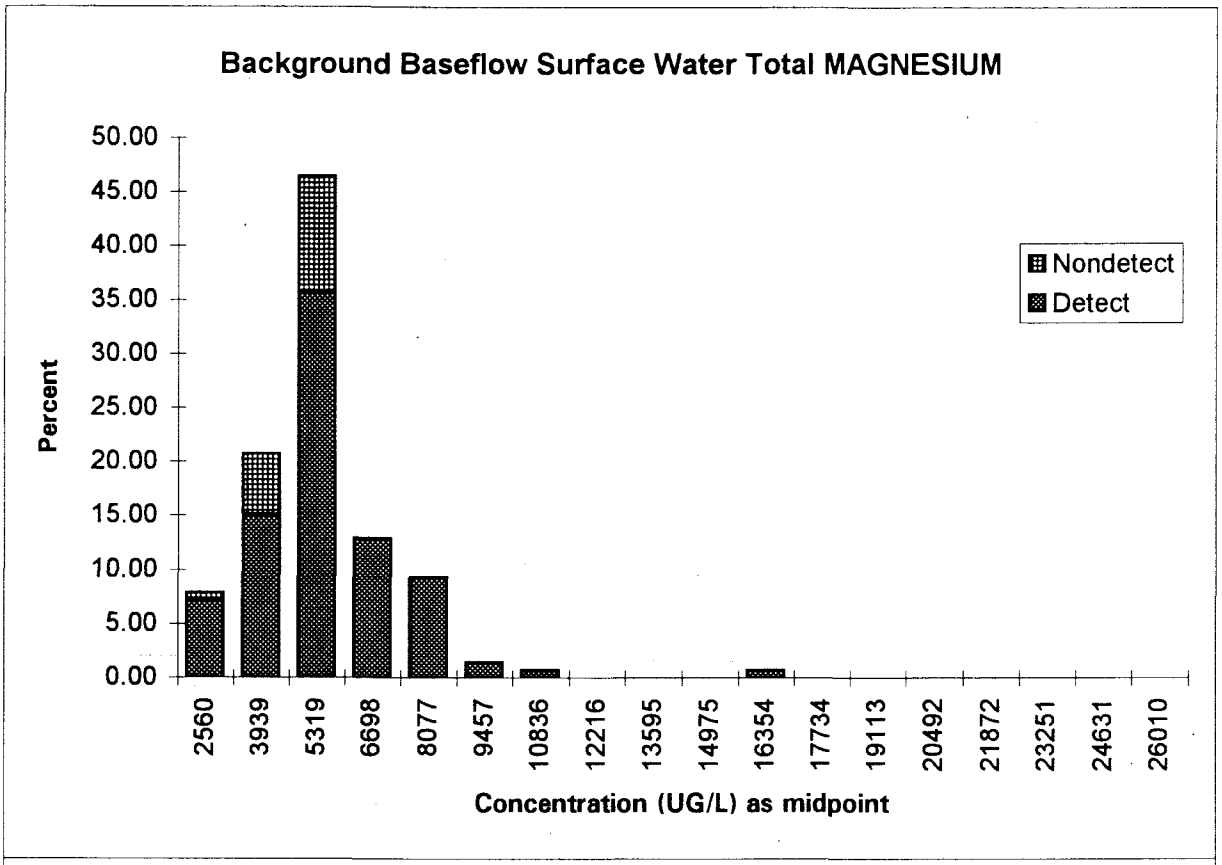

OU6 Baseflow Surface Water Total BARIUM
30.00
25.00
20.00
15.00
10.00
5.00
0.00
Percent
Nondetect
Detect
34
50
65
81
96
112
127
143
158
174
189
205
221
236
252
267
283
298
Concentration (UG/L) as midpoint

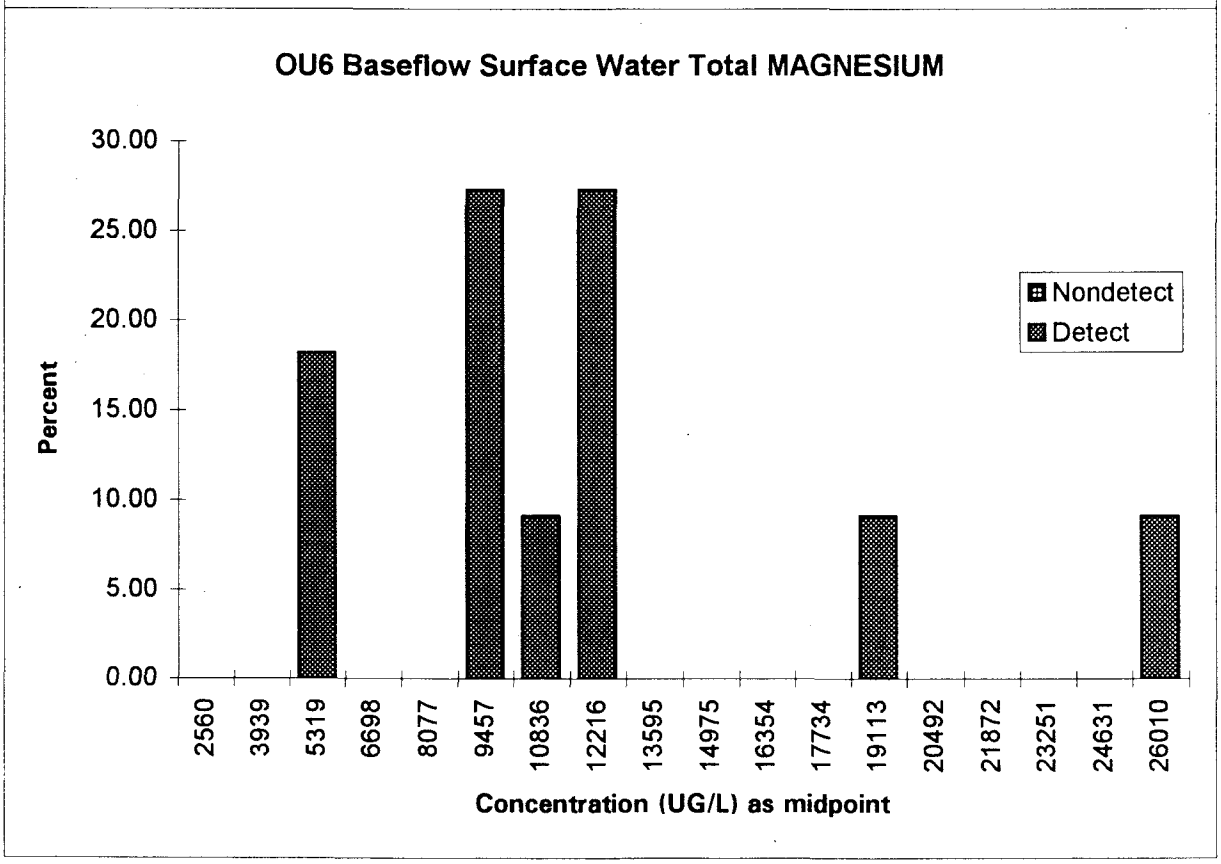

Background Baseflow Surface Water Total CALCIUM
30.00
25.00
20.00
15.00
10.00
5.00
0.00
Percent
Nondetect
Detect
8436
14297
20158
26019
31879
37740
43601
49462
55322
61183
67044
72905
78766
84626
90487
96348
102209
108070
Concentration (UG/L) as midpoint

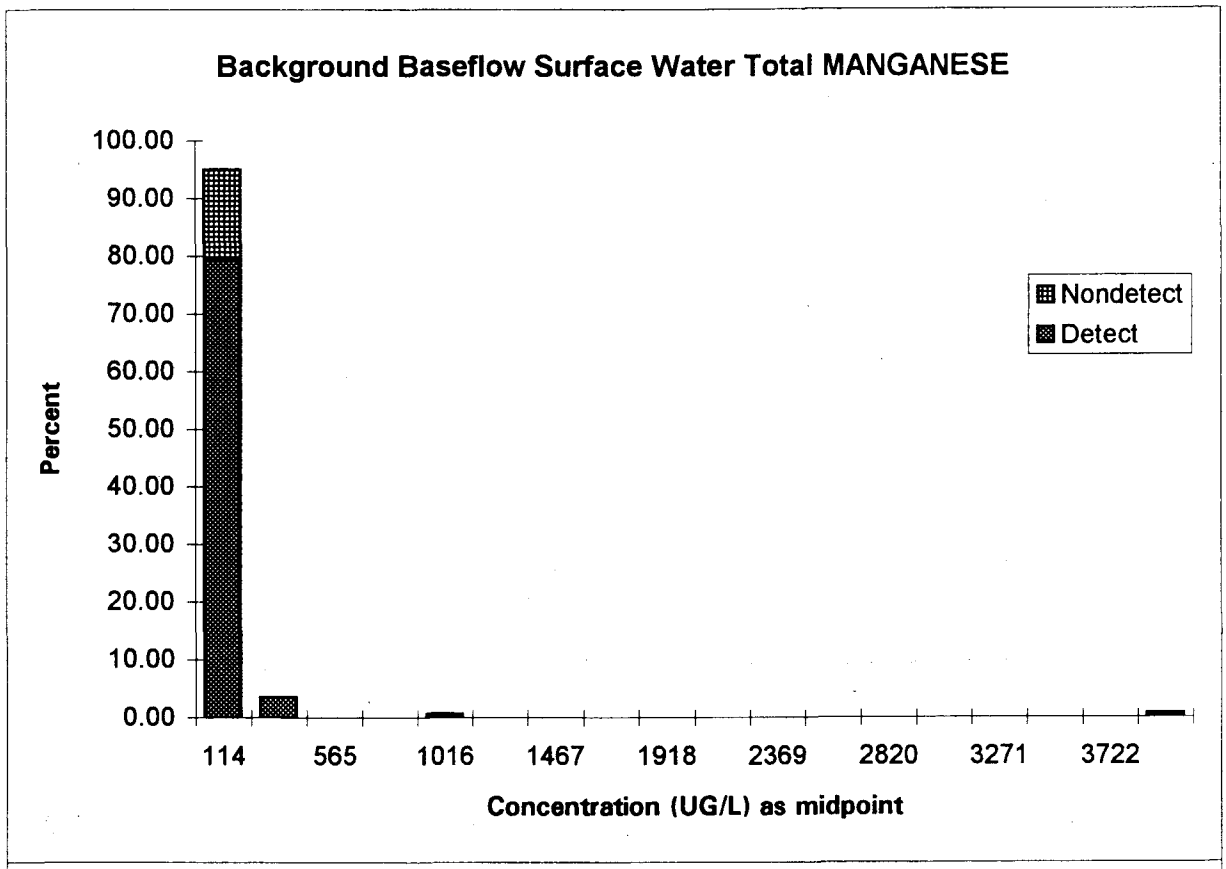

OU6 Baseflow Surface Water Total CALCIUM
30.00
25.00
20.00
15.00
10.00
5.00
0.00
Percent
Nondetect
Detect
8436
14297
20158
26019
31879
37740
43601
49462
55322
61183
67044
72905
78766
84626
90487
96348
102209
108070
Concentration (UG/L) as midpoint

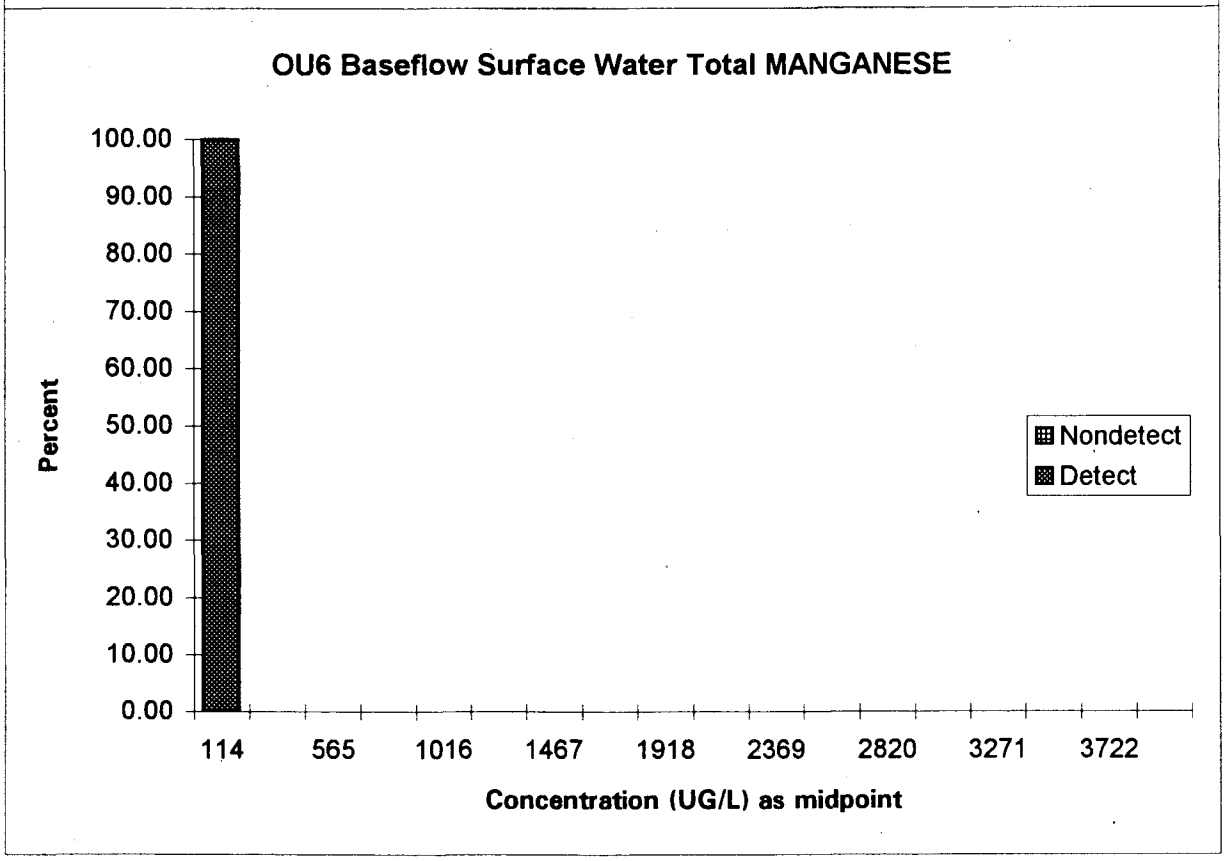

Background Baseflow Surface Water Total IRON
Percent
90.00
80.00
70.00
60.00
50.00
40.00
30.00
20.00
10.00
0.00
Nondetect
Detect
740
2201
3661
5122
6582
8043
9503
10964
12425
13885
15346
16806
18267
19727
21188
22649
24109
25570
Concentration (UG/L) as midpoint

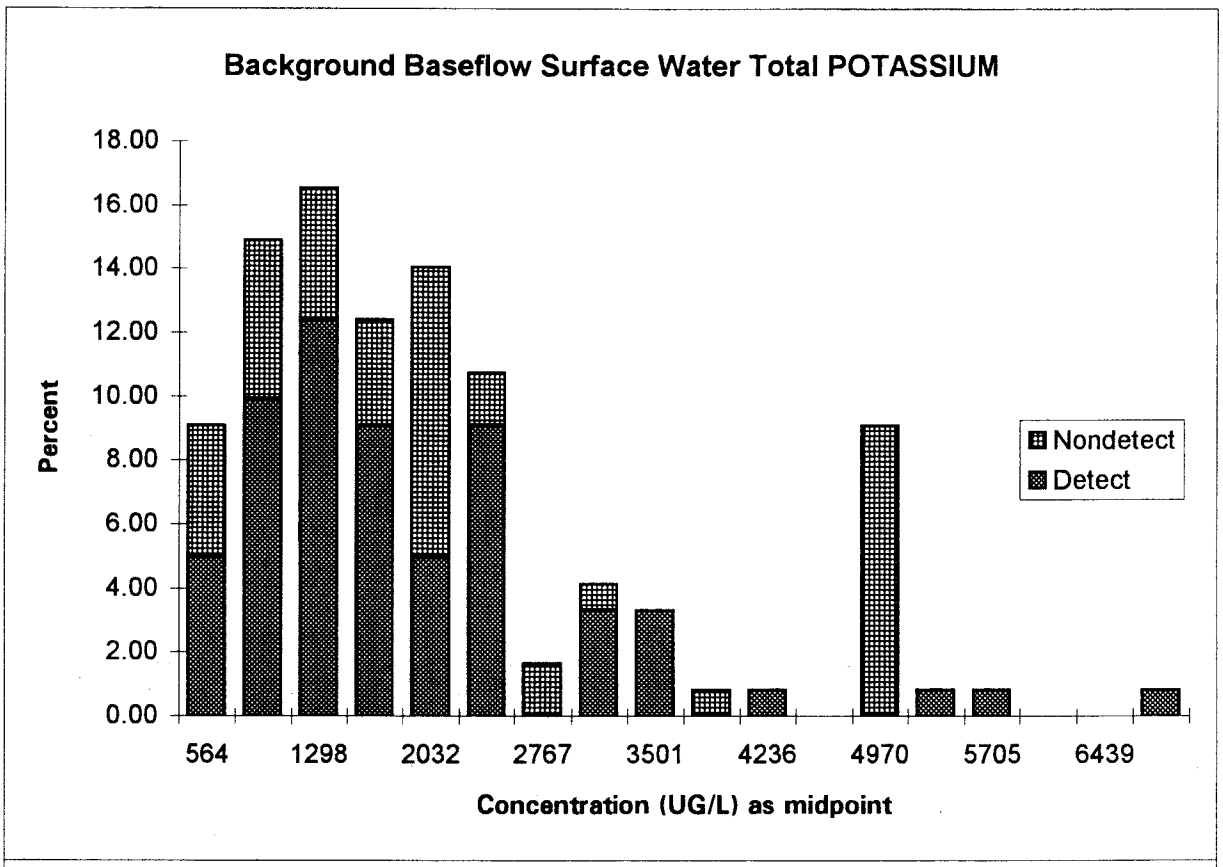

OU6 Baseflow Surface Water Total IRON
Percent
100.00
90.00
80.00
70.00
60.00
50.00
40.00
30.00
20.00
10.00
0.00
Nondetect
Detect
740
2201
3661
5122
6582
8043
9503
10964
12425
13885
15346
16806
18267
19727
21188
22649
24109
25570
Concentration (UG/L) as midpoint

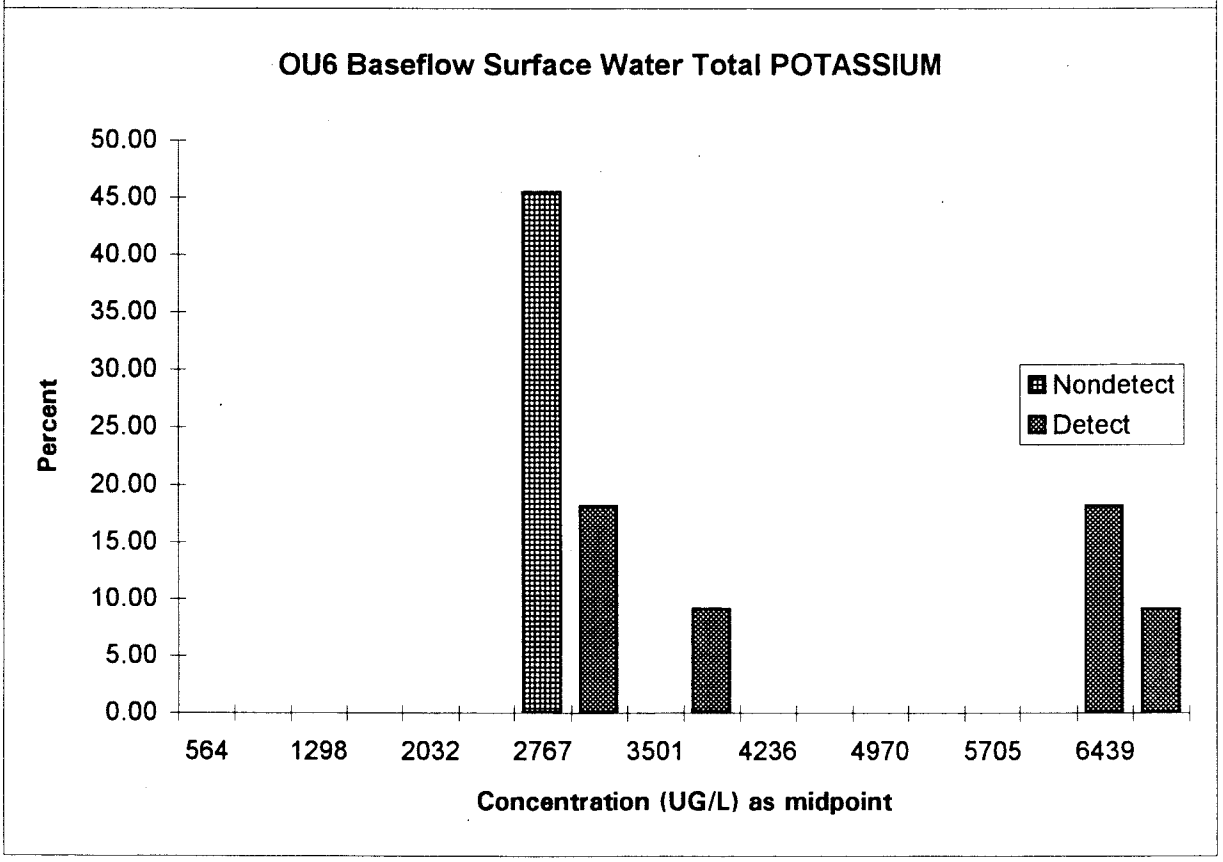

Background Baseflow Surface Water Total MAGNESIUM
Percent
50.00
45.00
40.00
35.00
30.00
25.00
20.00
15.00
10.00
5.00
0.00
Nondetect
Detect
2560
3939
5319
6698
8077
9457
10836
12216
13595
14975
16354
17734
19113
20492
21872
23251
24631
26010
Concentration (UG/L) as midpoint

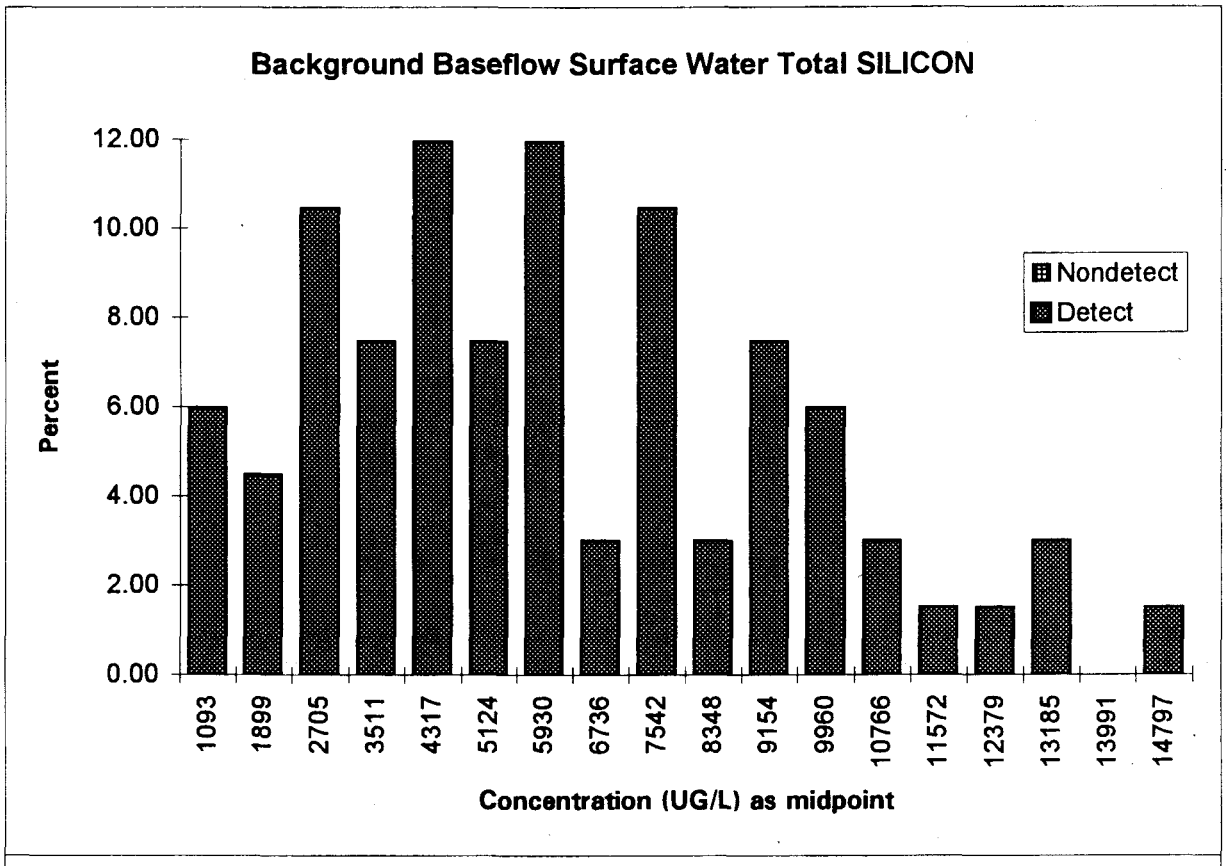

OU6 Baseflow Surface Water Total MAGNESIUM
Percent
30.00
25.00
20.00
15.00
10.00
5.00
0.00
Nondetect
Detect
2560
3939
5319
6698
8077
9457
10836
12216
13595
14975
16354
17734
19113
20492
21872
23251
24631
26010
Concentration (UG/L) as midpoint

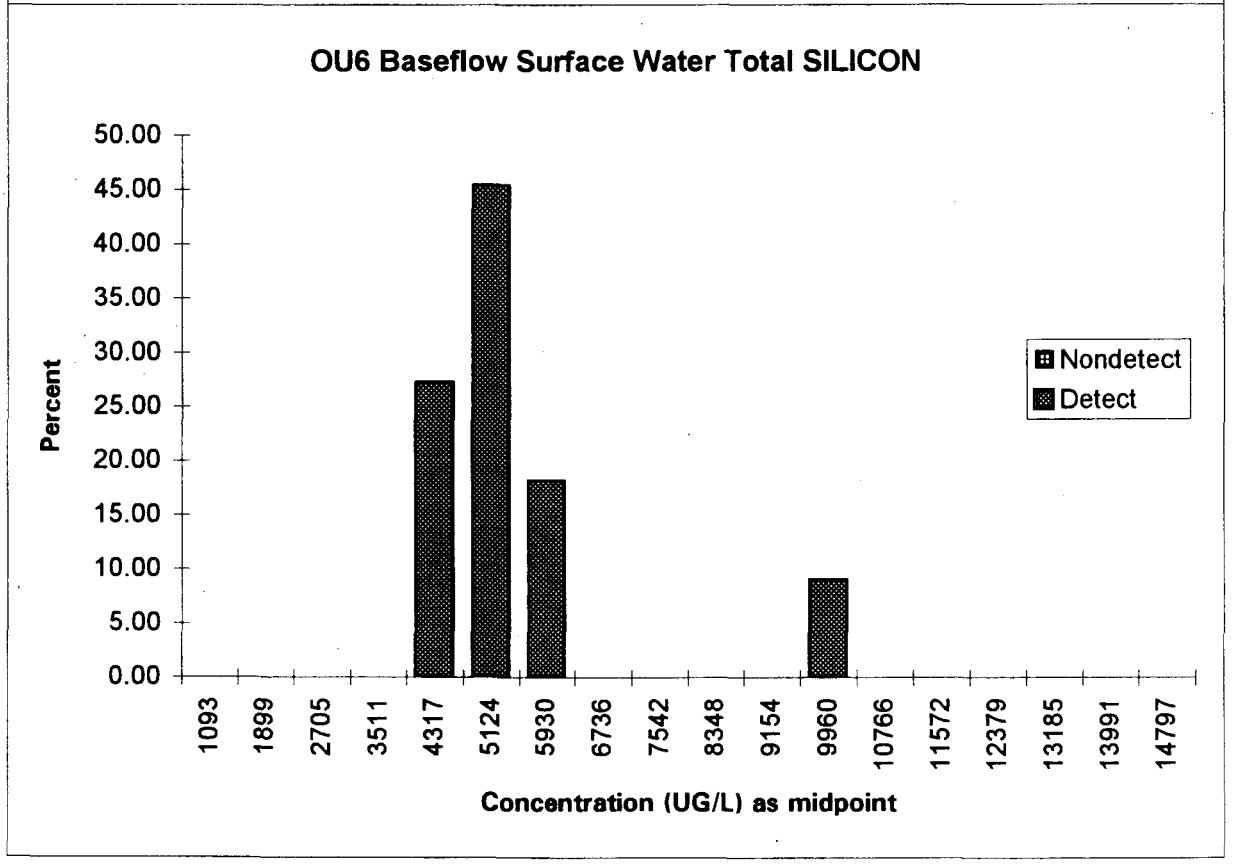

Background Baseflow Surface Water Total MANGANESE
100.00
90.00
80.00
70.00
60.00
50.00
40.00
30.00
20.00
10.00
0.00
Percent
Nondetect
Detect
114
565
1016
1467
1918
2369
2820
3271
3722
Concentration (UG/L) as midpoint

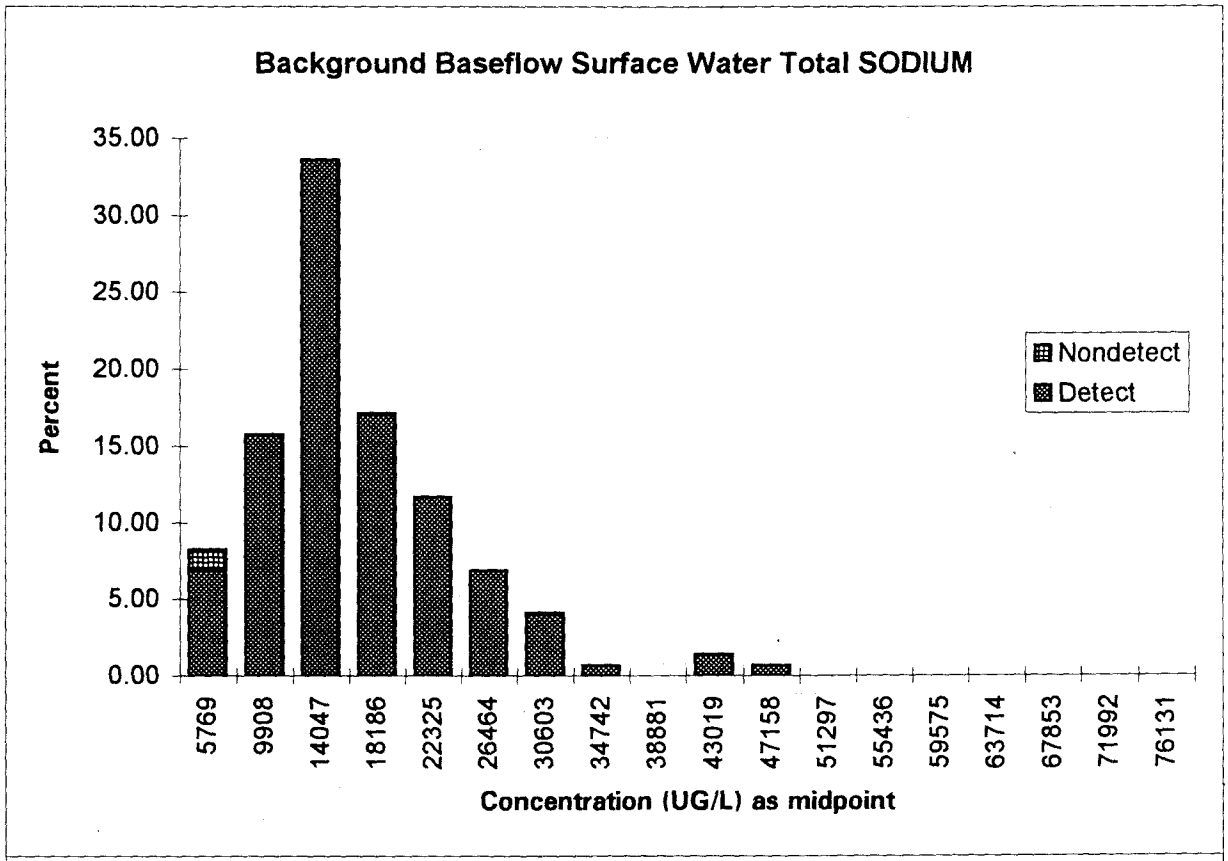

OU6 Baseflow Surface Water Total MANGANESE
100.00
90.00
80.00
70.00
60.00
50.00
40.00
30.00
20.00
10.00
0.00
Percent
Nondetect
Detect
114
565
1016
1467
1918
2369
2820
3271
3722
Concentration (UG/L) as midpoint

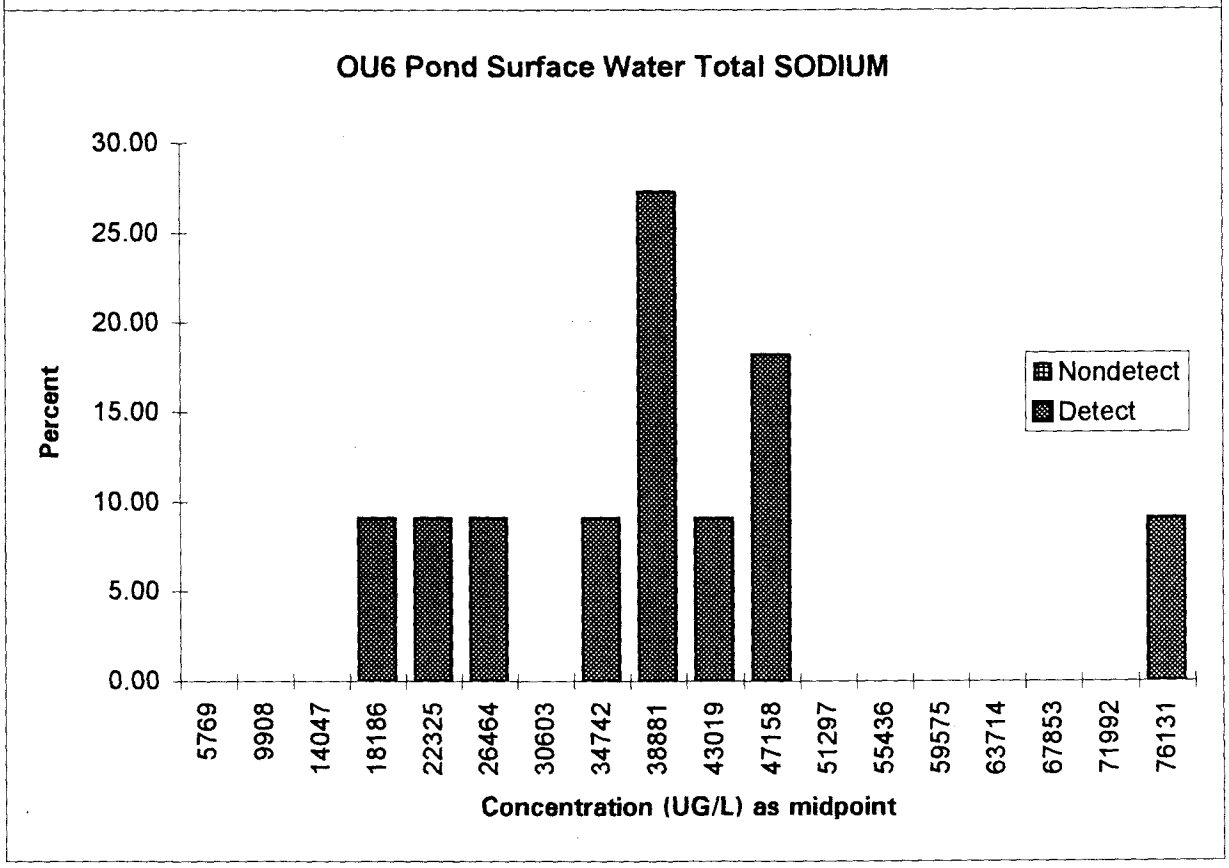

Background Baseflow Surface Water Total POTASSIUM
18.00
16.00
14.00
12.00
10.00
8.00
6.00
4.00
2.00
0.00
Percent
564
1298
2032
2767
3501
4236
4970
5705
6439
Concentration (UG/L) as midpoint
Nondetect
Detect

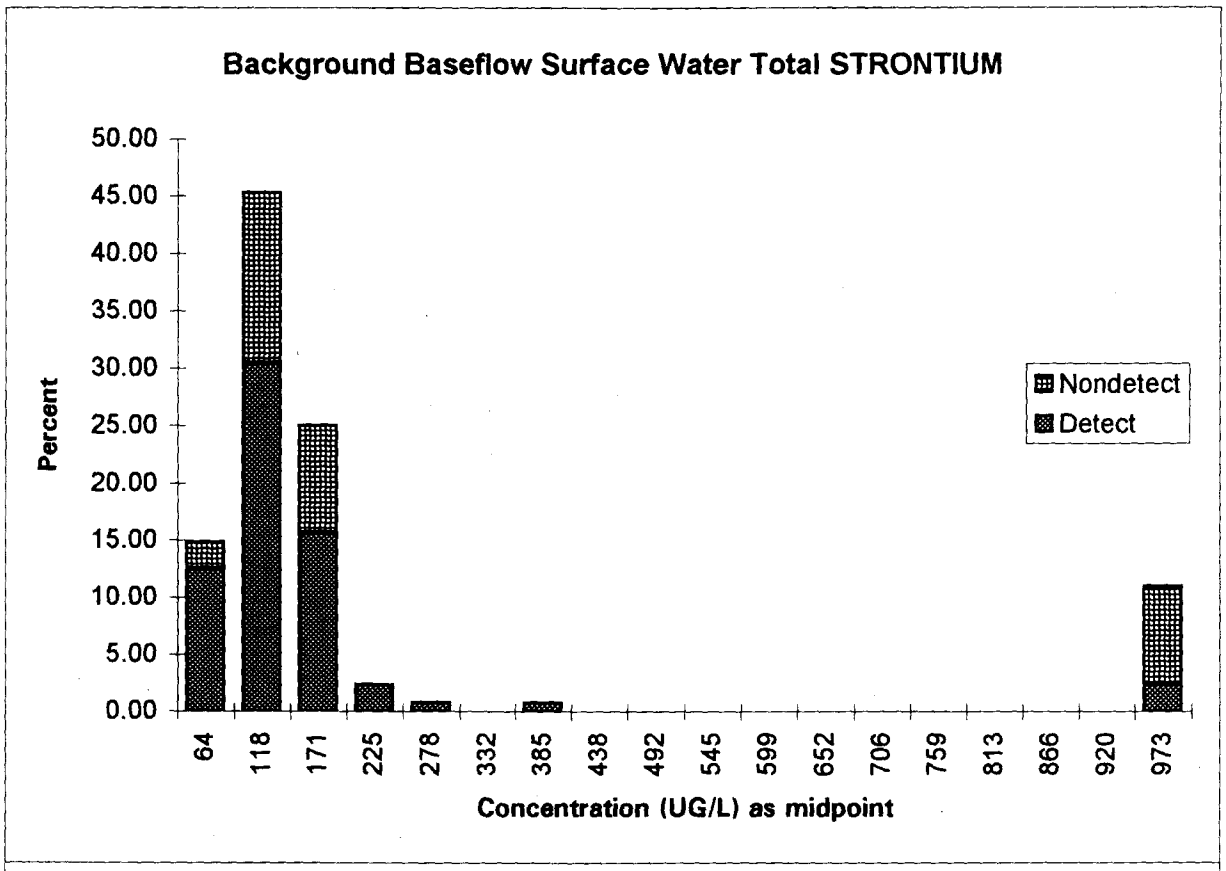

OU6 Baseflow Surface Water Total POTASSIUM
50.00
45.00
40.00
35.00
30.00
25.00
20.00
15.00
10.00
5.00
0.00
Percent
564
1298
2032
2767
3501
4236
4970
5705
6439
Concentration (UG/L) as midpoint
Nondetect
Detect

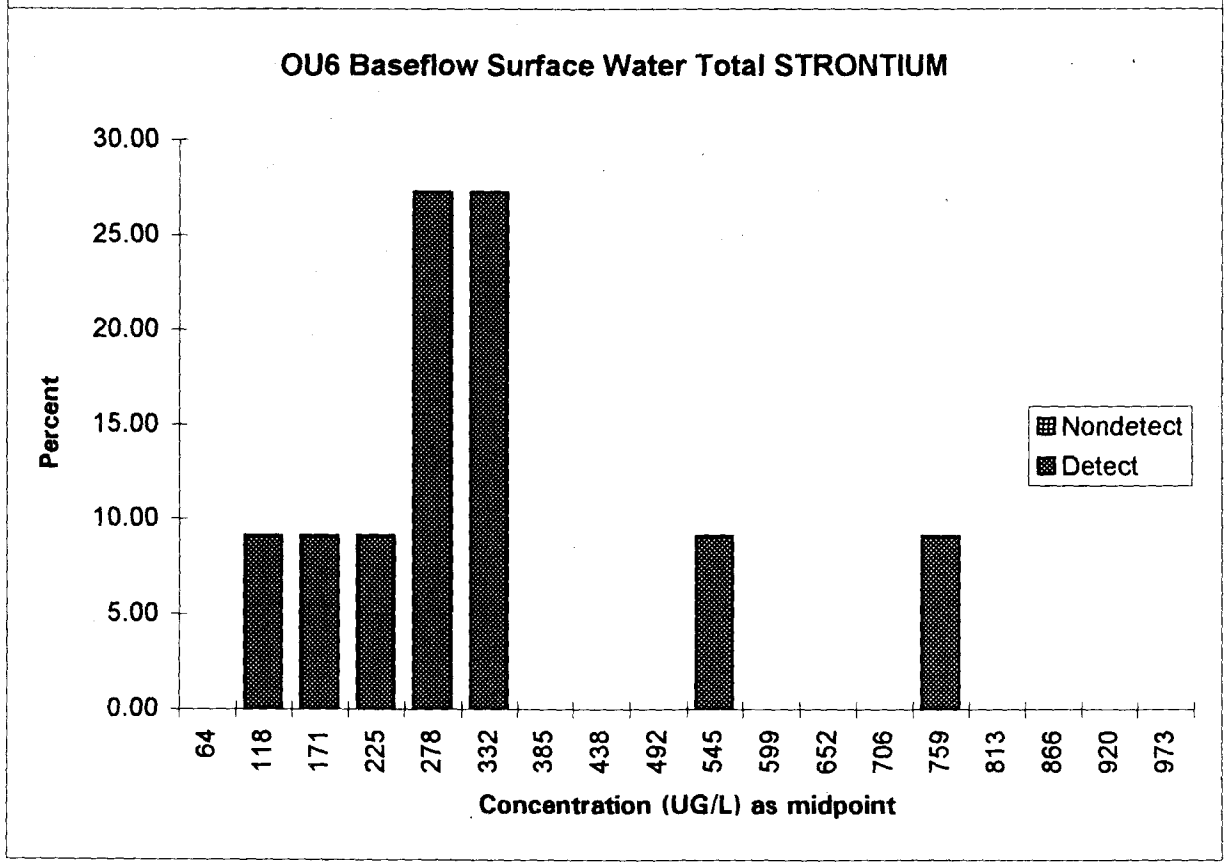

Background Baseflow Surface Water Total SILICON
Percent
12.00
10.00
8.00
6.00
4.00
2.00
0.00
Nondetect
Detect
1093
1899
2705
3511
4317
5124
5930
6736
7542
8348
9154
9960
10766
11572
12379
13185
13991
14797
Concentration (UG/L) as midpoint

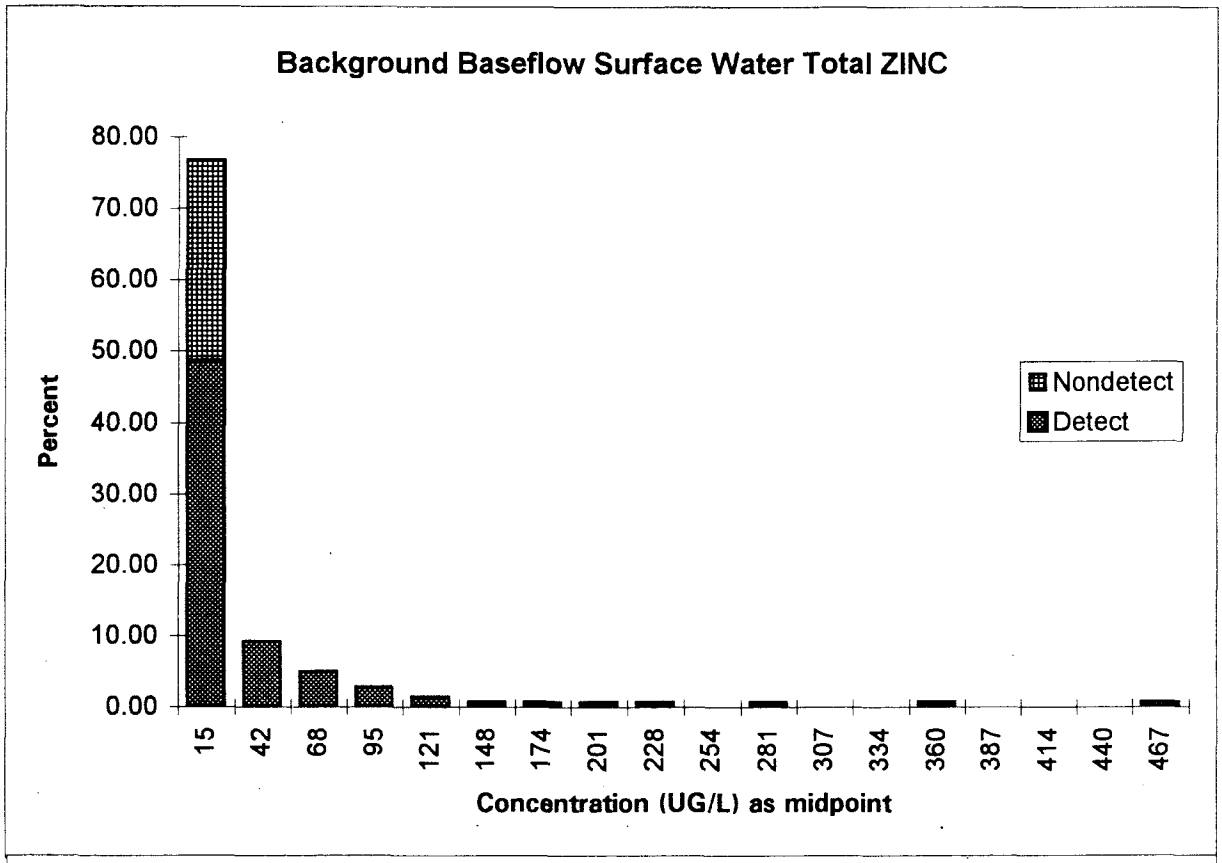

OU6 Baseflow Surface Water Total SILICON
Percent
50.00
45.00
40.00
35.00
30.00
25.00
20.00
15.00
10.00
5.00
0.00
Nondetect
Detect
1093
1899
2705
3511
4317
5124
5930
6736
7542
8348
9154
9960
10766
11572
12379
13185
13991
14797
Concentration (UG/L) as midpoint

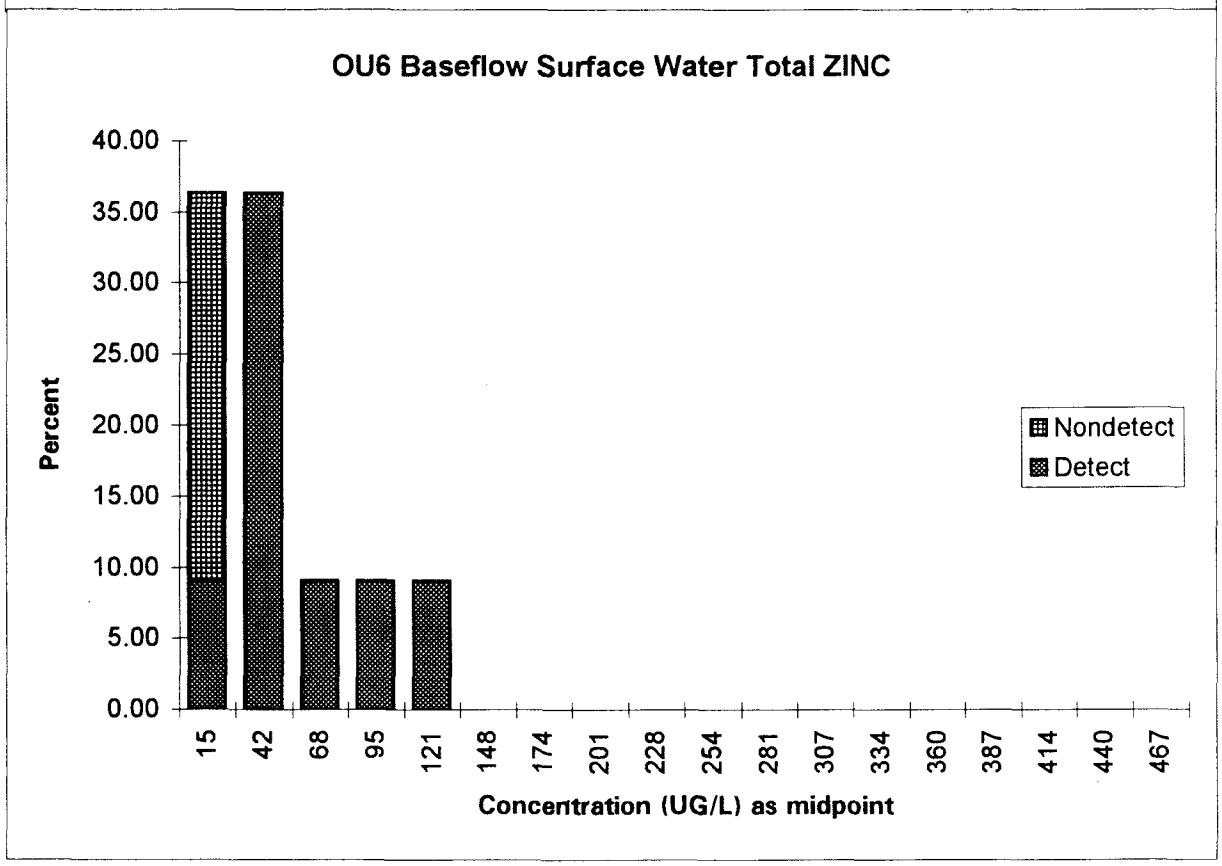

Background Baseflow Surface Water Total SODIUM
Percent
35.00
30.00
25.00
20.00
15.00
10.00
5.00
0.00
Nondetect
Detect
5769
9908
14047
18186
22325
26464
30603
34742
38881
43019
47158
51297
55436
59575
63714
67853
71992
76131
Concentration (UG/L) as midpoint

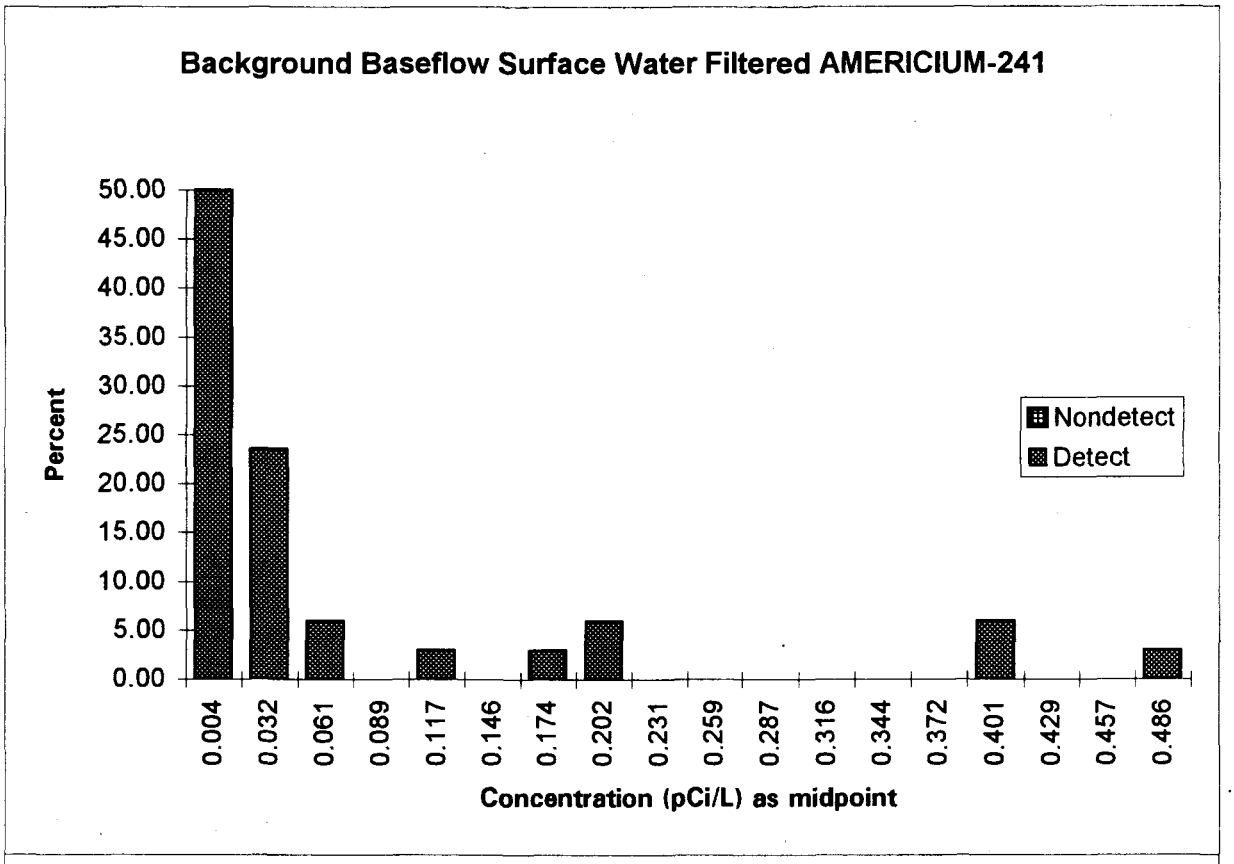

OU6 Pond Surface Water Total SODIUM
Percent
30.00
25.00
20.00
15.00
10.00
5.00
0.00
Nondetect
Detect
5769
9908
14047
18186
22325
26464
30603
34742
38881
43019
47158
51297
55436
59575
63714
67853
71992
76131
Concentration (UG/L) as midpoint

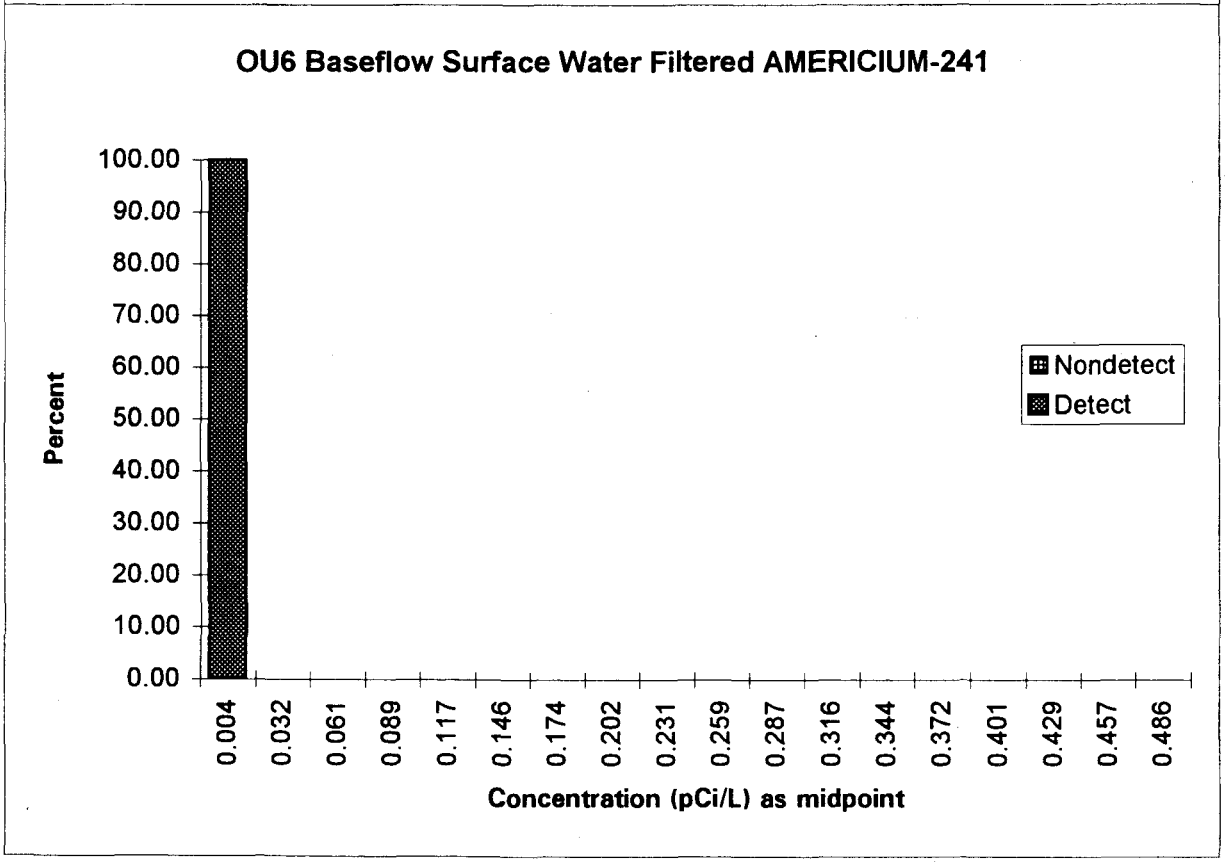

Background Baseflow Surface Water Total STRONTIUM
Percent
50.00
45.00
40.00
35.00
30.00
25.00
20.00
15.00
10.00
5.00
0.00
Nondetect
Detect
64
118
171
225
278
332
385
438
492
545
599
652
706
759
813
866
920
973
Concentration (UG/L) as midpoint

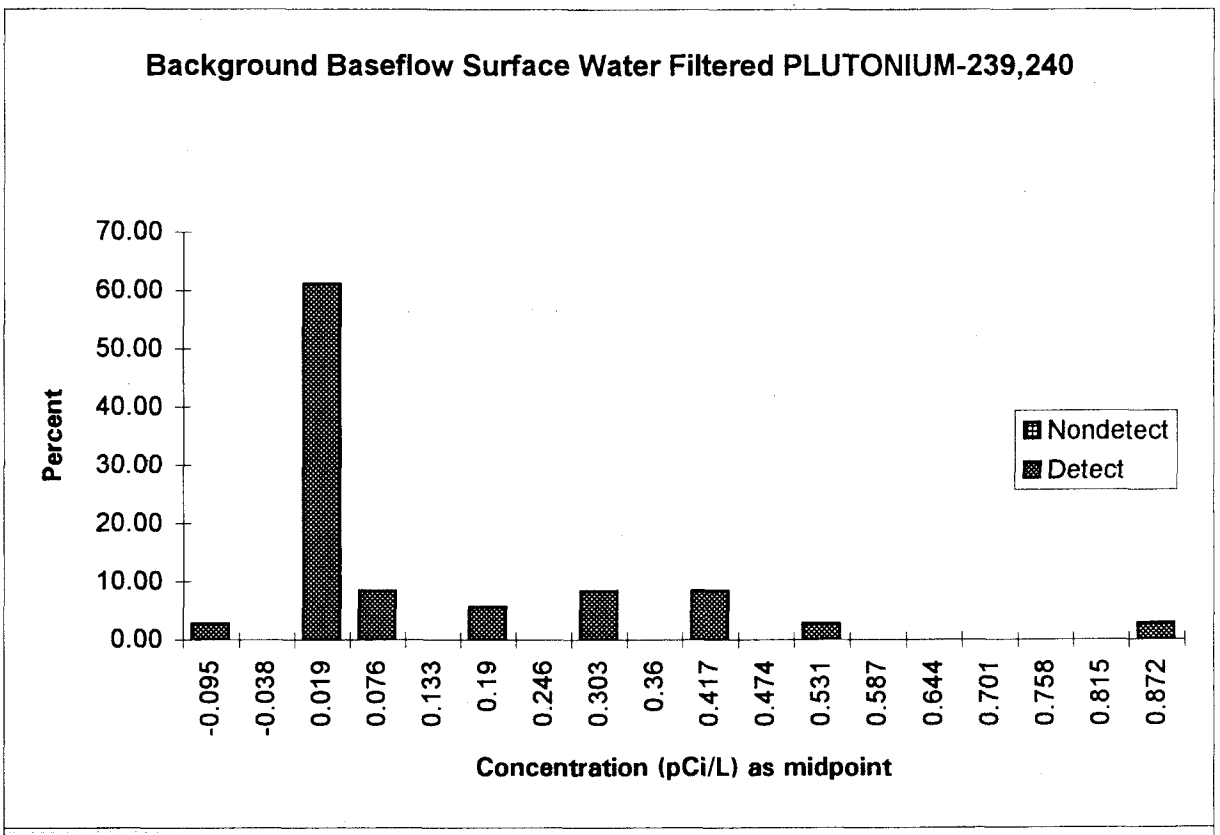

OU6 Baseflow Surface Water Total STRONTIUM
Percent
30.00
25.00
20.00
15.00
10.00
5.00
0.00
Nondetect
Detect
64
118
171
225
278
332
385
438
492
545
599
652
706
759
813
866
920
973
Concentration (UG/L) as midpoint

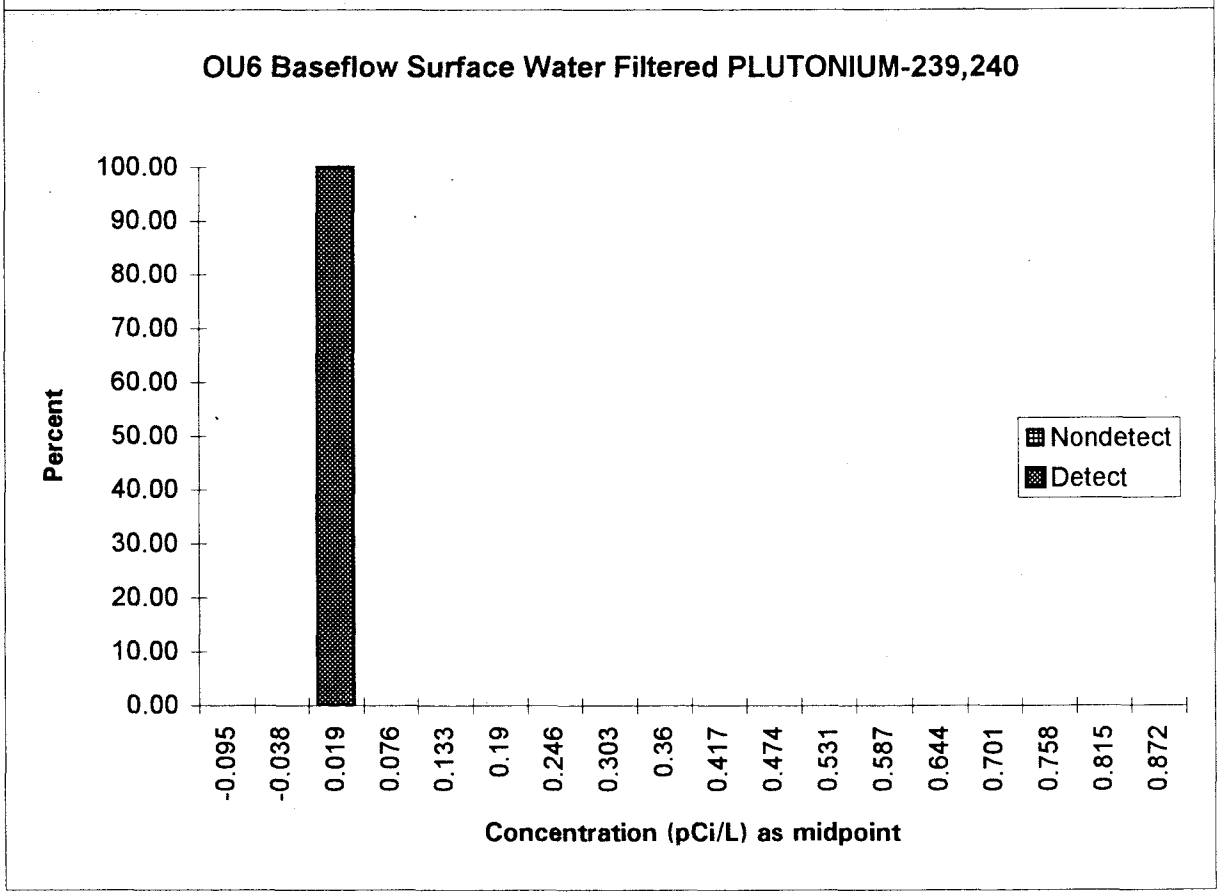

Background Baseflow Surface Water Total ZINC
Percent
80.00
70.00
60.00
50.00
40.00
30.00
20.00
10.00
0.00
Nondetect
Detect
15
42
68
95
121
148
174
201
228
254
281
307
334
360
387
414
440
467
Concentration (UG/L) as midpoint

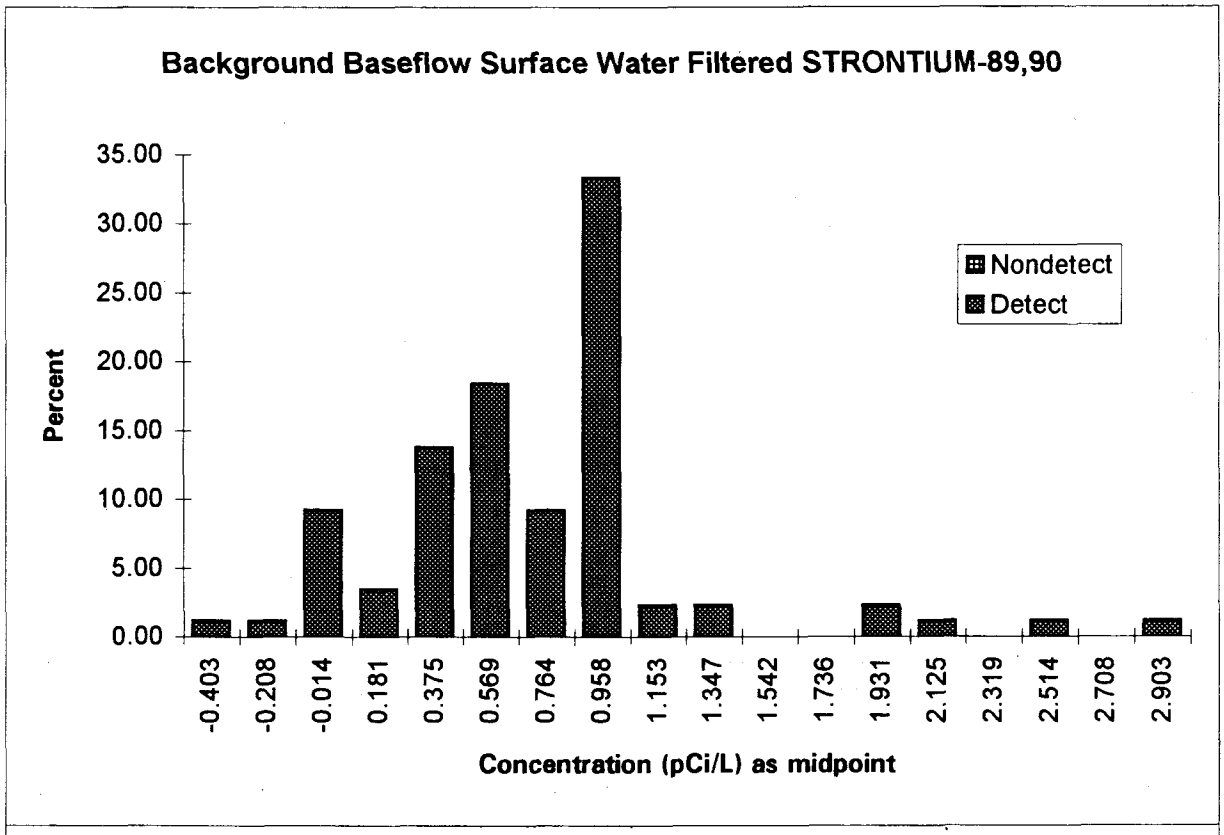

OU6 Baseflow Surface Water Total ZINC
Percent
40.00
35.00
30.00
25.00
20.00
15.00
10.00
5.00
0.00
Nondetect
Detect
15
42
68
95
121
148
174
201
228
254
281
307
334
360
387
414
440
467
Concentration (UG/L) as midpoint

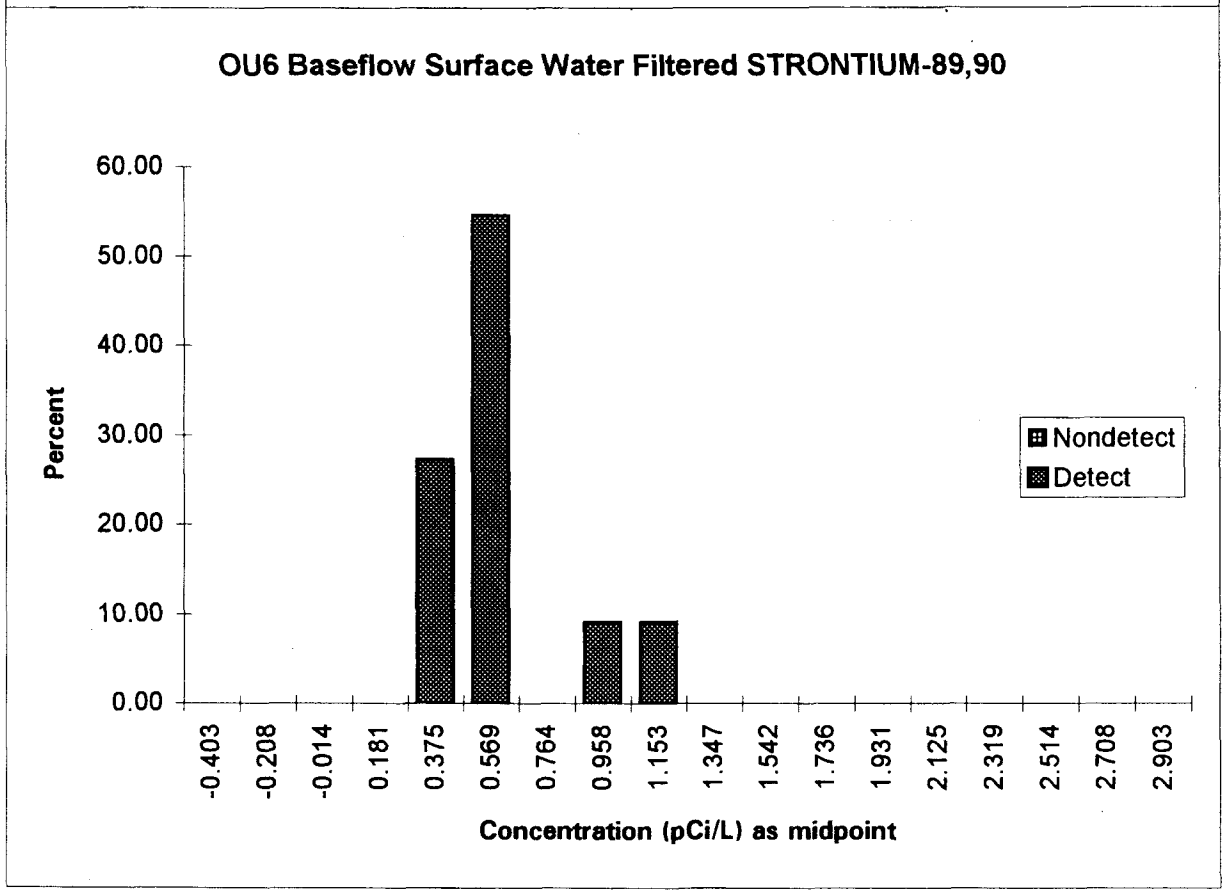

Background Baseflow Surface Water Filtered AMERICIUM-241
Percent
50.00
45.00
40.00
35.00
30.00
25.00
20.00
15.00
10.00
5.00
0.00
Nondetect
Detect
0.004
0.032
0.061
0.089
0.117
0.146
0.174
0.202
0.231
0.259
0.287
0.316
0.344
0.372
0.401
0.429
0.457
0.486
Concentration (pCi/L) as midpoint

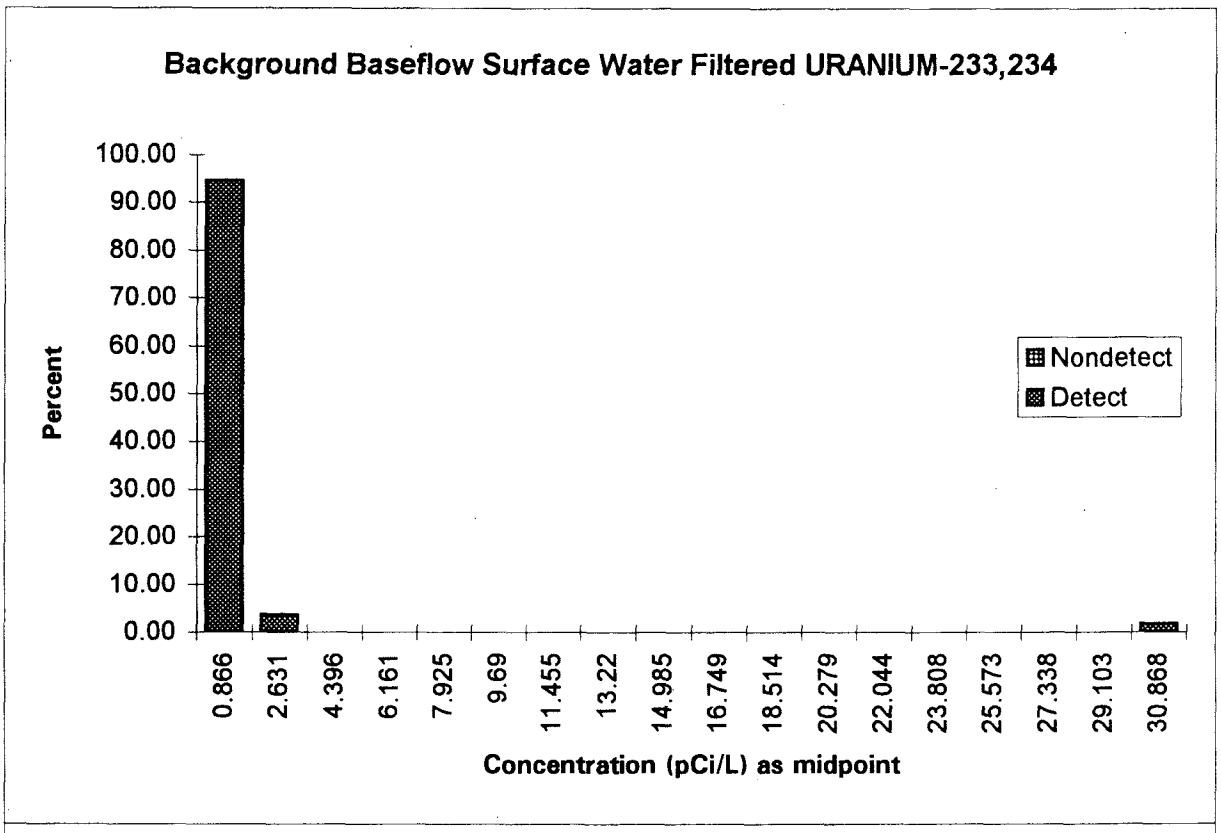

OU6 Baseflow Surface Water Filtered AMERICIUM-241
Percent
100.00
90.00
80.00
70.00
60.00
50.00
40.00
30.00
20.00
10.00
0.00
Nondetect
Detect
0.004
0.032
0.061
0.089
0.117
0.146
0.174
0.202
0.231
0.259
0.287
0.316
0.344
0.372
0.401
0.429
0.457
0.486
Concentration (pCi/L) as midpoint

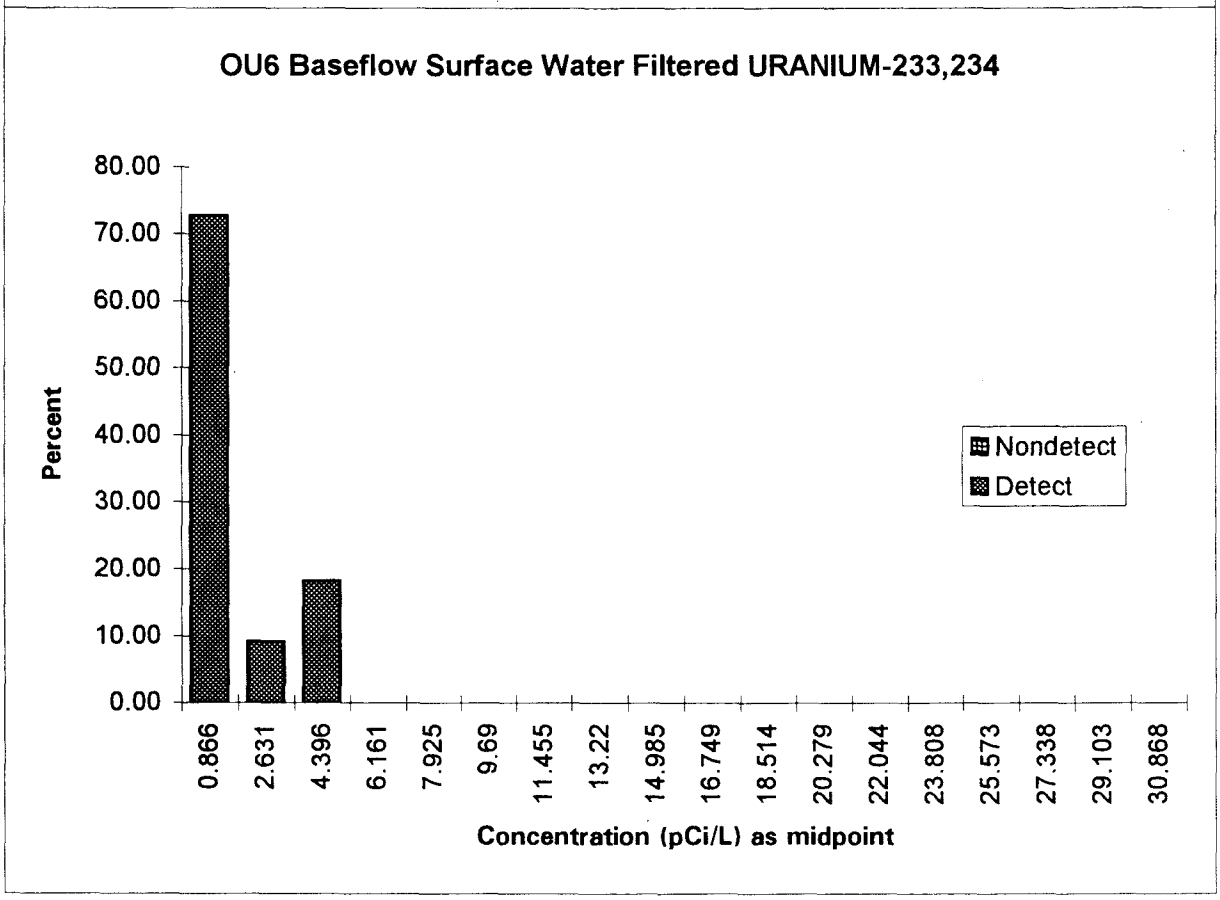

Background Baseflow Surface Water Filtered PLUTONIUM-239,240
Percent
70.00
60.00
50.00
40.00
30.00
20.00
10.00
0.00
Nondetect
Detect
-0.095
-0.038
0.019
0.076
0.133
0.19
0.246
0.303
0.36
0.417
0.474
0.531
0.587
0.644
0.701
0.758
0.815
0.872
Concentration (pCi/L) as midpoint

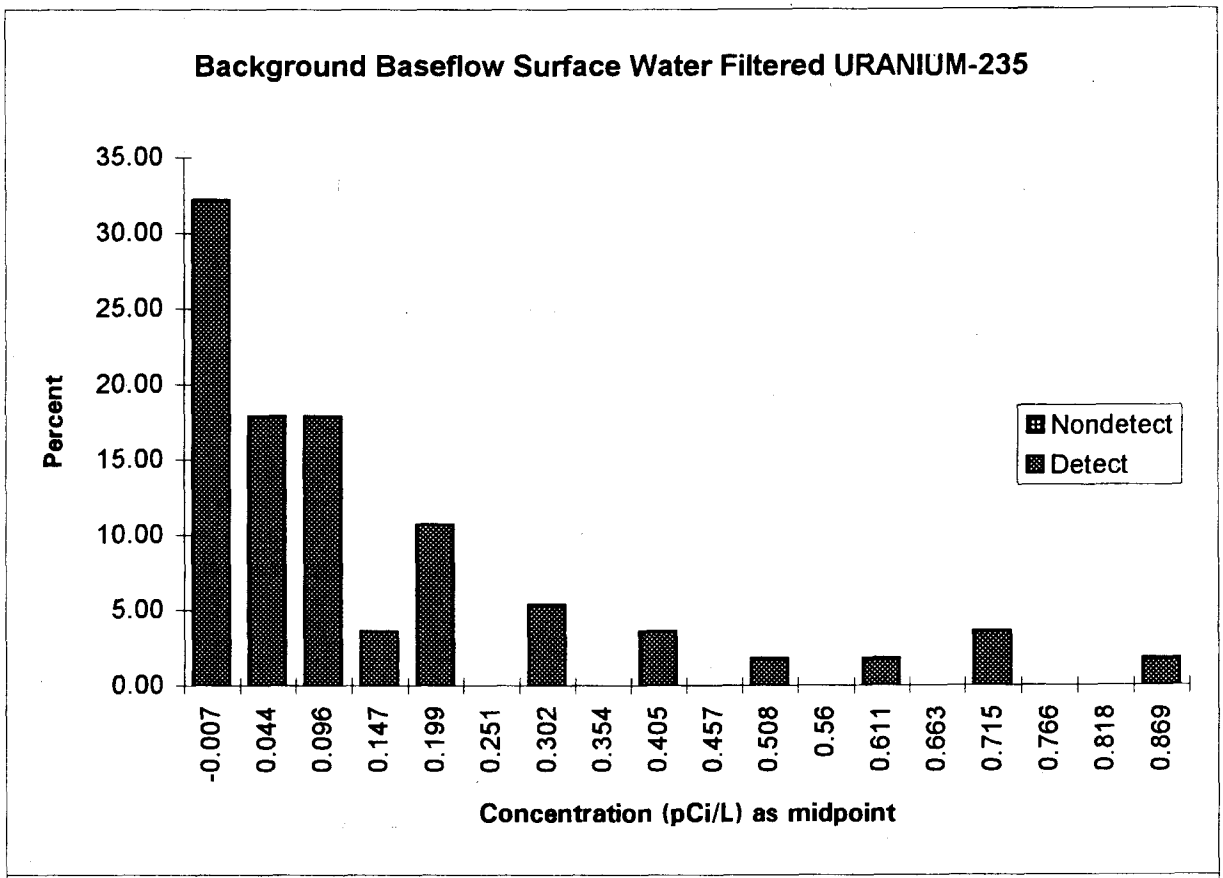

OU6 Baseflow Surface Water Filtered PLUTONIUM-239,240
Percent
100.00
90.00
80.00
70.00
60.00
50.00
40.00
30.00
20.00
10.00
0.00
Nondetect
Detect
-0.095
-0.038
0.019
0.076
0.133
0.19
0.246
0.303
0.36
0.417
0.474
0.531
0.587
0.644
0.701
0.758
0.815
0.872
Concentration (pCi/L) as midpoint

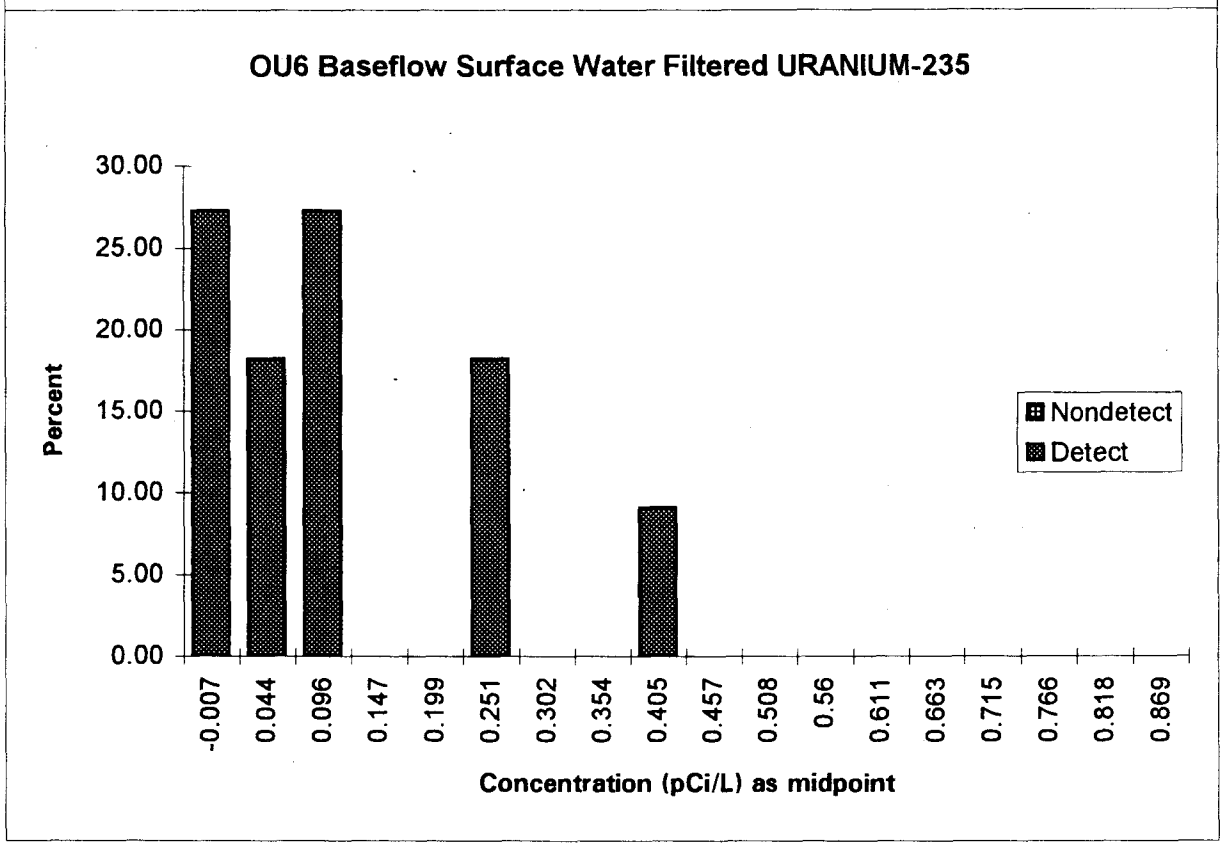

Background Baseflow Surface Water Filtered STRONTIUM-89,90
35.00
30.00
25.00
20.00
15.00
10.00
5.00
0.00
Percent
Nondetect
Detect
-0.403
-0.208
-0.014
0.181
0.375
0.569
0.764
0.958
1.153
1.347
1.542
1.736
1.931
2.125
2.319
2.514
2.708
2.903
Concentration (pCi/L) as midpoint

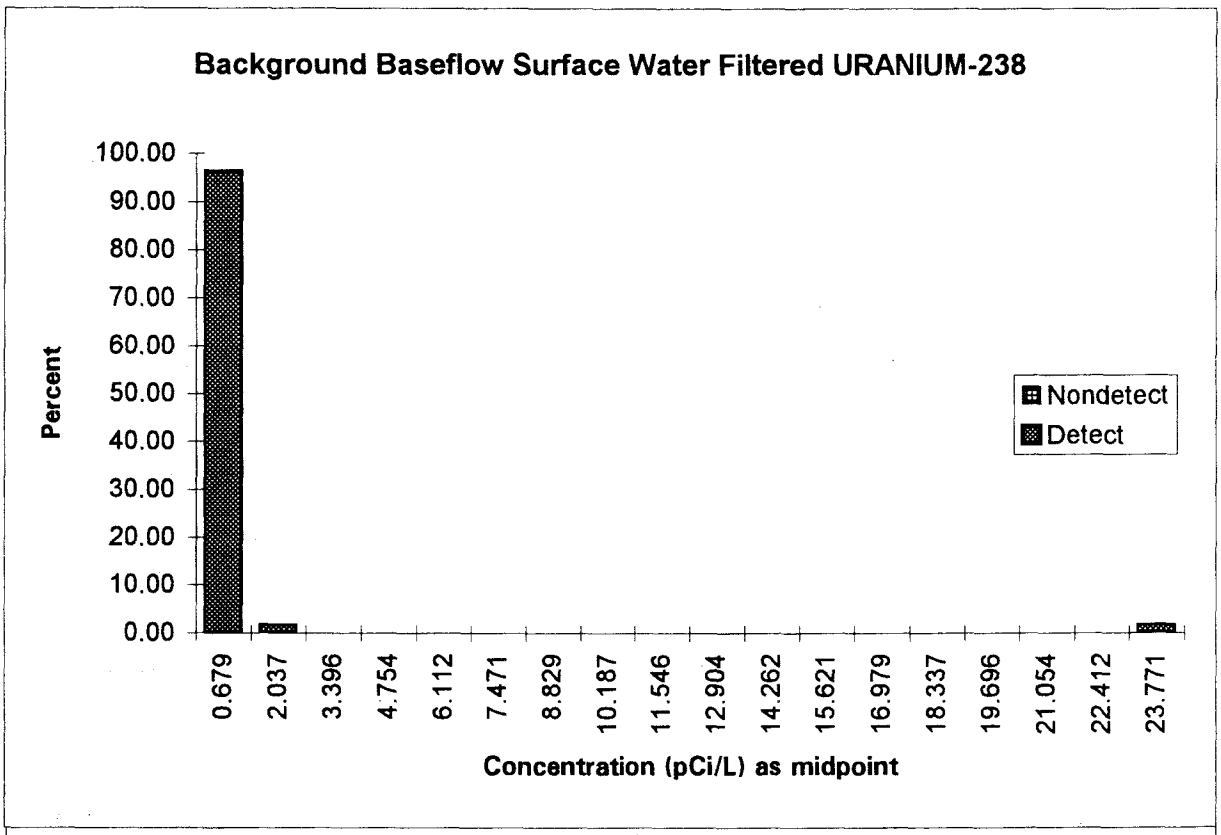

OU6 Baseflow Surface Water Filtered STRONTIUM-89,90
60.00
50.00
40.00
30.00
20.00
10.00
0.00
Percent
Nondetect
Detect
-0.403
-0.208
-0.014
0.181
0.375
0.569
0.764
0.958
1.153
1.347
1.542
1.736
1.931
2.125
2.319
2.514
2.708
2.903
Concentration (pCi/L) as midpoint

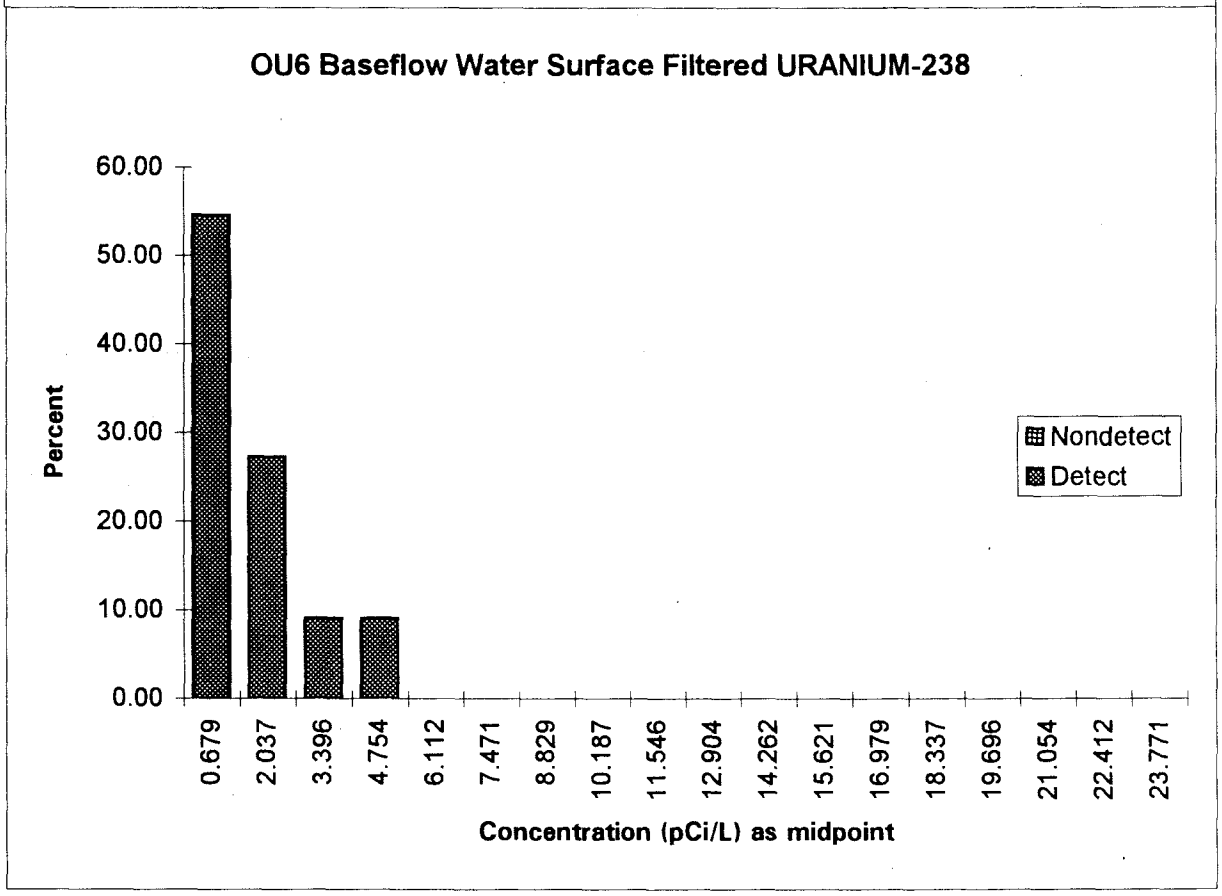

Background Baseflow Surface Water Filtered URANIUM-233,234
Percent
100.00
90.00
80.00
70.00
60.00
50.00
40.00
30.00
20.00
10.00
0.00
Nondetect
Detect
0.866
2.631
4.396
6.161
7.925
9.69
11.455
13.22
14.985
16.749
18.514
20.279
22.044
23.808
25.573
27.338
29.103
30.868
Concentration (pCi/L) as midpoint

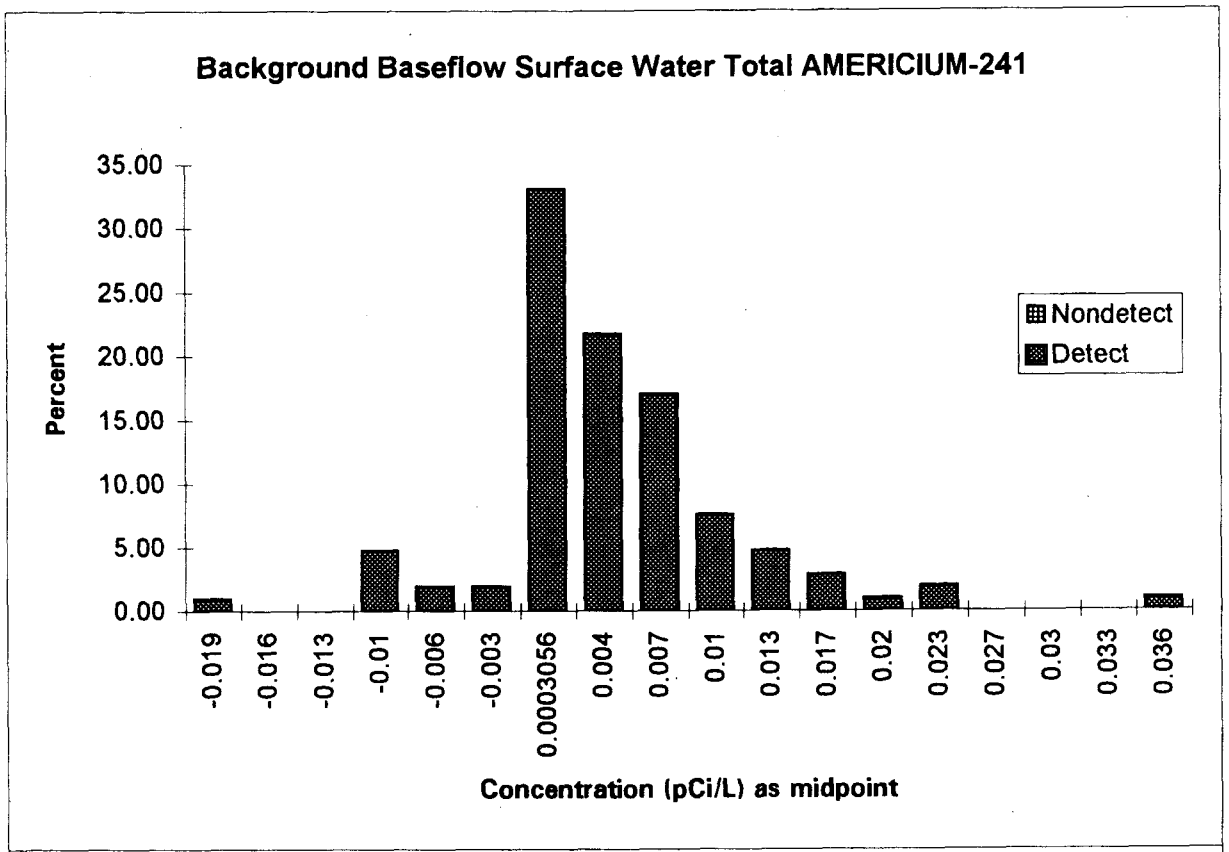

OU6 Baseflow Surface Water Filtered URANIUM-233,234
Percent
80.00
70.00
60.00
50.00
40.00
30.00
20.00
10.00
0.00
Nondetect
Detect
0.866
2.631
4.396
6.161
7.925
9.69
11.455
13.22
14.985
16.749
18.514
20.279
22.044
23.808
25.573
27.338
29.103
30.868
Concentration (pCi/L) as midpoint

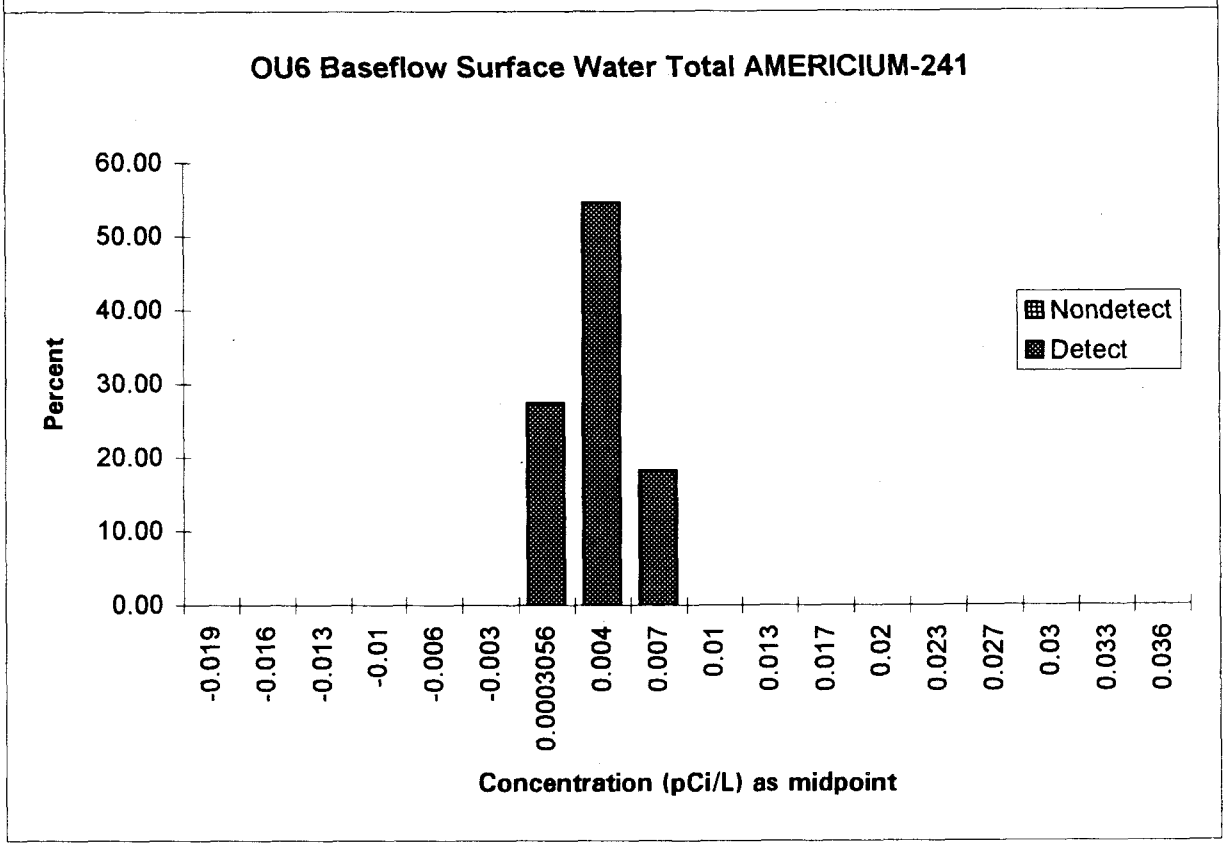

Background Baseflow Surface Water Filtered URANIUM-235
35.00
30.00
25.00
20.00
15.00
10.00
5.00
0.00
Percent
Nondetect
Detect
-0.007
0.044
0.096
0.147
0.199
0.251
0.302
0.354
0.405
0.457
0.508
0.56
0.611
0.663
0.715
0.766
0.818
0.869
Concentration (pCi/L) as midpoint

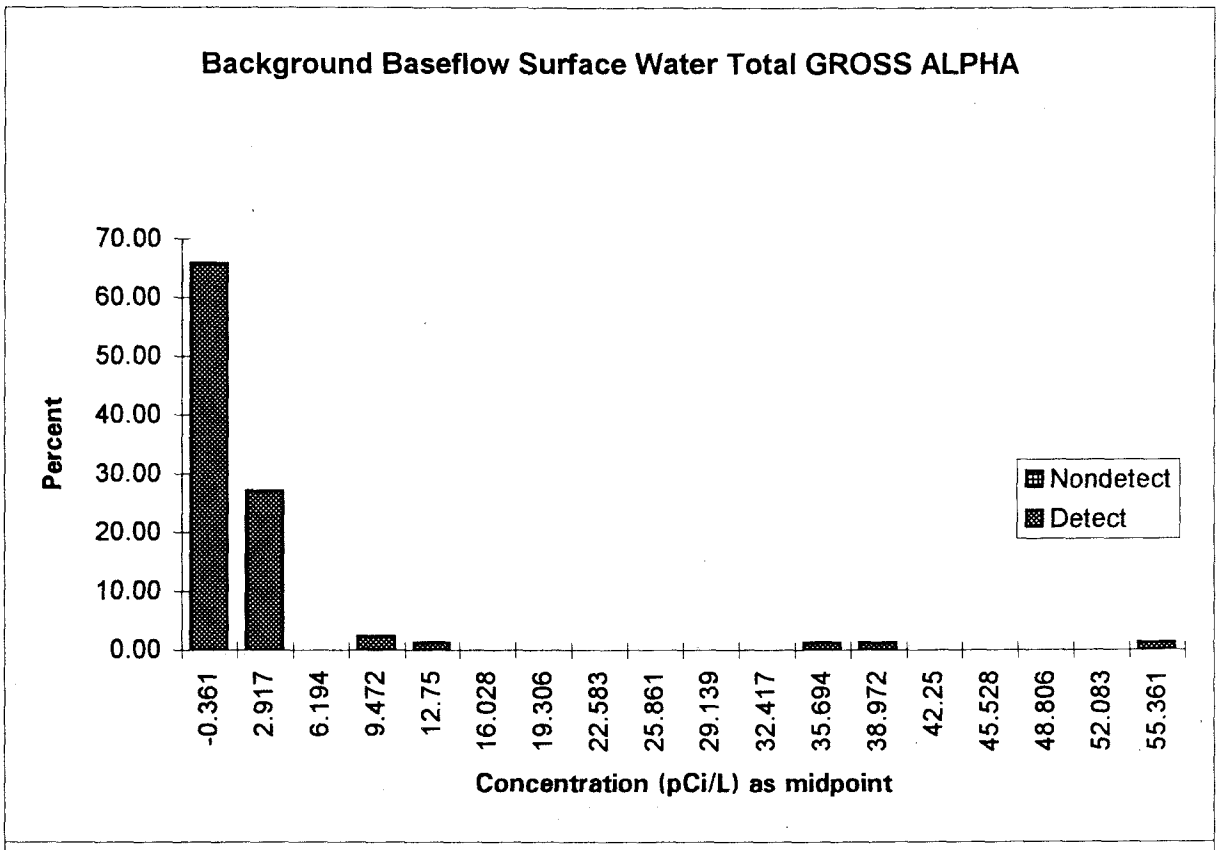

OU6 Baseflow Surface Water Filtered URANIUM-235
30.00
25.00
20.00
15.00
10.00
5.00
0.00
Percent
Nondetect
Detect
-0.007
0.044
0.096
0.147
0.199
0.251
0.302
0.354
0.405
0.457
0.508
0.56
0.611
0.663
0.715
0.766
0.818
0.869
Concentration (pCi/L) as midpoint

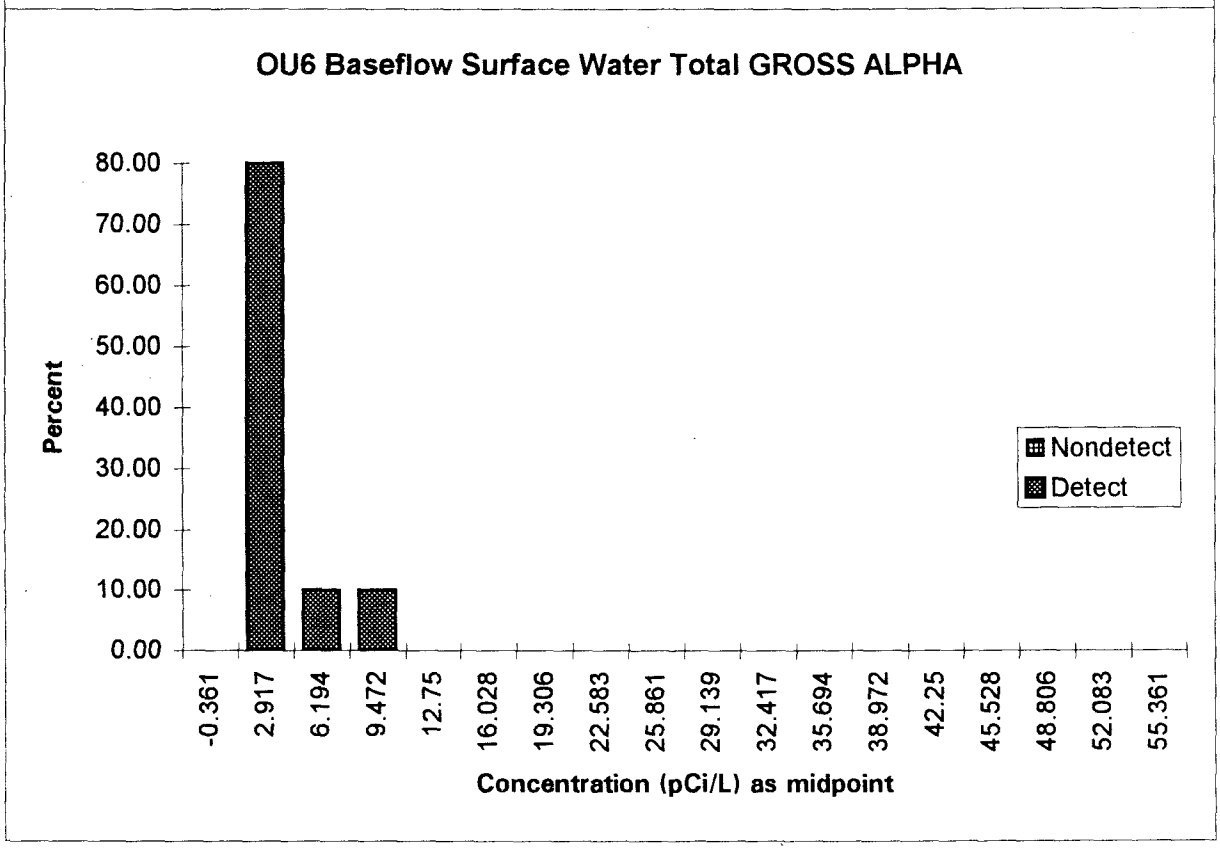

Background Baseflow Surface Water Filtered URANIUM-238
Percent
100.00
90.00
80.00
70.00
60.00
50.00
40.00
30.00
20.00
10.00
0.00
Nondetect
Detect
0.679
2.037
3.396
4.754
6.112
7.471
8.829
10.187
11.546
12.904
14.262
15.621
16.979
18.337
19.696
21.054
22.412
23.771
Concentration (pCi/L) as midpoint

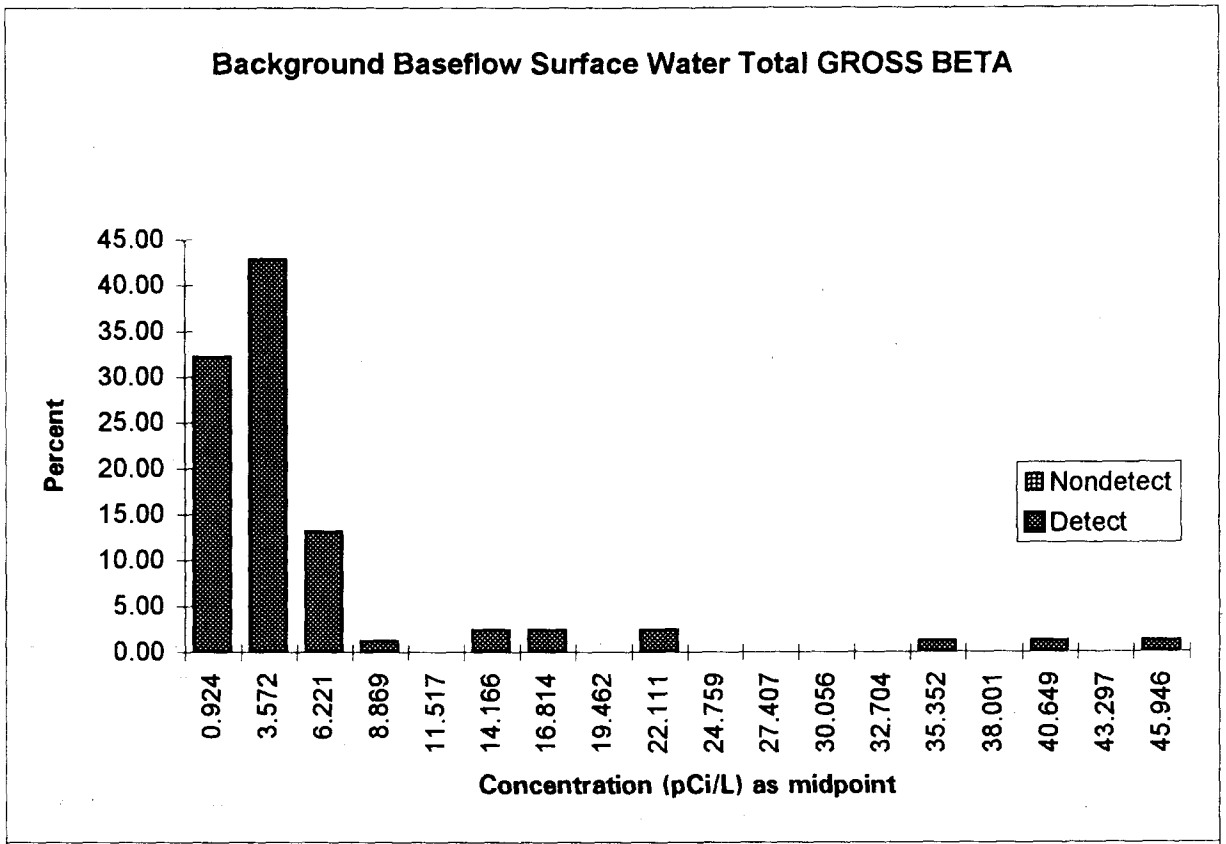

OU6 Baseflow Water Surface Filtered URANIUM-238
Percent
60.00
50.00
40.00
30.00
20.00
10.00
0.00
Nondetect
Detect
0.679
2.037
3.396
4.754
6.112
7.471
8.829
10.187
11.546
12.904
14.262
15.621
16.979
18.337
19.696
21.054
22.412
23.771
Concentration (pCi/L) as midpoint

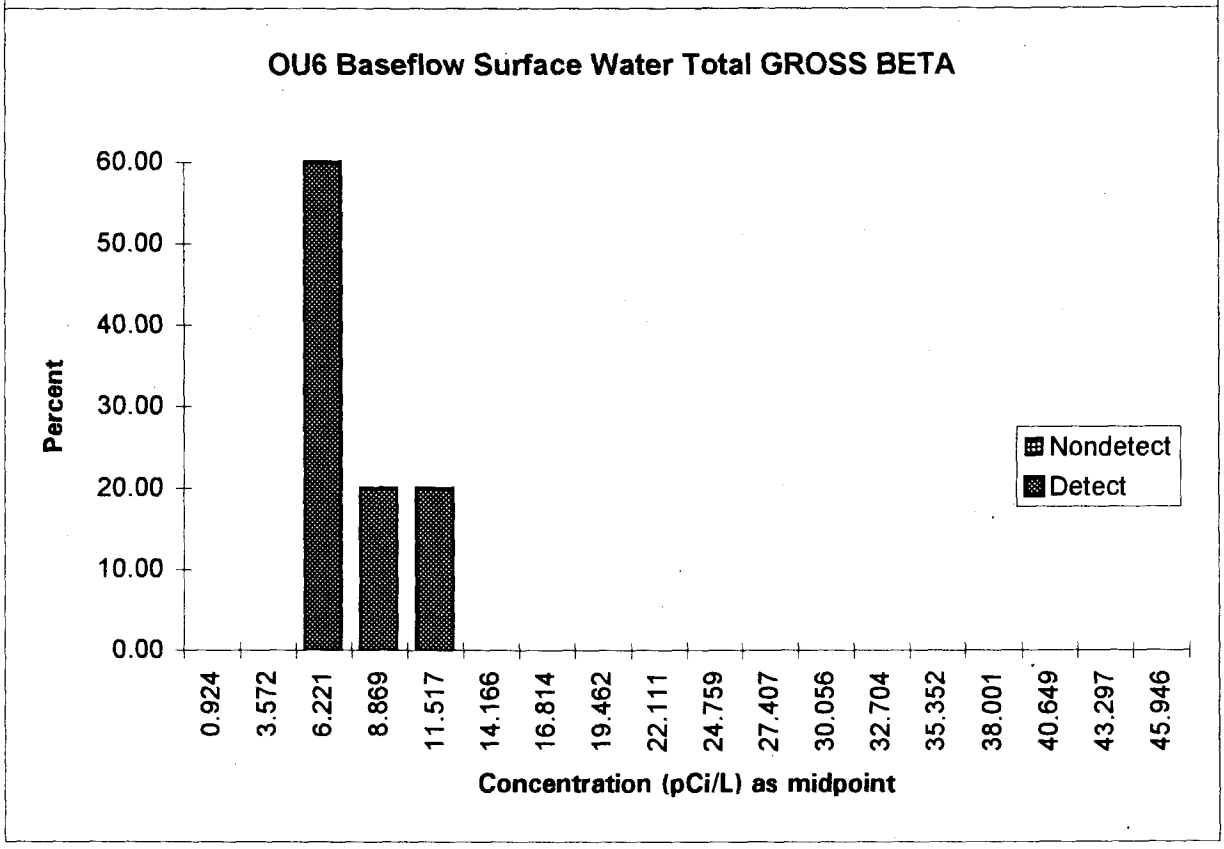

Background Baseflow Surface Water Total AMERICIUM-241
35.00
30.00
25.00
20.00
15.00
10.00
5.00
0.00
Percent
Nondetect
Detect
-0.019
-0.016
-0.013
-0.01
-0.006
-0.003
0.0003056
0.004
0.007
0.01
0.013
0.017
0.02
0.023
0.027
0.03
0.033
0.036
Concentration (pCi/L) as midpoint

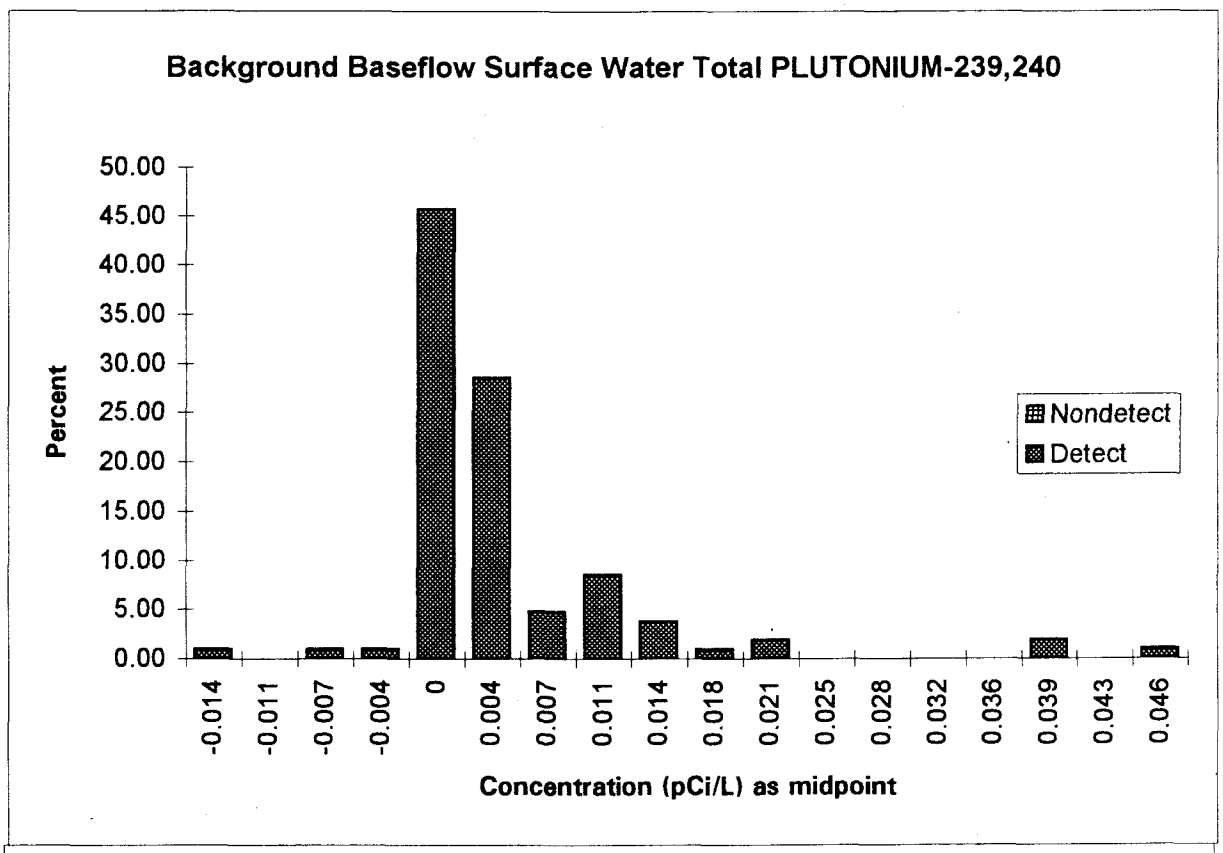

OU6 Baseflow Surface Water Total AMERICIUM-241
60.00
50.00
40.00
30.00
20.00
10.00
0.00
Percent
Nondetect
Detect
-0.019
-0.016
-0.013
-0.01
-0.006
-0.003
0.0003056
0.004
0.007
0.01
0.013
0.017
0.02
0.023
0.027
0.03
0.033
0.036
Concentration (pCi/L) as midpoint

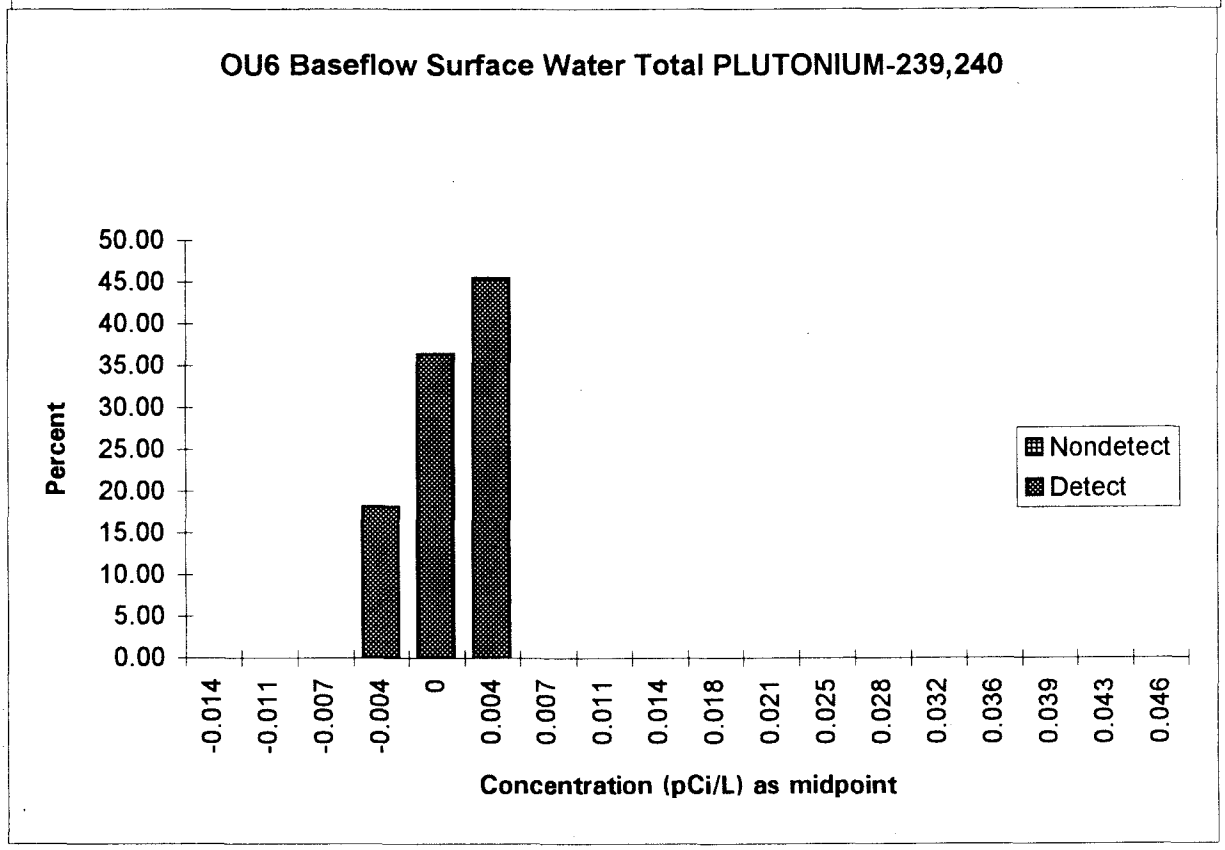

Background Baseflow Surface Water Total GROSS ALPHA
Percent
70.00
60.00
50.00
40.00
30.00
20.00
10.00
0.00
-0.361
2.917
6.194
9.472
12.75
16.028
19.306
22.583
25.861
29.139
32.417
35.694
38.972
42.25
45.528
48.806
52.083
55.361
Concentration (pCi/L) as midpoint
Nondetect
Detect

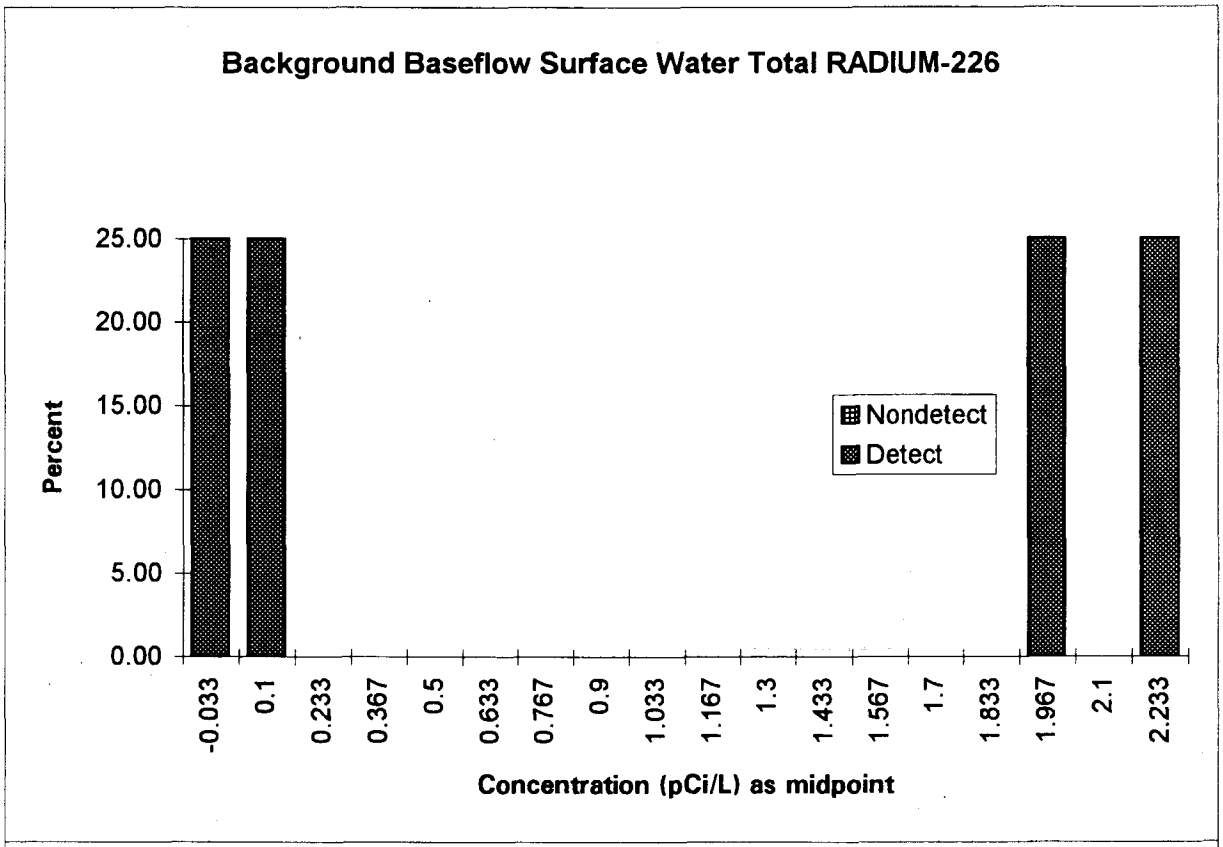

OU6 Baseflow Surface Water Total GROSS ALPHA
Percent
80.00
70.00
60.00
50.00
40.00
30.00
20.00
10.00
0.00
-0.361
2.917
6.194
9.472
12.75
16.028
19.306
22.583
25.861
29.139
32.417
35.694
38.972
42.25
45.528
48.806
52.083
55.361
Concentration (pCi/L) as midpoint
Nondetect
Detect

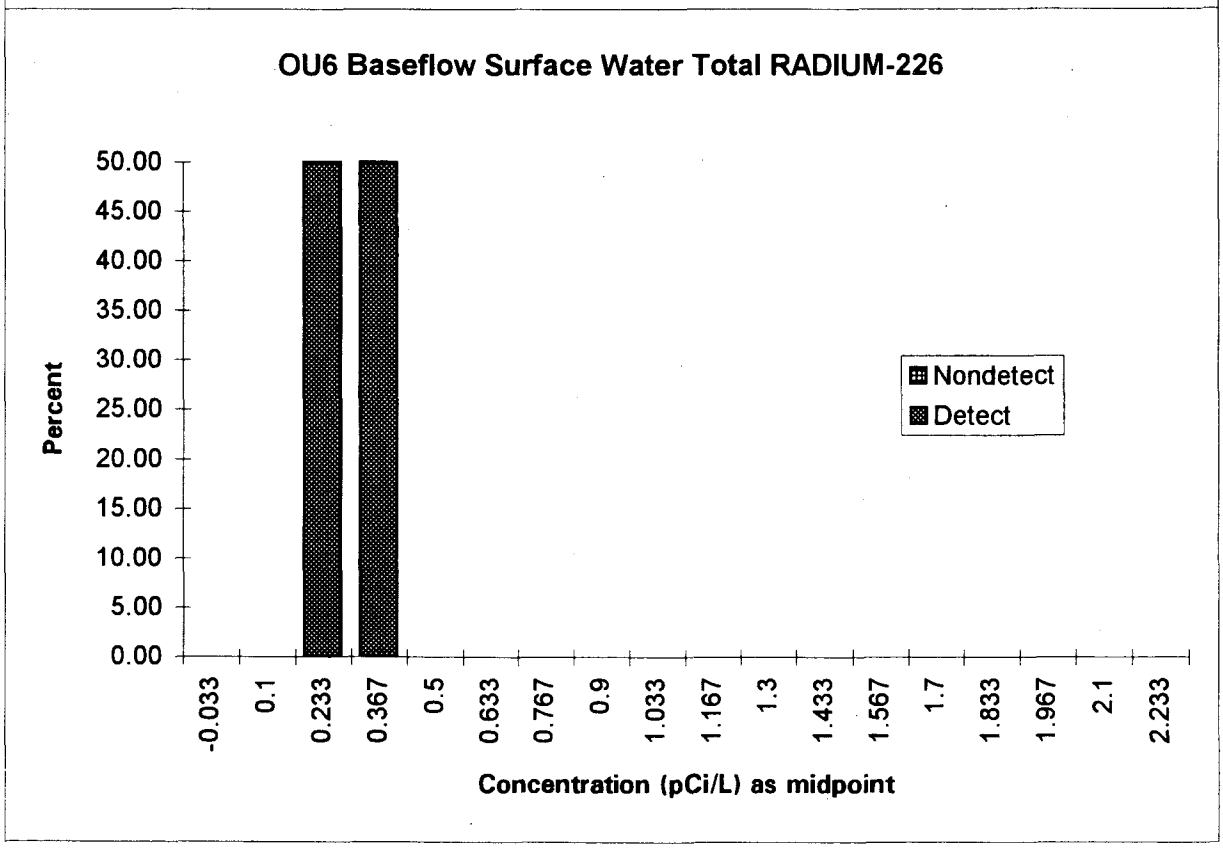

Background Baseflow Surface Water Total GROSS BETA
Percent
45.00
40.00
35.00
30.00
25.00
20.00
15.00
10.00
5.00
0.00
0.924
3.572
6.221
8.869
11.517
14.166
16.814
19.462
22.111
24.759
27.407
30.056
32.704
35.352
38.001
40.649
43.297
45.946
Concentration (pCi/L) as midpoint
Nondetect
Detect

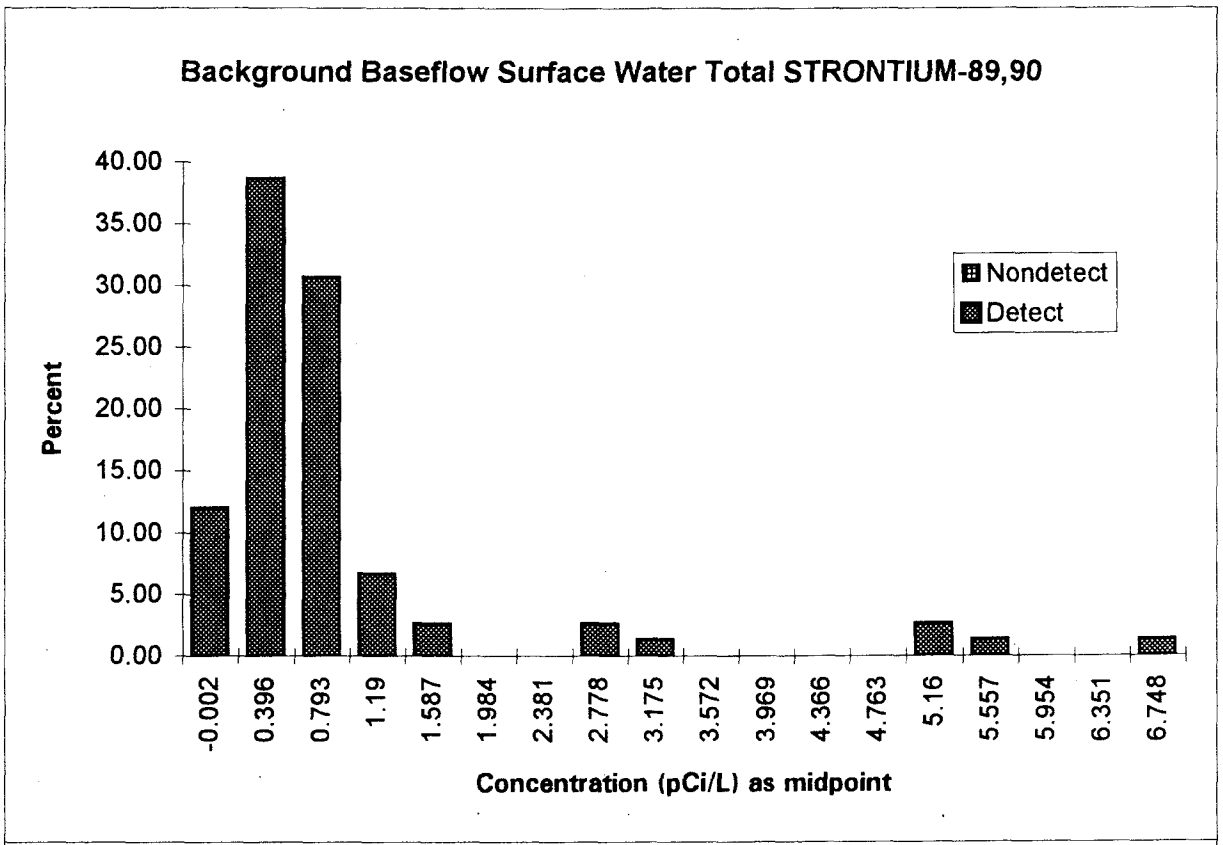

OU6 Baseflow Surface Water Total GROSS BETA
Percent
60.00
50.00
40.00
30.00
20.00
10.00
0.00
0.924
3.572
6.221
8.869
11.517
14.166
16.814
19.462
22.111
24.759
27.407
30.056
32.704
35.352
38.001
40.649
43.297
45.946
Concentration (pCi/L) as midpoint
Nondetect
Detect

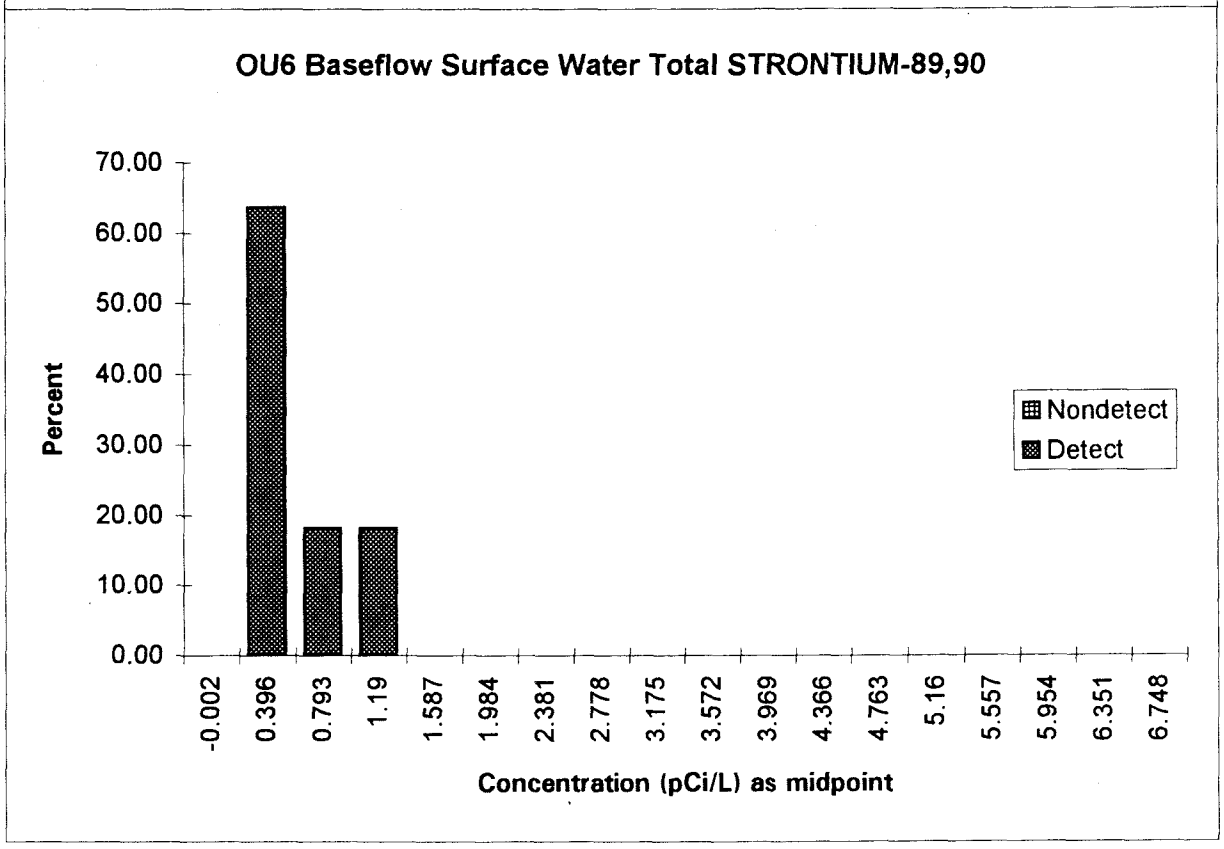

Background Baseflow Surface Water Total PLUTONIUM-239,240
Percent
50.00
45.00
40.00
35.00
30.00
25.00
20.00
15.00
10.00
5.00
0.00
Nondetect
Detect
-0.014
-0.011
-0.007
-0.004
0
0.004
0.007
0.011
0.014
0.018
0.021
0.025
0.028
0.032
0.036
0.039
0.043
0.046
Concentration (pCi/L) as midpoint

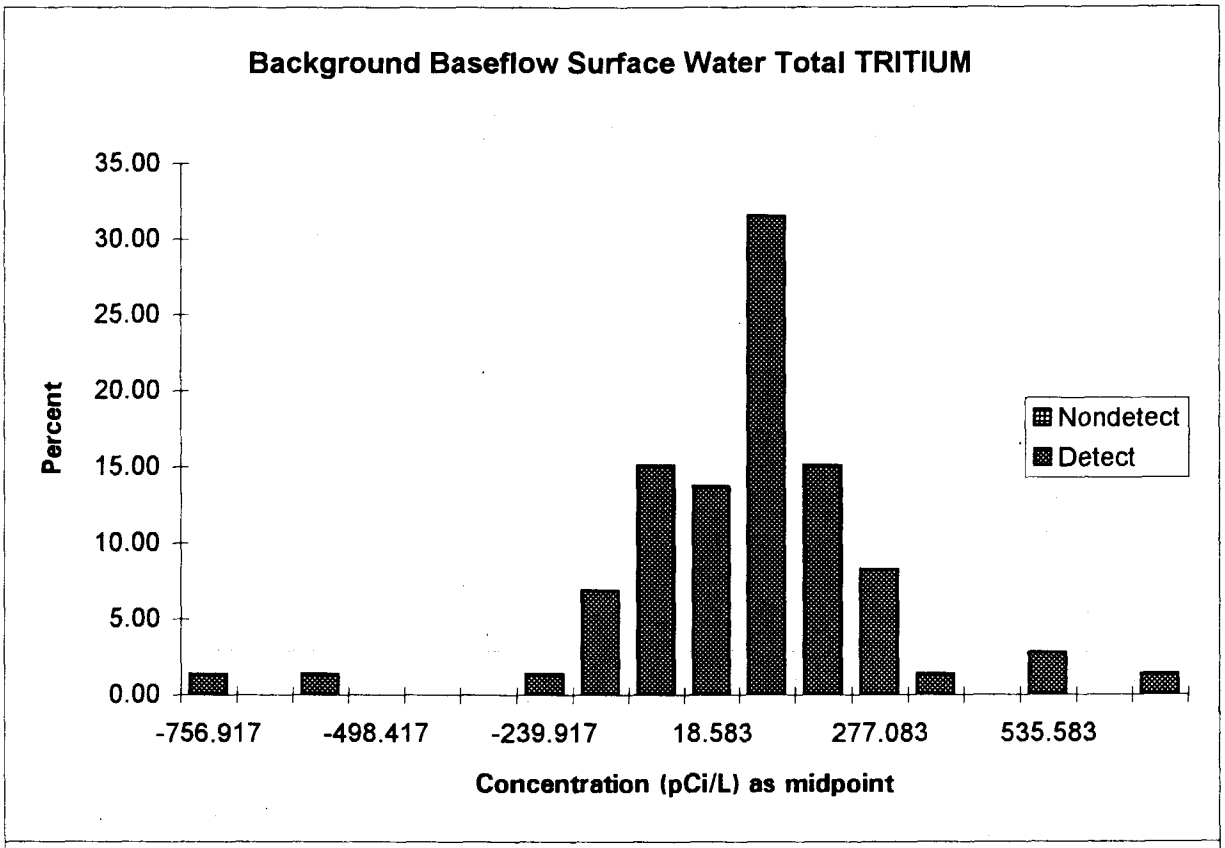

OU6 Baseflow Surface Water Total PLUTONIUM-239,240
Percent
50.00
45.00
40.00
35.00
30.00
25.00
20.00
15.00
10.00
5.00
0.00
Nondetect
Detect
-0.014
-0.011
-0.007
-0.004
0
0.004
0.007
0.011
0.014
0.018
0.021
0.025
0.028
0.032
0.036
0.039
0.043
0.046
Concentration (pCi/L) as midpoint

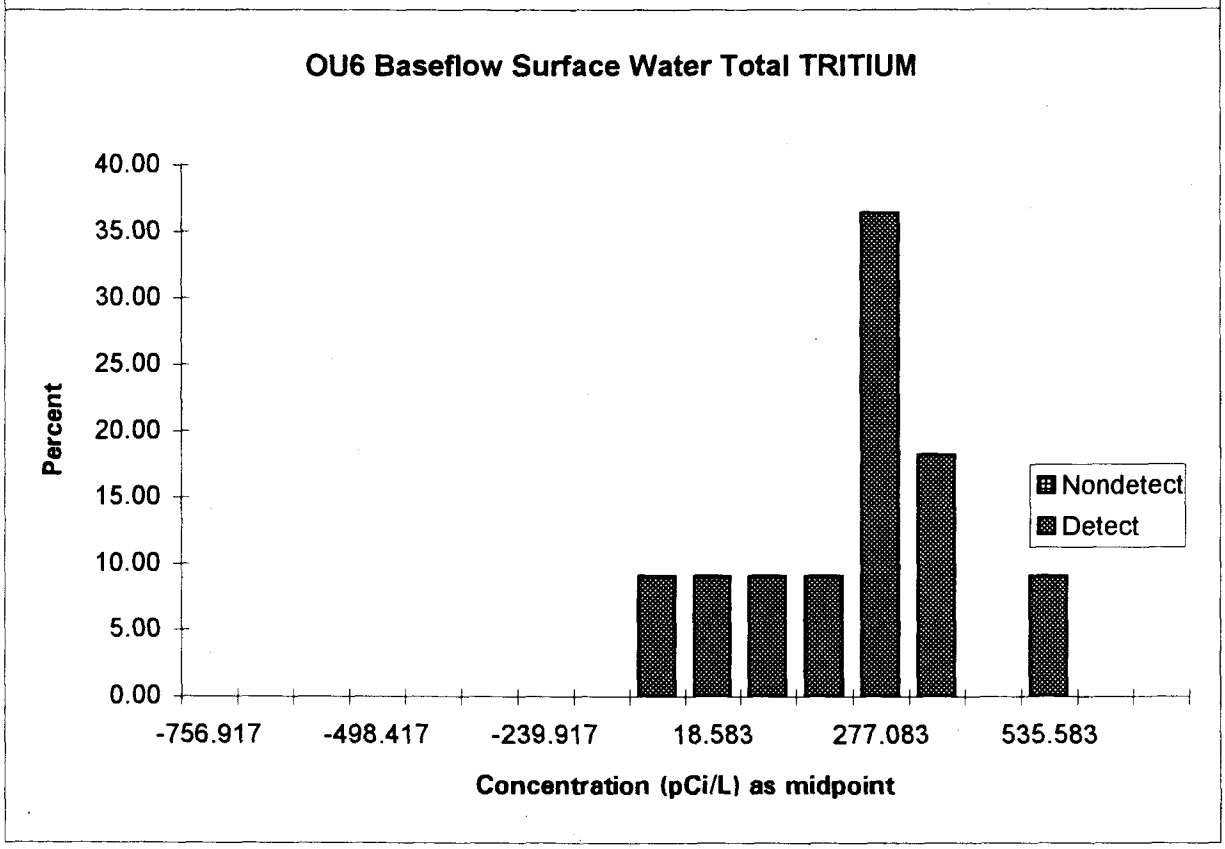

Background Baseflow Surface Water Total RADIUM-226
Percent
25.00
20.00
15.00
10.00
5.00
0.00
Nondetect
Detect
-0.033
0.1
0.233
0.367
0.5
0.633
0.767
0.9
1.033
1.167
1.3
1.433
1.567
1.7
1.833
1.967
2.1
2.233
Concentration (pCi/L) as midpoint

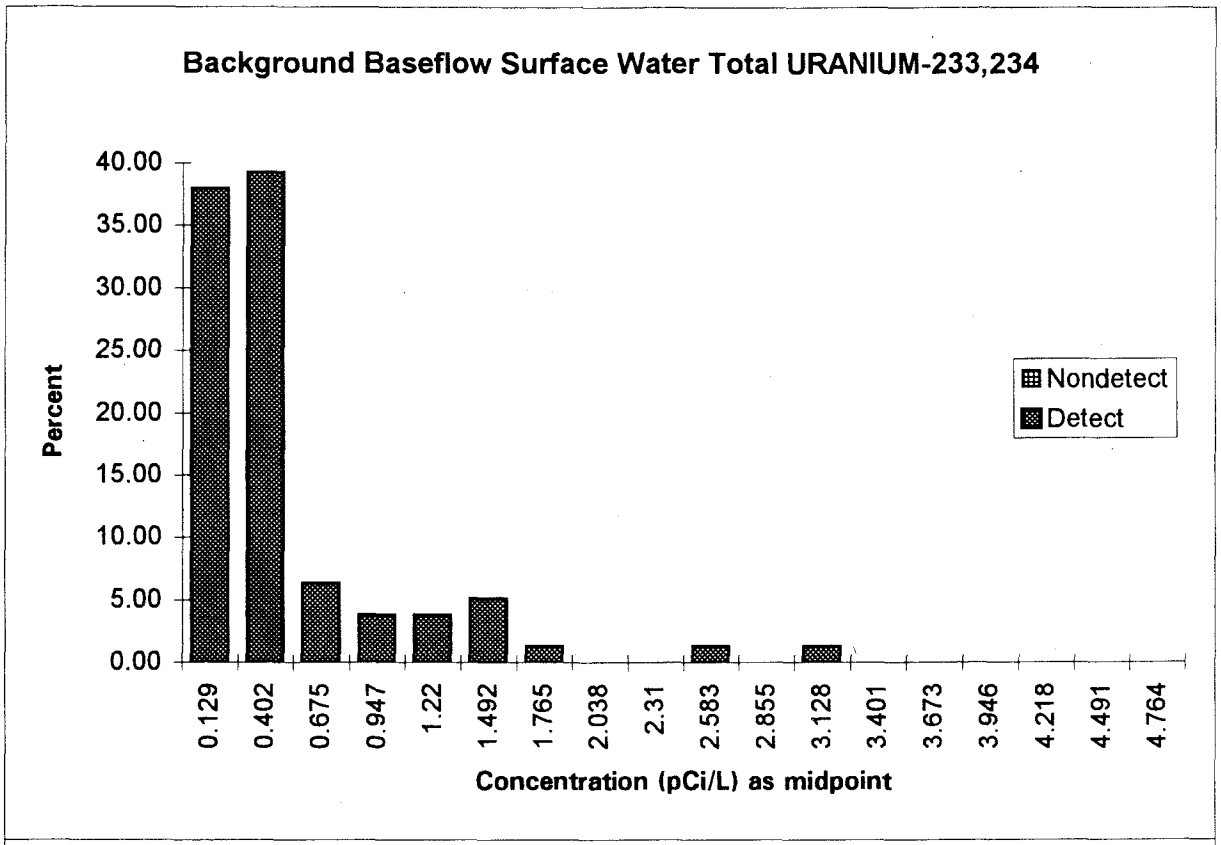

OU6 Baseflow Surface Water Total RADIUM-226
Percent
50.00
45.00
40.00
35.00
30.00
25.00
20.00
15.00
10.00
5.00
0.00
Nondetect
Detect
-0.033
0.1
0.233
0.367
0.5
0.633
0.767
0.9
1.033
1.167
1.3
1.433
1.567
1.7
1.833
1.967
2.1
2.233
Concentration (pCi/L) as midpoint

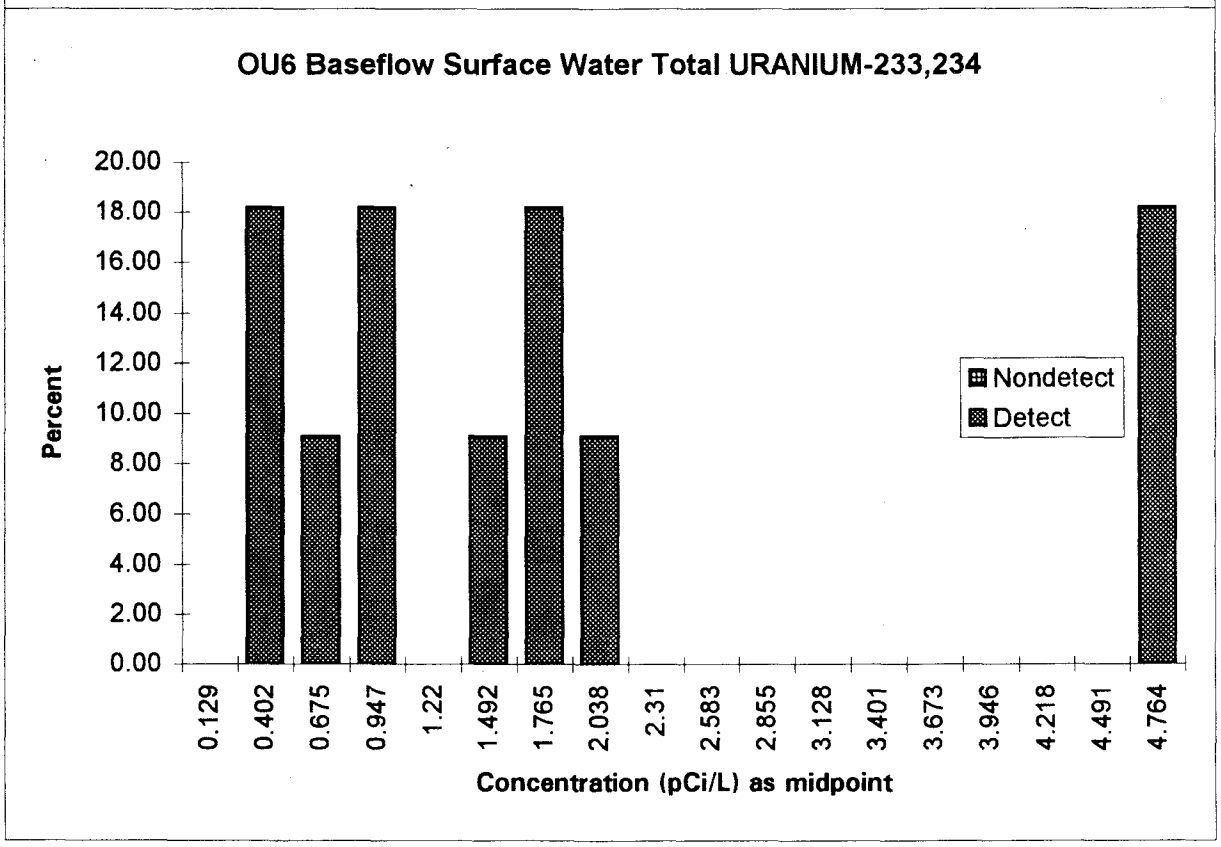

Background Baseflow Surface Water Total STRONTIUM-89,90
Percent
40.00
35.00
30.00
25.00
20.00
15.00
10.00
5.00
0.00
Nondetect
Detect
-0.002
0.396
0.793
1.19
1.587
1.984
2.381
2.778
3.175
3.572
3.969
4.366
4.763
5.16
5.557
5.954
6.351
6.748
Concentration (pCi/L) as midpoint

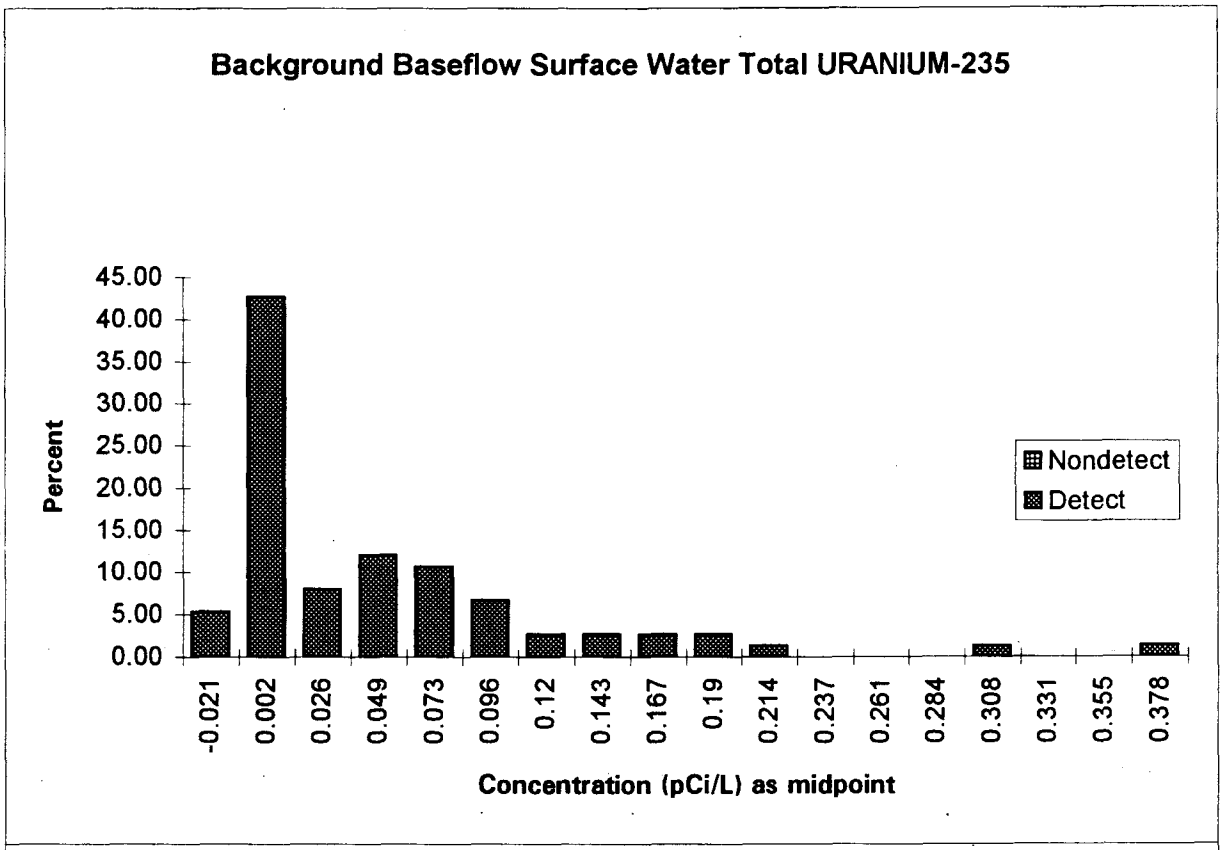

OU6 Baseflow Surface Water Total STRONTIUM-89,90
Percent
70.00
60.00
50.00
40.00
30.00
20.00
10.00
0.00
Nondetect
Detect
-0.002
0.396
0.793
1.19
1.587
1.984
2.381
2.778
3.175
3.572
3.969
4.366
4.763
5.16
5.557
5.954
6.351
6.748
Concentration (pCi/L) as midpoint

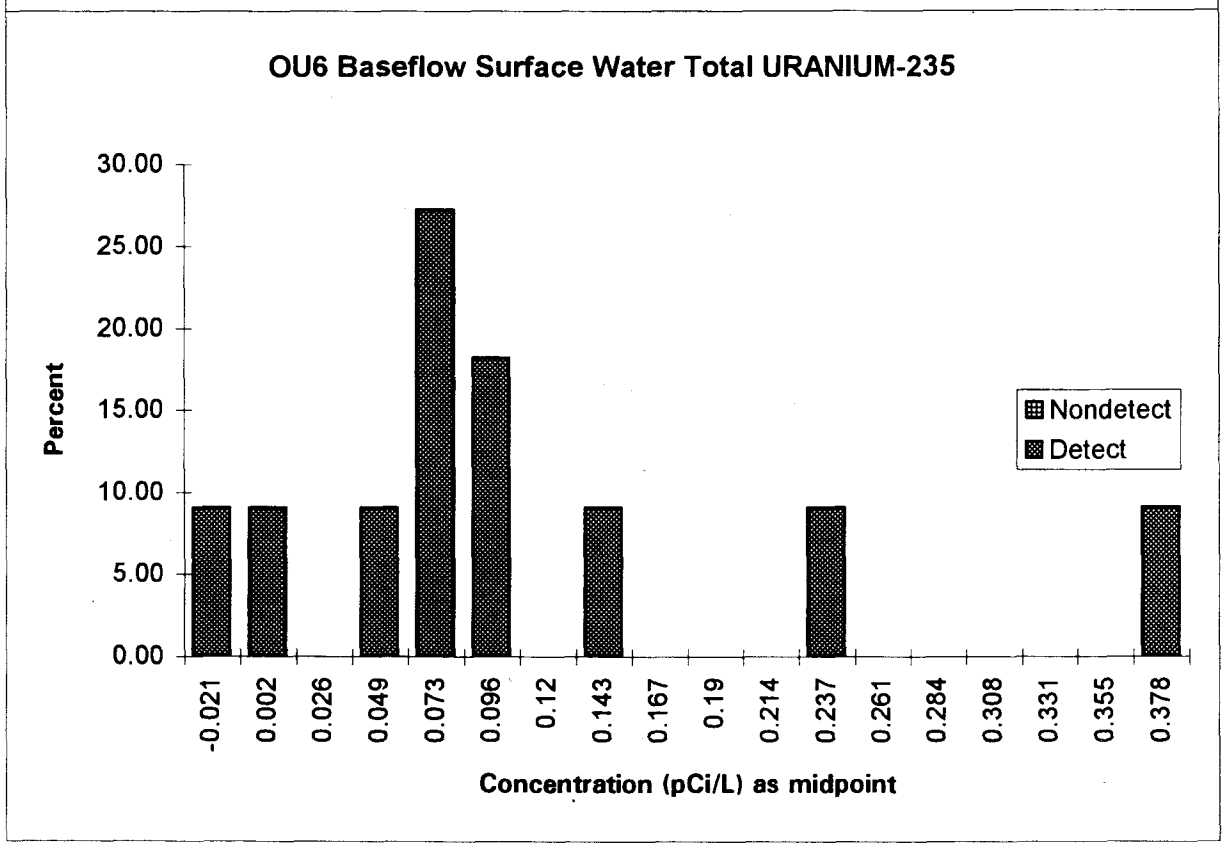

Background Baseflow Surface Water Total TRITIUM
35.00
30.00
25.00
20.00
15.00
10.00
5.00
0.00
Percent
Nondetect
Detect
-756.917
-498.417
-239.917
18.583
277.083
535.583
Concentration (pCi/L) as midpoint

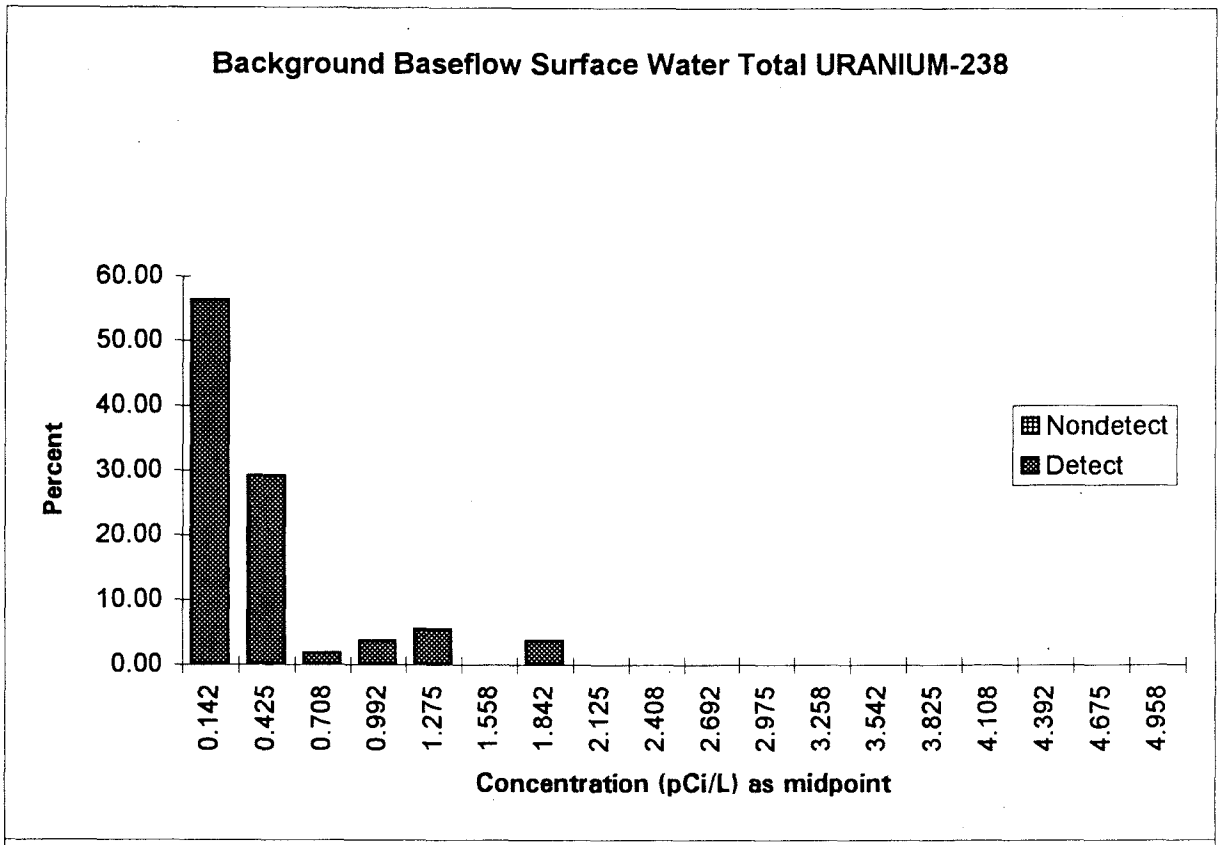

OU6 Baseflow Surface Water Total TRITIUM
40.00
35.00
30.00
25.00
20.00
15.00
10.00
5.00
0.00
Percent
Nondetect
Detect
-756.917
-498.417
-239.917
18.583
277.083
535.583
Concentration (pCi/L) as midpoint

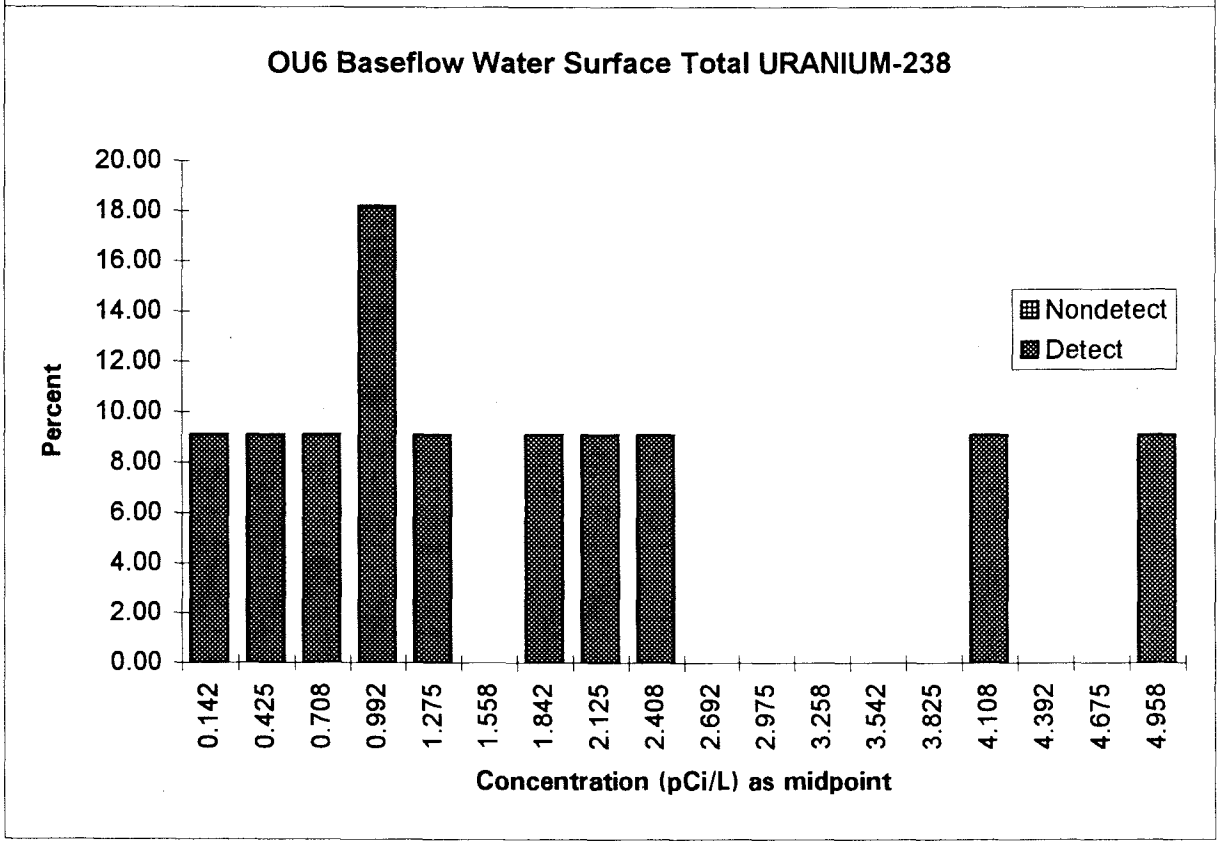

Background Baseflow Surface Water Total URANIUM-233,234
Percent
40.00
35.00
30.00
25.00
20.00
15.00
10.00
5.00
0.00
Nondetect
Detect
0.129
0.402
0.675
0.947
1.22
1.492
1.765
2.038
2.31
2.583
2.855
3.128
3.401
3.673
3.946
4.218
4.491
4.764
Concentration (pCi/L) as midpoint

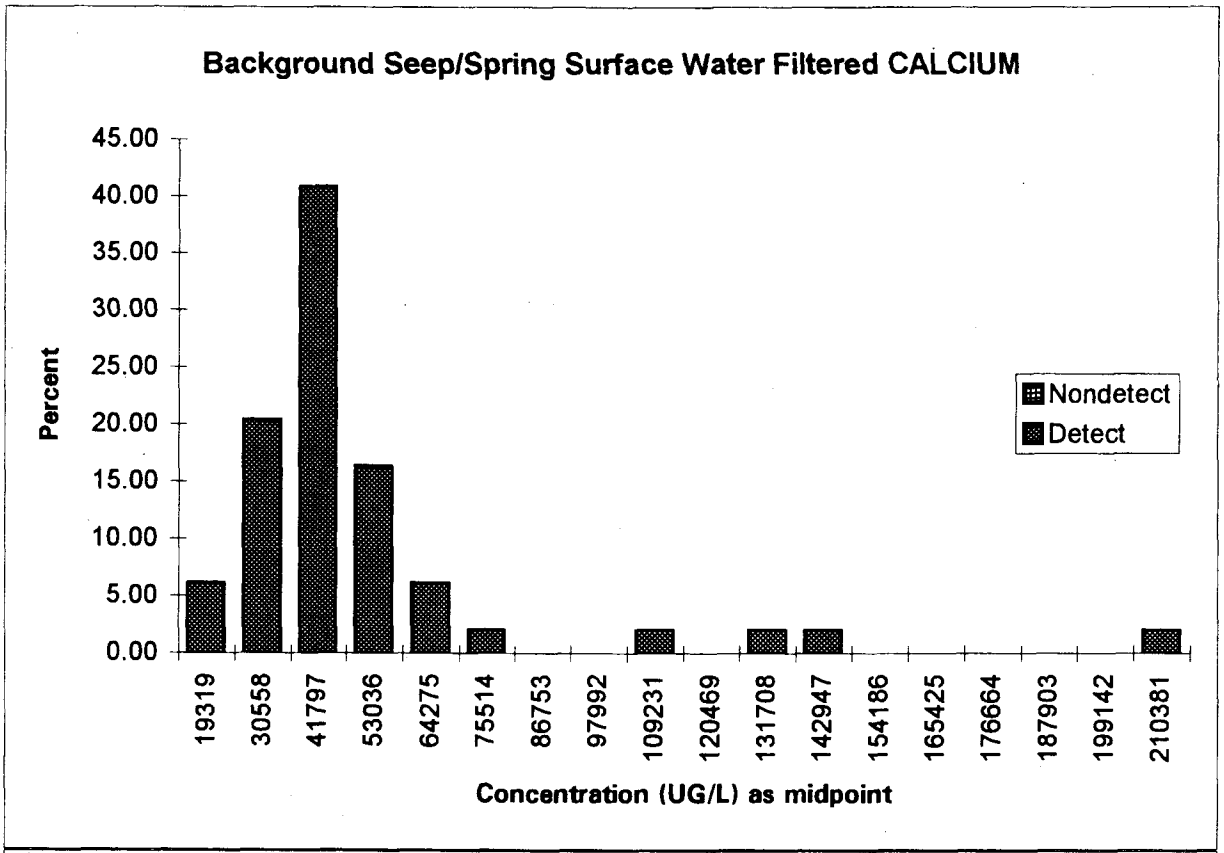

OU6 Baseflow Surface Water Total URANIUM-233,234
Percent
20.00
18.00
16.00
14.00
12.00
10.00
8.00
6.00
4.00
2.00
0.00
Nondetect
Detect
0.129
0.402
0.675
0.947
1.22
1.492
1.765
2.038
2.31
2.583
2.855
3.128
3.401
3.673
3.946
4.218
4.491
4.764
Concentration (pCi/L) as midpoint

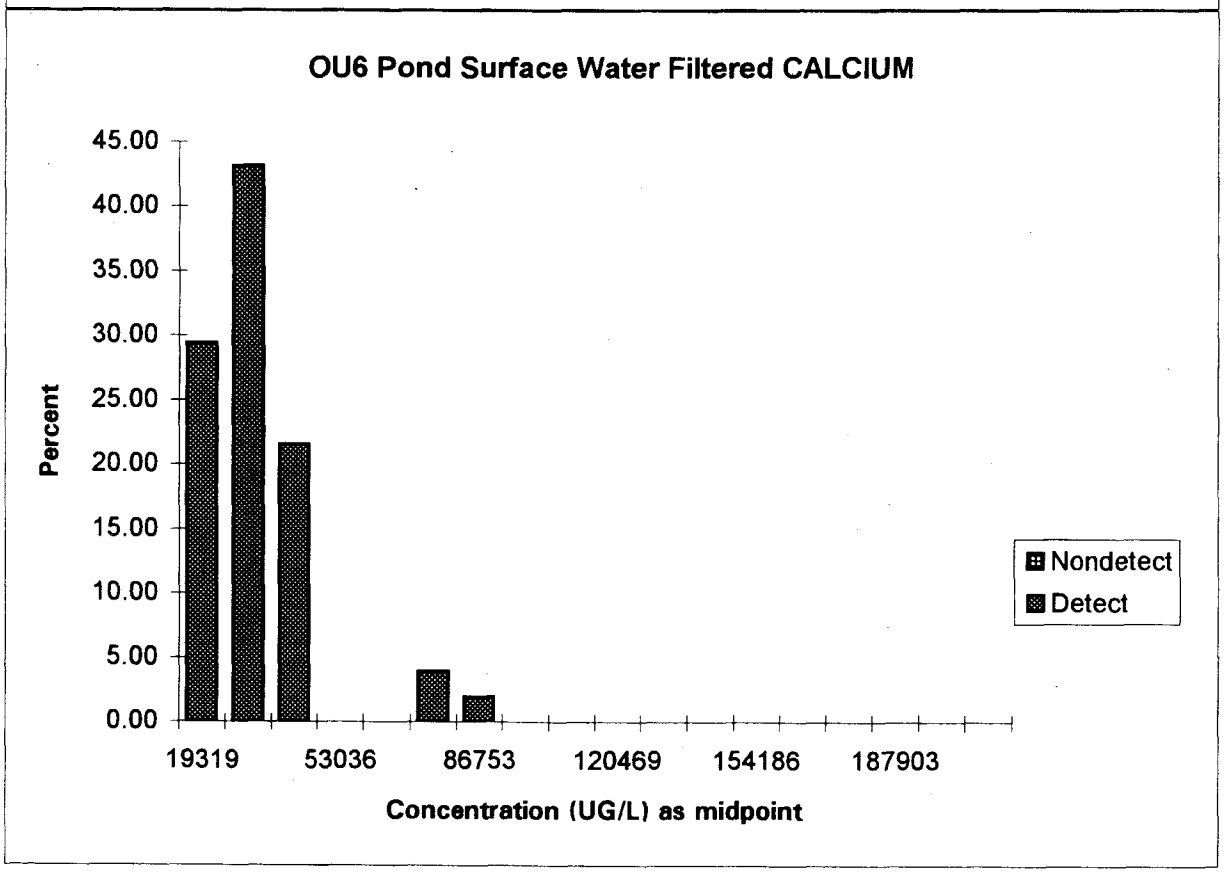

Background Baseflow Surface Water Total URANIUM-235
Percent
45.00
40.00
35.00
30.00
25.00
20.00
15.00
10.00
5.00
0.00
Nondetect
Detect
-0.021
0.002
0.026
0.049
0.073
0.096
0.12
0.143
0.167
0.19
0.214
0.237
0.261
0.284
0.308
0.331
0.355
0.378
Concentration (pCi/L) as midpoint

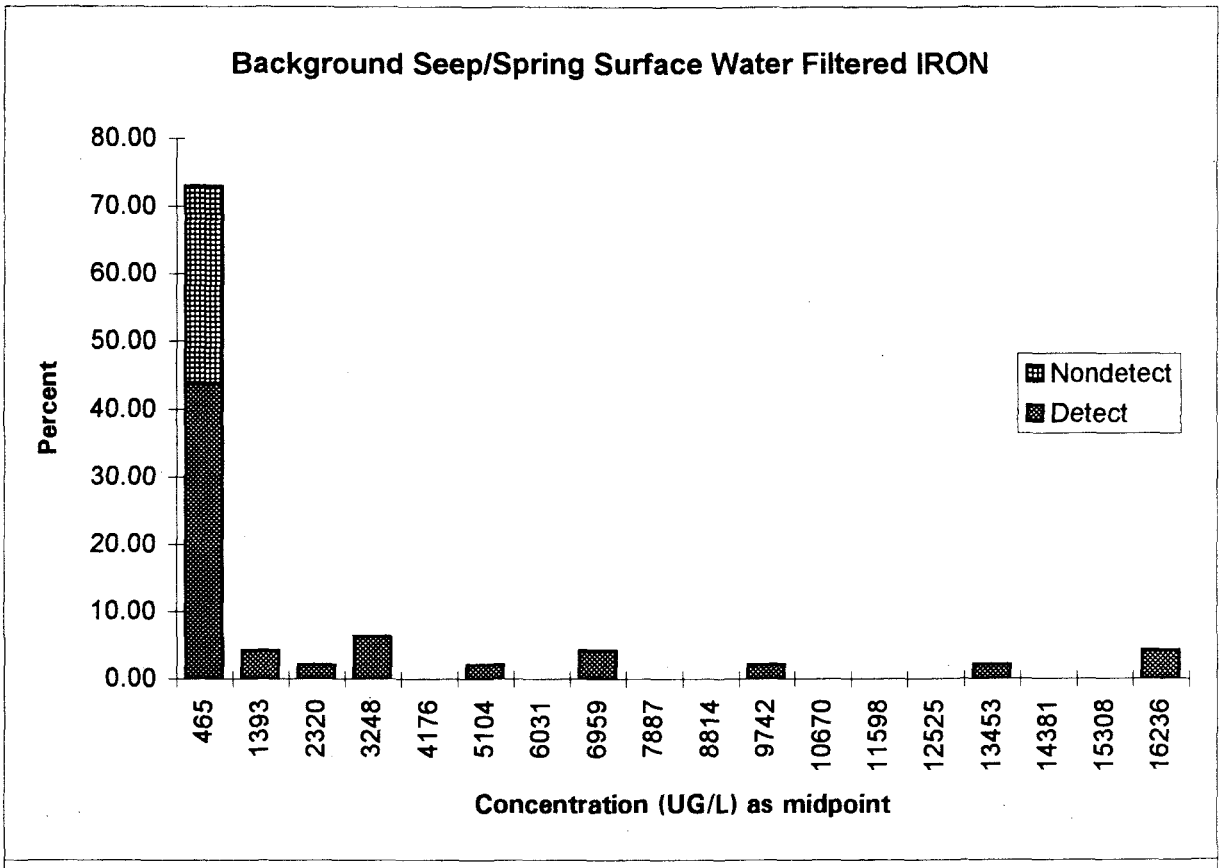

OU6 Baseflow Surface Water Total URANIUM-235
Percent
30.00
25.00
20.00
15.00
10.00
5.00
0.00
Nondetect
Detect
-0.021
0.002
0.026
0.049
0.073
0.096
0.12
0.143
0.167
0.19
0.214
0.237
0.261
0.284
0.308
0.331
0.355
0.378
Concentration (pCi/L) as midpoint

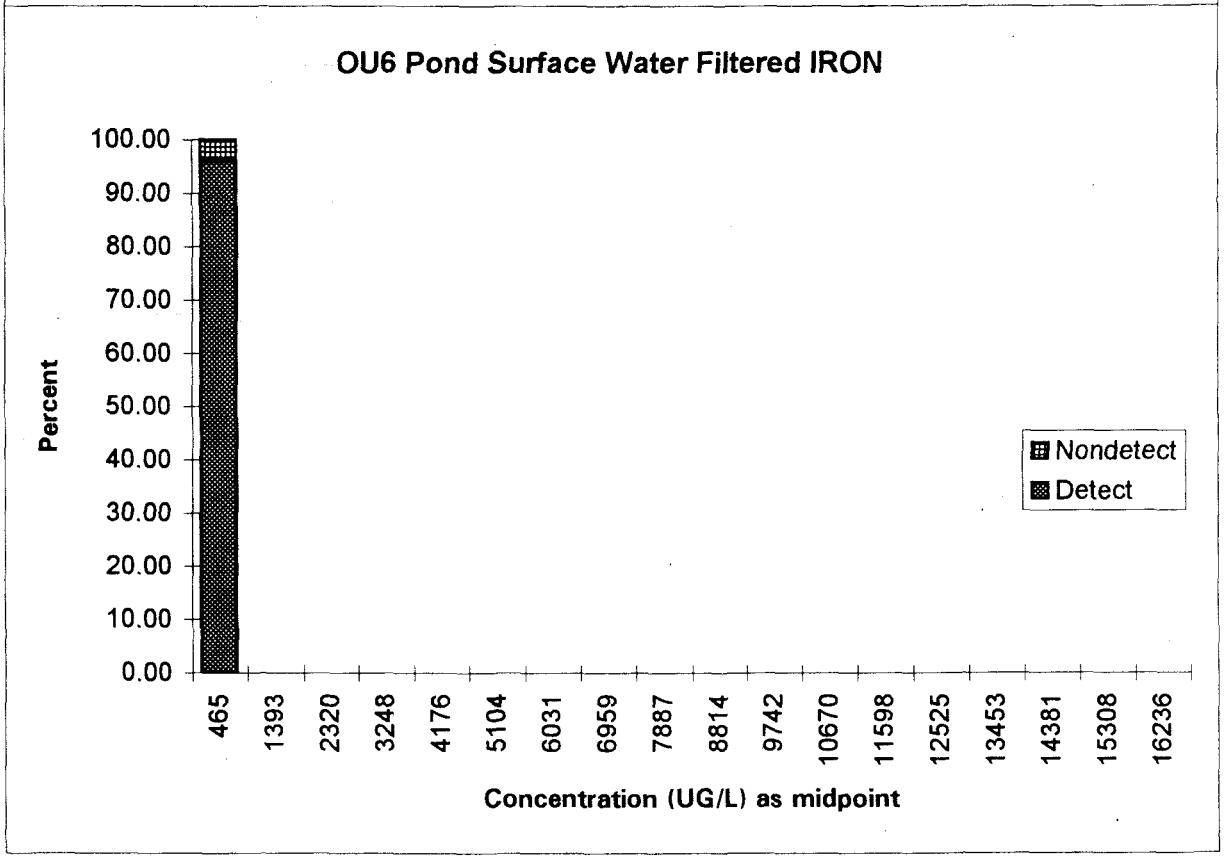

Background Baseflow Surface Water Total URANIUM-238
Percent
60.00
50.00
40.00
30.00
20.00
10.00
0.00
Nondetect
Detect
0.142
0.425
0.708
0.992
1.275
1.558
1.842
2.125
2.408
2.692
2.975
3.258
3.542
3.825
4.108
4.392
4.675
4.958
Concentration (pCi/L) as midpoint

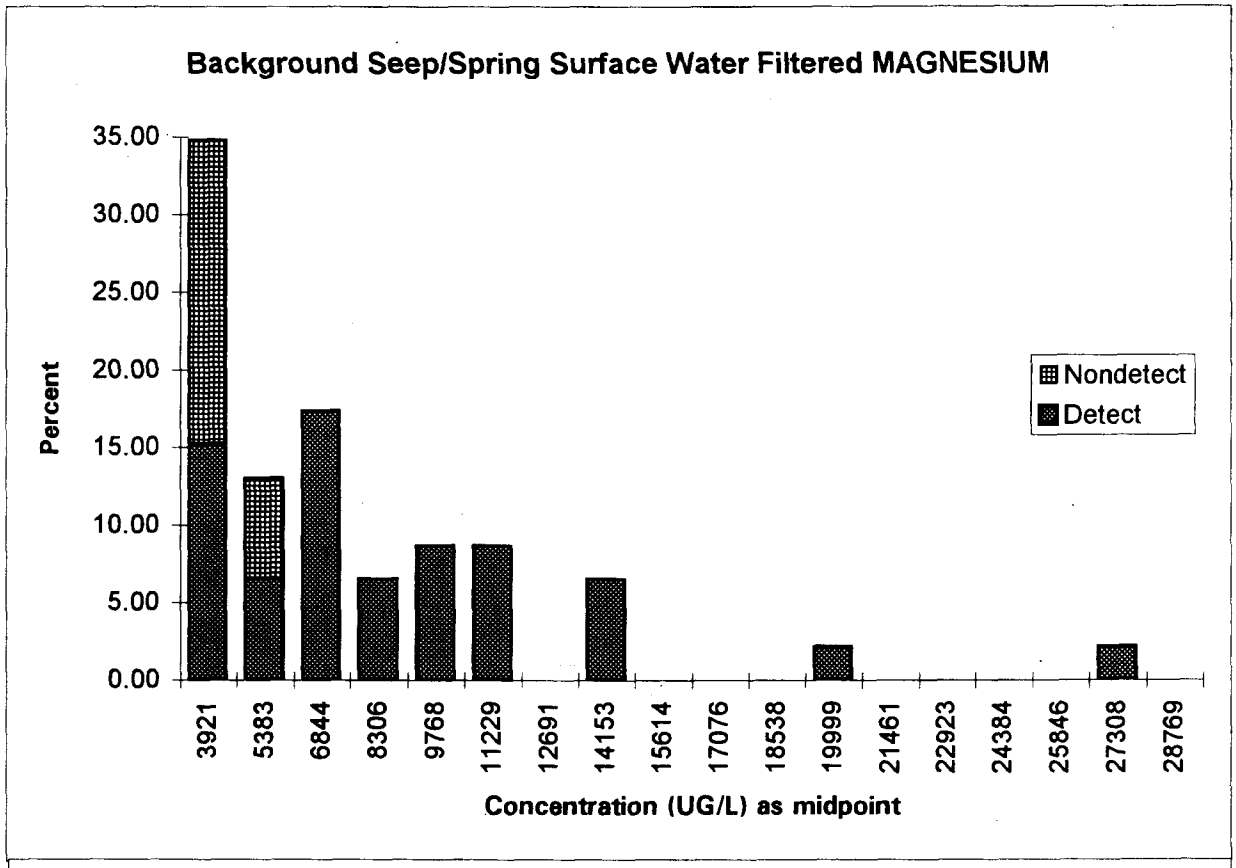

OU6 Baseflow Water Surface Total URANIUM-238
Percent
20.00
18.00
16.00
14.00
12.00
10.00
8.00
6.00
4.00
2.00
0.00
Nondetect
Detect
0.142
0.425
0.708
0.992
1.275
1.558
1.842
2.125
2.408
2.692
2.975
3.258
3.542
3.825
4.108
4.392
4.675
4.958
Concentration (pCi/L) as midpoint

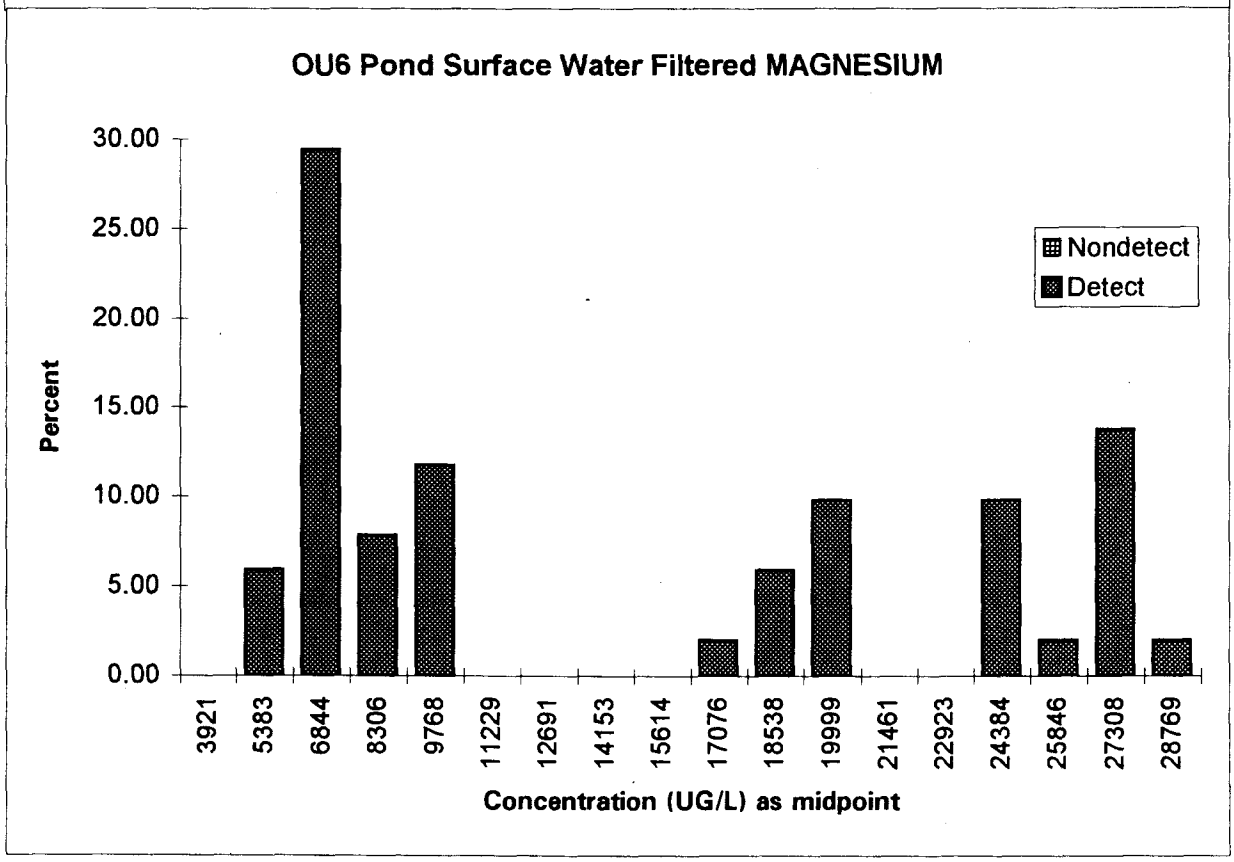

Background Seep/Spring Surface Water Filtered CALCIUM
Percent
45.00
40.00
35.00
30.00
25.00
20.00
15.00
10.00
5.00
0.00
19319
30558
41797
53036
64275
75514
86753
97992
109231
120469
131708
142947
154186
165425
176664
187903
199142
210381
Concentration (UG/L) as midpoint
Nondetect
Detect

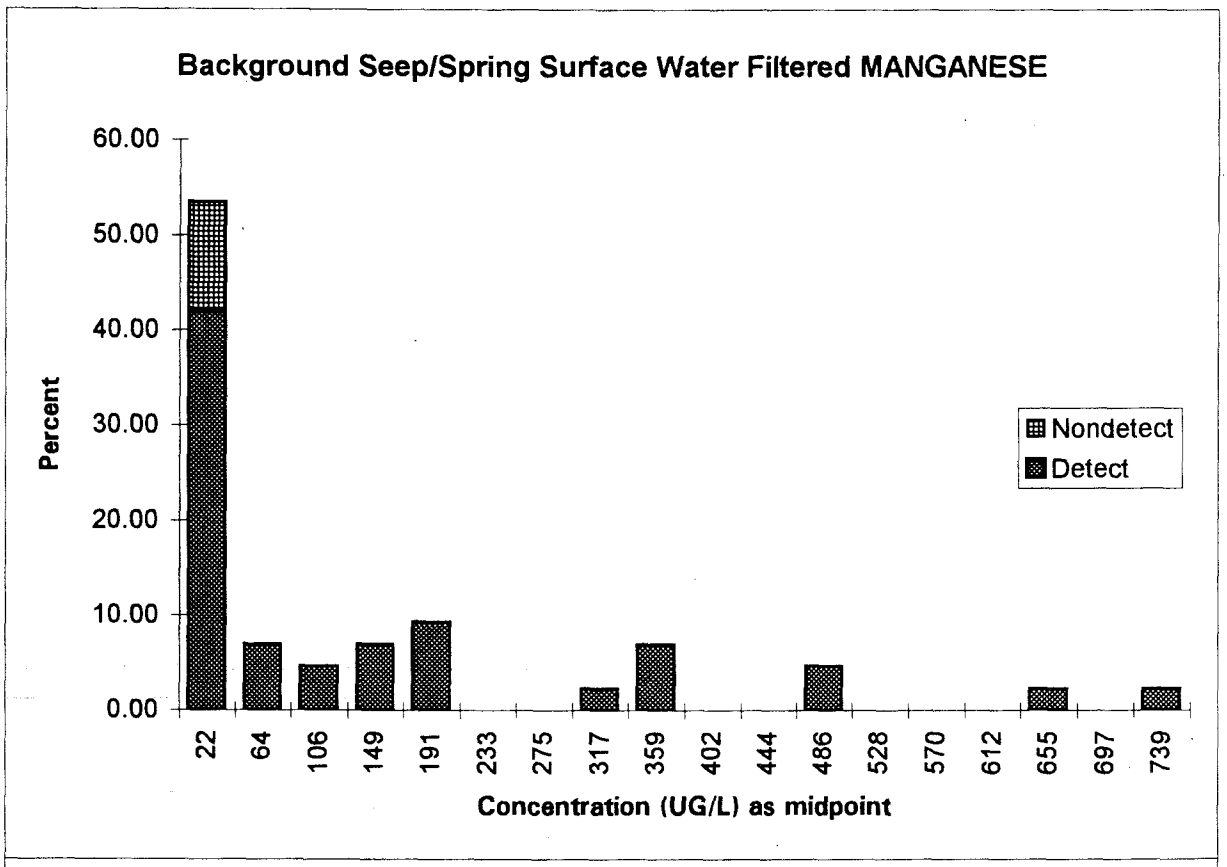

OU6 Pond Surface Water Filtered CALCIUM
Percent
45.00
40.00
35.00
30.00
25.00
20.00
15.00
10.00
5.00
0.00
19319
53036
86753
120469
154186
187903
Concentration (UG/L) as midpoint
Nondetect
Detect

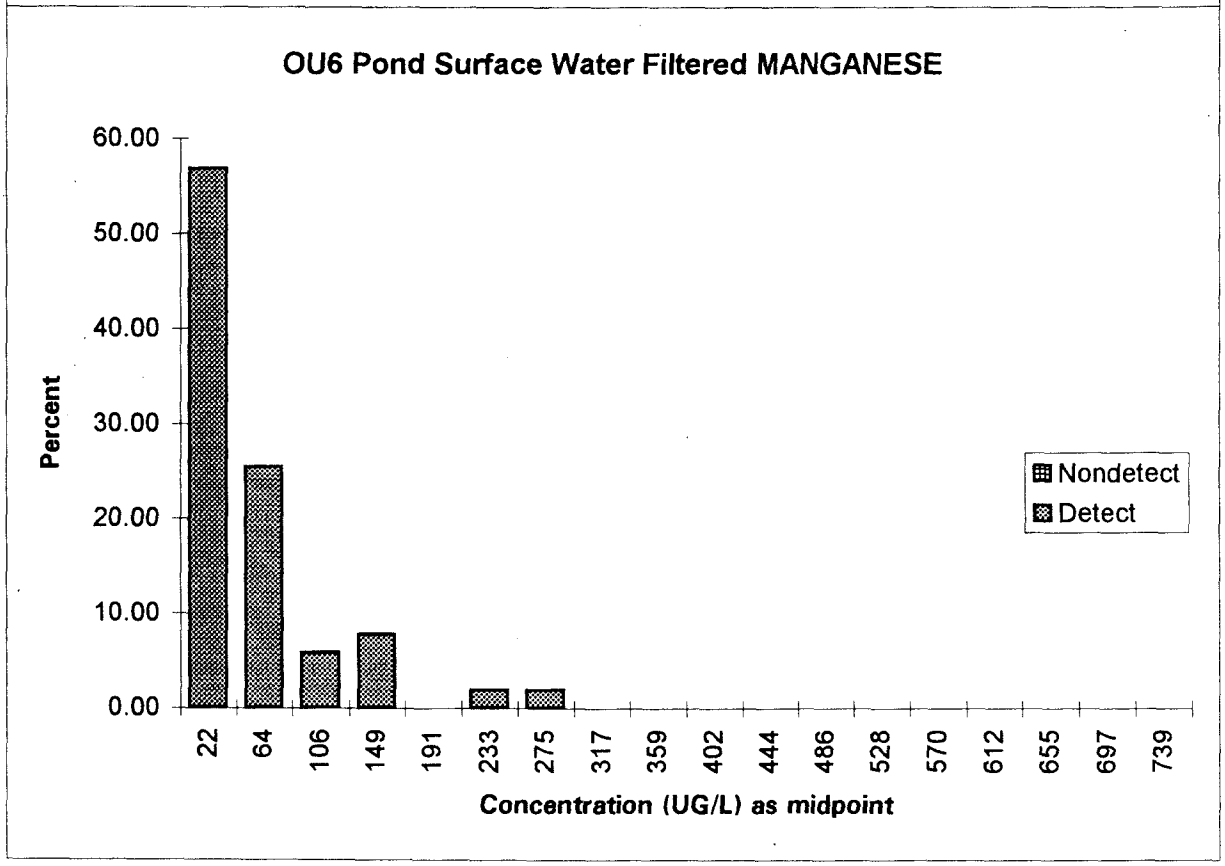

Background Seep/Spring Surface Water Filtered IRON
Percent
80.00
70.00
60.00
50.00
40.00
30.00
20.00
10.00
0.00
Nondetect
Detect
465
1393
2320
3248
4176
5104
6031
6959
7887
8814
9742
10670
11598
12525
13453
14381
15308
16236
Concentration (UG/L) as midpoint

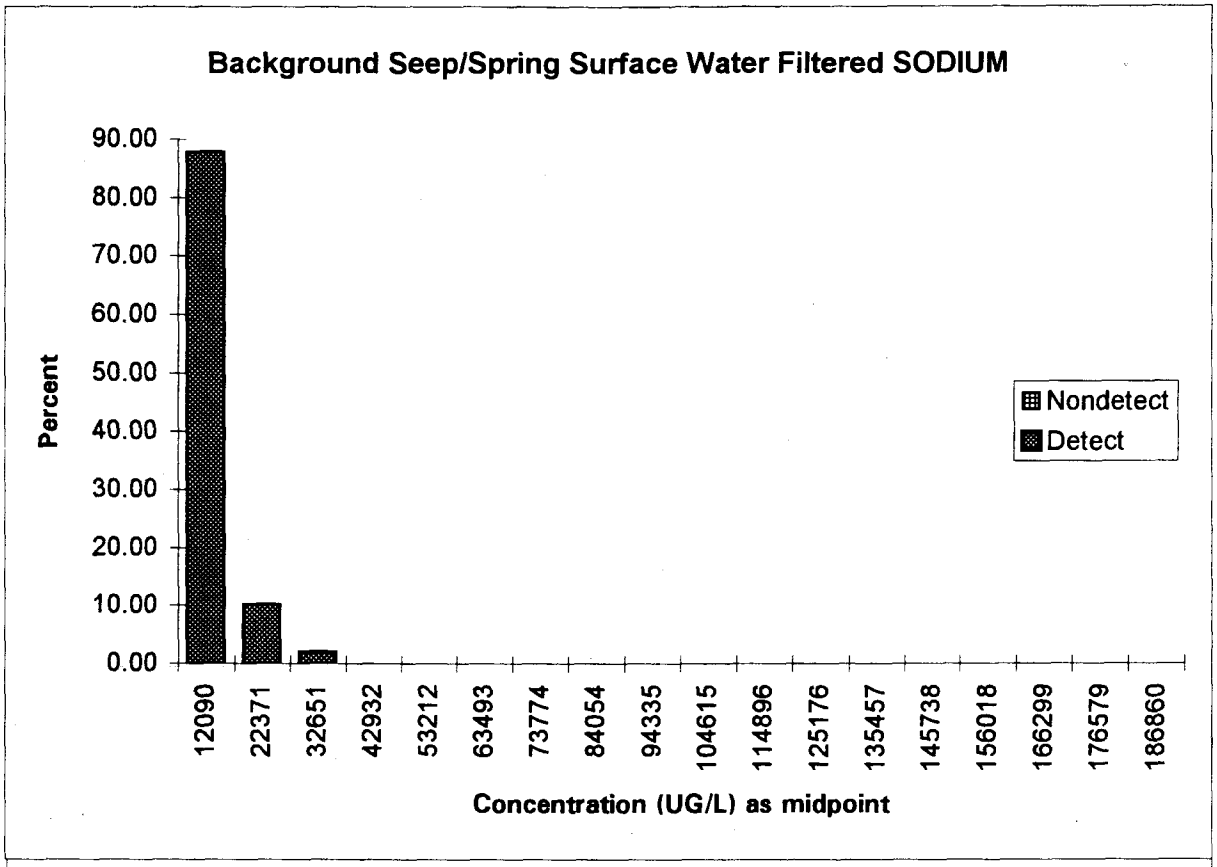

OU6 Pond Surface Water Filtered IRON
Percent
100.00
90.00
80.00
70.00
60.00
50.00
40.00
30.00
20.00
10.00
0.00
Nondetect
Detect
465
1393
2320
3248
4176
5104
6031
6959
7887
8814
9742
10670
11598
12525
13453
14381
15308
16236
Concentration (UG/L) as midpoint

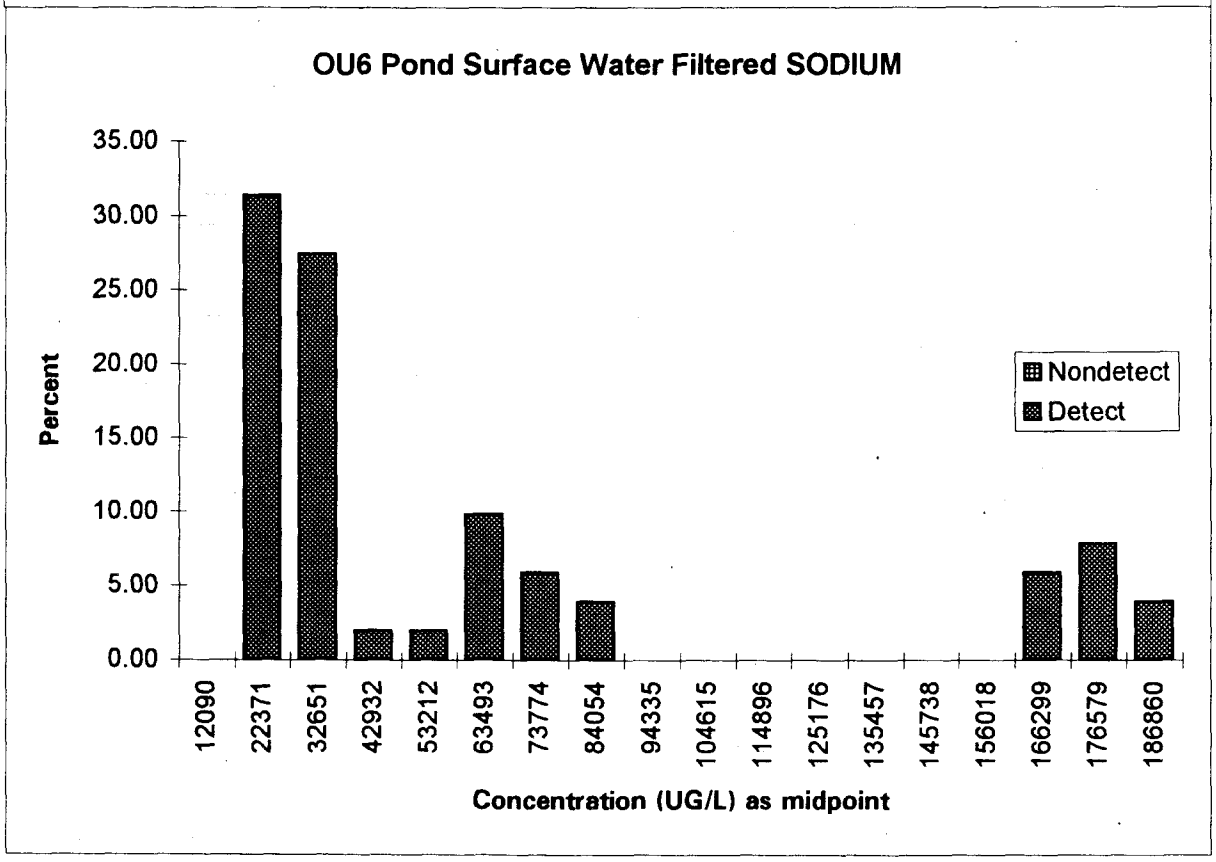

Background Seep/Spring Surface Water Filtered MAGNESIUM
Percent
35.00
30.00
25.00
20.00
15.00
10.00
5.00
0.00
Nondetect
Detect
3921
5383
6844
8306
9768
11229
12691
14153
15614
17076
18538
19999
21461
22923
24384
25846
27308
28769
Concentration (UG/L) as midpoint

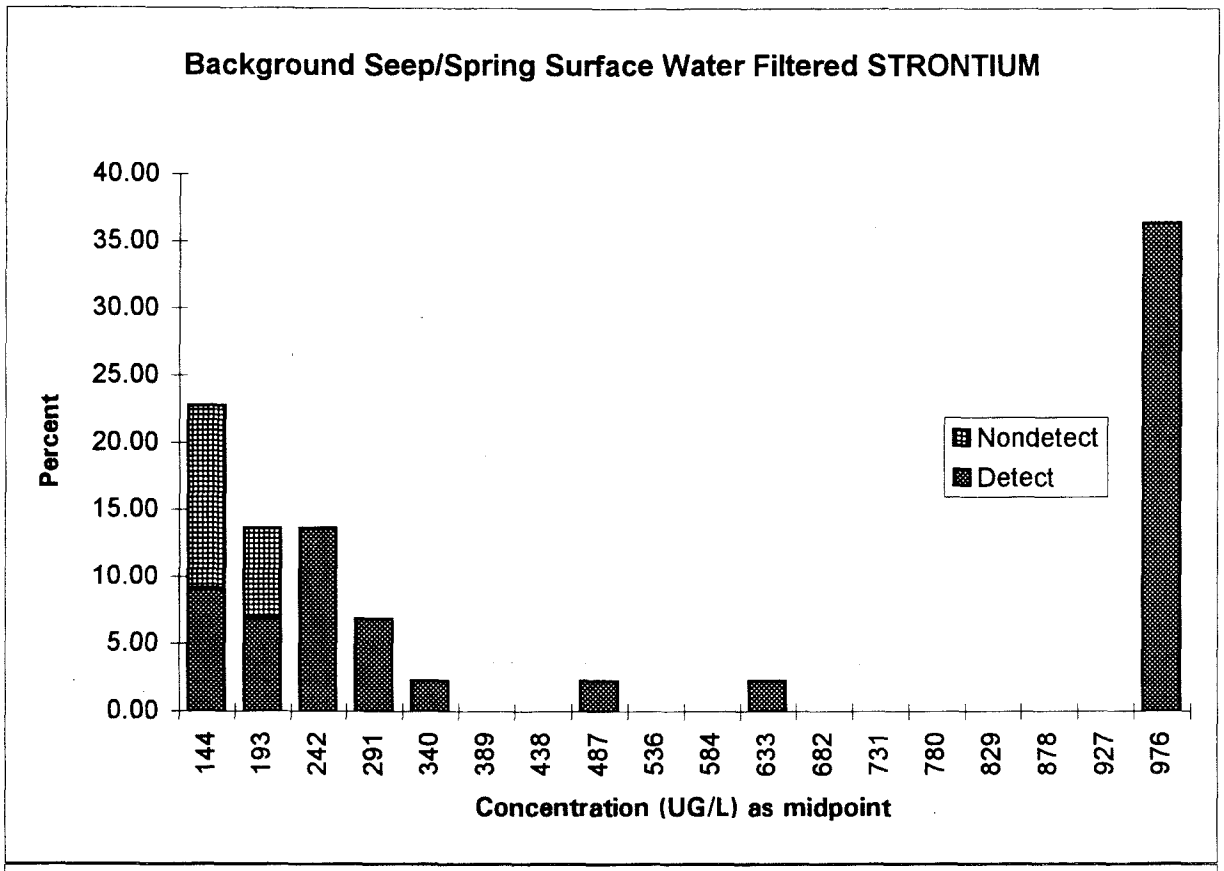

OU6 Pond Surface Water Filtered MAGNESIUM
Percent
30.00
25.00
20.00
15.00
10.00
5.00
0.00
Nondetect
Detect
3921
5383
6844
8306
9768
11229
12691
14153
15614
17076
18538
19999
21461
22923
24384
25846
27308
28769
Concentration (UG/L) as midpoint

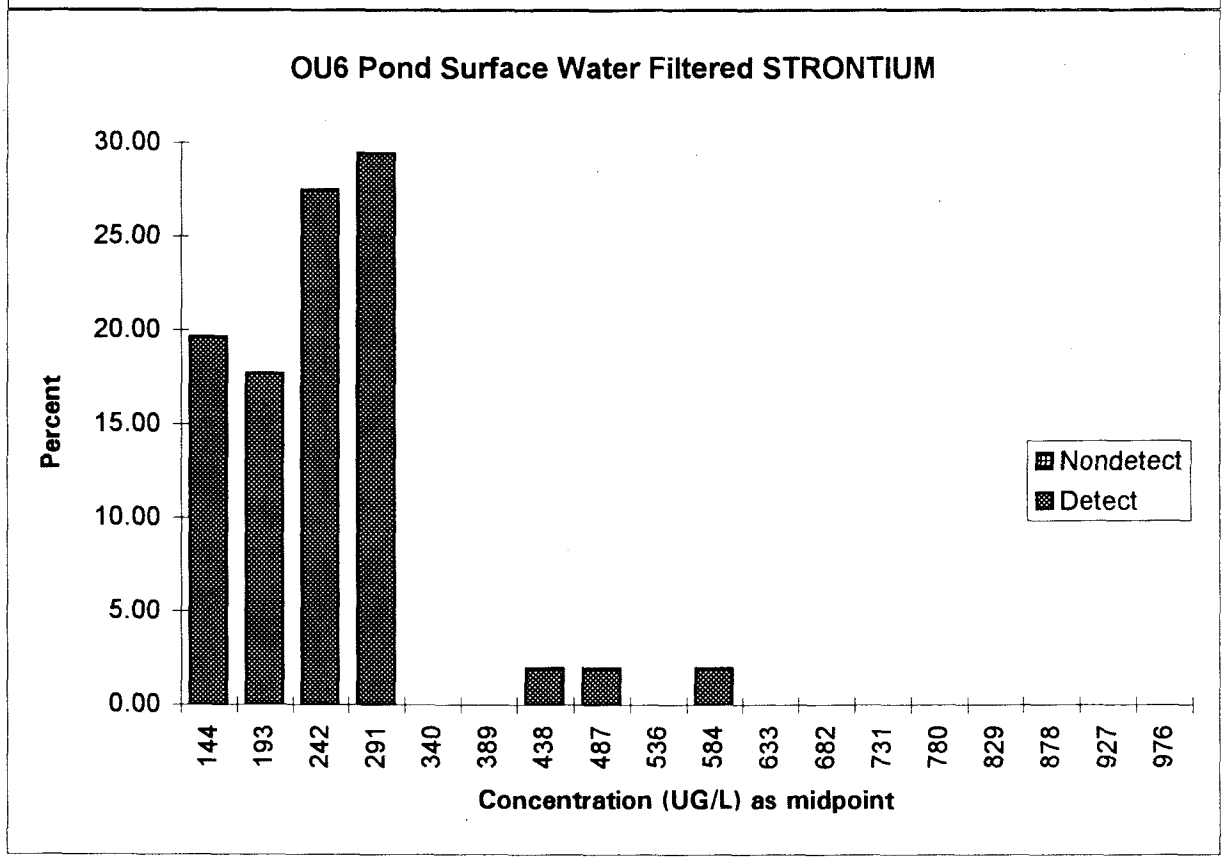

Background Seep/Spring Surface Water Filtered MANGANESE
60.00
50.00
40.00
30.00
20.00
10.00
0.00
Percent
Nondetect
Detect
22
64
106
149
191
233
275
317
359
402
444
486
528
570
612
655
697
739
Concentration (UG/L) as midpoint

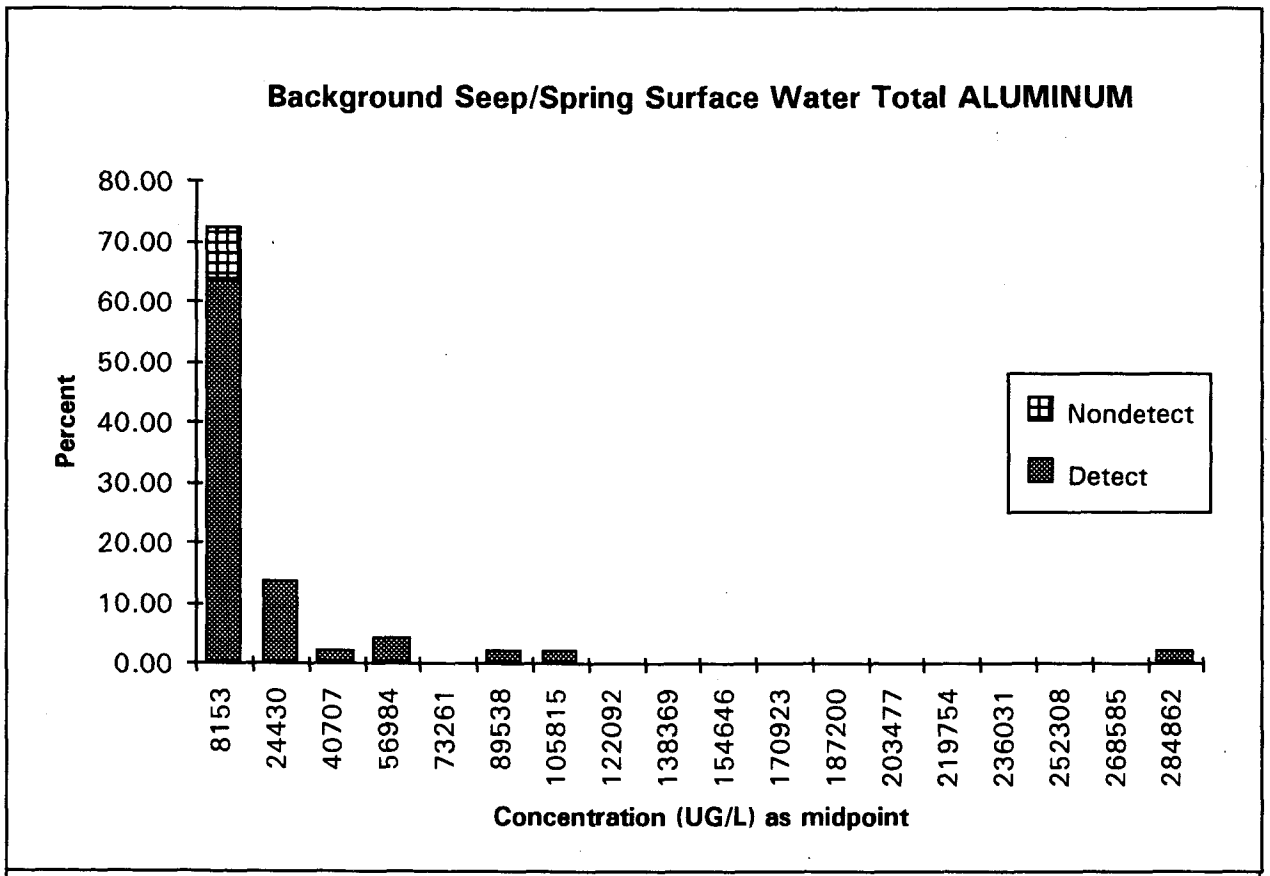

OU6 Pond Surface Water Filtered MANGANESE
60.00
50.00
40.00
30.00
20.00
10.00
0.00
Percent
Nondetect
Detect
22
64
106
149
191
233
275
317
359
402
444
486
528
570
612
655
697
739
Concentration (UG/L) as midpoint

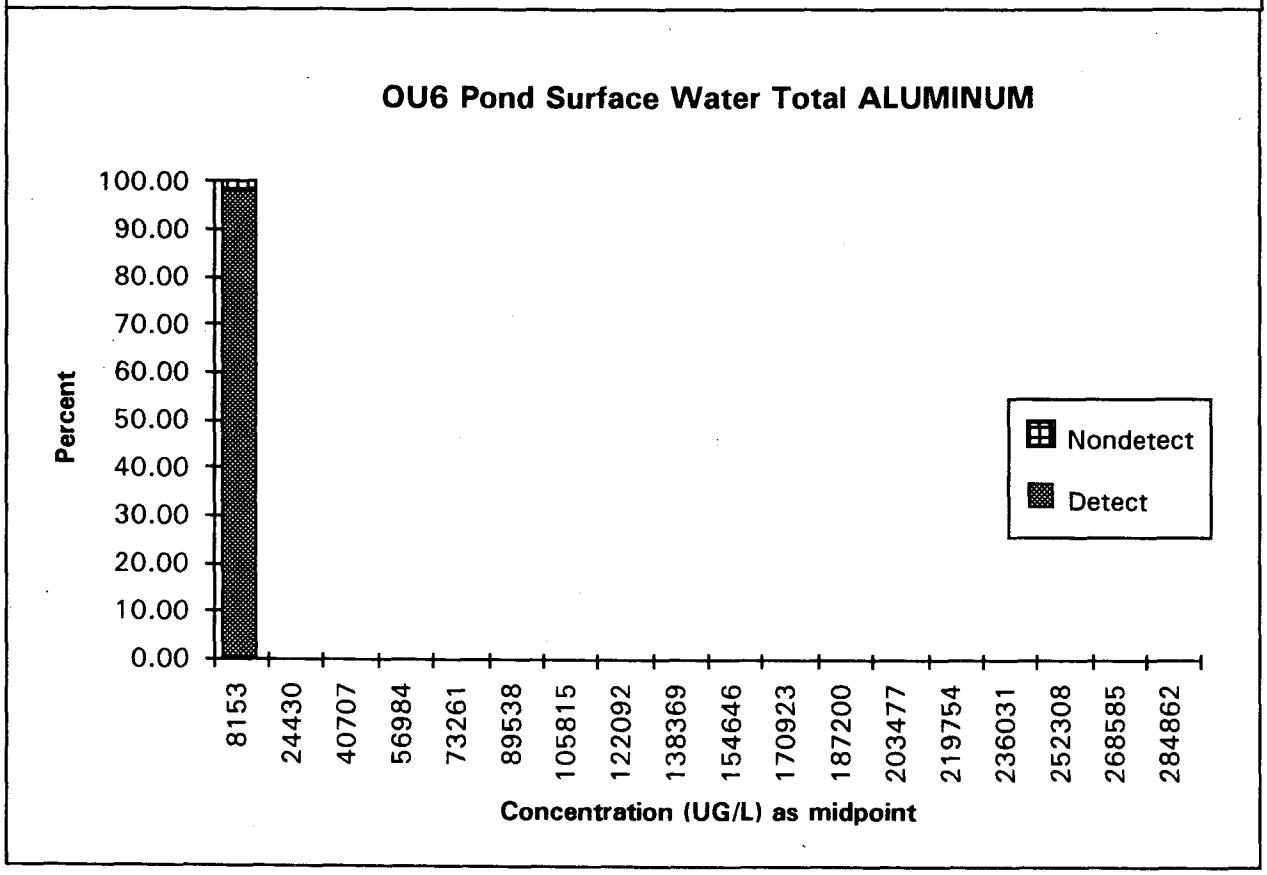

Background Seep/Spring Surface Water Filtered SODIUM
Percent
90.00
80.00
70.00
60.00
50.00
40.00
30.00
20.00
10.00
0.00
Nondetect
Detect
12090
22371
32651
42932
53212
63493
73774
84054
94335
104615
114896
125176
135457
145738
156018
166299
176579
186860
Concentration (UG/L) as midpoint

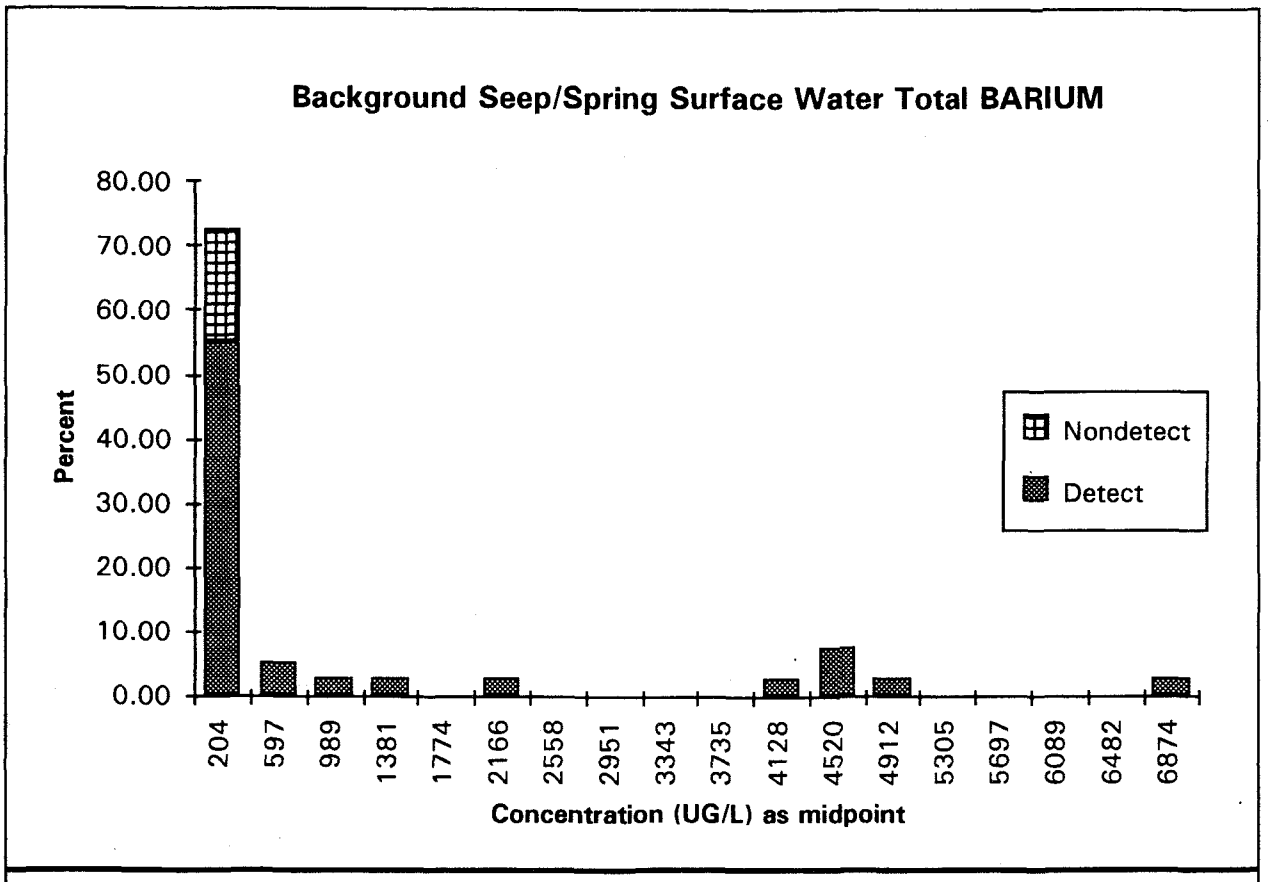

OU6 Pond Surface Water Filtered SODIUM
Percent
35.00
30.00
25.00
20.00
15.00
10.00
5.00
0.00
Nondetect
Detect
12090
22371
32651
42932
53212
63493
73774
84054
94335
104615
114896
125176
135457
145738
156018
166299
176579
186860
Concentration (UG/L) as midpoint

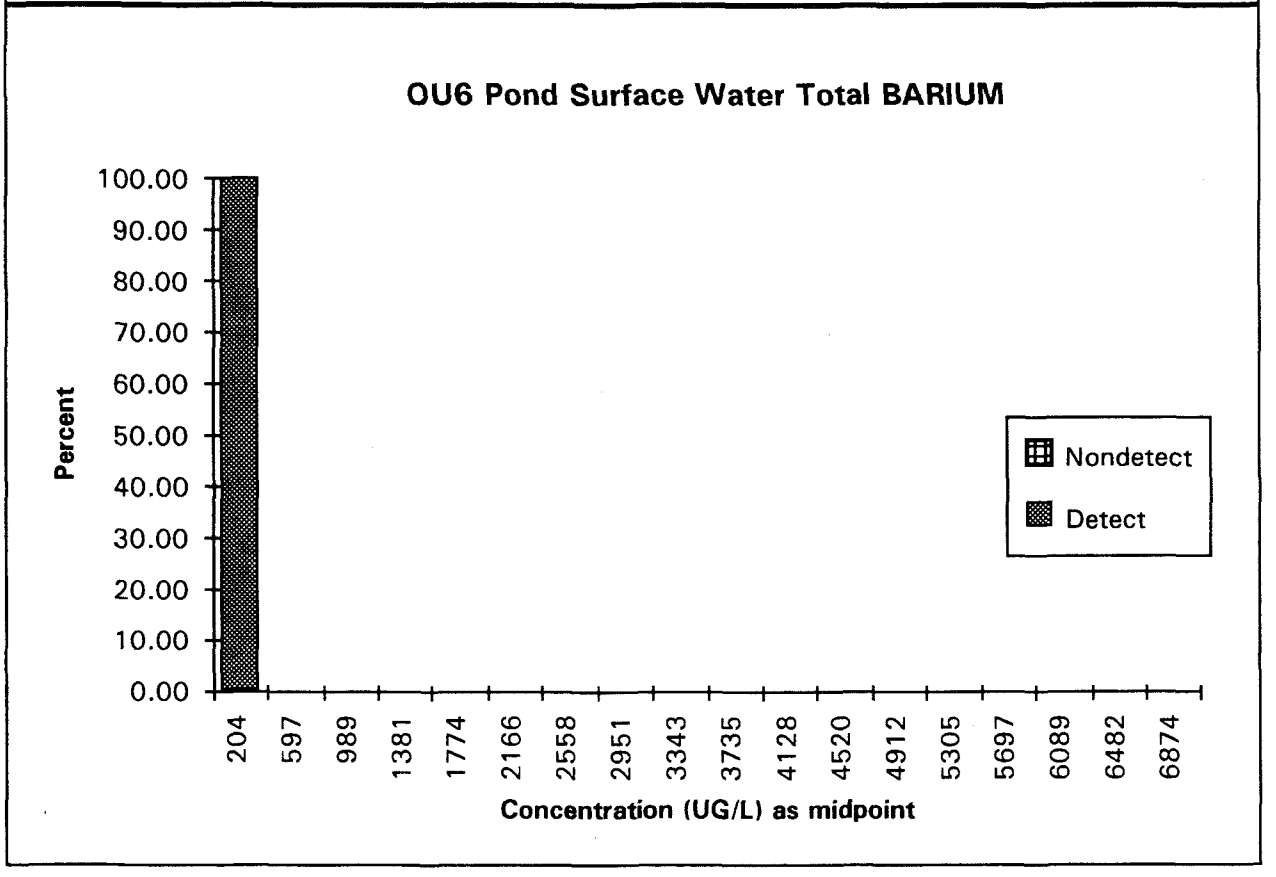

Background Seep/Spring Surface Water Filtered STRONTIUM
Percent
40.00
35.00
30.00
25.00
20.00
15.00
10.00
5.00
0.00
Nondetect
Detect
144
193
242
291
340
389
438
487
536
584
633
682
731
780
829
878
927
976
Concentration (UG/L) as midpoint

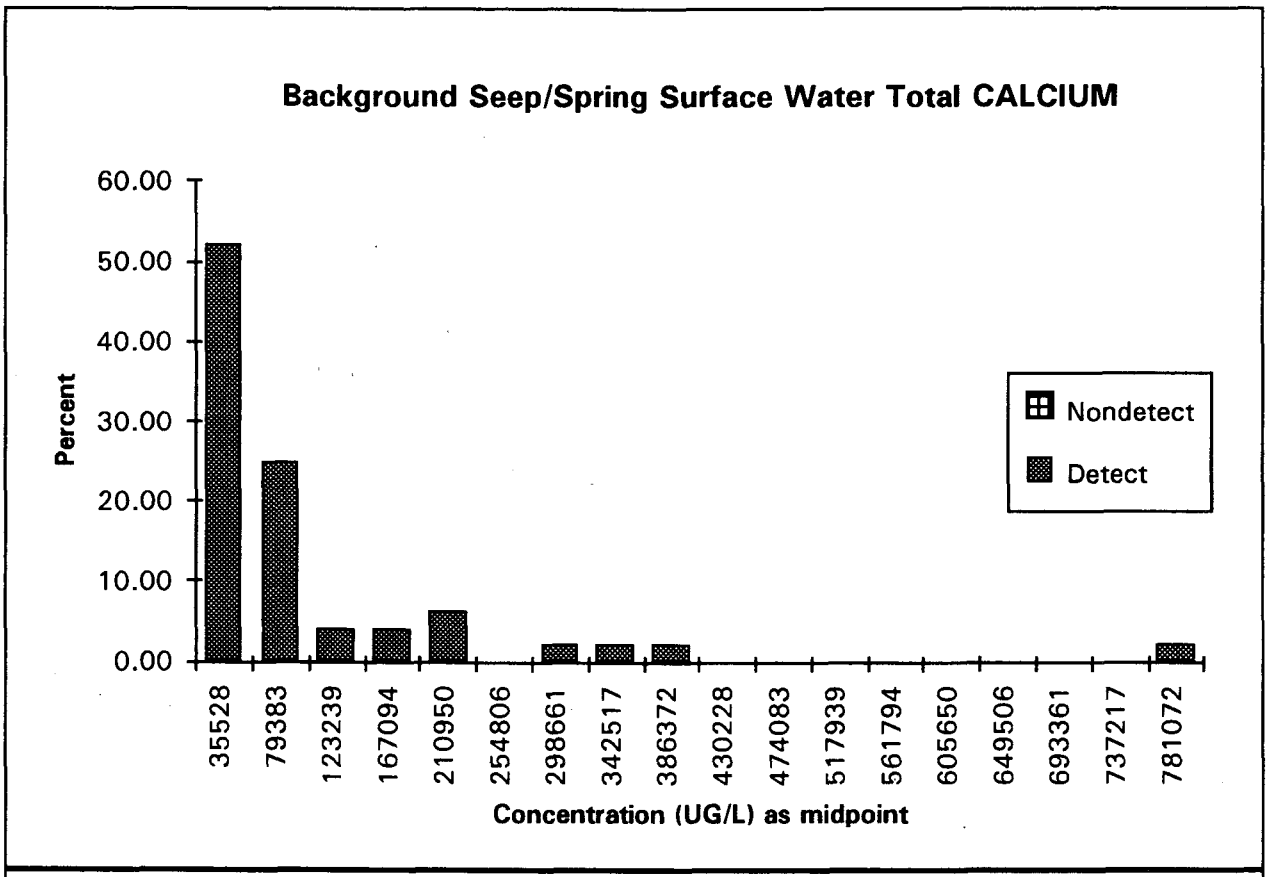

OU6 Pond Surface Water Filtered STRONTIUM
Percent
30.00
25.00
20.00
15.00
10.00
5.00
0.00
Nondetect
Detect
144
193
242
291
340
389
438
487
536
584
633
682
731
780
829
878
927
976
Concentration (UG/L) as midpoint

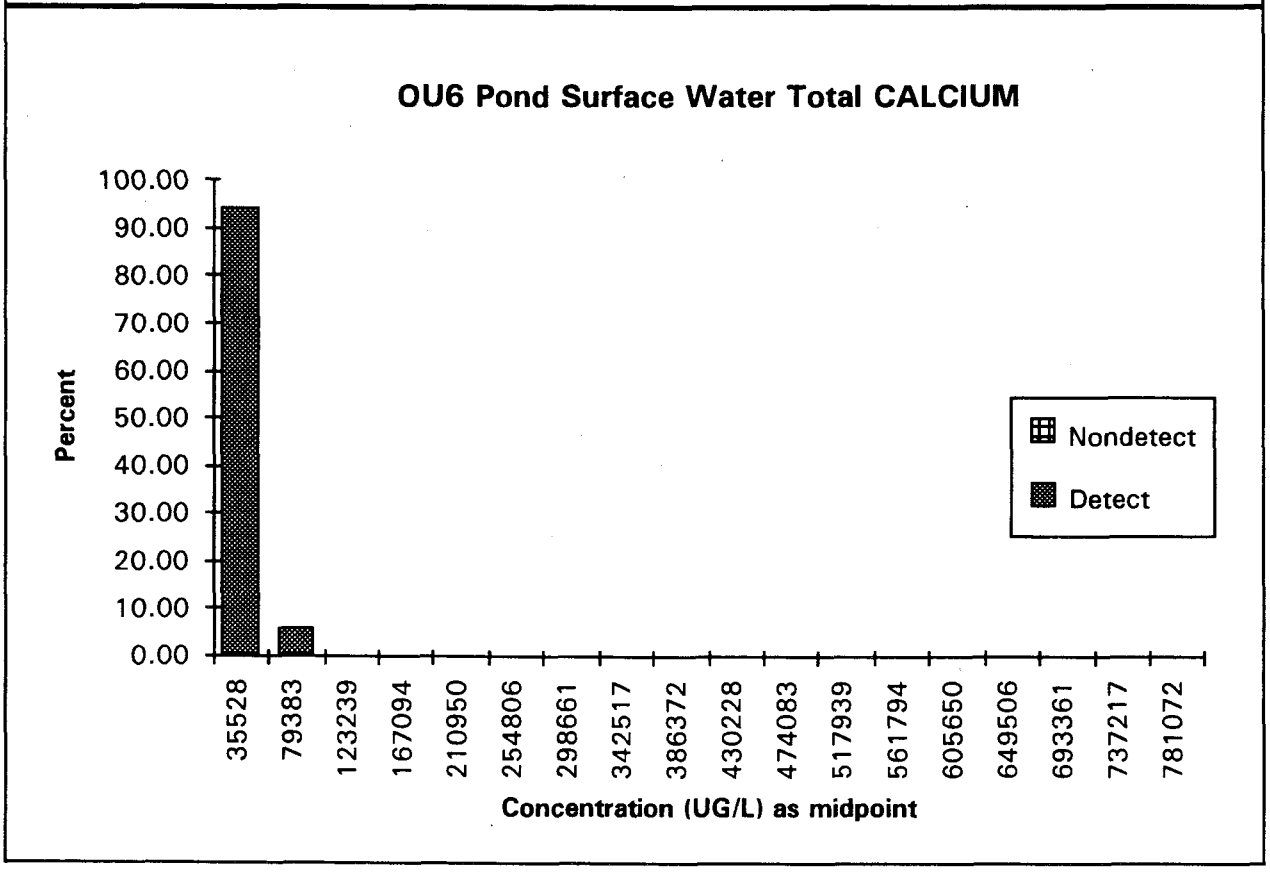

Background Seep/Spring Surface Water Total ALUMINUM
80.00
70.00
60.00
50.00
40.00
30.00
20.00
10.00
0.00
Percent
Nondetect
Detect
8153
24430
40707
56984
73261
89538
105815
122092
138369
154646
170923
187200
203477
219754
236031
252308
268585
284862
Concentration (UG/L) as midpoint

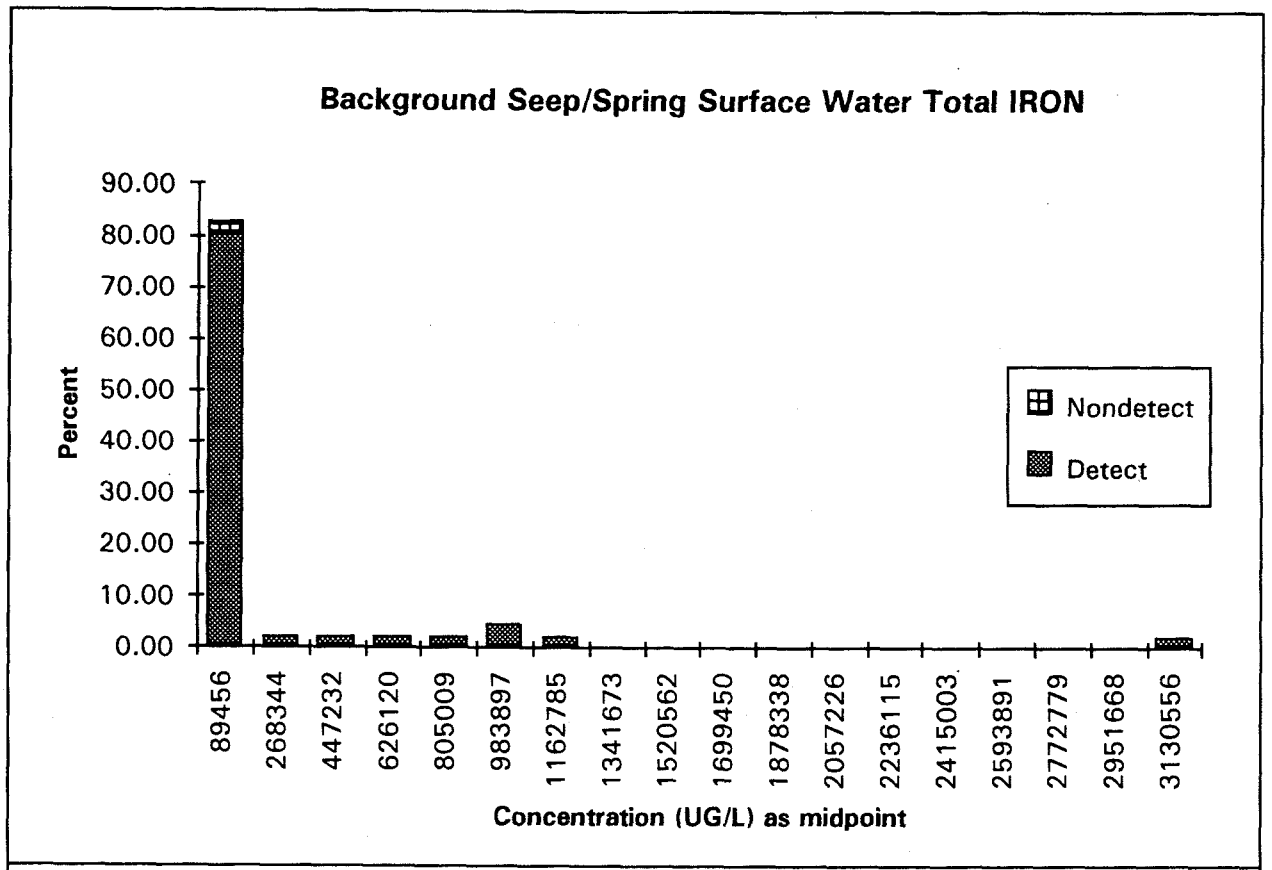

OU6 Pond Surface Water Total ALUMINUM
100.00
90.00
80.00
70.00
60.00
50.00
40.00
30.00
20.00
10.00
0.00
Percent
Nondetect
Detect
8153
24430
40707
56984
73261
89538
105815
122092
138369
154646
170923
187200
203477
219754
236031
252308
268585
284862
Concentration (UG/L) as midpoint

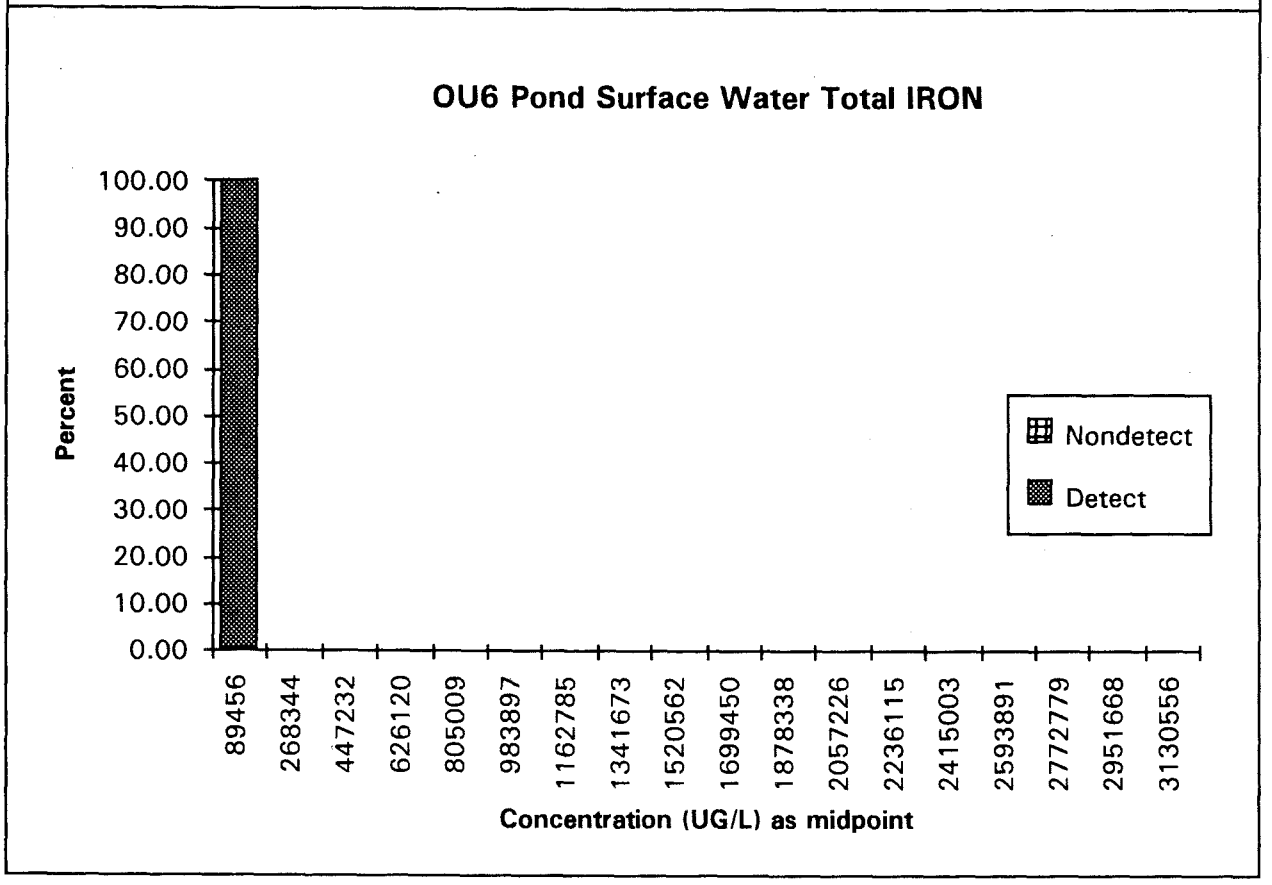

Background Seep/Spring Surface Water Total BARIUM
Percent
80.00
70.00
60.00
50.00
40.00
30.00
20.00
10.00
0.00
Nondetect
Detect
204
597
989
1381
1774
2166
2558
2951
3343
3735
4128
4520
4912
5305
5697
6089
6482
6874
Concentration (UG/L) as midpoint

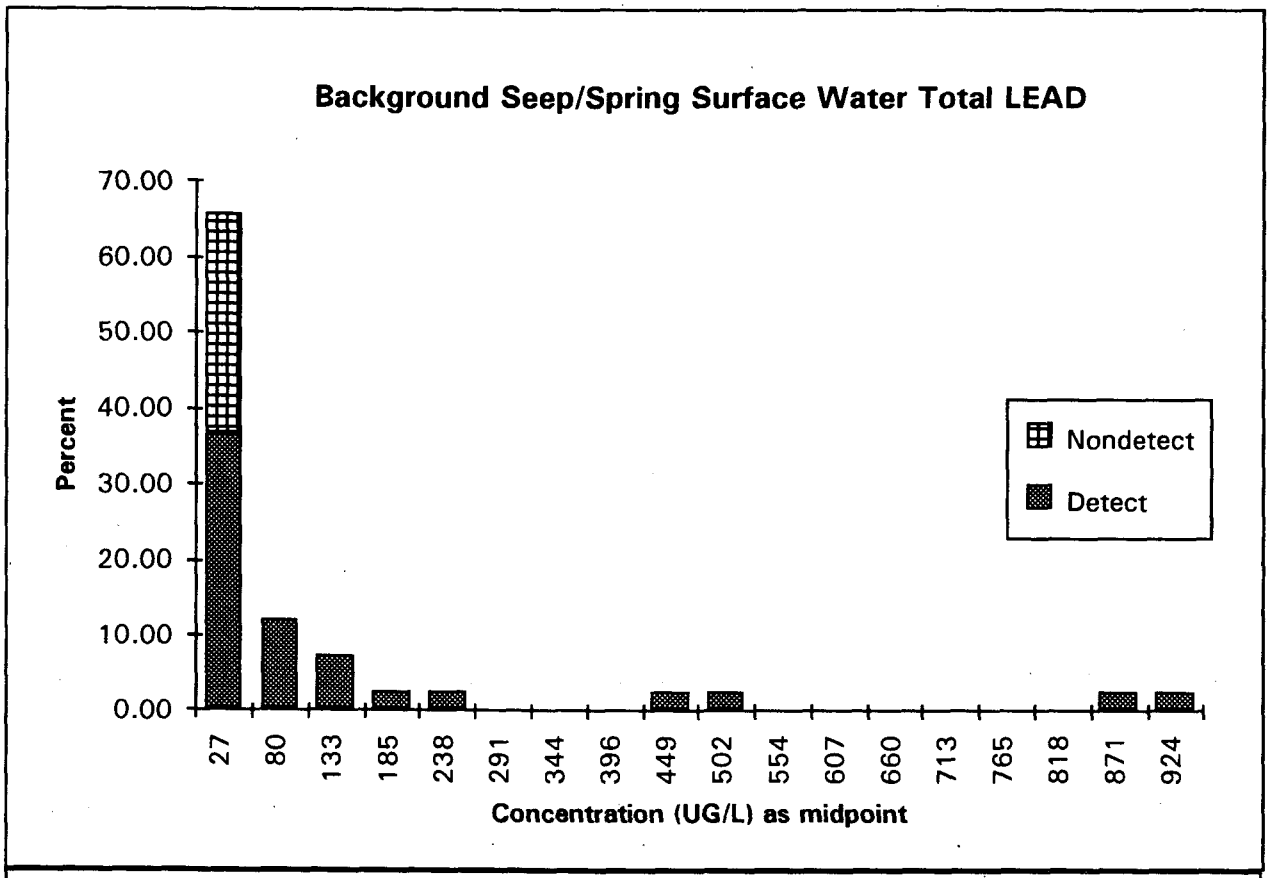

OU6 Pond Surface Water Total BARIUM
Percent
100.00
90.00
80.00
70.00
60.00
50.00
40.00
30.00
20.00
10.00
0.00
Nondetect
Detect
204
597
989
1381
1774
2166
2558
2951
3343
3735
4128
4520
4912
5305
5697
6089
6482
6874
Concentration (UG/L) as midpoint

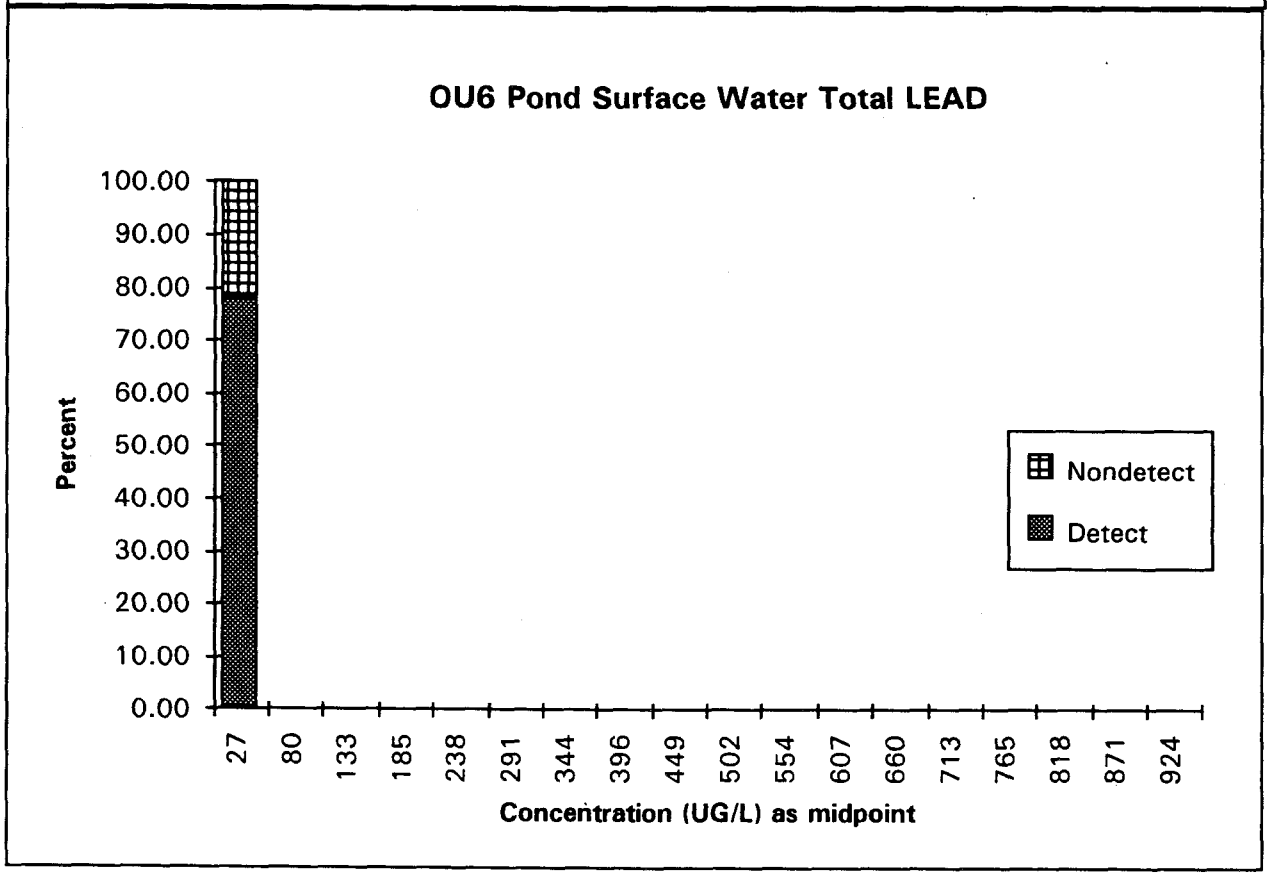

Background Seep/Spring Surface Water Total CALCIUM
60.00
50.00
40.00
30.00
20.00
10.00
0.00
Percent
Nondetect
Detect
35528
79383
123239
167094
210950
254806
298661
342517
386372
430228
474083
517939
561794
605650
649506
693361
737217
781072
Concentration (UG/L) as midpoint

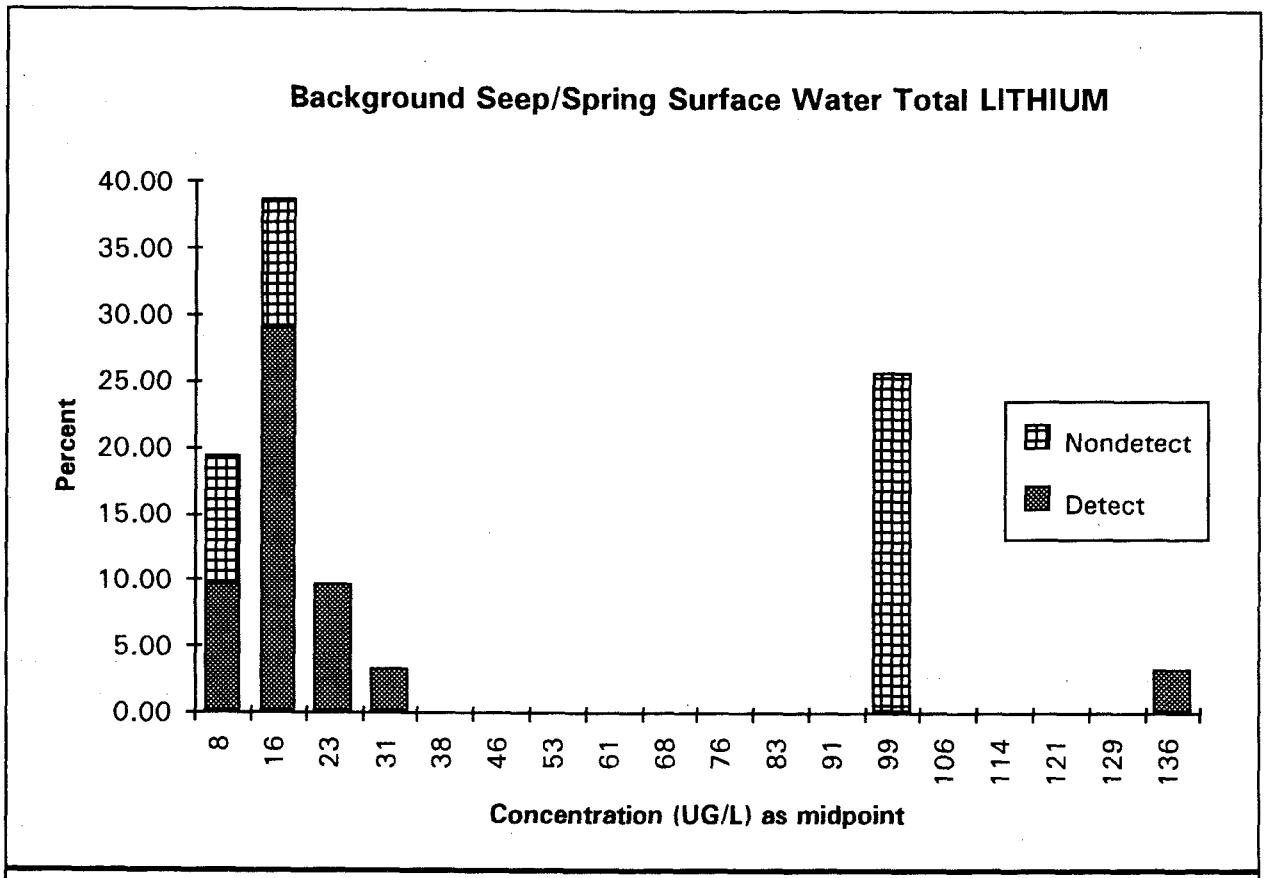

OU6 Pond Surface Water Total CALCIUM
100.00
90.00
80.00
70.00
60.00
50.00
40.00
30.00
20.00
10.00
0.00
Percent
Nondetect
Detect
35528
79383
123239
167094
210950
254806
298661
342517
386372
430228
474083
517939
561794
605650
649506
693361
737217
781072
Concentration (UG/L) as midpoint

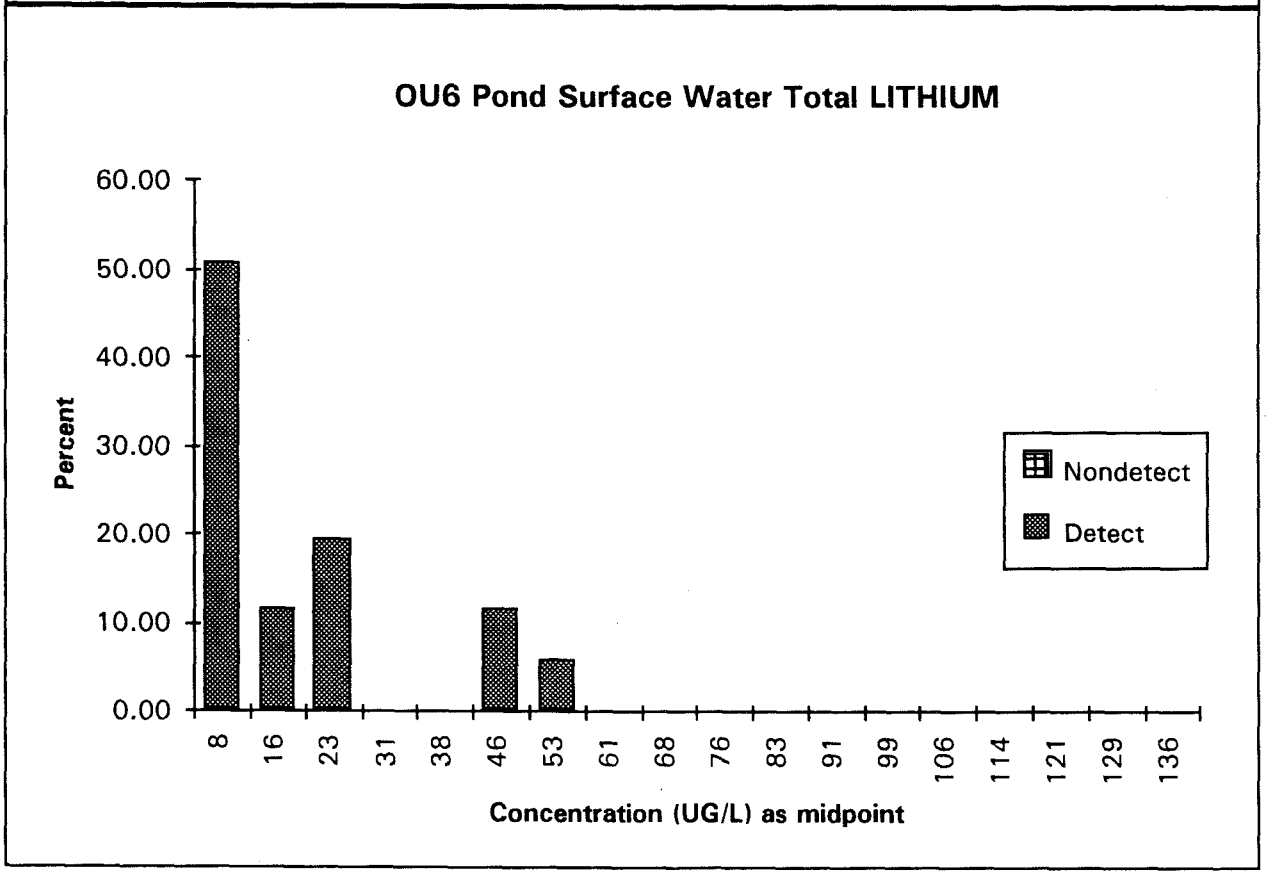

Background Seep/Spring Surface Water Total IRON
Percent
90.00
80.00
70.00
60.00
50.00
40.00
30.00
20.00
10.00
0.00
Nondetect
Detect
89456
268344
447232
626120
805009
983897
1162785
1341673
1520562
1699450
1878338
2057226
2236115
2415003
2593891
2772779
2951668
3130556
Concentration (UG/L) as midpoint

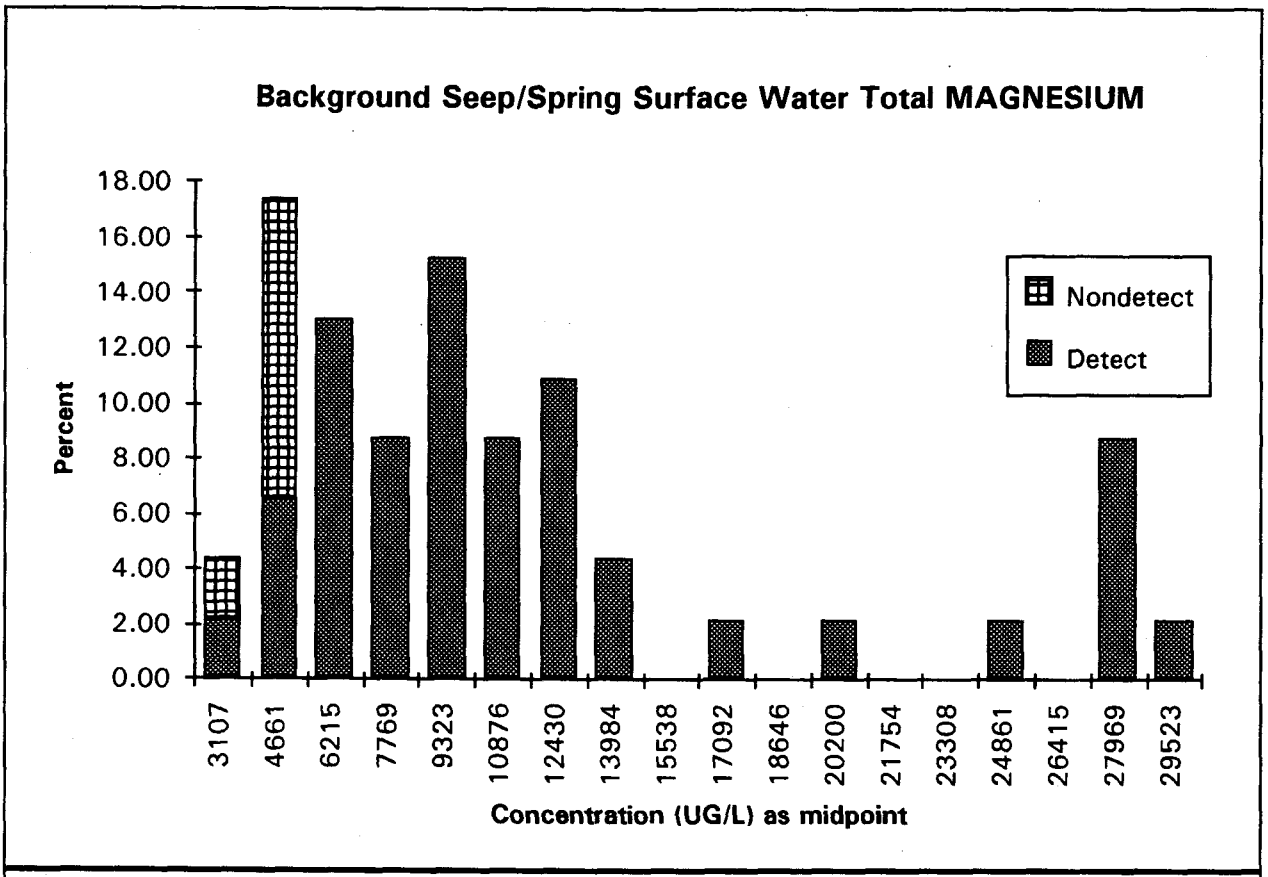

OU6 Pond Surface Water Total IRON
Percent
100.00
90.00
80.00
70.00
60.00
50.00
40.00
30.00
20.00
10.00
0.00
Nondetect
Detect
89456
268344
447232
626120
805009
983897
1162785
1341673
1520562
1699450
1878338
2057226
2236115
2415003
2593891
2772779
2951668
3130556
Concentration (UG/L) as midpoint

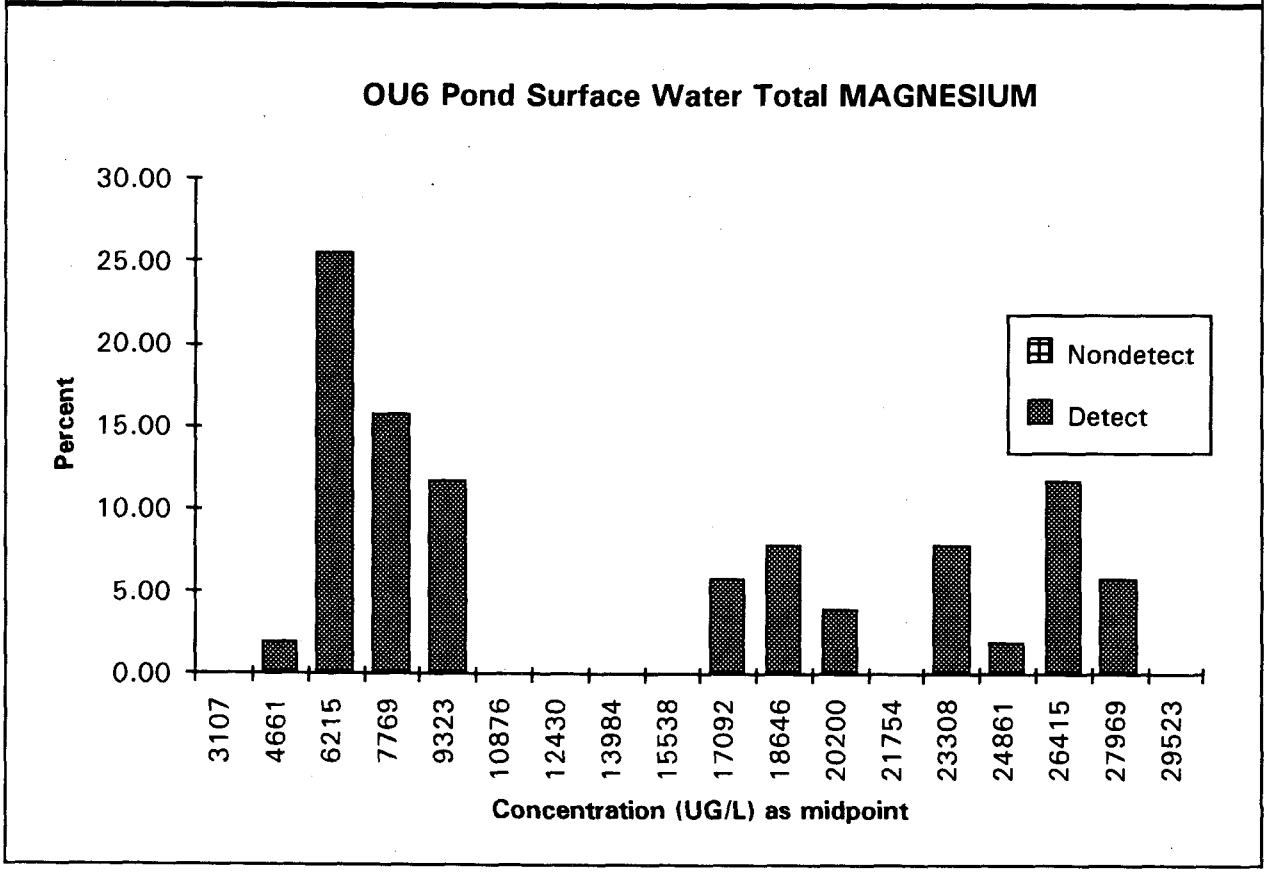

Background Seep/Spring Surface Water Total LEAD
70.00
60.00
50.00
40.00
30.00
20.00
10.00
0.00
Percent
Nondetect
Detect
27
80
133
185
238
291
344
396
449
502
554
607
660
713
765
818
871
924
Concentration (UG/L) as midpoint

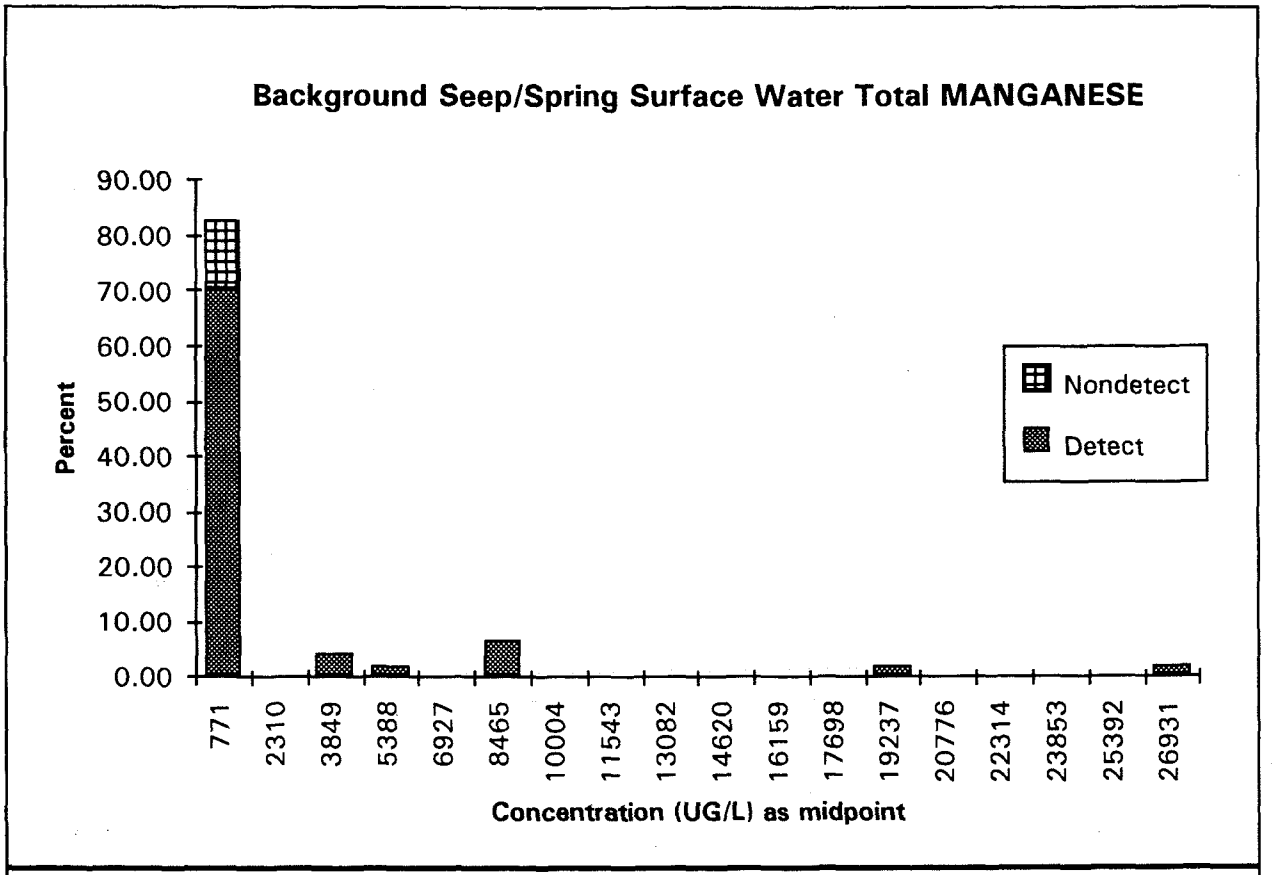

OU6 Pond Surface Water Total LEAD
100.00
90.00
80.00
70.00
60.00
50.00
40.00
30.00
20.00
10.00
0.00
Percent
Nondetect
Detect
27
80
133
185
238
291
344
396
449
502
554
607
660
713
765
818
871
924
Concentration (UG/L) as midpoint

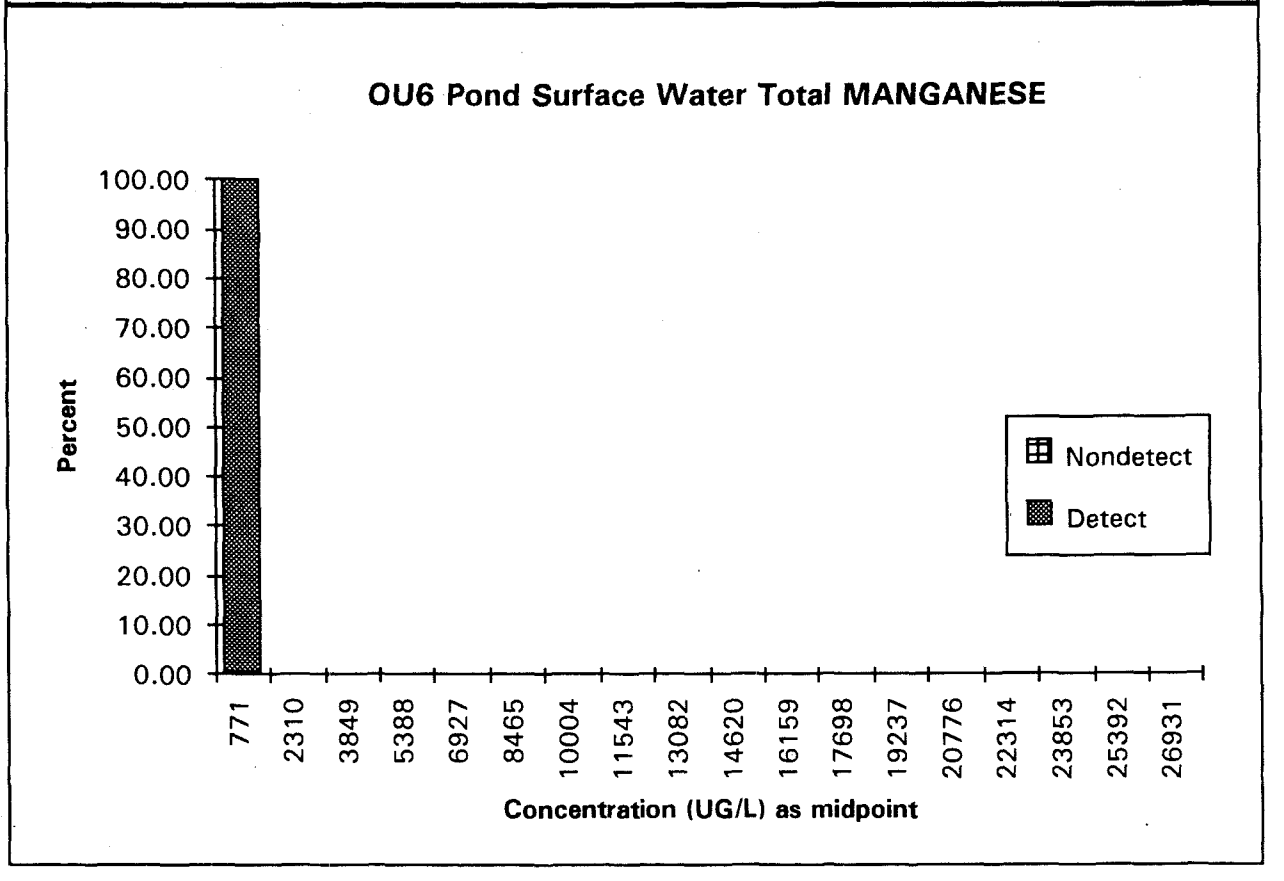

Background Seep/Spring Surface Water Total LITHIUM
Percent
40.00
35.00
30.00
25.00
20.00
15.00
10.00
5.00
0.00
8
16
23
31
38
46
53
61
68
76
83
91
99
106
114
121
129
136
Concentration (UG/L) as midpoint
Nondetect
Detect

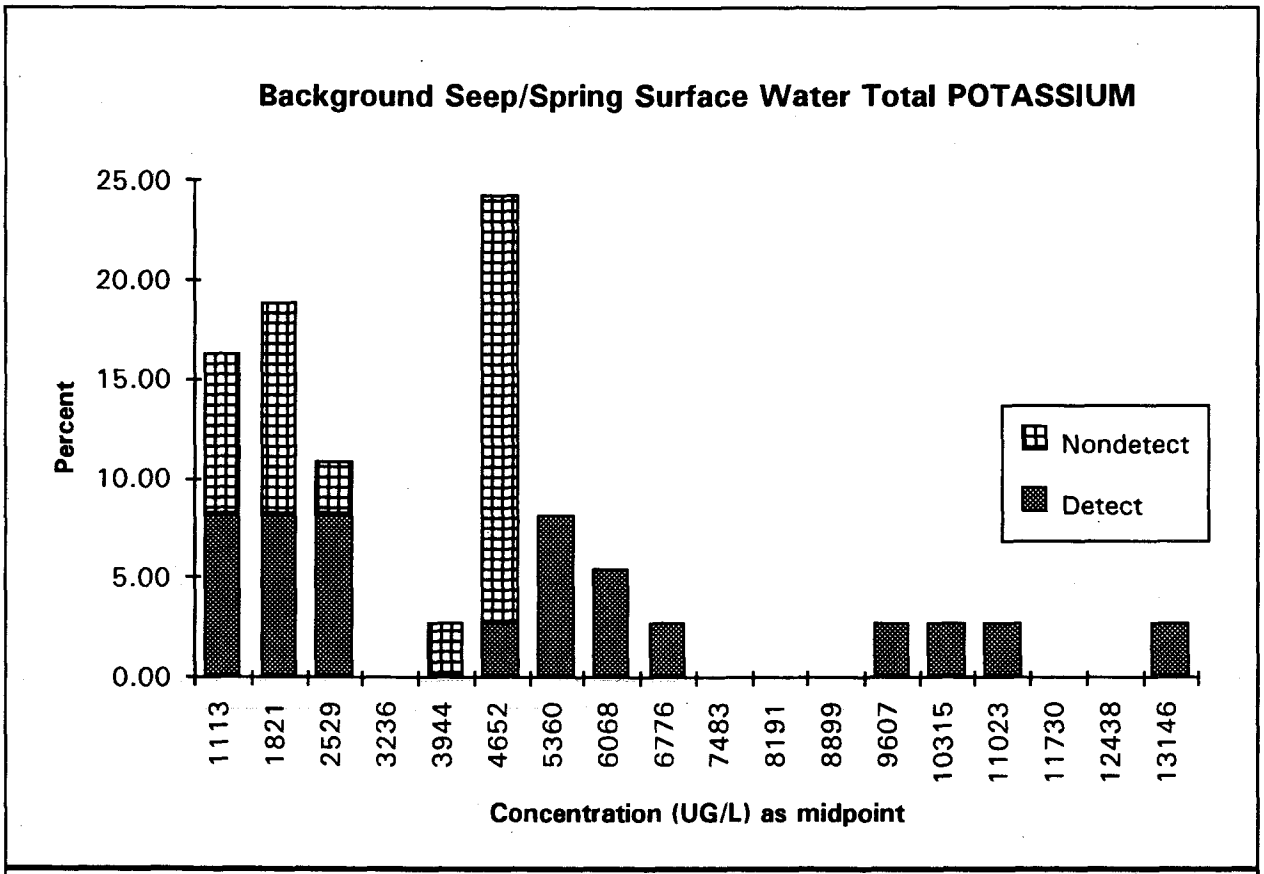

OU6 Pond Surface Water Total LITHIUM
Percent
60.00
50.00
40.00
30.00
20.00
10.00
0.00
8
16
23
31
38
46
53
61
68
76
83
91
99
106
114
121
129
136
Concentration (UG/L) as midpoint
Nondetect
Detect

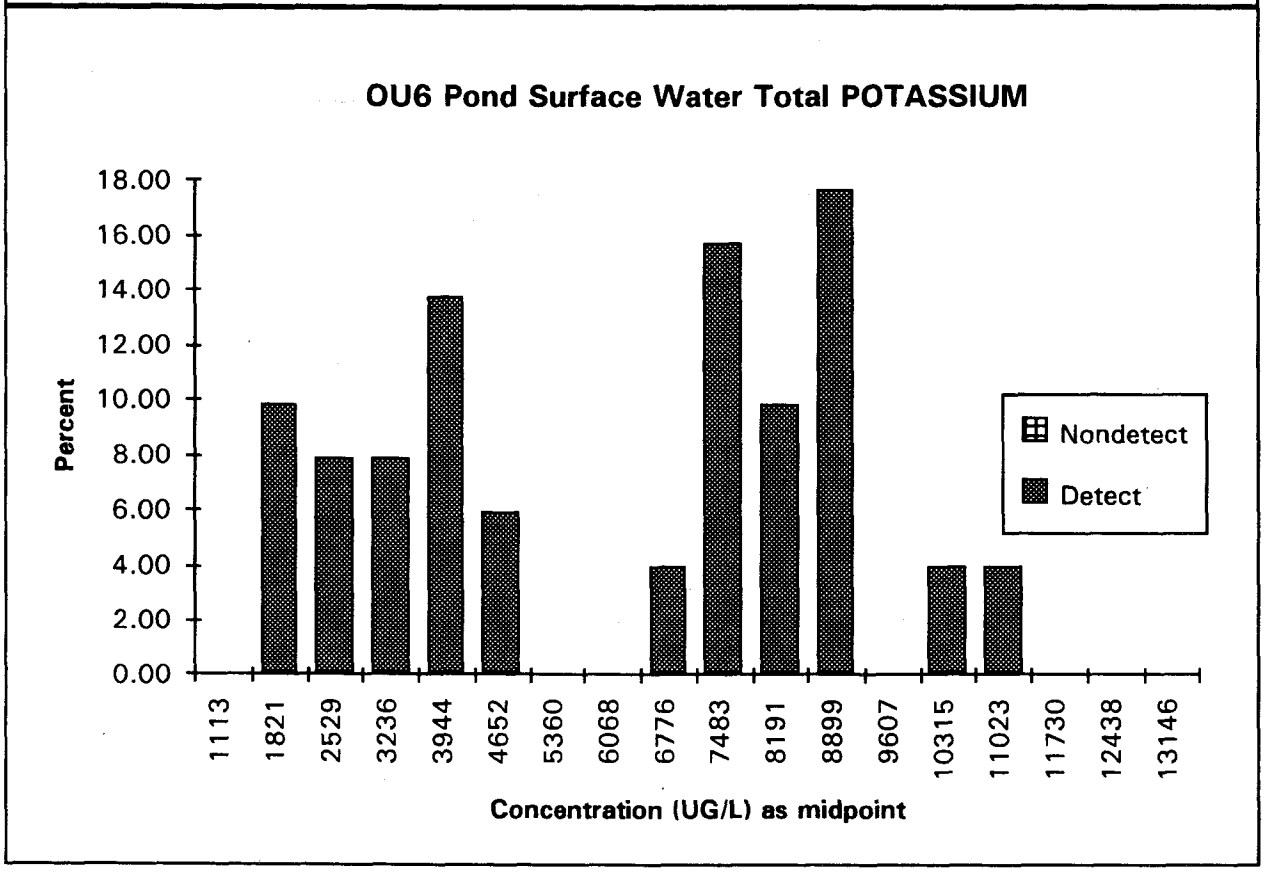

Background Seep/Spring Surface Water Total MAGNESIUM
18.00
16.00
14.00
12.00
10.00
8.00
6.00
4.00
2.00
0.00
Percent
Nondetect
Detect
3107
4661
6215
7769
9323
10876
12430
13984
15538
17092
18646
20200
21754
23308
24861
26415
27969
29523
Concentration (UG/L) as midpoint

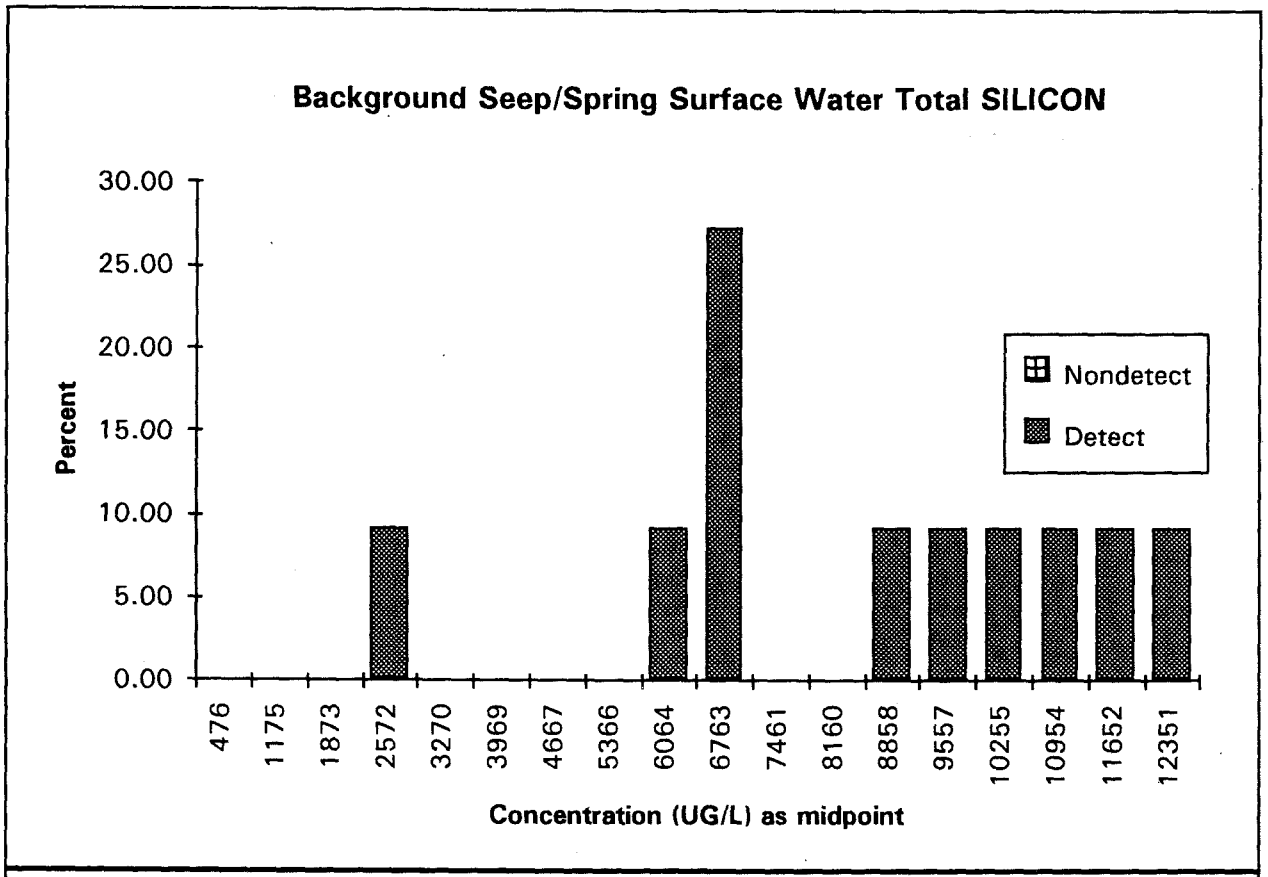

OU6 Pond Surface Water Total MAGNESIUM
30.00
25.00
20.00
15.00
10.00
5.00
0.00
Percent
Nondetect
Detect
3107
4661
6215
7769
9323
10876
12430
13984
15538
17092
18646
20200
21754
23308
24861
26415
27969
29523
Concentration (UG/L) as midpoint

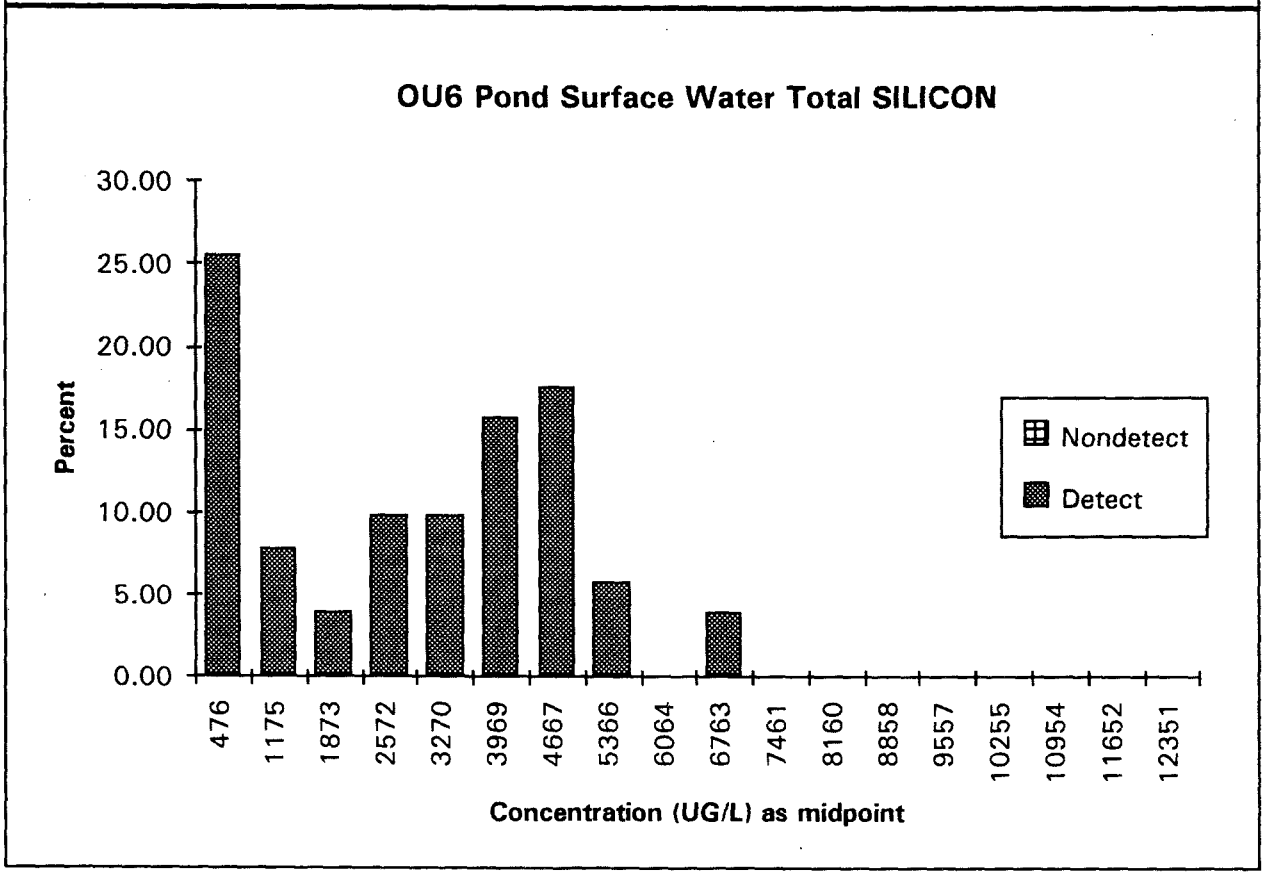

Background Seep/Spring Surface Water Total MANGANESE
90.00
80.00
70.00
60.00
50.00
40.00
30.00
20.00
10.00
0.00
Percent
Nondetect
Detect
771
2310
3849
5388
6927
8465
10004
11543
13082
14620
16159
17698
19237
20776
22314
23853
25392
26931
Concentration (UG/L) as midpoint

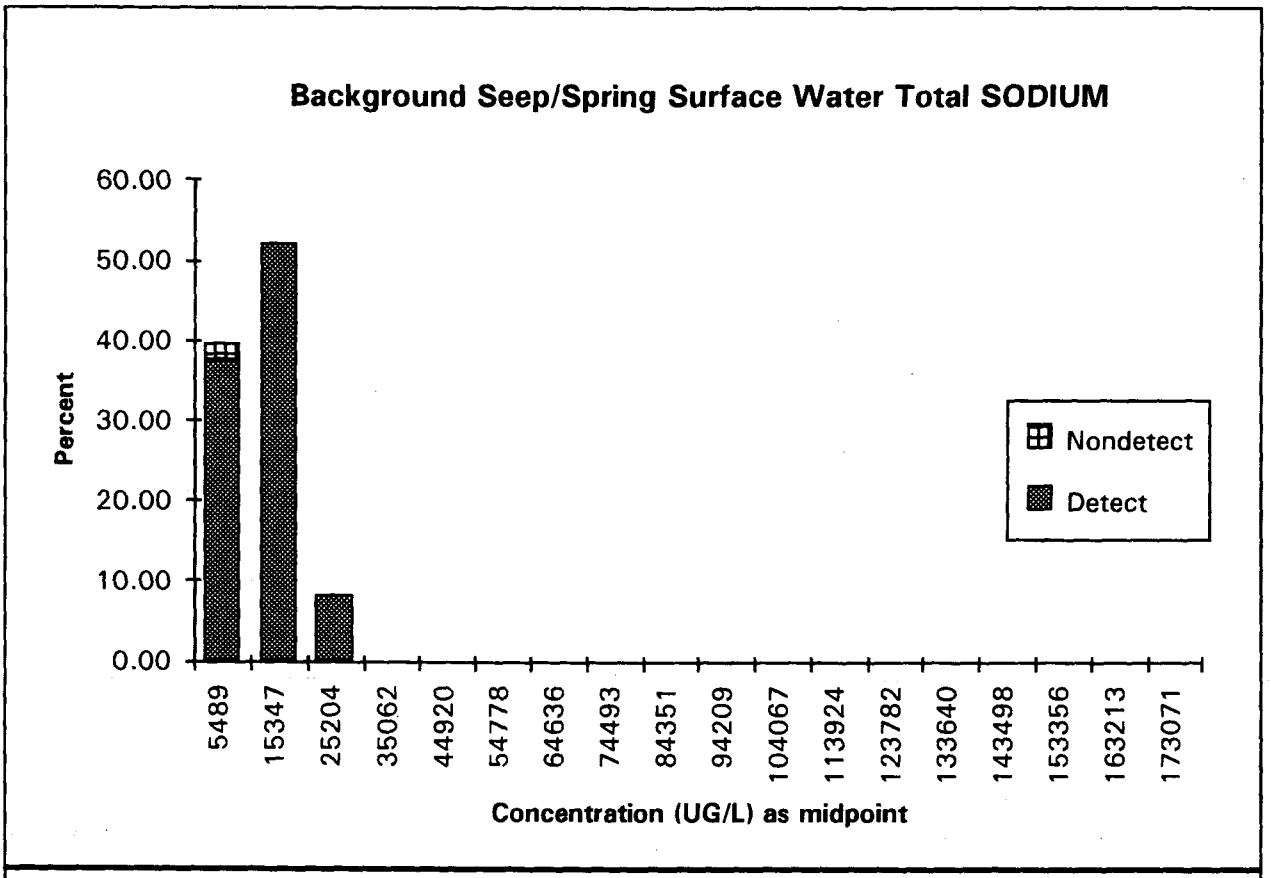

OU6 Pond Surface Water Total MANGANESE
100.00
90.00
80.00
70.00
60.00
50.00
40.00
30.00
20.00
10.00
0.00
Percent
Nondetect
Detect
771
2310
3849
5388
6927
8465
10004
11543
13082
14620
16159
17698
19237
20776
22314
23853
25392
26931
Concentration (UG/L) as midpoint

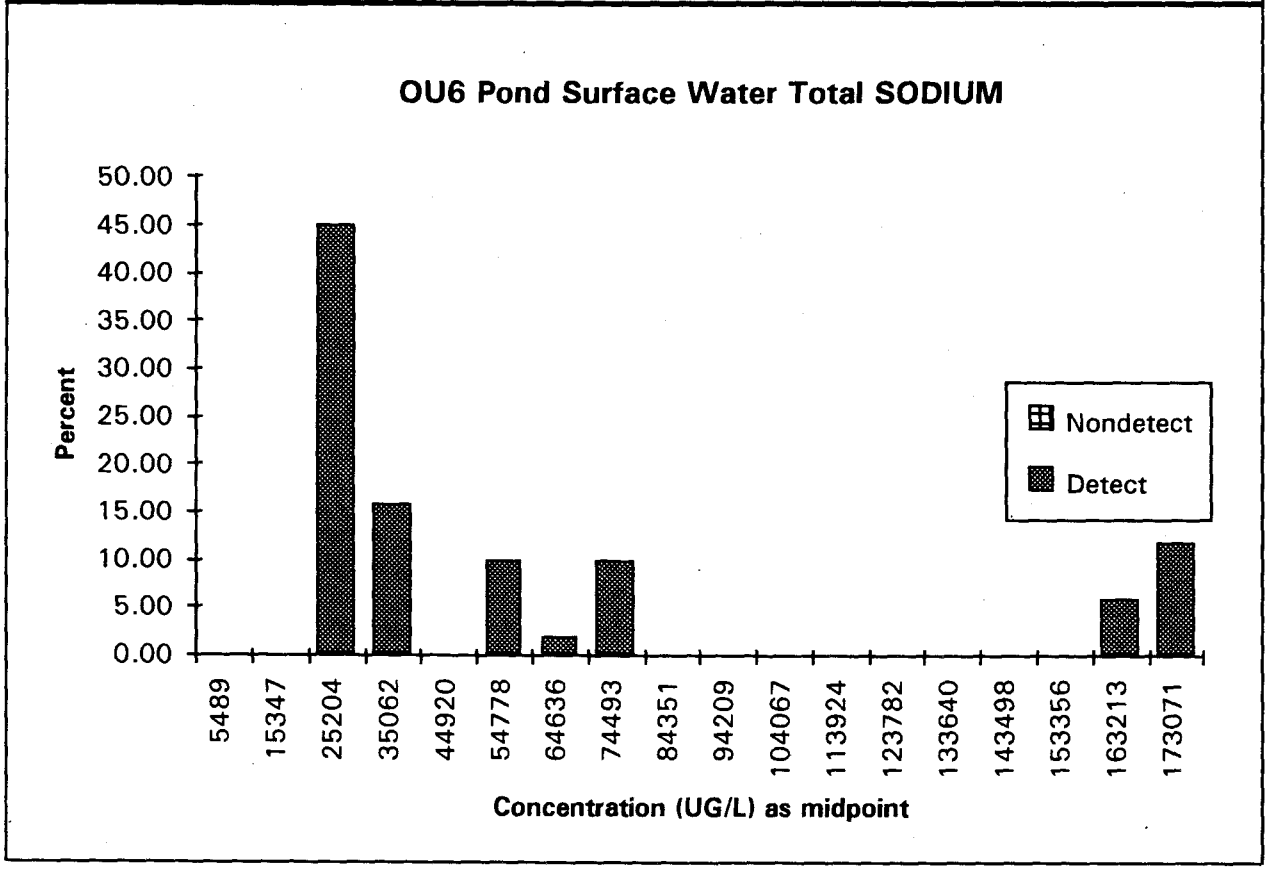

Background Seep/Spring Surface Water Total POTASSIUM
25.00
20.00
15.00
10.00
5.00
0.00
Percent
Nondetect
Detect
1113
1821
2529
3236
3944
4652
5360
6068
6776
7483
8191
8899
9607
10315
11023
11730
12438
13146
Concentration (UG/L) as midpoint

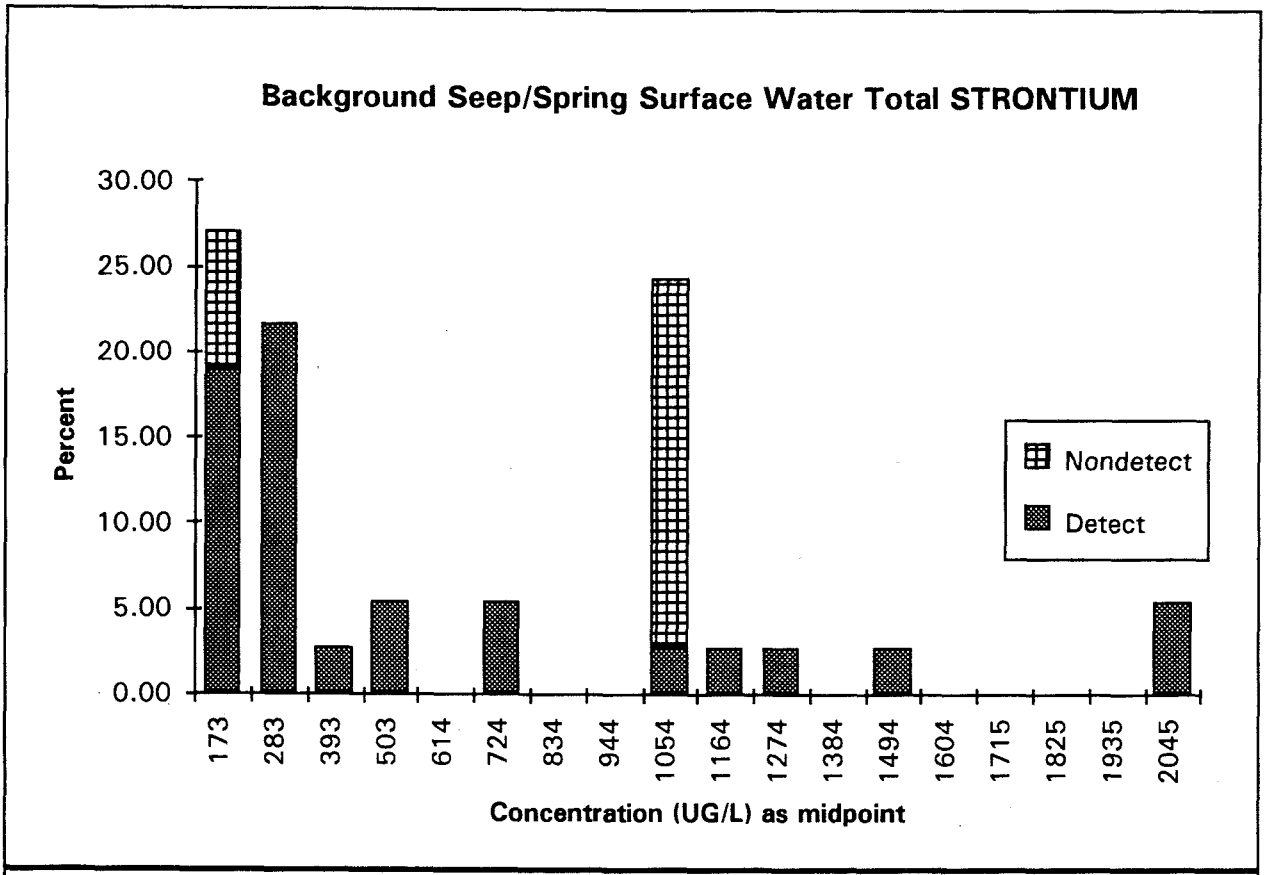

OU6 Pond Surface Water Total POTASSIUM
18.00
16.00
14.00
12.00
10.00
8.00
6.00
4.00
2.00
0.00
Percent
Nondetect
Detect
1113
1821
2529
3236
3944
4652
5360
6068
6776
7483
8191
8899
9607
10315
11023
11730
12438
13146
Concentration (UG/L) as midpoint

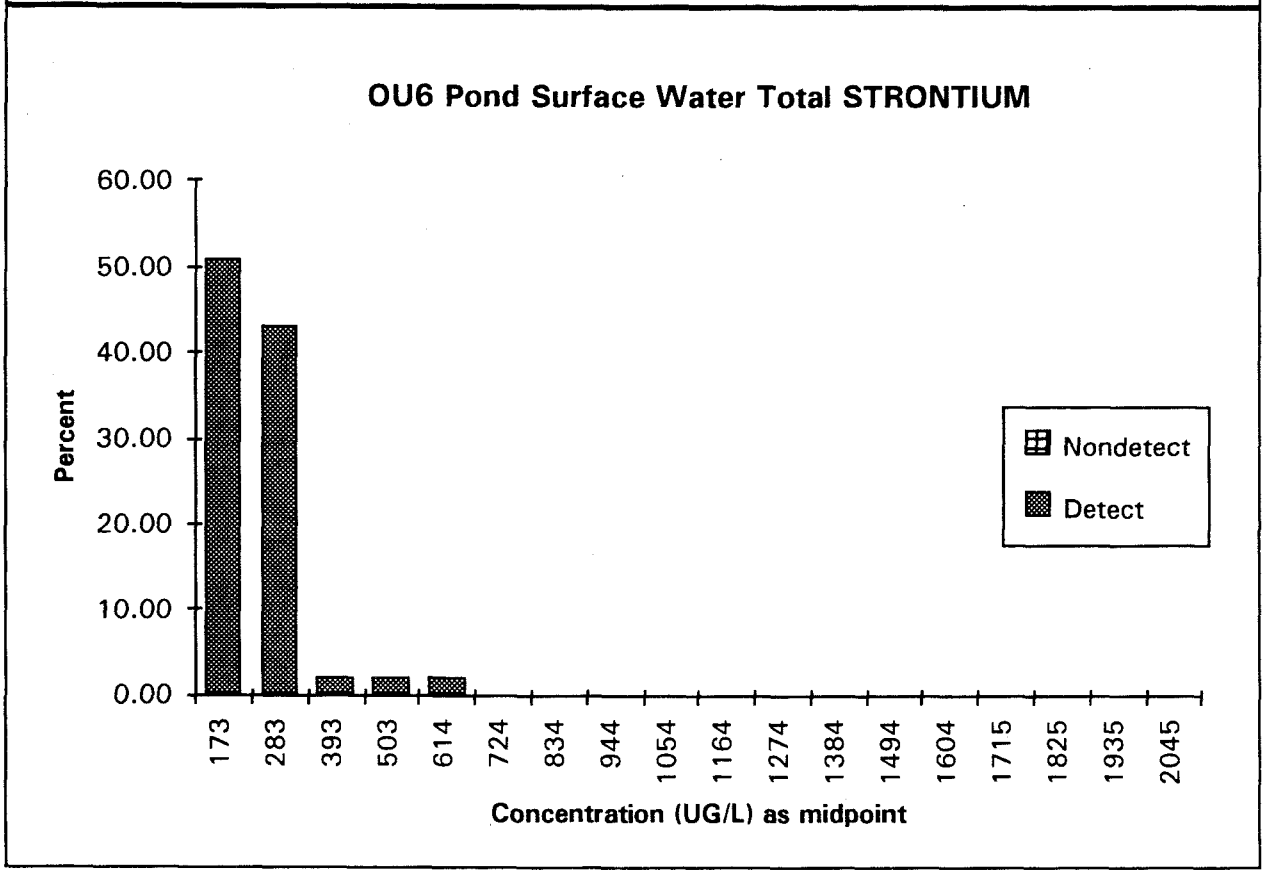

Background Seep/Spring Surface Water Total SILICON
30.00
25.00
20.00
15.00
10.00
5.00
0.00
Percent
Nondetect
Detect
476
1175
1873
2572
3270
3969
4667
5366
6064
6763
7461
8160
8858
9557
10255
10954
11652
12351
Concentration (UG/L) as midpoint

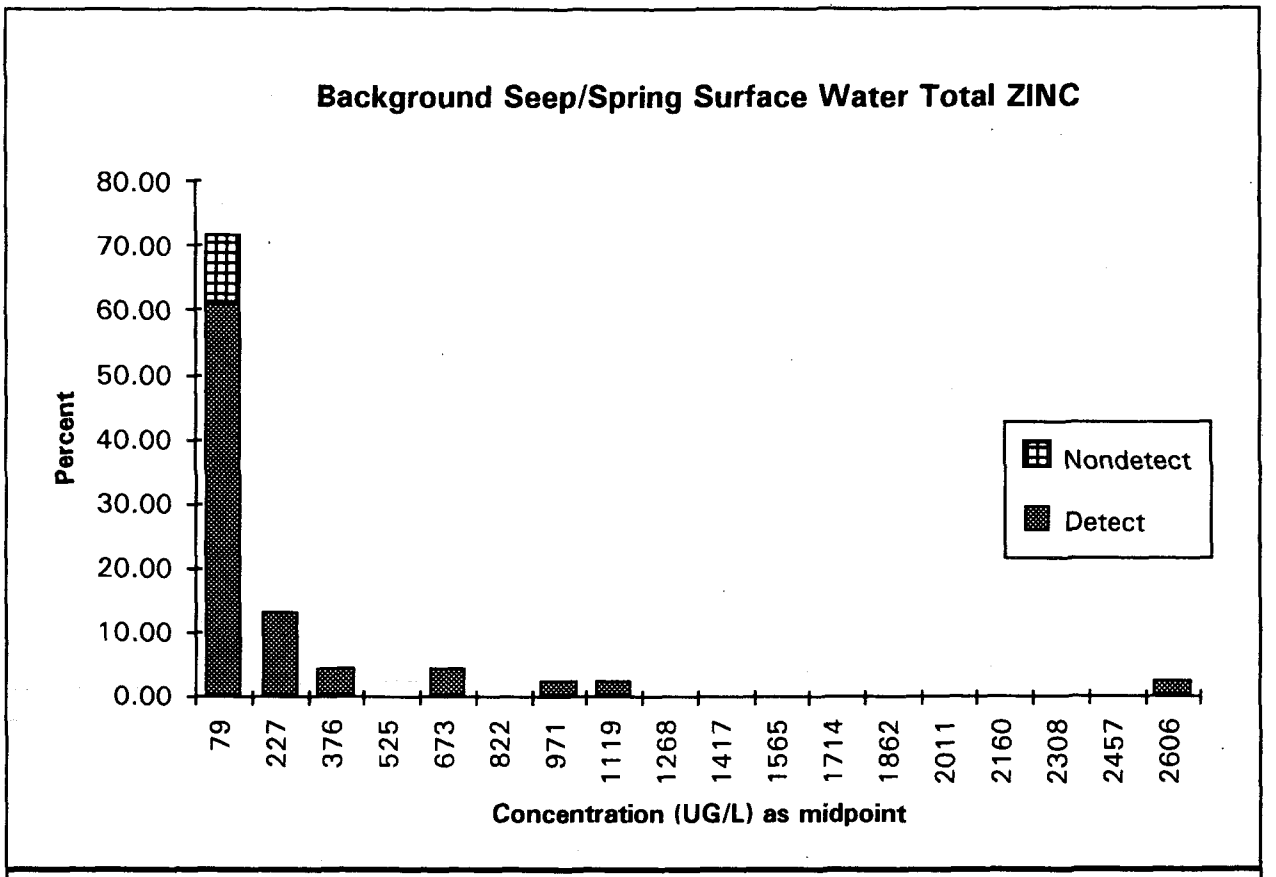

OU6 Pond Surface Water Total SILICON
30.00
25.00
20.00
15.00
10.00
5.00
0.00
Percent
Nondetect
Detect
476
1175
1873
2572
3270
3969
4667
5366
6064
6763
7461
8160
8858
9557
10255
10954
11652
12351
Concentration (UG/L) as midpoint

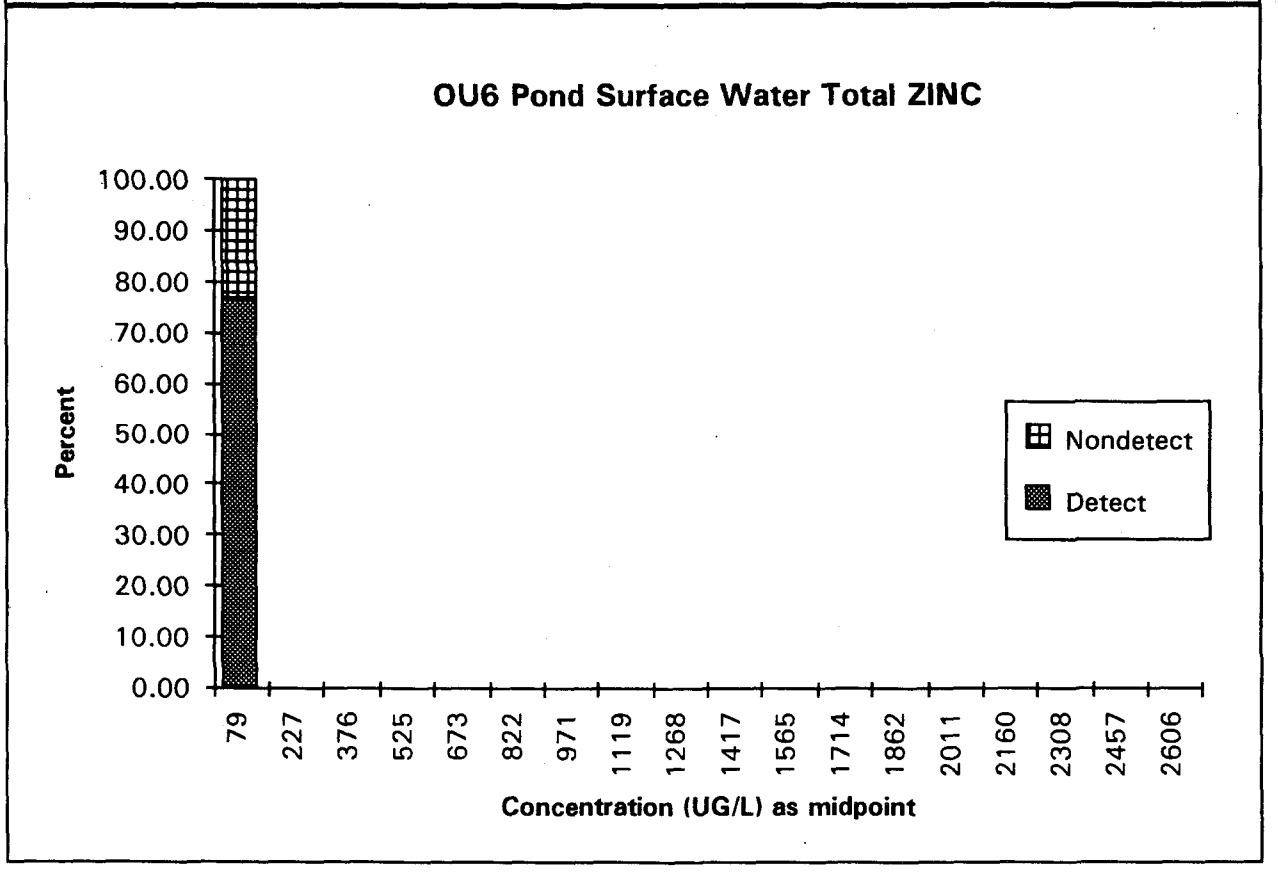

Background Seep/Spring Surface Water Total SODIUM
Percent
60.00
50.00
40.00
30.00
20.00
10.00
0.00
Nondetect
Detect
5489
15347
25204
35062
44920
54778
64636
74493
84351
94209
104067
113924
123782
133640
143498
153356
163213
173071
Concentration (UG/L) as midpoint

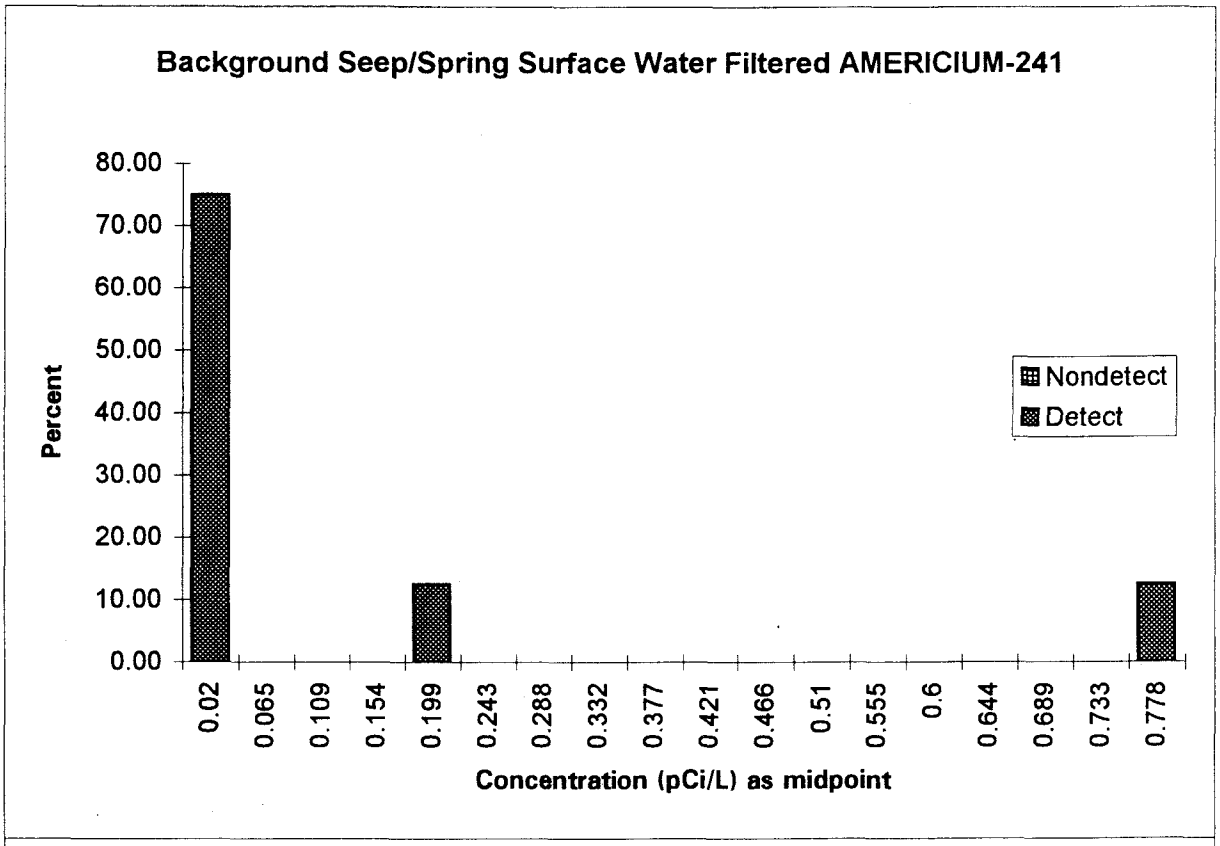

OU6 Pond Surface Water Total SODIUM
Percent
50.00
45.00
40.00
35.00
30.00
25.00
20.00
15.00
10.00
5.00
0.00
Nondetect
Detect
5489
15347
25204
35062
44920
54778
64636
74493
84351
94209
104067
113924
123782
133640
143498
153356
163213
173071
Concentration (UG/L) as midpoint

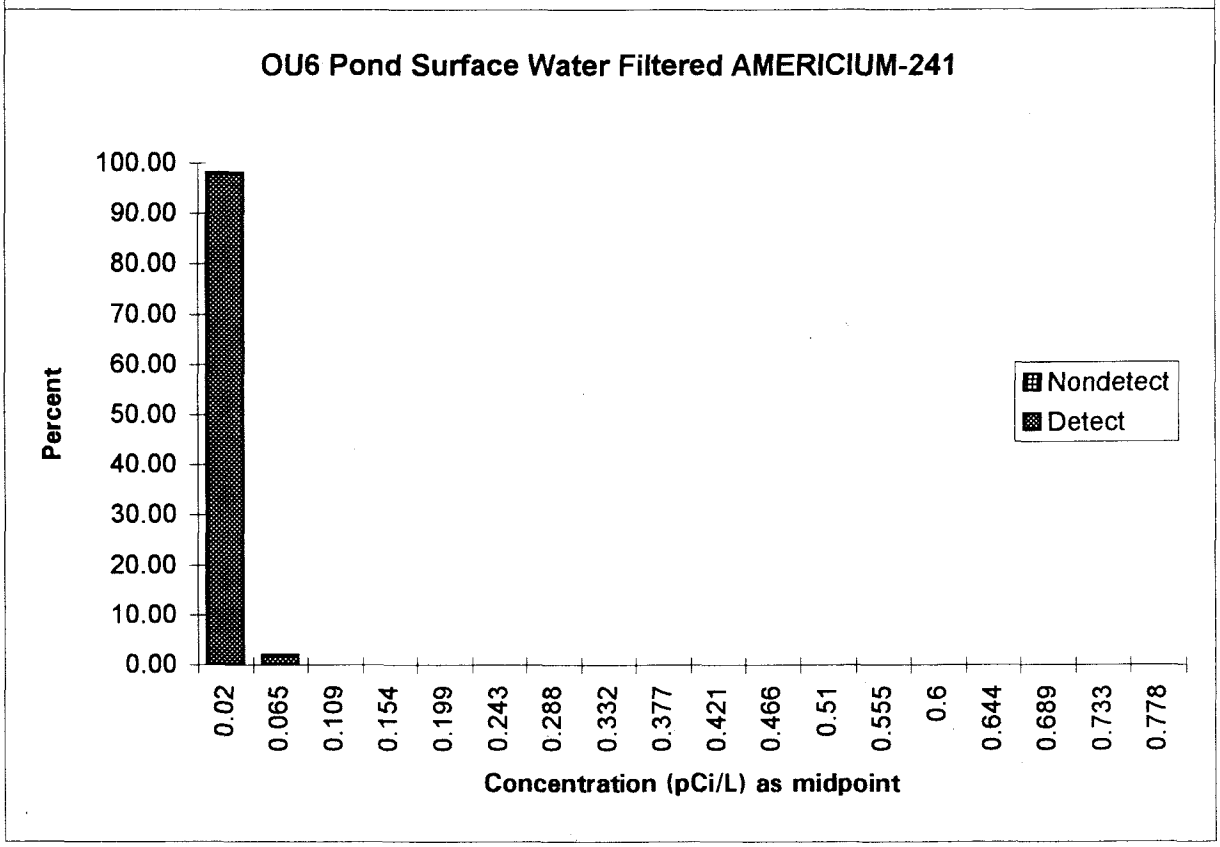

Background Seep/Spring Surface Water Total STRONTIUM
30.00
25.00
20.00
15.00
10.00
5.00
0.00
Percent
Nondetect
Detect
173
283
393
503
614
724
834
944
1054
1164
1274
1384
1494
1604
1715
1825
1935
2045
Concentration (UG/L) as midpoint

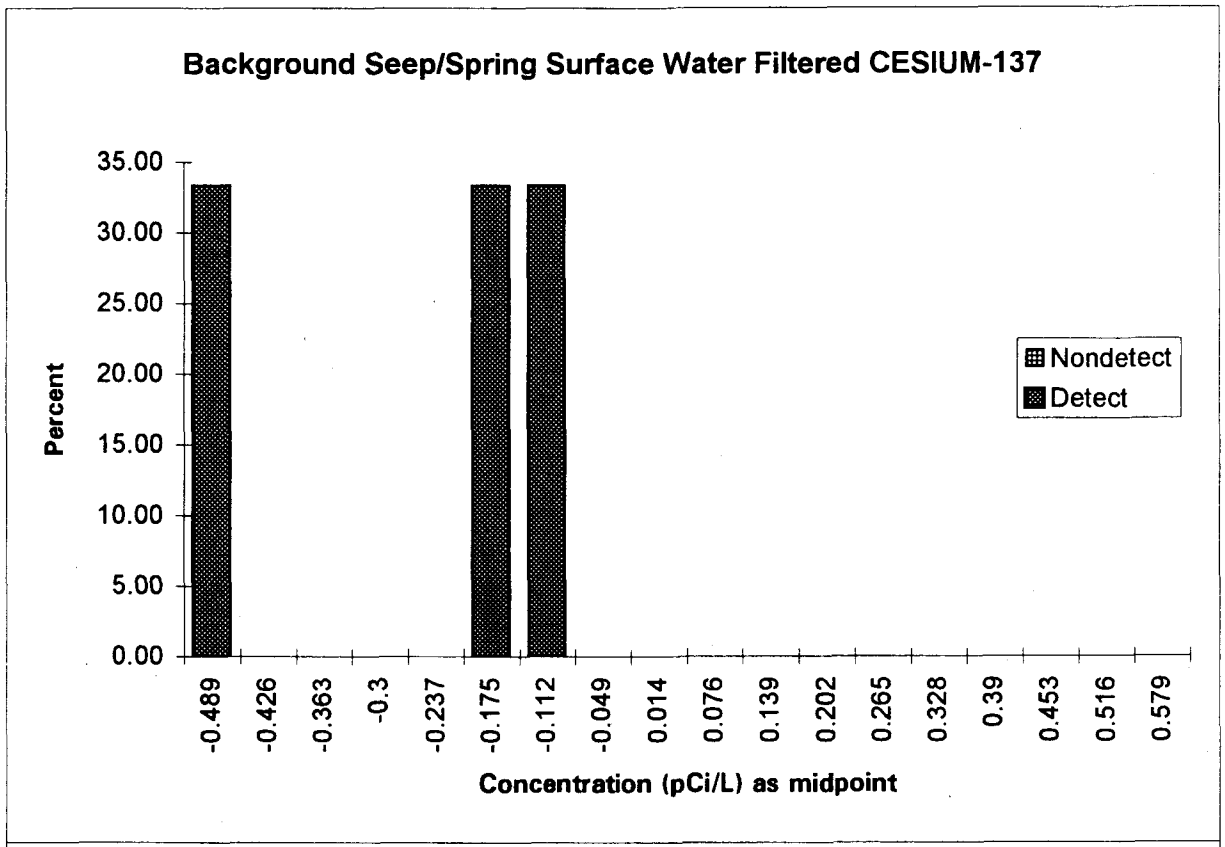

OU6 Pond Surface Water Total STRONTIUM
60.00
50.00
40.00
30.00
20.00
10.00
0.00
Percent
Nondetect
Detect
173
283
393
503
614
724
834
944
1054
1164
1274
1384
1494
1604
1715
1825
1935
2045
Concentration (UG/L) as midpoint

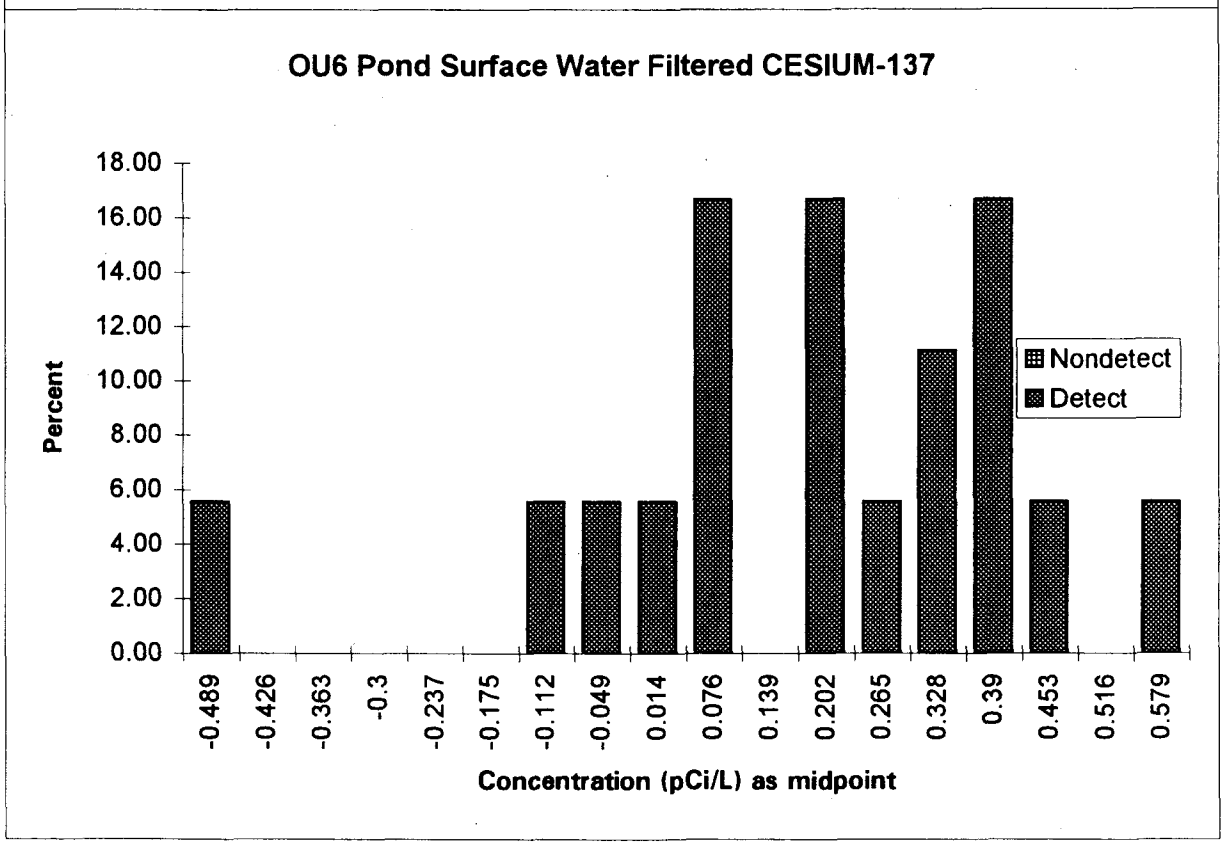

Background Seep/Spring Surface Water Total ZINC
Percent
80.00
70.00
60.00
50.00
40.00
30.00
20.00
10.00
0.00
Nondetect
Detect
79
227
376
525
673
822
971
1119
1268
1417
1565
1714
1862
2011
2160
2308
2457
2606
Concentration (UG/L) as midpoint

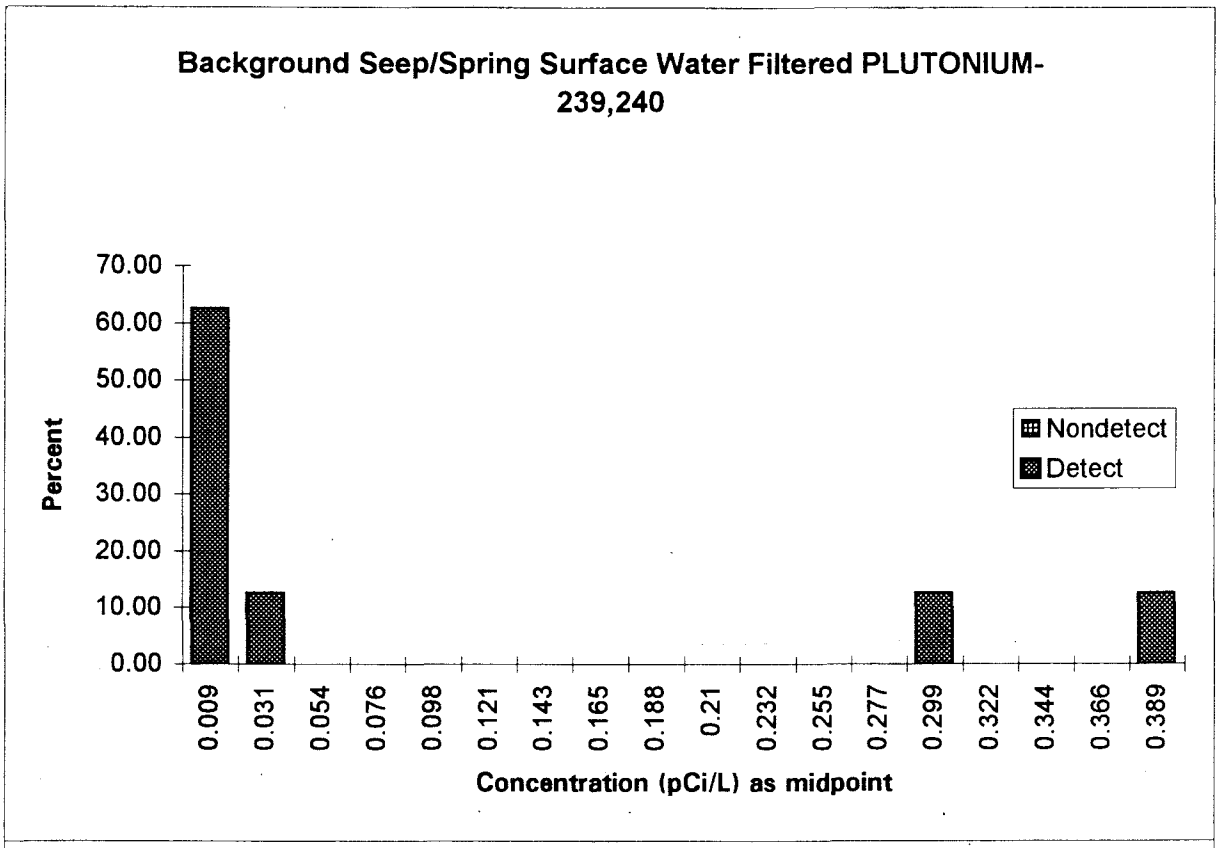

OU6 Pond Surface Water Total ZINC
Percent
100.00
90.00
80.00
70.00
60.00
50.00
40.00
30.00
20.00
10.00
0.00
Nondetect
Detect
79
227
376
525
673
822
971
1119
1268
1417
1565
1714
1862
2011
2160
2308
2457
2606
Concentration (UG/L) as midpoint

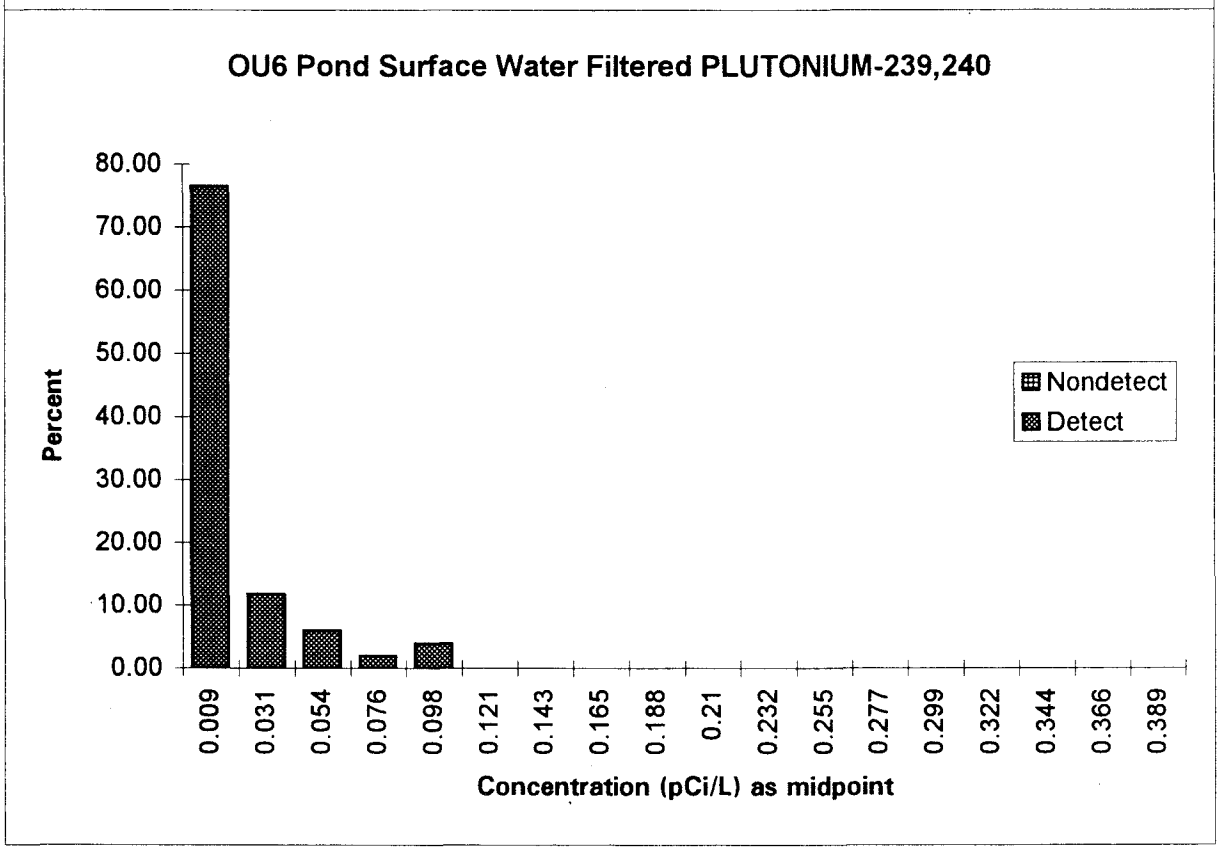

Background Seep/Spring Surface Water Filtered AMERICIUM-241
Percent
80.00
70.00
60.00
50.00
40.00
30.00
20.00
10.00
0.00
Nondetect
Detect
0.02
0.065
0.109
0.154
0.199
0.243
0.288
0.332
0.377
0.421
0.466
0.51
0.555
0.6
0.644
0.689
0.733
0.778
Concentration (pCi/L) as midpoint

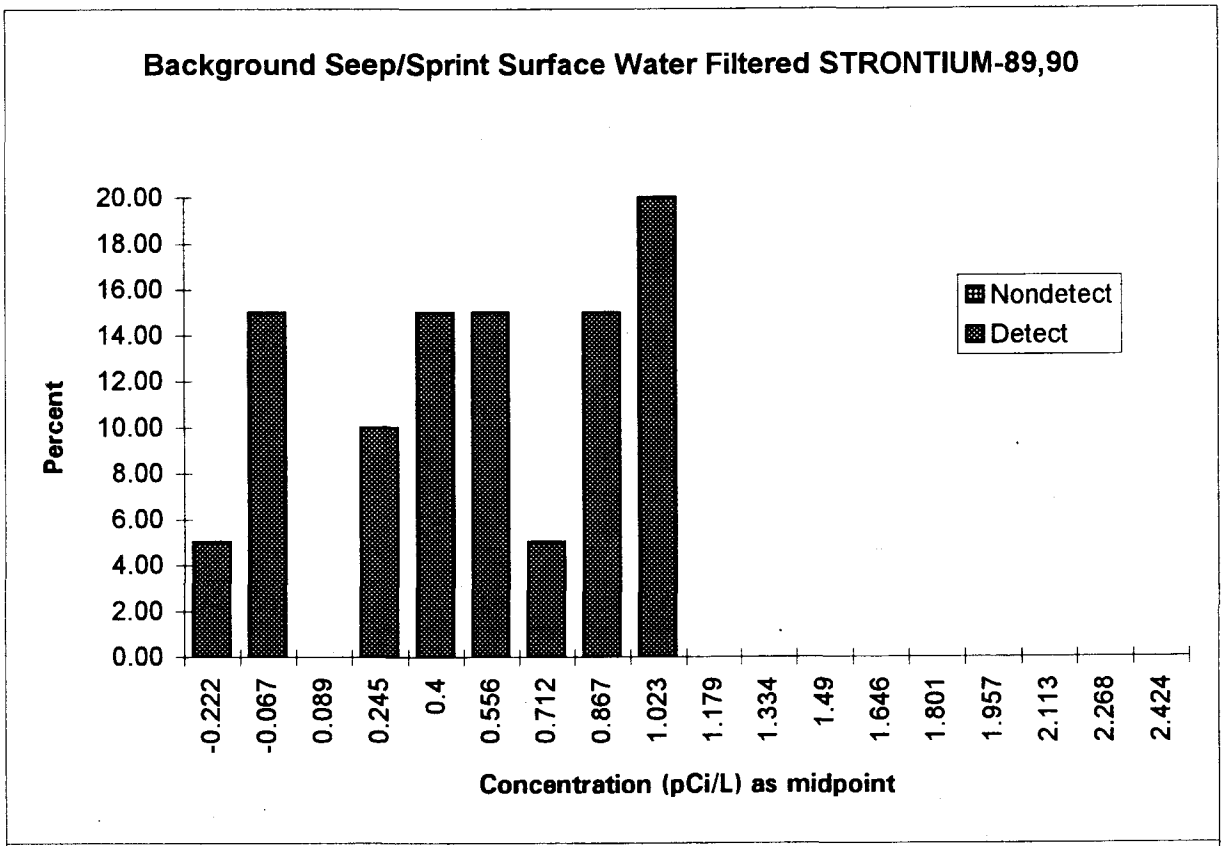

OU6 Pond Surface Water Filtered AMERICIUM-241
Percent
100.00
90.00
80.00
70.00
60.00
50.00
40.00
30.00
20.00
10.00
0.00
Nondetect
Detect
0.02
0.065
0.109
0.154
0.199
0.243
0.288
0.332
0.377
0.421
0.466
0.51
0.555
0.6
0.644
0.689
0.733
0.778
Concentration (pCi/L) as midpoint

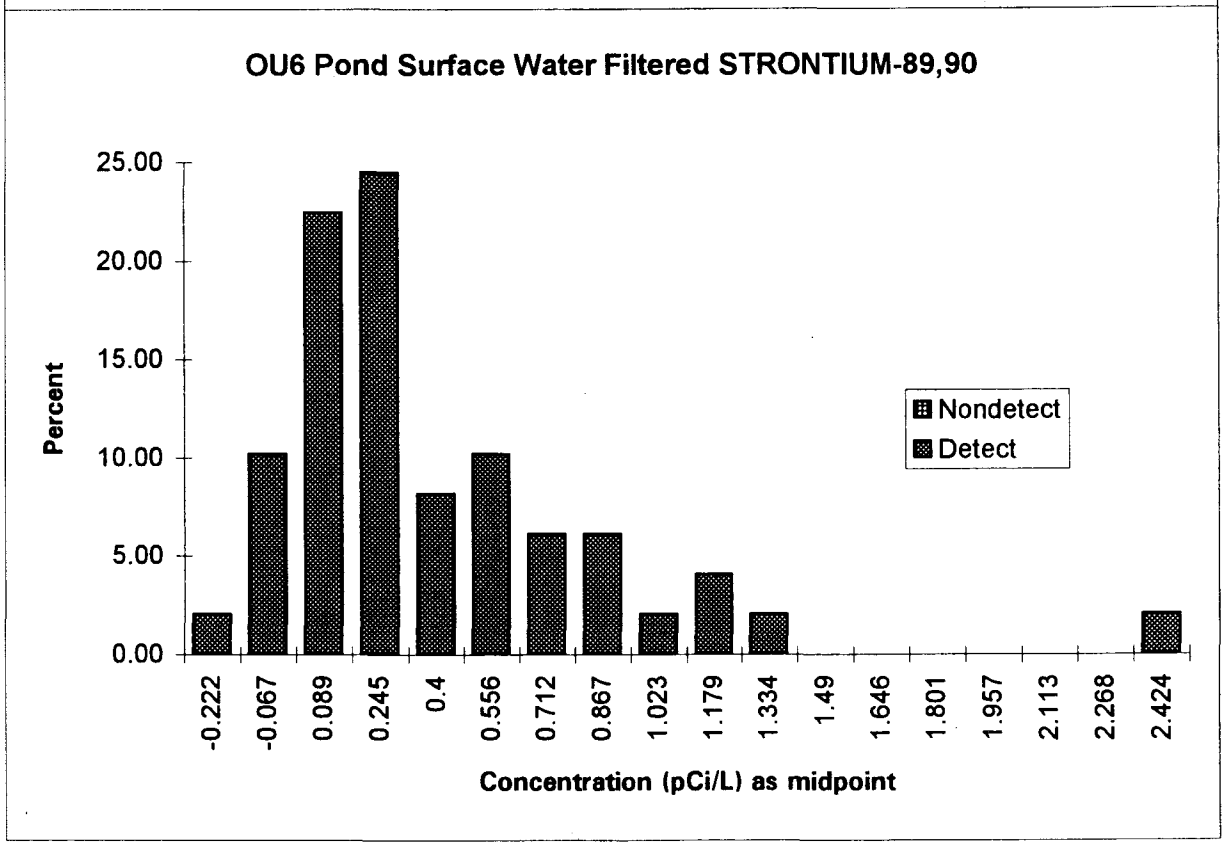

Background Seep/Spring Surface Water Filtered CESIUM-137
35.00
30.00
25.00
20.00
15.00
10.00
5.00
0.00
Percent
Nondetect
Detect
-0.489
-0.426
-0.363
-0.3
-0.237
-0.175
-0.112
-0.049
0.014
0.076
0.139
0.202
0.265
0.328
0.39
0.453
0.516
0.579
Concentration (pCi/L) as midpoint

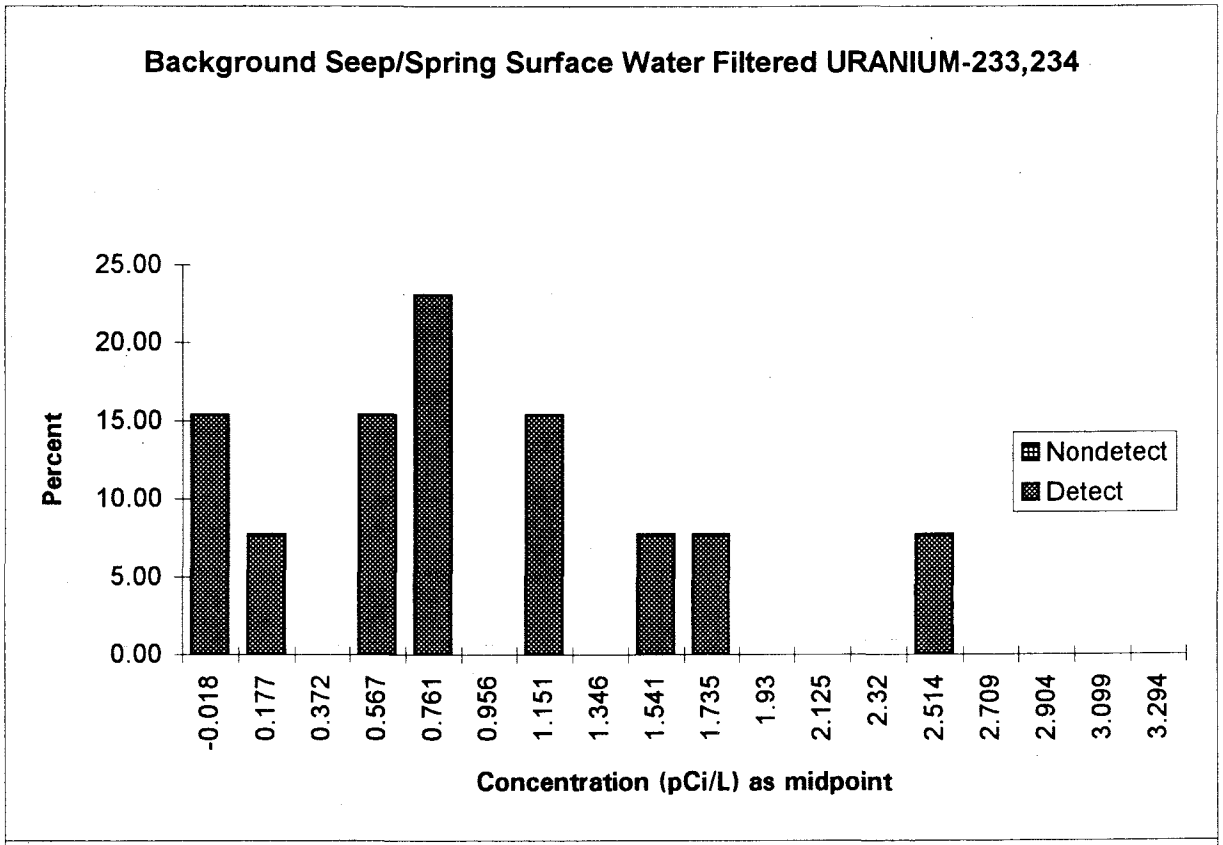

OU6 Pond Surface Water Filtered CESIUM-137
18.00
16.00
14.00
12.00
10.00
8.00
6.00
4.00
2.00
0.00
Percent
Nondetect
Detect
-0.489
-0.426
-0.363
-0.3
-0.237
-0.175
-0.112
-0.049
0.014
0.076
0.139
0.202
0.265
0.328
0.39
0.453
0.516
0.579
Concentration (pCi/L) as midpoint

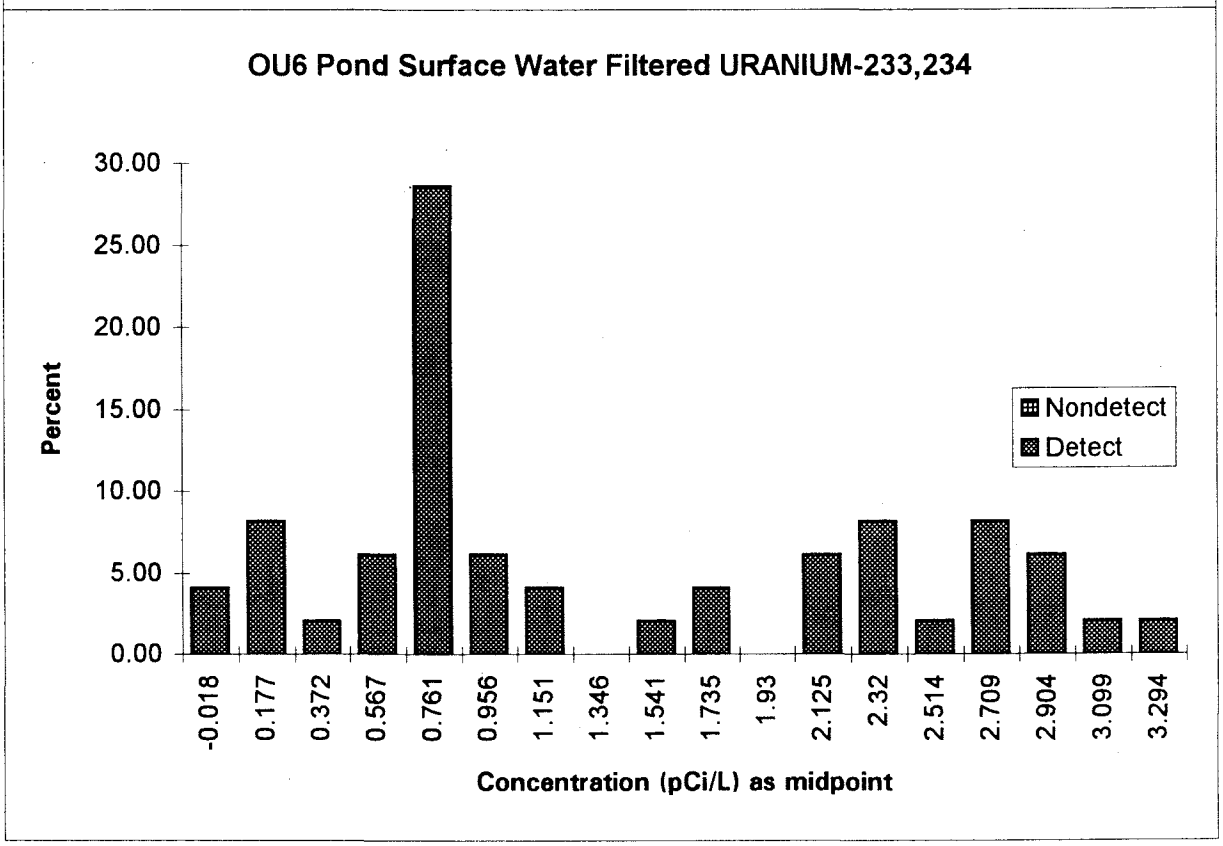

Background Seep/Spring Surface Water Filtered PLUTONIUM-239,240
Percent
70.00
60.00
50.00
40.00
30.00
20.00
10.00
0.00
Nondetect
Detect
0.009
0.031
0.054
0.076
0.098
0.121
0.143
0.165
0.188
0.21
0.232
0.255
0.277
0.299
0.322
0.344
0.366
0.389
Concentration (pCi/L) as midpoint

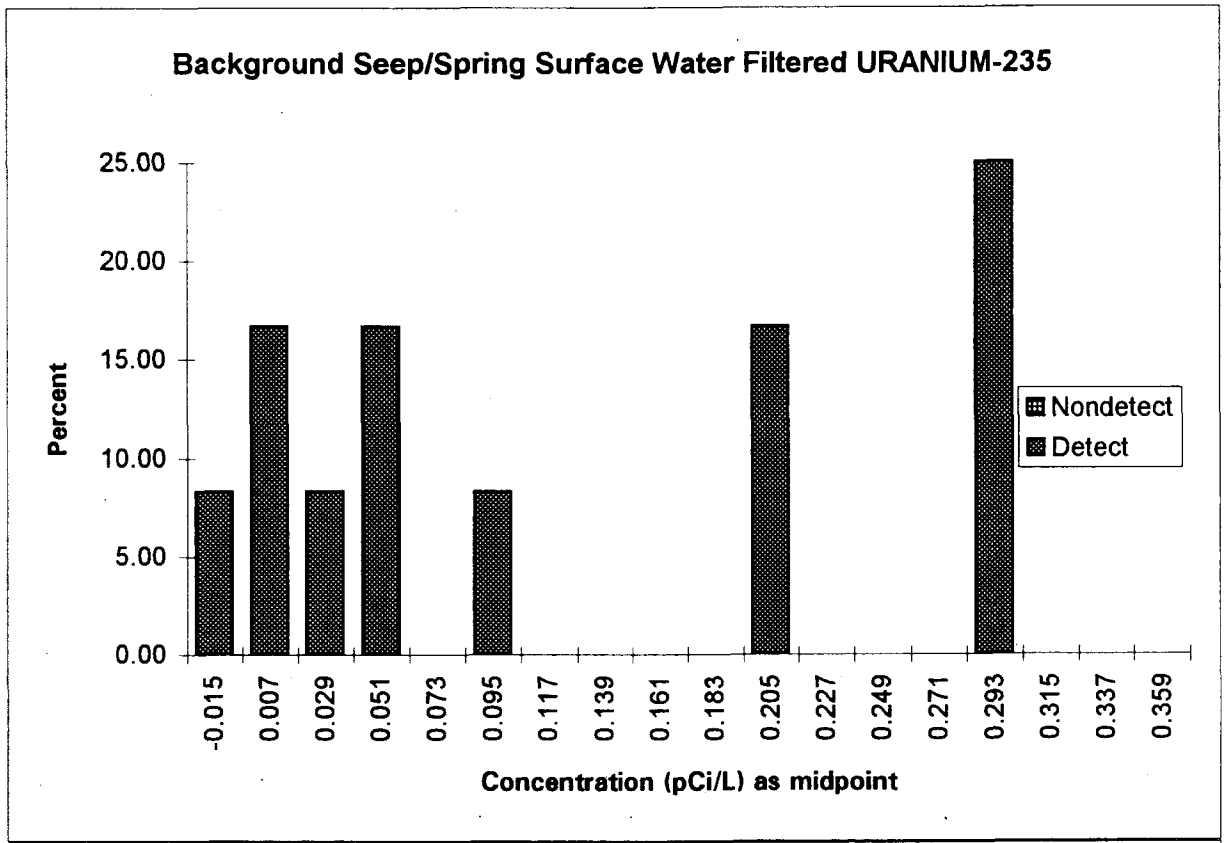

OU6 Pond Surface Water Filtered PLUTONIUM-239,240
Percent
80.00
70.00
60.00
50.00
40.00
30.00
20.00
10.00
0.00
Nondetect
Detect
0.009
0.031
0.054
0.076
0.098
0.121
0.143
0.165
0.188
0.21
0.232
0.255
0.277
0.299
0.322
0.344
0.366
0.389
Concentration (pCi/L) as midpoint

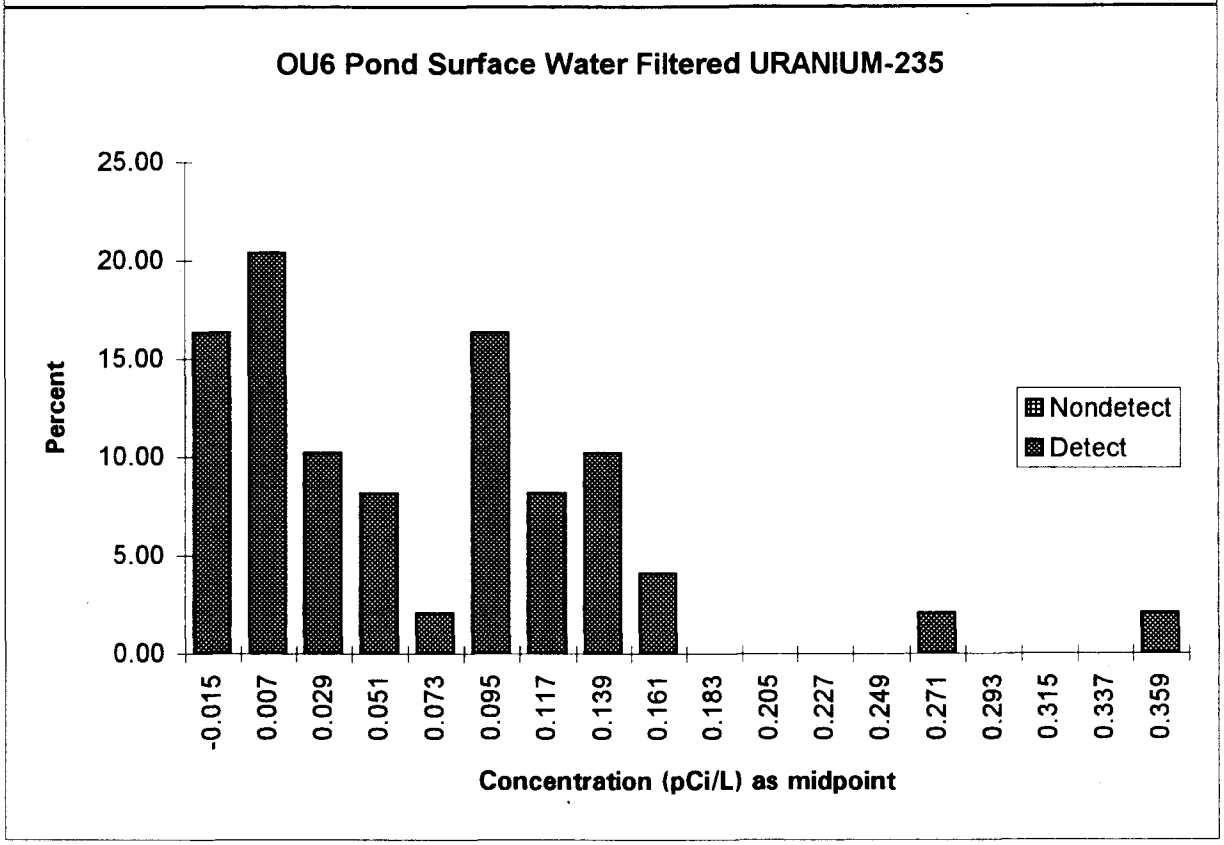

Background Seep/Sprint Surface Water Filtered STRONTIUM-89,90
Percent
20.00
18.00
16.00
14.00
12.00
10.00
8.00
6.00
4.00
2.00
0.00
Nondetect
Detect
-0.222
-0.067
0.089
0.245
0.4
0.556
0.712
0.867
1.023
1.179
1.334
1.49
1.646
1.801
1.957
2.113
2.268
2.424
Concentration (pCi/L) as midpoint

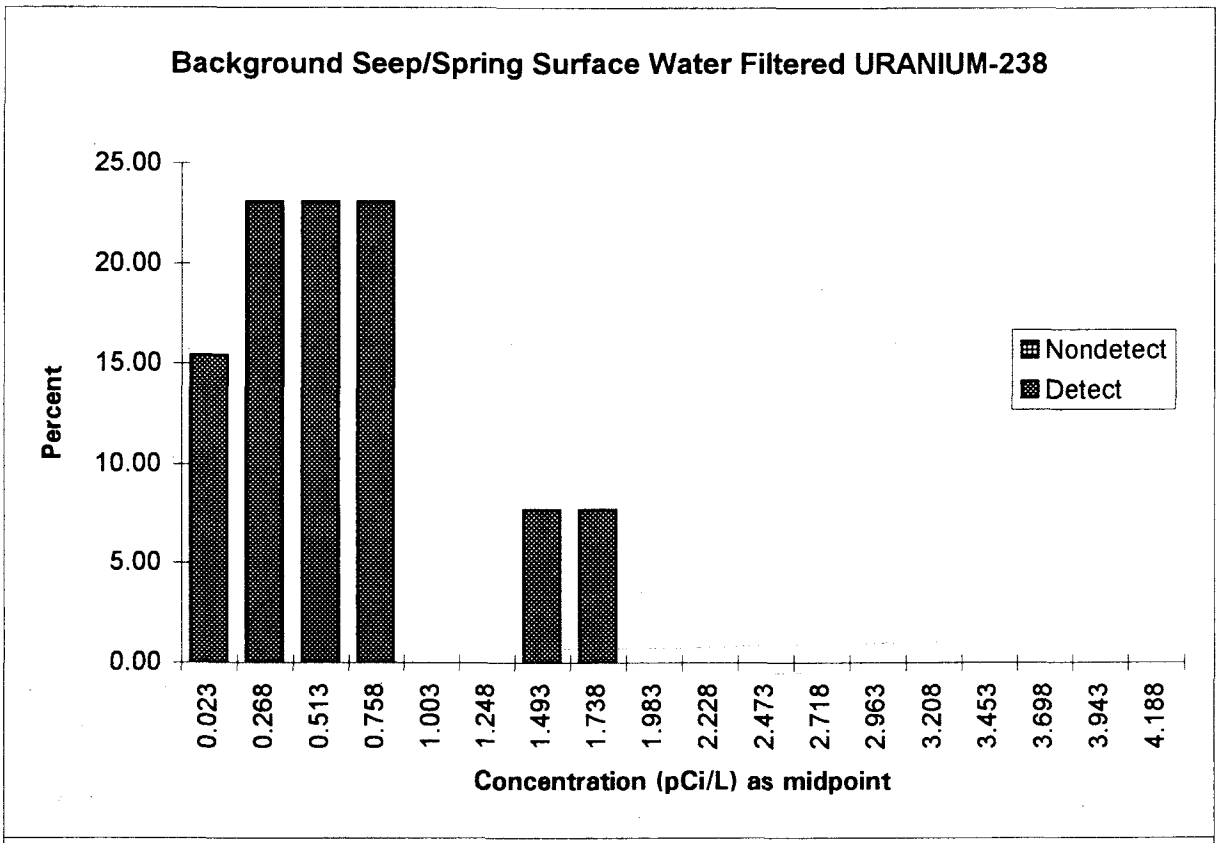

OU6 Pond Surface Water Filtered STRONTIUM-89,90
Percent
25.00
20.00
15.00
10.00
5.00
0.00
Nondetect
Detect
-0.222
-0.067
0.089
0.245
0.4
0.556
0.712
0.867
1.023
1.179
1.334
1.49
1.646
1.801
1.957
2.113
2.268
2.424
Concentration (pCi/L) as midpoint

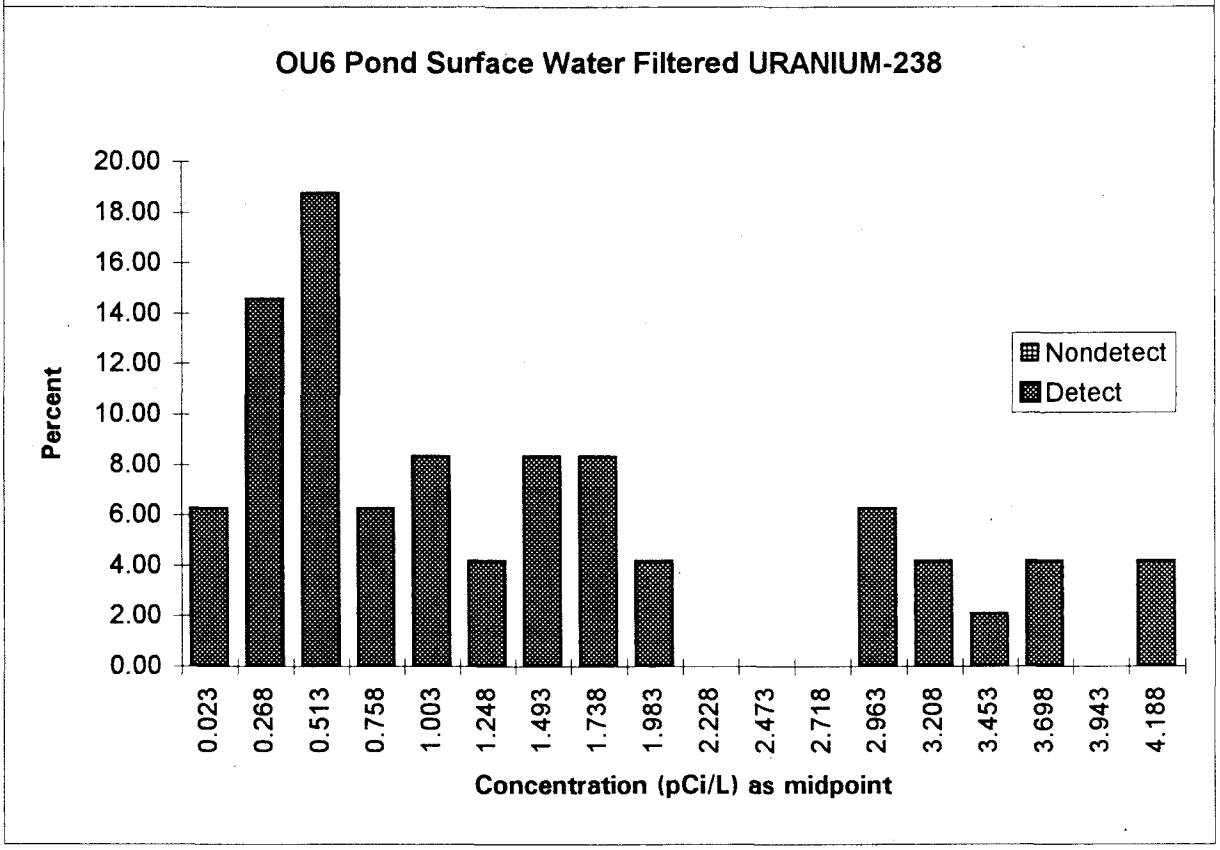

Background Seep/Spring Surface Water Filtered URANIUM-233,234
Percent
25.00
20.00
15.00
10.00
5.00
0.00
Nondetect
Detect
-0.018
0.177
0.372
0.567
0.761
0.956
1.151
1.346
1.541
1.735
1.93
2.125
2.32
2.514
2.709
2.904
3.099
3.294
Concentration (pCi/L) as midpoint

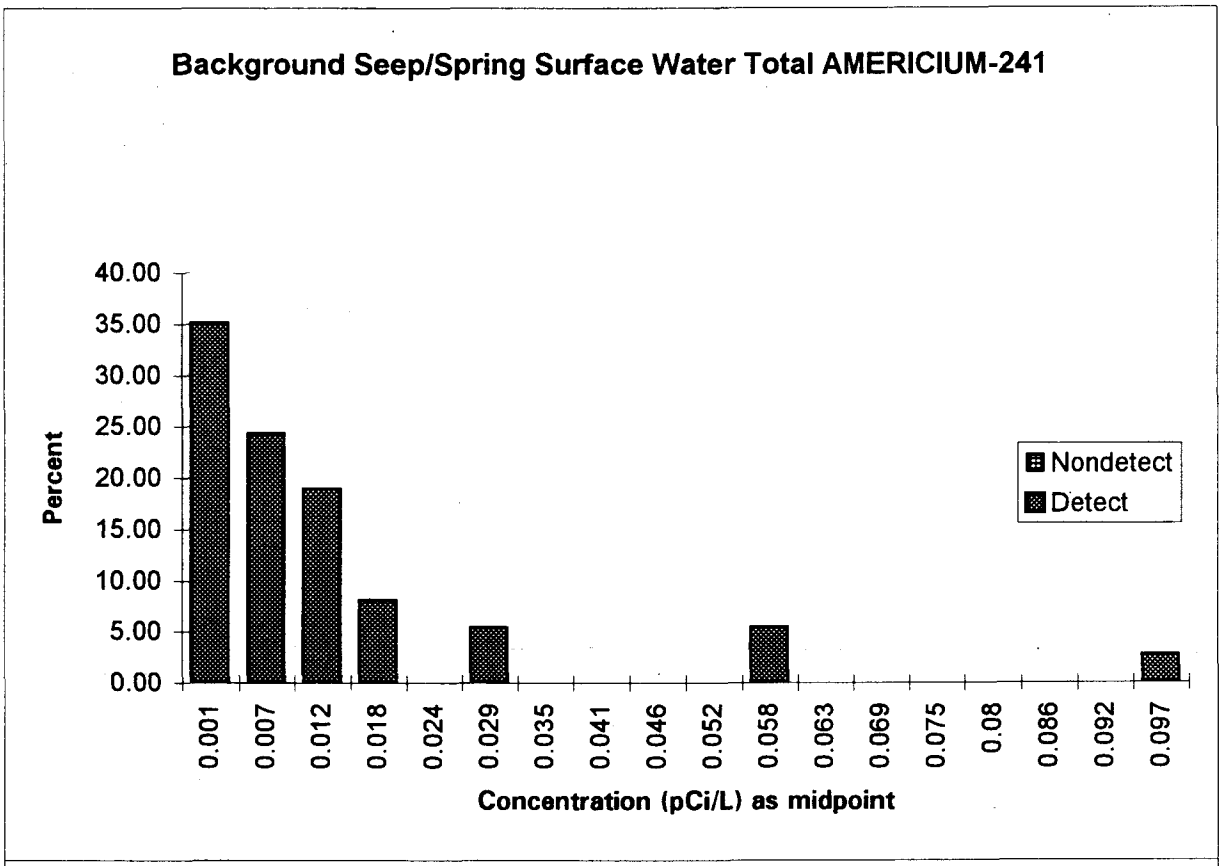

OU6 Pond Surface Water Filtered URANIUM-233,234
Percent
30.00
25.00
20.00
15.00
10.00
5.00
0.00
Nondetect
Detect
-0.018
0.177
0.372
0.567
0.761
0.956
1.151
1.346
1.541
1.735
1.93
2.125
2.32
2.514
2.709
2.904
3.099
3.294
Concentration (pCi/L) as midpoint

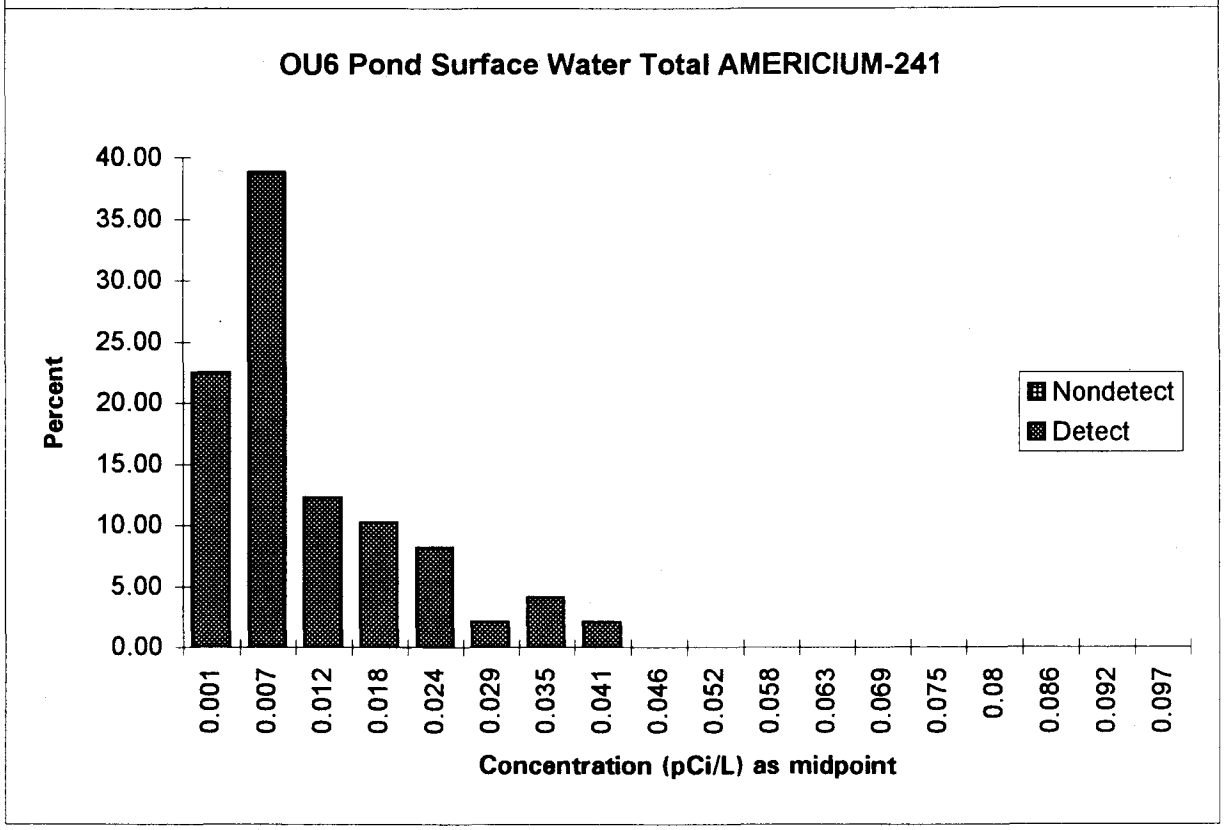

Background Seep/Spring Surface Water Filtered URANIUM-235
Percent
25.00
20.00
15.00
10.00
5.00
0.00
-0.015
0.007
0.029
0.051
0.073
0.095
0.117
0.139
0.161
0.183
0.205
0.227
0.249
0.271
0.293
0.315
0.337
0.359
Concentration (pCi/L) as midpoint
Nondetect
Detect

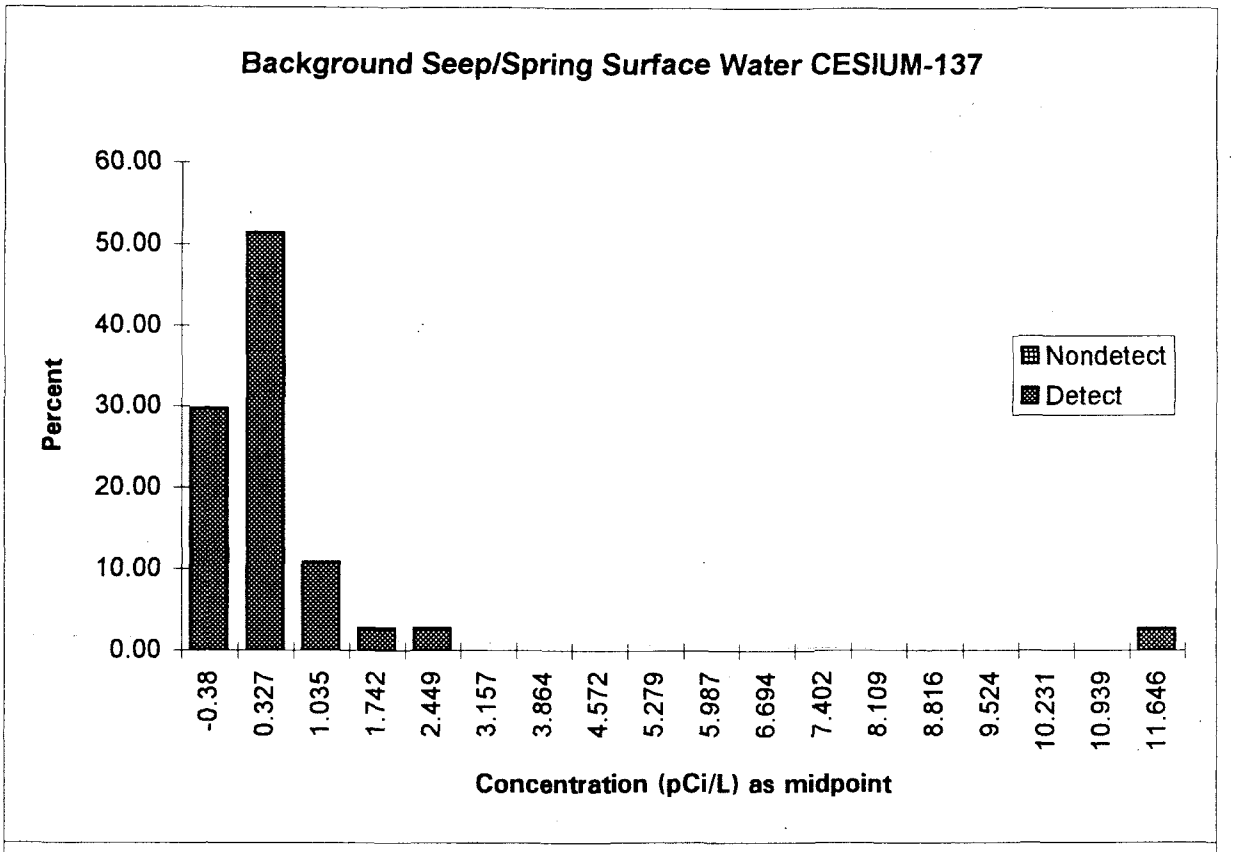

OU6 Pond Surface Water Filtered URANIUM-235
Percent
25.00
20.00
15.00
10.00
5.00
0.00
-0.015
0.007
0.029
0.051
0.073
0.095
0.117
0.139
0.161
0.183
0.205
0.227
0.249
0.271
0.293
0.315
0.337
0.359
Concentration (pCi/L) as midpoint
Nondetect
Detect

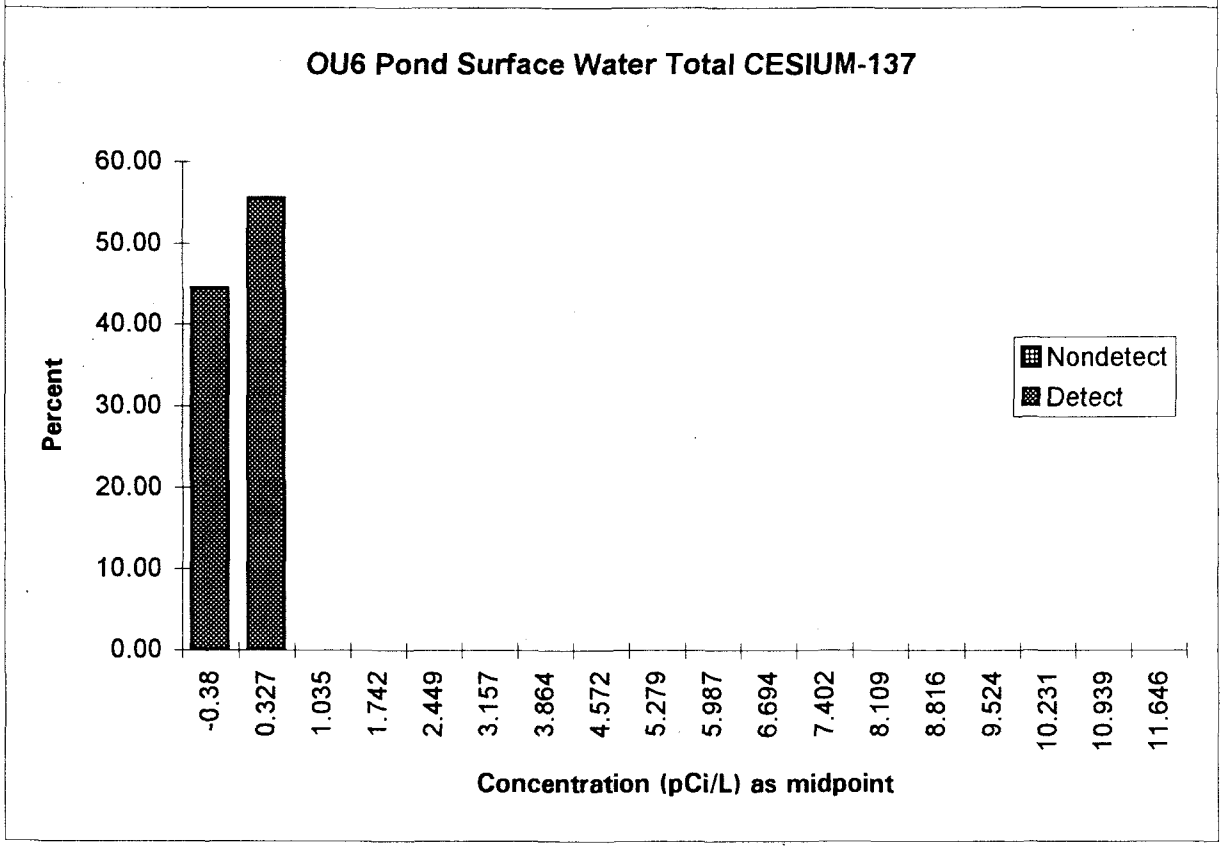

Background Seep/Spring Surface Water Filtered URANIUM-238
Percent
25.00
20.00
15.00
10.00
5.00
0.00
Nondetect
Detect
0.023
0.268
0.513
0.758
1.003
1.248
1.493
1.738
1.983
2.228
2.473
2.718
2.963
3.208
3.453
3.698
3.943
4.188
Concentration (pCi/L) as midpoint

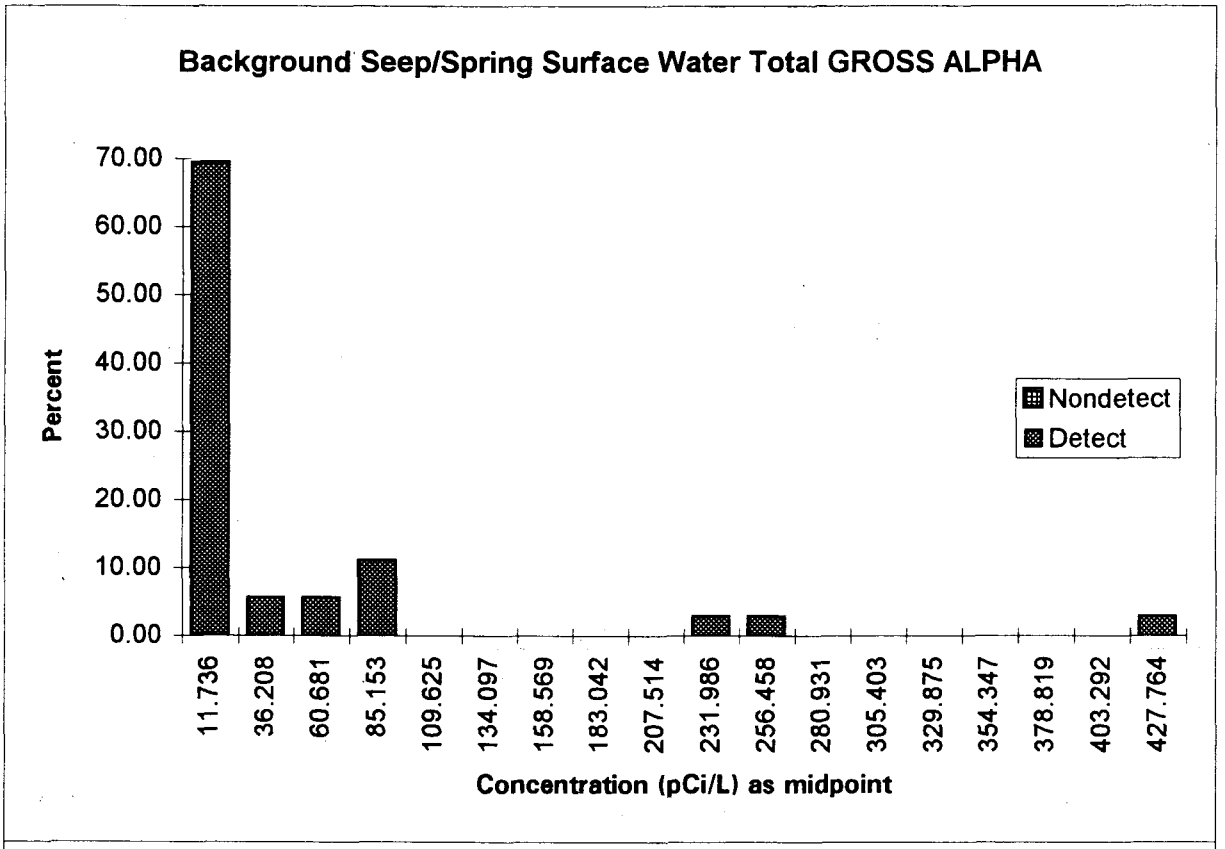

OU6 Pond Surface Water Filtered URANIUM-238
Percent
20.00
18.00
16.00
14.00
12.00
10.00
8.00
6.00
4.00
2.00
0.00
Nondetect
Detect
0.023
0.268
0.513
0.758
1.003
1.248
1.493
1.738
1.983
2.228
2.473
2.718
2.963
3.208
3.453
3.698
3.943
4.188
Concentration (pCi/L) as midpoint

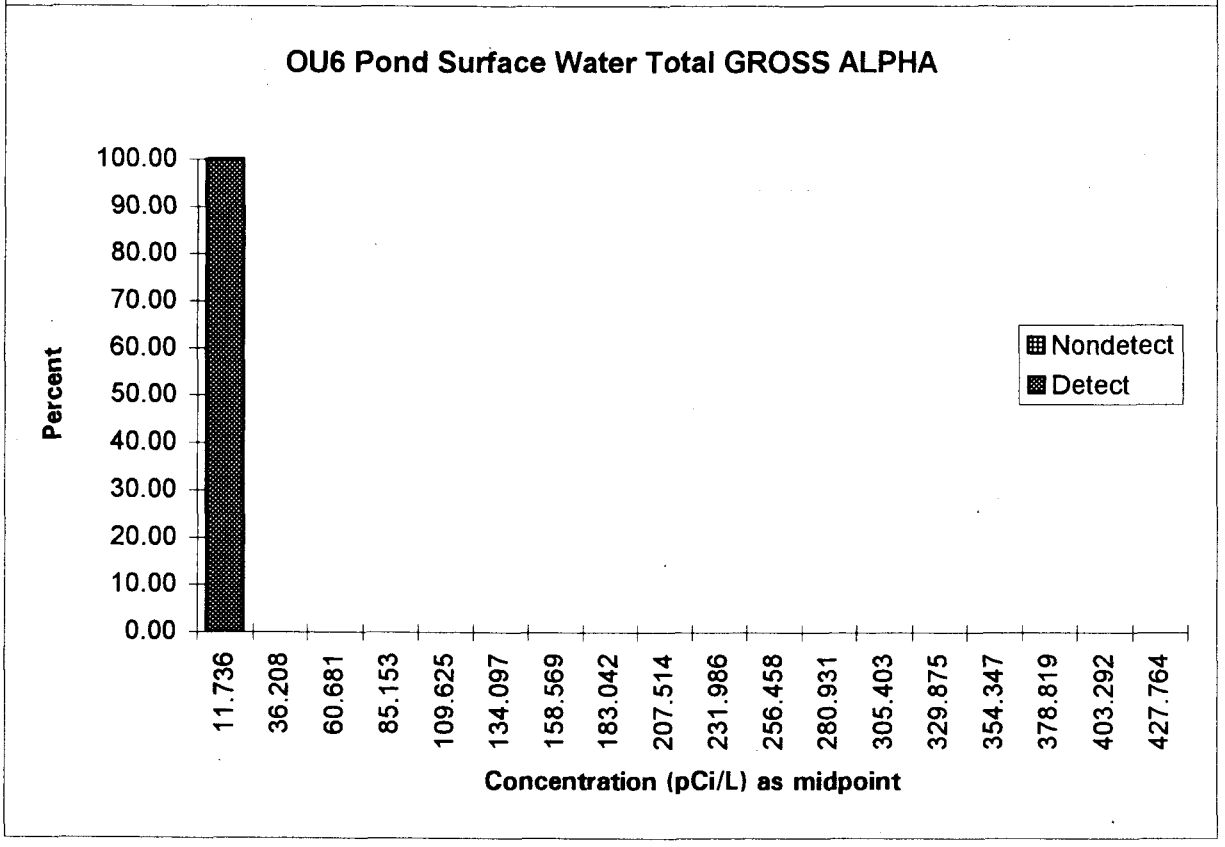

Background Seep/Spring Surface Water Total AMERICIUM-241
Percent
40.00
35.00
30.00
25.00
20.00
15.00
10.00
5.00
0.00
Nondetect
Detect
0.001
0.007
0.012
0.018
0.024
0.029
0.035
0.041
0.046
0.052
0.058
0.063
0.069
0.075
0.08
0.086
0.092
0.097
Concentration (pCi/L) as midpoint

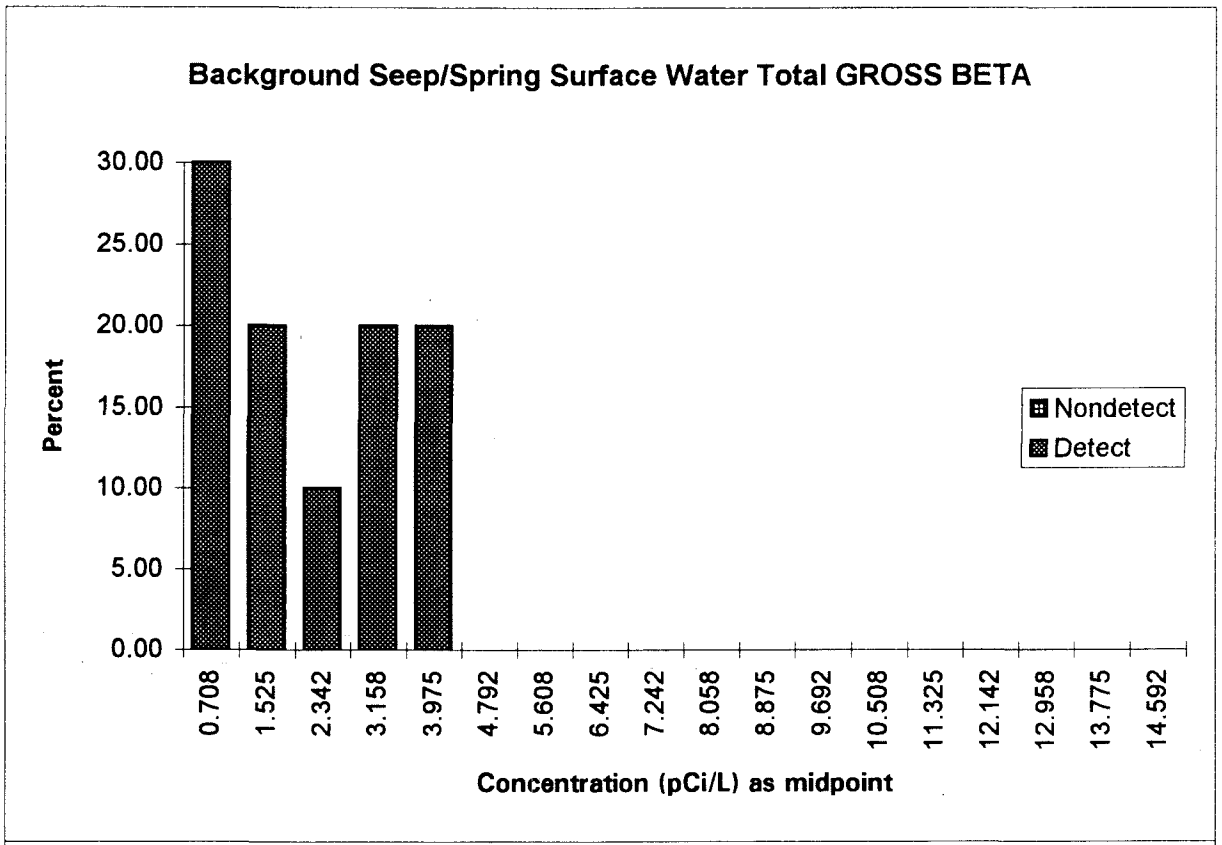

OU6 Pond Surface Water Total AMERICIUM-241
Percent
40.00
35.00
30.00
25.00
20.00
15.00
10.00
5.00
0.00
Nondetect
Detect
0.001
0.007
0.012
0.018
0.024
0.029
0.035
0.041
0.046
0.052
0.058
0.063
0.069
0.075
0.08
0.086
0.092
0.097
Concentration (pCi/L) as midpoint

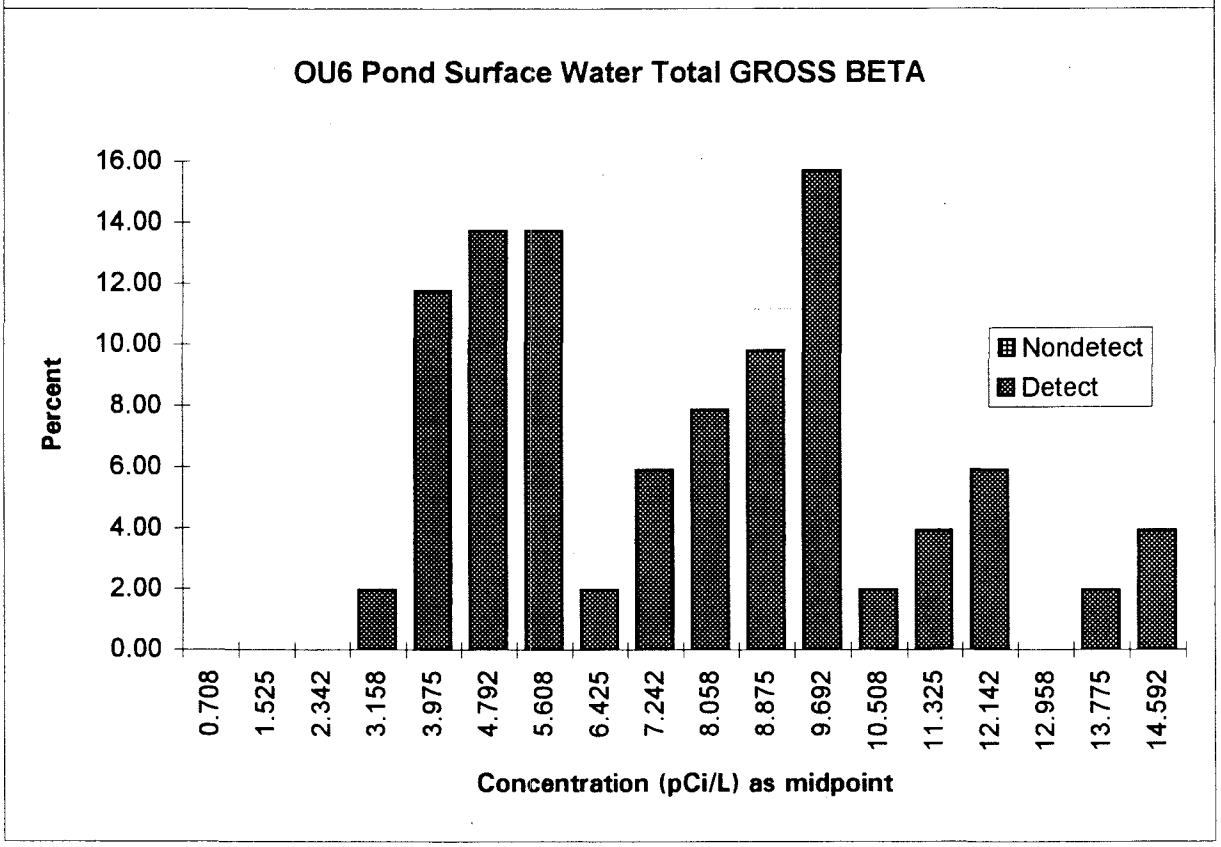

Background Seep/Spring Surface Water CESIUM-137
60.00
50.00
40.00
30.00
20.00
10.00
0.00
Percent
Nondetect
Detect
-0.38
0.327
1.035
1.742
2.449
3.157
3.864
4.572
5.279
5.987
6.694
7.402
8.109
8.816
9.524
10.231
10.939
11.646
Concentration (pCi/L) as midpoint

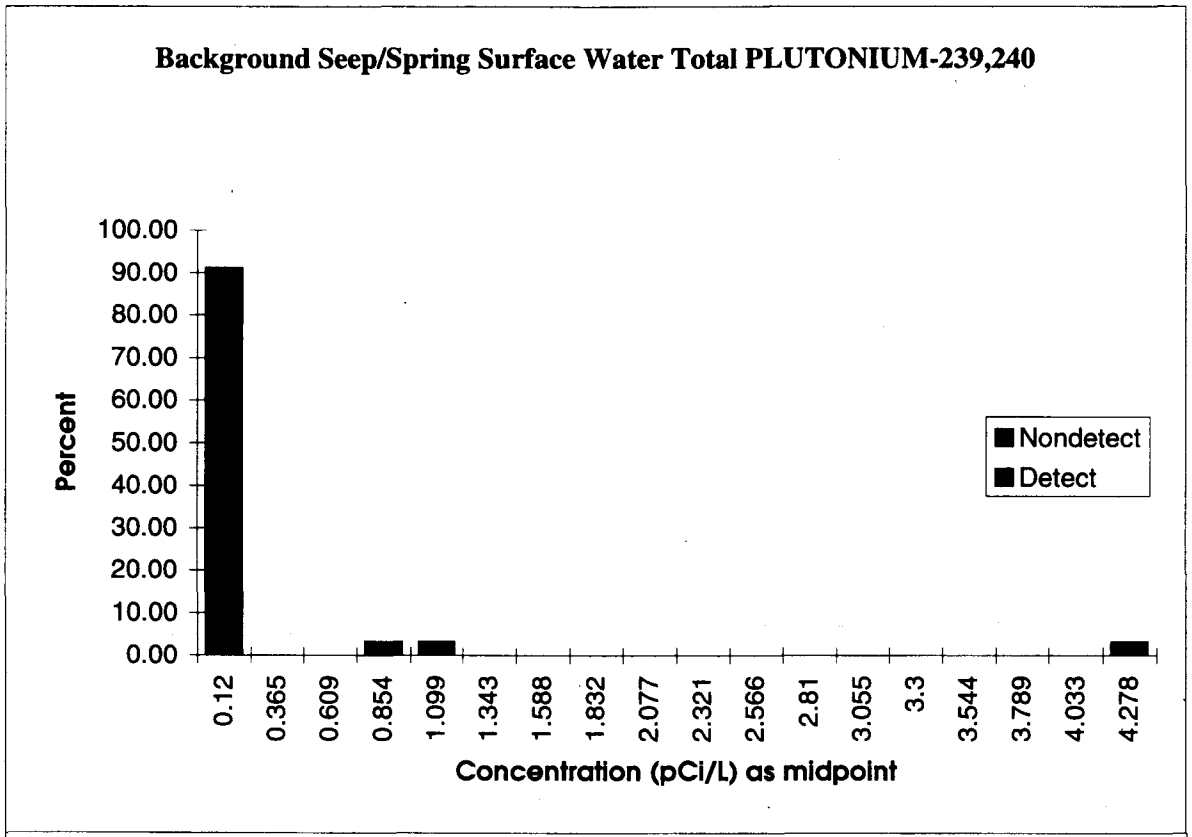

OU6 Pond Surface Water Total CESIUM-137
60.00
50.00
40.00
30.00
20.00
10.00
0.00
Percent
Nondetect
Detect
-0.38
0.327
1.035
1.742
2.449
3.157
3.864
4.572
5.279
5.987
6.694
7.402
8.109
8.816
9.524
10.231
10.939
11.646
Concentration (pCi/L) as midpoint

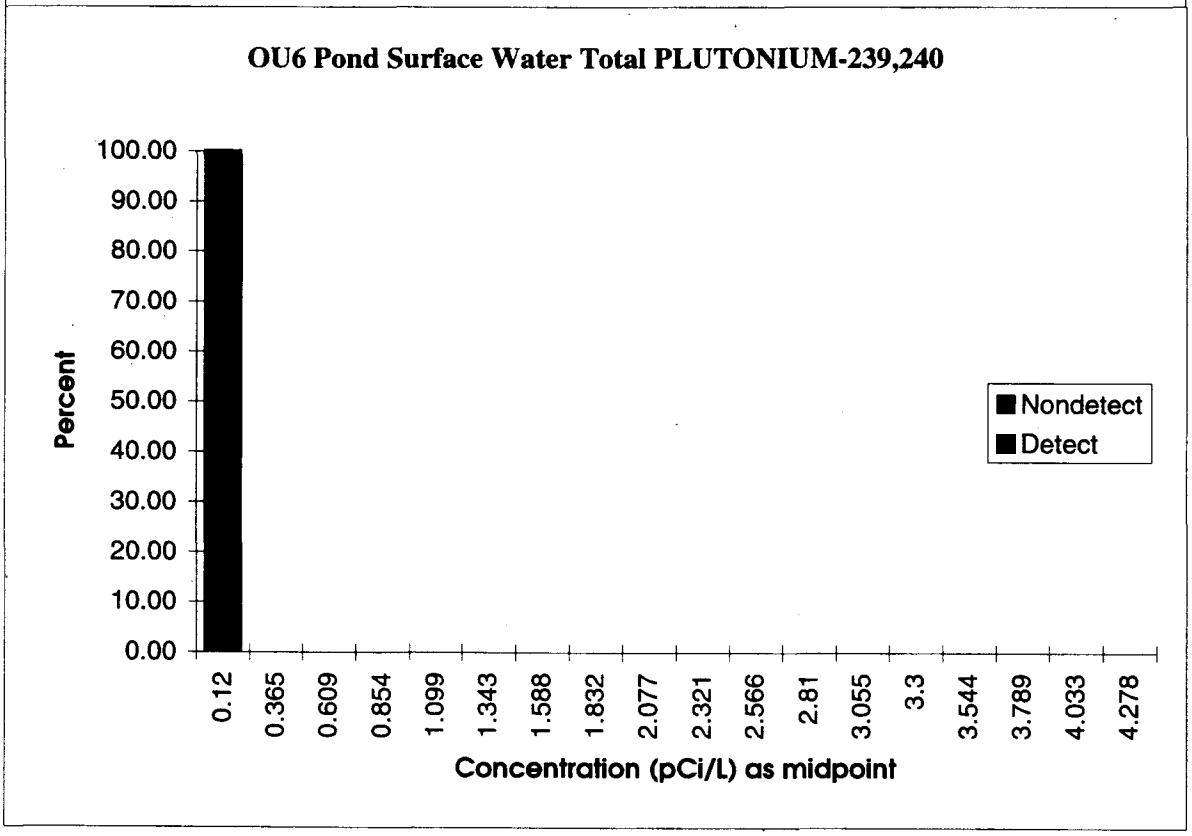

Background Seep/Spring Surface Water Total GROSS ALPHA
Percent
70.00
60.00
50.00
40.00
30.00
20.00
10.00
0.00
Nondetect
Detect
11.736
36.208
60.681
85.153
109.625
134.097
158.569
183.042
207.514
231.986
256.458
280.931
305.403
329.875
354.347
378.819
403.292
427.764
Concentration (pCi/L) as midpoint

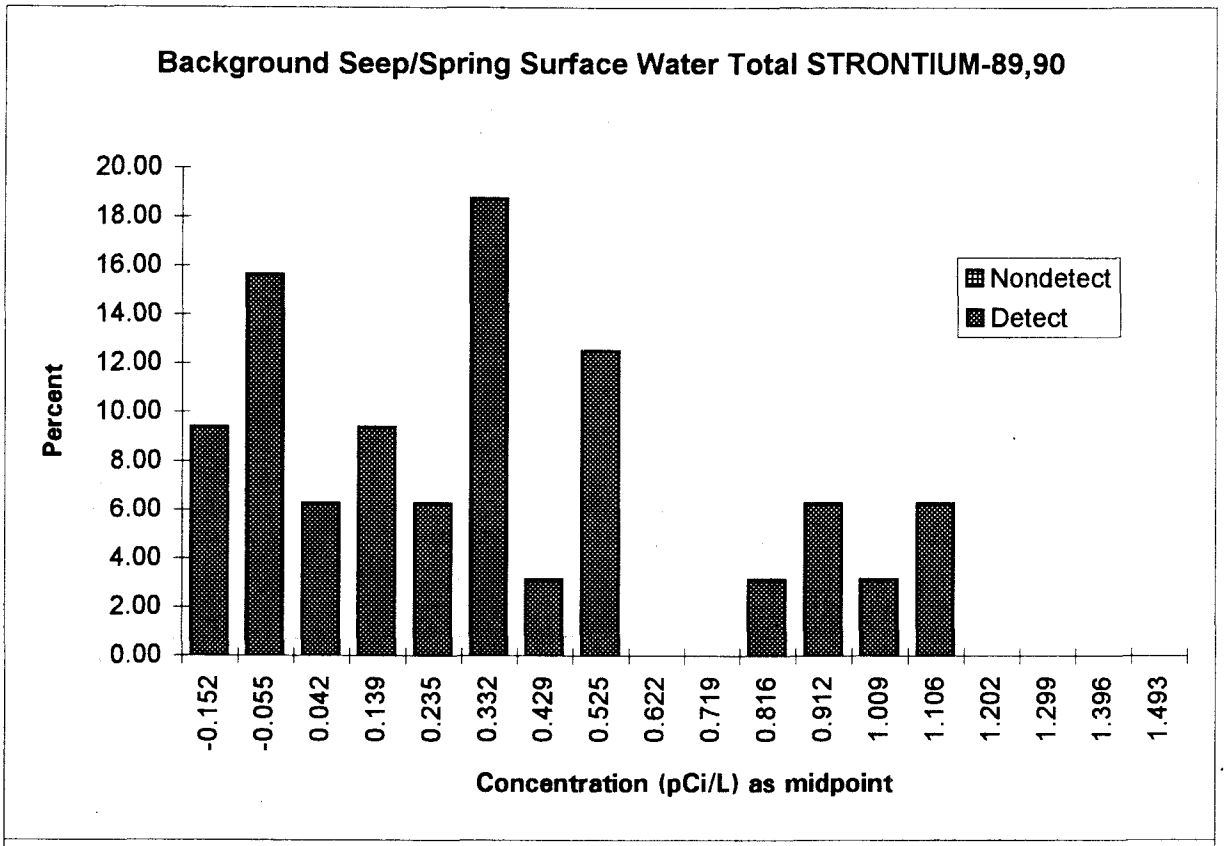

OU6 Pond Surface Water Total GROSS ALPHA
Percent
100.00
90.00
80.00
70.00
60.00
50.00
40.00
30.00
20.00
10.00
0.00
Nondetect
Detect
11.736
36.208
60.681
85.153
109.625
134.097
158.569
183.042
207.514
231.986
256.458
280.931
305.403
329.875
354.347
378.819
403.292
427.764
Concentration (pCi/L) as midpoint

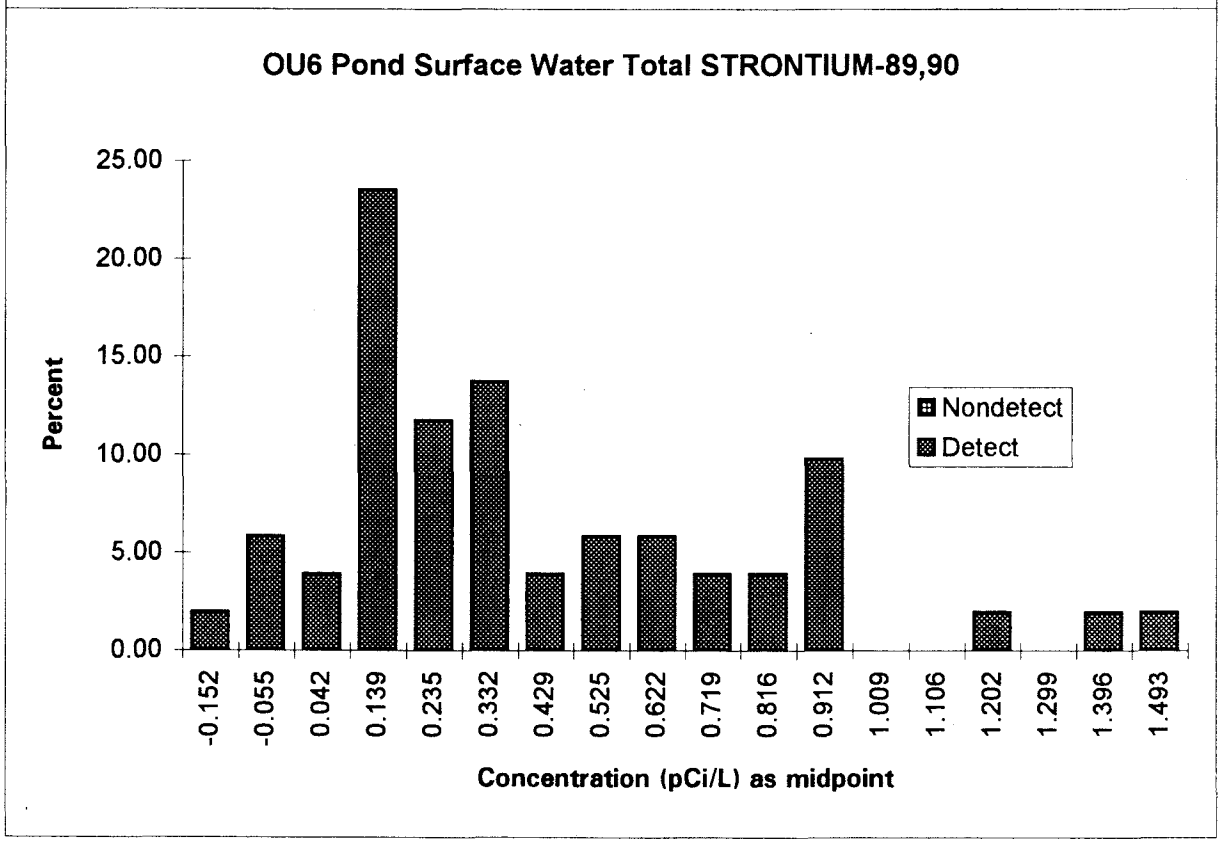

Background Seep/Spring Surface Water Total GROSS BETA
Percent
30.00
25.00
20.00
15.00
10.00
5.00
0.00
Nondetect
Detect
0.708
1.525
2.342
3.158
3.975
4.792
5.608
6.425
7.242
8.058
8.875
9.692
10.508
11.325
12.142
12.958
13.775
14.592
Concentration (pCi/L) as midpoint

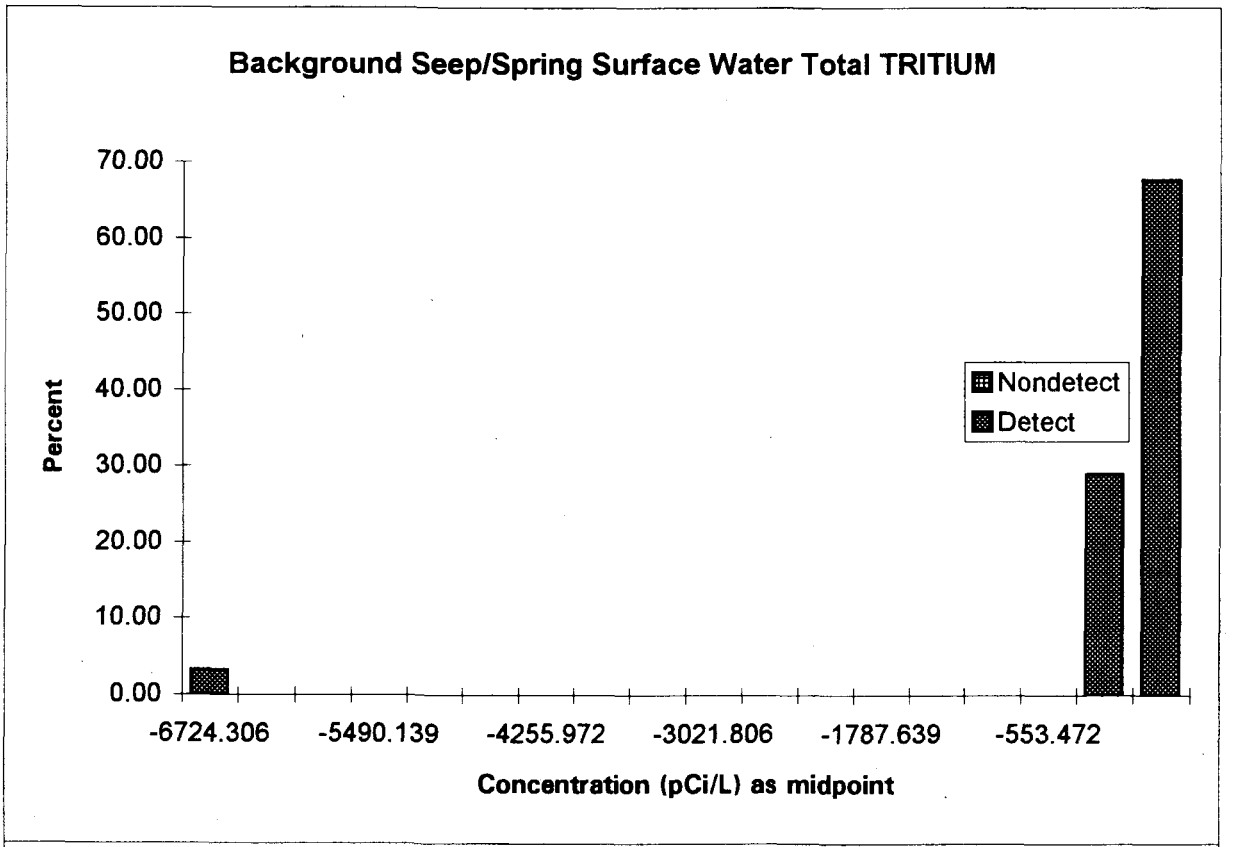

OU6 Pond Surface Water Total GROSS BETA
Percent
16.00
14.00
12.00
10.00
8.00
6.00
4.00
2.00
0.00
Nondetect
Detect
0.708
1.525
2.342
3.158
3.975
4.792
5.608
6.425
7.242
8.058
8.875
9.692
10.508
11.325
12.142
12.958
13.775
14.592
Concentration (pCi/L) as midpoint

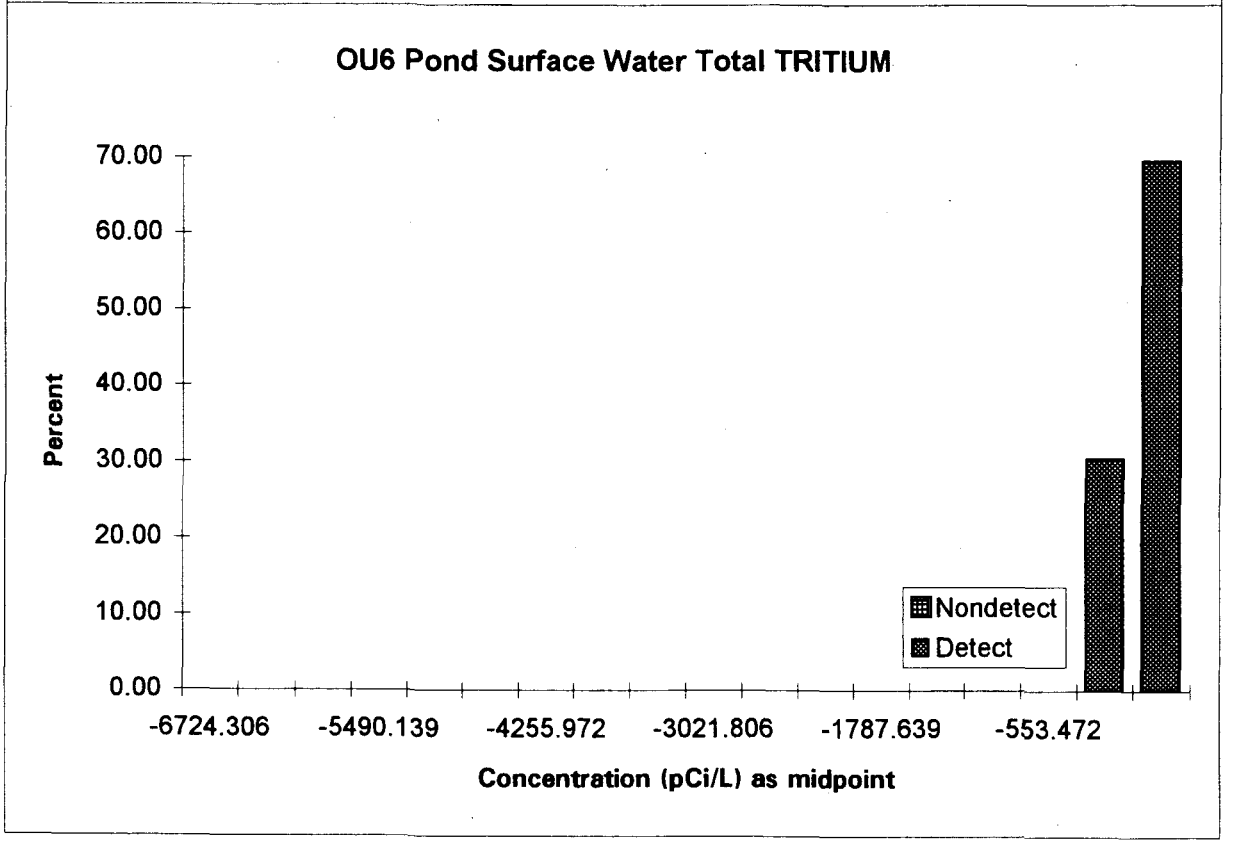

Background Seep/Spring Surface Water Total PLUTONIUM-239,240
Percent
100.00
90.00
80.00
70.00
60.00
50.00
40.00
30.00
20.00
10.00
0.00
Nondetect
Detect
0.12
0.365
0.609
0.854
1.099
1.343
1.588
1.832
2.077
2.321
2.566
2.81
3.055
3.3
3.544
3.789
4.033
4.278
Concentration (pCi/L) as midpoint

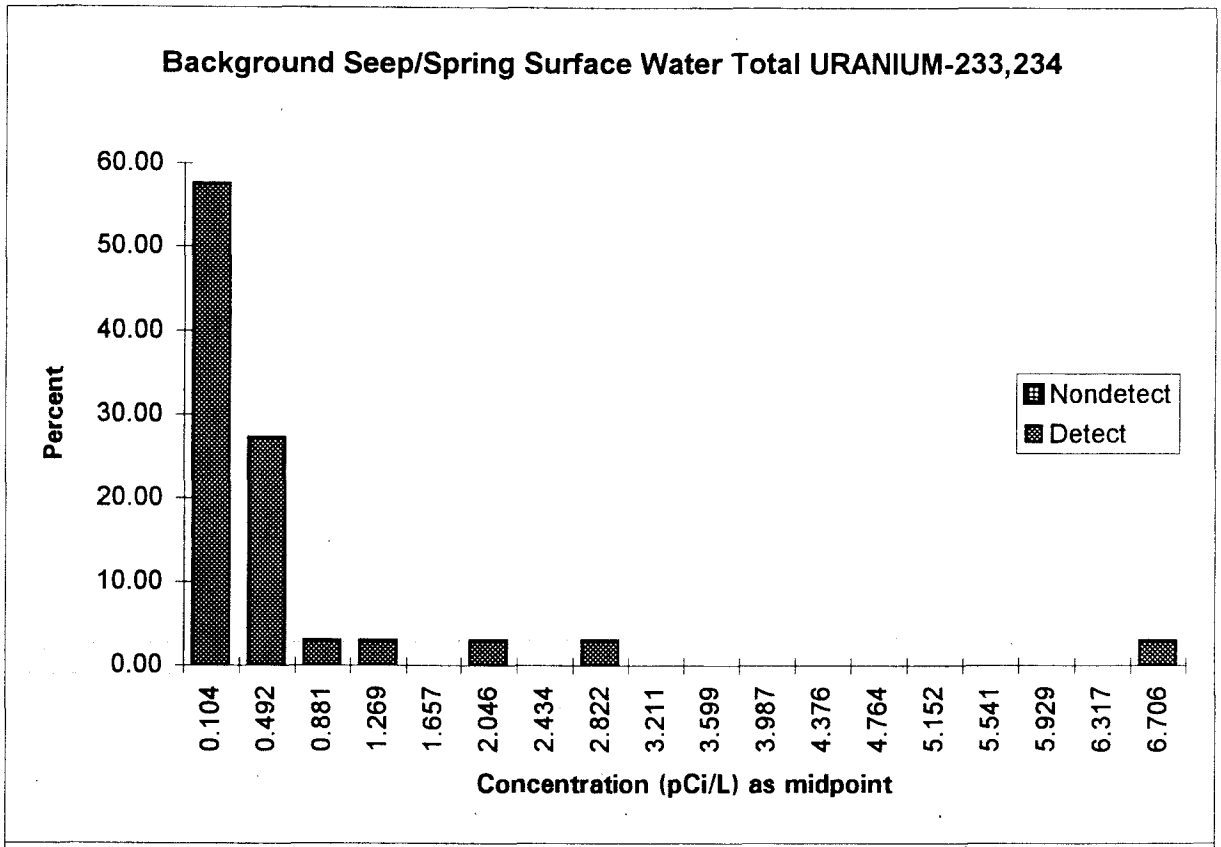

OU6 Pond Surface Water Total PLUTONIUM-239,240
Percent
100.00
90.00
80.00
70.00
60.00
50.00
40.00
30.00
20.00
10.00
0.00
Nondetect
Detect
0.12
0.365
0.609
0.854
1.099
1.343
1.588
1.832
2.077
2.321
2.566
2.81
3.055
3.3
3.544
3.789
4.033
4.278
Concentration (pCi/L) as midpoint

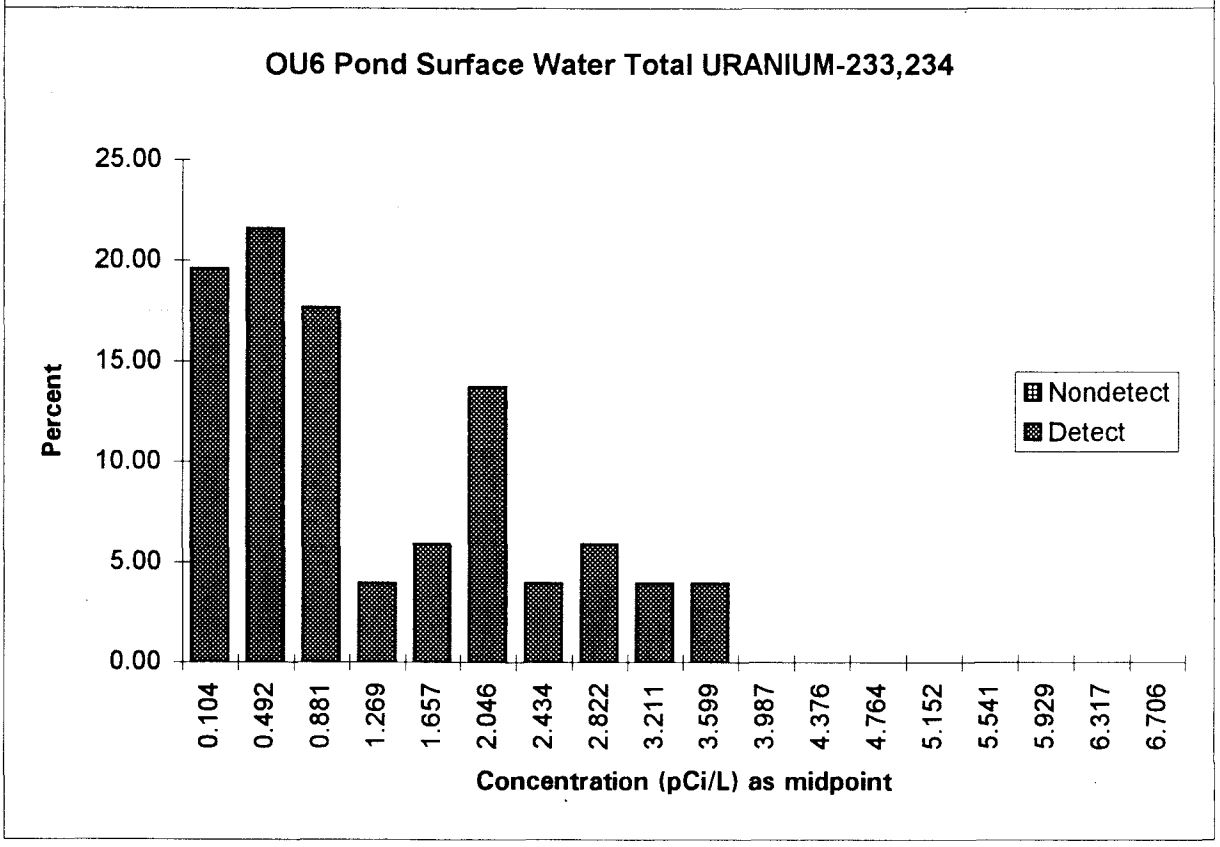

Background Seep/Spring Surface Water Total STRONTIUM-89,90
Percent
20.00
18.00
16.00
14.00
12.00
10.00
8.00
6.00
4.00
2.00
0.00
Nondetect
Detect
-0.152
-0.055
0.042
0.139
0.235
0.332
0.429
0.525
0.622
0.719
0.816
0.912
1.009
1.106
1.202
1.299
1.396
1.493
Concentration (pCi/L) as midpoint

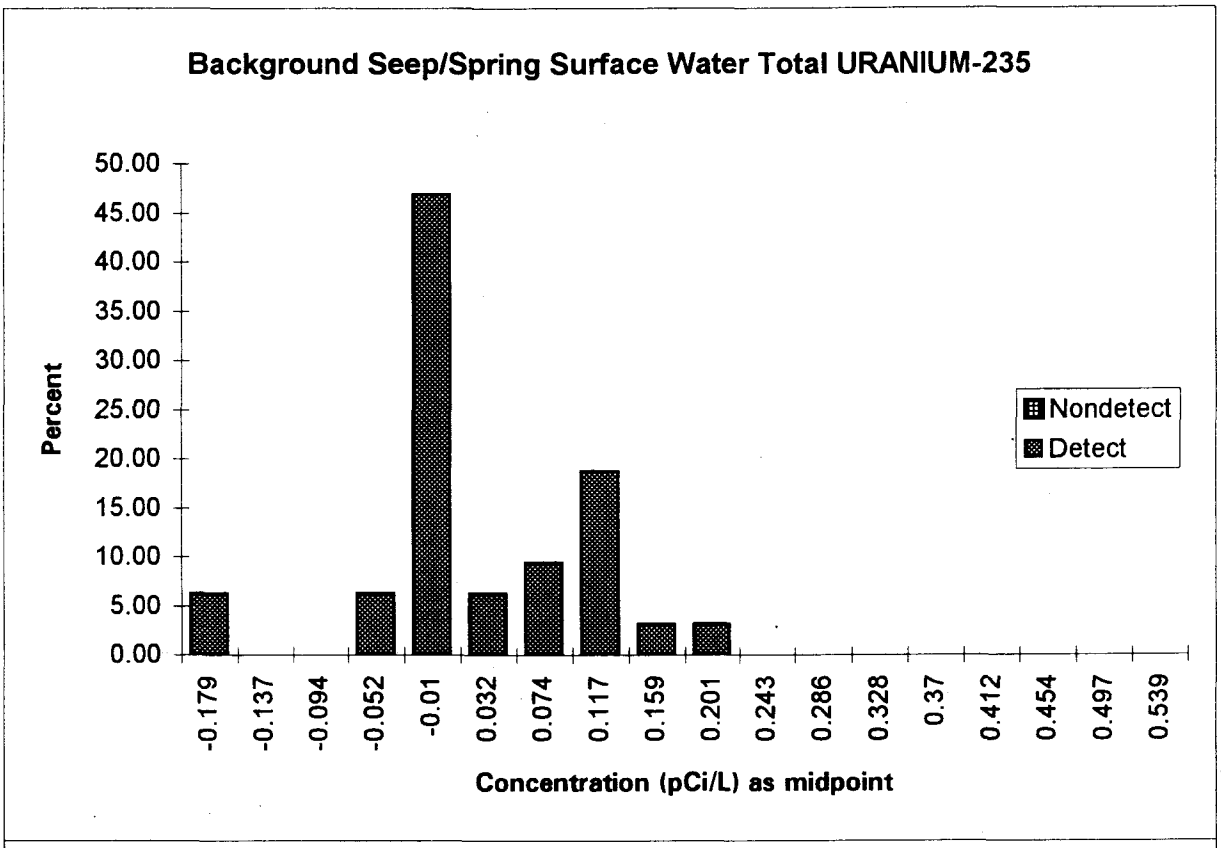

OU6 Pond Surface Water Total STRONTIUM-89,90
Percent
25.00
20.00
15.00
10.00
5.00
0.00
Nondetect
Detect
-0.152
-0.055
0.042
0.139
0.235
0.332
0.429
0.525
0.622
0.719
0.816
0.912
1.009
1.106
1.202
1.299
1.396
1.493
Concentration (pCi/L) as midpoint

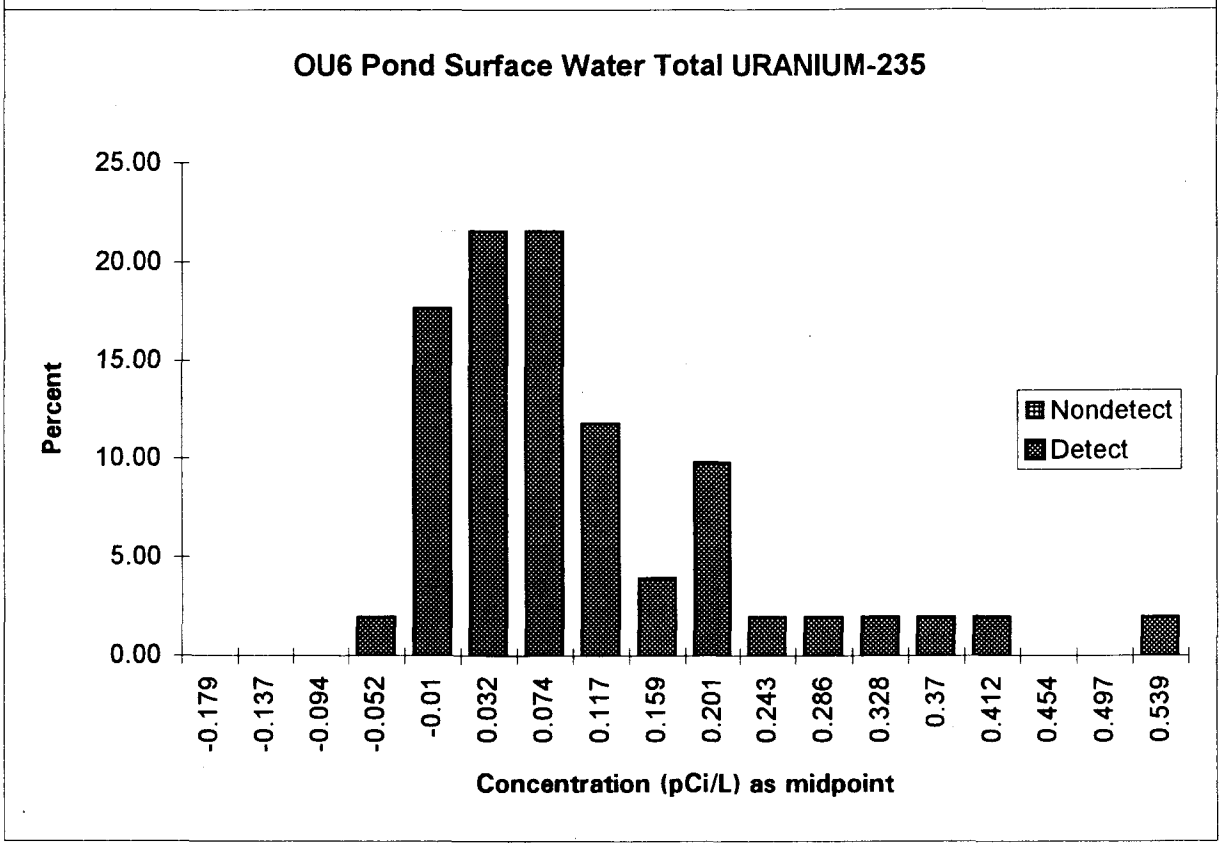

Background Seep/Spring Surface Water Total TRITIUM
70.00
60.00
50.00
40.00
30.00
20.00
10.00
0.00
Percent
Nondetect
Detect
-6724.306
-5490.139
-4255.972
-3021.806
-1787.639
-553.472
Concentration (pCi/L) as midpoint

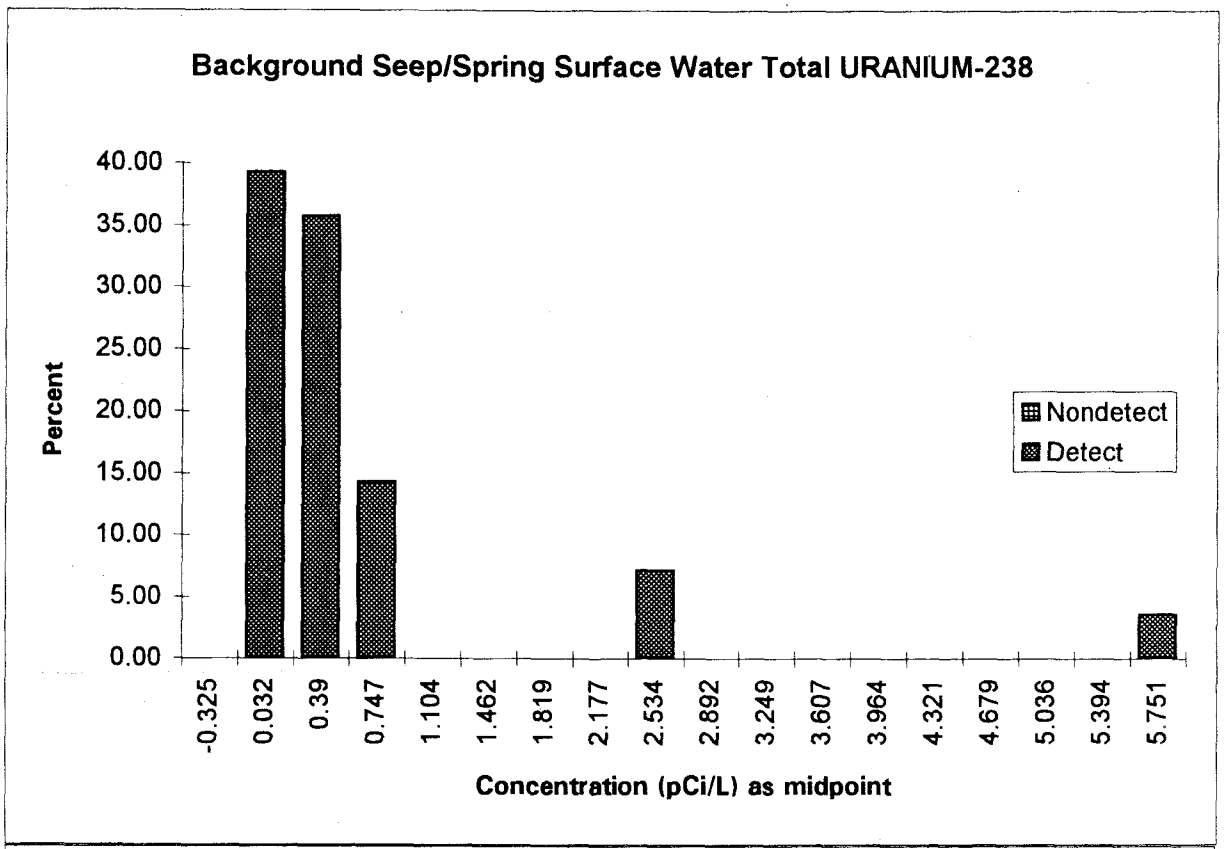

OU6 Pond Surface Water Total TRITIUM
70.00
60.00
50.00
40.00
30.00
20.00
10.00
0.00
Percent
Nondetect
Detect
-6724.306
-5490.139
-4255.972
-3021.806
-1787.639
-553.472
Concentration (pCi/L) as midpoint

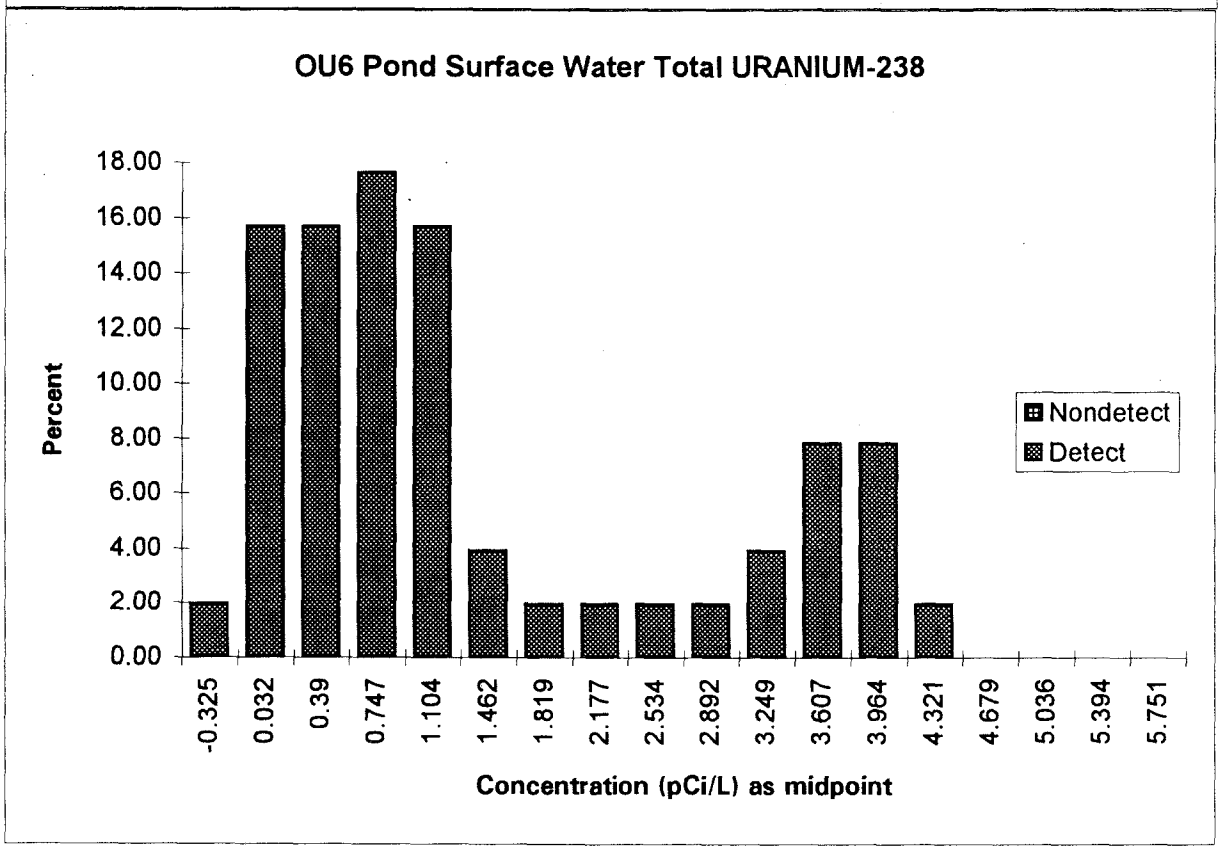

Background Seep/Spring Surface Water Total URANIUM-233,234
Percent
60.00
50.00
40.00
30.00
20.00
10.00
0.00
Nondetect
Detect
0.104
0.492
0.881
1.269
1.657
2.046
2.434
2.822
3.211
3.599
3.987
4.376
4.764
5.152
5.541
5.929
6.317
6.706
Concentration (pCi/L) as midpoint

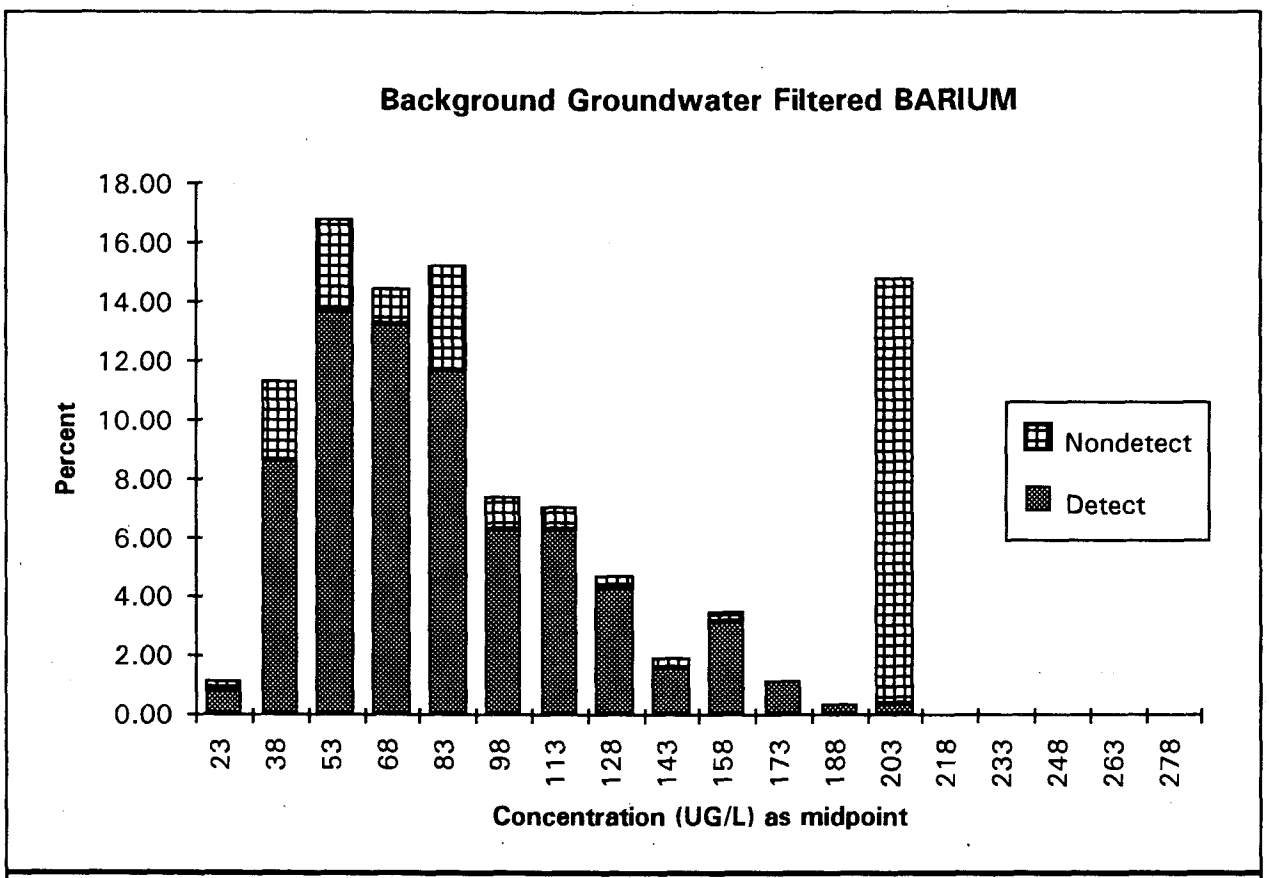

OU6 Pond Surface Water Total URANIUM-233,234
Percent
25.00
20.00
15.00
10.00
5.00
0.00
Nondetect
Detect
0.104
0.492
0.881
1.269
1.657
2.046
2.434
2.822
3.211
3.599
3.987
4.376
4.764
5.152
5.541
5.929
6.317
6.706
Concentration (pCi/L) as midpoint

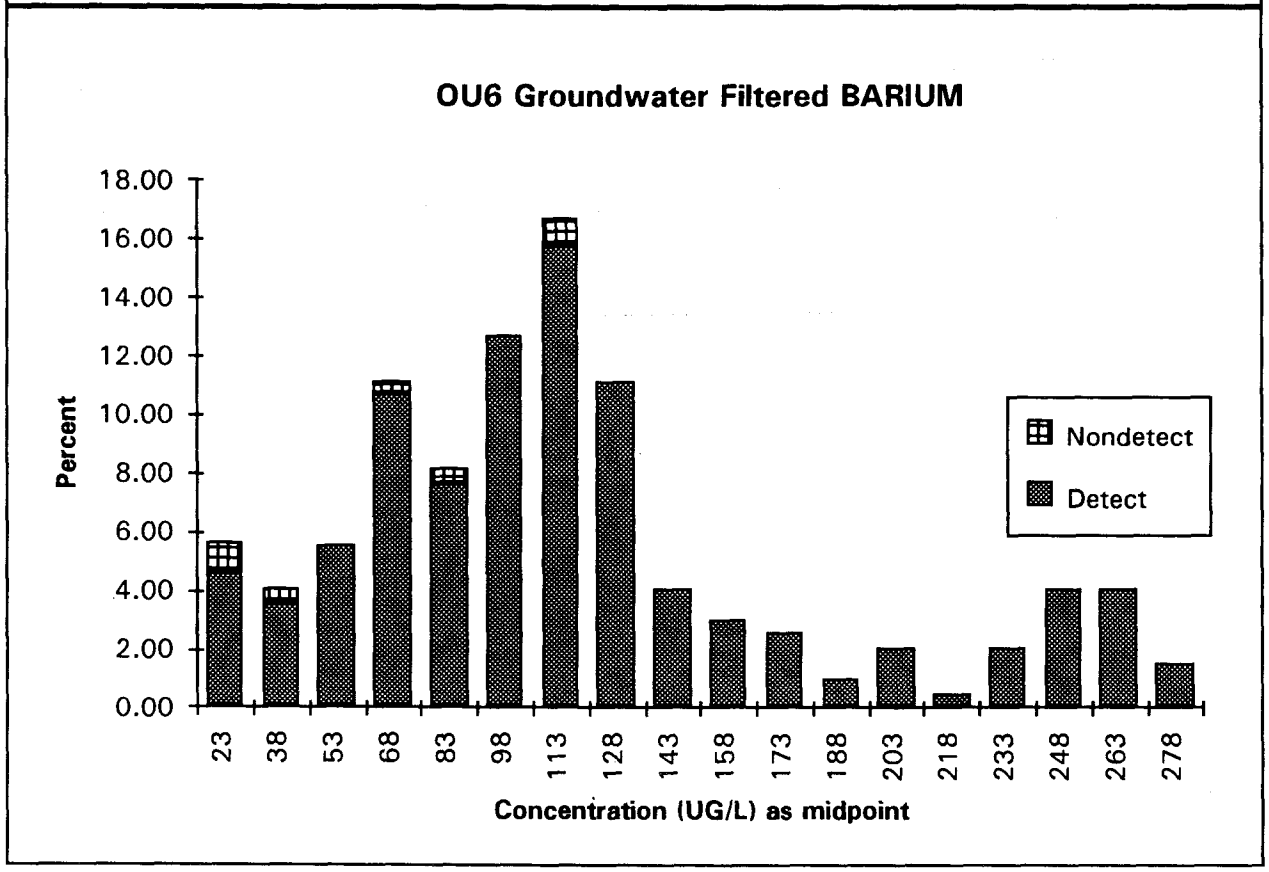

Background Seep/Spring Surface Water Total URANIUM-235
Percent
50.00
45.00
40.00
35.00
30.00
25.00
20.00
15.00
10.00
5.00
0.00
Nondetect
Detect
-0.179
-0.137
-0.094
-0.052
-0.01
0.032
0.074
0.117
0.159
0.201
0.243
0.286
0.328
0.37
0.412
0.454
0.497
0.539
Concentration (pCi/L) as midpoint

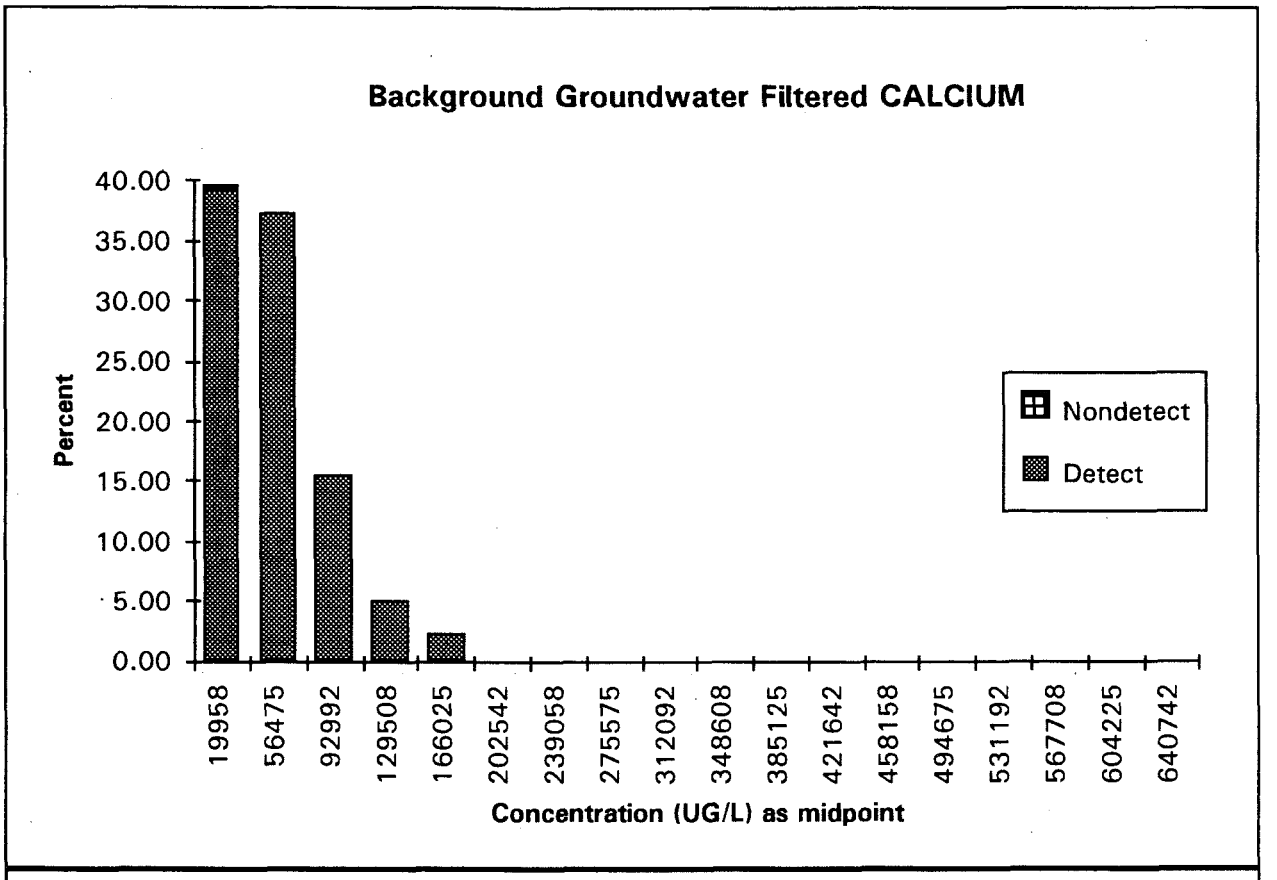

OU6 Pond Surface Water Total URANIUM-235
Percent
25.00
20.00
15.00
10.00
5.00
0.00
Nondetect
Detect
-0.179
-0.137
-0.094
-0.052
-0.01
0.032
0.074
0.117
0.159
0.201
0.243
0.286
0.328
0.37
0.412
0.454
0.497
0.539
Concentration (pCi/L) as midpoint

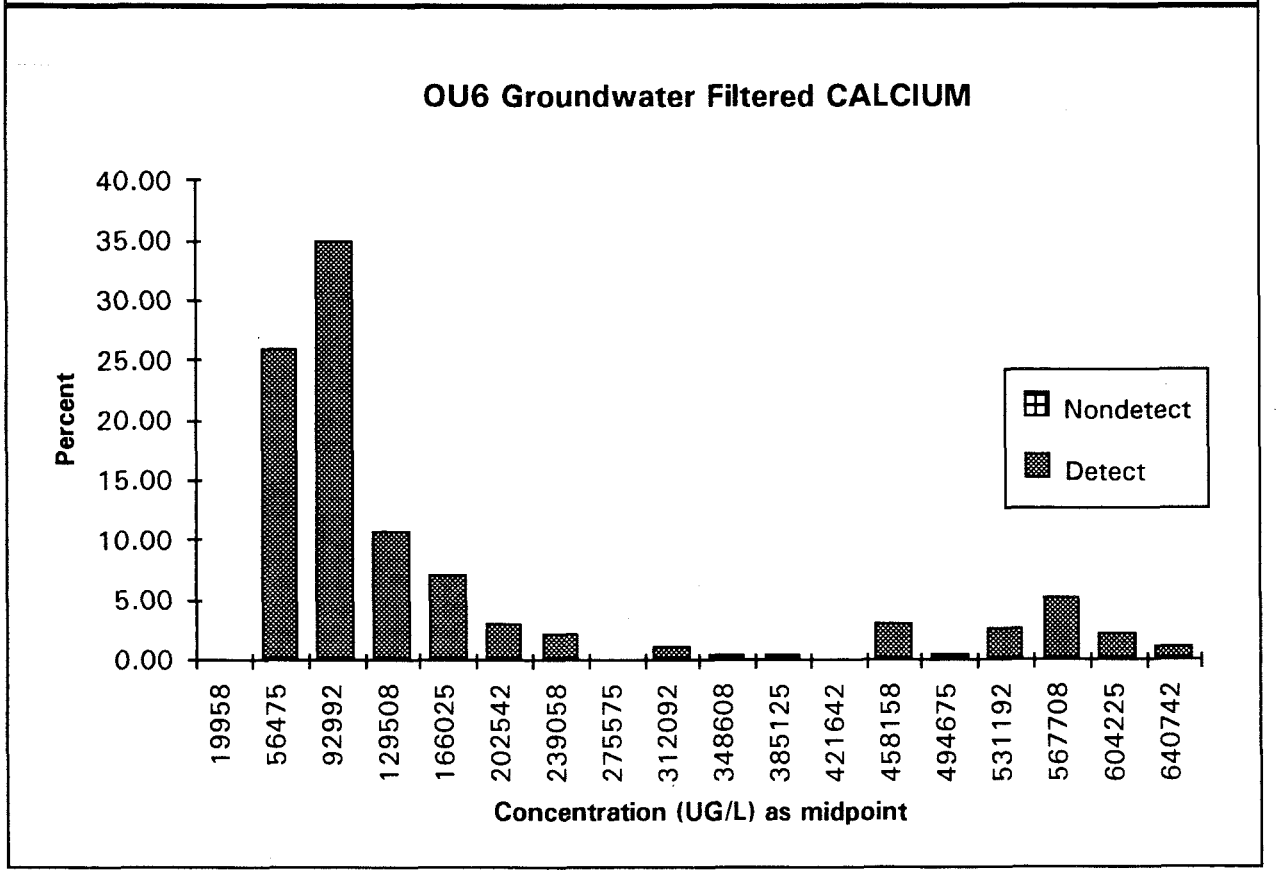

Background Seep/Spring Surface Water Total URANIUM-238
Percent
40.00
35.00
30.00
25.00
20.00
15.00
10.00
5.00
0.00
Nondetect
Detect
-0.325
0.032
0.39
0.747
1.104
1.462
1.819
2.177
2.534
2.892
3.249
3.607
3.964
4.321
4.679
5.036
5.394
5.751
Concentration (pCi/L) as midpoint

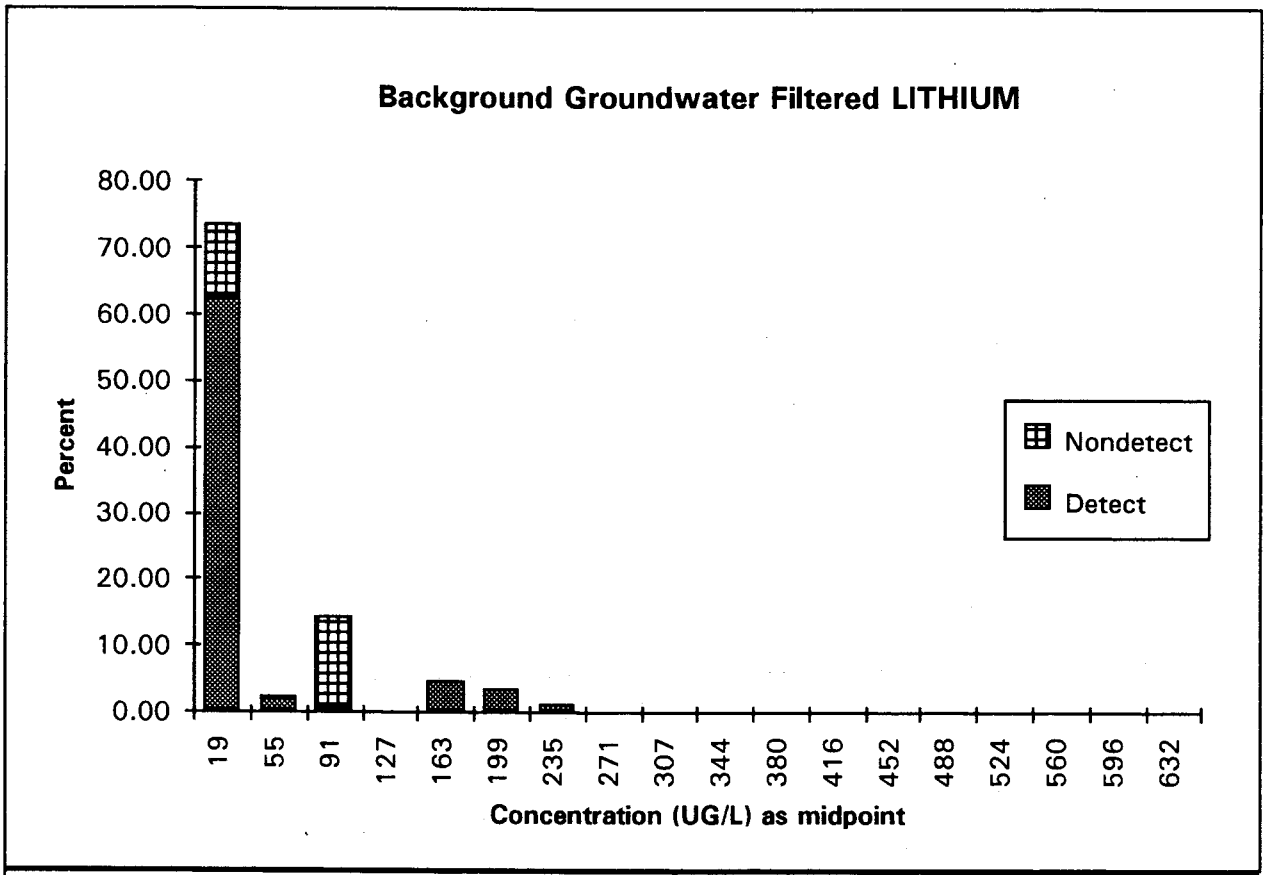

OU6 Pond Surface Water Total URANIUM-238
Percent
18.00
16.00
14.00
12.00
10.00
8.00
6.00
4.00
2.00
0.00
Nondetect
Detect
-0.325
0.032
0.39
0.747
1.104
1.462
1.819
2.177
2.534
2.892
3.249
3.607
3.964
4.321
4.679
5.036
5.394
5.751
Concentration (pCi/L) as midpoint

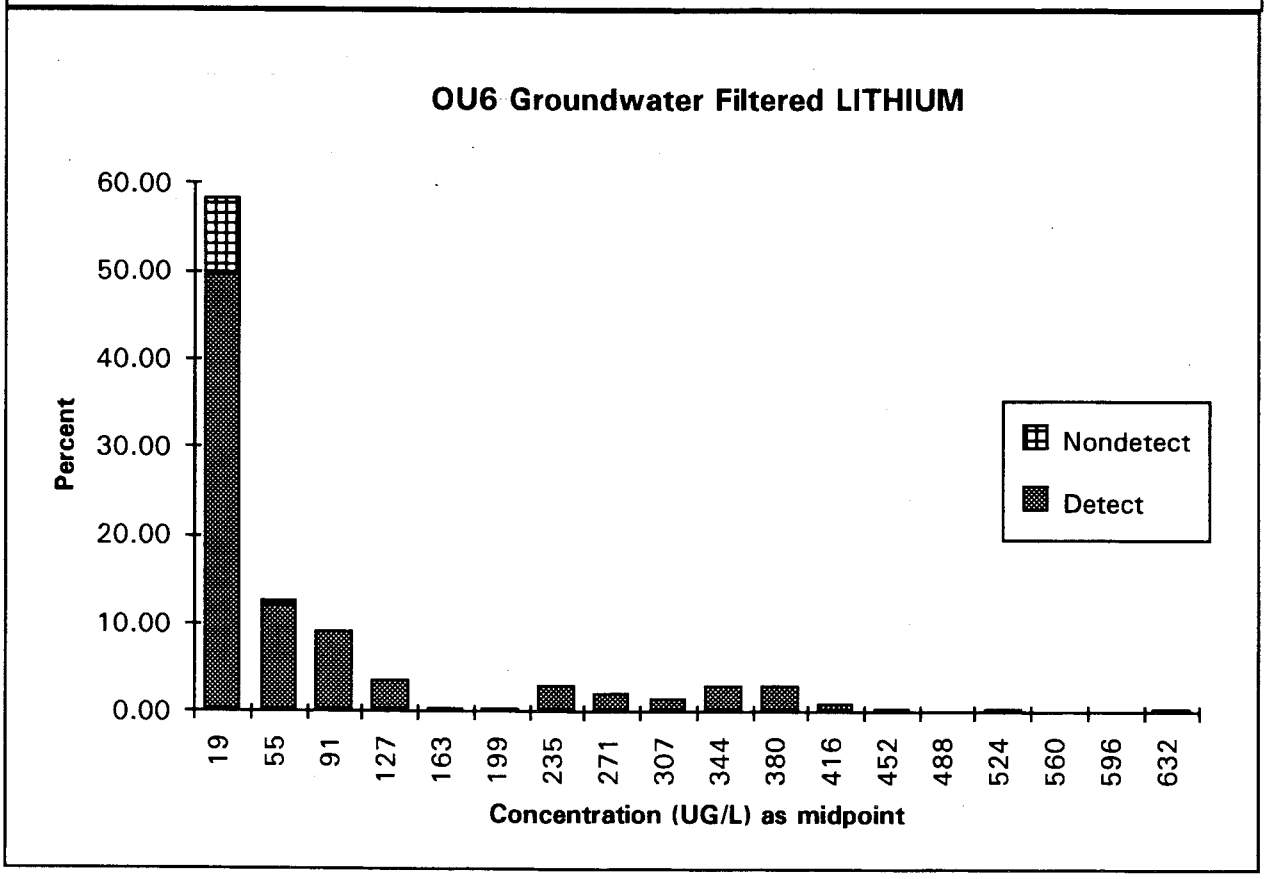

Background Groundwater Filtered BARIUM
Percent
18.00
16.00
14.00
12.00
10.00
8.00
6.00
4.00
2.00
0.00
23
38
53
68
83
98
113
128
143
158
173
188
203
218
233
248
263
278
Concentration (UG/L) as midpoint
Nondetect
Detect

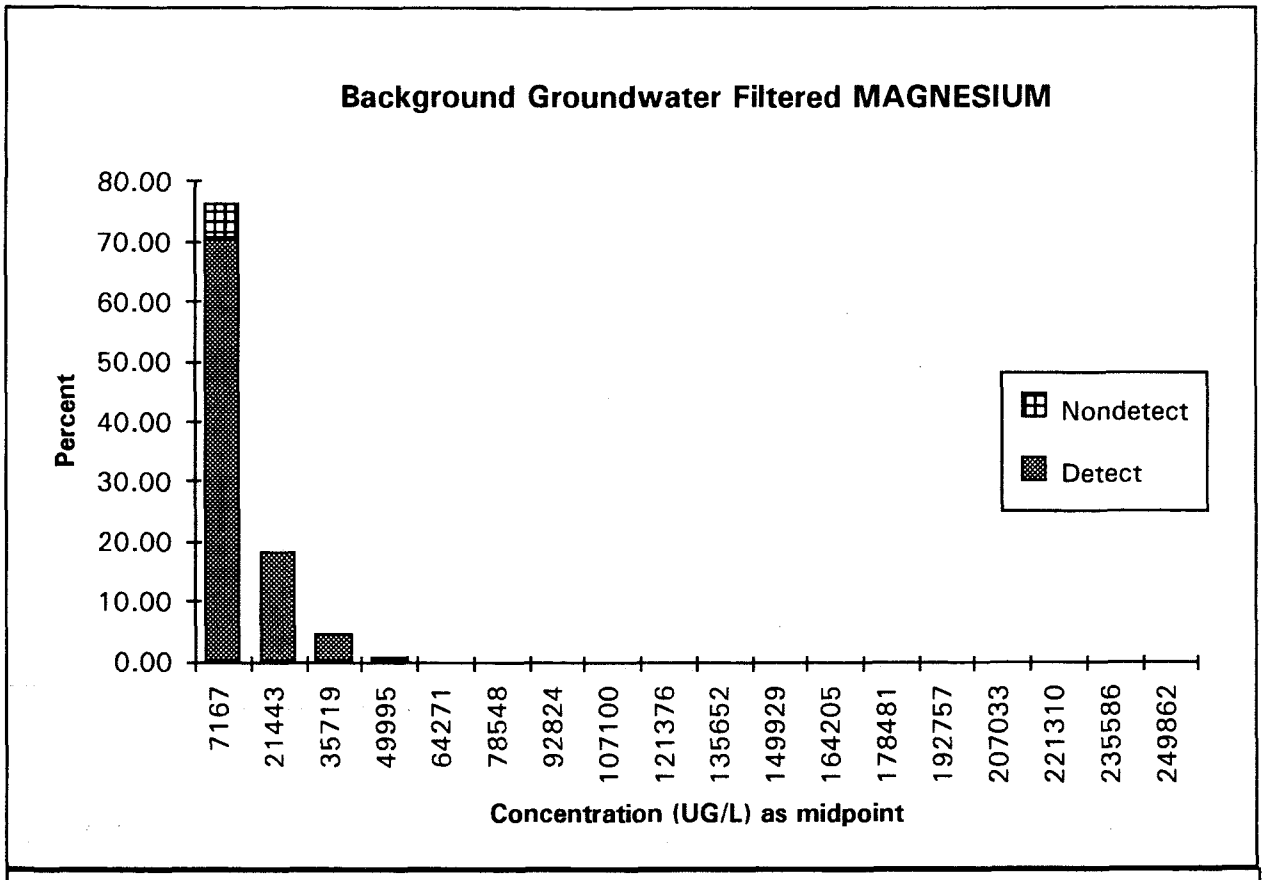

OU6 Groundwater Filtered BARIUM
Percent
18.00
16.00
14.00
12.00
10.00
8.00
6.00
4.00
2.00
0.00
23
38
53
68
83
98
113
128
143
158
173
188
203
218
233
248
263
278
Concentration (UG/L) as midpoint
Nondetect
Detect

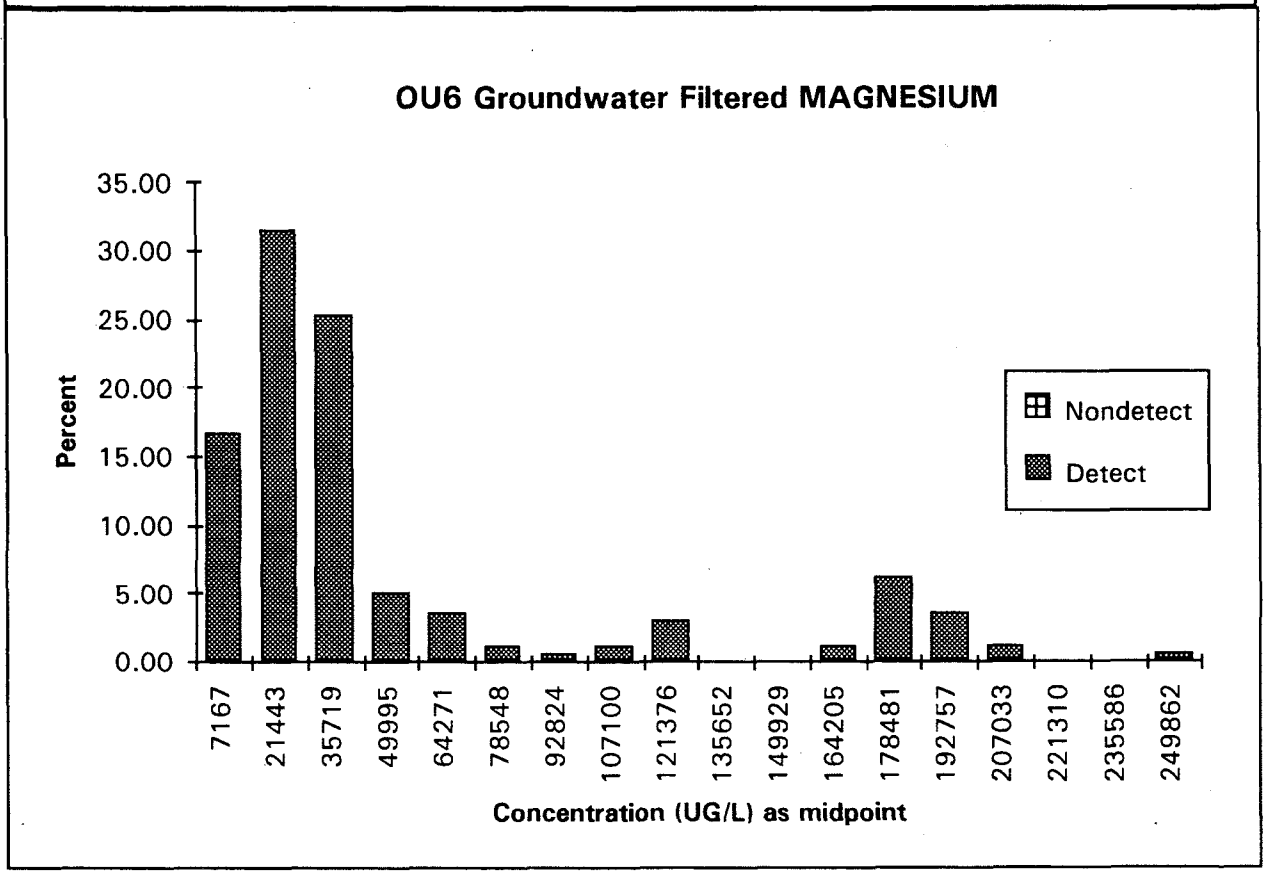

Background Groundwater Filtered CALCIUM
Percent
40.00
35.00
30.00
25.00
20.00
15.00
10.00
5.00
0.00
19958
56475
92992
129508
166025
202542
239058
275575
312092
348608
385125
421642
458158
494675
531192
567708
604225
640742
Concentration (UG/L) as midpoint
Nondetect
Detect

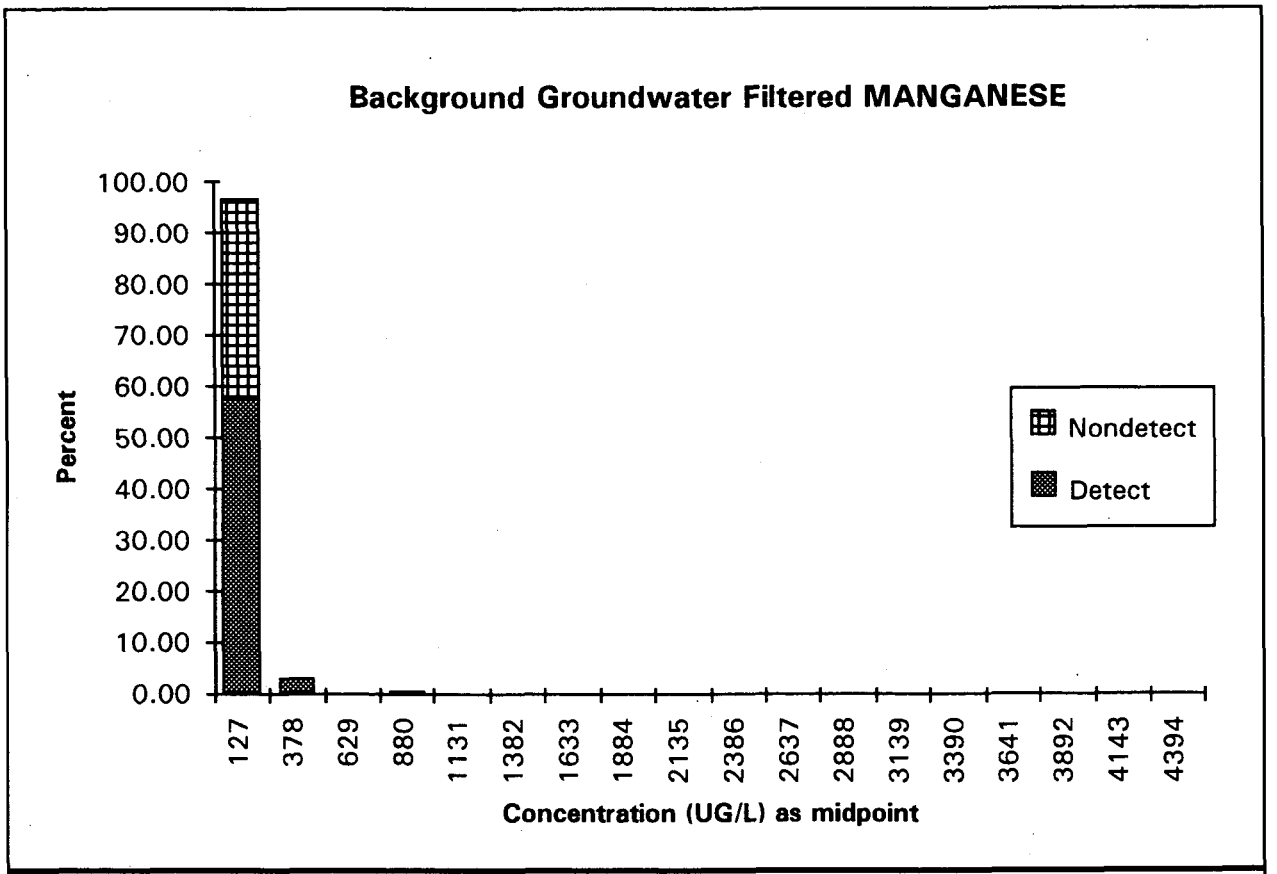

OU6 Groundwater Filtered CALCIUM
Percent
40.00
35.00
30.00
25.00
20.00
15.00
10.00
5.00
0.00
19958
56475
92992
129508
166025
202542
239058
275575
312092
348608
385125
421642
458158
494675
531192
567708
604225
640742
Concentration (UG/L) as midpoint
Nondetect
Detect

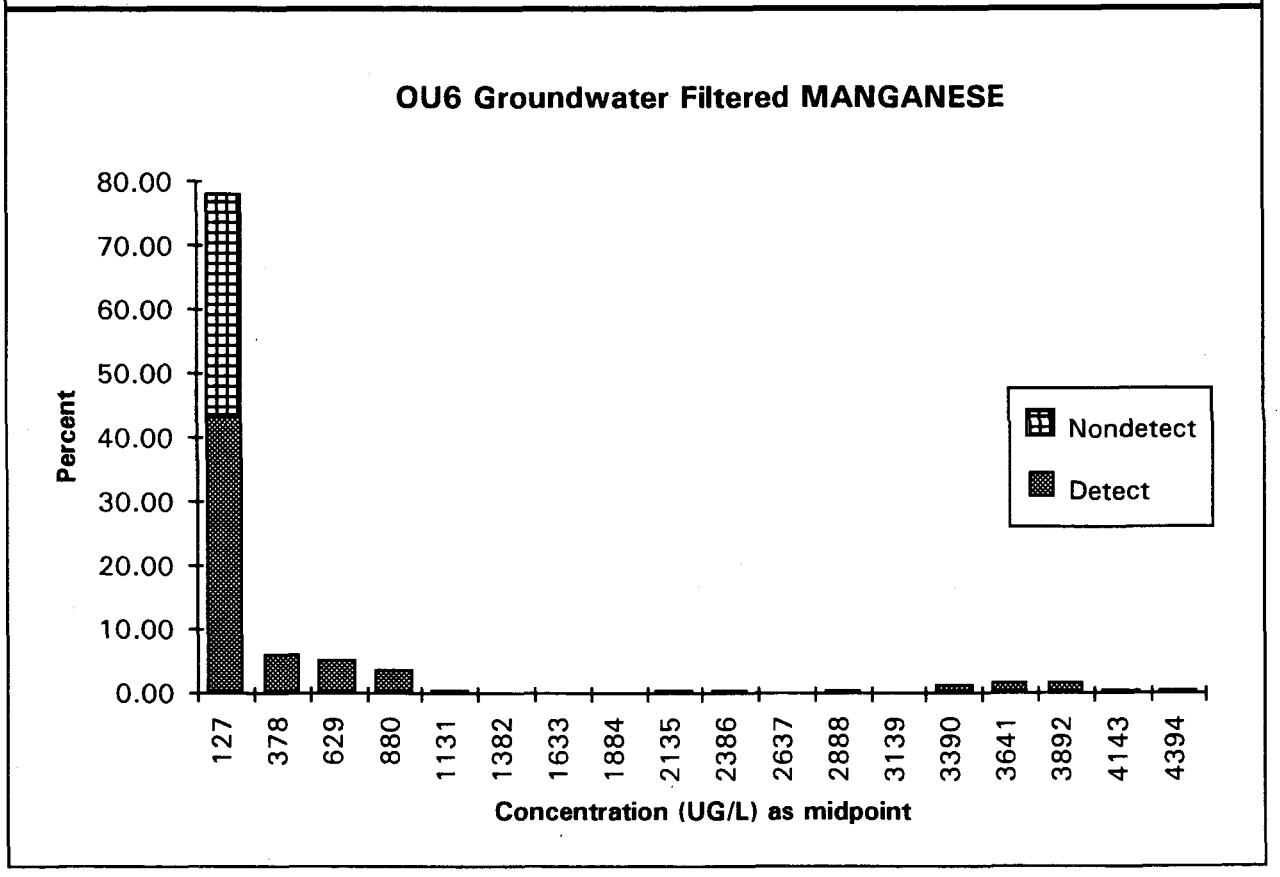

Background Groundwater Filtered LITHIUM
Percent
80.00
70.00
60.00
50.00
40.00
30.00
20.00
10.00
0.00
19
55
91
127
163
199
235
271
307
344
380
416
452
488
524
560
596
632
Concentration (UG/L) as midpoint
Nondetect
Detect

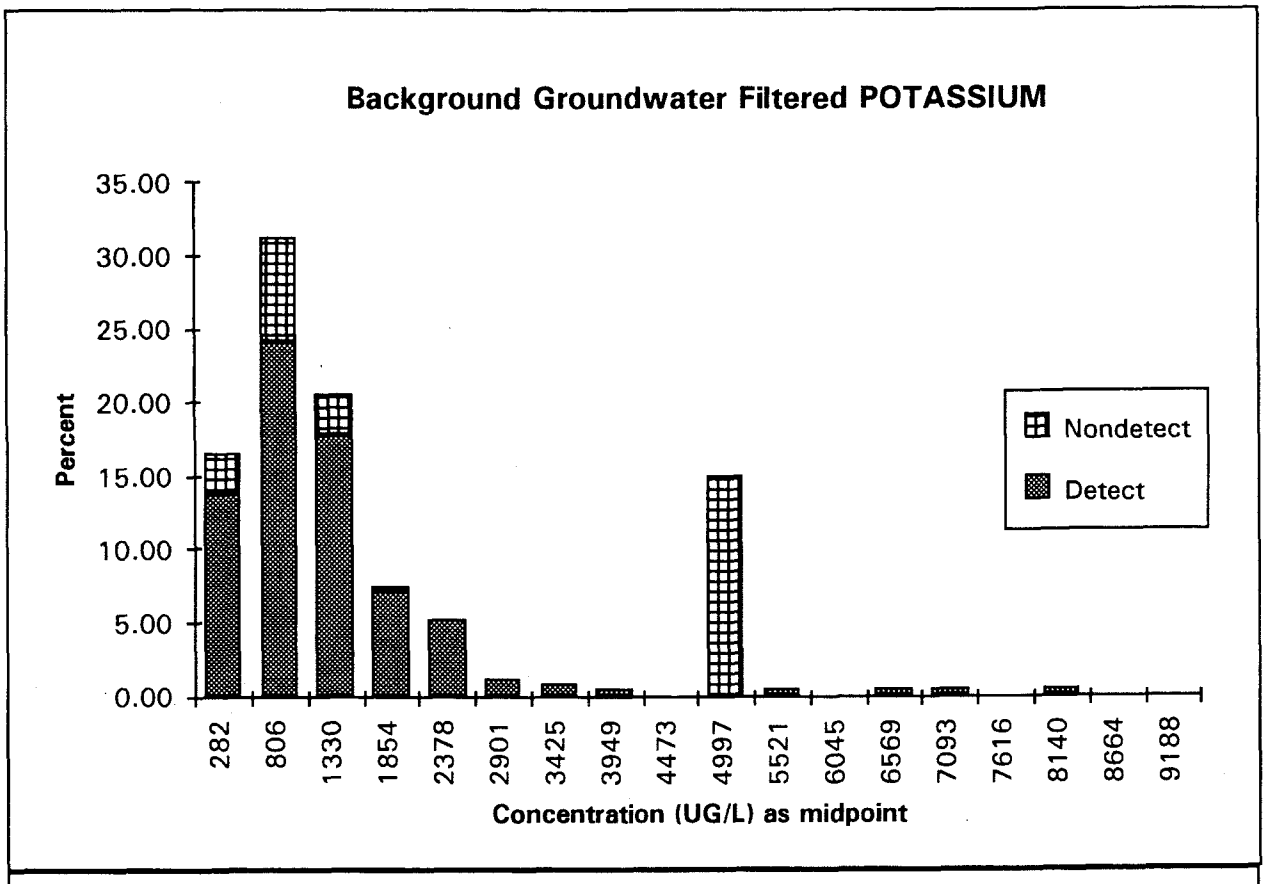

OU6 Groundwater Filtered LITHIUM
Percent
60.00
50.00
40.00
30.00
20.00
10.00
0.00
19
55
91
127
163
199
235
271
307
344
380
416
452
488
524
560
596
632
Concentration (UG/L) as midpoint
Nondetect
Detect

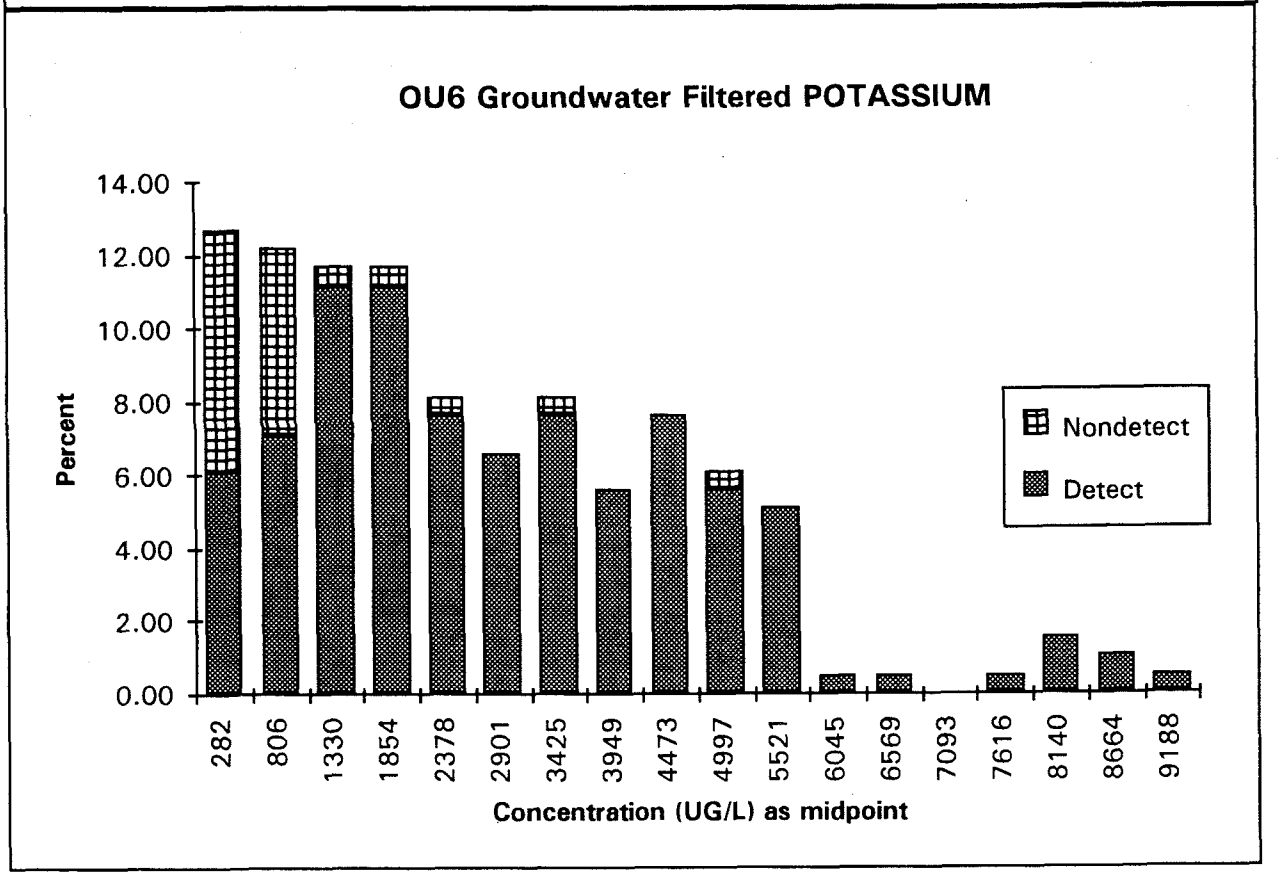

Background Groundwater Filtered MAGNESIUM
80.00
70.00
60.00
50.00
40.00
30.00
20.00
10.00
0.00
Percent
Nondetect
Detect
7167
21443
35719
49995
64271
78548
92824
107100
121376
135652
149929
164205
178481
192757
207033
221310
235586
249862
Concentration (UG/L) as midpoint

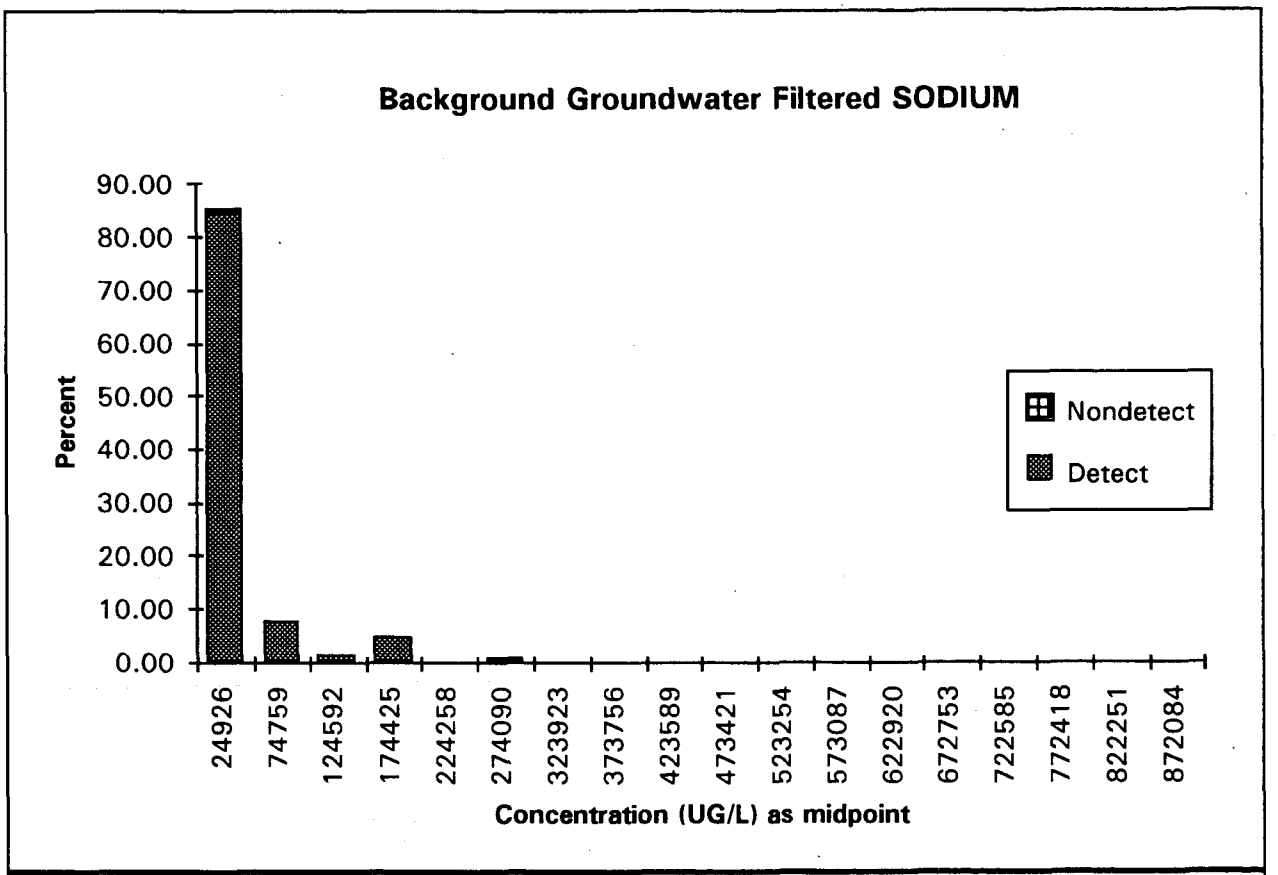

OU6 Groundwater Filtered MAGNESIUM
35.00
30.00
25.00
20.00
15.00
10.00
5.00
0.00
Percent
Nondetect
Detect
7167
21443
35719
49995
64271
78548
92824
107100
121376
135652
149929
164205
178481
192757
207033
221310
235586
249862
Concentration (UG/L) as midpoint

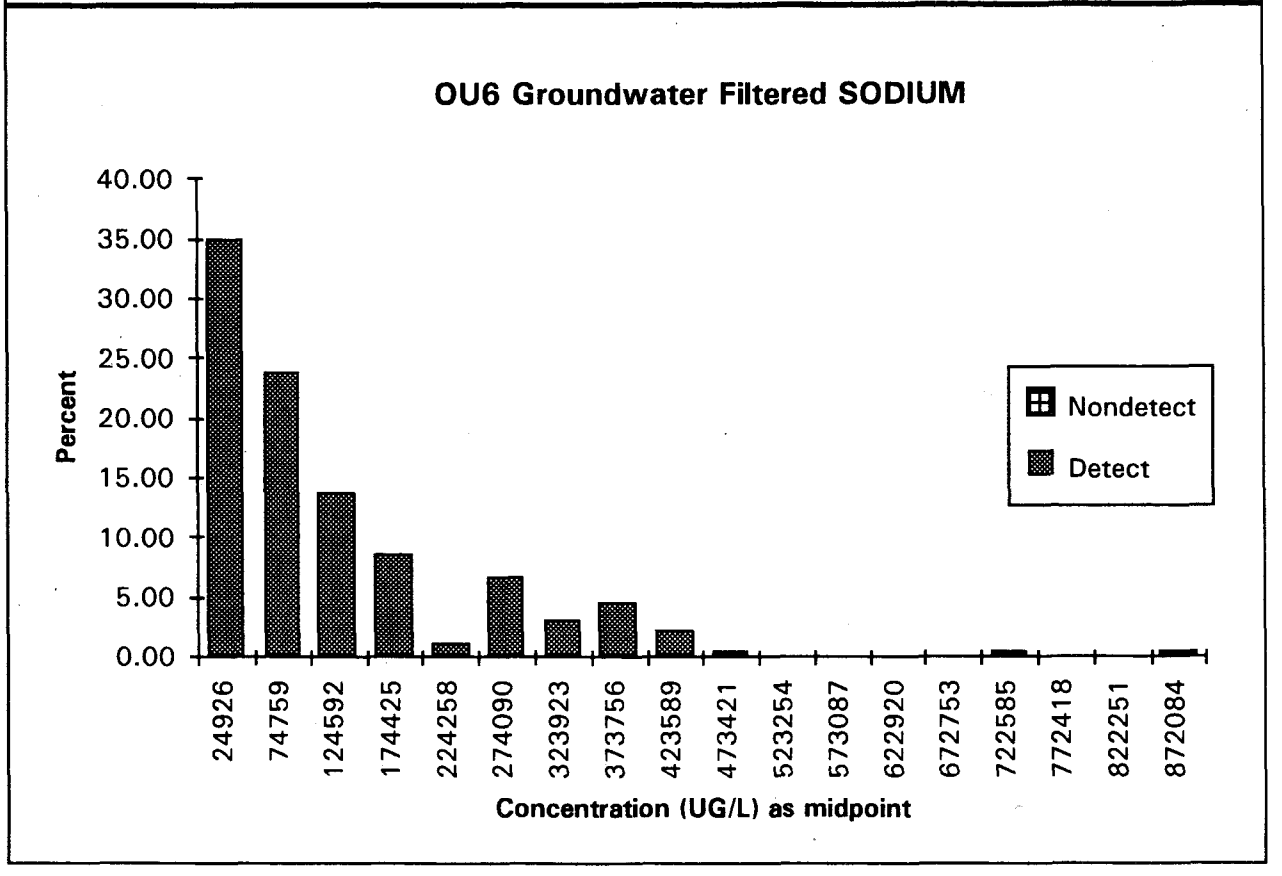

Background Groundwater Filtered MANGANESE
Percent
100.00
90.00
80.00
70.00
60.00
50.00
40.00
30.00
20.00
10.00
0.00
127
378
629
880
1131
1382
1633
1884
2135
2386
2637
2888
3139
3390
3641
3892
4143
4394
Concentration (UG/L) as midpoint
Nondetect
Detect

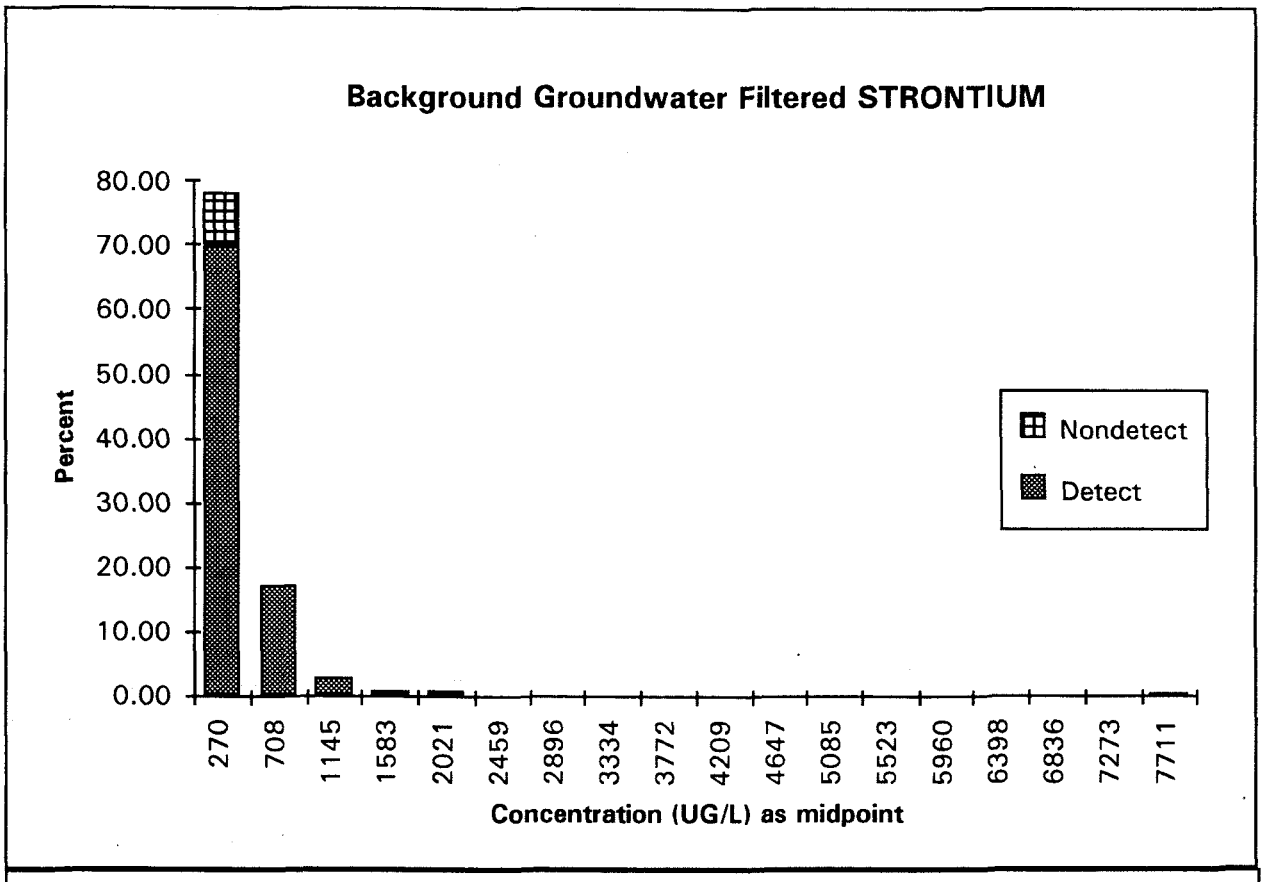

OU6 Groundwater Filtered MANGANESE
Percent
80.00
70.00
60.00
50.00
40.00
30.00
20.00
10.00
0.00
127
378
629
880
1131
1382
1633
1884
2135
2386
2637
2888
3139
3390
3641
3892
4143
4394
Concentration (UG/L) as midpoint
Nondetect
Detect

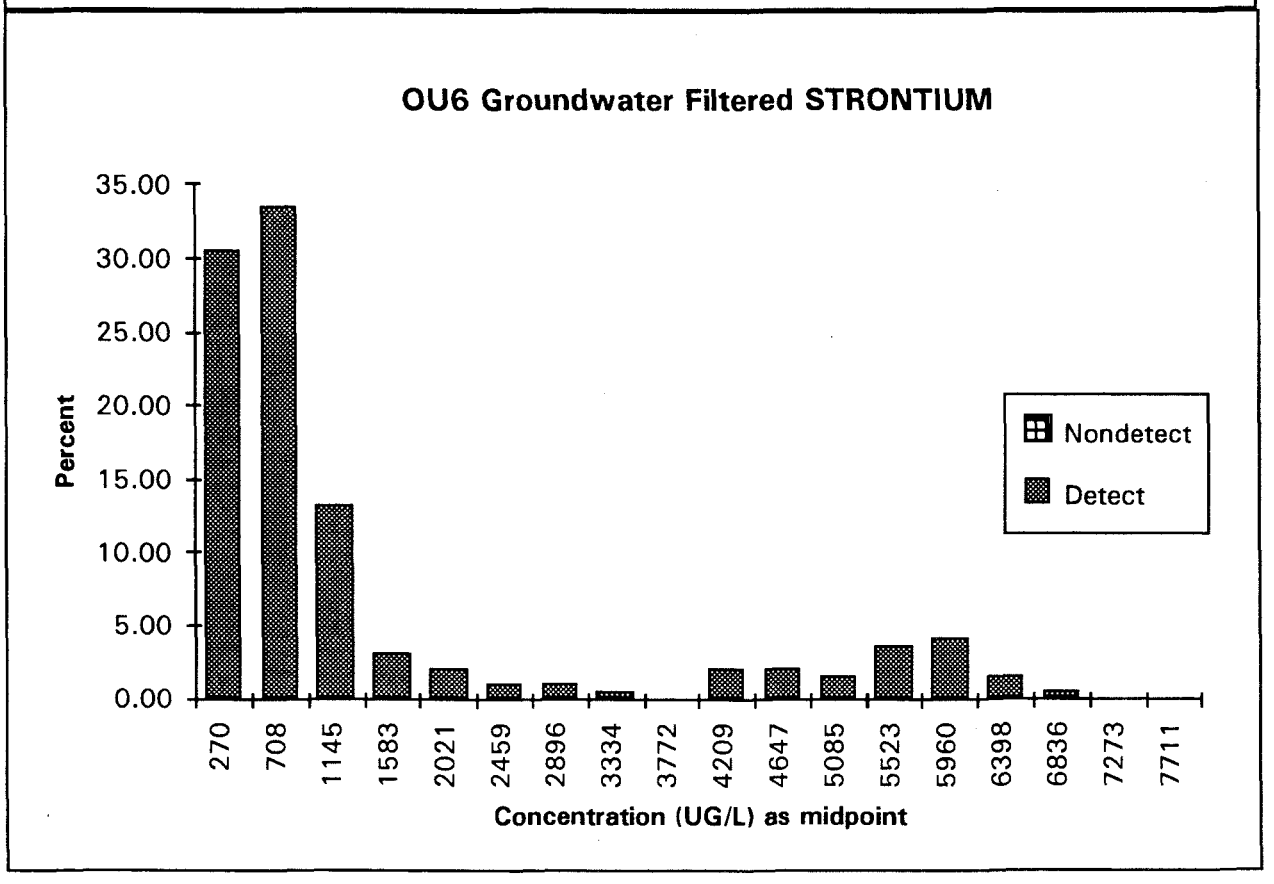

Background Groundwater Filtered POTASSIUM
35.00
30.00
25.00
20.00
15.00
10.00
5.00
0.00
Percent
Nondetect
Detect
282
806
1330
1854
2378
2901
3425
3949
4473
4997
5521
6045
6569
7093
7616
8140
8664
9188
Concentration (UG/L) as midpoint

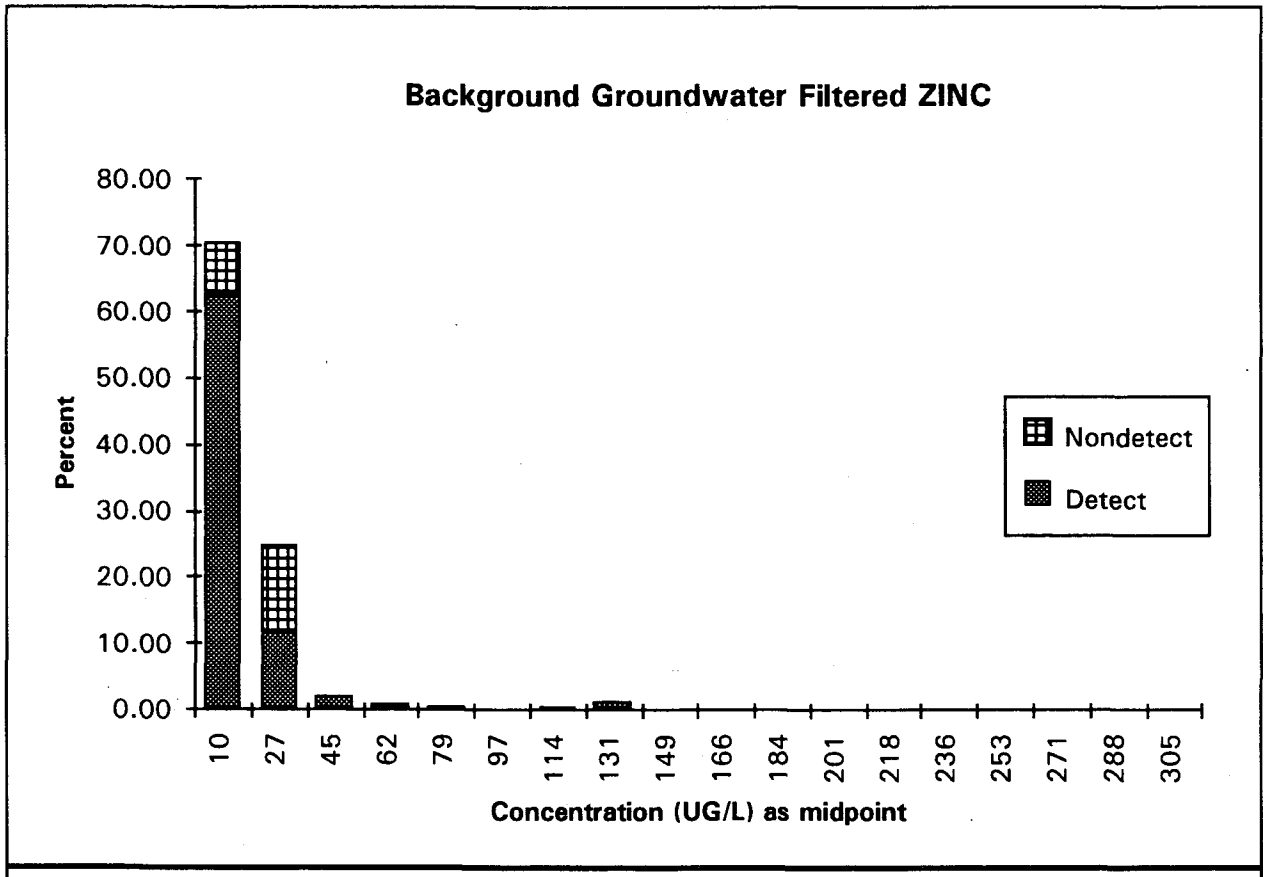

OU6 Groundwater Filtered POTASSIUM
14.00
12.00
10.00
8.00
6.00
4.00
2.00
0.00
Percent
Nondetect
Detect
282
806
1330
1854
2378
2901
3425
3949
4473
4997
5521
6045
6569
7093
7616
8140
8664
9188
Concentration (UG/L) as midpoint

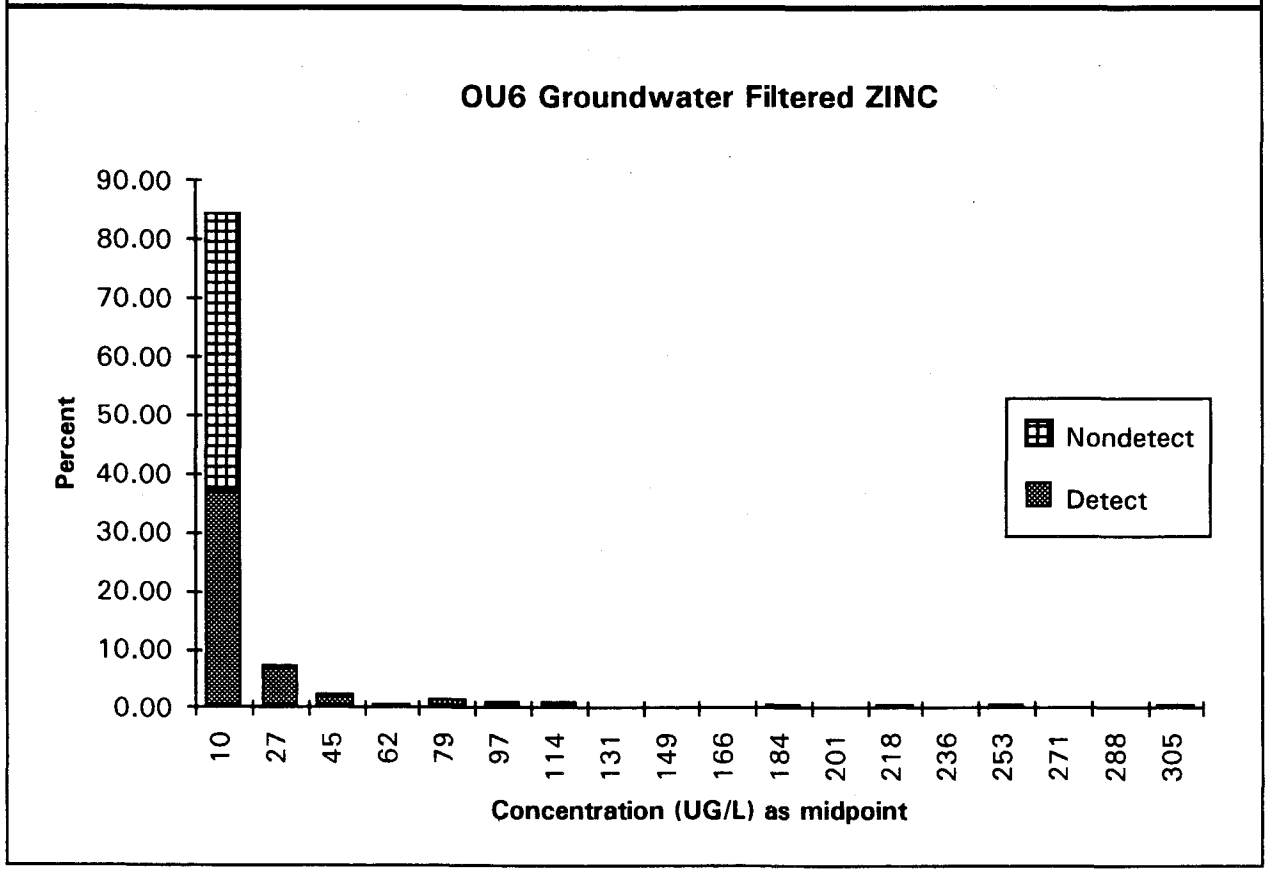

Background Groundwater Filtered SODIUM
Percent
90.00
80.00
70.00
60.00
50.00
40.00
30.00
20.00
10.00
0.00
Nondetect
Detect
24926
74759
124592
174425
224258
274090
323923
373756
423589
473421
523254
573087
622920
672753
722585
772418
822251
872084
Concentration (UG/L) as midpoint

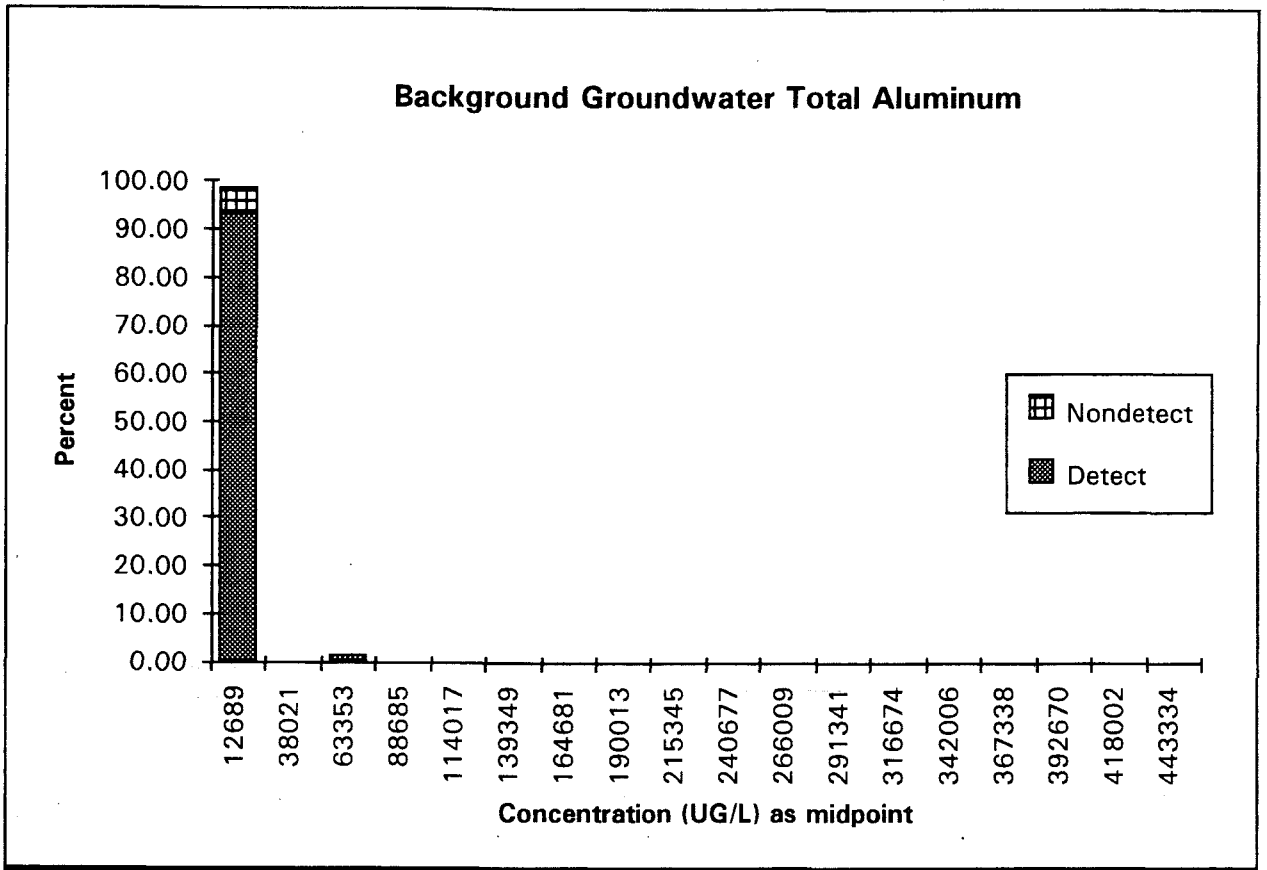

OU6 Groundwater Filtered SODIUM
Percent
40.00
35.00
30.00
25.00
20.00
15.00
10.00
5.00
0.00
Nondetect
Detect
24926
74759
124592
174425
224258
274090
323923
373756
423589
473421
523254
573087
622920
672753
722585
772418
822251
872084
Concentration (UG/L) as midpoint

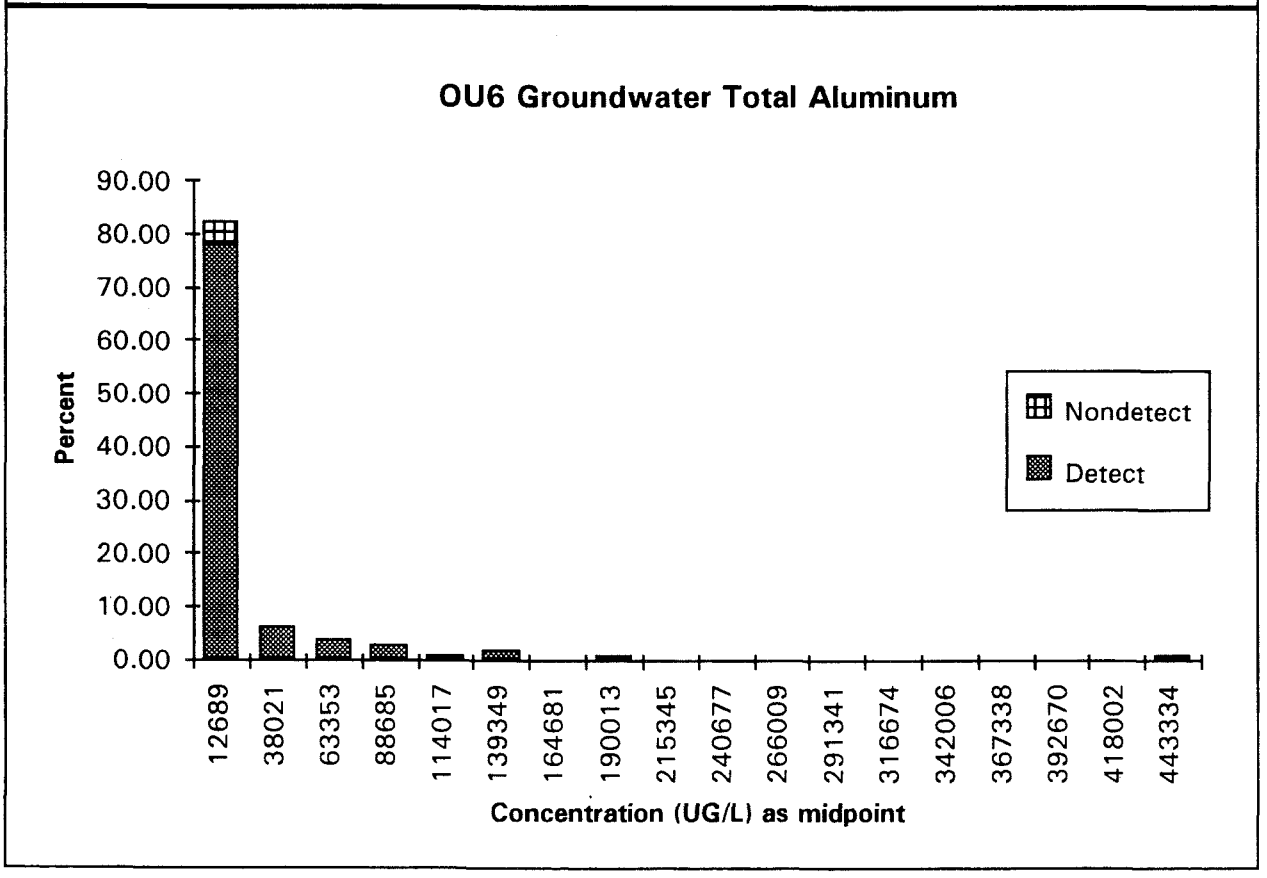

Background Groundwater Filtered STRONTIUM
80.00
70.00
60.00
50.00
40.00
30.00
20.00
10.00
0.00
Percent
Nondetect
Detect
270
708
1145
1583
2021
2459
2896
3334
3772
4209
4647
5085
5523
5960
6398
6836
7273
7711
Concentration (UG/L) as midpoint

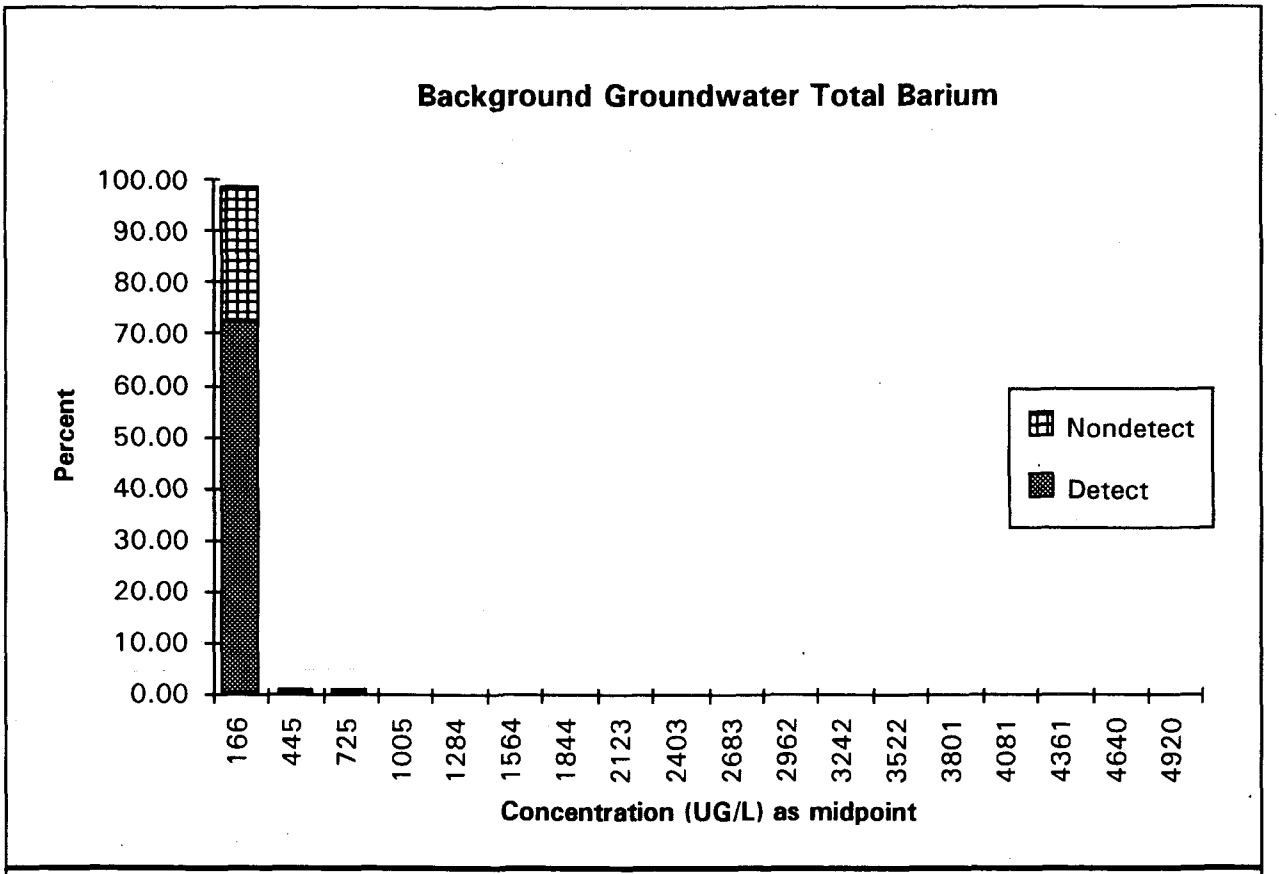

OU6 Groundwater Filtered STRONTIUM
35.00
30.00
25.00
20.00
15.00
10.00
5.00
0.00
Percent
Nondetect
Detect
270
708
1145
1583
2021
2459
2896
3334
3772
4209
4647
5085
5523
5960
6398
6836
7273
7711
Concentration (UG/L) as midpoint

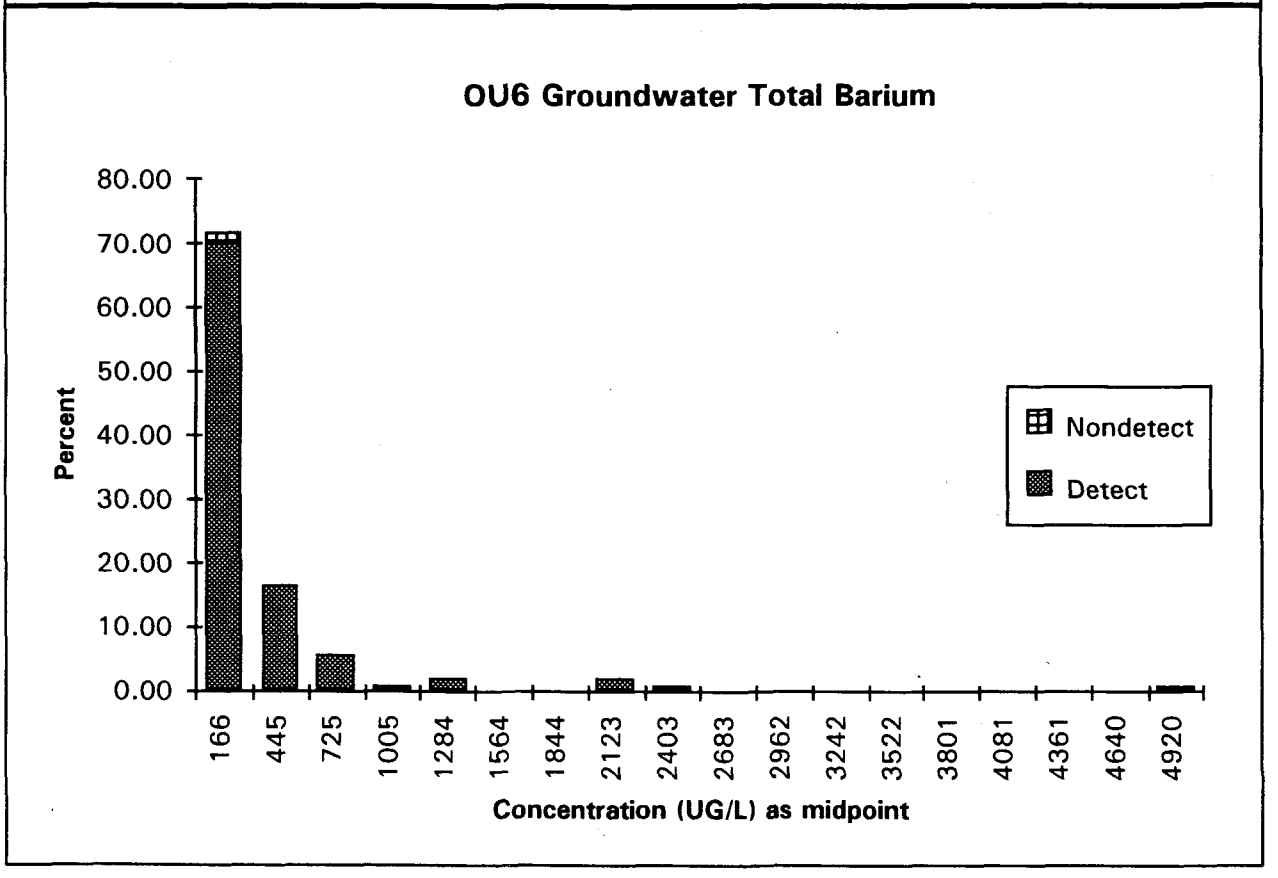

Background Groundwater Filtered ZINC
80.00
70.00
60.00
50.00
40.00
30.00
20.00
10.00
0.00
Percent
Nondetect
Detect
10
27
45
62
79
97
114
131
149
166
184
201
218
236
253
271
288
305
Concentration (UG/L) as midpoint

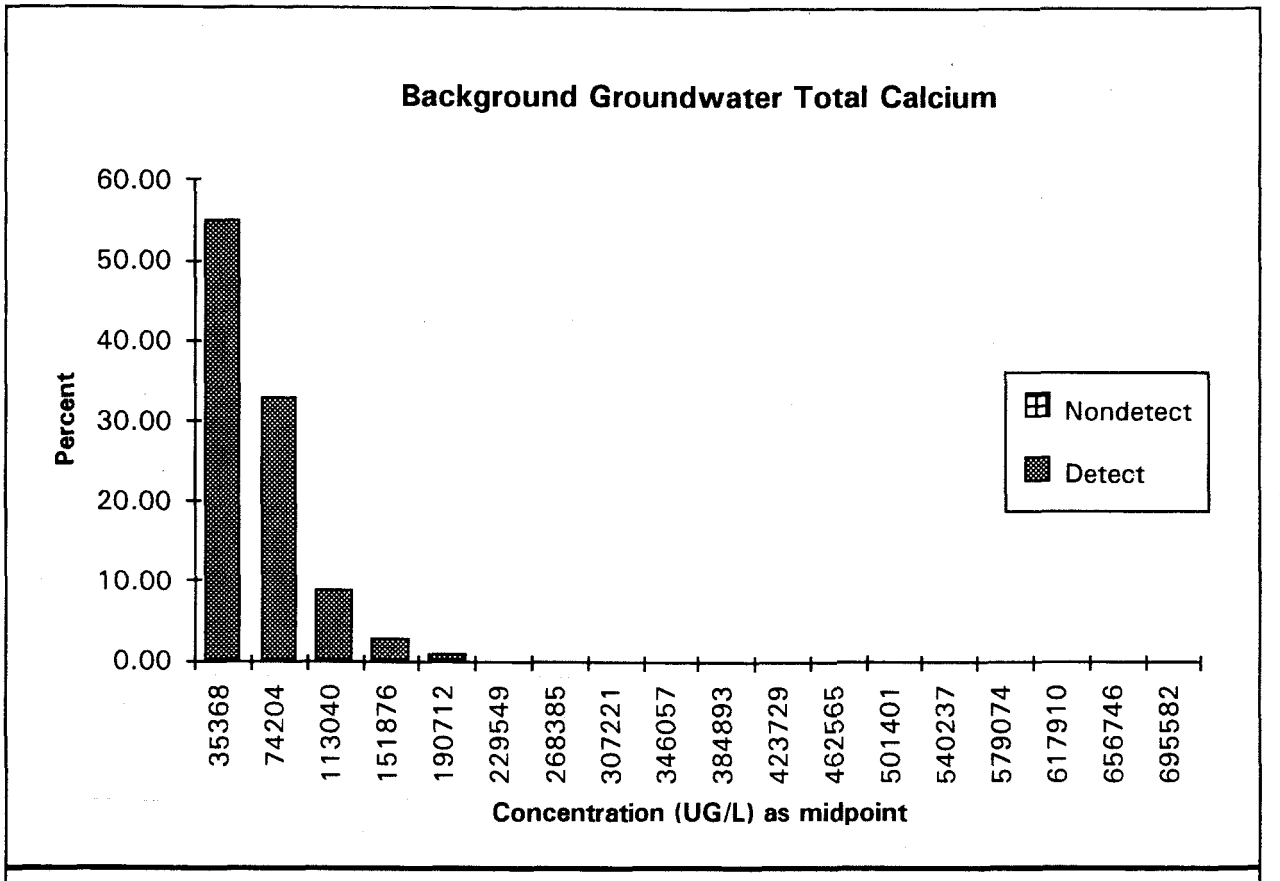

OU6 Groundwater Filtered ZINC
90.00
80.00
70.00
60.00
50.00
40.00
30.00
20.00
10.00
0.00
Percent
Nondetect
Detect
10
27
45
62
79
97
114
131
149
166
184
201
218
236
253
271
288
305
Concentration (UG/L) as midpoint

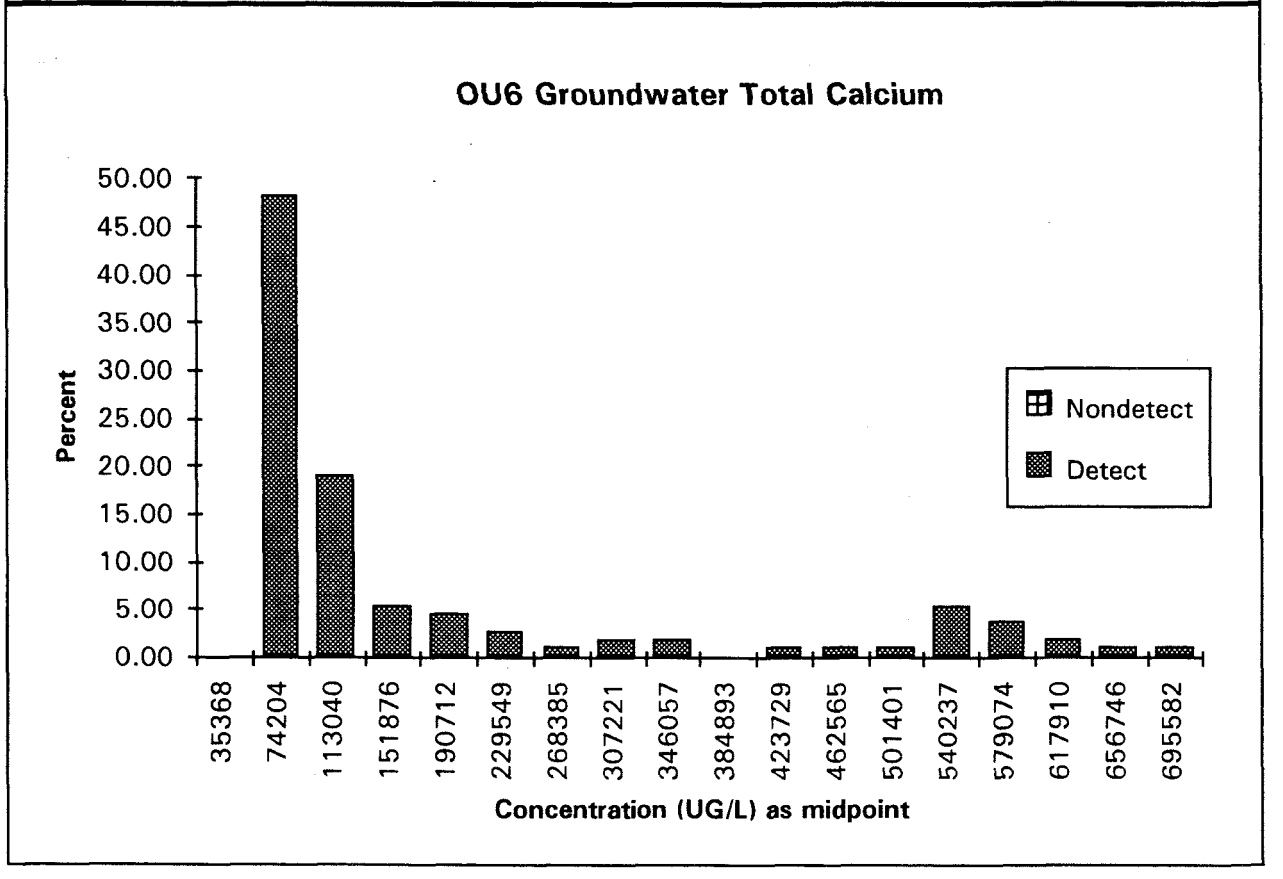

Background Groundwater Total Aluminum
Percent
100.00
90.00
80.00
70.00
60.00
50.00
40.00
30.00
20.00
10.00
0.00
Nondetect
Detect
12689
38021
63353
88685
114017
139349
164681
190013
215345
240677
266009
291341
316674
342006
367338
392670
418002
443334
Concentration (UG/L) as midpoint

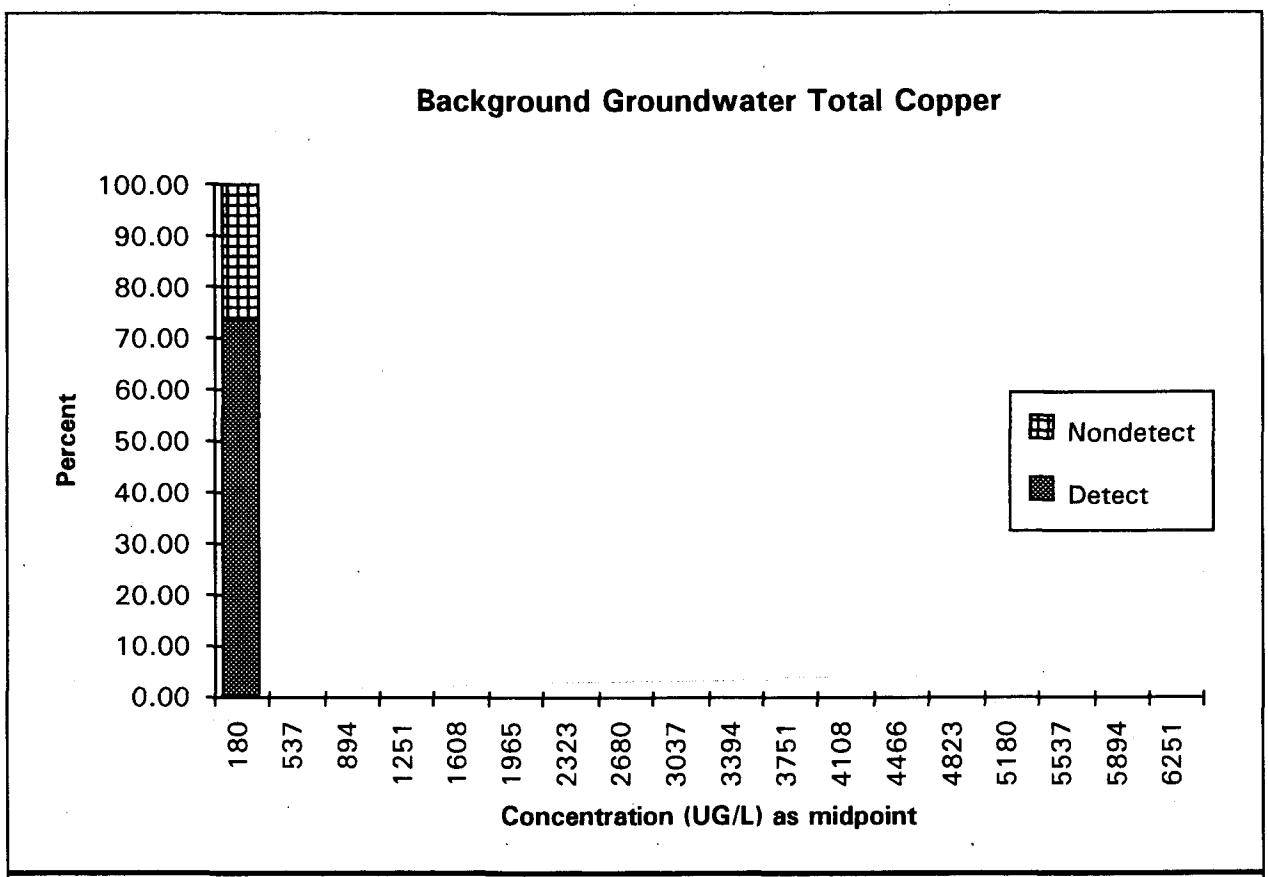

OU6 Groundwater Total Aluminum
Percent
90.00
80.00
70.00
60.00
50.00
40.00
30.00
20.00
10.00
0.00
Nondetect
Detect
12689
38021
63353
88685
114017
139349
164681
190013
215345
240677
266009
291341
316674
342006
367338
392670
418002
443334
Concentration (UG/L) as midpoint

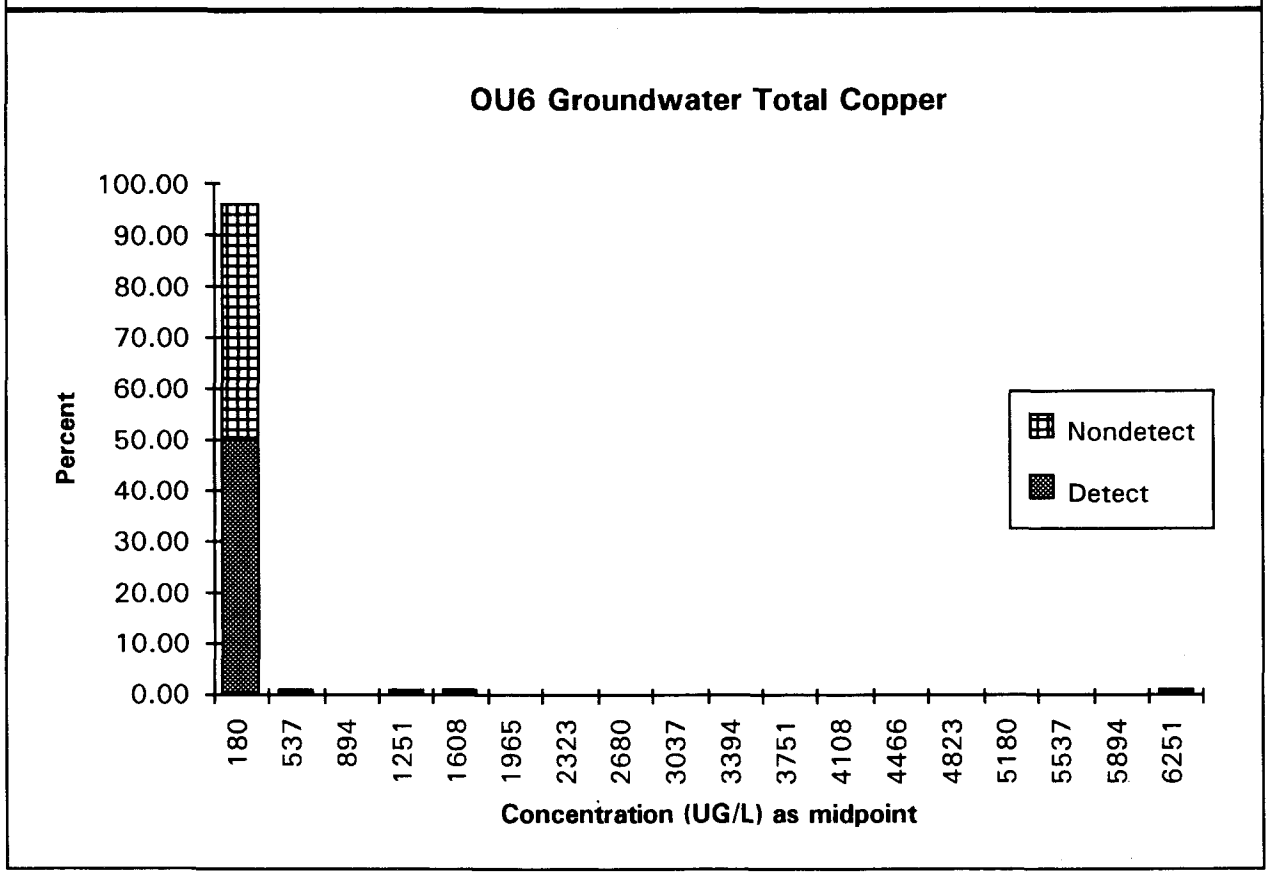

Background Groundwater Total Barium
Percent
100.00
90.00
80.00
70.00
60.00
50.00
40.00
30.00
20.00
10.00
0.00
166
445
725
1005
1284
1564
1844
2123
2403
2683
2962
3242
3522
3801
4081
4361
4640
4920
Concentration (UG/L) as midpoint
Nondetect
Detect

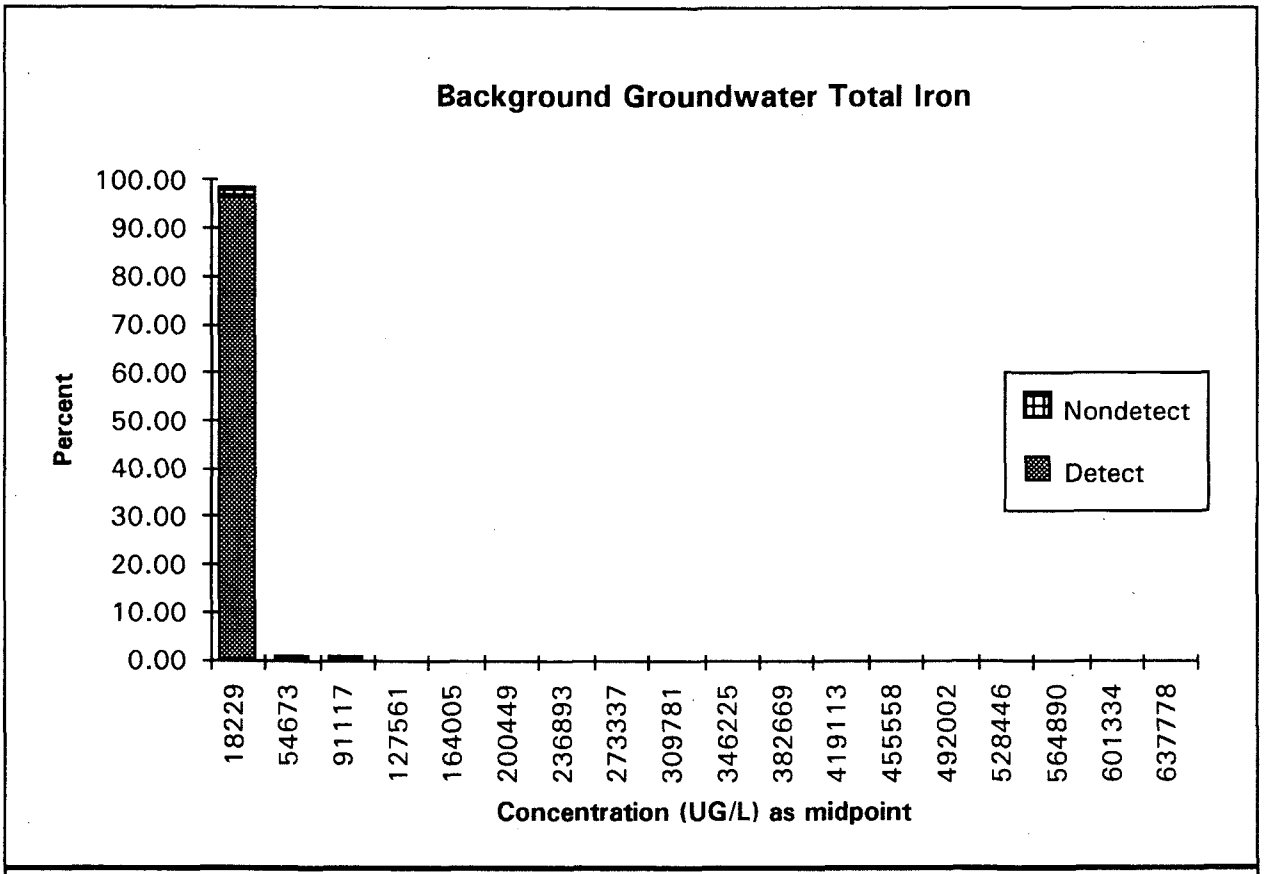

OU6 Groundwater Total Barium
Percent
80.00
70.00
60.00
50.00
40.00
30.00
20.00
10.00
0.00
166
445
725
1005
1284
1564
1844
2123
2403
2683
2962
3242
3522
3801
4081
4361
4640
4920
Concentration (UG/L) as midpoint
Nondetect
Detect

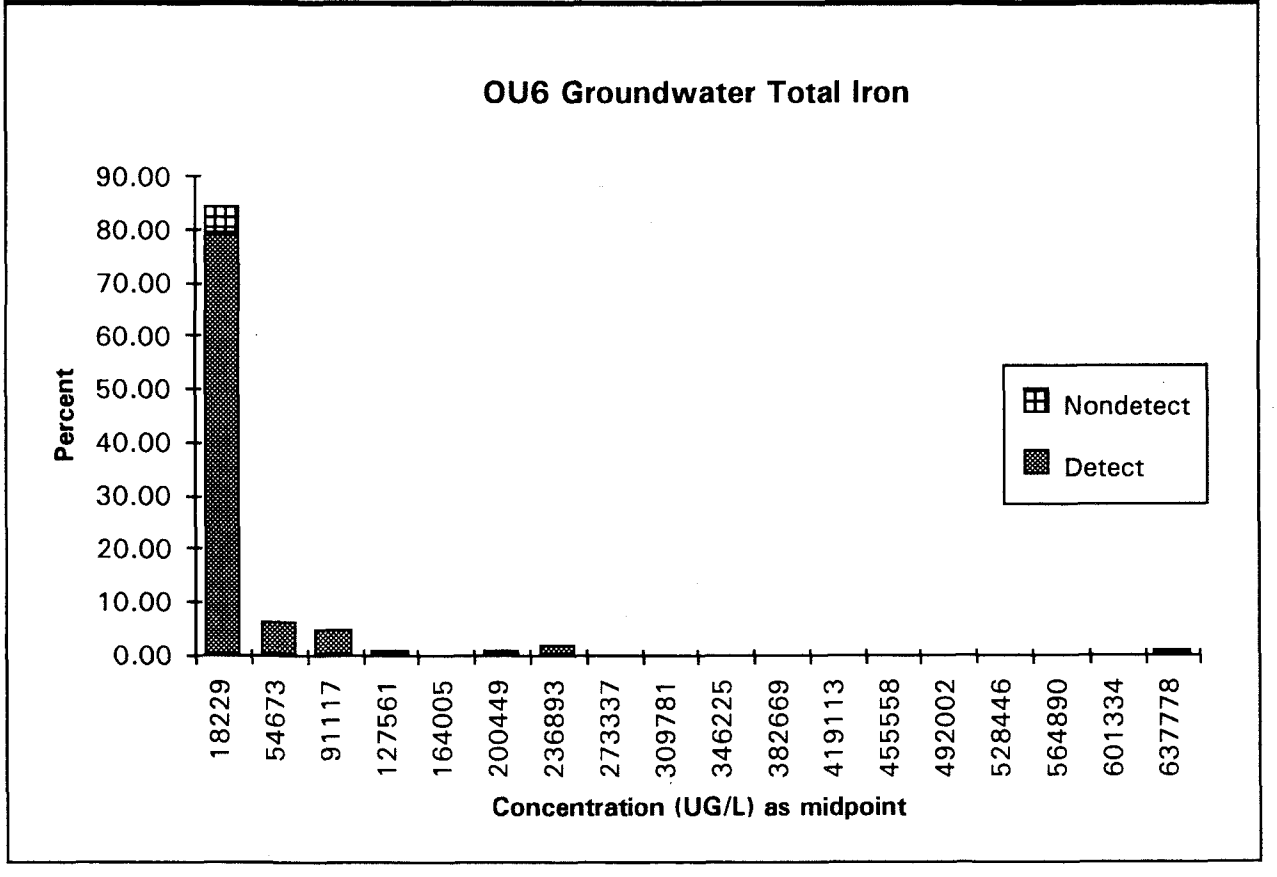

Background Groundwater Total Calcium
60.00
50.00
40.00
30.00
20.00
10.00
0.00
Percent
Nondetect
Detect
35368
74204
113040
151876
190712
229549
268385
307221
346057
384893
423729
462565
501401
540237
579074
617910
656746
695582
Concentration (UG/L) as midpoint

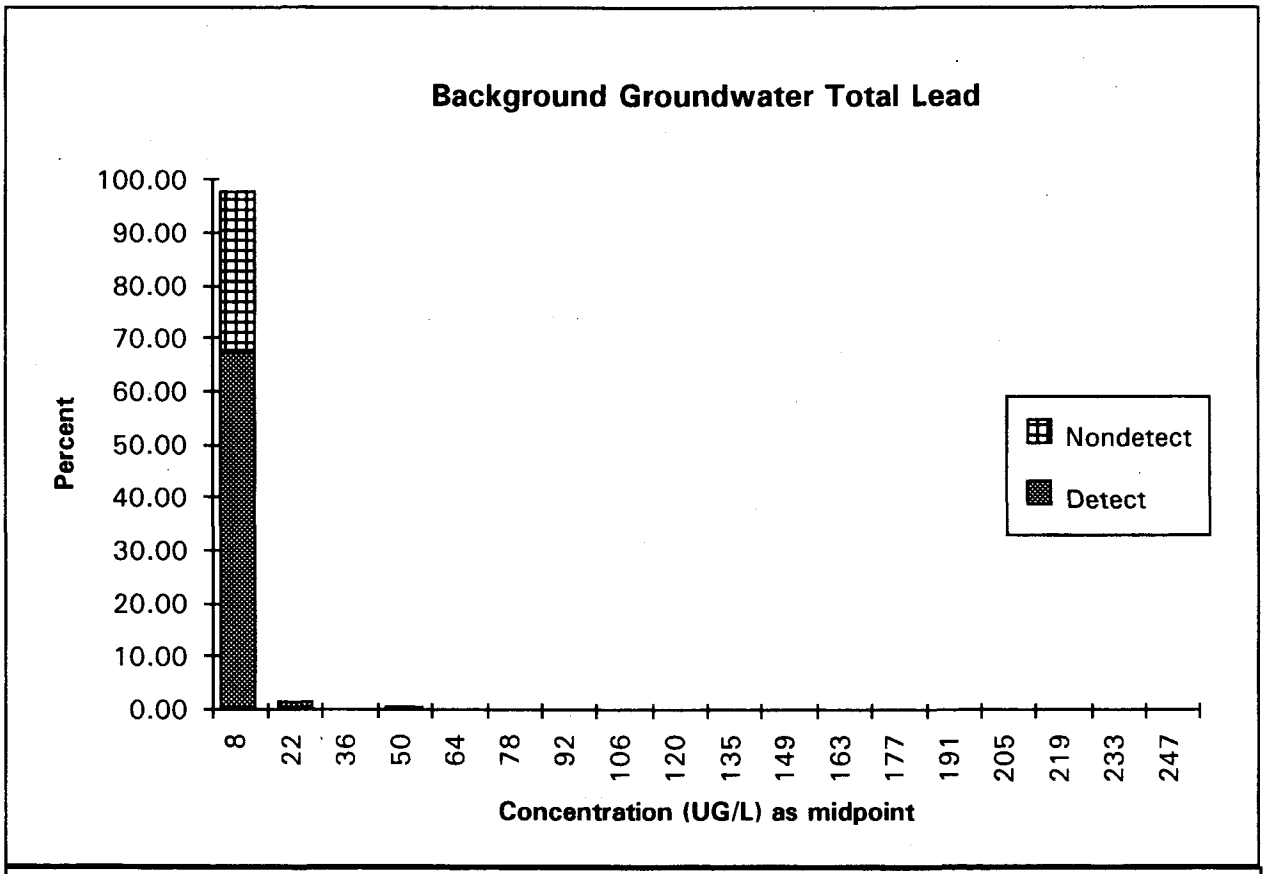

OU6 Groundwater Total Calcium
50.00
45.00
40.00
35.00
30.00
25.00
20.00
15.00
10.00
5.00
0.00
Percent
Nondetect
Detect
35368
74204
113040
151876
190712
229549
268385
307221
346057
384893
423729
462565
501401
540237
579074
617910
656746
695582
Concentration (UG/L) as midpoint

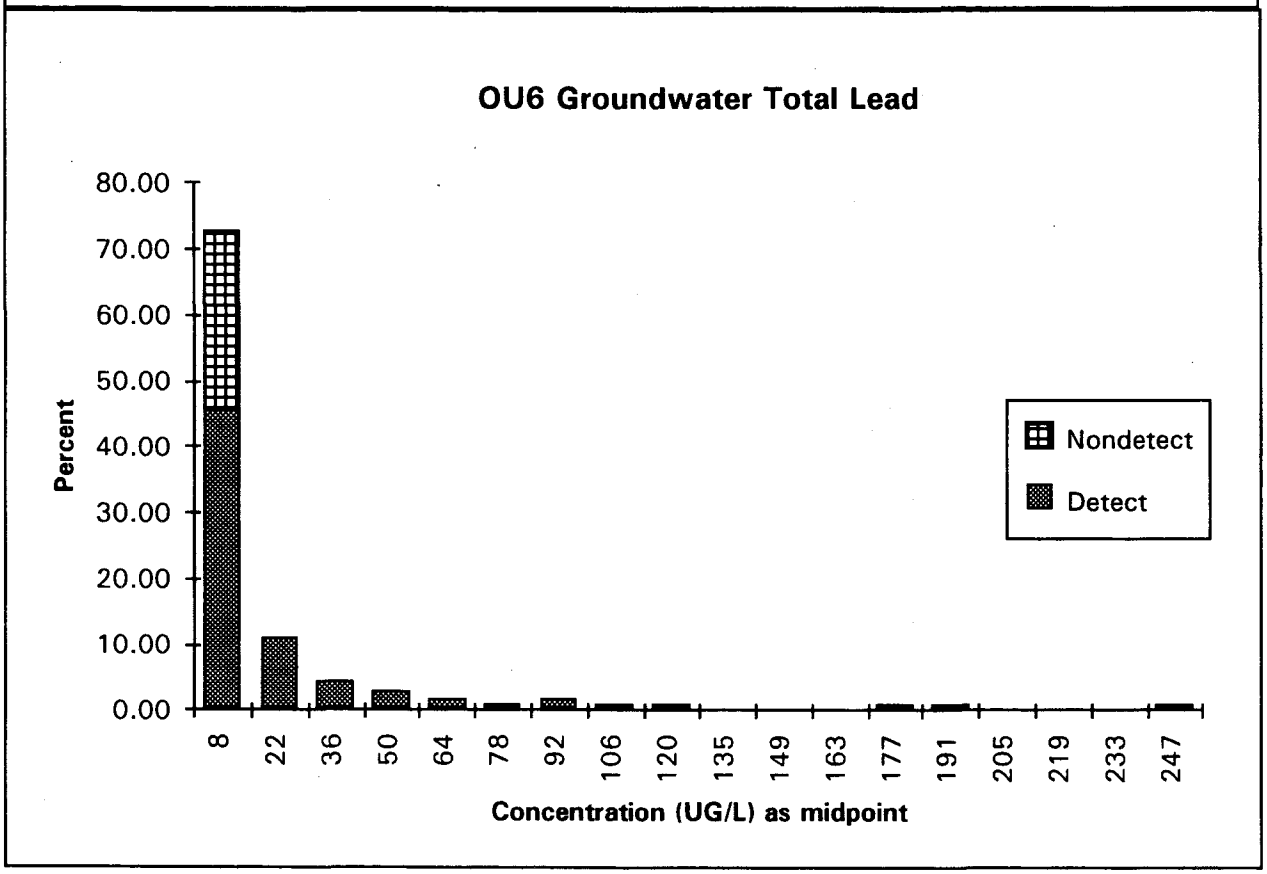

Background Groundwater Total Copper
Percent
100.00
90.00
80.00
70.00
60.00
50.00
40.00
30.00
20.00
10.00
0.00
180
537
894
1251
1608
1965
2323
2680
3037
3394
3751
4108
4466
4823
5180
5537
5894
6251
Concentration (UG/L) as midpoint
Nondetect
Detect

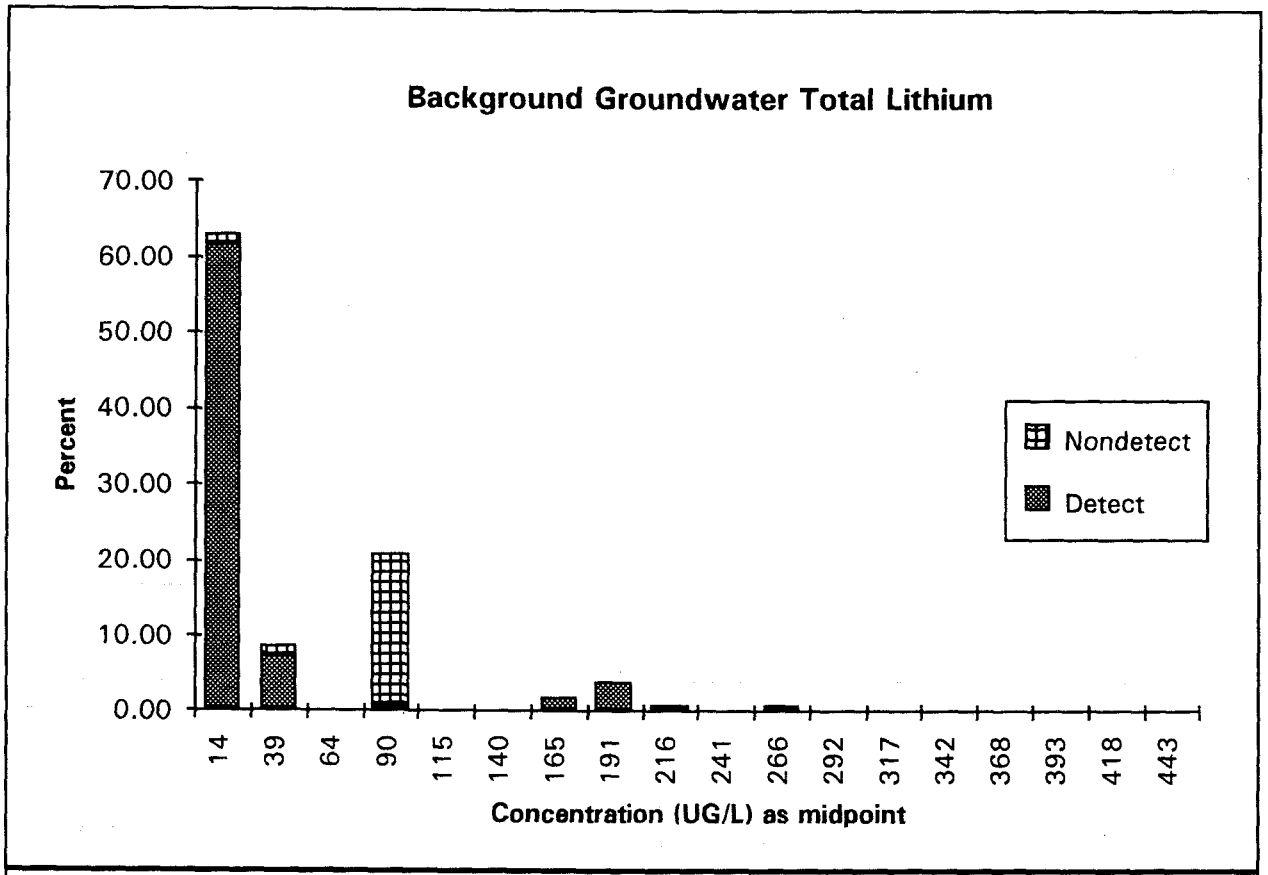

OU6 Groundwater Total Copper
Percent
100.00
90.00
80.00
70.00
60.00
50.00
40.00
30.00
20.00
10.00
0.00
180
537
894
1251
1608
1965
2323
2680
3037
3394
3751
4108
4466
4823
5180
5537
5894
6251
Concentration (UG/L) as midpoint
Nondetect
Detect

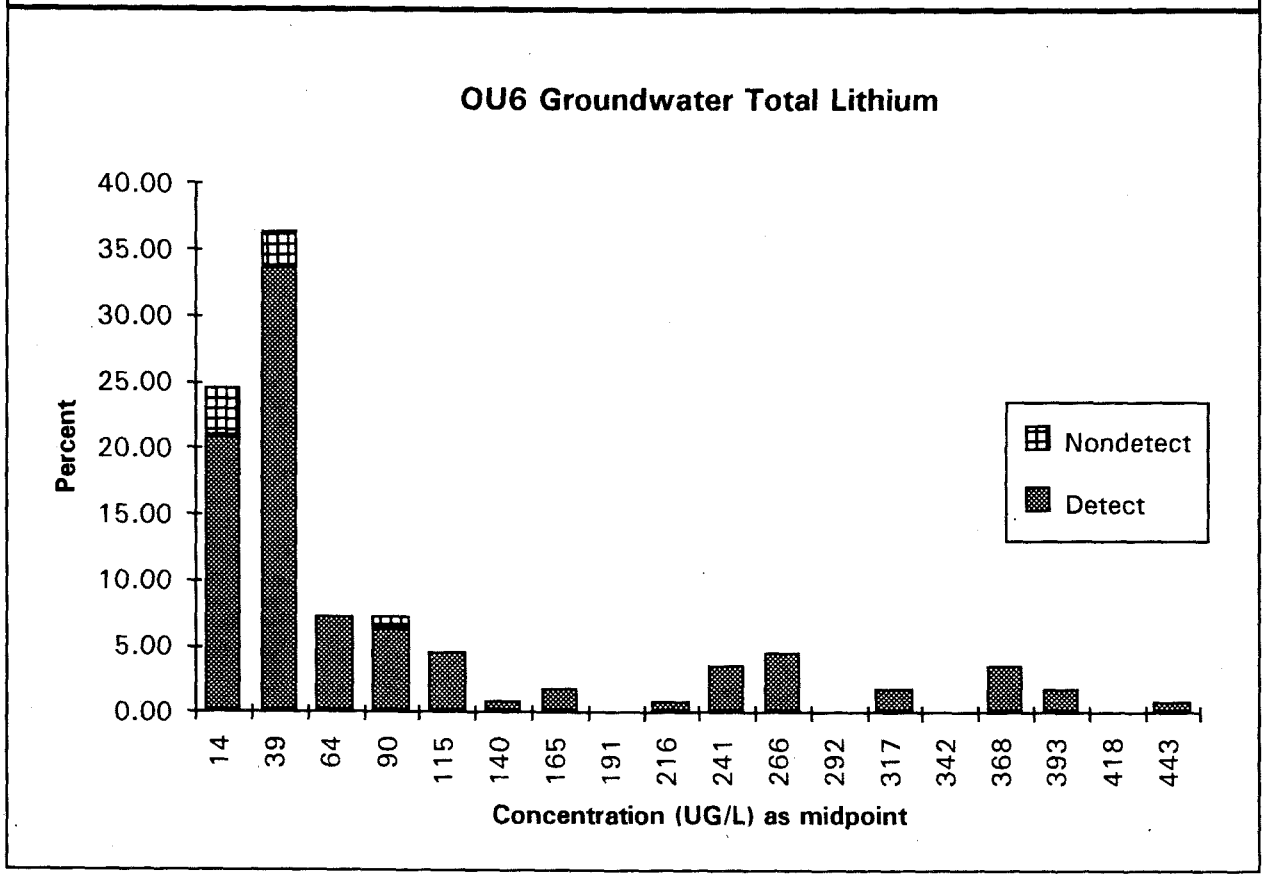

Background Groundwater Total Iron
Percent
100.00
90.00
80.00
70.00
60.00
50.00
40.00
30.00
20.00
10.00
0.00
18229
54673
91117
127561
164005
200449
236893
273337
309781
346225
382669
419113
455558
492002
528446
564890
601334
637778
Concentration (UG/L) as midpoint
Nondetect
Detect

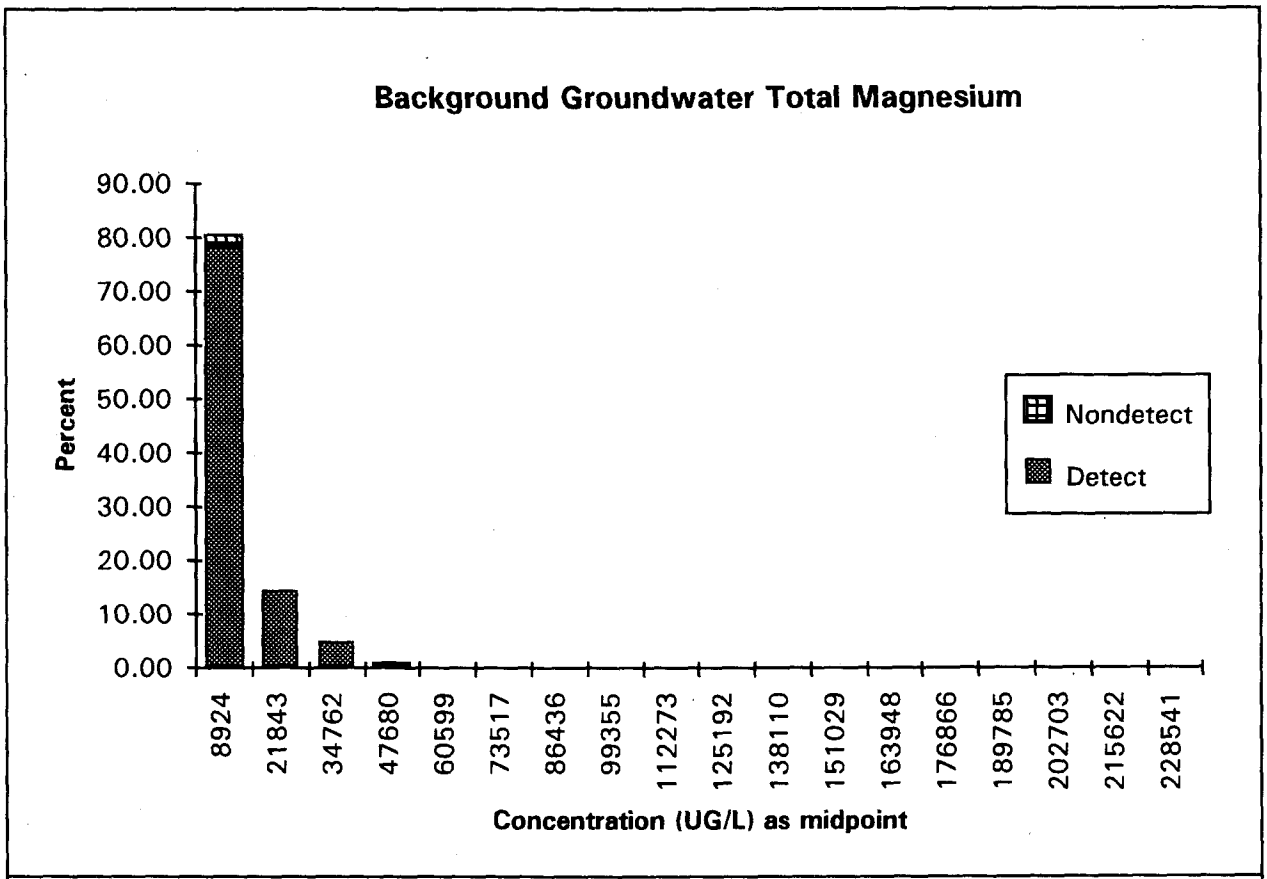

OU6 Groundwater Total Iron
Percent
90.00
80.00
70.00
60.00
50.00
40.00
30.00
20.00
10.00
0.00
18229
54673
91117
127561
164005
200449
236893
273337
309781
346225
382669
419113
455558
492002
528446
564890
601334
637778
Concentration (UG/L) as midpoint
Nondetect
Detect

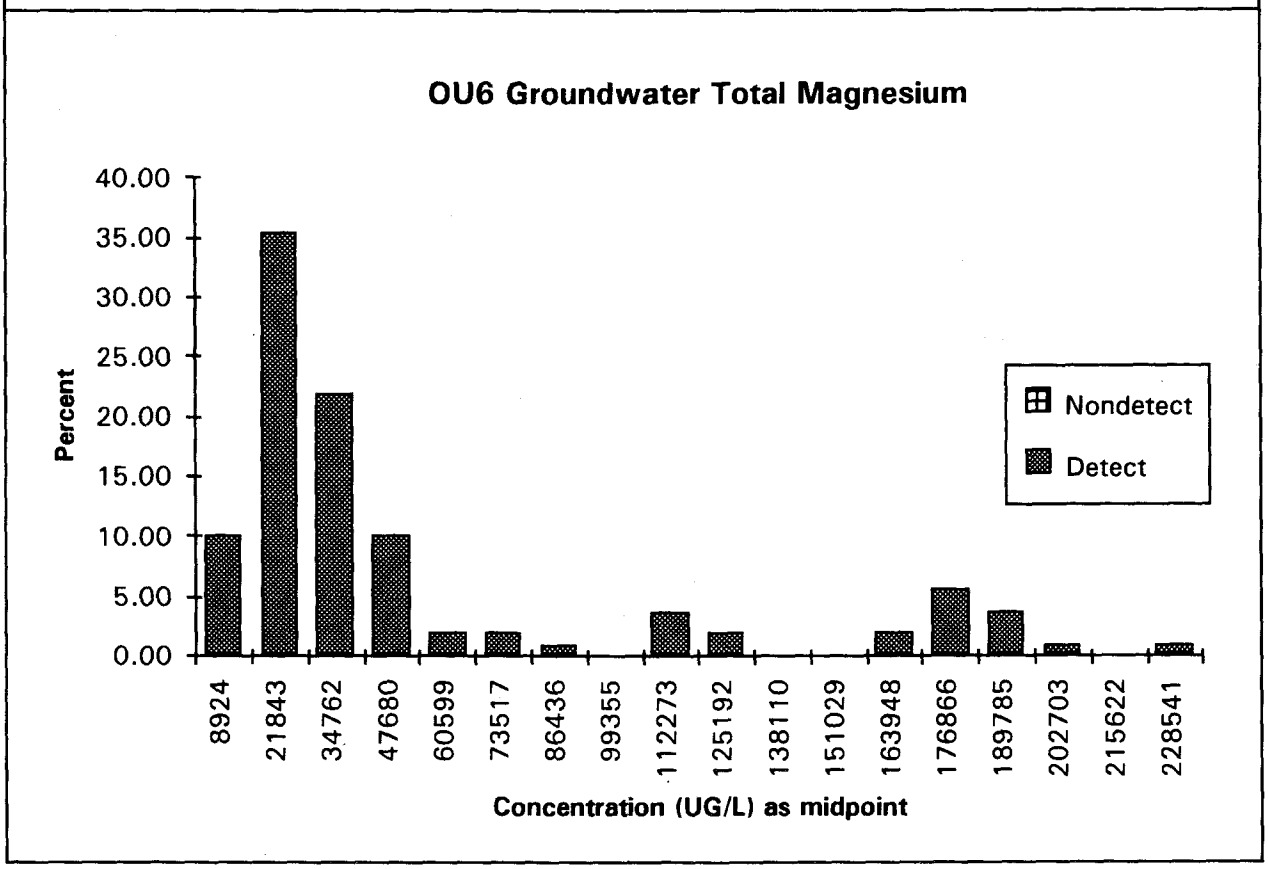

Background Groundwater Total Lead
Percent
100.00
90.00
80.00
70.00
60.00
50.00
40.00
30.00
20.00
10.00
0.00
8
22
36
50
64
78
92
106
120
135
149
163
177
191
205
219
233
247
Concentration (UG/L) as midpoint
Nondetect
Detect

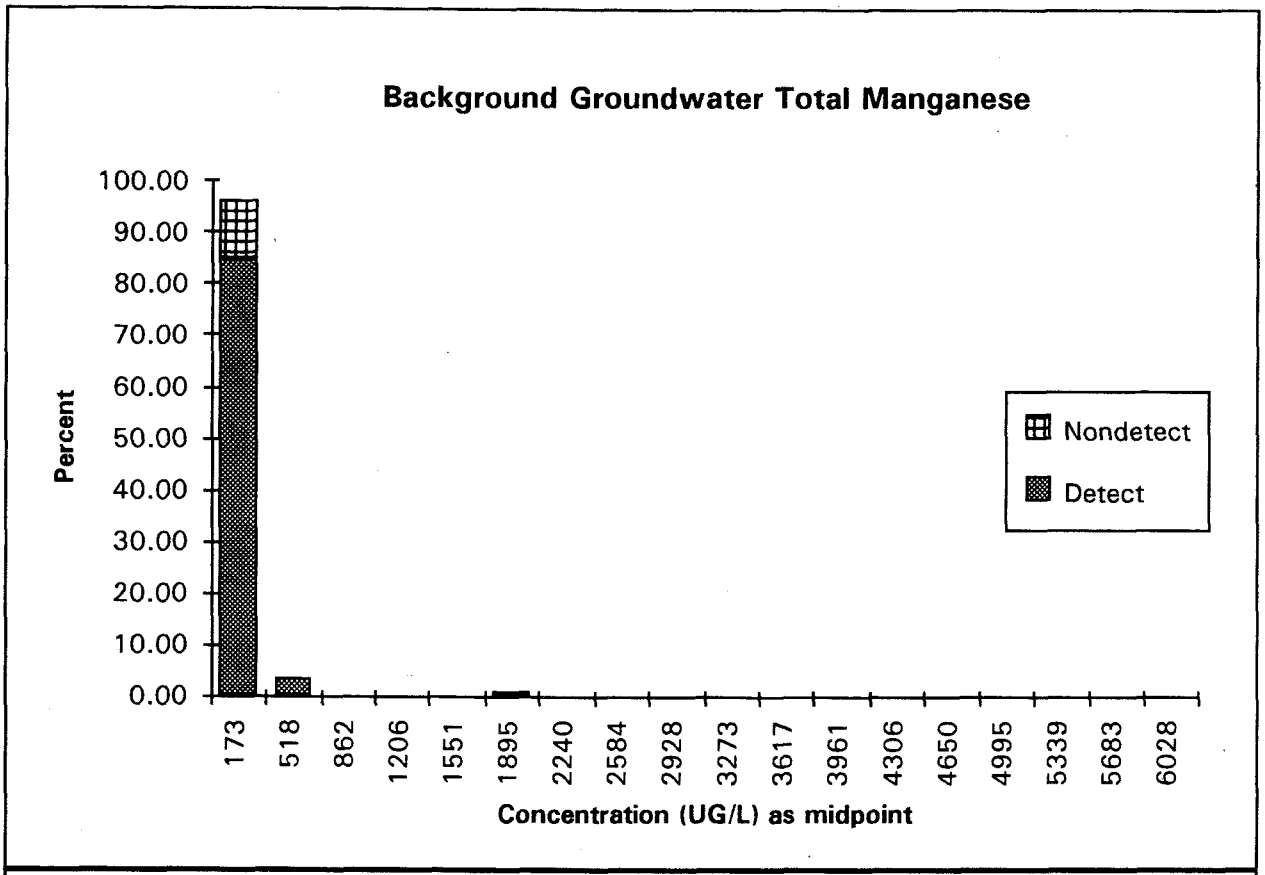

OU6 Groundwater Total Lead
Percent
80.00
70.00
60.00
50.00
40.00
30.00
20.00
10.00
0.00
8
22
36
50
64
78
92
106
120
135
149
163
177
191
205
219
233
247
Concentration (UG/L) as midpoint
Nondetect
Detect

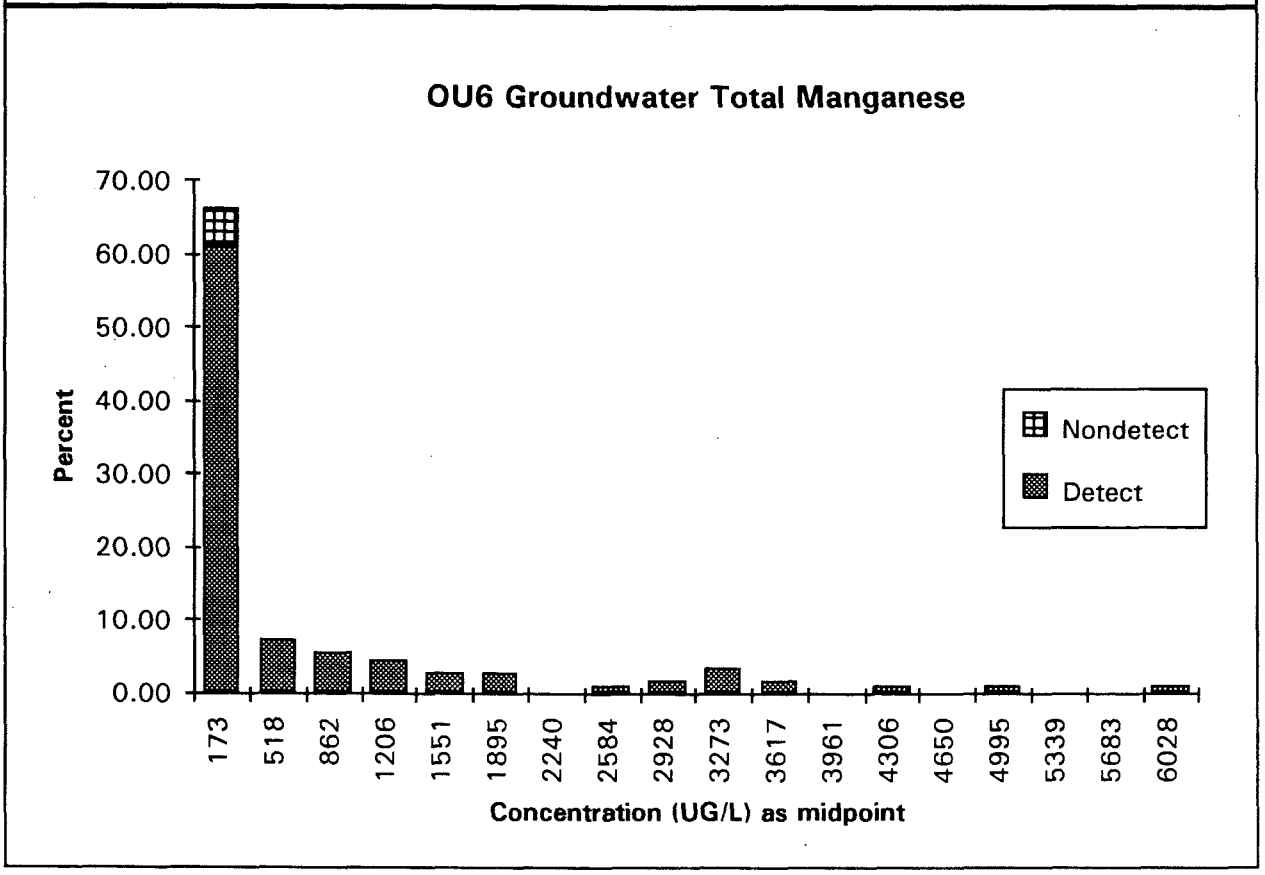

Background Groundwater Total Lithium
70.00
60.00
50.00
40.00
30.00
20.00
10.00
0.00
Percent
Nondetect
Detect
14
39
64
90
115
140
165
191
216
241
266
292
317
342
368
393
418
443
Concentration (UG/L) as midpoint

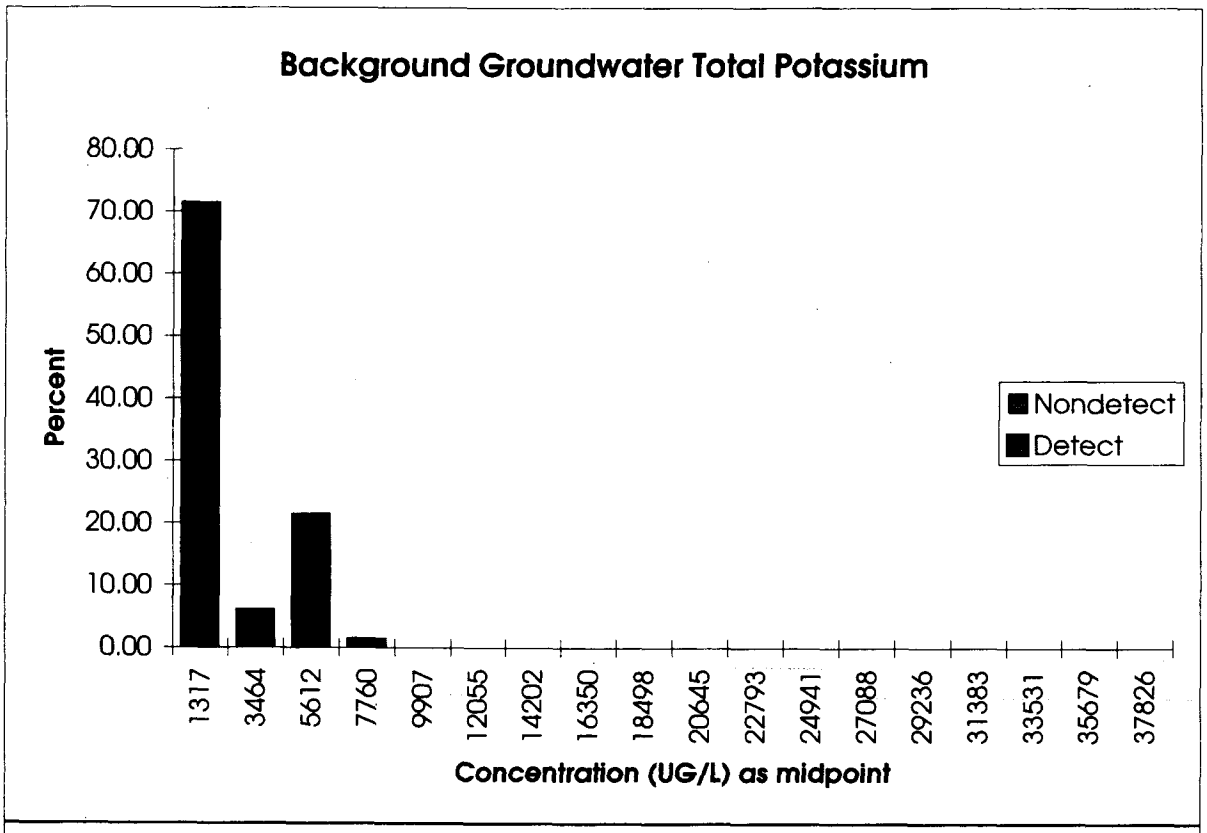

OU6 Groundwater Total Lithium
40.00
35.00
30.00
25.00
20.00
15.00
10.00
5.00
0.00
Percent
Nondetect
Detect
14
39
64
90
115
140
165
191
216
241
266
292
317
342
368
393
418
443
Concentration (UG/L) as midpoint

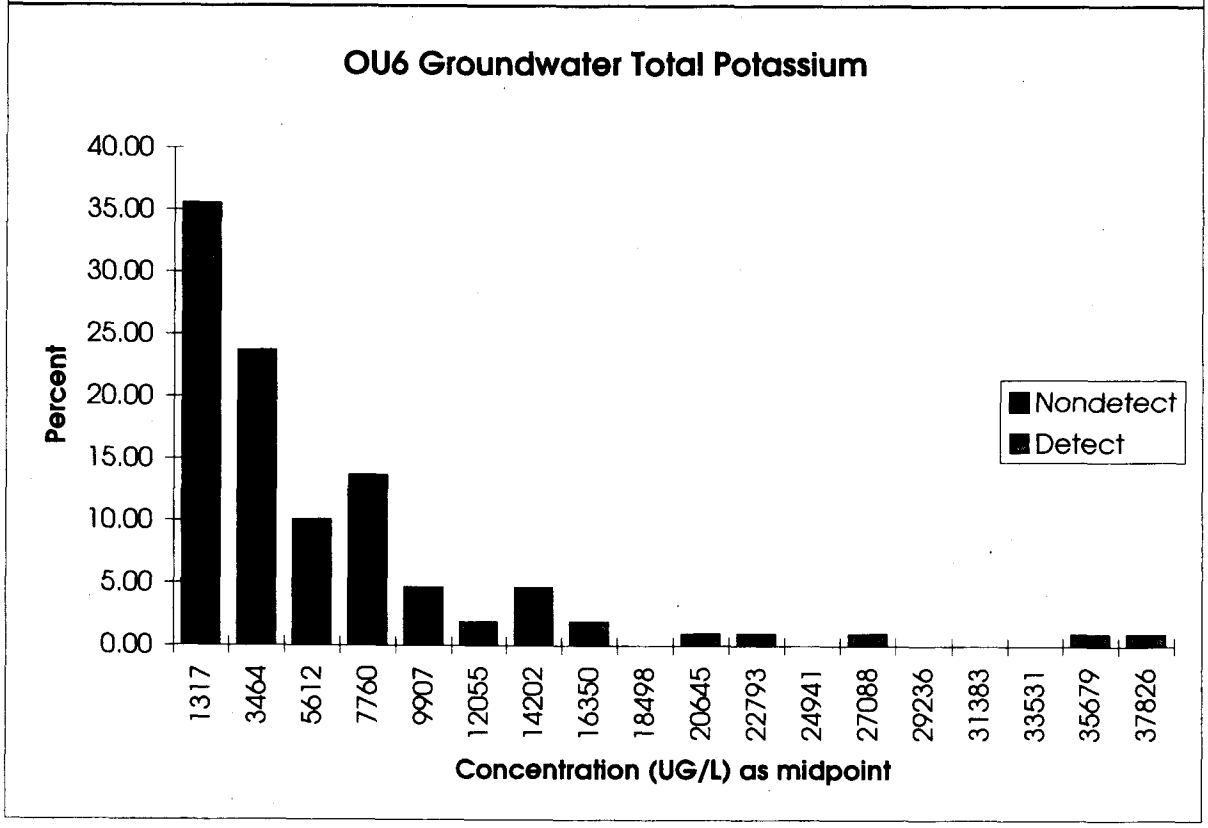

Background Groundwater Total Magnesium
90.00
80.00
70.00
60.00
50.00
40.00
30.00
20.00
10.00
0.00
Percent
Nondetect
Detect
8924
21843
34762
47680
60599
73517
86436
99355
112273
125192
138110
151029
163948
176866
189785
202703
215622
228541
Concentration (UG/L) as midpoint

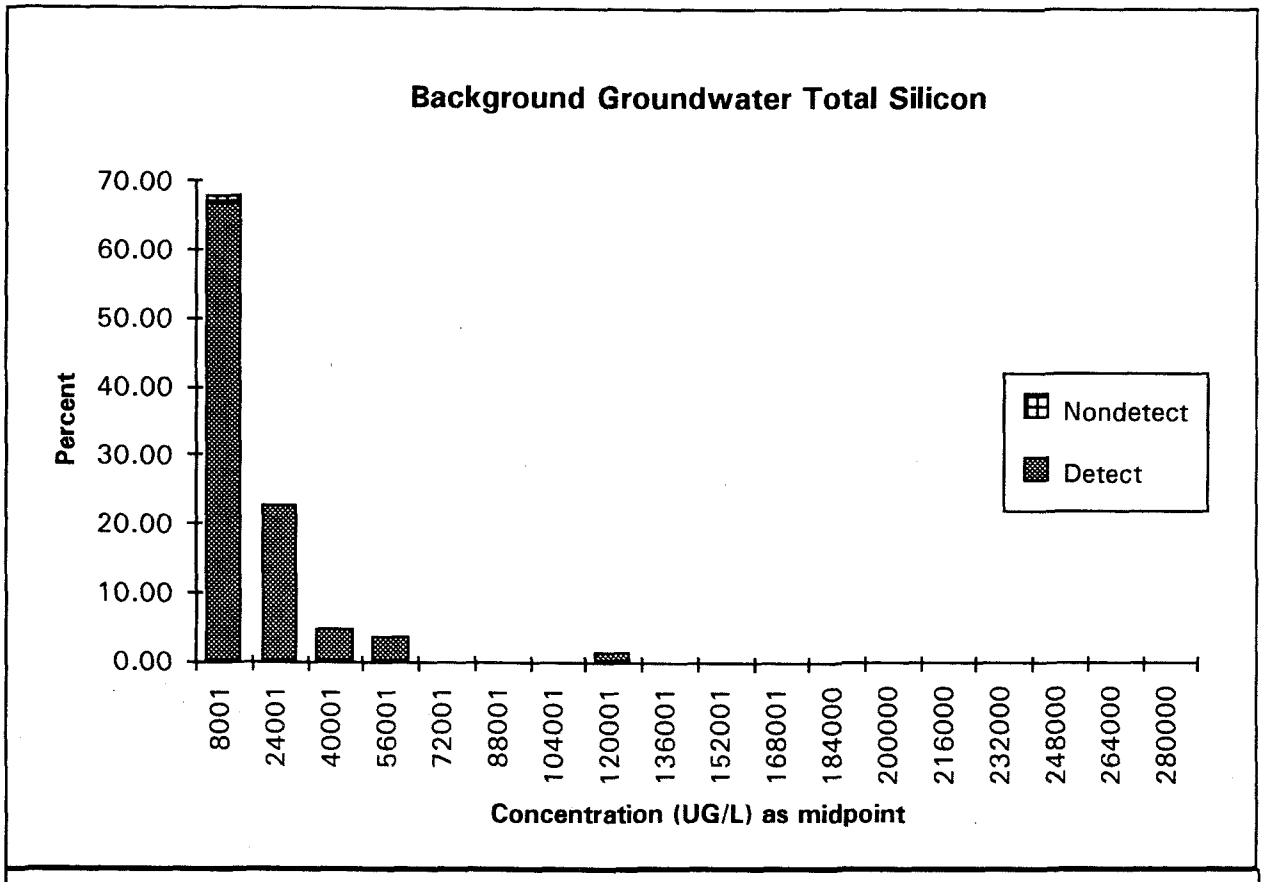

OU6 Groundwater Total Magnesium
40.00
35.00
30.00
25.00
20.00
15.00
10.00
5.00
0.00
Percent
Nondetect
Detect
8924
21843
34762
47680
60599
73517
86436
99355
112273
125192
138110
151029
163948
176866
189785
202703
215622
228541
Concentration (UG/L) as midpoint

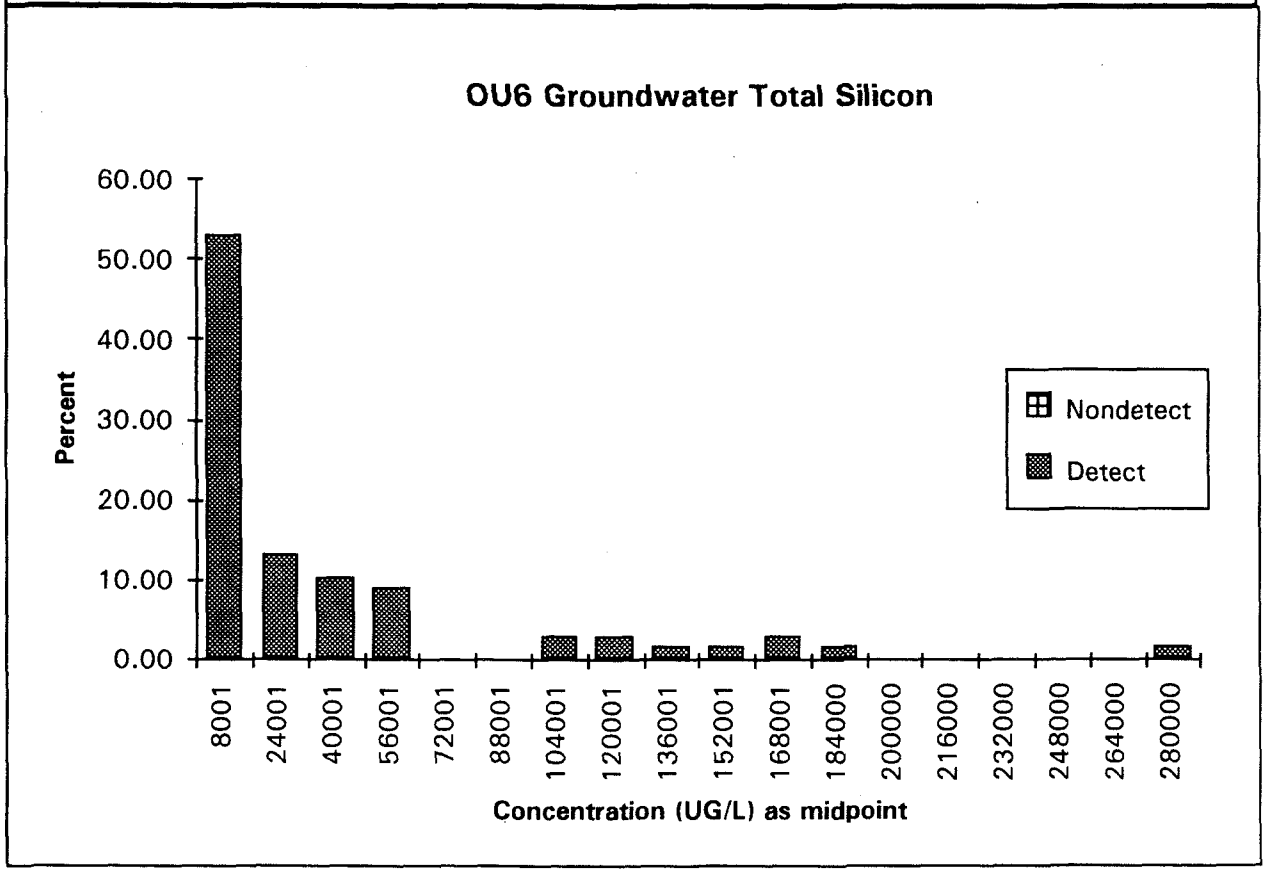

Background Groundwater Total Manganese
100.00
90.00
80.00
70.00
60.00
50.00
40.00
30.00
20.00
10.00
0.00
Percent
Nondetect
Detect
173
518
862
1206
1551
1895
2240
2584
2928
3273
3617
3961
4306
4650
4995
5339
5683
6028
Concentration (UG/L) as midpoint

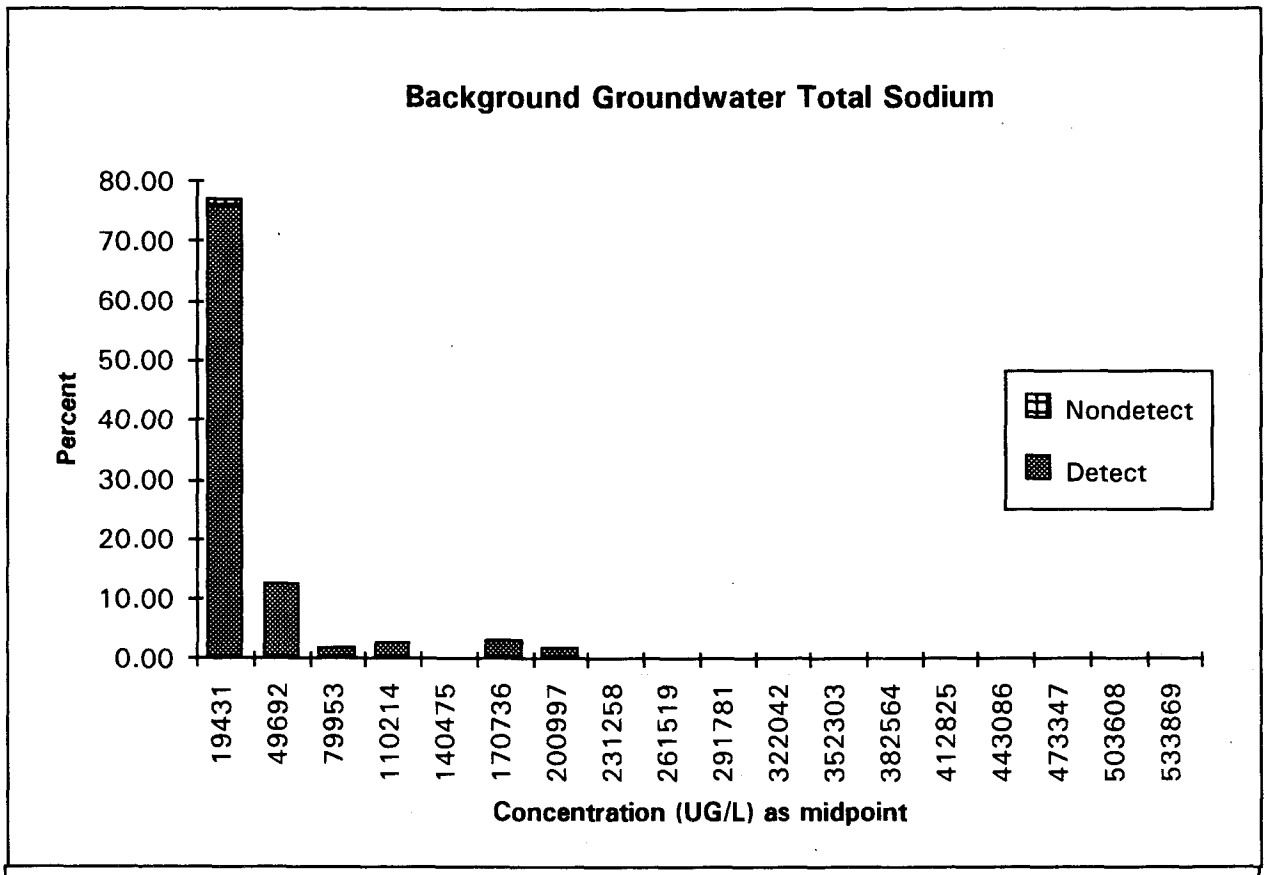

OU6 Groundwater Total Manganese
70.00
60.00
50.00
40.00
30.00
20.00
10.00
0.00
Percent
Nondetect
Detect
173
518
862
1206
1551
1895
2240
2584
2928
3273
3617
3961
4306
4650
4995
5339
5683
6028
Concentration (UG/L) as midpoint

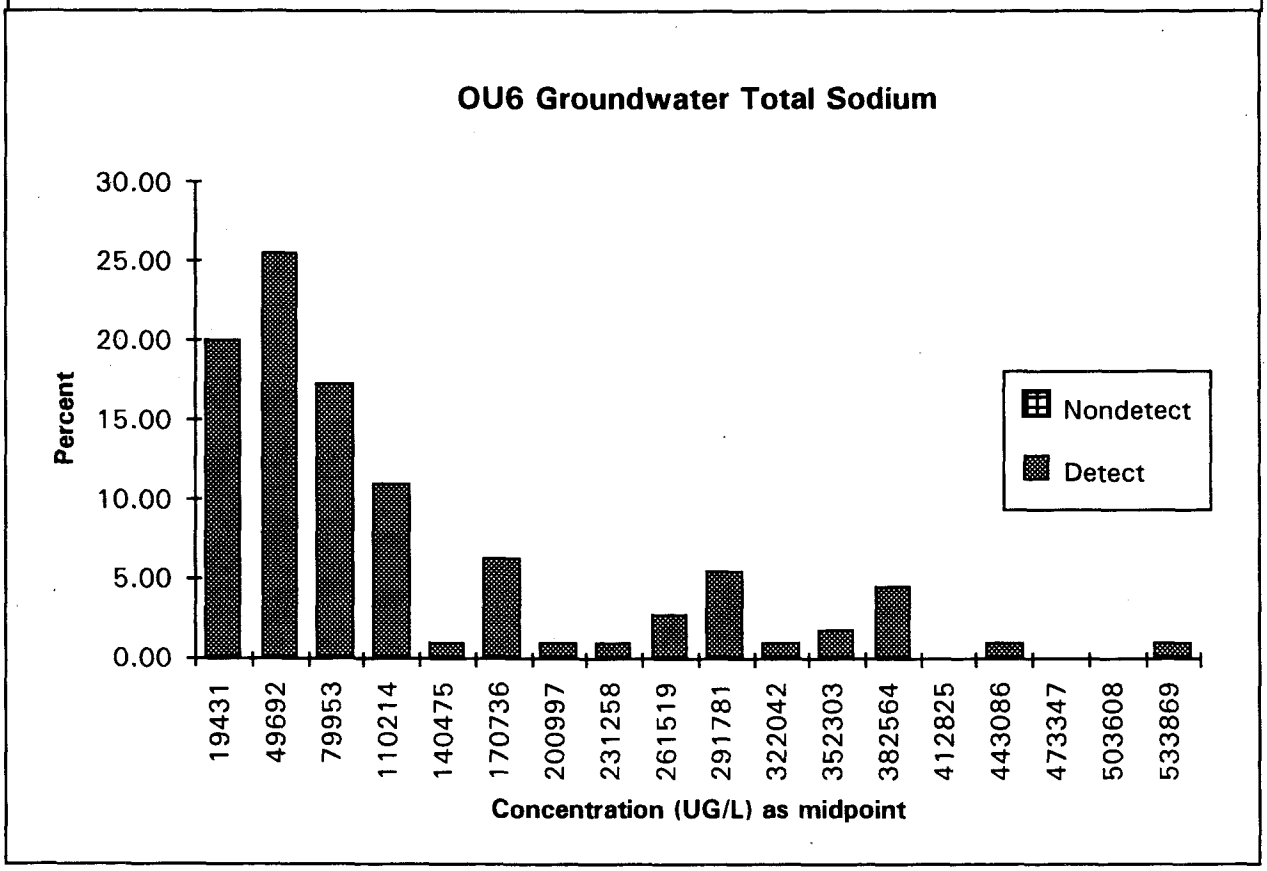

Background Groundwater Total Potassium
80.00
70.00
60.00
50.00
40.00
30.00
20.00
10.00
0.00
Percent
Nondetect
Detect
1317
3464
5612
7760
9907
12055
14202
16350
18498
20645
22793
24941
27088
29236
31383
33531
35679
37826
Concentration (UG/L) as midpoint

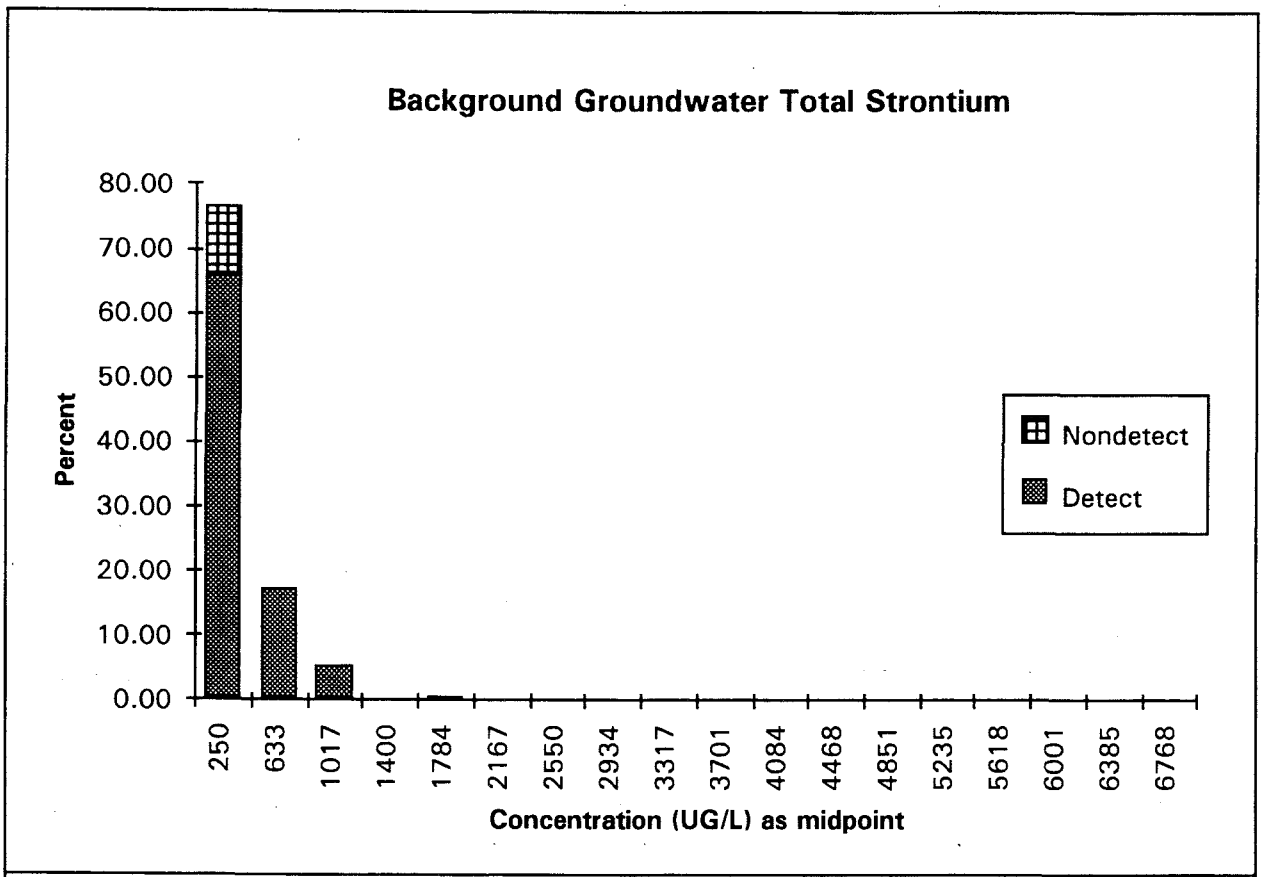

OU6 Groundwater Total Potassium
40.00
35.00
30.00
25.00
20.00
15.00
10.00
5.00
0.00
Percent
Nondetect
Detect
1317
3464
5612
7760
9907
12055
14202
16350
18498
20645
22793
24941
27088
29236
31383
33531
35679
37826
Concentration (UG/L) as midpoint

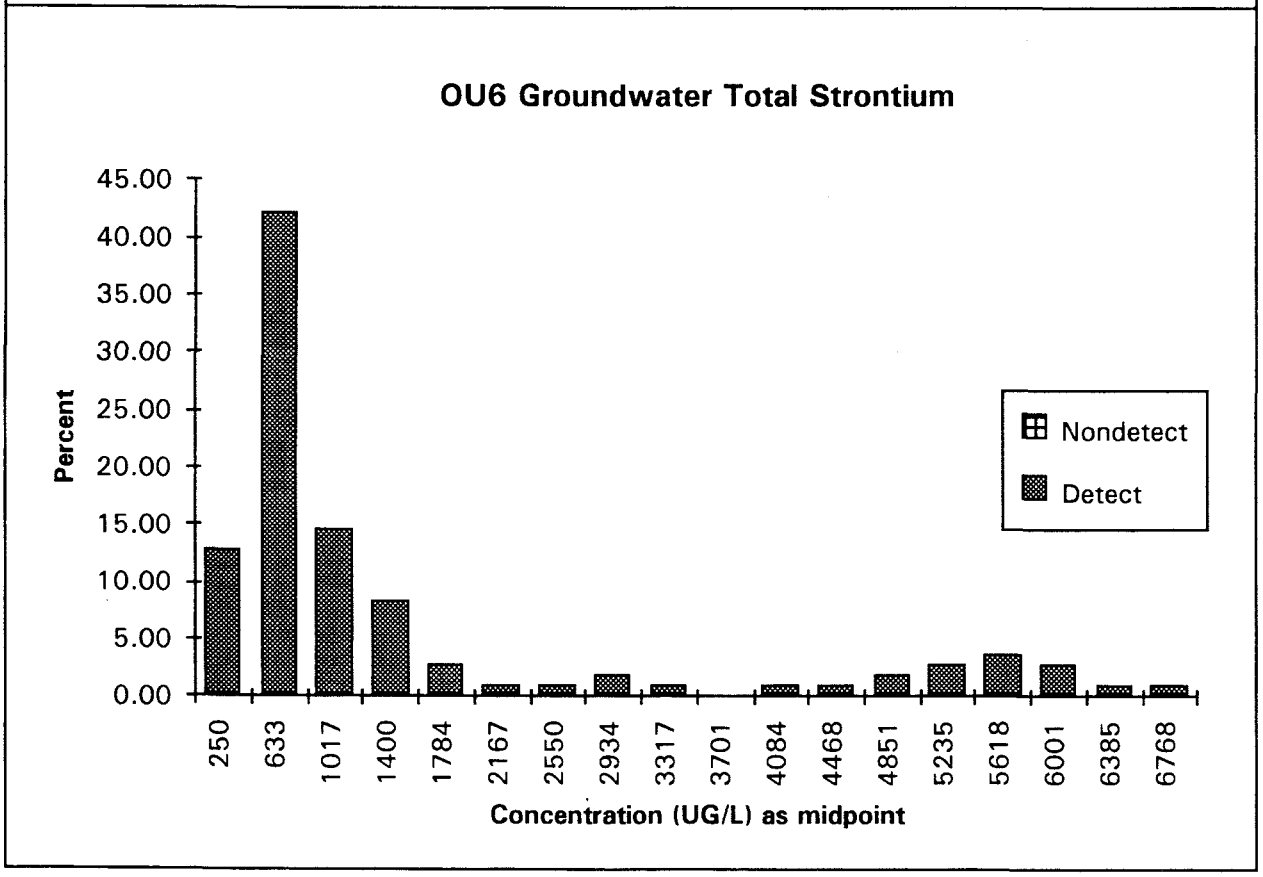

Background Groundwater Total Silicon
70.00
60.00
50.00
40.00
30.00
20.00
10.00
0.00
Percent
Nondetect
Detect
8001
24001
40001
56001
72001
88001
104001
120001
136001
152001
168001
184000
200000
216000
232000
248000
264000
280000
Concentration (UG/L) as midpoint

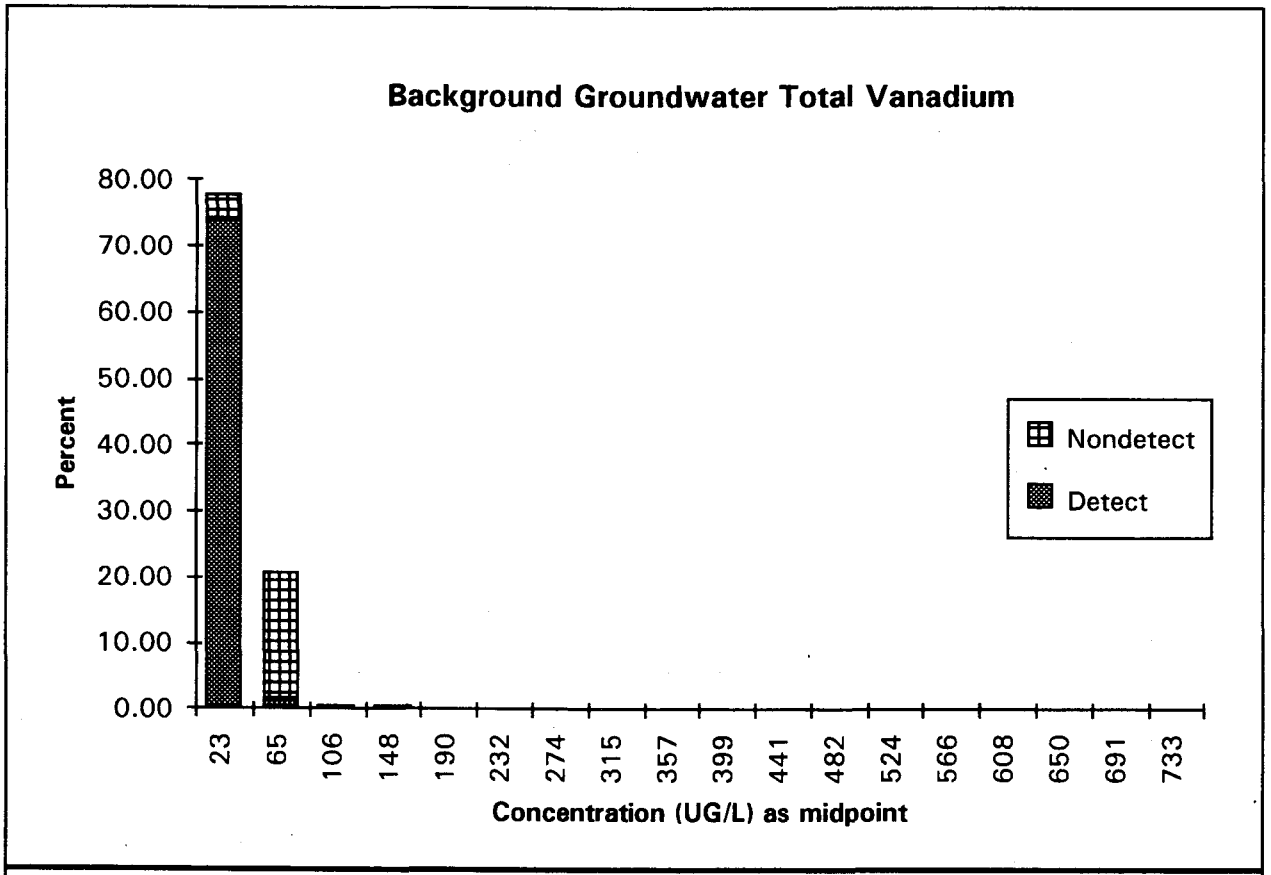

OU6 Groundwater Total Silicon
60.00
50.00
40.00
30.00
20.00
10.00
0.00
Percent
Nondetect
Detect
8001
24001
40001
56001
72001
88001
104001
120001
136001
152001
168001
184000
200000
216000
232000
248000
264000
280000
Concentration (UG/L) as midpoint

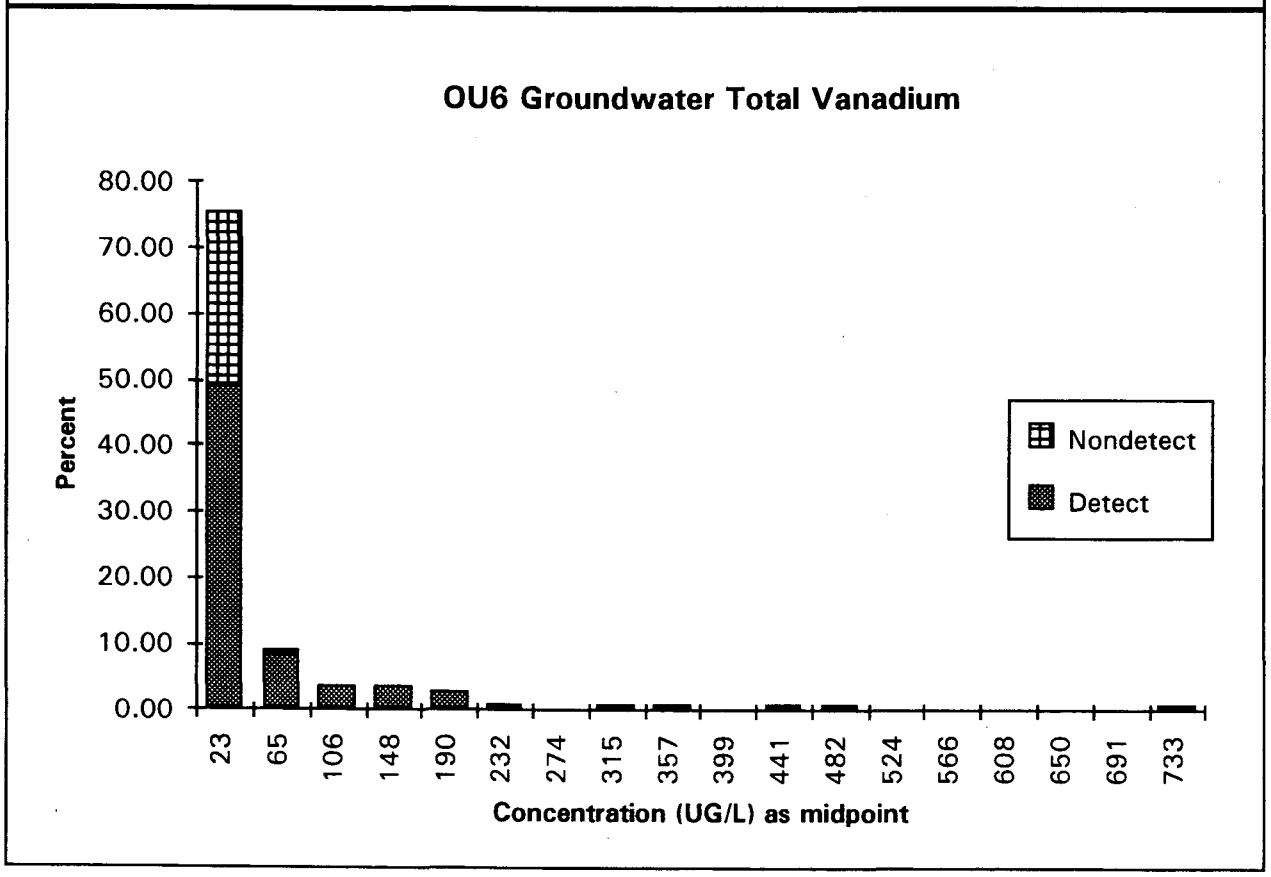

Background Groundwater Total Sodium
80.00
70.00
60.00
50.00
40.00
30.00
20.00
10.00
0.00
Percent
Nondetect
Detect
19431
49692
79953
110214
140475
170736
200997
231258
261519
291781
322042
352303
382564
412825
443086
473347
503608
533869
Concentration (UG/L) as midpoint

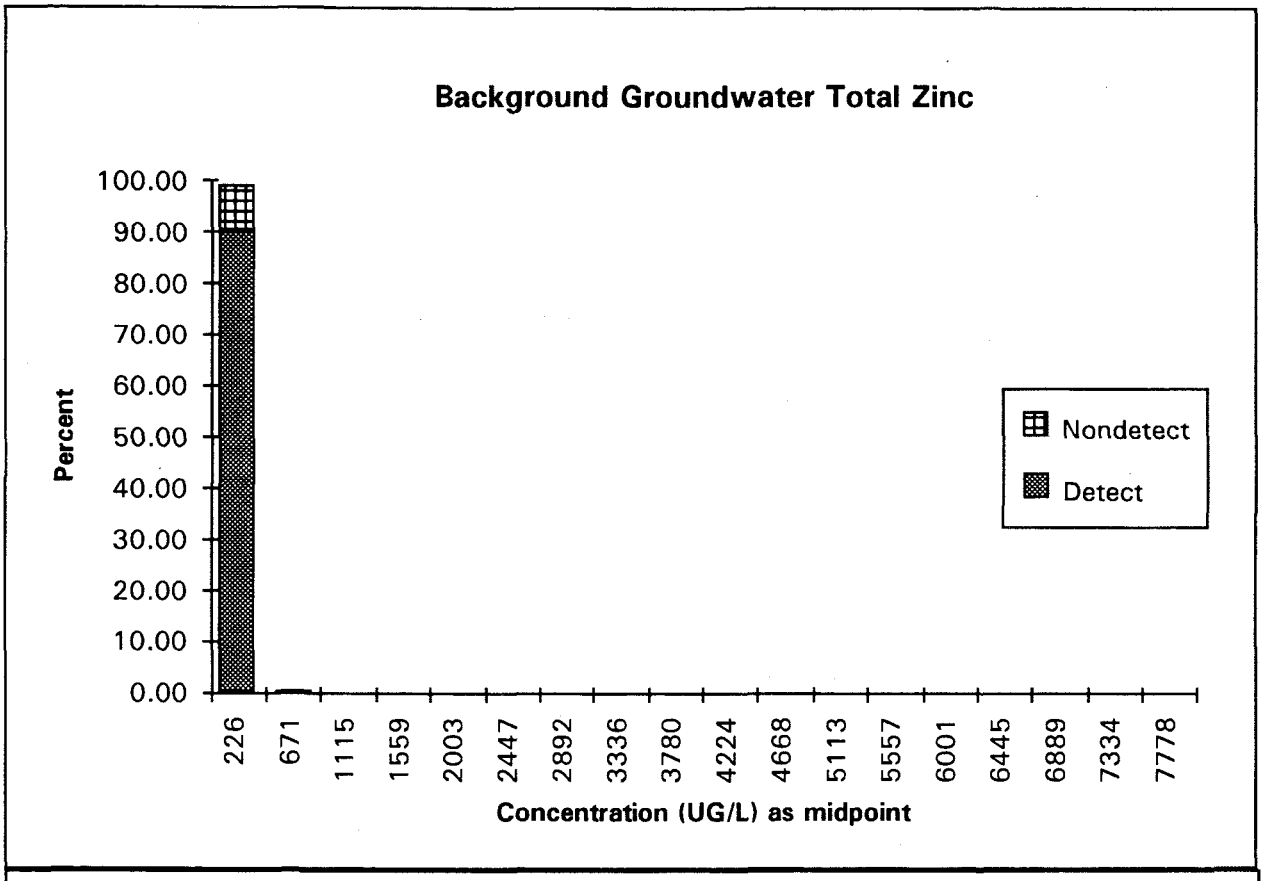

OU6 Groundwater Total Sodium
30.00
25.00
20.00
15.00
10.00
5.00
0.00
Percent
Nondetect
Detect
19431
49692
79953
110214
140475
170736
200997
231258
261519
291781
322042
352303
382564
412825
443086
473347
503608
533869
Concentration (UG/L) as midpoint

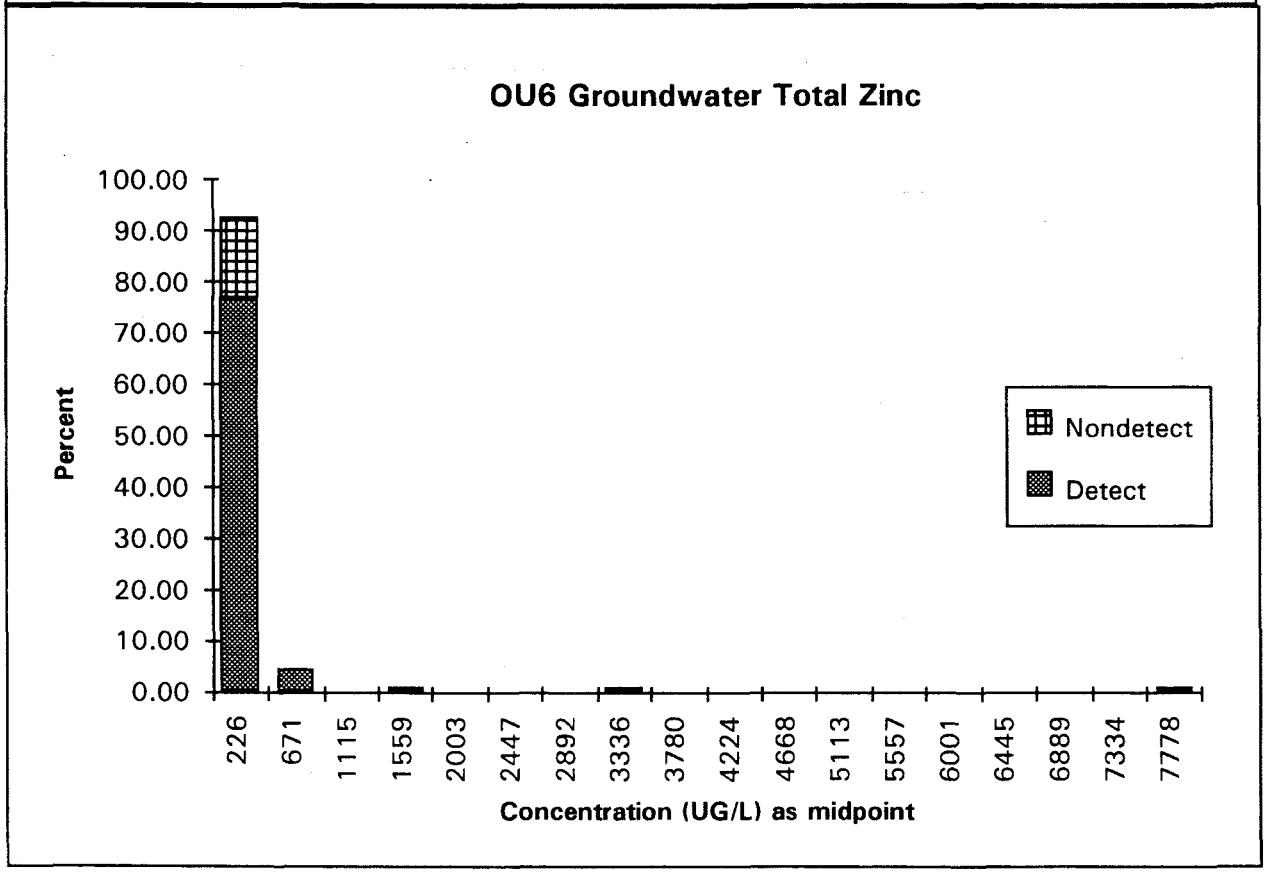

Background Groundwater Total Strontium
80.00
70.00
60.00
50.00
40.00
30.00
20.00
10.00
0.00
Percent
Nondetect
Detect
250
633
1017
1400
1784
2167
2550
2934
3317
3701
4084
4468
4851
5235
5618
6001
6385
6768
Concentration (UG/L) as midpoint

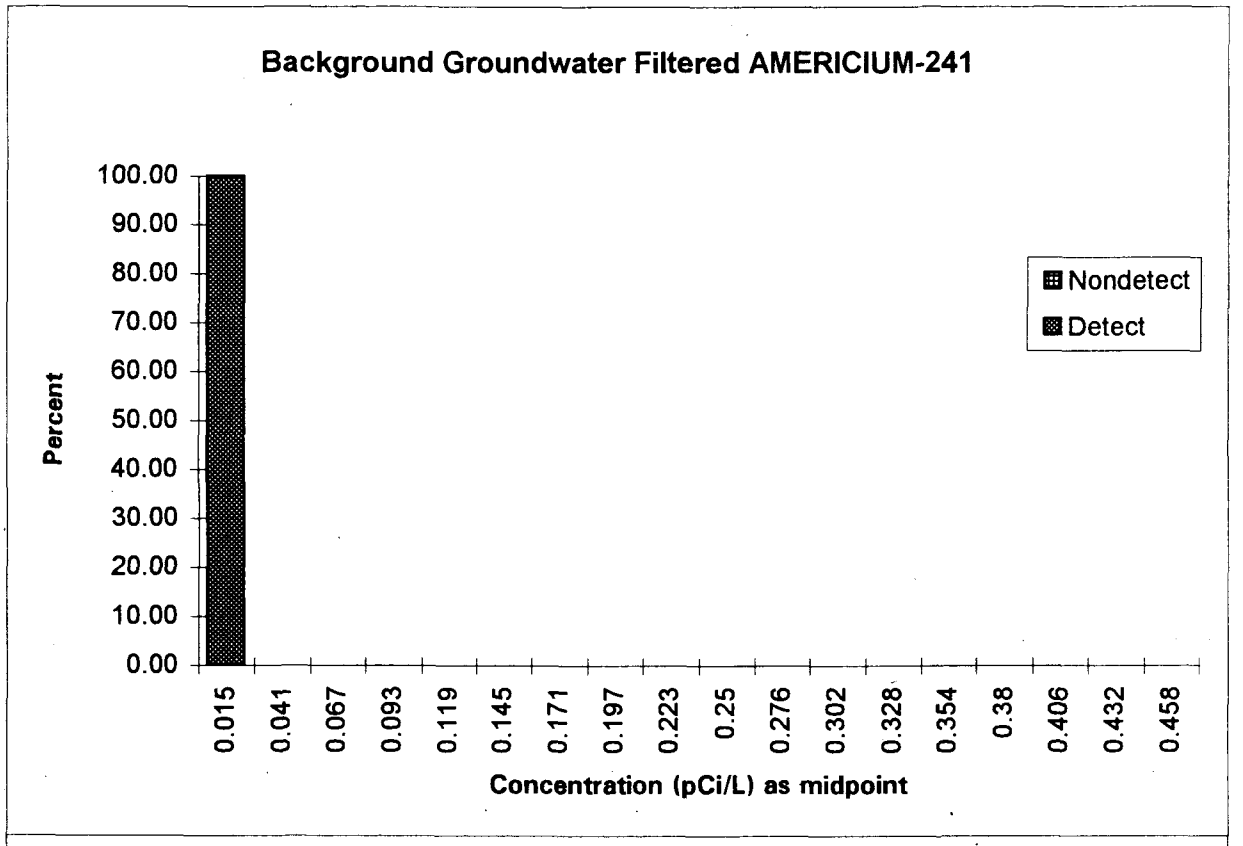

OU6 Groundwater Total Strontium
45.00
40.00
35.00
30.00
25.00
20.00
15.00
10.00
5.00
0.00
Percent
Nondetect
Detect
250
633
1017
1400
1784
2167
2550
2934
3317
3701
4084
4468
4851
5235
5618
6001
6385
6768
Concentration (UG/L) as midpoint

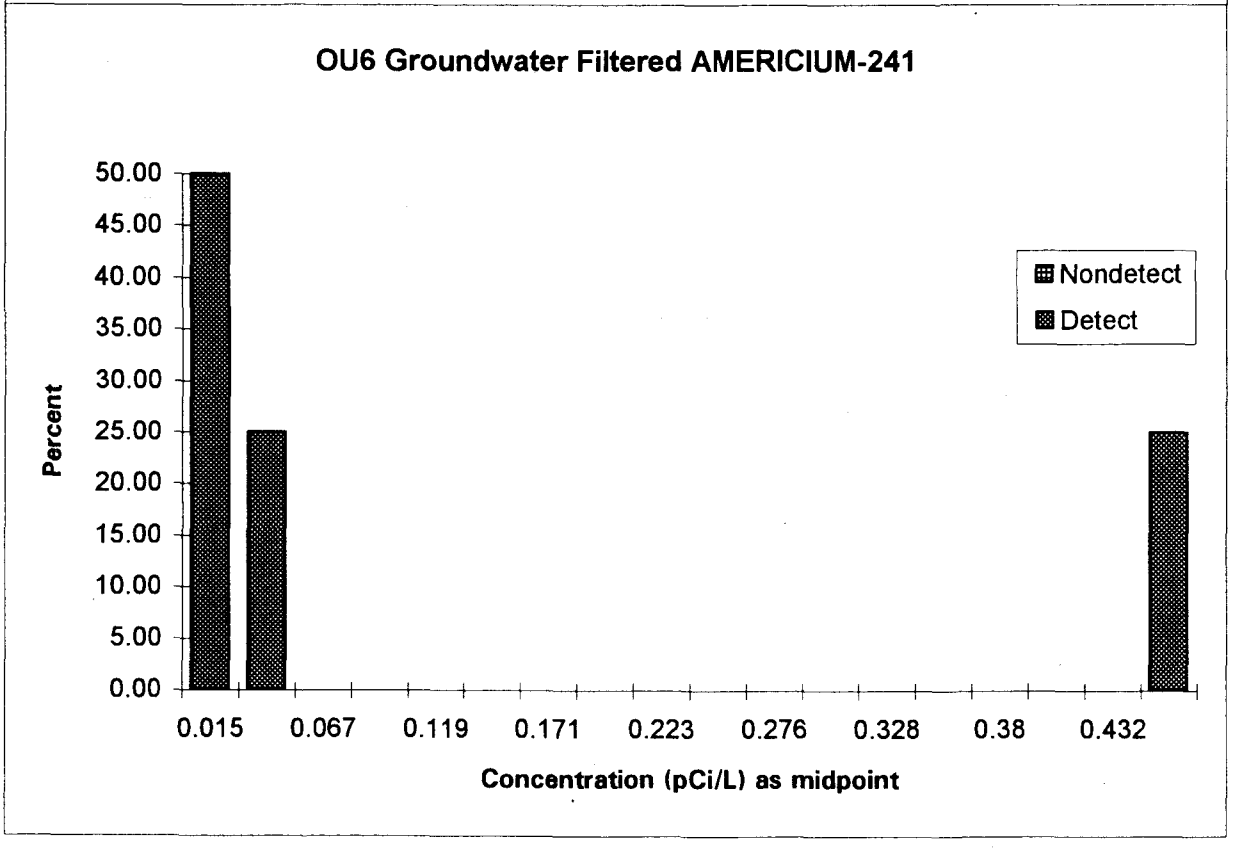

Background Groundwater Total Vanadium
80.00
70.00
60.00
50.00
40.00
30.00
20.00
10.00
0.00
Percent
Nondetect
Detect
23
65
106
148
190
232
274
315
357
399
441
482
524
566
608
650
691
733
Concentration (UG/L) as midpoint

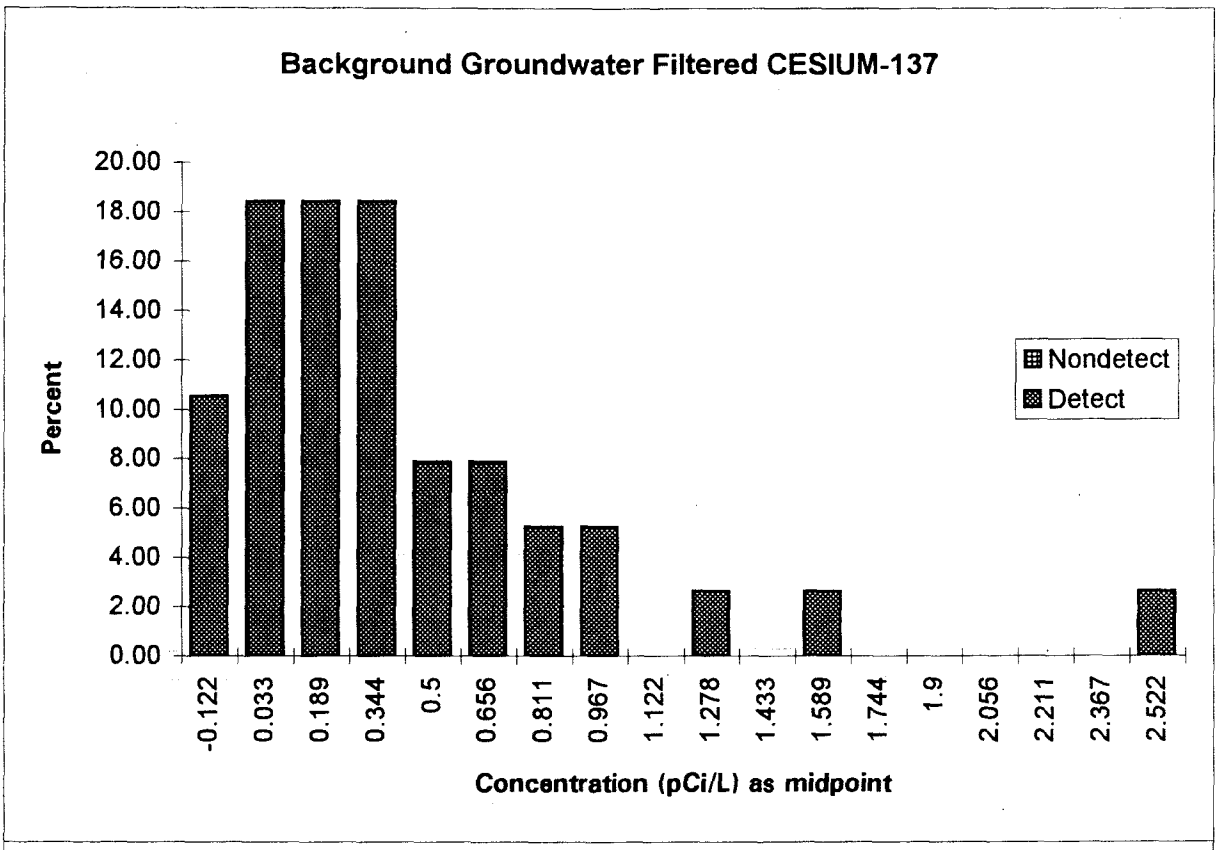

OU6 Groundwater Total Vanadium
80.00
70.00
60.00
50.00
40.00
30.00
20.00
10.00
0.00
Percent
Nondetect
Detect
23
65
106
148
190
232
274
315
357
399
441
482
524
566
608
650
691
733
Concentration (UG/L) as midpoint

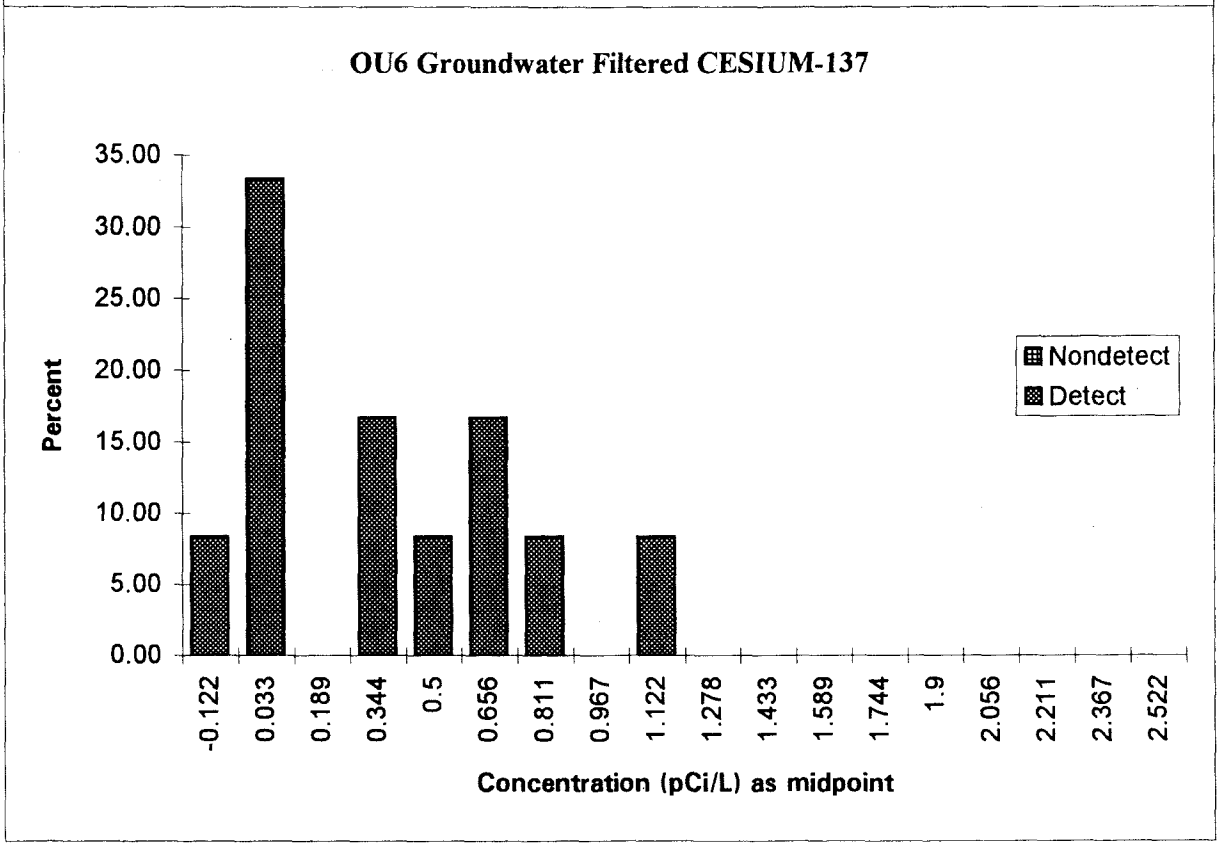

Background Groundwater Total Zinc
Percent
100.00
90.00
80.00
70.00
60.00
50.00
40.00
30.00
20.00
10.00
0.00
226
671
1115
1559
2003
2447
2892
3336
3780
4224
4668
5113
5557
6001
6445
6889
7334
7778
Concentration (UG/L) as midpoint
Nondetect
Detect

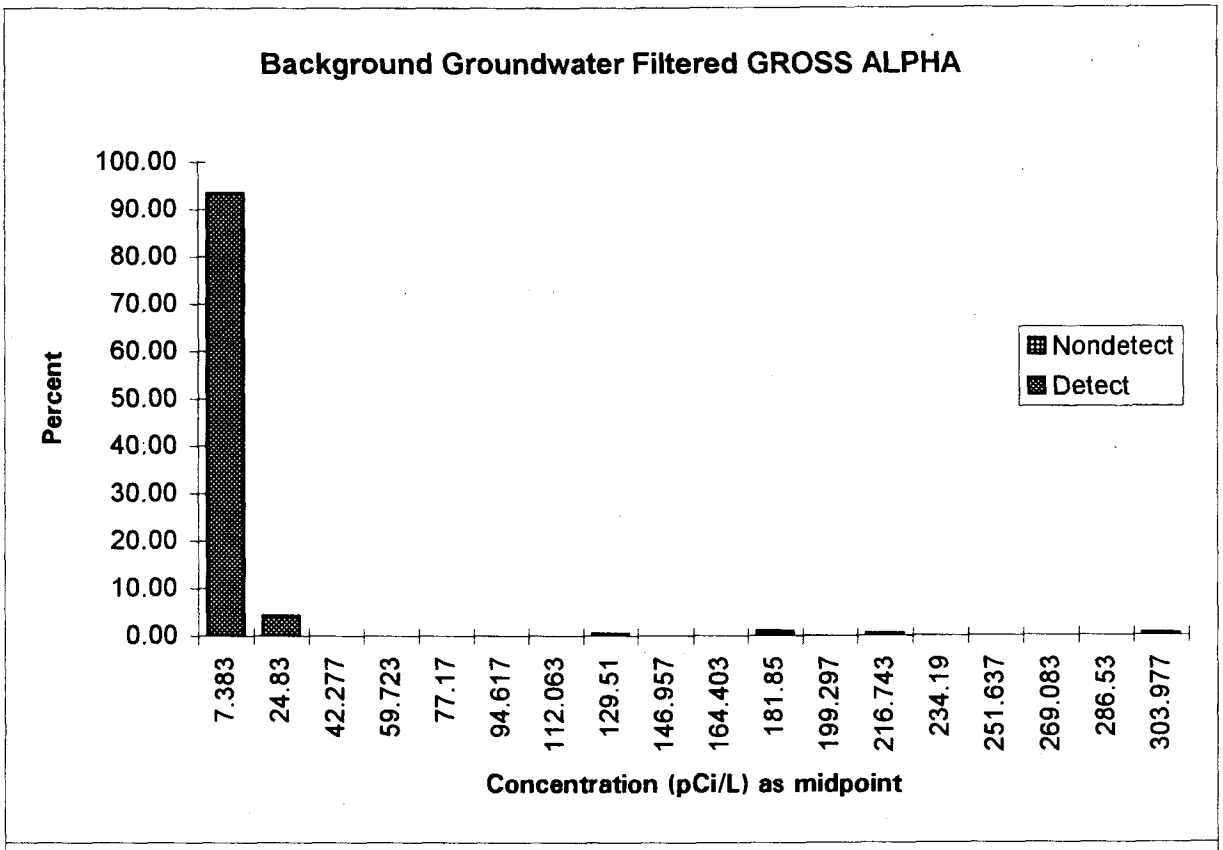

OU6 Groundwater Total Zinc
Percent
100.00
90.00
80.00
70.00
60.00
50.00
40.00
30.00
20.00
10.00
0.00
226
671
1115
1559
2003
2447
2892
3336
3780
4224
4668
5113
5557
6001
6445
6889
7334
7778
Concentration (UG/L) as midpoint
Nondetect
Detect

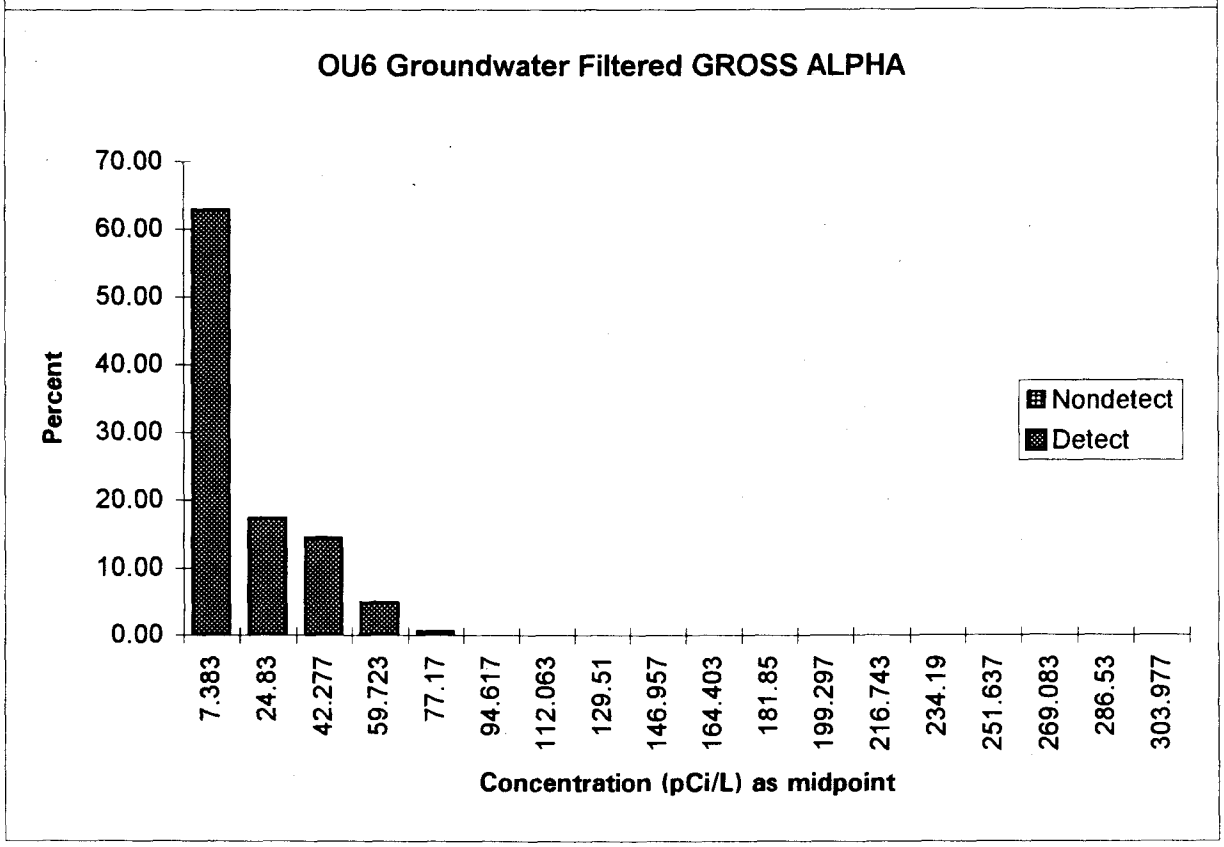

Background Groundwater Filtered AMERICIUM-241
Percent
100.00
90.00
80.00
70.00
60.00
50.00
40.00
30.00
20.00
10.00
0.00
Nondetect
Detect
0.015
0.041
0.067
0.093
0.119
0.145
0.171
0.197
0.223
0.25
0.276
0.302
0.328
0.354
0.38
0.406
0.432
0.458
Concentration (pCi/L) as midpoint

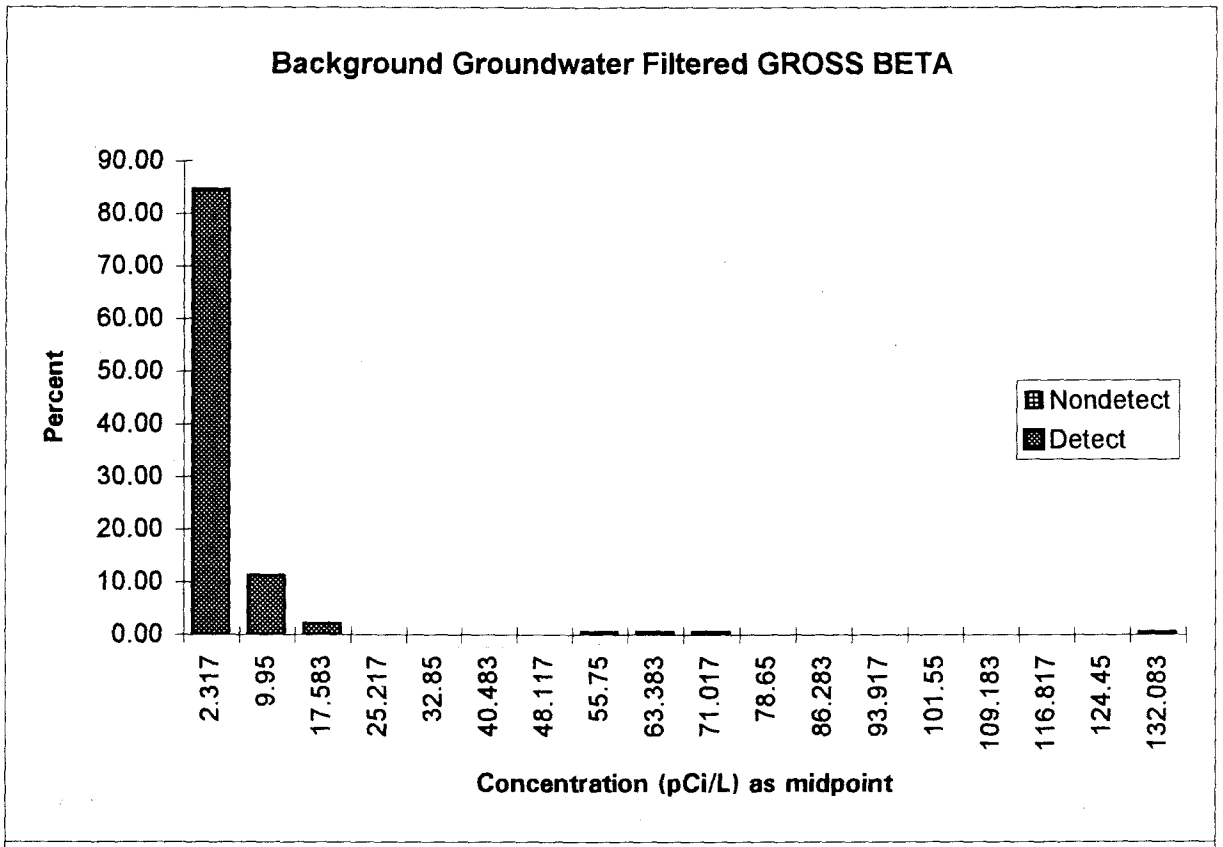

OU6 Groundwater Filtered AMERICIUM-241
Percent
50.00
45.00
40.00
35.00
30.00
25.00
20.00
15.00
10.00
5.00
0.00
Nondetect
Detect
0.015
0.067
0.119
0.171
0.223
0.276
0.328
0.38
0.432
Concentration (pCi/L) as midpoint

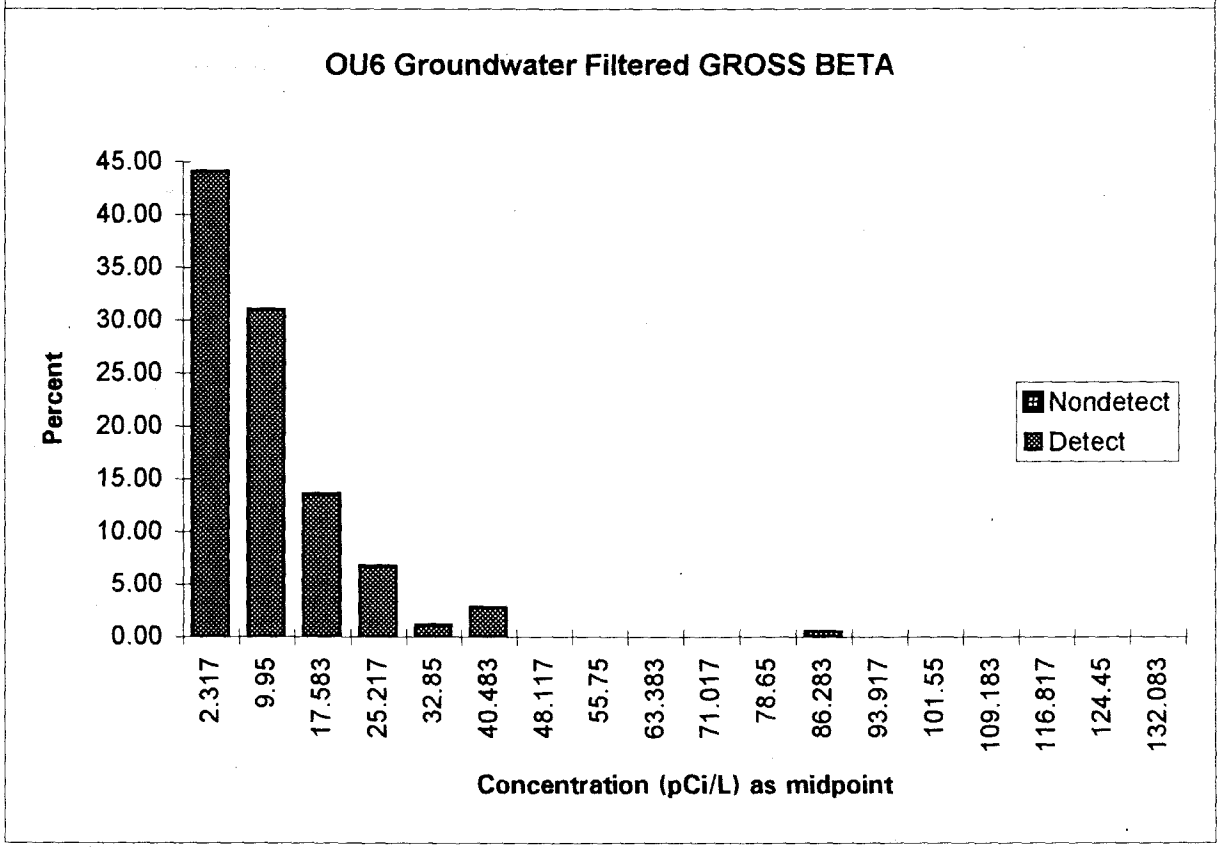

Background Groundwater Filtered CESIUM-137
Percent
20.00
18.00
16.00
14.00
12.00
10.00
8.00
6.00
4.00
2.00
0.00
Nondetect
Detect
-0.122
0.033
0.189
0.344
0.5
0.656
0.811
0.967
1.122
1.278
1.433
1.589
1.744
1.9
2.056
2.211
2.367
2.522
Concentration (pCi/L) as midpoint

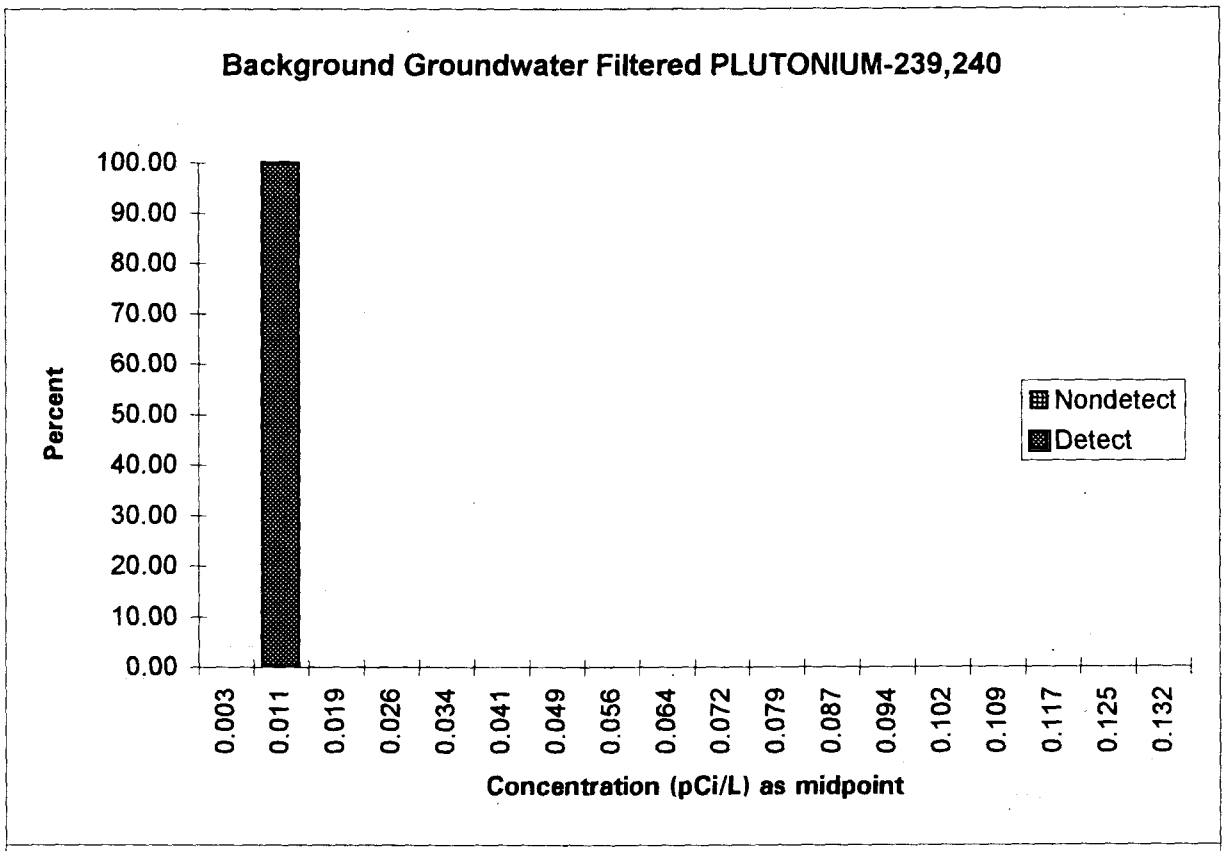

OU6 Groundwater Filtered CESIUM-137
Percent
35.00
30.00
25.00
20.00
15.00
10.00
5.00
0.00
Nondetect
Detect
-0.122
0.033
0.189
0.344
0.5
0.656
0.811
0.967
1.122
1.278
1.433
1.589
1.744
1.9
2.056
2.211
2.367
2.522
Concentration (pCi/L) as midpoint

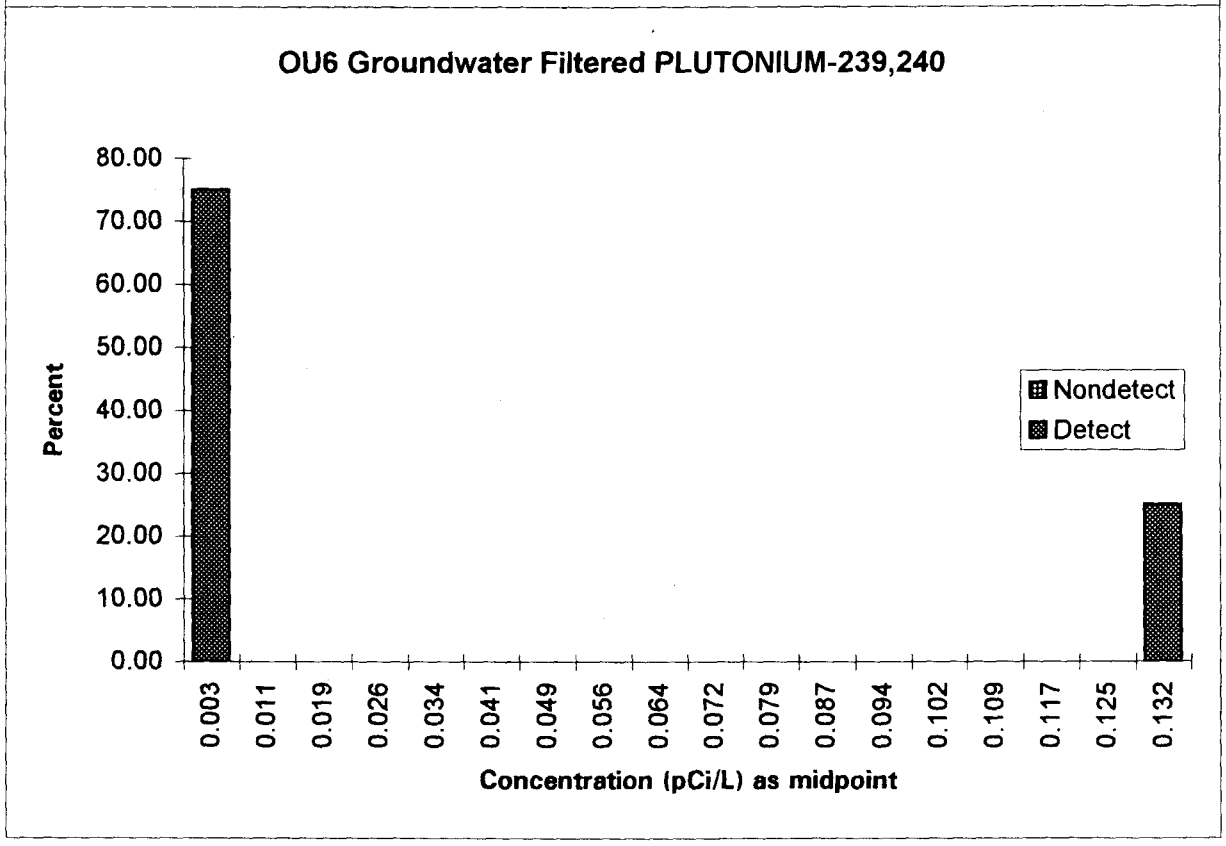

Background Groundwater Filtered GROSS ALPHA
Percent
100.00
90.00
80.00
70.00
60.00
50.00
40.00
30.00
20.00
10.00
0.00
Nondetect
Detect
7.383
24.83
42.277
59.723
77.17
94.617
112.063
129.51
146.957
164.403
181.85
199.297
216.743
234.19
251.637
269.083
286.53
303.977
Concentration (pCi/L) as midpoint

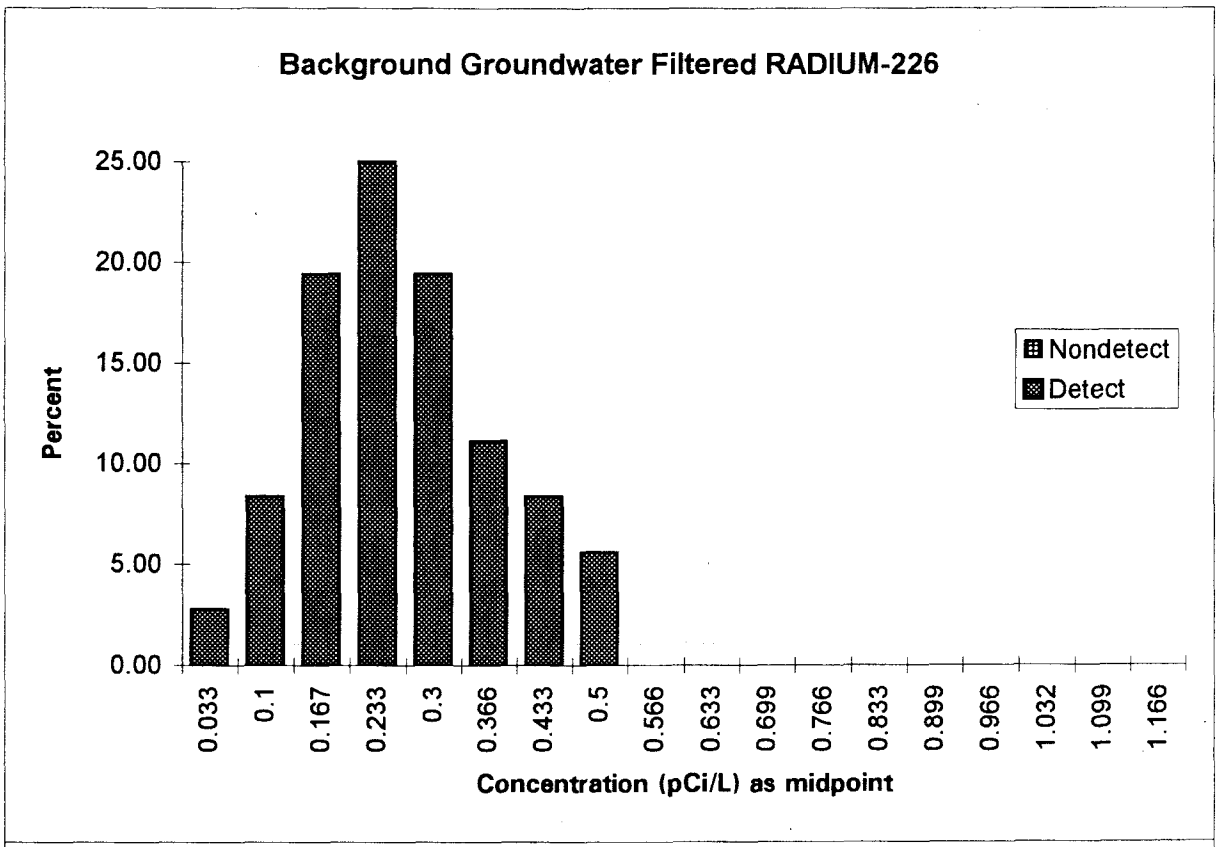

OU6 Groundwater Filtered GROSS ALPHA
Percent
70.00
60.00
50.00
40.00
30.00
20.00
10.00
0.00
Nondetect
Detect
7.383
24.83
42.277
59.723
77.17
94.617
112.063
129.51
146.957
164.403
181.85
199.297
216.743
234.19
251.637
269.083
286.53
303.977
Concentration (pCi/L) as midpoint

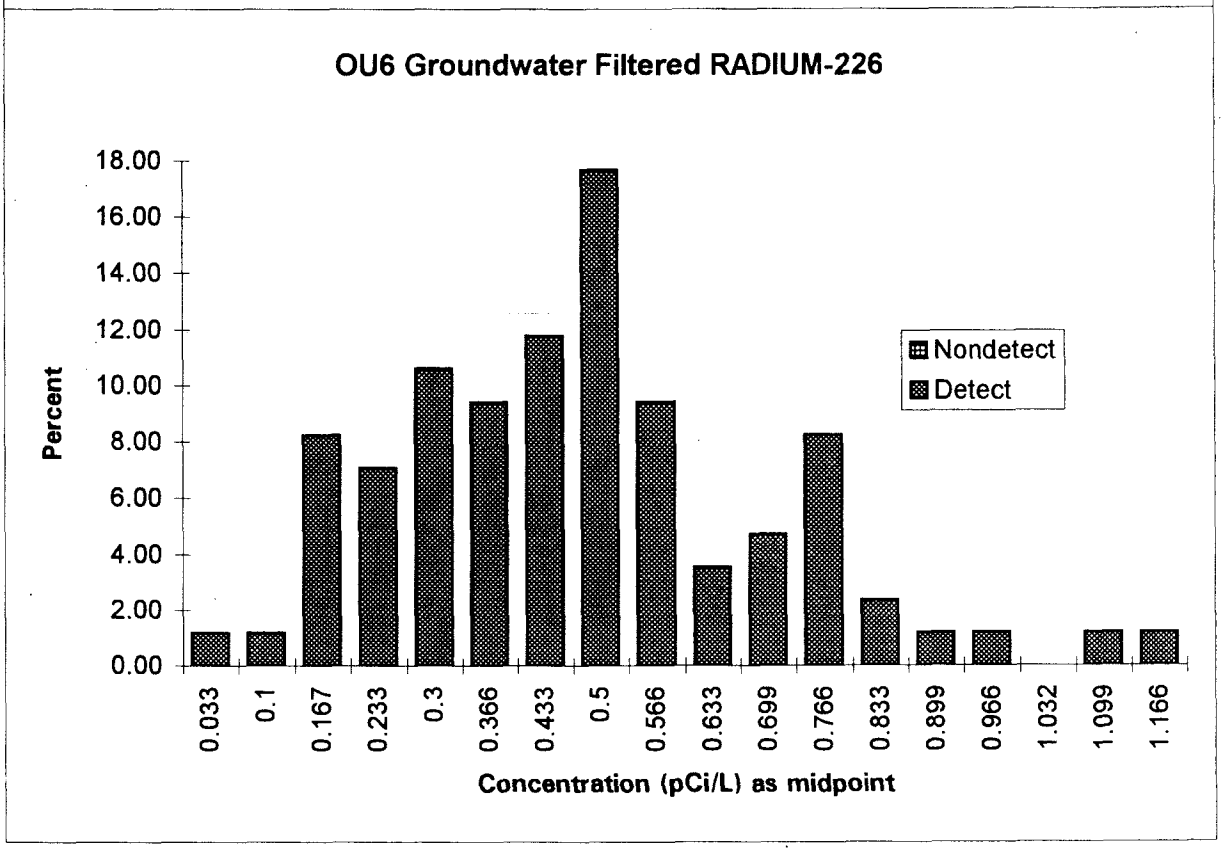

Background Groundwater Filtered GROSS BETA
Percent
90.00
80.00
70.00
60.00
50.00
40.00
30.00
20.00
10.00
0.00
2.317
9.95
17.583
25.217
32.85
40.483
48.117
55.75
63.383
71.017
78.65
86.283
93.917
101.55
109.183
116.817
124.45
132.083
Concentration (pCi/L) as midpoint
Nondetect
Detect

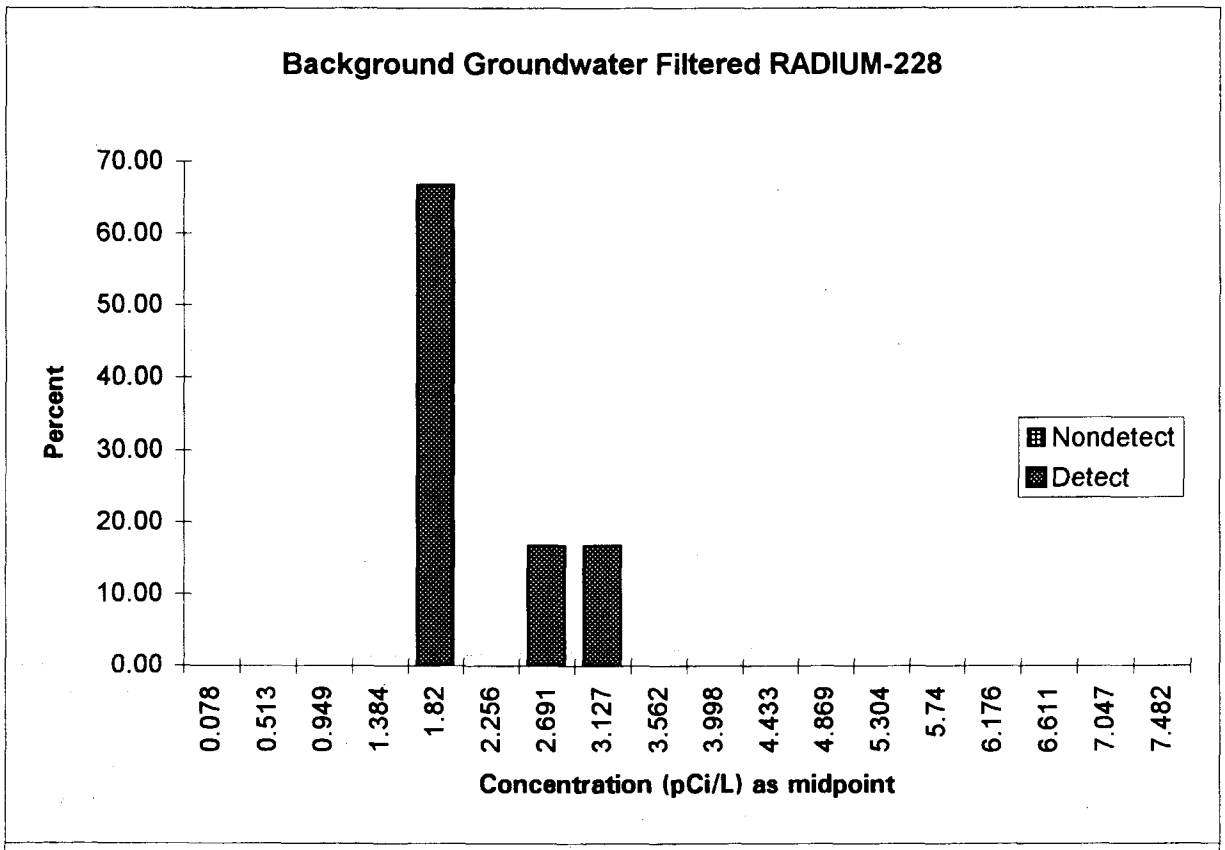

OU6 Groundwater Filtered GROSS BETA
Percent
45.00
40.00
35.00
30.00
25.00
20.00
15.00
10.00
5.00
0.00
2.317
9.95
17.583
25.217
32.85
40.483
48.117
55.75
63.383
71.017
78.65
86.283
93.917
101.55
109.183
116.817
124.45
132.083
Concentration (pCi/L) as midpoint
Nondetect
Detect

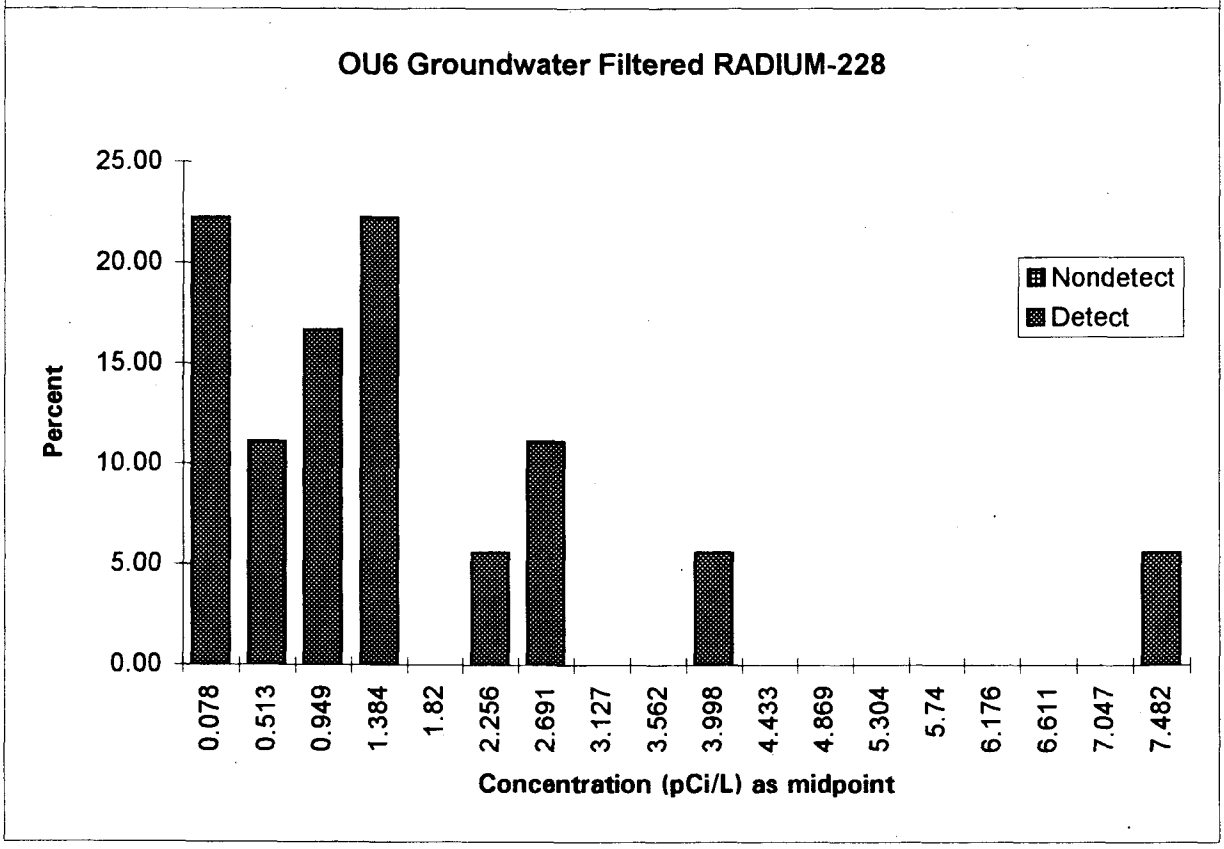

Background Groundwater Filtered PLUTONIUM-239,240
Percent
100.00
90.00
80.00
70.00
60.00
50.00
40.00
30.00
20.00
10.00
0.00
Nondetect
Detect
0.003
0.011
0.019
0.026
0.034
0.041
0.049
0.056
0.064
0.072
0.079
0.087
0.094
0.102
0.109
0.117
0.125
0.132
Concentration (pCi/L) as midpoint

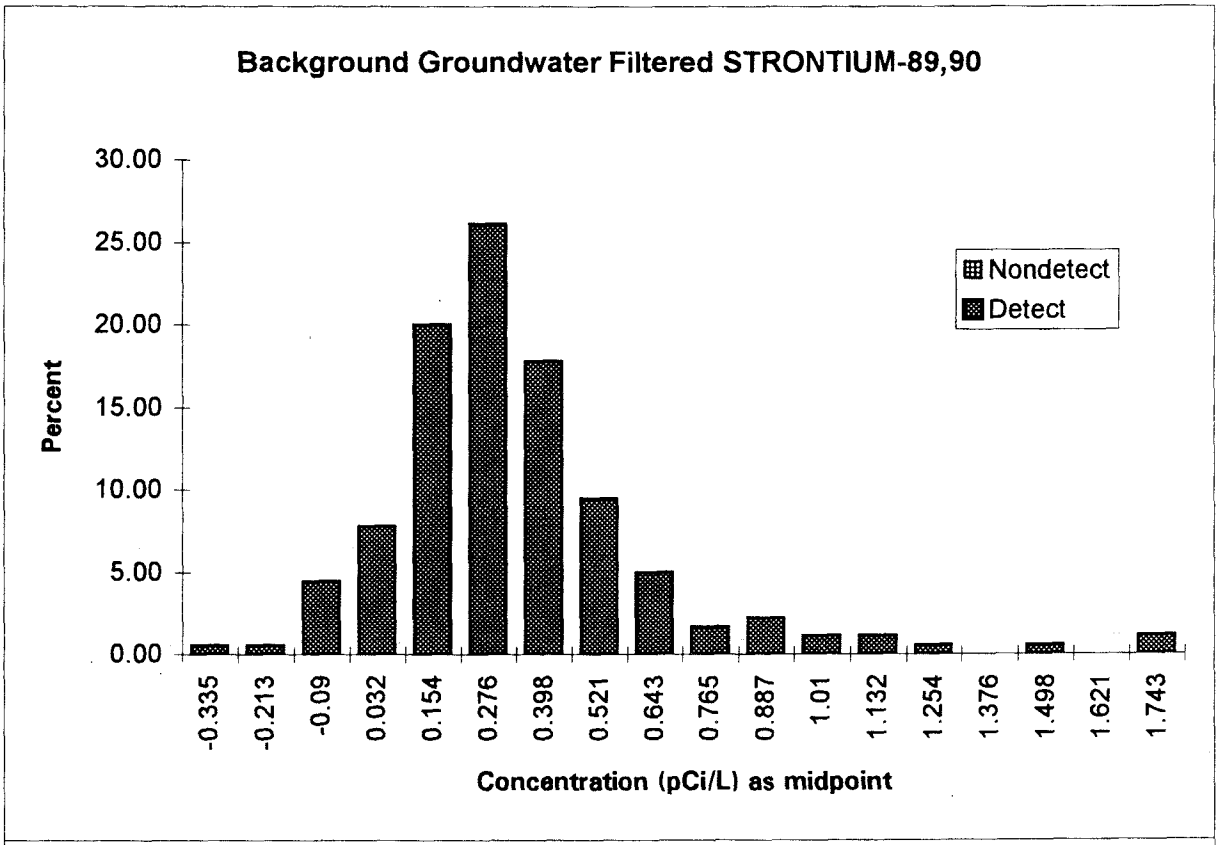

OU6 Groundwater Filtered PLUTONIUM-239,240
Percent
80.00
70.00
60.00
50.00
40.00
30.00
20.00
10.00
0.00
Nondetect
Detect
0.003
0.011
0.019
0.026
0.034
0.041
0.049
0.056
0.064
0.072
0.079
0.087
0.094
0.102
0.109
0.117
0.125
0.132
Concentration (pCi/L) as midpoint

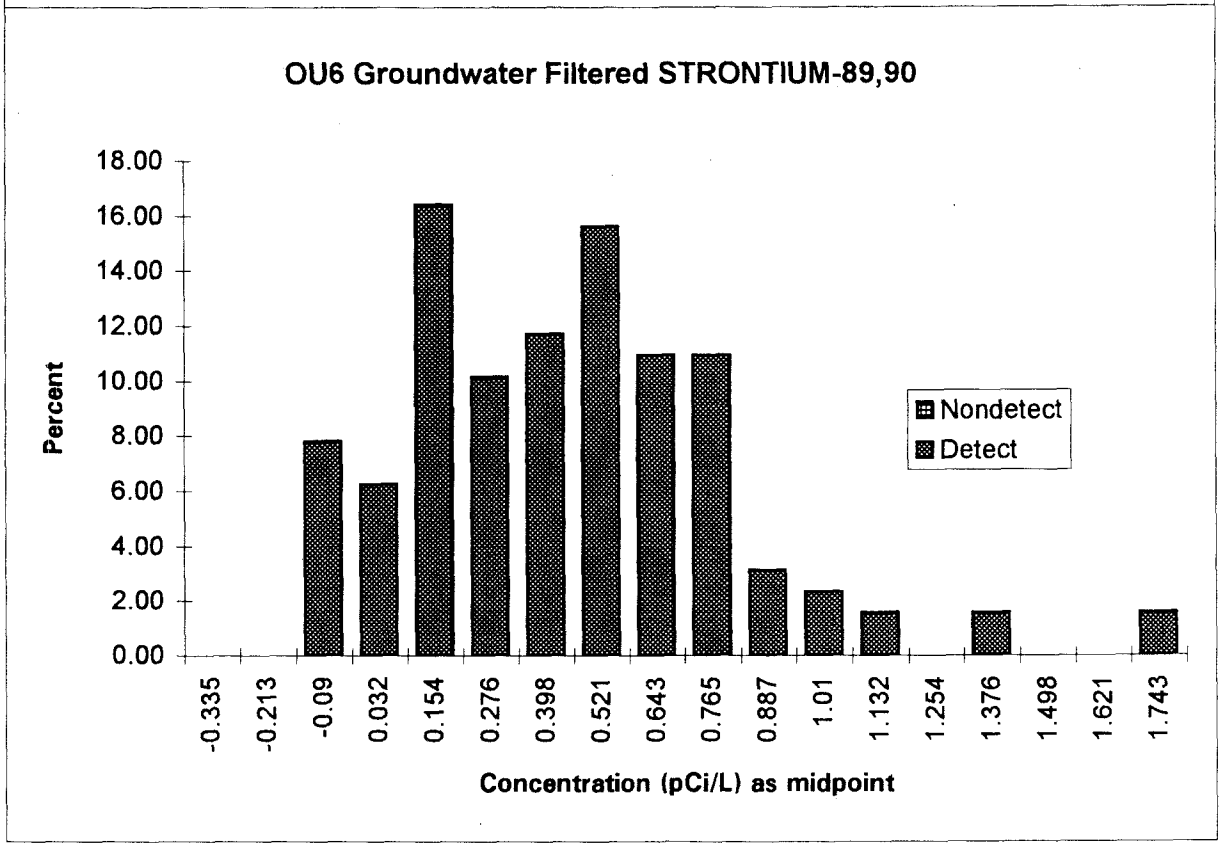

Background Groundwater Filtered RADIUM-226
Percent
25.00
20.00
15.00
10.00
5.00
0.00
Nondetect
Detect
0.033
0.1
0.167
0.233
0.3
0.366
0.433
0.5
0.566
0.633
0.699
0.766
0.833
0.899
0.966
1.032
1.099
1.166
Concentration (pCi/L) as midpoint

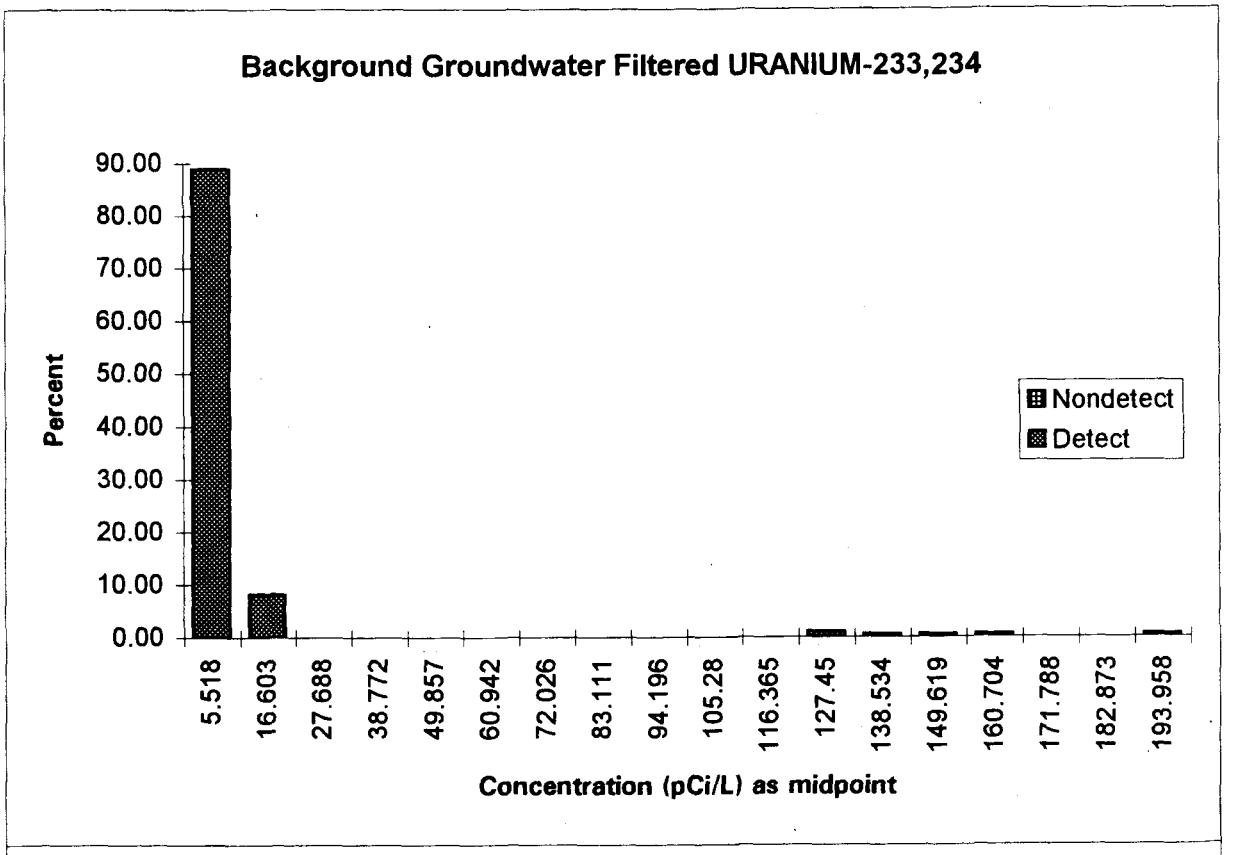

OU6 Groundwater Filtered RADIUM-226
Percent
18.00
16.00
14.00
12.00
10.00
8.00
6.00
4.00
2.00
0.00
Nondetect
Detect
0.033
0.1
0.167
0.233
0.3
0.366
0.433
0.5
0.566
0.633
0.699
0.766
0.833
0.899
0.966
1.032
1.099
1.166
Concentration (pCi/L) as midpoint

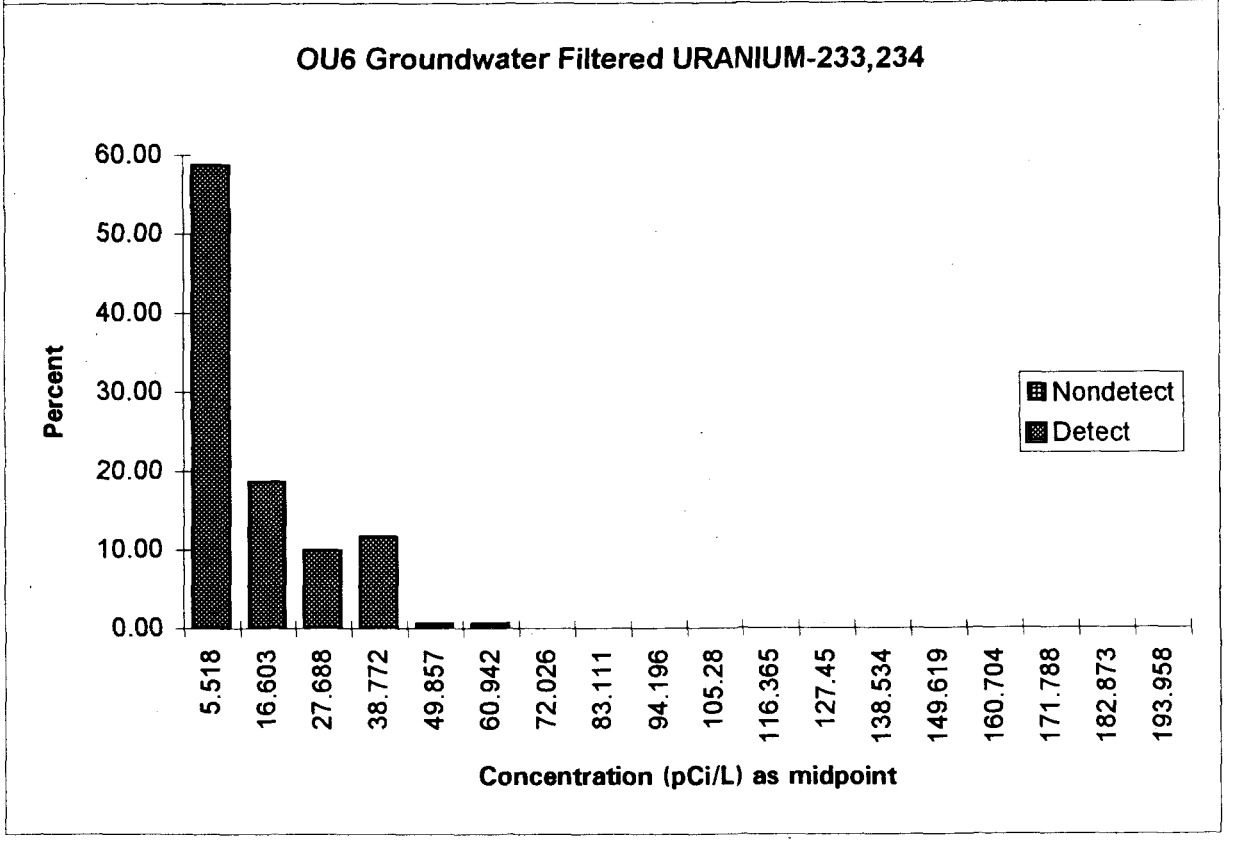

Background Groundwater Filtered RADIUM-228
Percent
70.00
60.00
50.00
40.00
30.00
20.00
10.00
0.00
Nondetect
Detect
0.078
0.513
0.949
1.384
1.82
2.256
2.691
3.127
3.562
3.998
4.433
4.869
5.304
5.74
6.176
6.611
7.047
7.482
Concentration (pCi/L) as midpoint

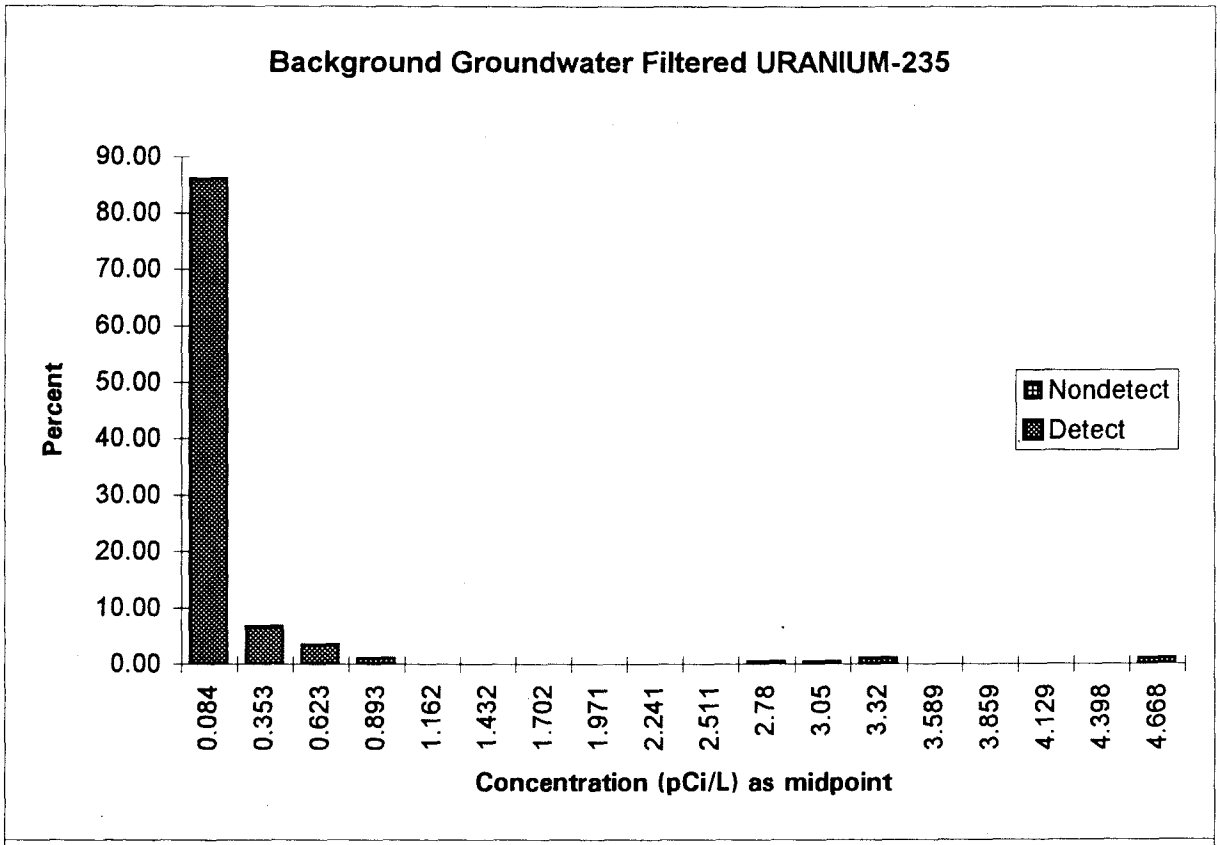

OU6 Groundwater Filtered RADIUM-228
Percent
25.00
20.00
15.00
10.00
5.00
0.00
Nondetect
Detect
0.078
0.513
0.949
1.384
1.82
2.256
2.691
3.127
3.562
3.998
4.433
4.869
5.304
5.74
6.176
6.611
7.047
7.482
Concentration (pCi/L) as midpoint

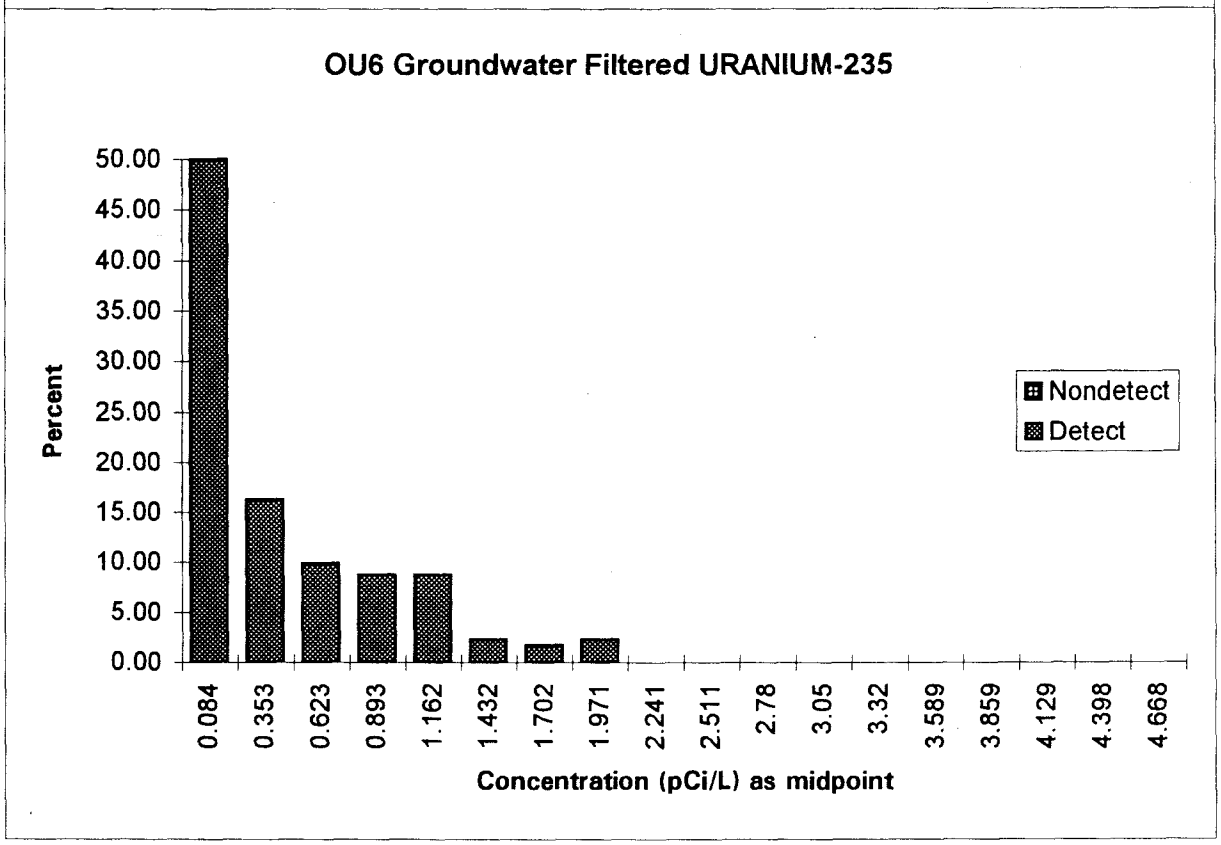

Background Groundwater Filtered STRONTIUM-89,90
30.00
25.00
20.00
15.00
10.00
5.00
0.00
Percent
Nondetect
Detect
-0.335
-0.213
-0.09
0.032
0.154
0.276
0.398
0.521
0.643
0.765
0.887
1.01
1.132
1.254
1.376
1.498
1.621
1.743
Concentration (pCi/L) as midpoint

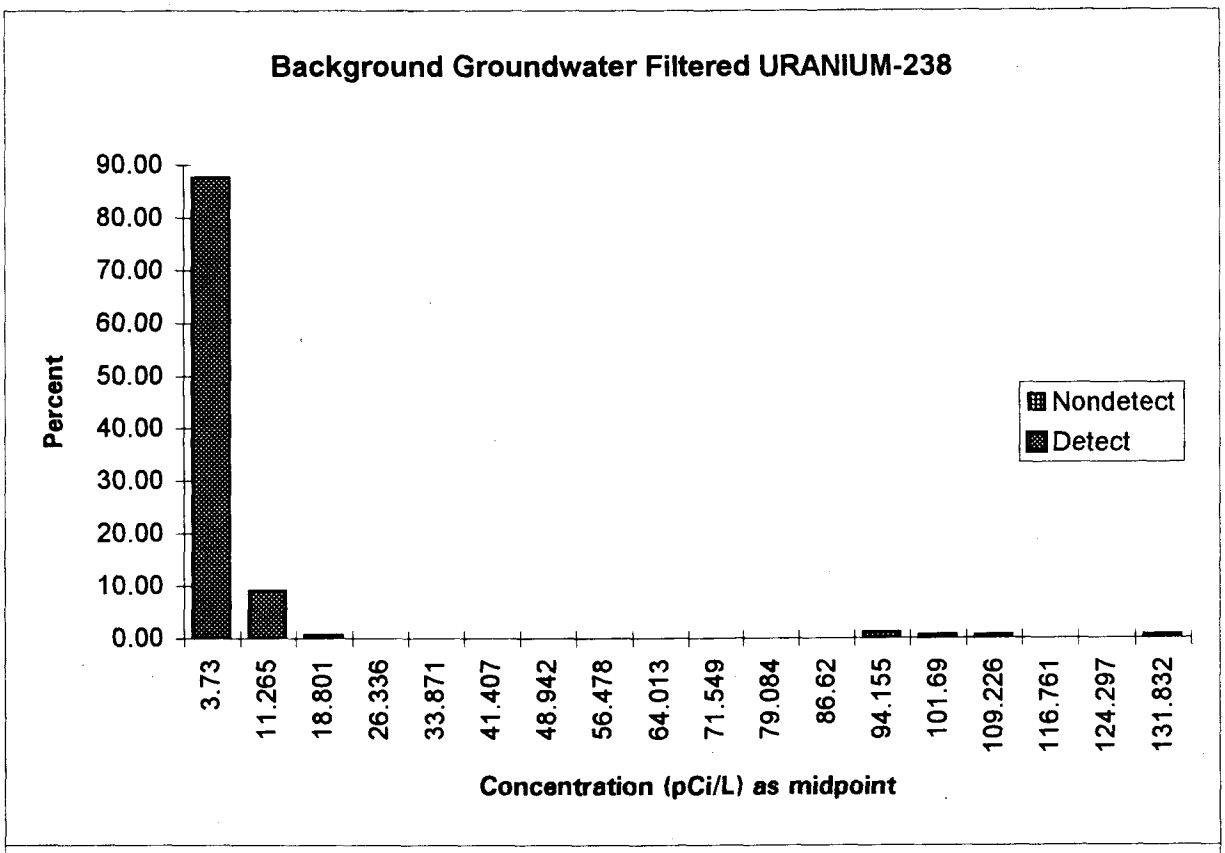

OU6 Groundwater Filtered STRONTIUM-89,90
18.00
16.00
14.00
12.00
10.00
8.00
6.00
4.00
2.00
0.00
Percent
Nondetect
Detect
-0.335
-0.213
-0.09
0.032
0.154
0.276
0.398
0.521
0.643
0.765
0.887
1.01
1.132
1.254
1.376
1.498
1.621
1.743
Concentration (pCi/L) as midpoint

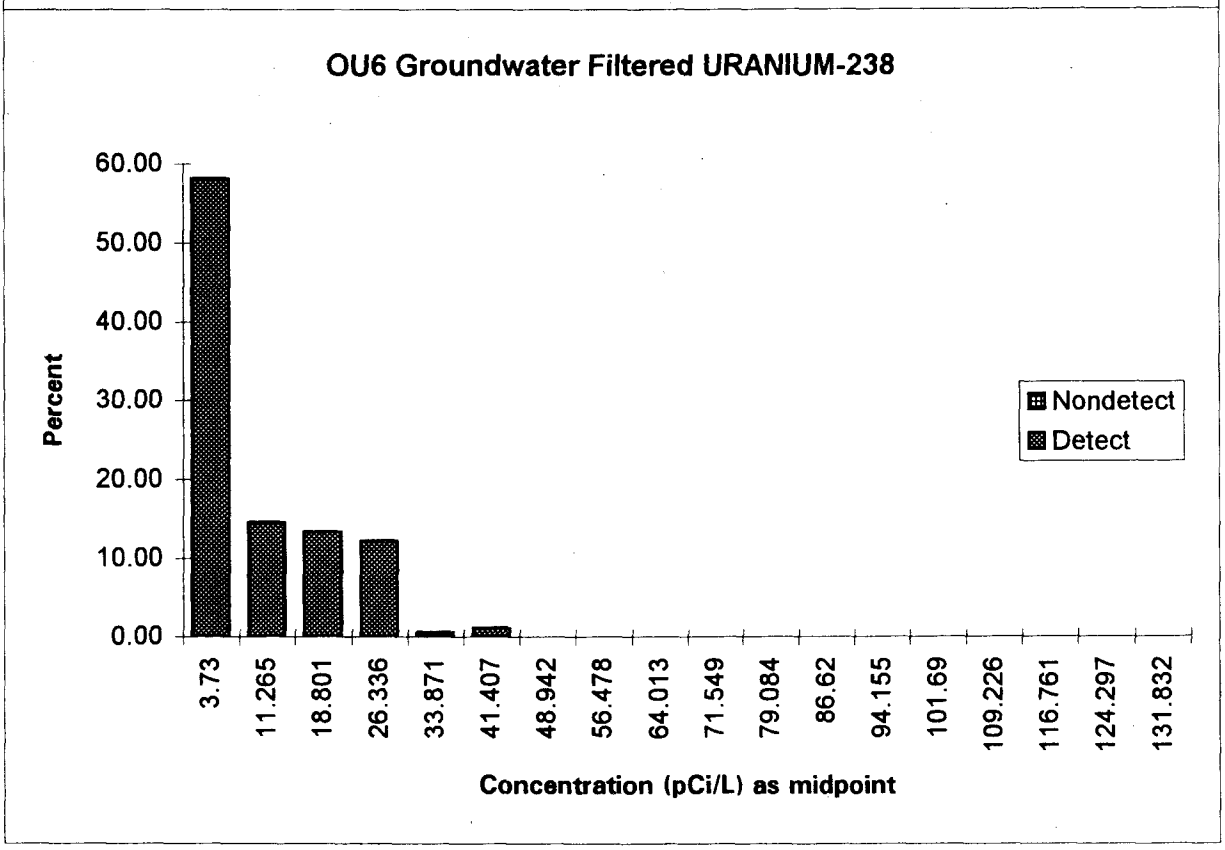

Background Groundwater Filtered URANIUM-233,234
Percent
90.00
80.00
70.00
60.00
50.00
40.00
30.00
20.00
10.00
0.00
Nondetect
Detect
5.518
16.603
27.688
38.772
49.857
60.942
72.026
83.111
94.196
105.28
116.365
127.45
138.534
149.619
160.704
171.788
182.873
193.958
Concentration (pCi/L) as midpoint

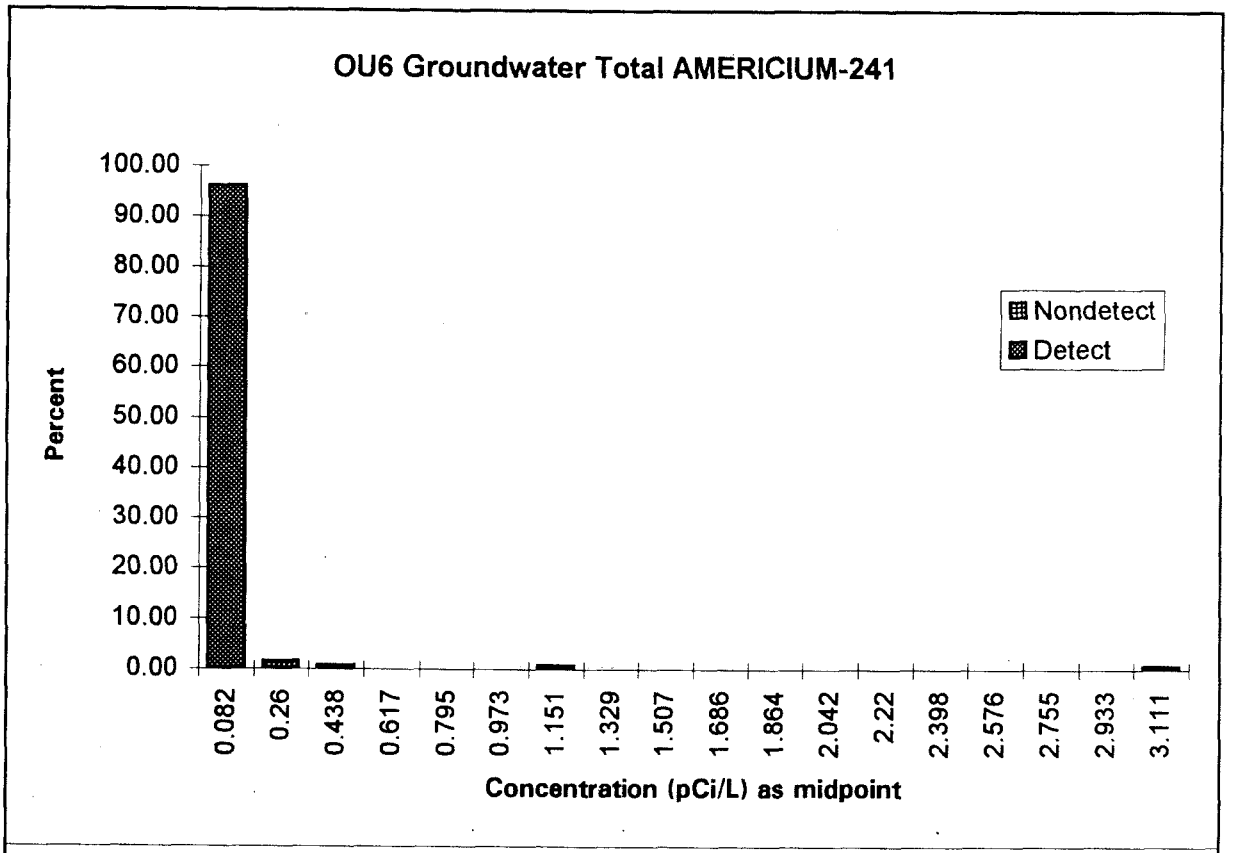

OU6 Groundwater Filtered URANIUM-233,234
Percent
60.00
50.00
40.00
30.00
20.00
10.00
0.00
Nondetect
Detect
5.518
16.603
27.688
38.772
49.857
60.942
72.026
83.111
94.196
105.28
116.365
127.45
138.534
149.619
160.704
171.788
182.873
193.958
Concentration (pCi/L) as midpoint

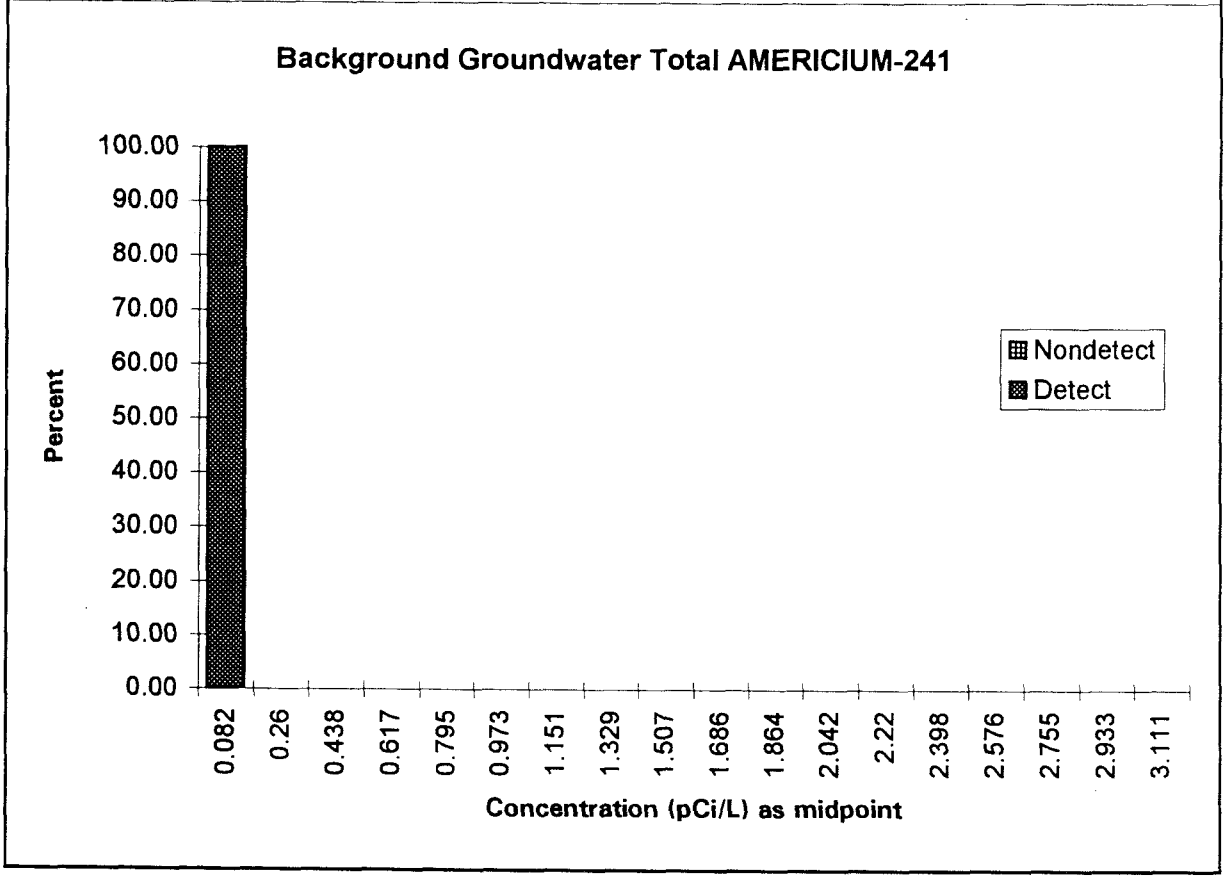

Background Groundwater Filtered URANIUM-235
Percent
90.00
80.00
70.00
60.00
50.00
40.00
30.00
20.00
10.00
0.00
Nondetect
Detect
0.084
0.353
0.623
0.893
1.162
1.432
1.702
1.971
2.241
2.511
2.78
3.05
3.32
3.589
3.859
4.129
4.398
4.668
Concentration (pCi/L) as midpoint

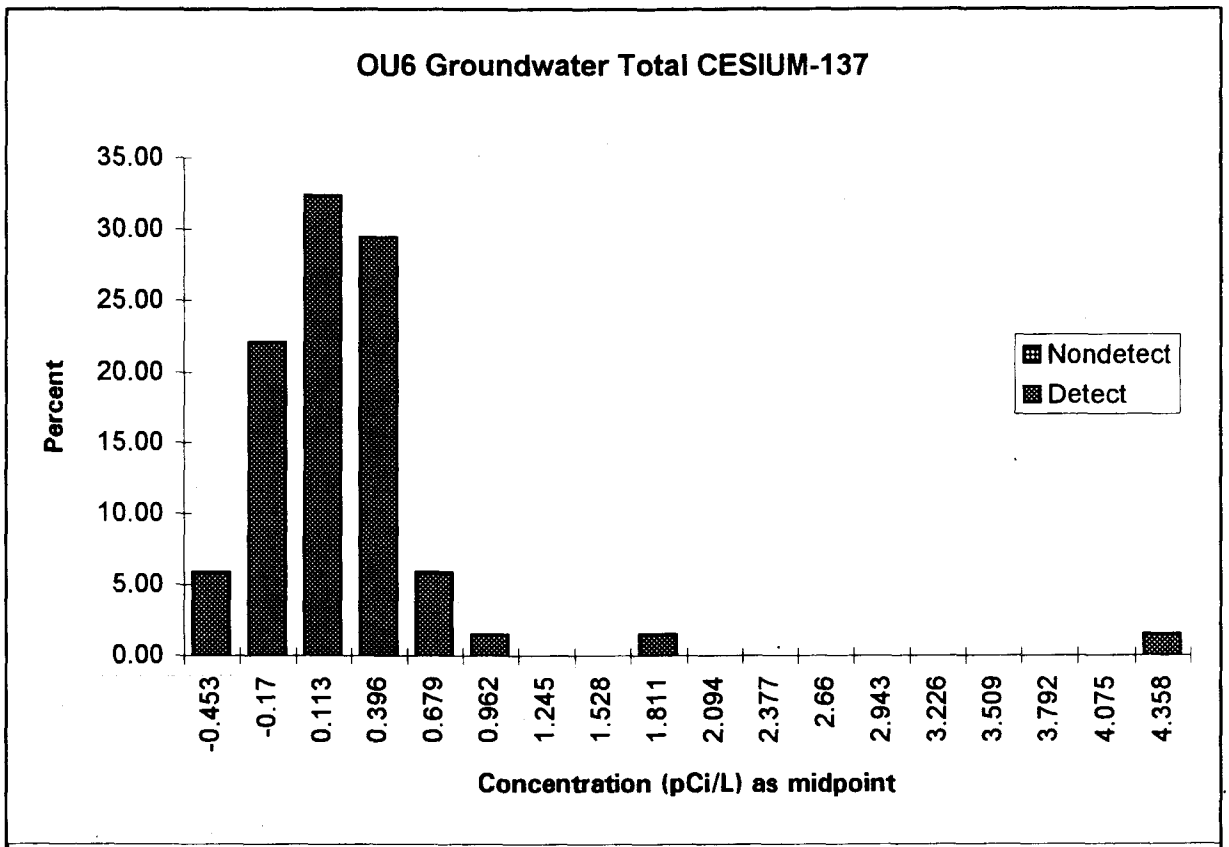

OU6 Groundwater Filtered URANIUM-235
Percent
50.00
45.00
40.00
35.00
30.00
25.00
20.00
15.00
10.00
5.00
0.00
Nondetect
Detect
0.084
0.353
0.623
0.893
1.162
1.432
1.702
1.971
2.241
2.511
2.78
3.05
3.32
3.589
3.859
4.129
4.398
4.668
Concentration (pCi/L) as midpoint

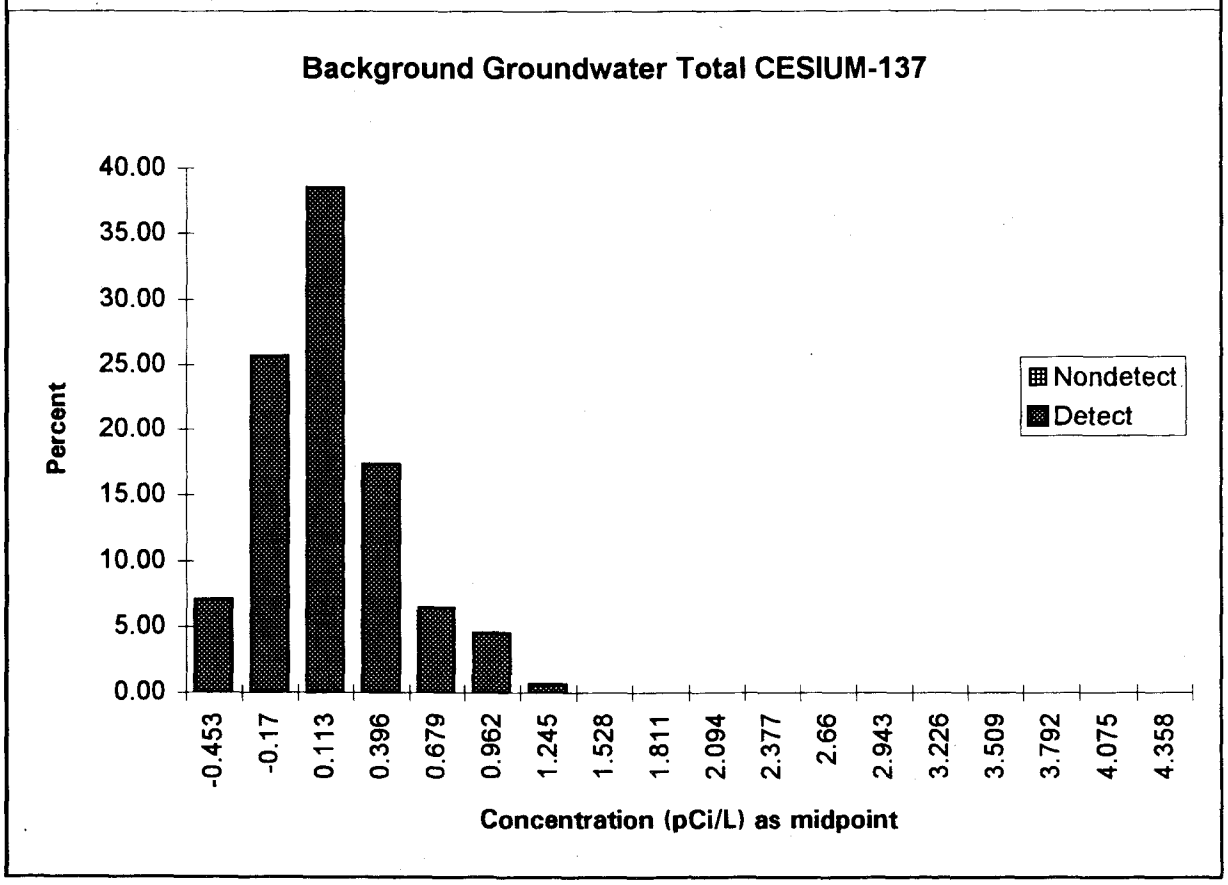

Background Groundwater Filtered URANIUM-238
Percent
90.00
80.00
70.00
60.00
50.00
40.00
30.00
20.00
10.00
0.00
Nondetect
Detect
3.73
11.265
18.801
26.336
33.871
41.407
48.942
56.478
64.013
71.549
79.084
86.62
94.155
101.69
109.226
116.761
124.297
131.832
Concentration (pCi/L) as midpoint

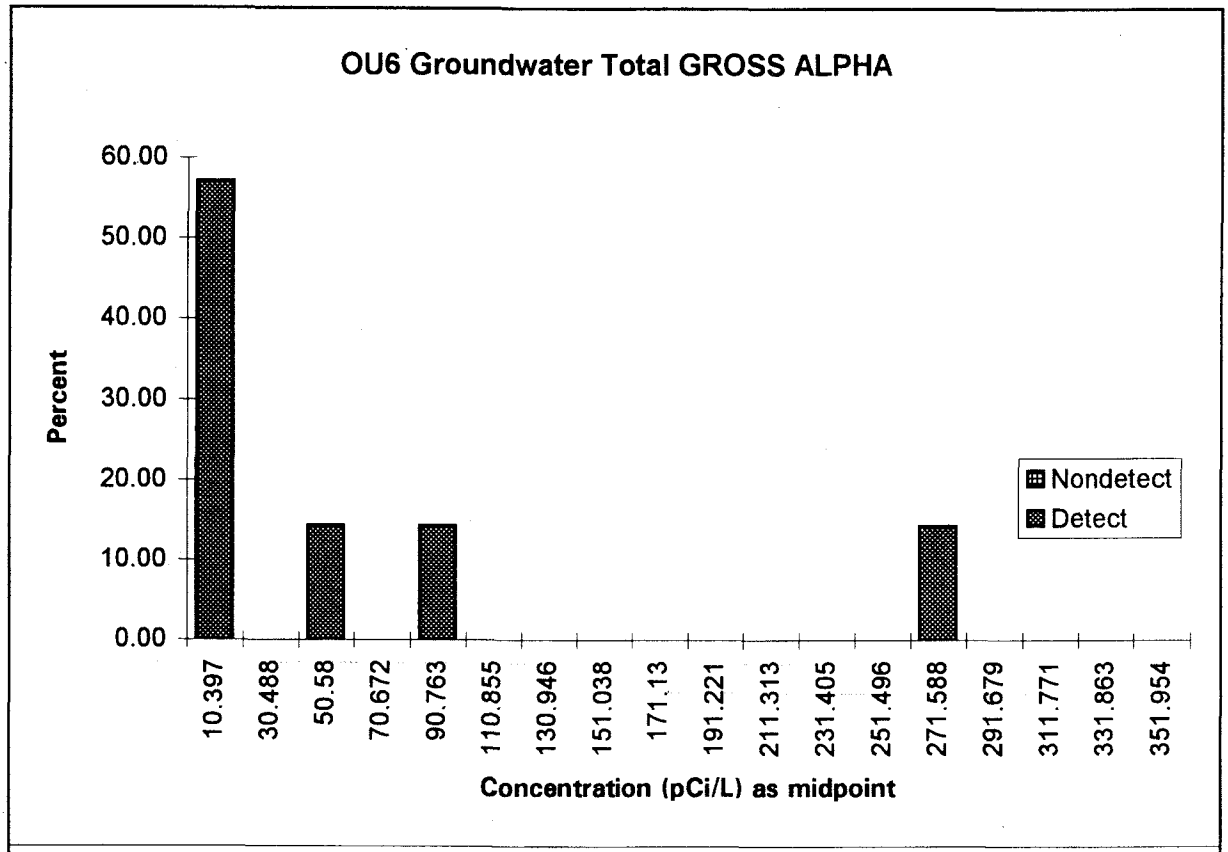

OU6 Groundwater Filtered URANIUM-238
Percent
60.00
50.00
40.00
30.00
20.00
10.00
0.00
Nondetect
Detect
3.73
11.265
18.801
26.336
33.871
41.407
48.942
56.478
64.013
71.549
79.084
86.62
94.155
101.69
109.226
116.761
124.297
131.832
Concentration (pCi/L) as midpoint

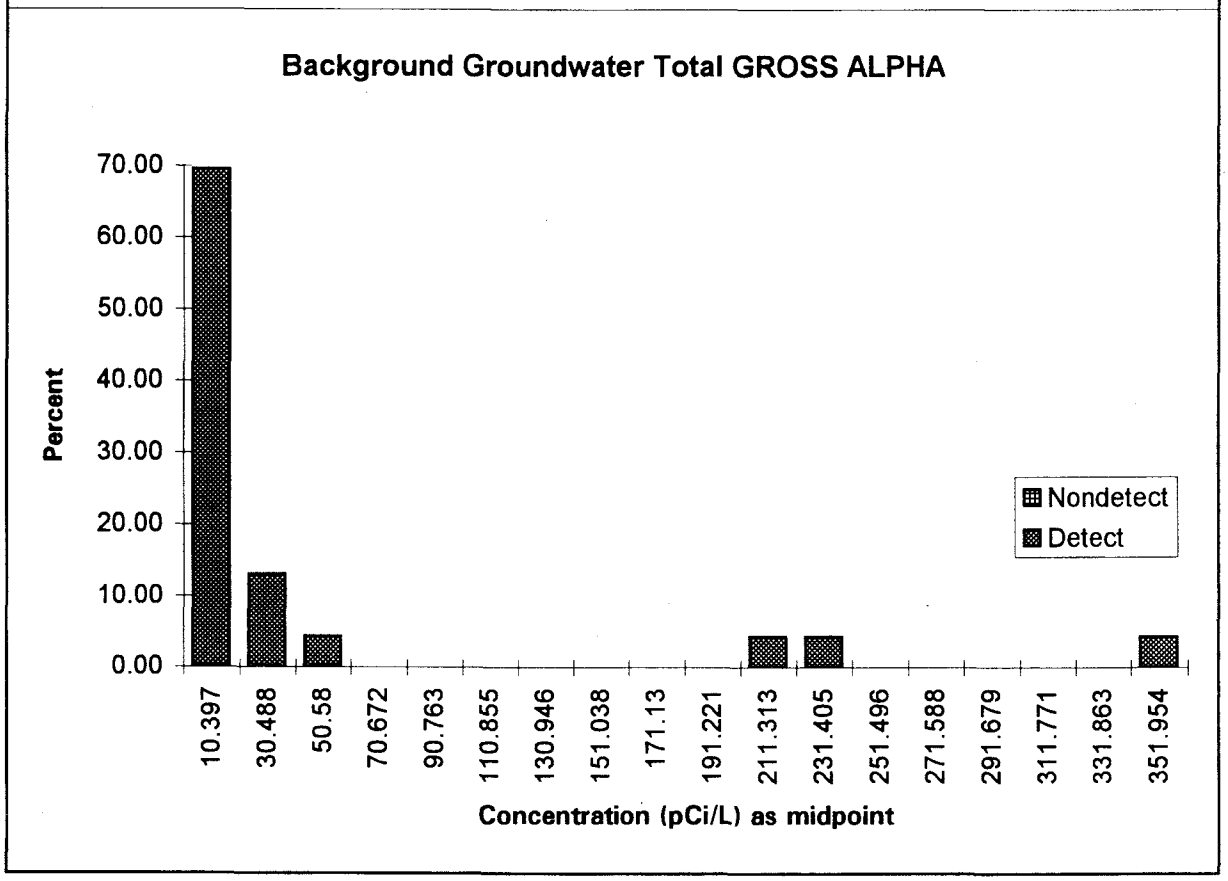

OU6 Groundwater Total AMERICIUM-241
Percent
100.00
90.00
80.00
70.00
60.00
50.00
40.00
30.00
20.00
10.00
0.00
Nondetect
Detect
0.082
0.26
0.438
0.617
0.795
0.973
1.151
1.329
1.507
1.686
1.864
2.042
2.22
2.398
2.576
2.755
2.933
3.111
Concentration (pCi/L) as midpoint

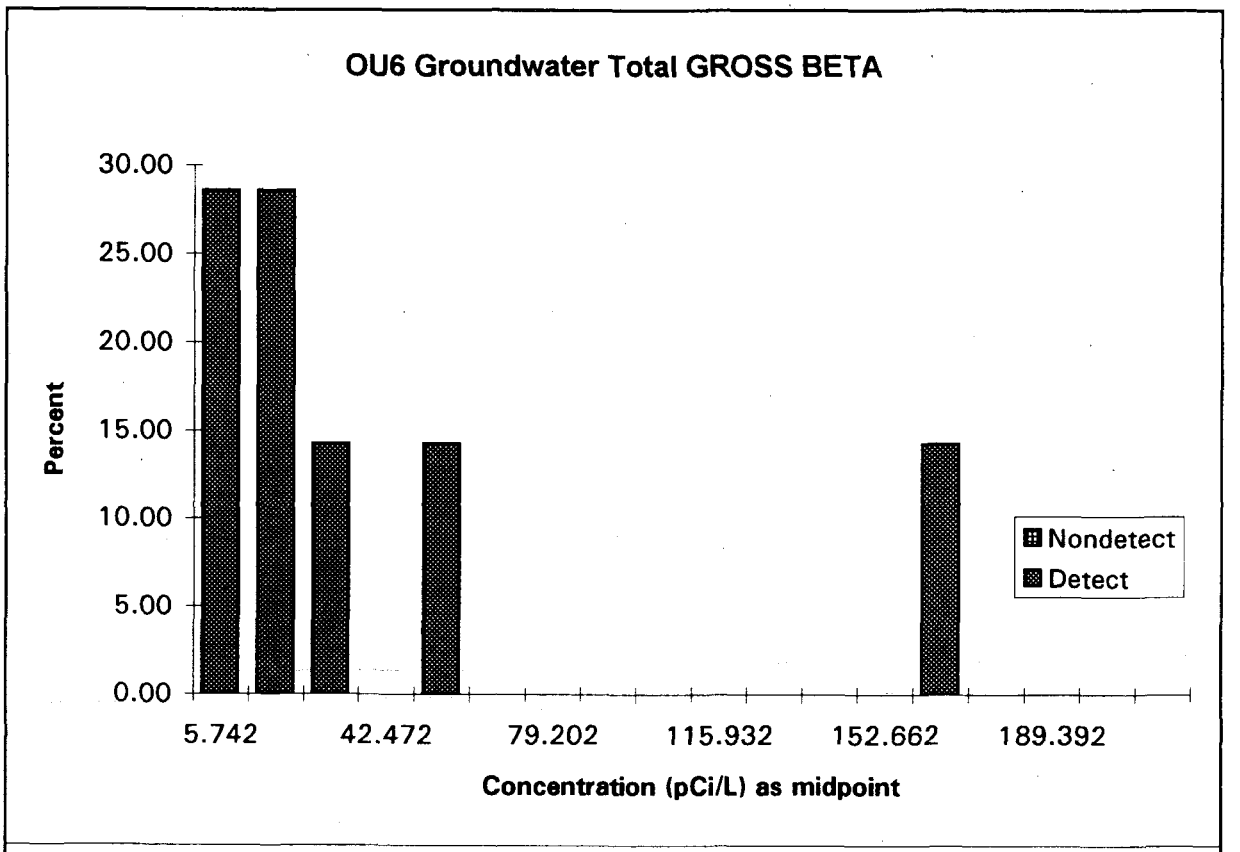

Background Groundwater Total AMERICIUM-241
Percent
100.00
90.00
80.00
70.00
60.00
50.00
40.00
30.00
20.00
10.00
0.00
Nondetect
Detect
0.082
0.26
0.438
0.617
0.795
0.973
1.151
1.329
1.507
1.686
1.864
2.042
2.22
2.398
2.576
2.755
2.933
3.111
Concentration (pCi/L) as midpoint

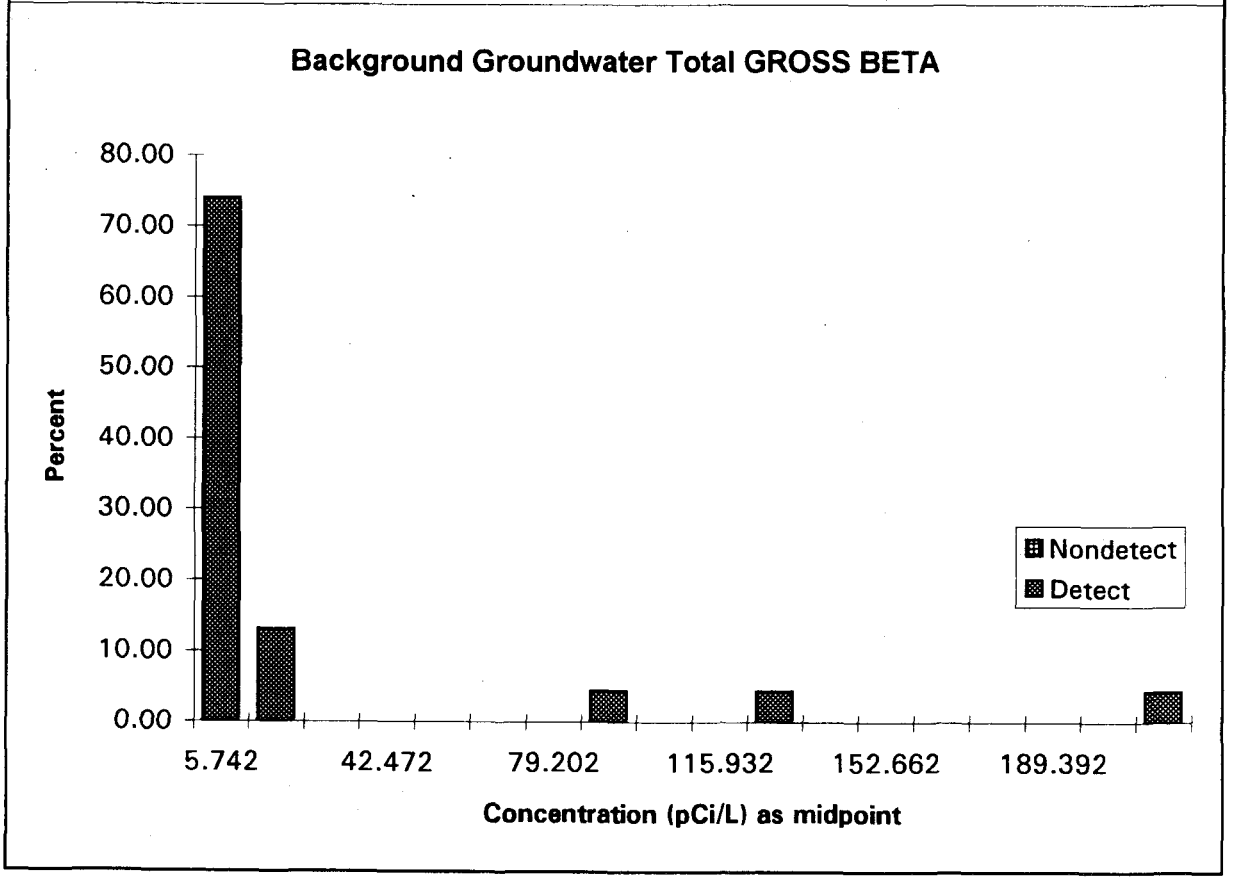

OU6 Groundwater Total CESIUM-137
Percent
35.00
30.00
25.00
20.00
15.00
10.00
5.00
0.00
Nondetect
Detect
-0.453
-0.17
0.113
0.396
0.679
0.962
1.245
1.528
1.811
2.094
2.377
2.66
2.943
3.226
3.509
3.792
4.075
4.358
Concentration (pCi/L) as midpoint

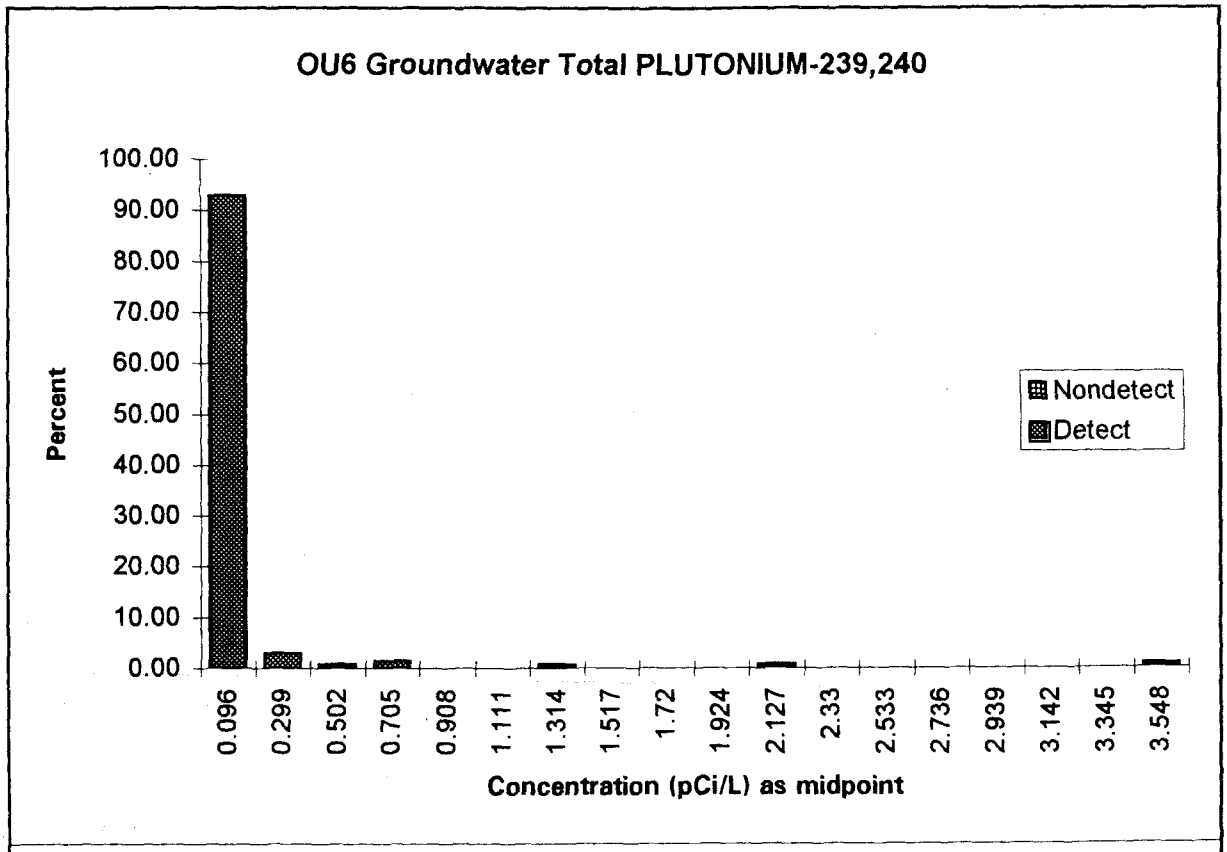

Background Groundwater Total CESIUM-137
Percent
40.00
35.00
30.00
25.00
20.00
15.00
10.00
5.00
0.00
Nondetect
Detect
-0.453
-0.17
0.113
0.396
0.679
0.962
1.245
1.528
1.811
2.094
2.377
2.66
2.943
3.226
3.509
3.792
4.075
4.358
Concentration (pCi/L) as midpoint

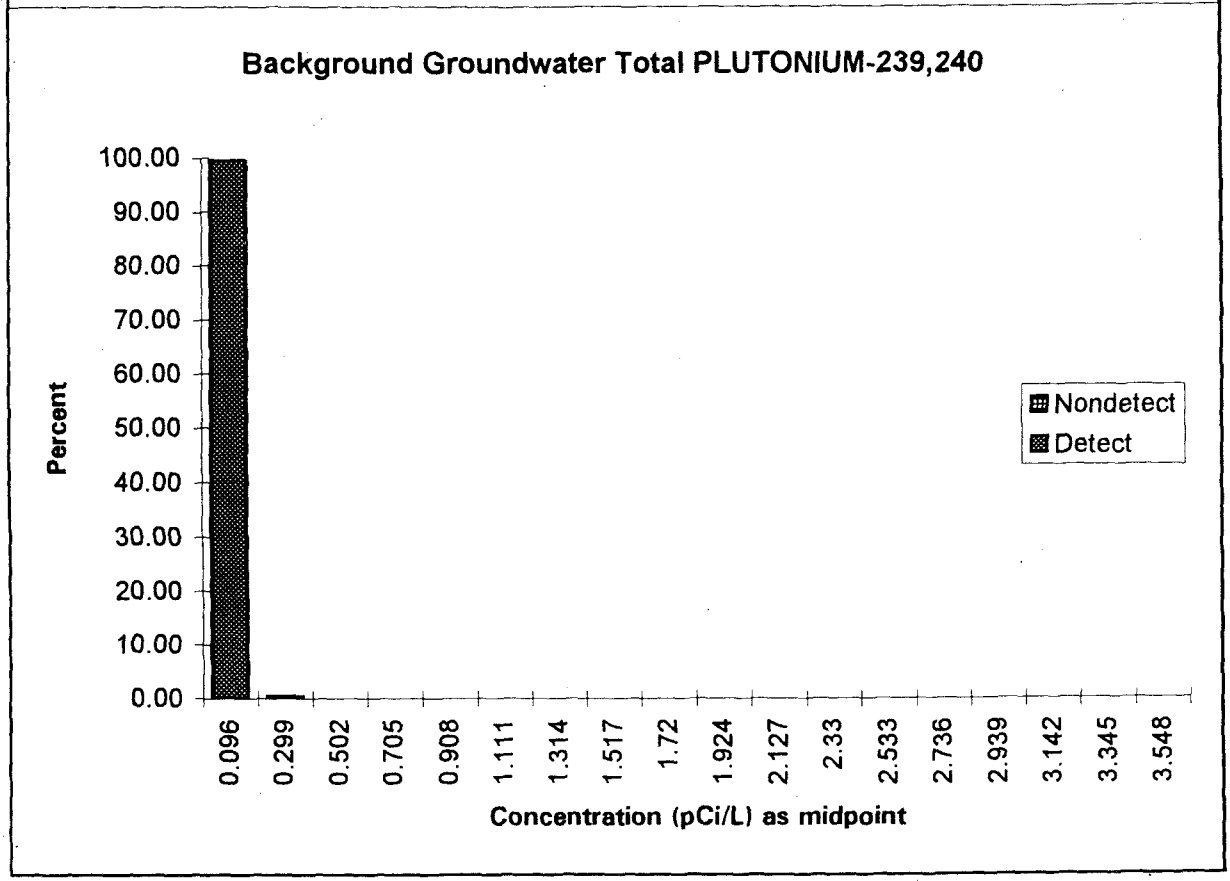

OU6 Groundwater Total GROSS ALPHA
Percent
60.00
50.00
40.00
30.00
20.00
10.00
0.00
Nondetect
Detect
10.397
30.488
50.58
70.672
90.763
110.855
130.946
151.038
171.13
191.221
211.313
231.405
251.496
271.588
291.679
311.771
331.863
351.954
Concentration (pCi/L) as midpoint

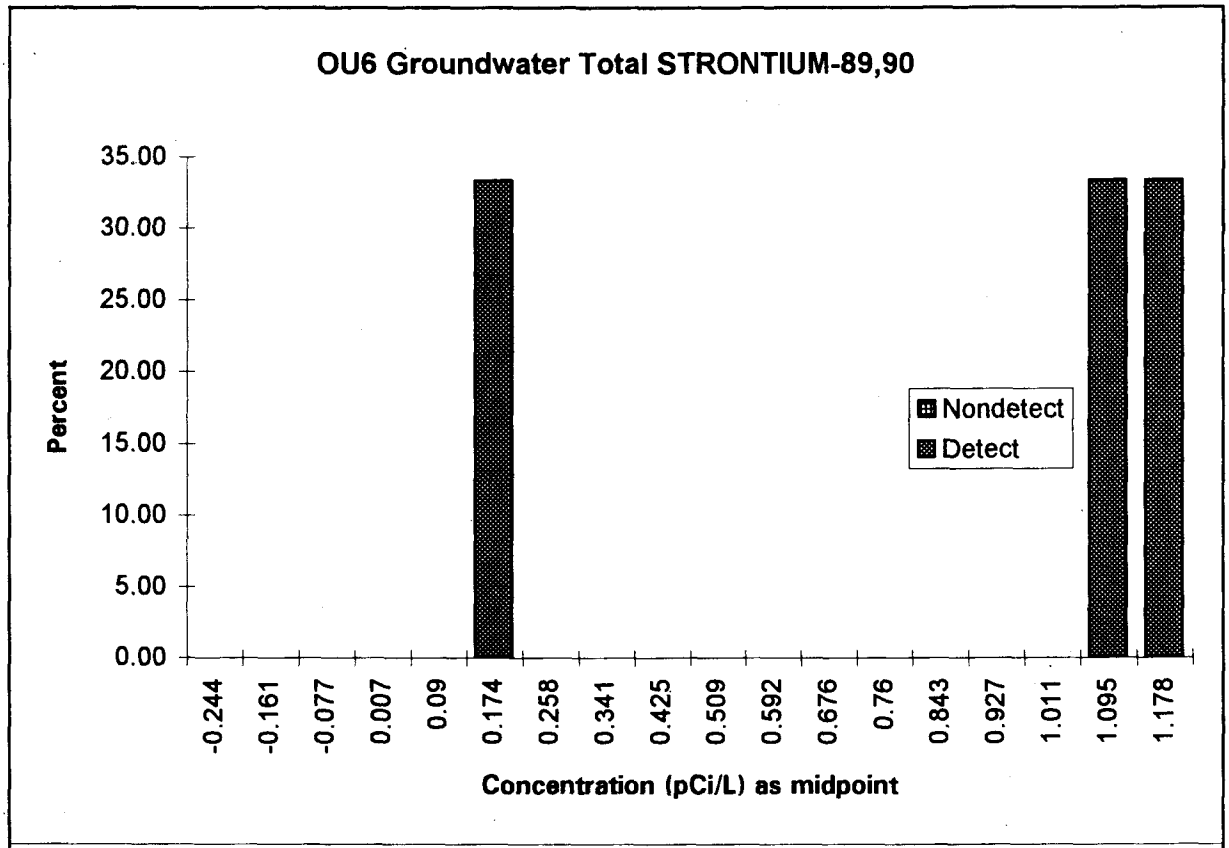

Background Groundwater Total GROSS ALPHA
Percent
70.00
60.00
50.00
40.00
30.00
20.00
10.00
0.00
Nondetect
Detect
10.397
30.488
50.58
70.672
90.763
110.855
130.946
151.038
171.13
191.221
211.313
231.405
251.496
271.588
291.679
311.771
331.863
351.954
Concentration (pCi/L) as midpoint

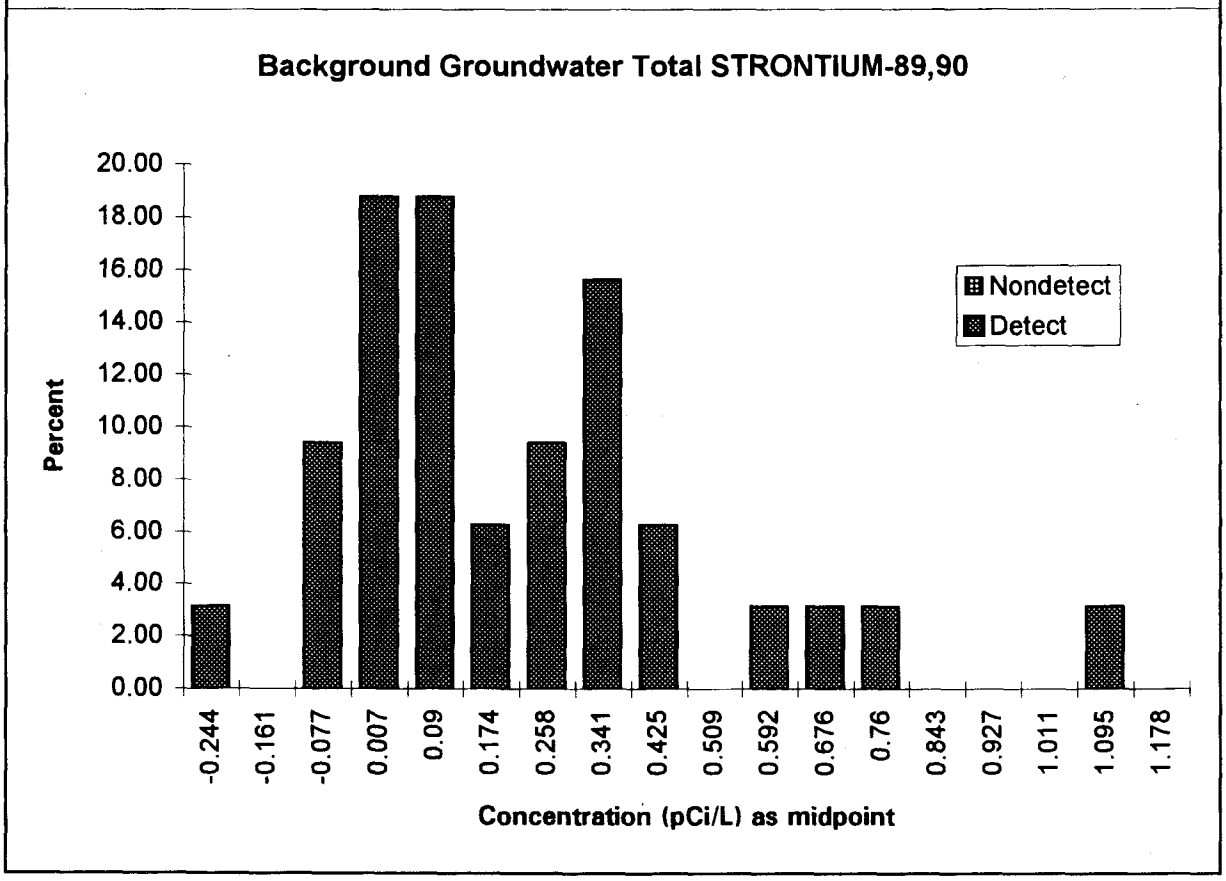

OU6 Groundwater Total GROSS BETA
30.00
25.00
20.00
15.00
10.00
5.00
0.00
Percent
5.742
42.472
79.202
115.932
152.662
189.392
Concentration (pCi/L) as midpoint
Nondetect
Detect

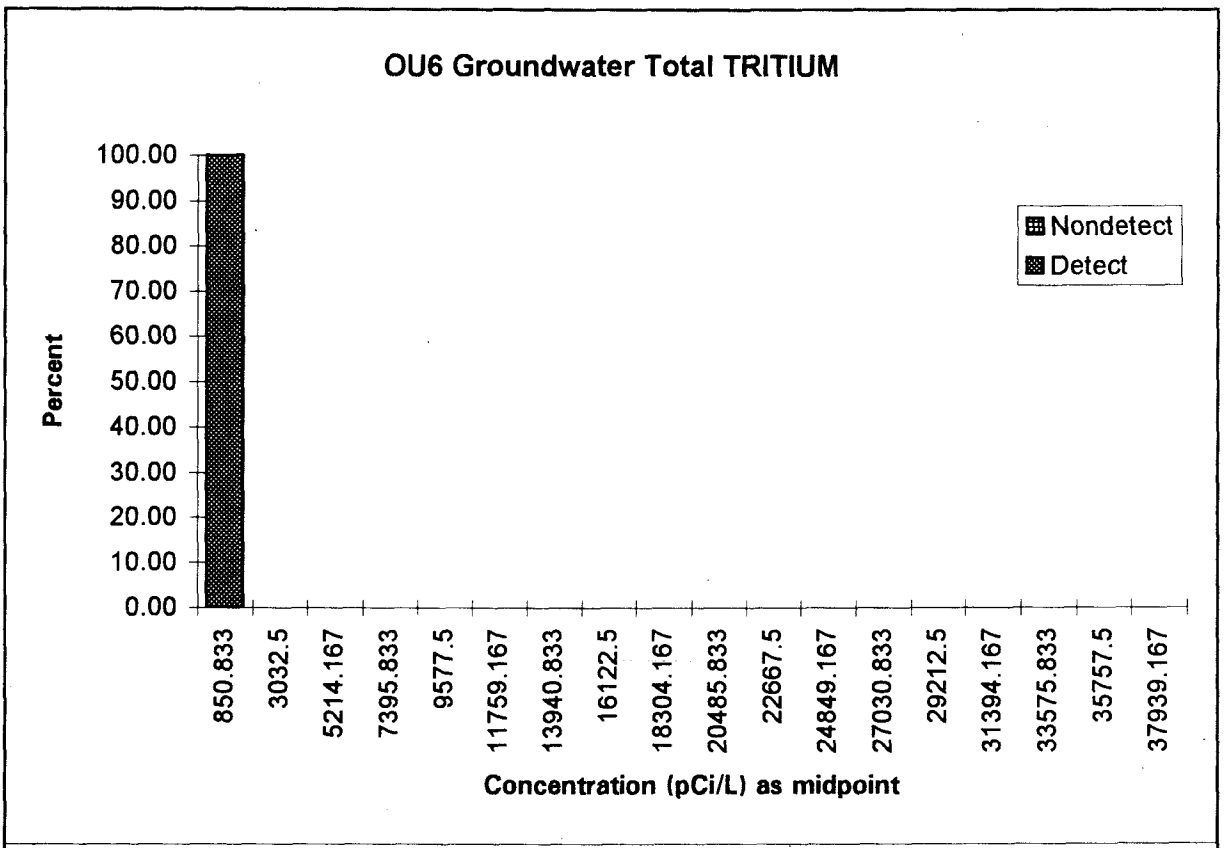

Background Groundwater Total GROSS BETA
80.00
70.00
60.00
50.00
40.00
30.00
20.00
10.00
0.00
Percent
5.742
42.472
79.202
115.932
152.662
189.392
Concentration (pCi/L) as midpoint
Nondetect
Detect

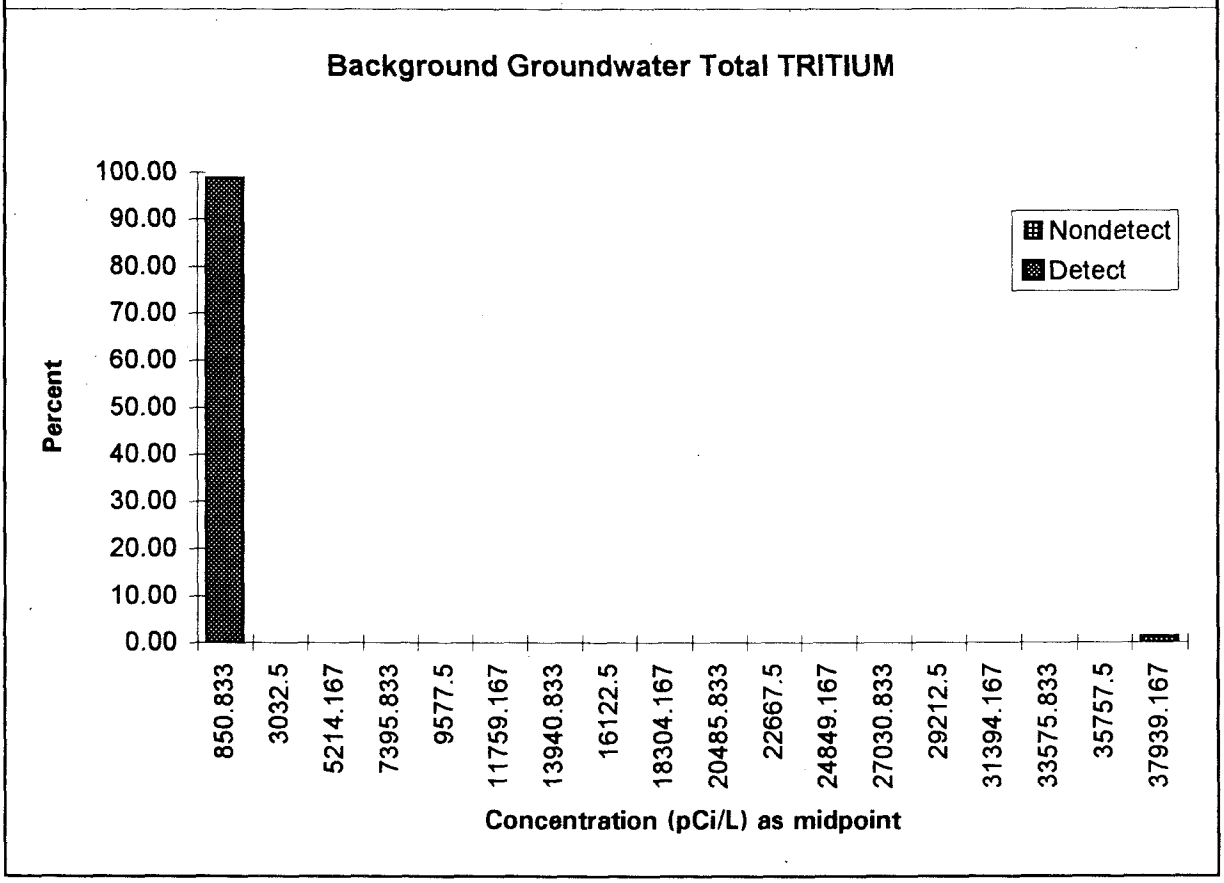

OU6 Groundwater Total PLUTONIUM-239,240
Percent
100.00
90.00
80.00
70.00
60.00
50.00
40.00
30.00
20.00
10.00
0.00
Nondetect
Detect
0.096
0.299
0.502
0.705
0.908
1.111
1.314
1.517
1.72
1.924
2.127
2.33
2.533
2.736
2.939
3.142
3.345
3.548
Concentration (pCi/L) as midpoint

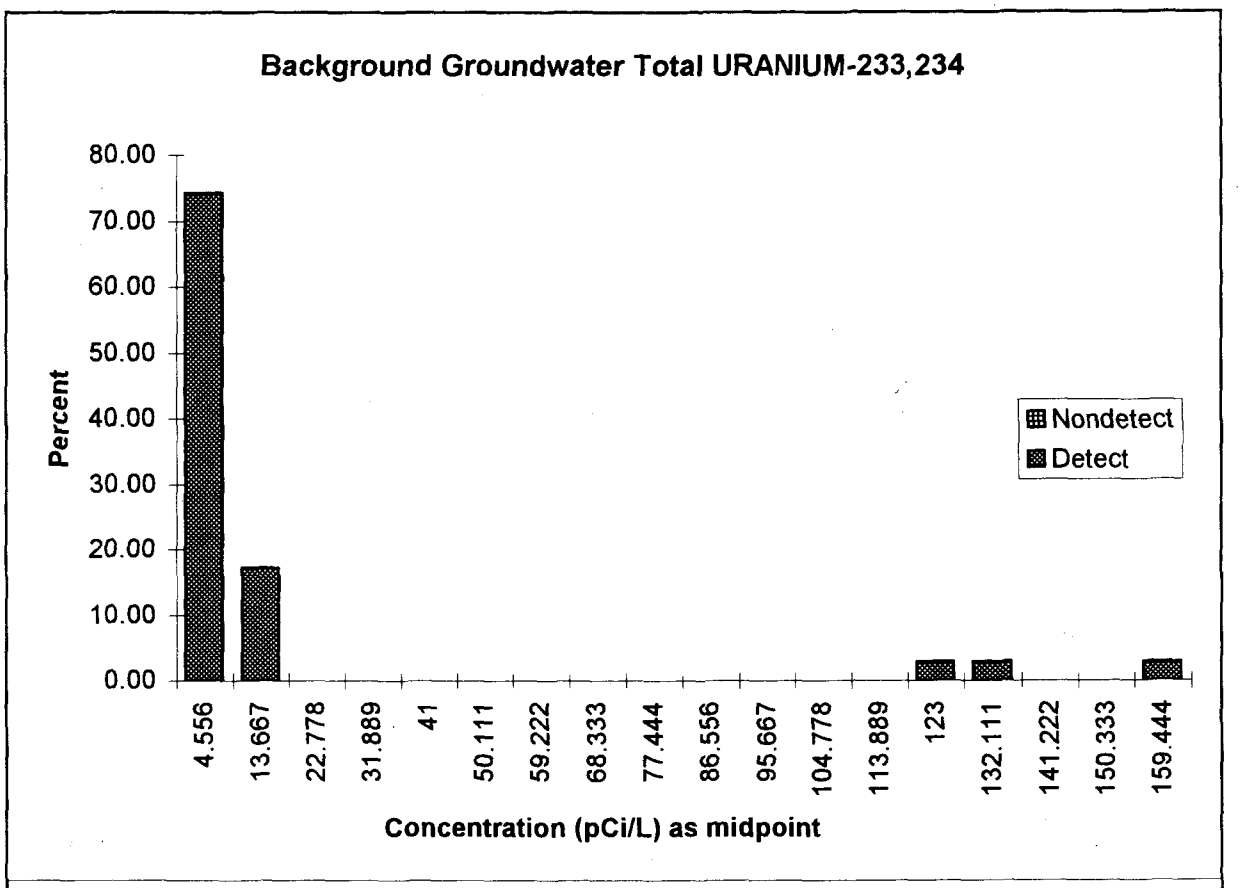

Background Groundwater Total PLUTONIUM-239,240
Percent
100.00
90.00
80.00
70.00
60.00
50.00
40.00
30.00
20.00
10.00
0.00
Nondetect
Detect
0.096
0.299
0.502
0.705
0.908
1.111
1.314
1.517
1.72
1.924
2.127
2.33
2.533
2.736
2.939
3.142
3.345
3.548
Concentration (pCi/L) as midpoint

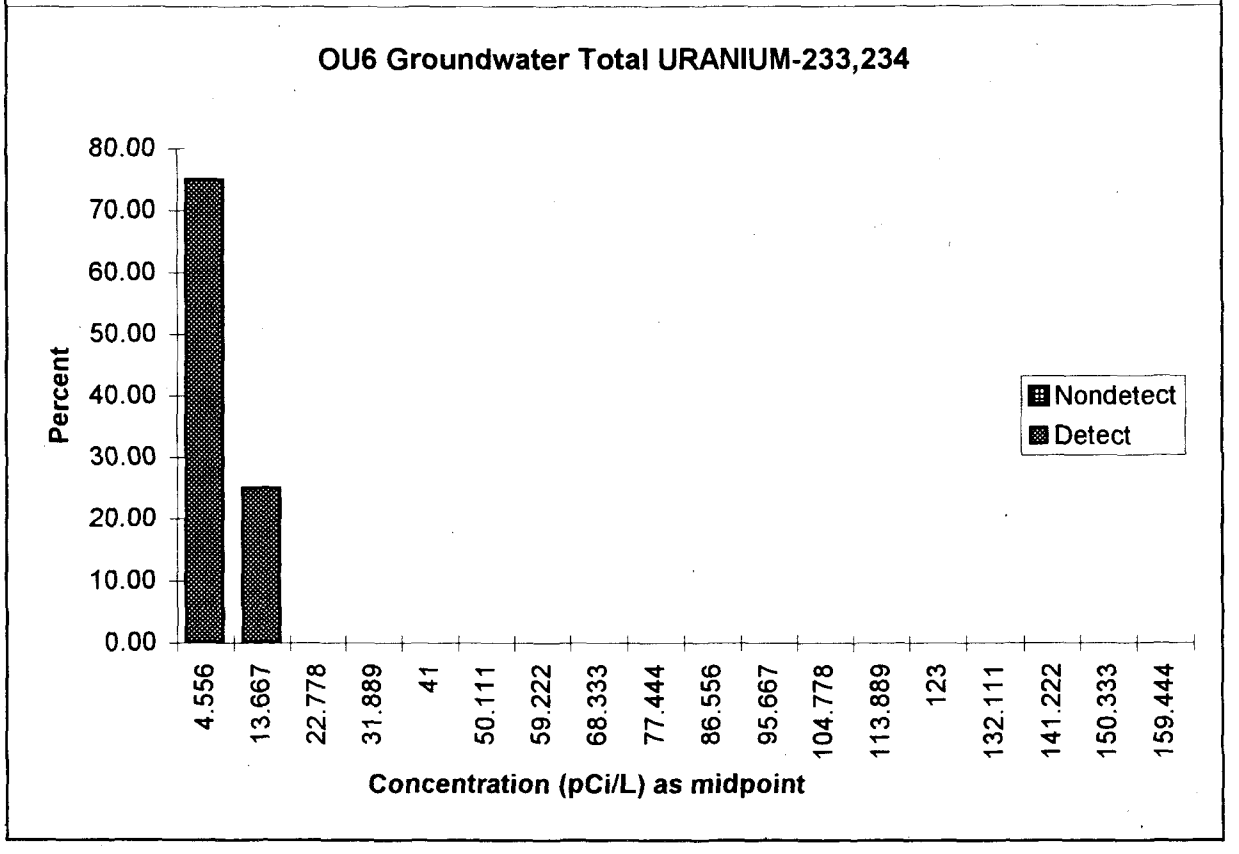

OU6 Groundwater Total STRONTIUM-89,90
Percent
35.00
30.00
25.00
20.00
15.00
10.00
5.00
0.00
Nondetect
Detect
-0.244
-0.161
-0.077
0.007
0.09
0.174
0.258
0.341
0.425
0.509
0.592
0.676
0.76
0.843
0.927
1.011
1.095
1.178
Concentration (pCi/L) as midpoint

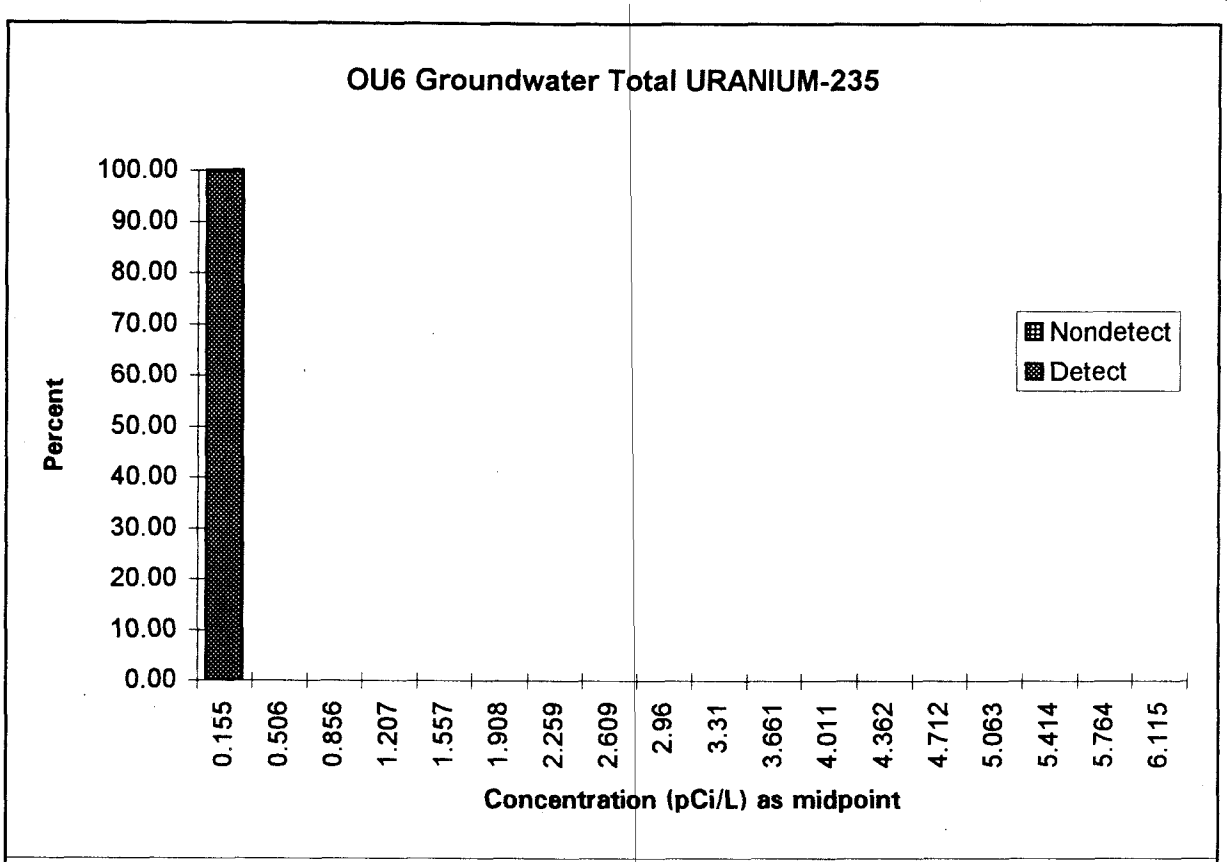

Background Groundwater Total STRONTIUM-89,90
Percent
20.00
18.00
16.00
14.00
12.00
10.00
8.00
6.00
4.00
2.00
0.00
Nondetect
Detect
-0.244
-0.161
-0.077
0.007
0.09
0.174
0.258
0.341
0.425
0.509
0.592
0.676
0.76
0.843
0.927
1.011
1.095
1.178
Concentration (pCi/L) as midpoint

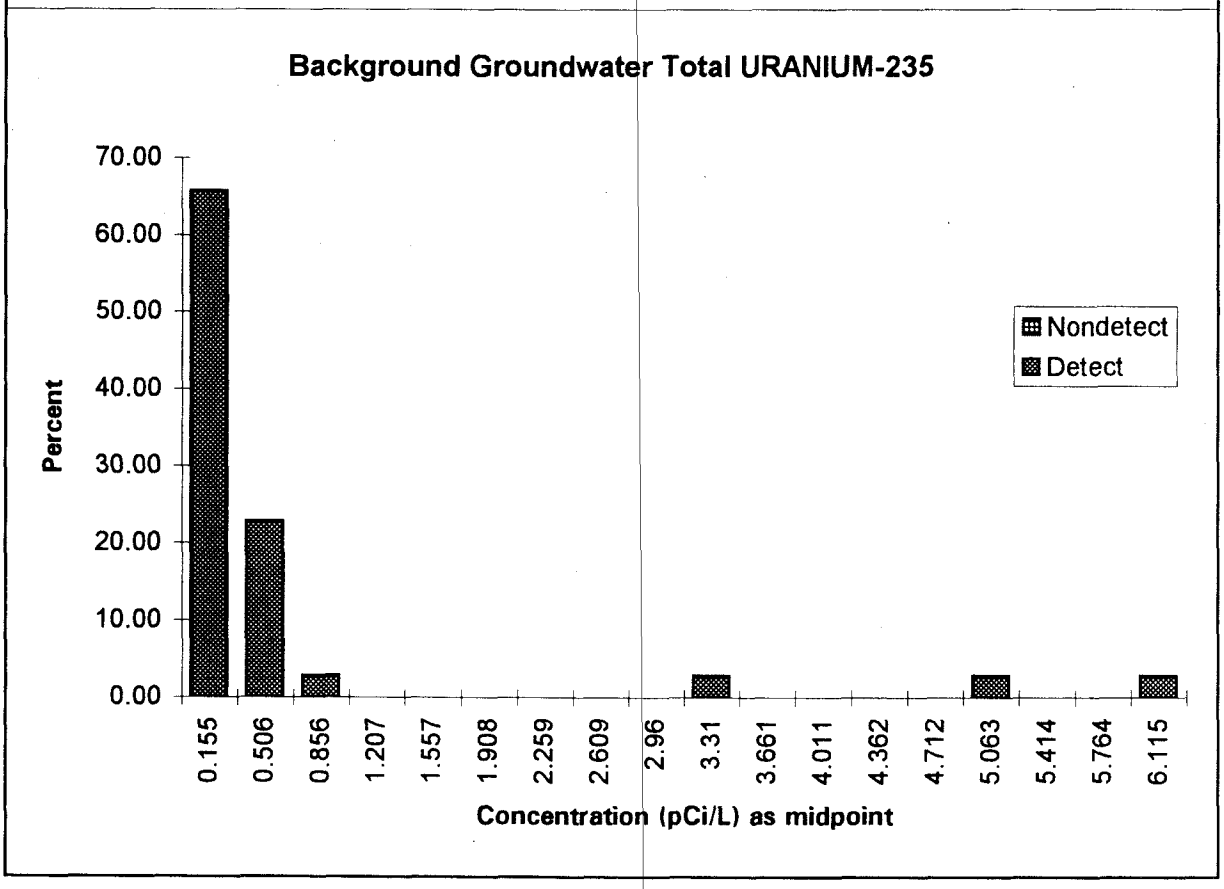

OU6 Groundwater Total TRITIUM
Percent
100.00
90.00
80.00
70.00
60.00
50.00
40.00
30.00
20.00
10.00
0.00
Nondetect
Detect
850.833
3032.5
5214.167
7395.833
9577.5
11759.167
13940.833
16122.5
18304.167
20485.833
22667.5
24849.167
27030.833
29212.5
31394.167
33575.833
35757.5
37939.167
Concentration (pCi/L) as midpoint

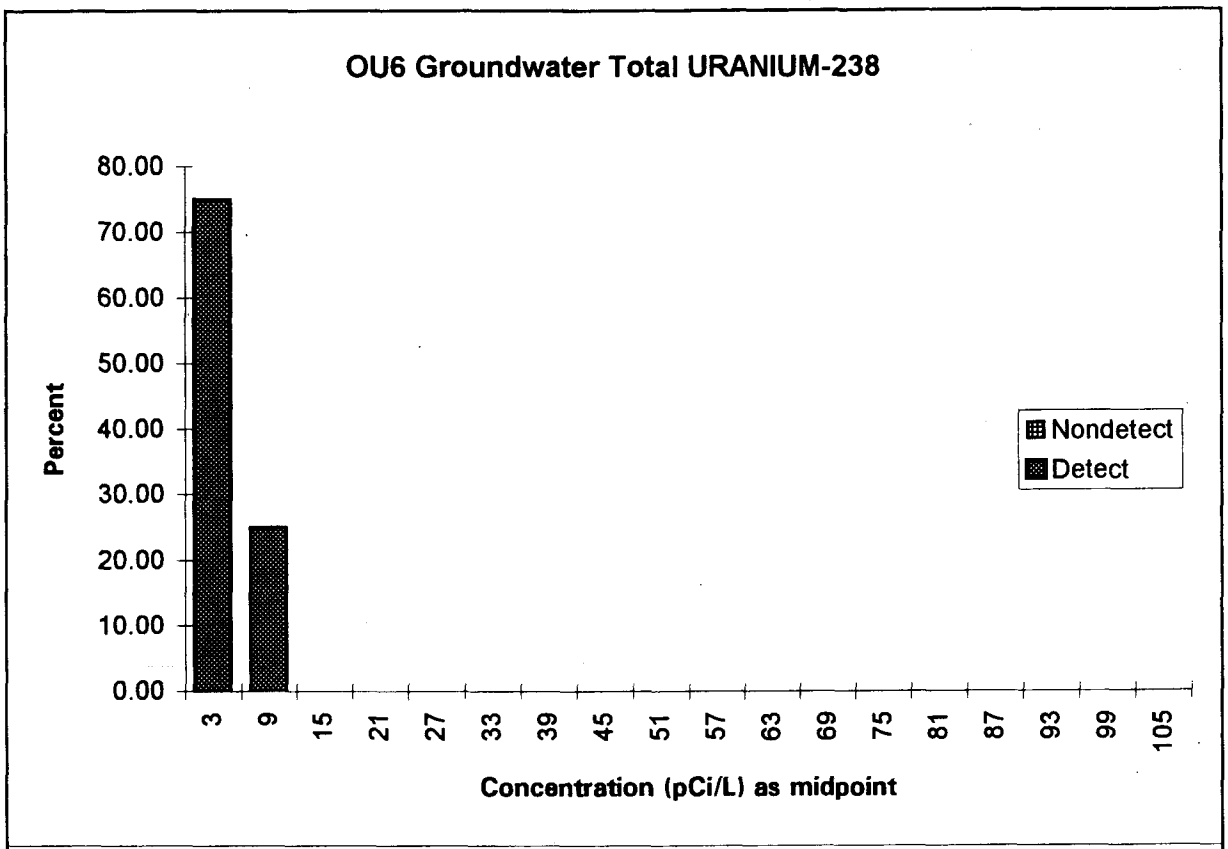

Background Groundwater Total TRITIUM
Percent
100.00
90.00
80.00
70.00
60.00
50.00
40.00
30.00
20.00
10.00
0.00
Nondetect
Detect
850.833
3032.5
5214.167
7395.833
9577.5
11759.167
13940.833
16122.5
18304.167
20485.833
22667.5
24849.167
27030.833
29212.5
31394.167
33575.833
35757.5
37939.167
Concentration (pCi/L) as midpoint

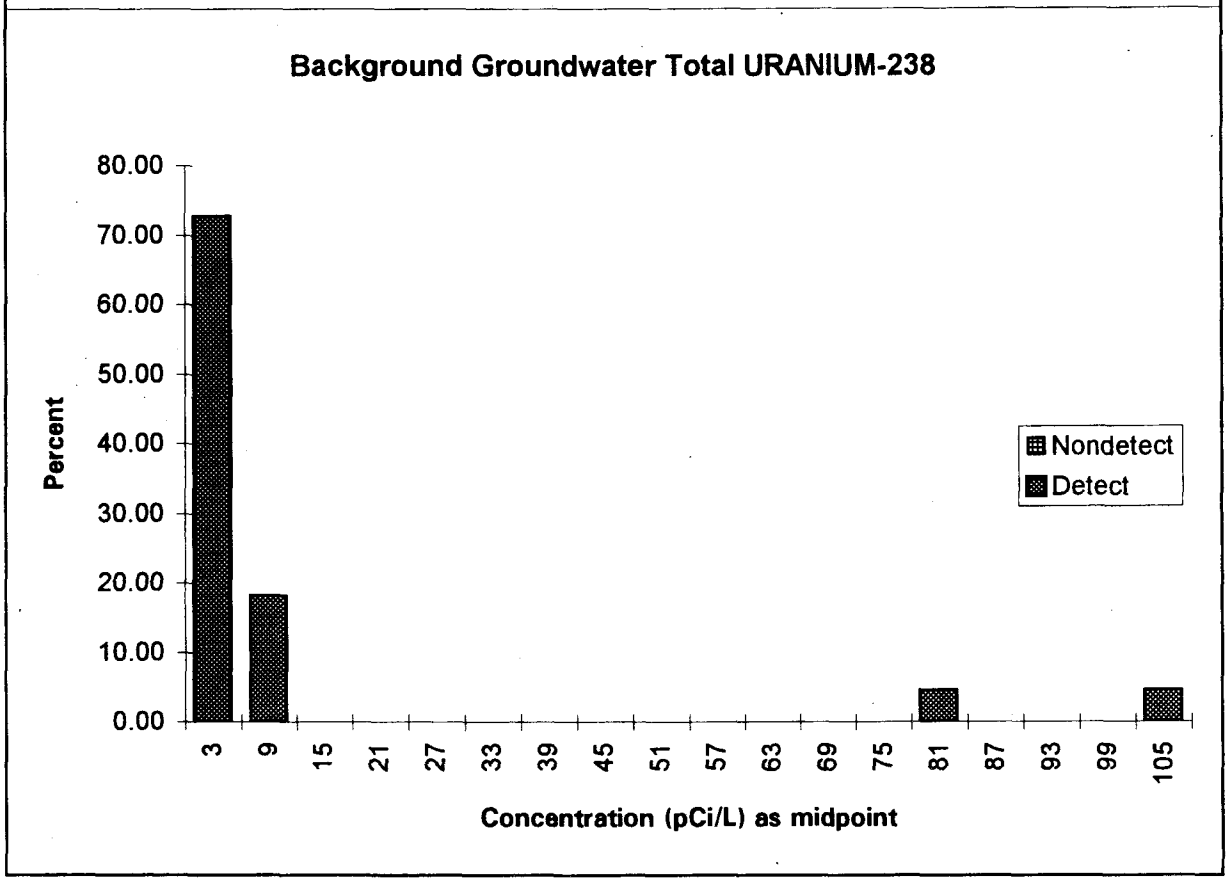

Background Groundwater Total URANIUM-233,234
80.00
70.00
60.00
50.00
40.00
30.00
20.00
10.00
0.00
Percent
Nondetect
Detect
4.556
13.667
22.778
31.889
41
50.111
59.222
68.333
77.444
86.556
95.667
104.778
113.889
123
132.111
141.222
150.333
159.444
Concentration (pCi/L) as midpoint

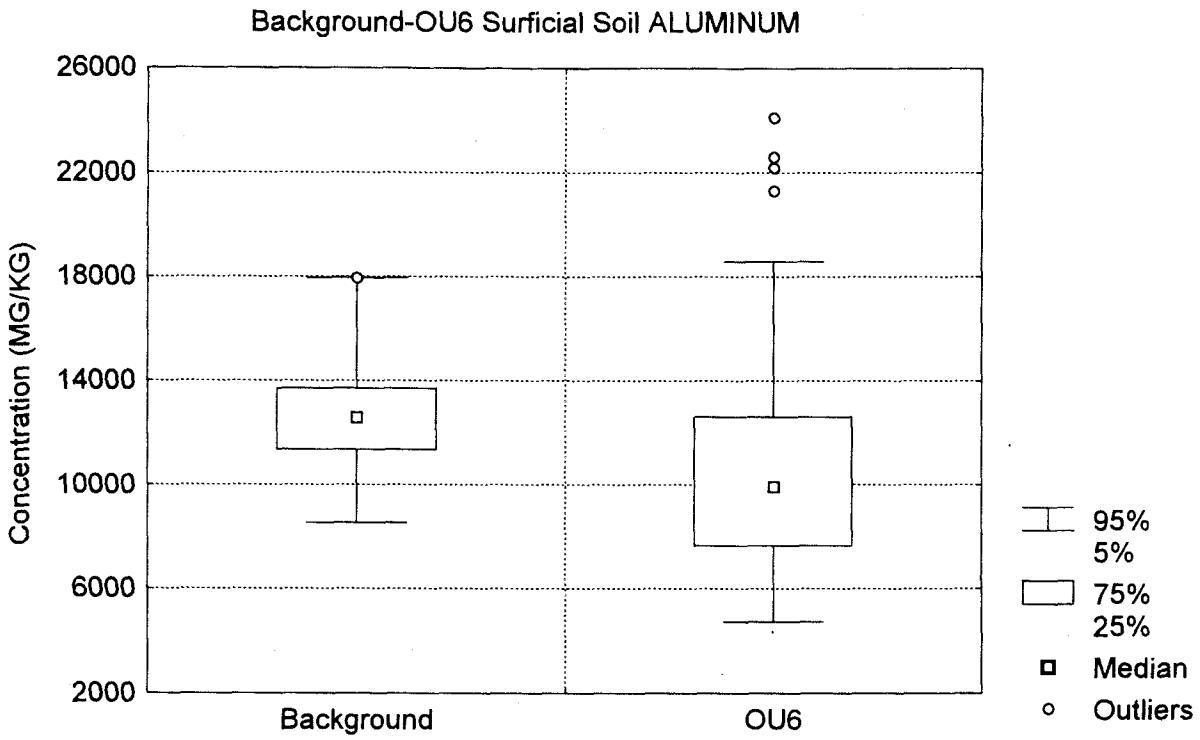

OU6 Groundwater Total URANIUM-233,234
80.00
70.00
60.00
50.00
40.00
30.00
20.00
10.00
0.00
Percent
Nondetect
Detect
4.556
13.667
22.778
31.889
41
50.111
59.222
68.333
77.444
86.556
95.667
104.778
113.889
123
132.111
141.222
150.333
159.444
Concentration (pCi/L) as midpoint

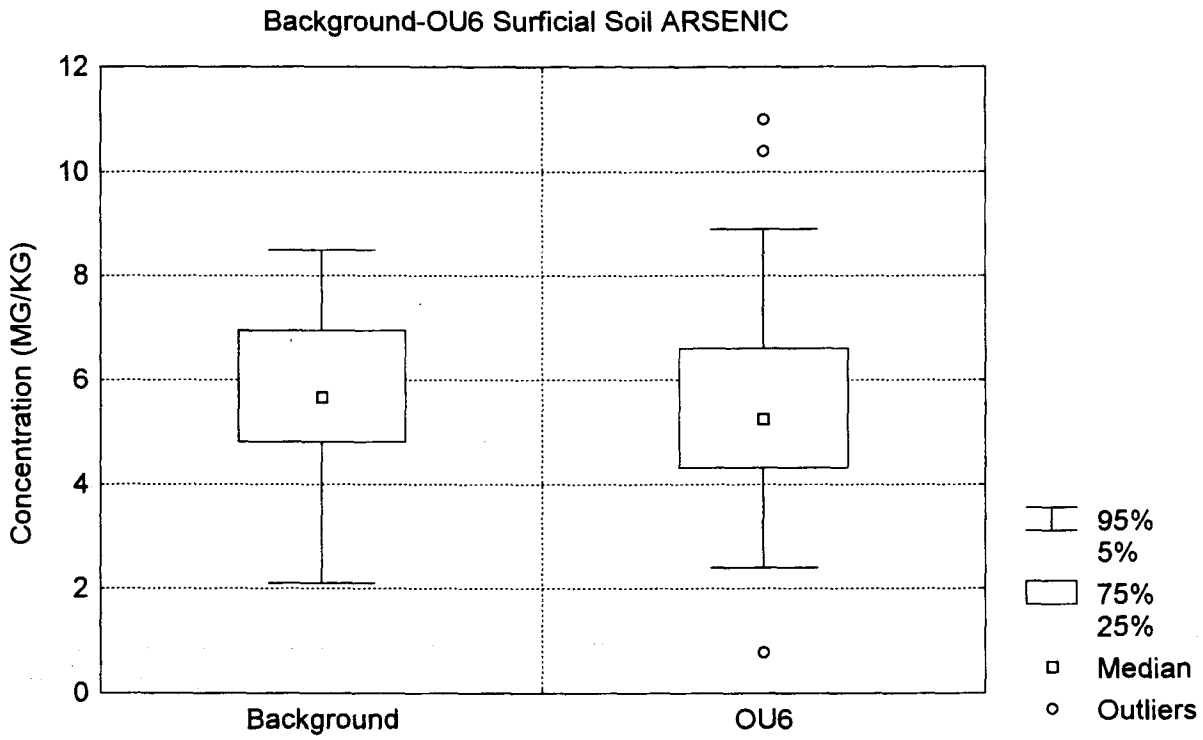

OU6 Groundwater Total URANIUM-235
Percent
100.00
90.00
80.00
70.00
60.00
50.00
40.00
30.00
20.00
10.00
0.00
Nondetect
Detect
0.155
0.506
0.856
1.207
1.557
1.908
2.259
2.609
2.96
3.31
3.661
4.011
4.362
4.712
5.063
5.414
5.764
6.115
Concentration (pCi/L) as midpoint

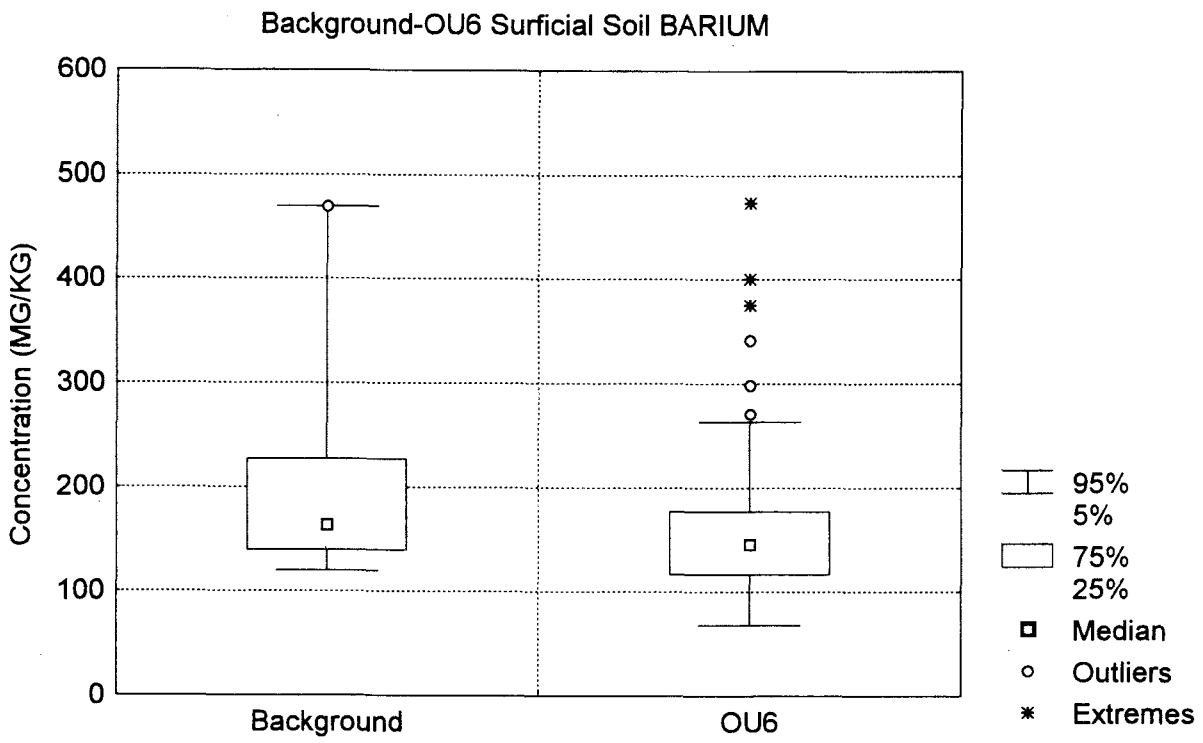

Background Groundwater Total URANIUM-235
Percent
70.00
60.00
50.00
40.00
30.00
20.00
10.00
0.00
Nondetect
Detect
0.155
0.506
0.856
1.207
1.557
1.908
2.259
2.609
2.96
3.31
3.661
4.011
4.362
4.712
5.063
5.414
5.764
6.115
Concentration (pCi/L) as midpoint

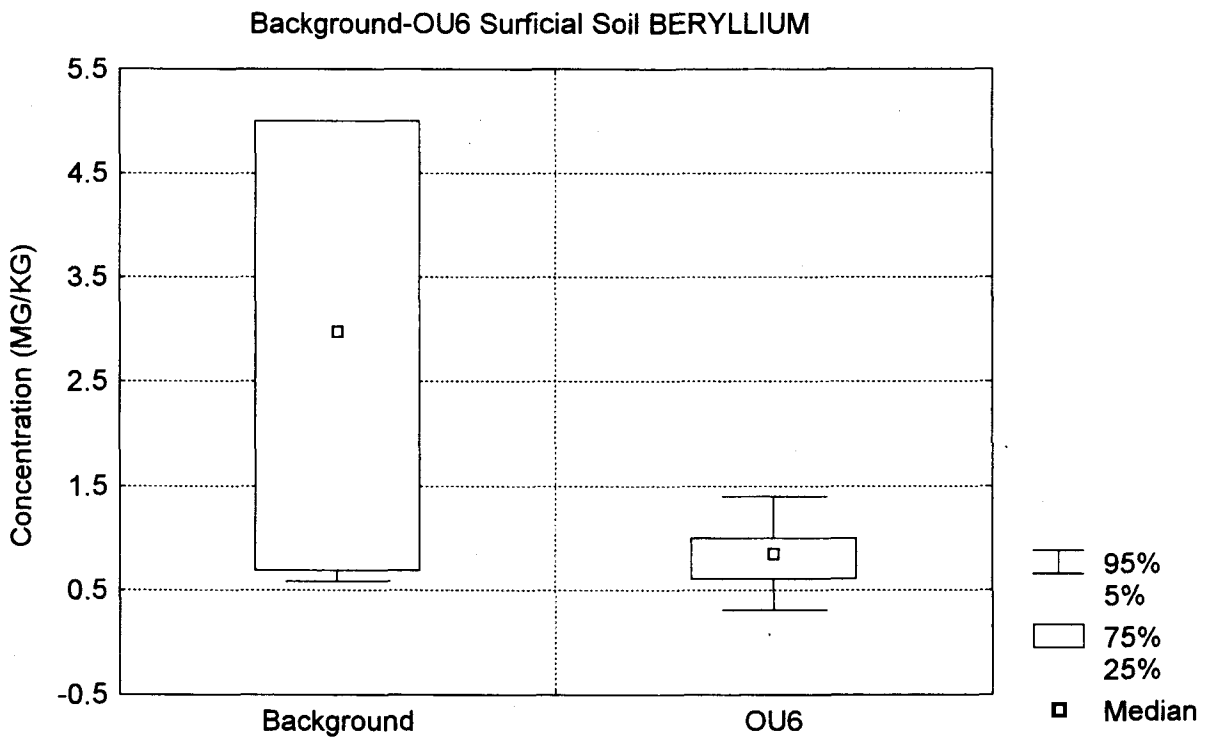

OU6 Groundwater Total URANIUM-238
Percent
80.00
70.00
60.00
50.00
40.00
30.00
20.00
10.00
0.00
3
9
15
21
27
33
39
45
51
57
63
69
75
81
87
93
99
105
Concentration (pCi/L) as midpoint
Nondetect
Detect

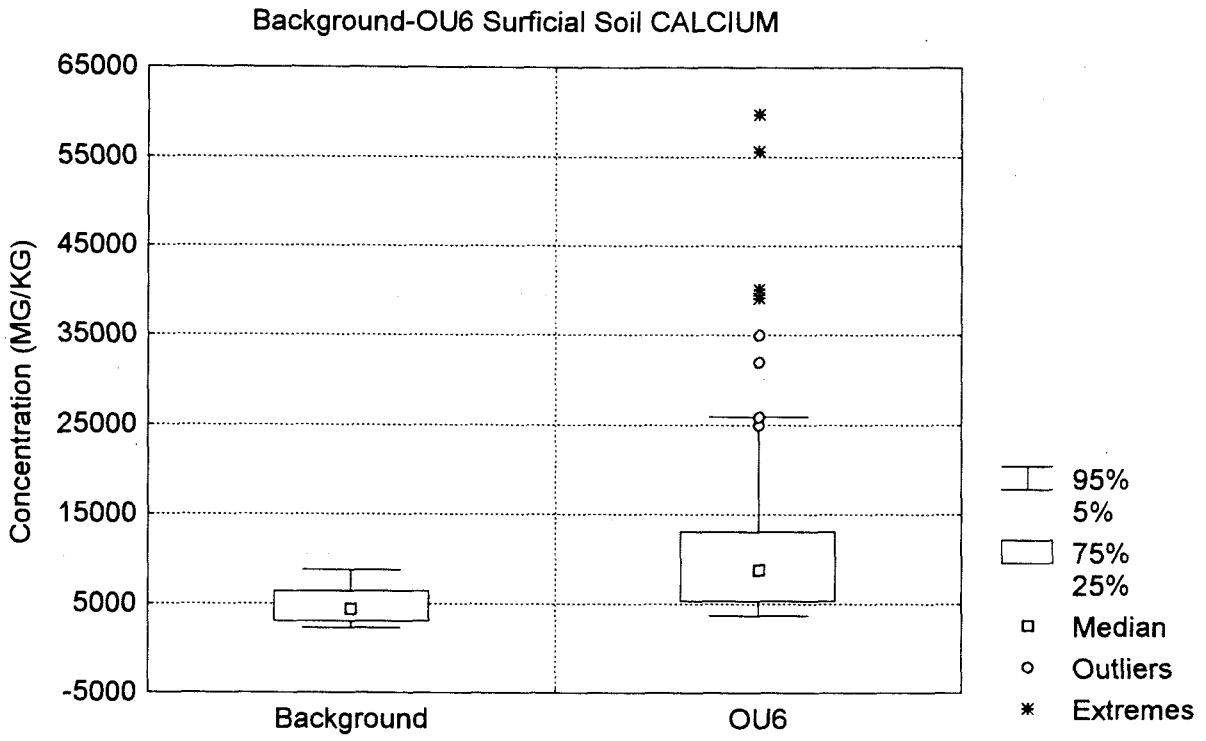

Background Groundwater Total URANIUM-238
Percent
80.00
70.00
60.00
50.00
40.00
30.00
20.00
10.00
0.00
3
9
15
21
27
33
39
45
51
57
63
69
75
81
87
93
99
105
Concentration (pCi/L) as midpoint
Nondetect
Detect

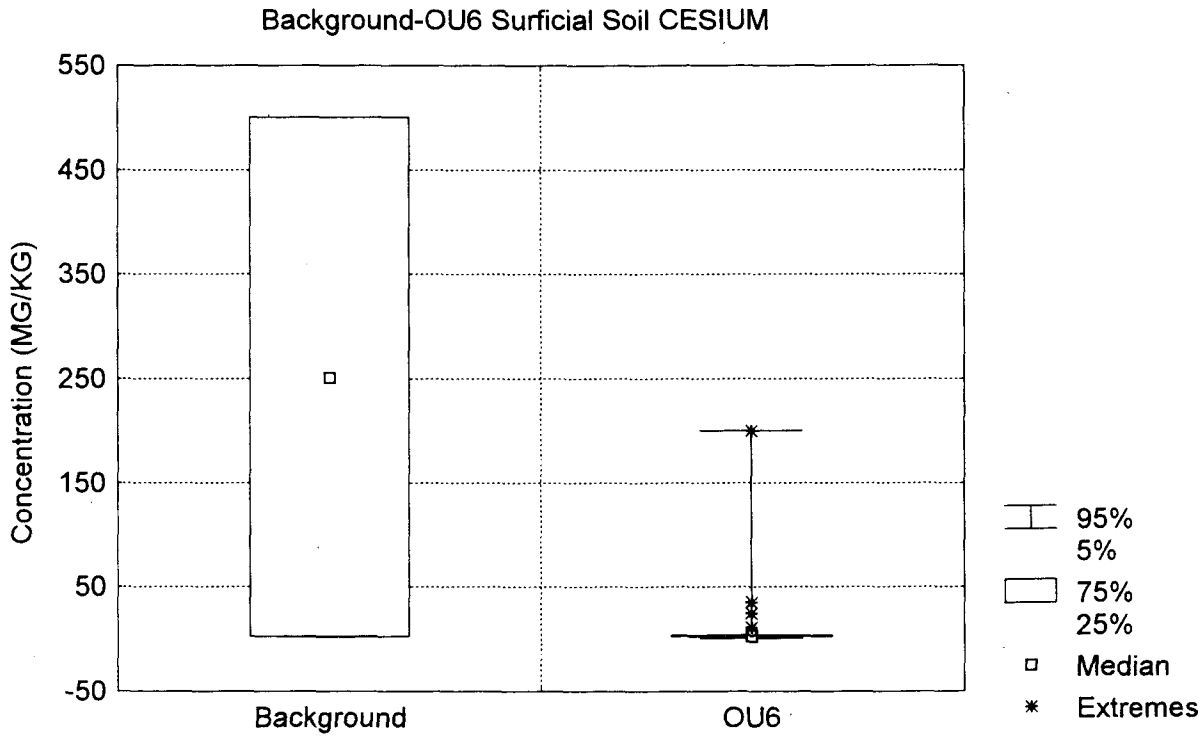

Background-OU6 Surficial Soil ALUMINUM
Concentration (MG/KG)
26000
22000
18000
14000
10000
6000
2000
Background
OU6
95%
5%
75%
25%
Median
Outliers

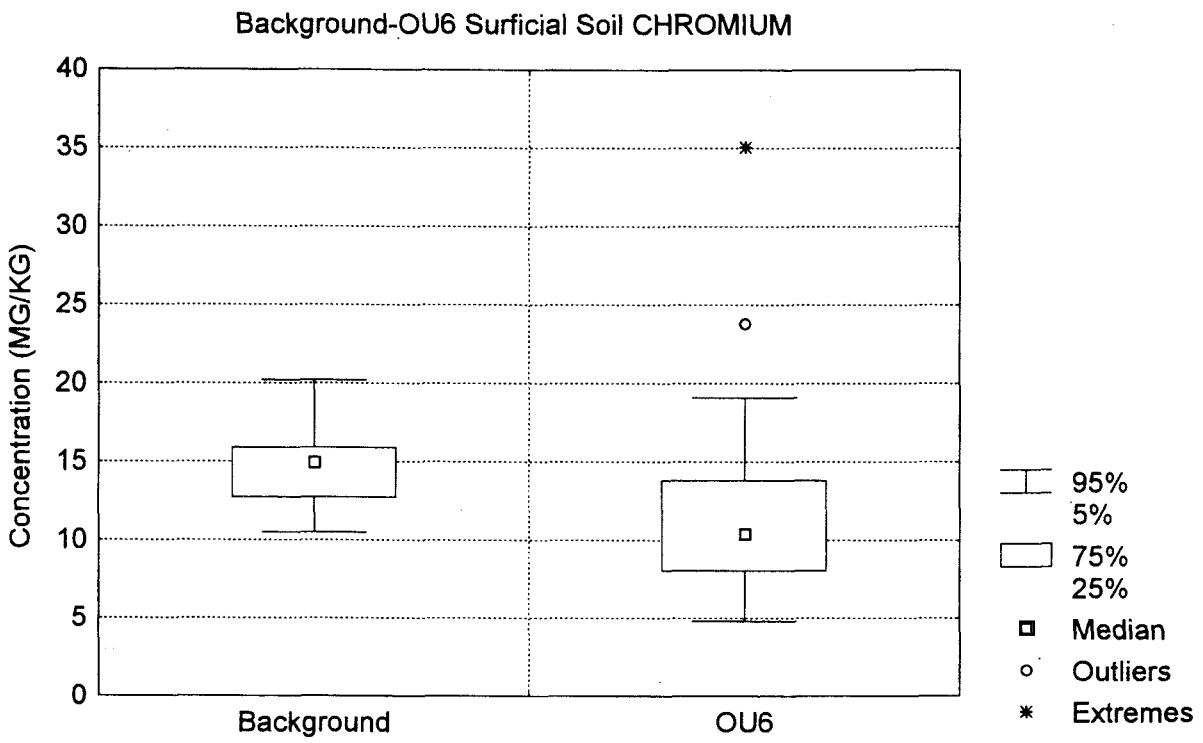

Background-OU6 Surficial Soil ARSENIC
Concentration (MG/KG)
12
10
8
6
4
2
0
Background
OU6
95%
5%
75%
25%
Median
Outliers

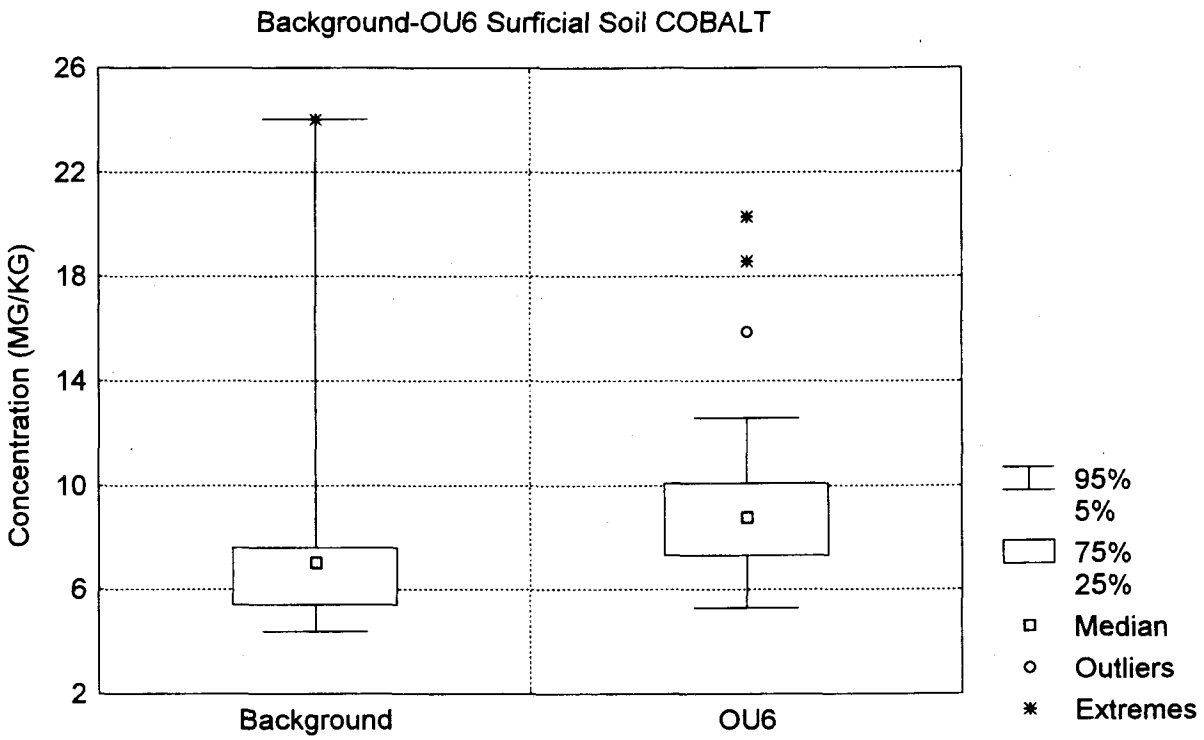

Background-OU6 Surficial Soil BARIUM
Concentration (MG/KG)
600
500
400
300
200
100
0
Background
OU6
95%
5%
75%
25%
Median
Outliers
Extremes

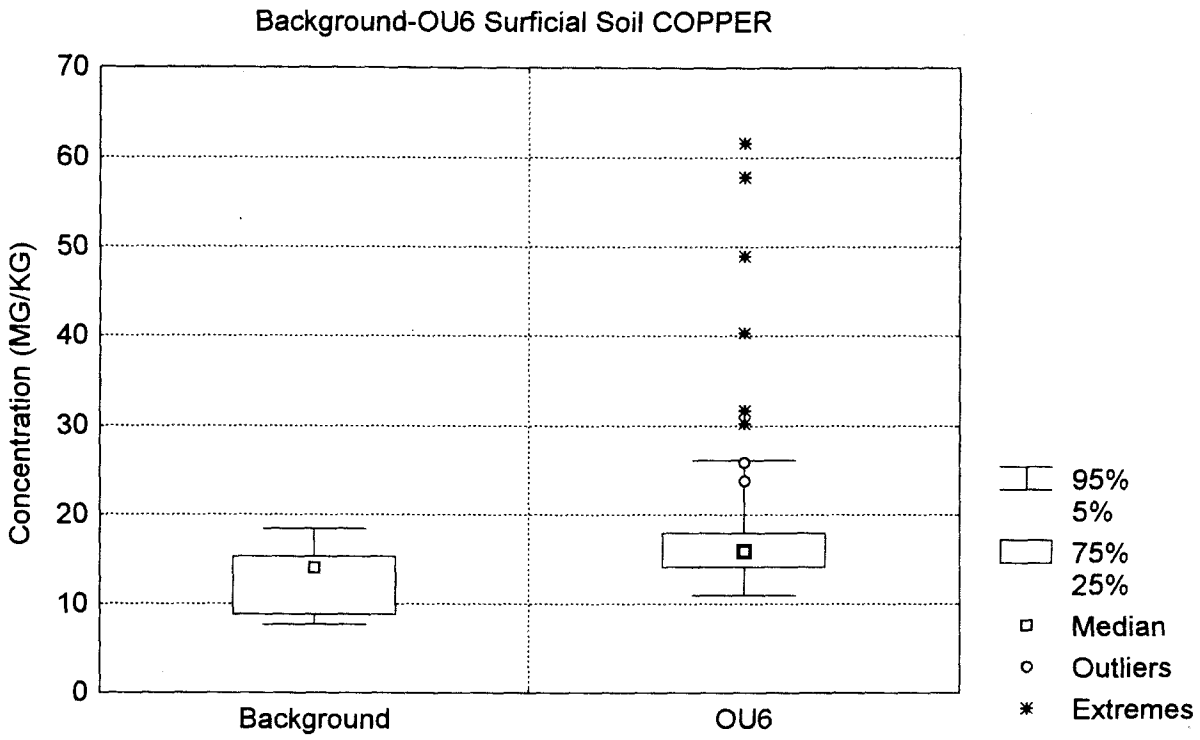

Background-OU6 Surficial Soil BERYLLIUM
Concentration (MG/KG)
5.5
4.5
3.5
2.5
1.5
0.5
-0.5
Background
OU6
95%
5%
75%
25%
Median

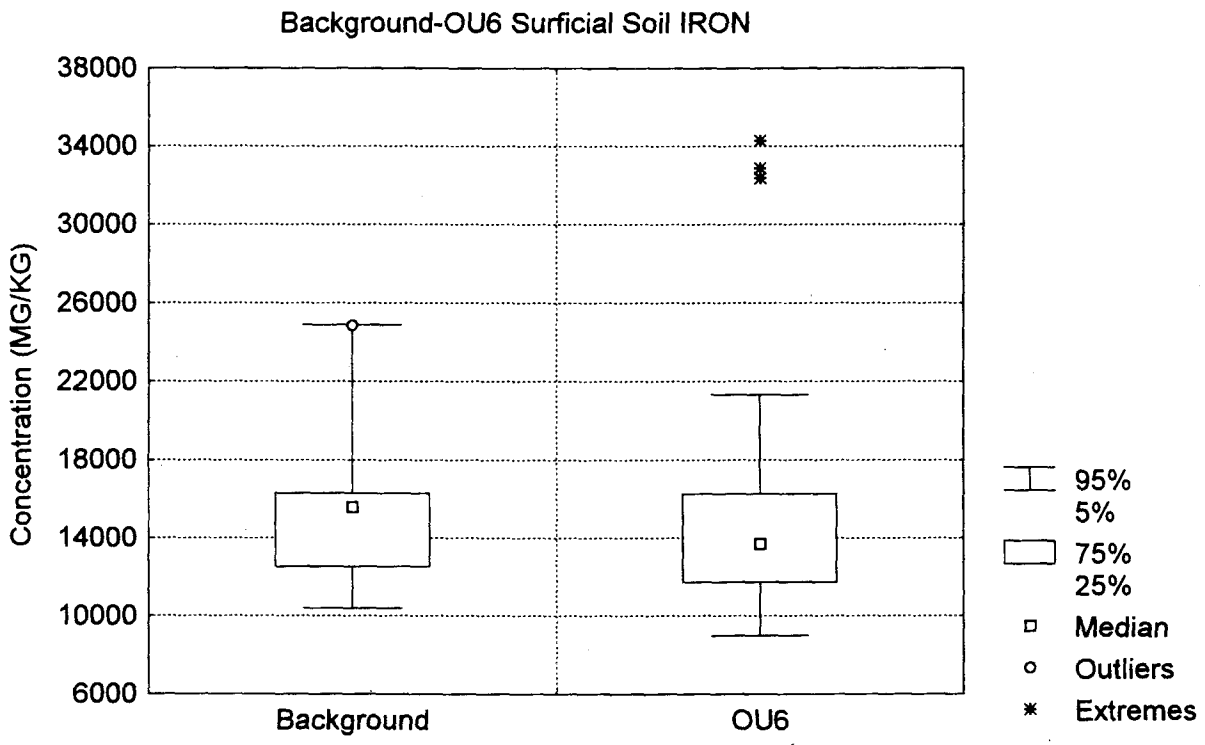

Background-OU6 Surficial Soil CALCIUM
Concentration (MG/KG)
65000
55000
45000
35000
25000
15000
5000
-5000
Background
OU6
95%
5%
75%
25%
Median
Outliers
Extremes

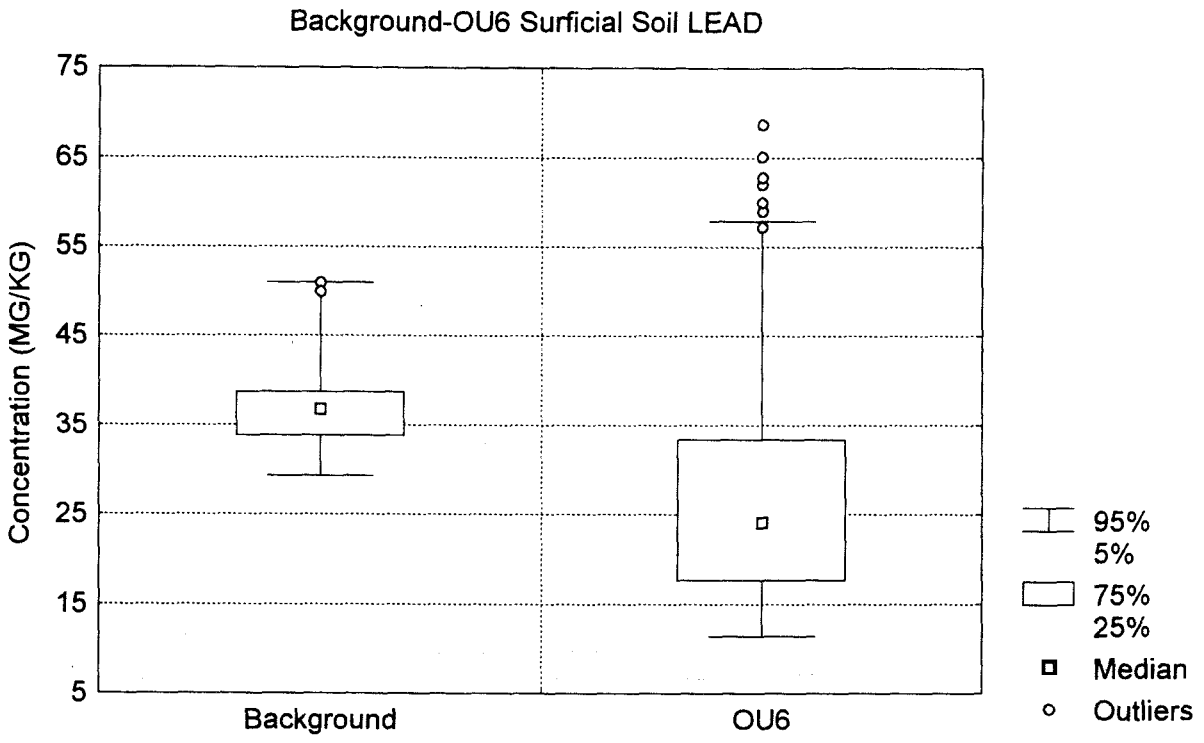

Background-OU6 Surficial Soil CESIUM
Concentration (MG/KG)
550
450
350
250
150
50
-50
Background
OU6
95%
5%
75%
25%
Median
Extremes

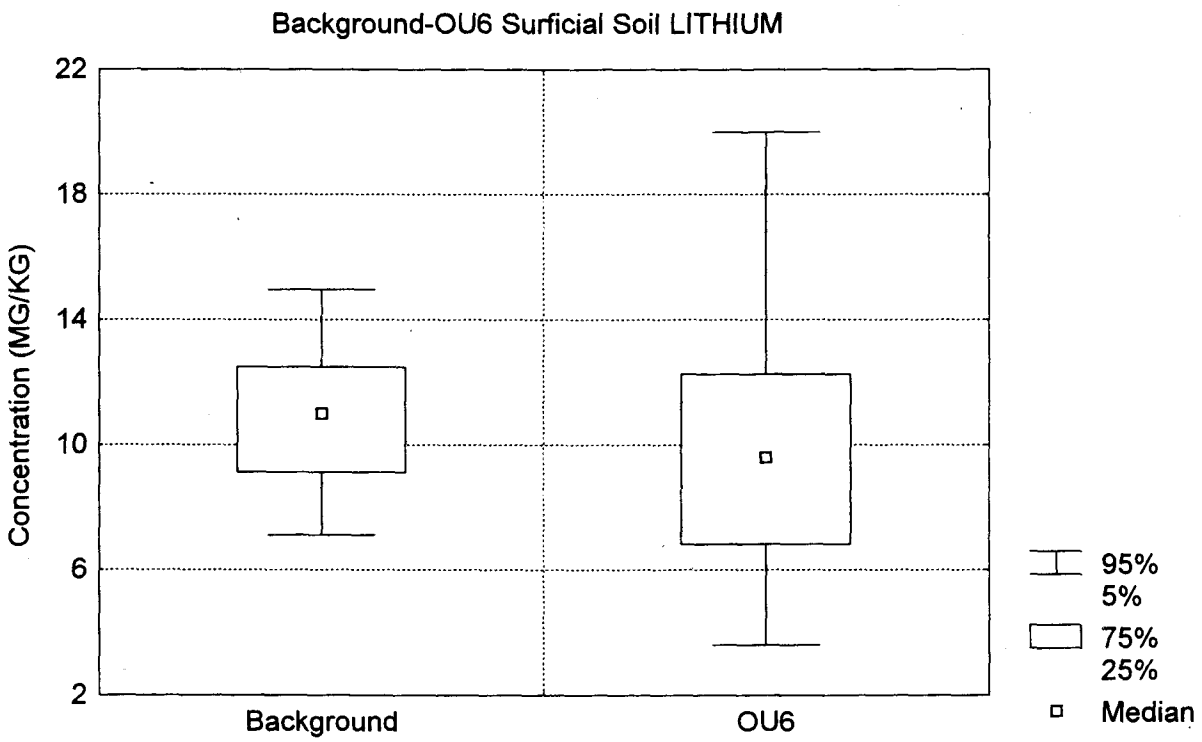

Background-OU6 Surficial Soil CHROMIUM
Concentration (MG/KG)
40
35
30
25
20
15
10
5
0
Background
OU6
95%
5%
75%
25%
Median
Outliers
Extremes

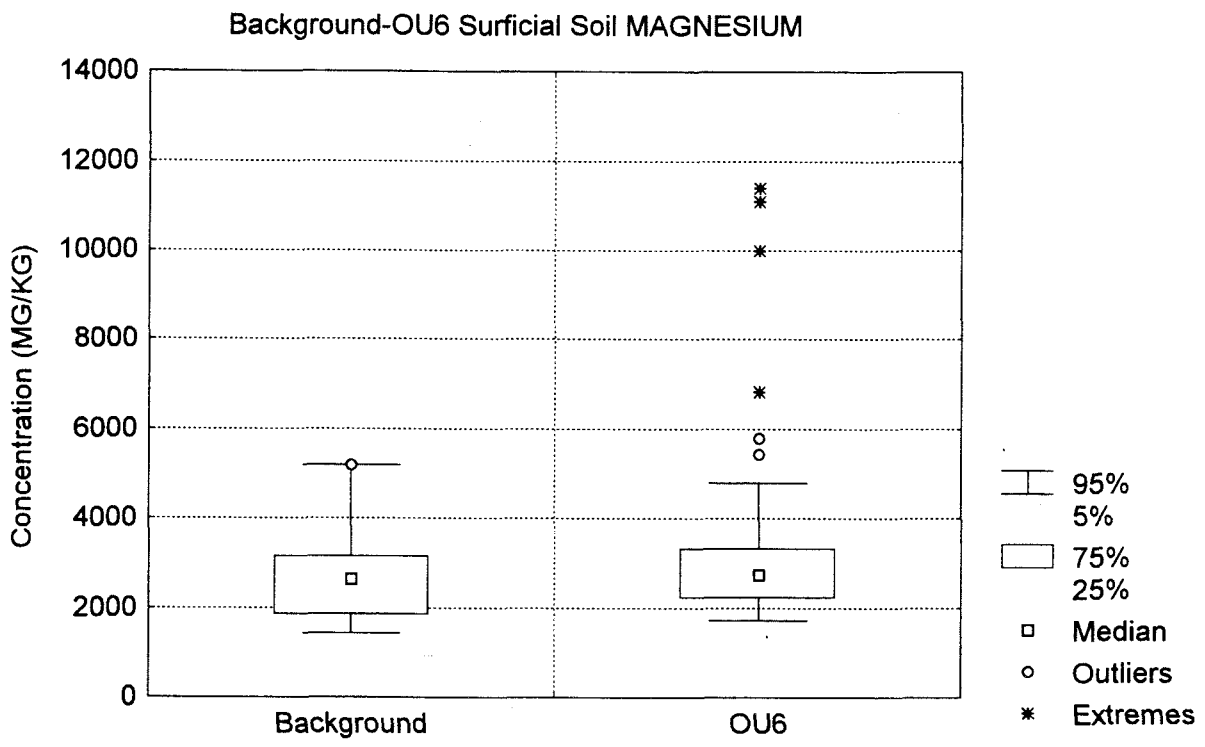

Background-OU6 Surficial Soil COBALT
Concentration (MG/KG)
26
22
18
14
10
6
2
Background
OU6
95%
5%
75%
25%
Median
Outliers
Extremes

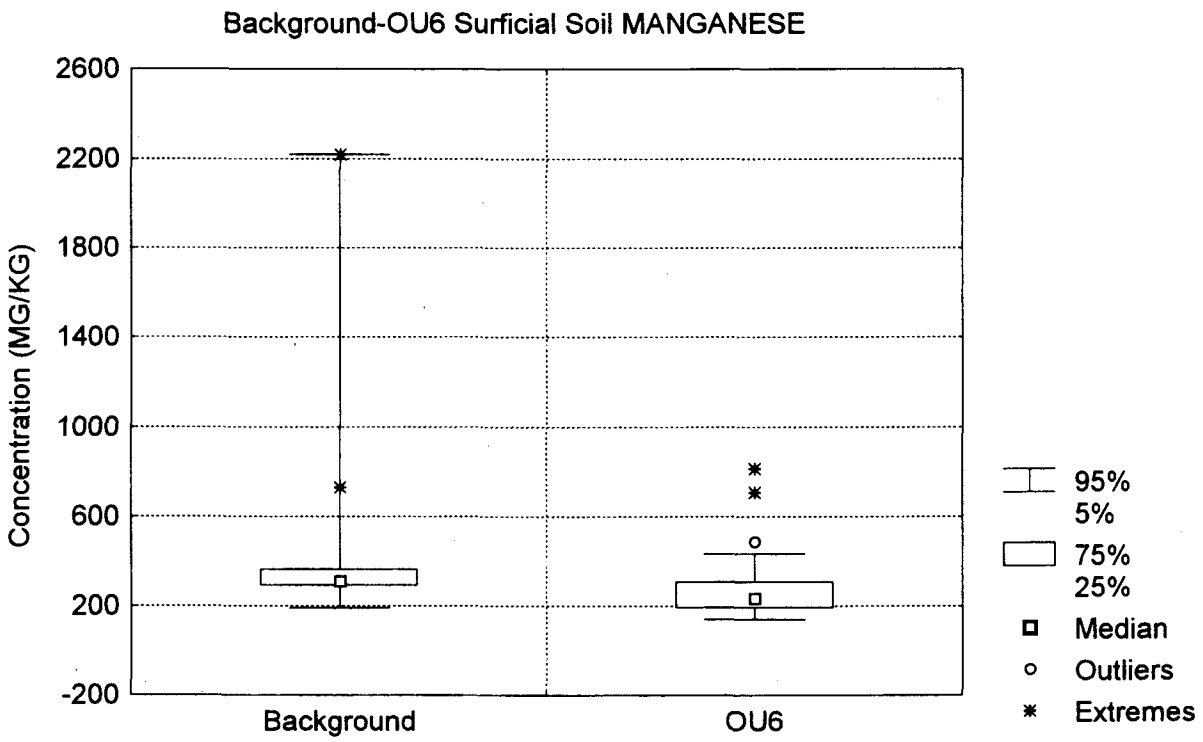

Background-OU6 Surficial Soil COPPER
Concentration (MG/KG)
70
60
50
40
30
20
10
0
Background
OU6
95%
5%
75%
25%
Median
Outliers
Extremes

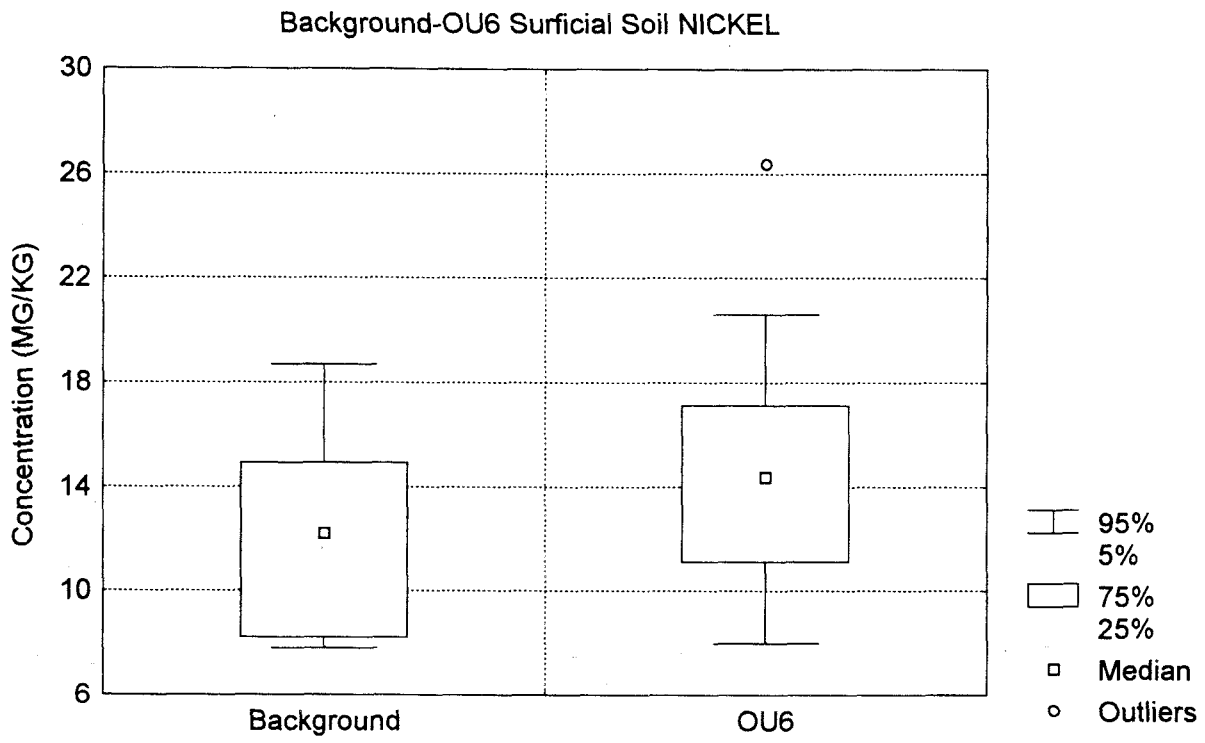

Background-OU6 Surficial Soil IRON
Concentration (MG/KG)
38000
34000
30000
26000
22000
18000
14000
10000
6000
Background
OU6
95%
5%
75%
25%
Median
Outliers
Extremes

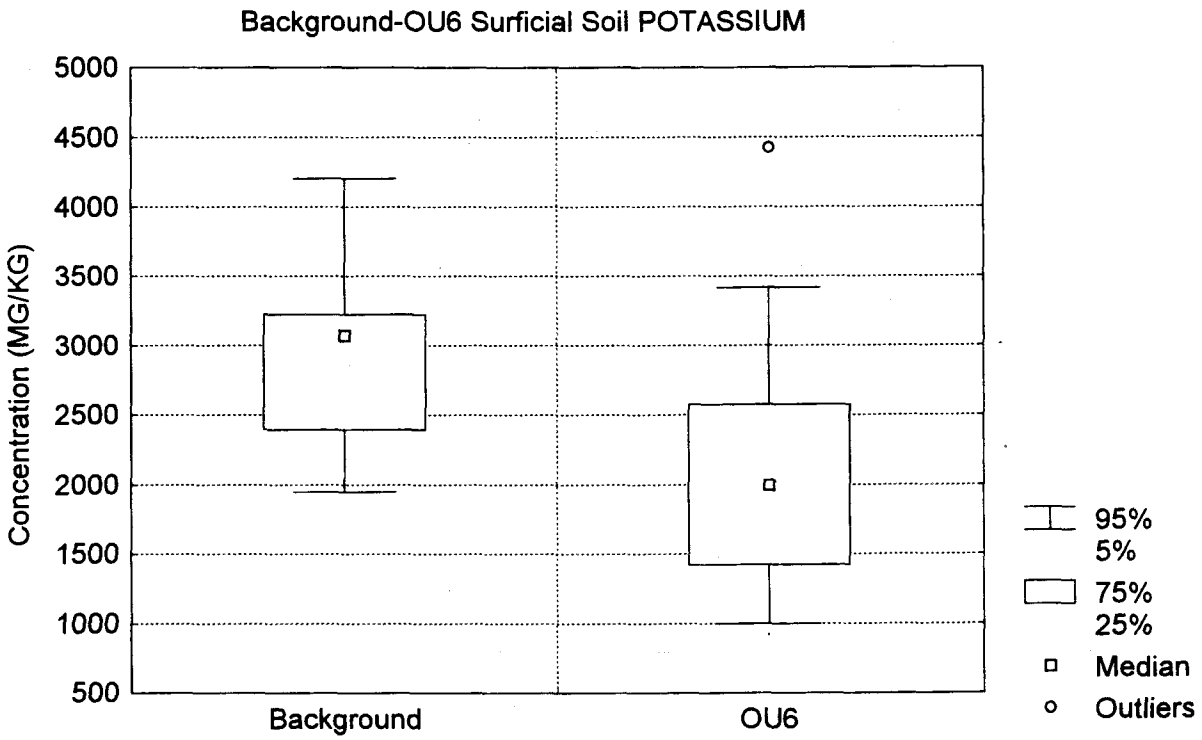

Background-OU6 Surficial Soil LEAD
Concentration (MG/KG)
75
65
55
45
35
25
15
5
Background
OU6
95%
5%
75%
25%
Median
Outliers

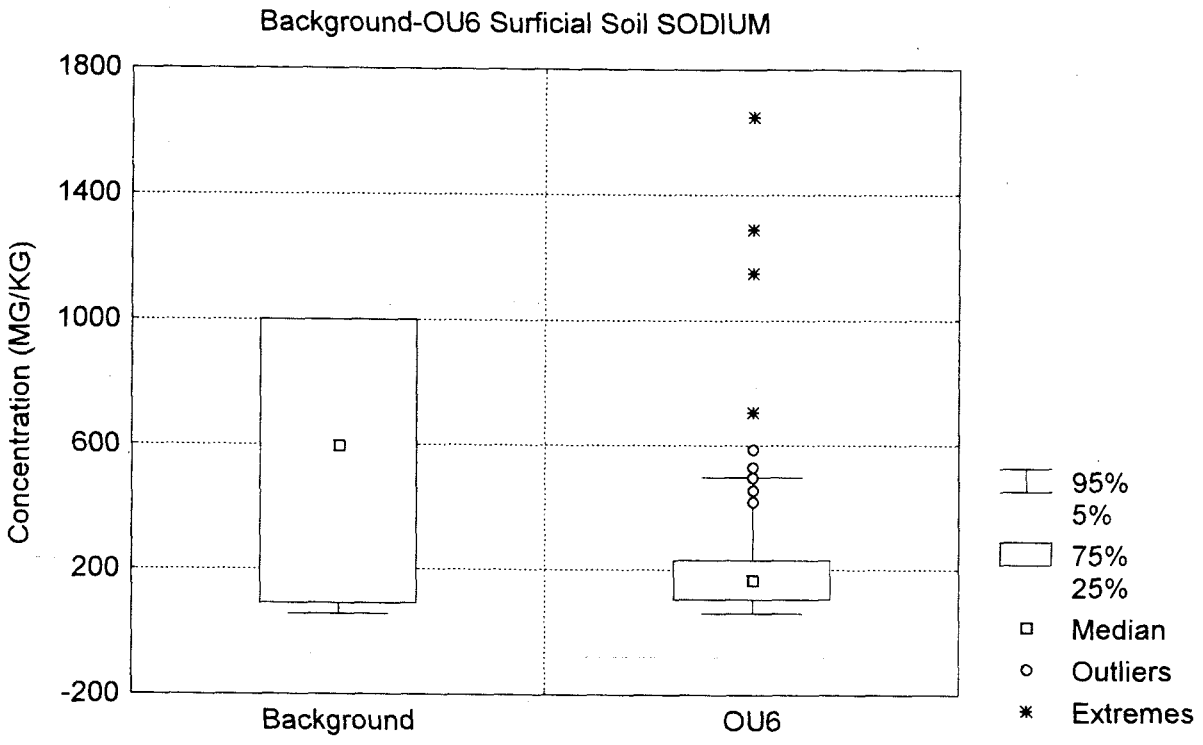

Background-OU6 Surficial Soil LITHIUM
Concentration (MG/KG)
22
18
14
10
6
2
Background
OU6
95%
5%
75%
25%
Median

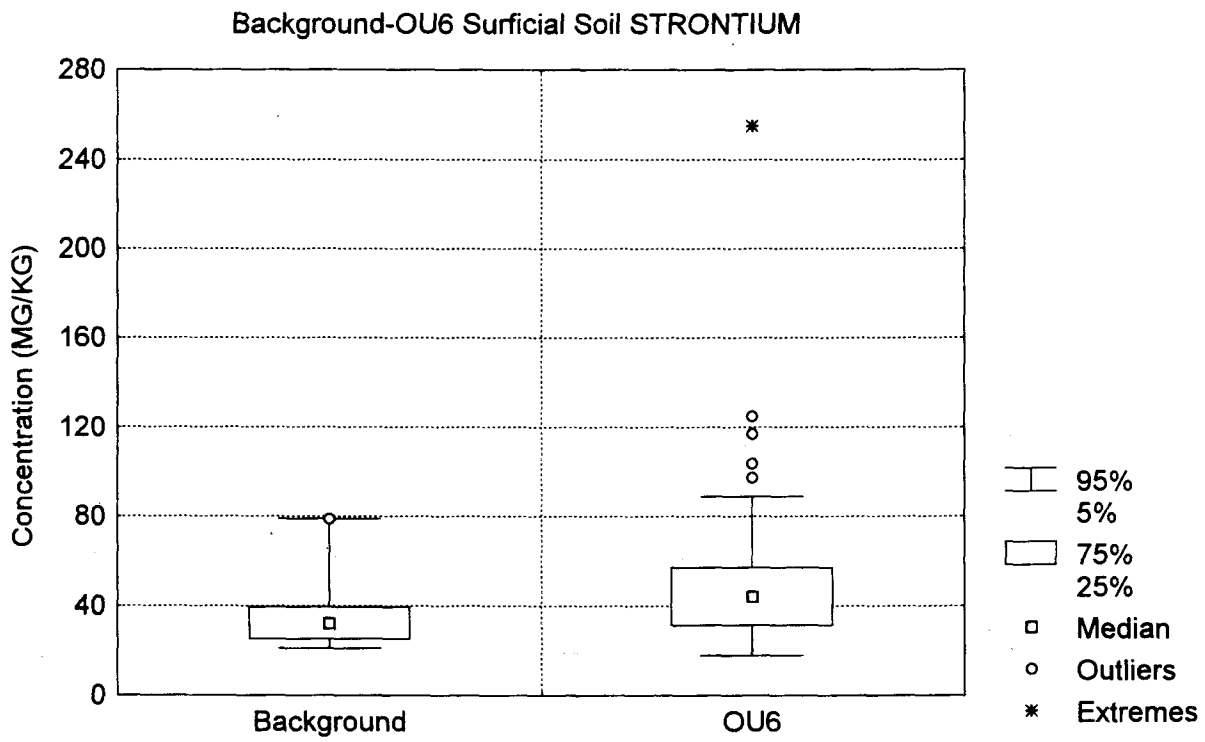

Background-OU6 Surficial Soil MAGNESIUM
Concentration (MG/KG)
14000
12000
10000
8000
6000
4000
2000
0
Background
OU6
95%
5%
75%
25%
Median
Outliers
Extremes

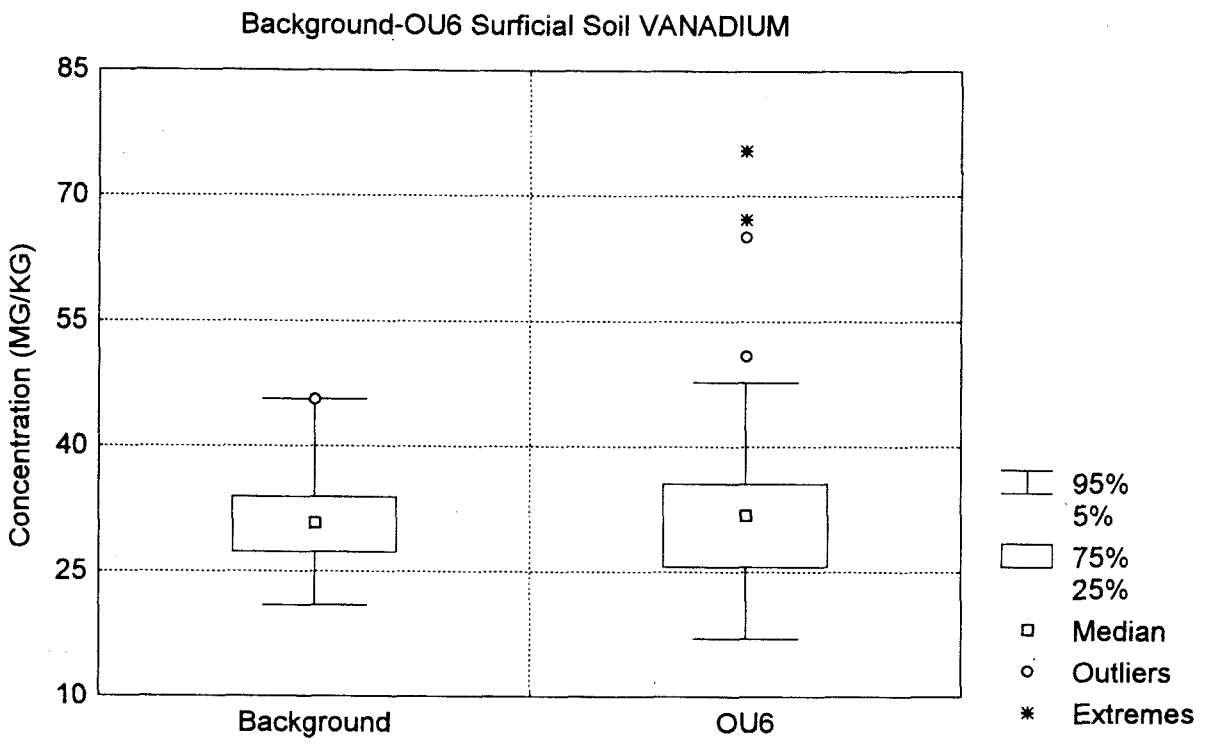

Background-OU6 Surficial Soil MANGANESE
Concentration (MG/KG)
2600
2200
1800
1400
1000
600
200
-200
Background
OU6
95%
5%
75%
25%
Median
Outliers
Extremes

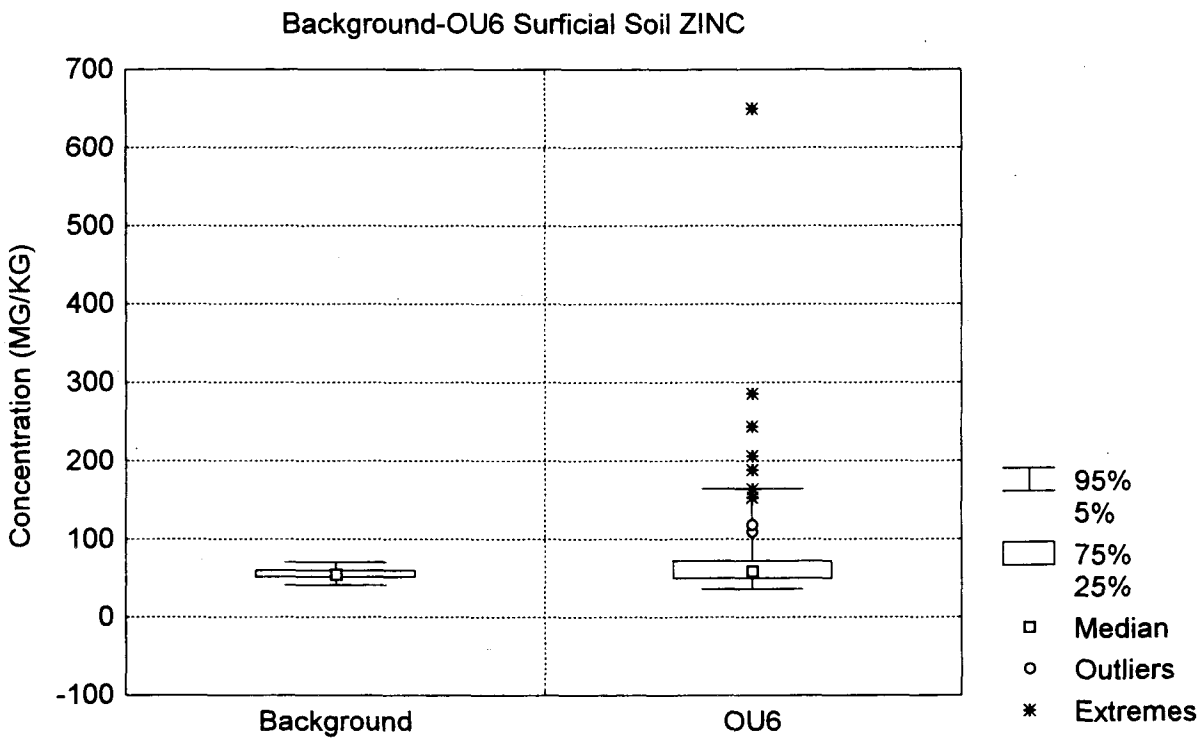

Background-OU6 Surficial Soil NICKEL
Concentration (MG/KG)
30
26
22
18
14
10
6
Background
OU6
95%
5%
75%
25%
Median
Outliers

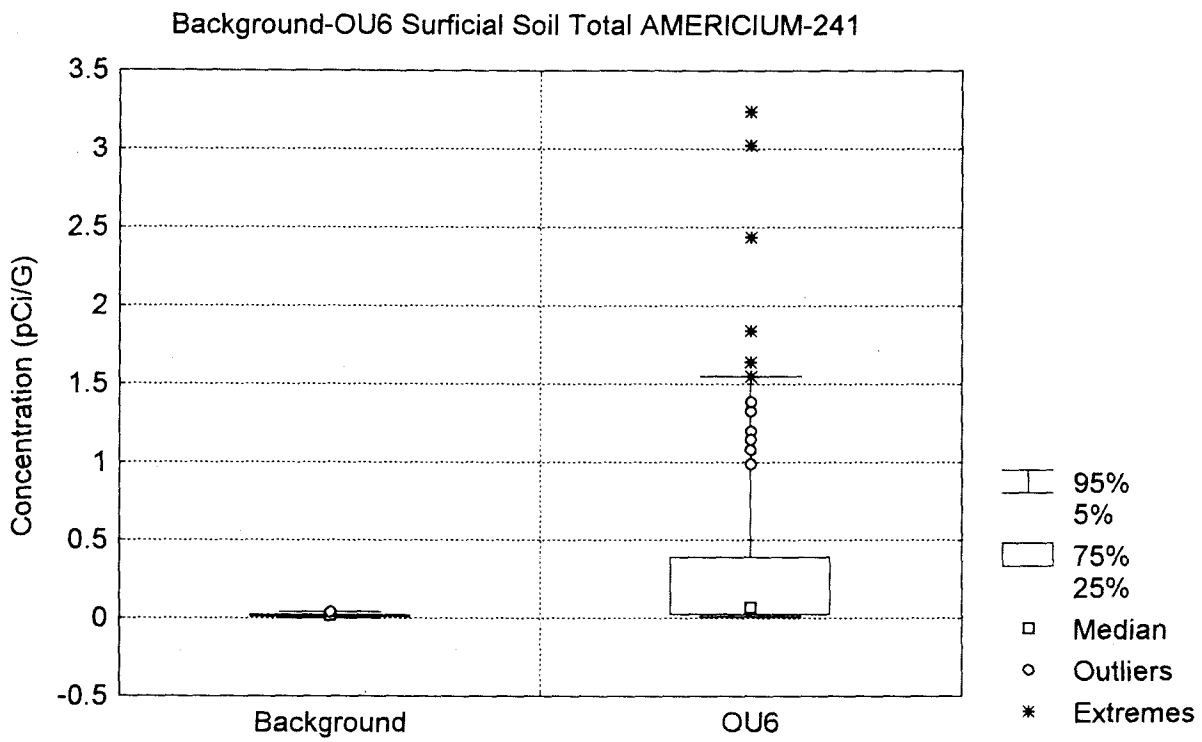

Background-OU6 Surficial Soil POTASSIUM
Concentration (MG/KG)
5000
4500
4000
3500
3000
2500
2000
1500
1000
500
Background
OU6
95%
5%
75%
25%
Median
Outliers

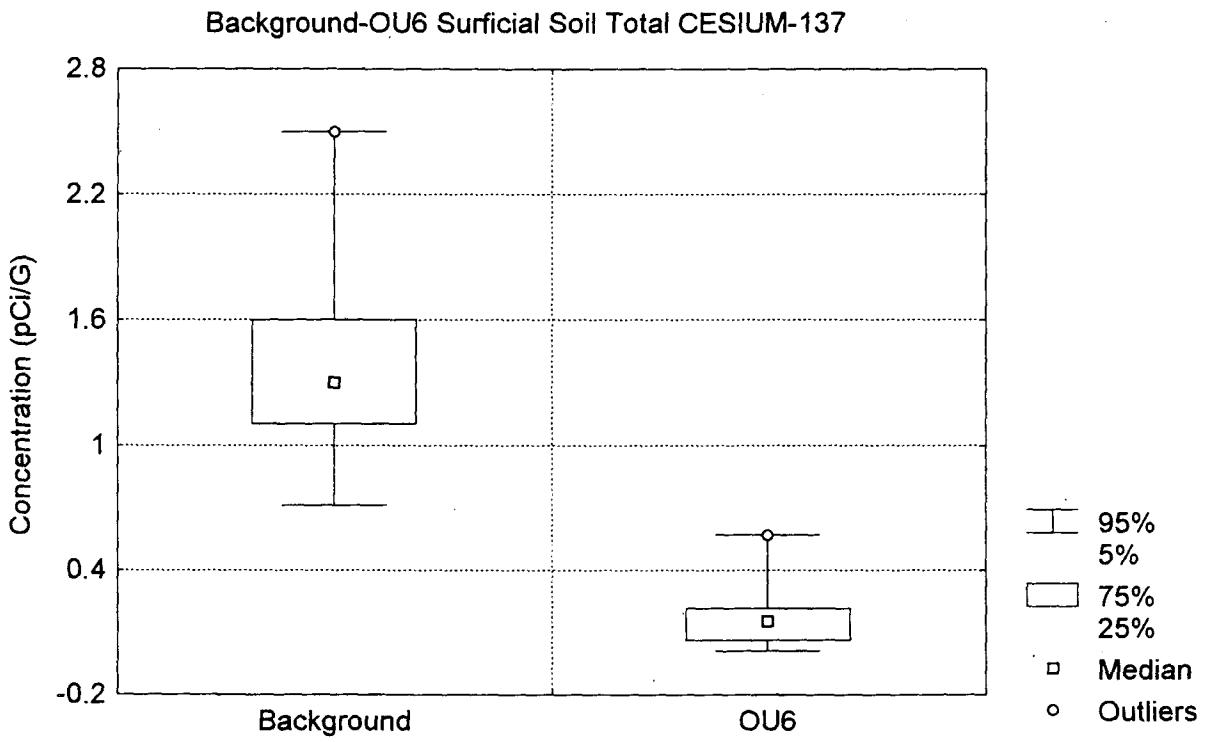

Background-OU6 Surficial Soil SODIUM
Concentration (MG/KG)
1800
1400
1000
600
200
-200
Background
OU6
95%
5%
75%
25%
Median
Outliers
Extremes

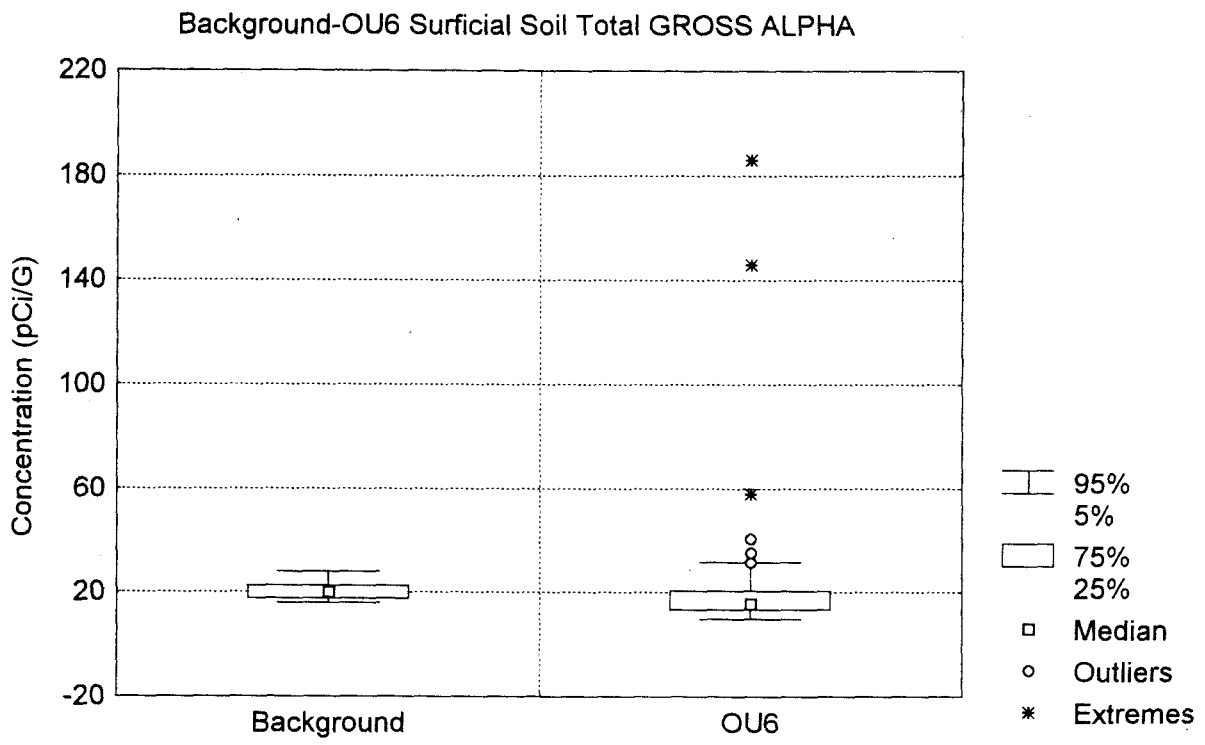

Background-OU6 Surficial Soil STRONTIUM
Concentration (MG/KG)
280
240
200
160
120
80
40
0
Background
OU6
95%
5%
75%
25%
Median
Outliers
Extremes

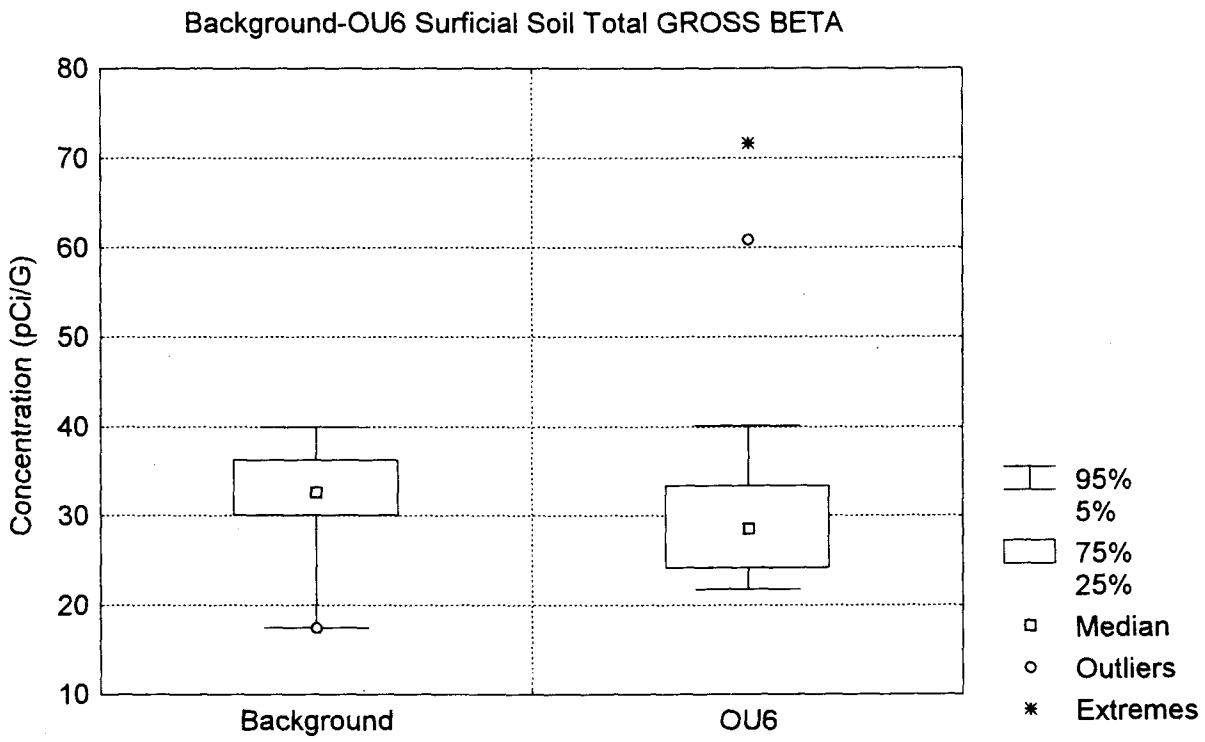

Background-OU6 Surficial Soil VANADIUM
Concentration (MG/KG)
85
70
55
40
25
10
Background
OU6
95%
5%
75%
25%
Median
Outliers
Extremes

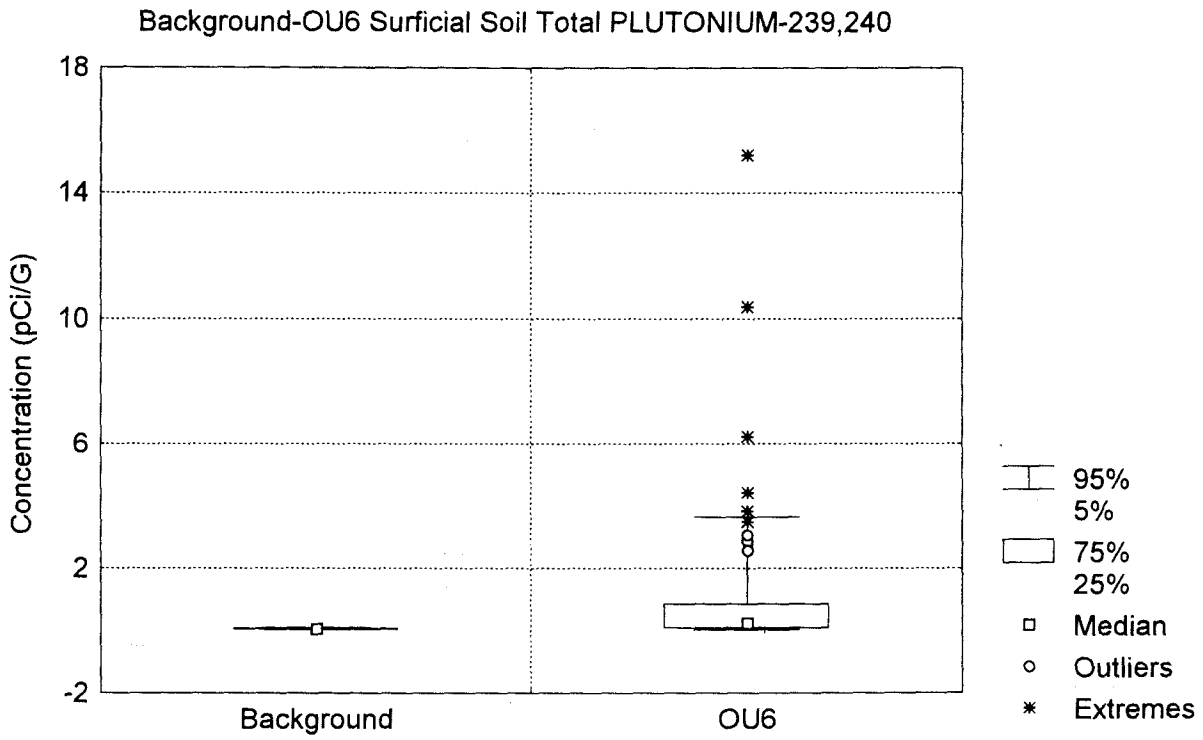

Background-OU6 Surficial Soil ZINC
Concentration (MG/KG)
700
600
500
400
300
200
100
0
-100
Background
OU6
95%
5%
75%
25%
Median
Outliers
Extremes

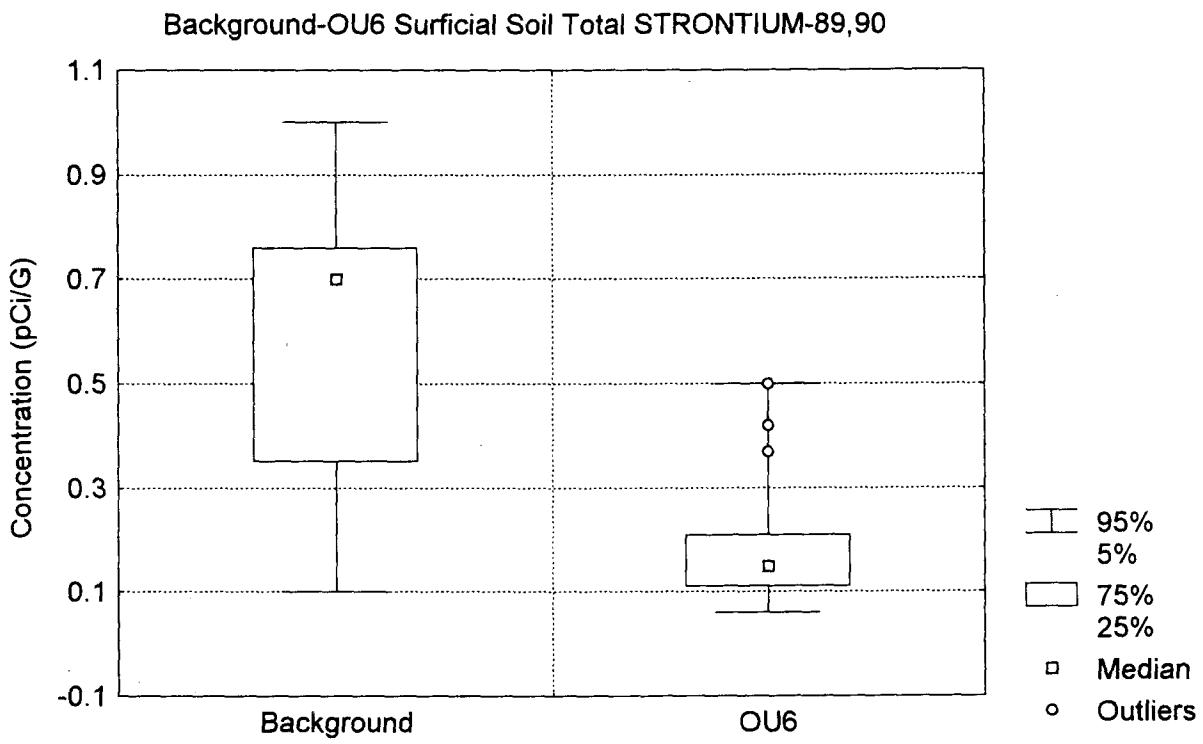

Background-OU6 Surficial Soil Total AMERICIUM-241
Concentration (pCi/G)
3.5
3
2.5
2
1.5
1
0.5
0
-0.5
Background
OU6
95%
5%
75%
25%
Median
Outliers
Extremes

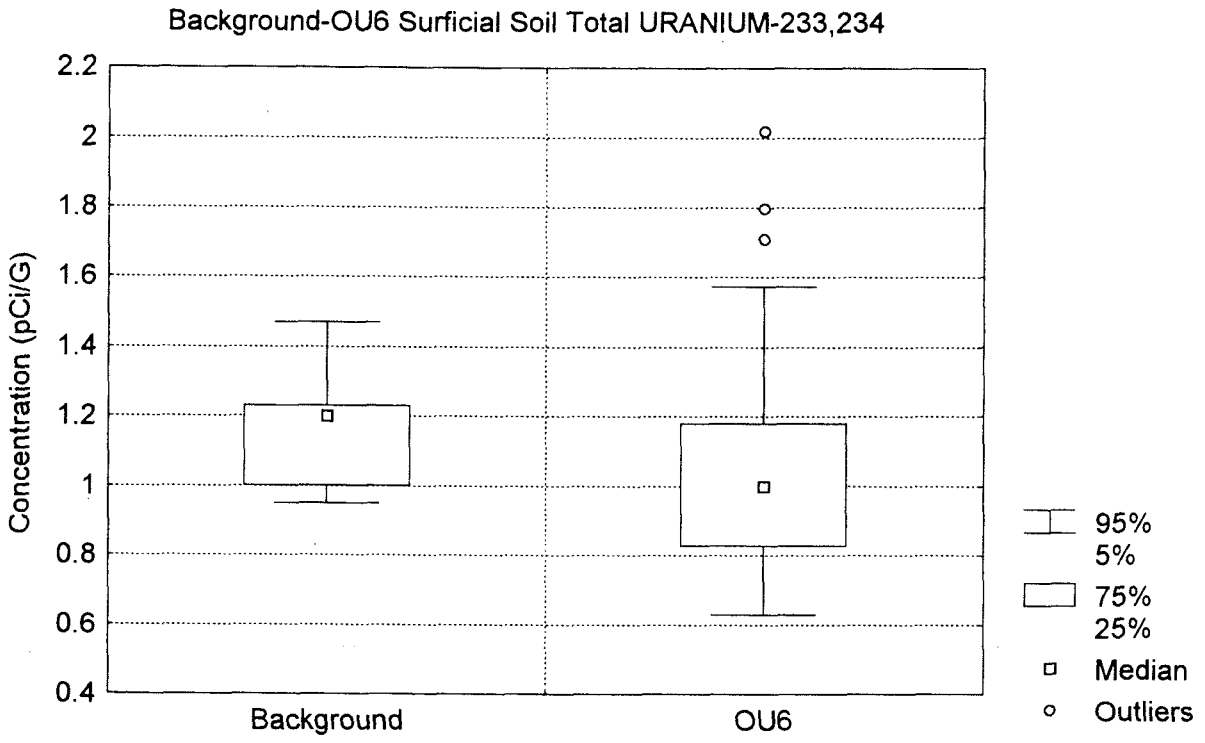

Background-OU6 Surficial Soil Total CESIUM-137
Concentration (pCi/G)
2.8
2.2
1.6
1
0.4
-0.2
Background
OU6
95%
5%
75%
25%
Median
Outliers

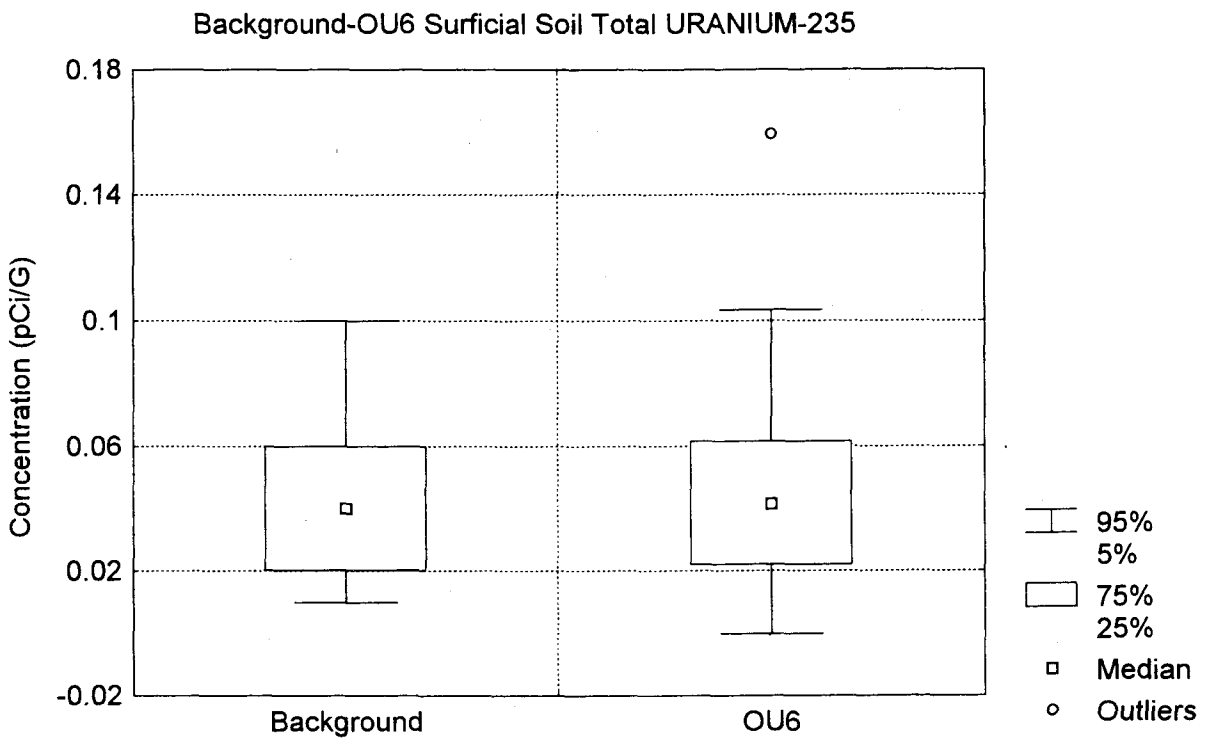

Background-OU6 Surficial Soil Total GROSS ALPHA
Concentration (pCi/G)
220
180
140
100
60
20
-20
Background
OU6
95%
5%
75%
25%
Median
Outliers
Extremes

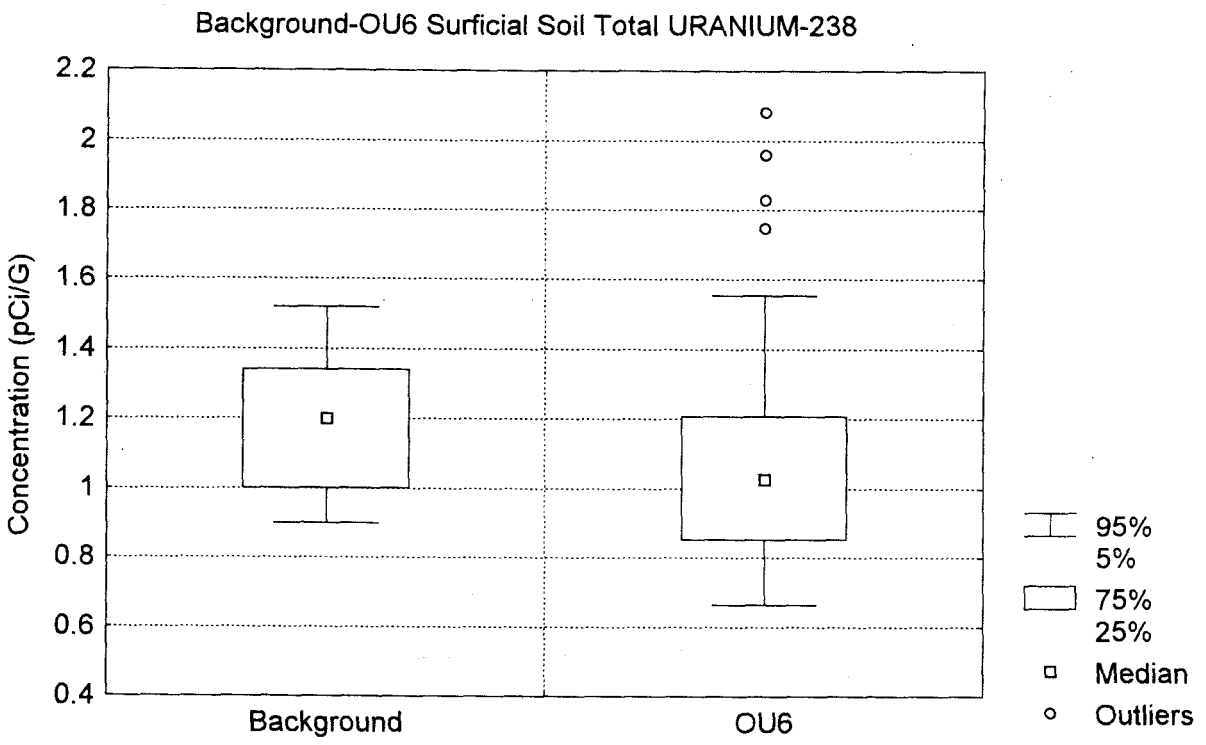

Background-OU6 Surficial Soil Total GROSS BETA
Concentration (pCi/G)
80
70
60
50
40
30
20
10
Background
OU6
95%
5%
75%
25%
Median
Outliers
Extremes

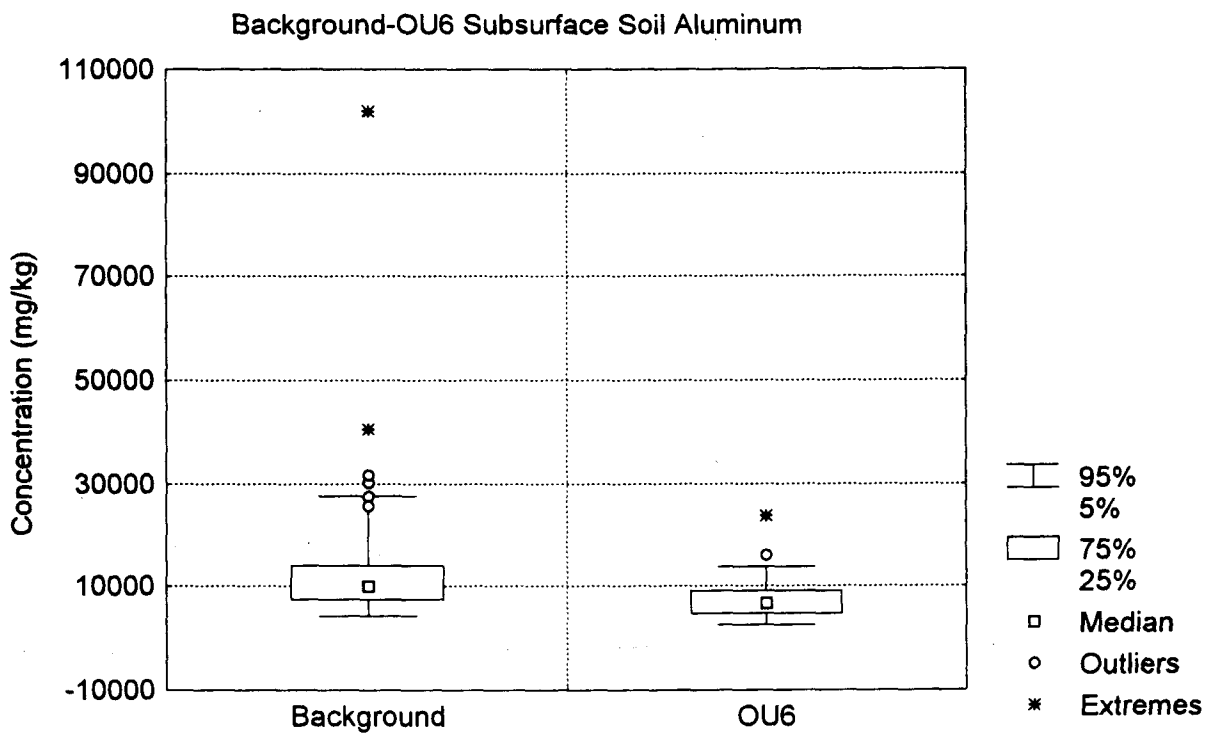

Background-OU6 Surficial Soil Total PLUTONIUM-239,240
Concentration (pCi/G)
18
14
10
6
2
-2
Background
OU6
95%
5%
75%
25%
Median
Outliers
Extremes

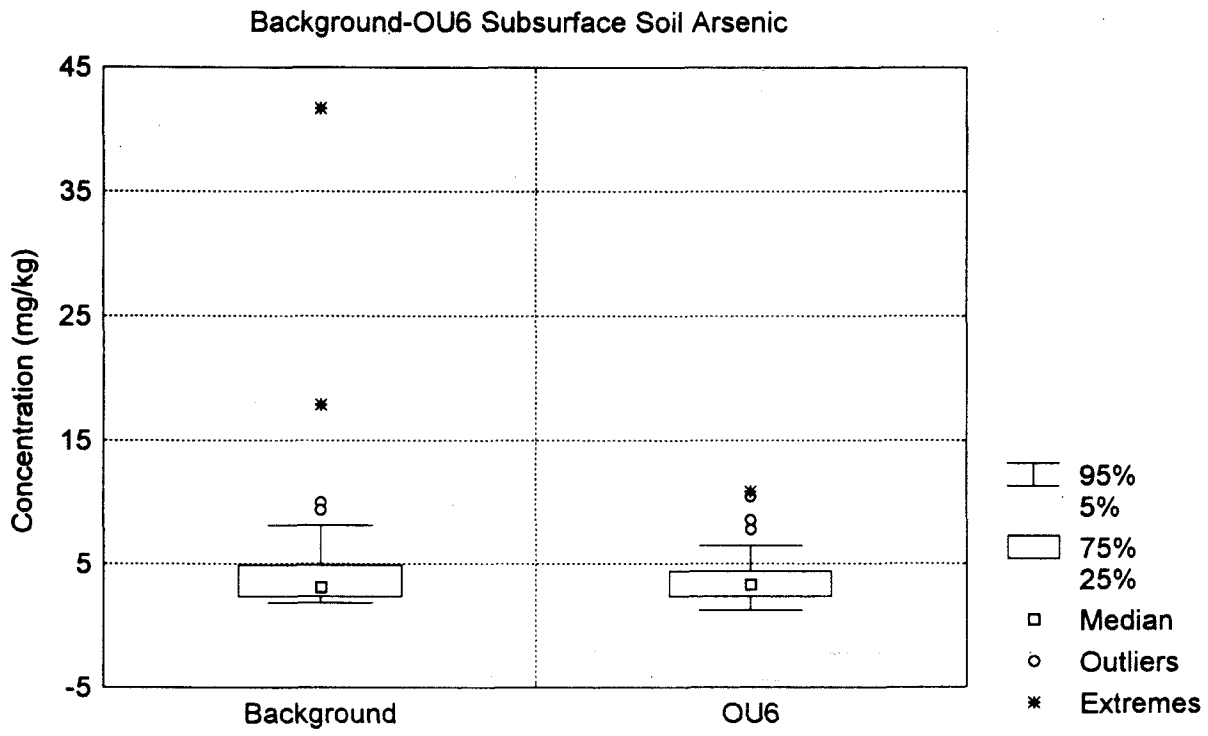

Background-OU6 Surficial Soil Total STRONTIUM-89,90
Concentration (pCi/G)
1.1
0.9
0.7
0.5
0.3
0.1
-0.1
Background
OU6
95%
5%
75%
25%
Median
Outliers

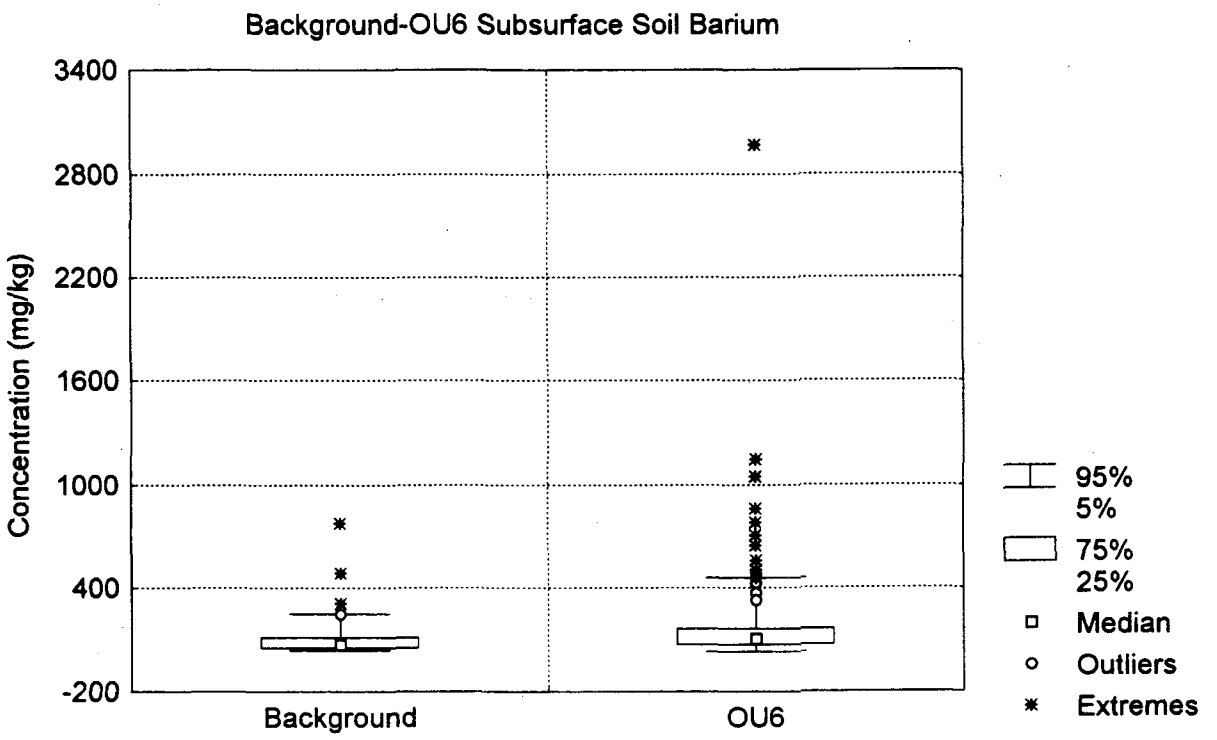

Background-OU6 Surficial Soil Total URANIUM-233,234
Concentration (pCi/G)
2.2
2
1.8
1.6
1.4
1.2
1
0.8
0.6
0.4
Background
OU6
95%
5%
75%
25%
Median
Outliers

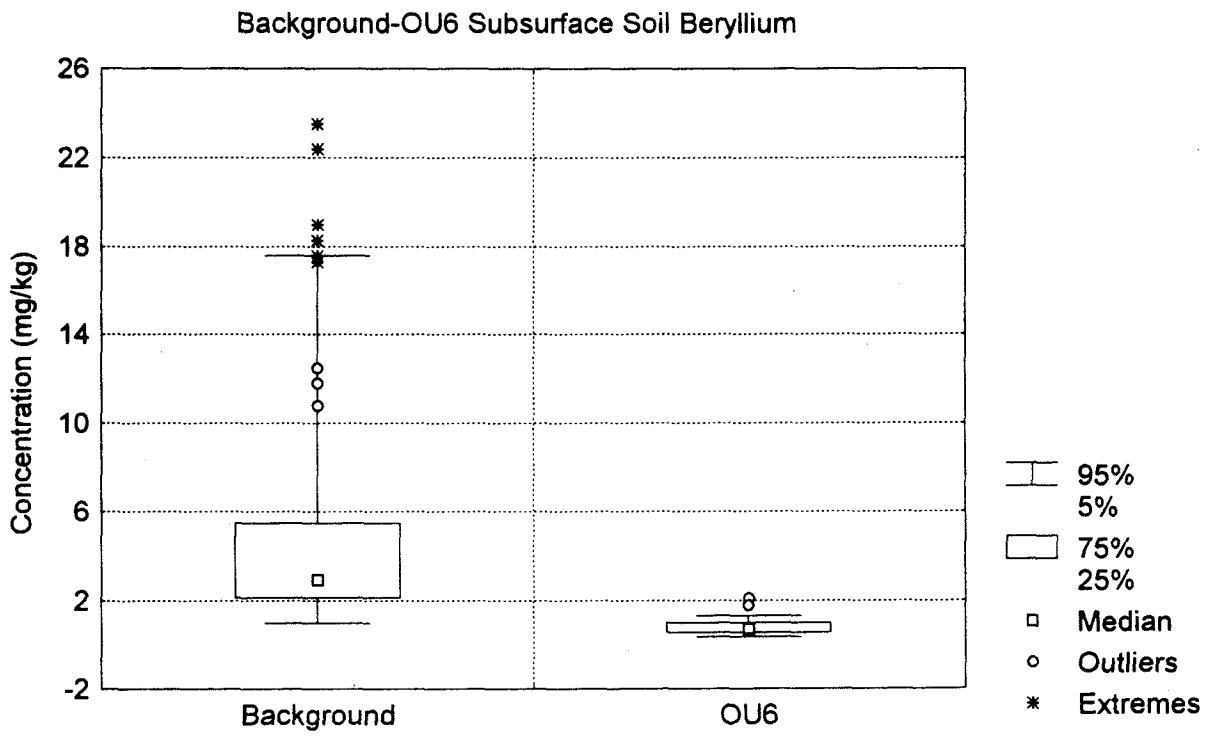

Background-OU6 Surficial Soil Total URANIUM-235
0.18
0.14
0.1
0.06
0.02
-0.02
Concentration (pCi/G)
Background
OU6
95%
5%
75%
25%
Median
Outliers

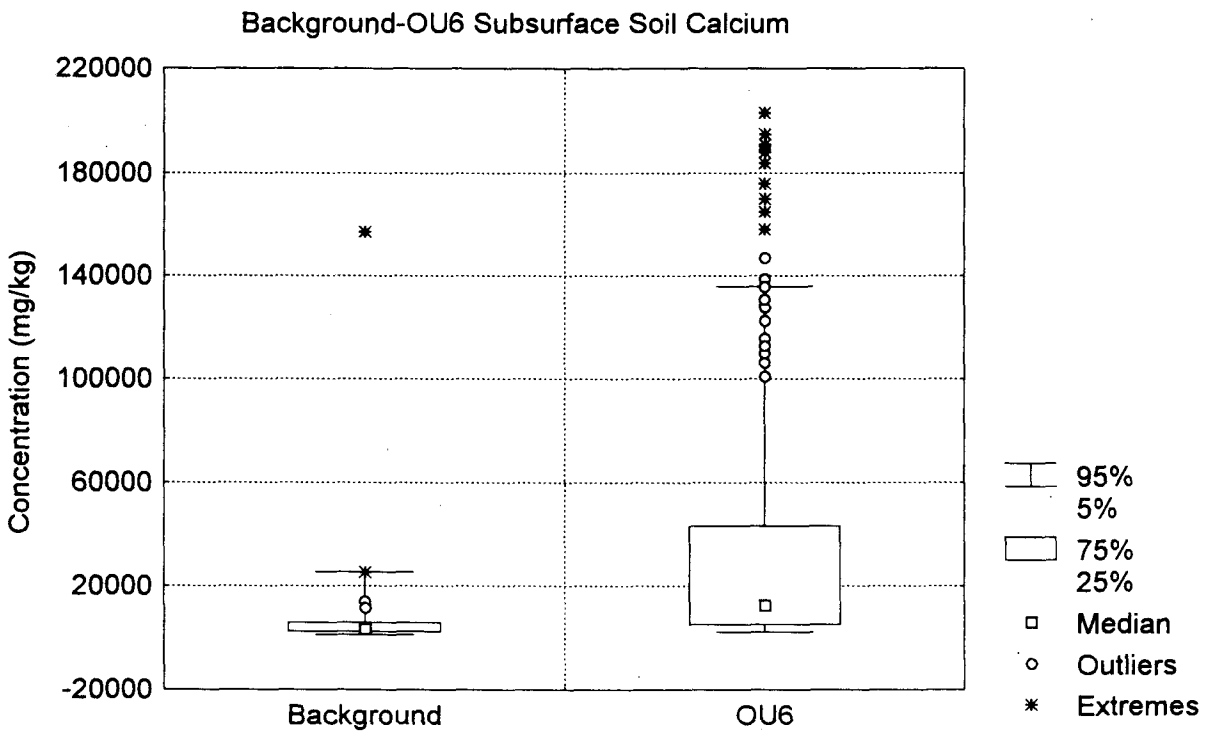

Background-OU6 Surficial Soil Total URANIUM-238
Concentration (pCi/G)
2.2
2
1.8
1.6
1.4
1.2
1
0.8
0.6
0.4
Background
OU6
95%
5%
75%
25%
Median
Outliers

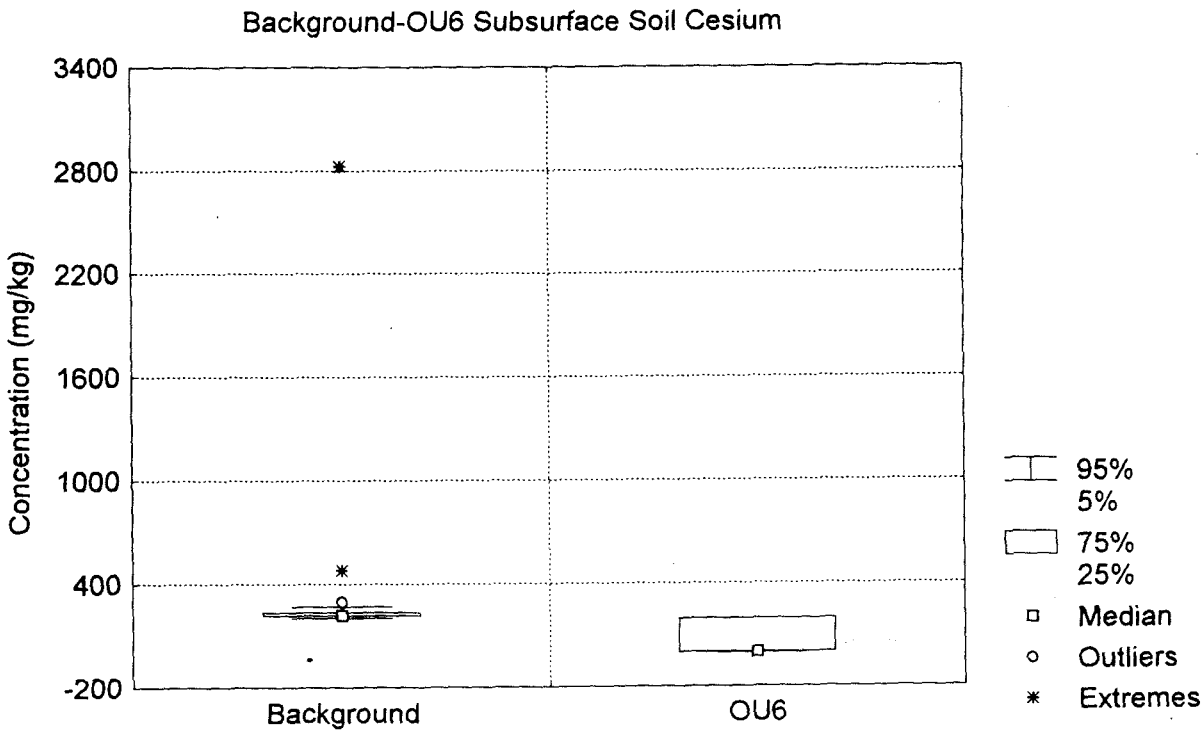

Background-OU6 Subsurface Soil Aluminum
Concentration (mg/kg)
110000
90000
70000
50000
30000
10000
-10000
Background
OU6
95%
5%
75%
25%
Median
Outliers
Extremes

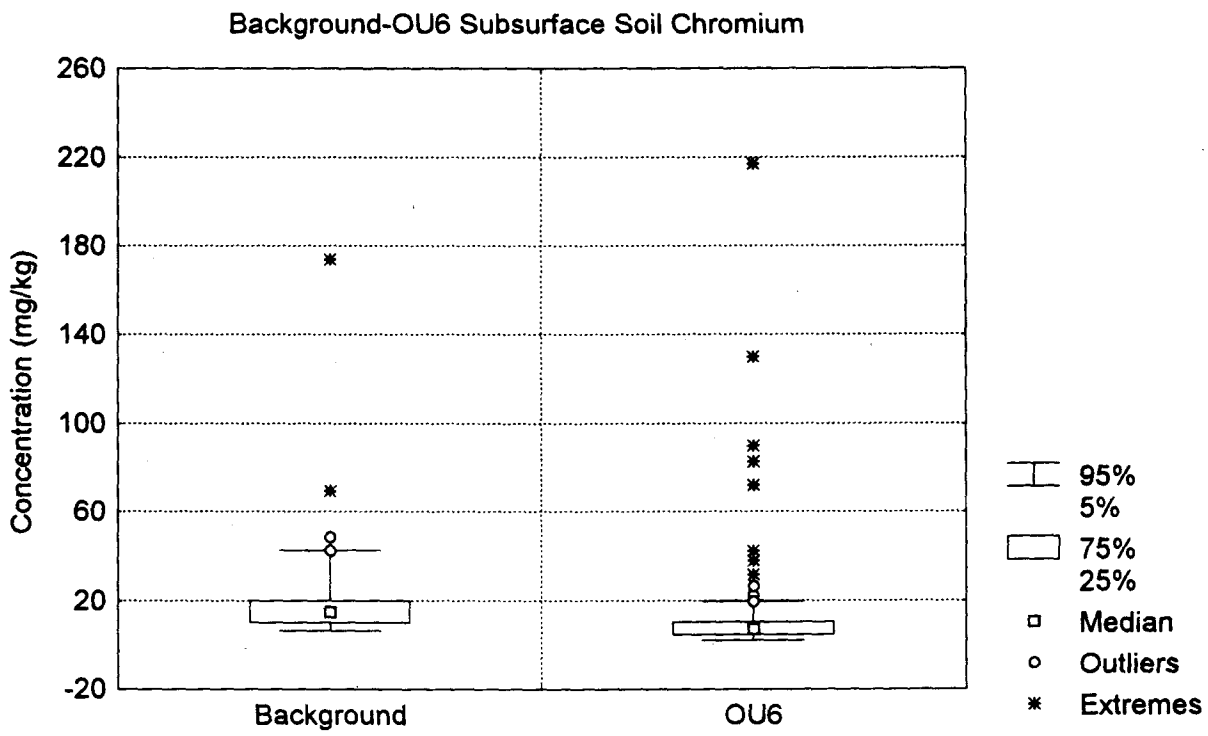

Background-OU6 Subsurface Soil Arsenic
Concentration (mg/kg)
45
35
25
15
5
-5
Background
OU6
95%
5%
75%
25%
Median
Outliers
Extremes

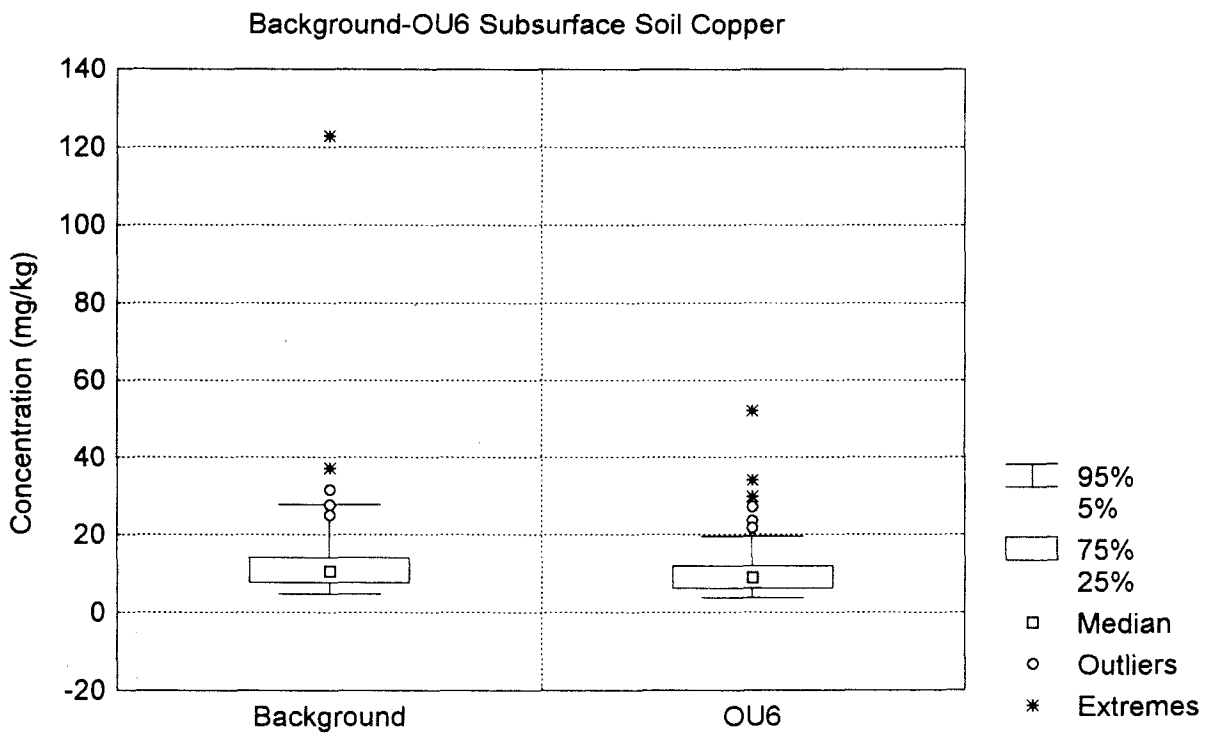

Background-OU6 Subsurface Soil Barium
Concentration (mg/kg)
3400
2800
2200
1600
1000
400
-200
Background
OU6
95%
5%
75%
25%
Median
Outliers
Extremes

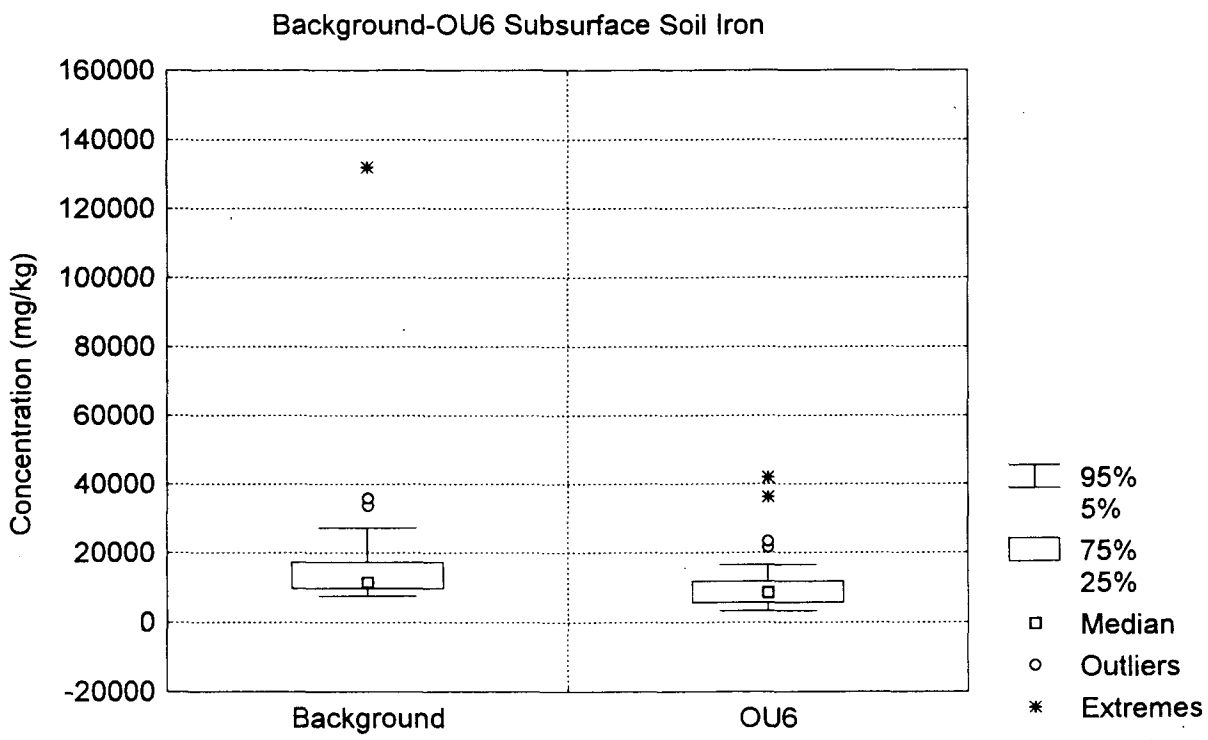

Background-OU6 Subsurface Soil Beryllium
Concentration (mg/kg)
26
22
18
14
10
6
2
-2
Background
OU6
95%
5%
75%
25%
Median
Outliers
Extremes

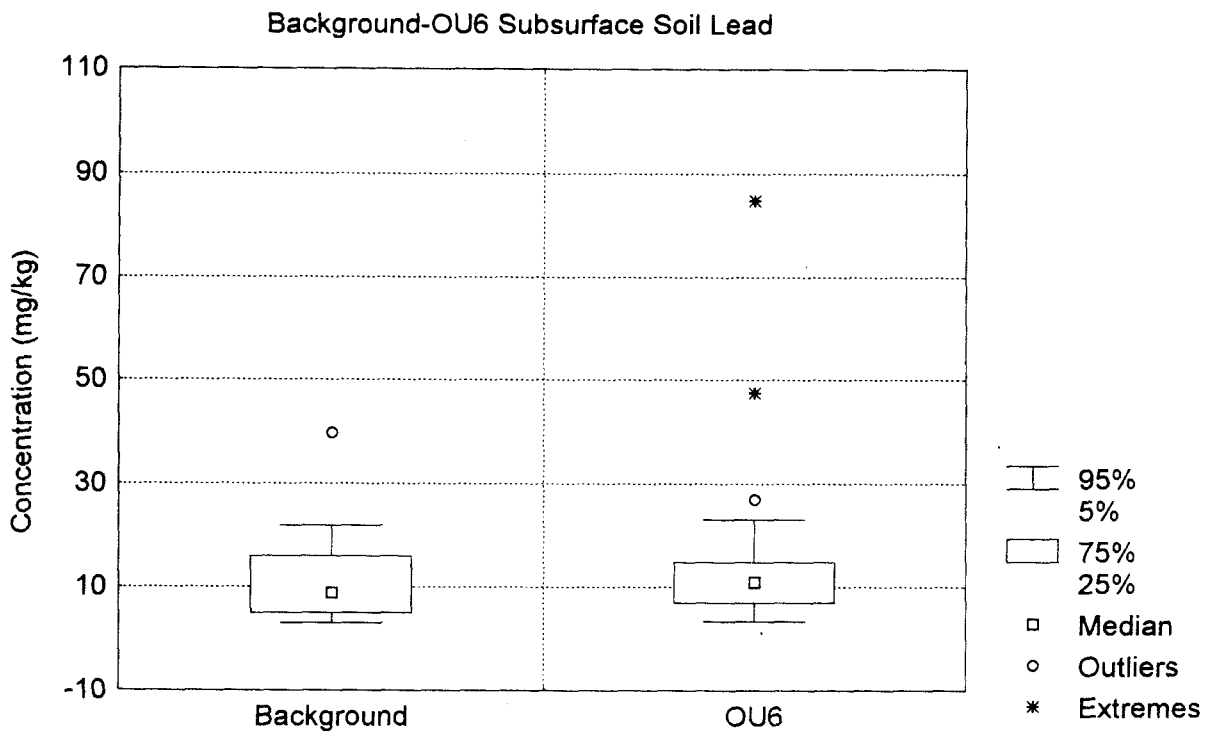

Background-OU6 Subsurface Soil Calcium
Concentration (mg/kg)
220000
180000
140000
100000
60000
20000
-20000
Background
OU6
95%
5%
75%
25%
Median
Outliers
Extremes

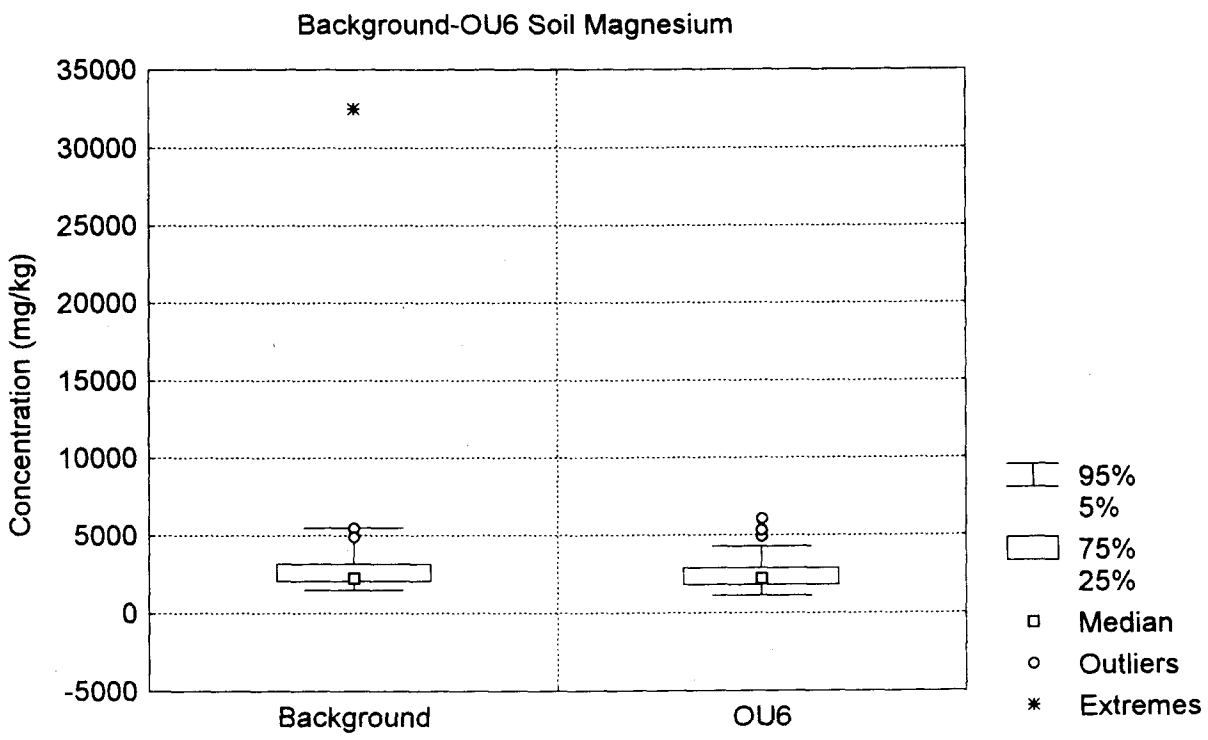

Background-OU6 Subsurface Soil Cesium
3400
2800
2200
1600
1000
400
-200
Concentration (mg/kg)
Background
OU6
95%
5%
75%
25%
Median
Outliers
Extremes

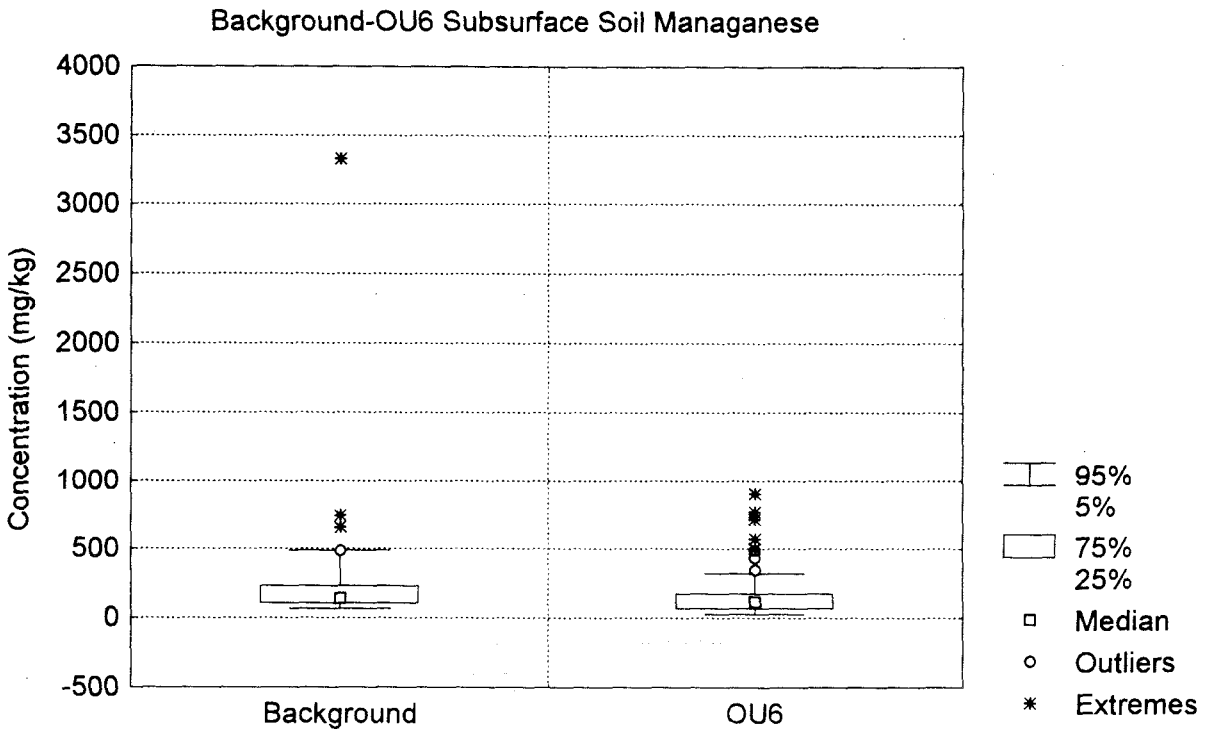

Background-OU6 Subsurface Soil Chromium
Concentration (mg/kg)
260
220
180
140
100
60
20
-20
Background
OU6
95%
5%
75%
25%
Median
Outliers
Extremes

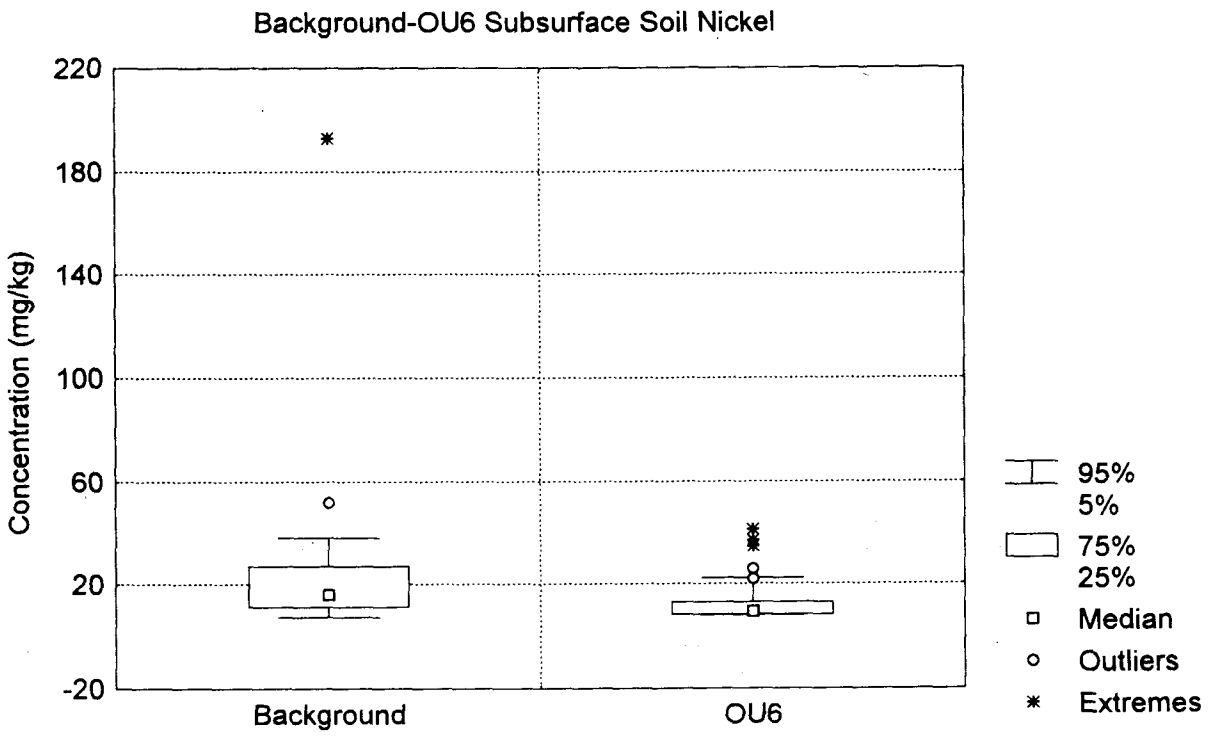

Background-OU6 Subsurface Soil Copper
Concentration (mg/kg)
140
120
100
80
60
40
20
0
-20
Background
OU6
95%
5%
75%
25%
Median
Outliers
Extremes

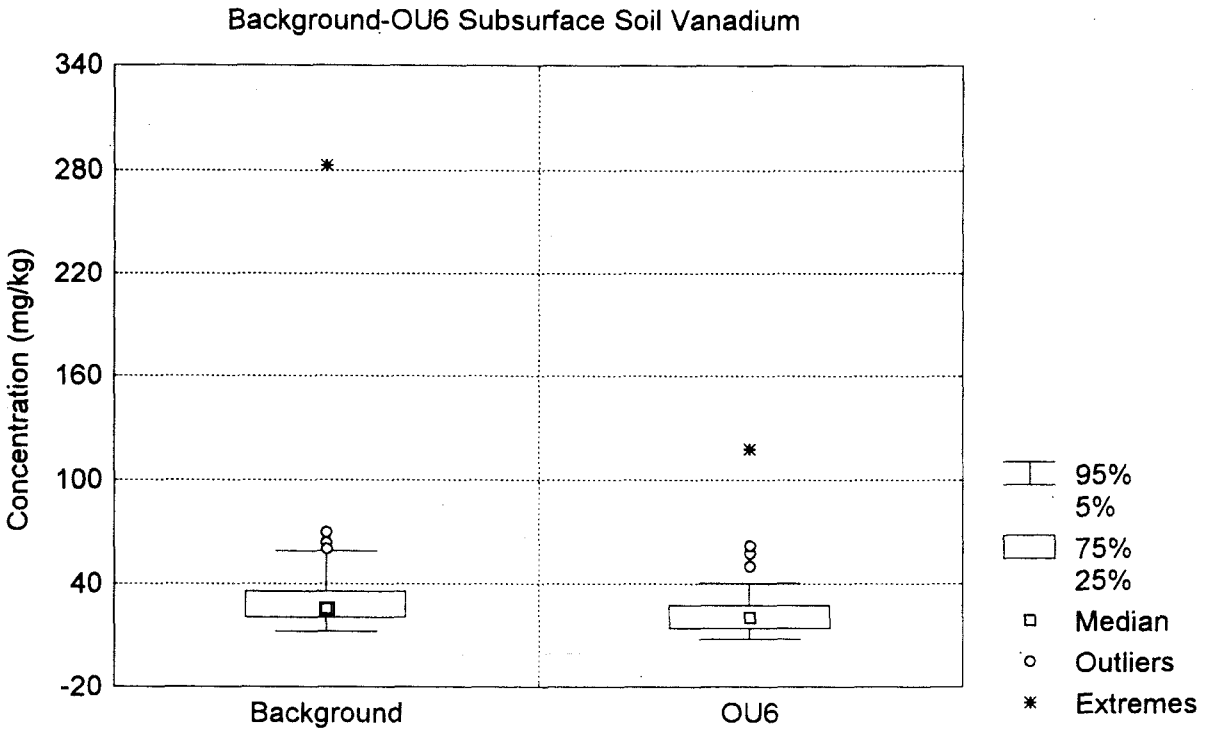

Background-OU6 Subsurface Soil Iron
Concentration (mg/kg)
160000
140000
120000
100000
80000
60000
40000
20000
0
-20000
Background
OU6
95%
5%
75%
25%
Median
Outliers
Extremes

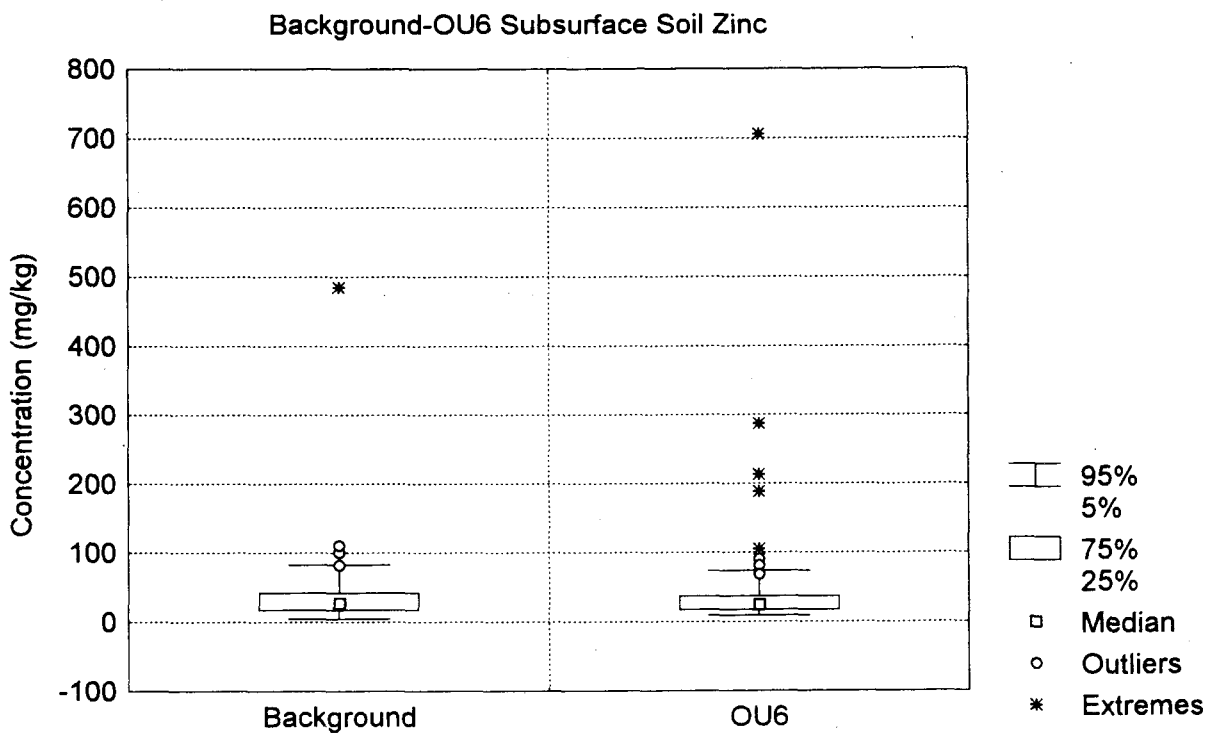

Background-OU6 Subsurface Soil Lead
Concentration (mg/kg)
110
90
70
50
30
10
-10
Background
OU6
95%
5%
75%
25%
Median
Outliers
Extremes

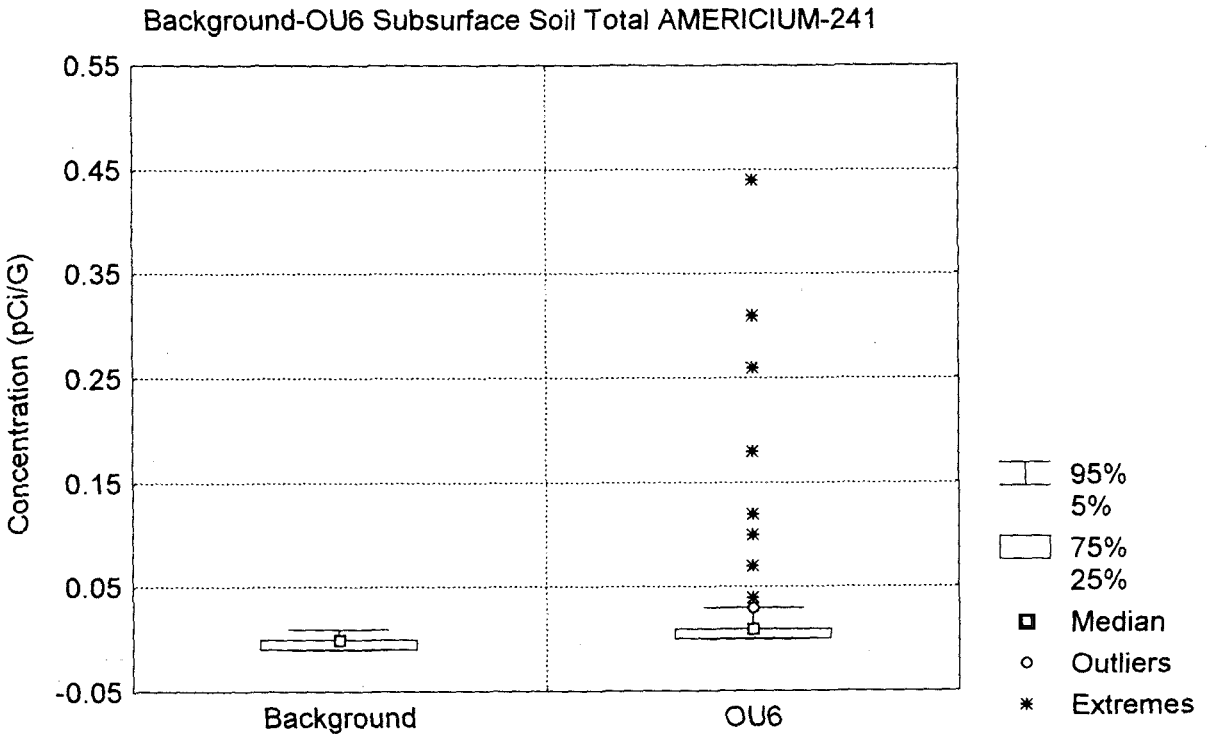

Background-OU6 Soil Magnesium
Concentration (mg/kg)
35000
30000
25000
20000
15000
10000
5000
0
-5000
Background
OU6
95%
5%
75%
25%
Median
Outliers
Extremes

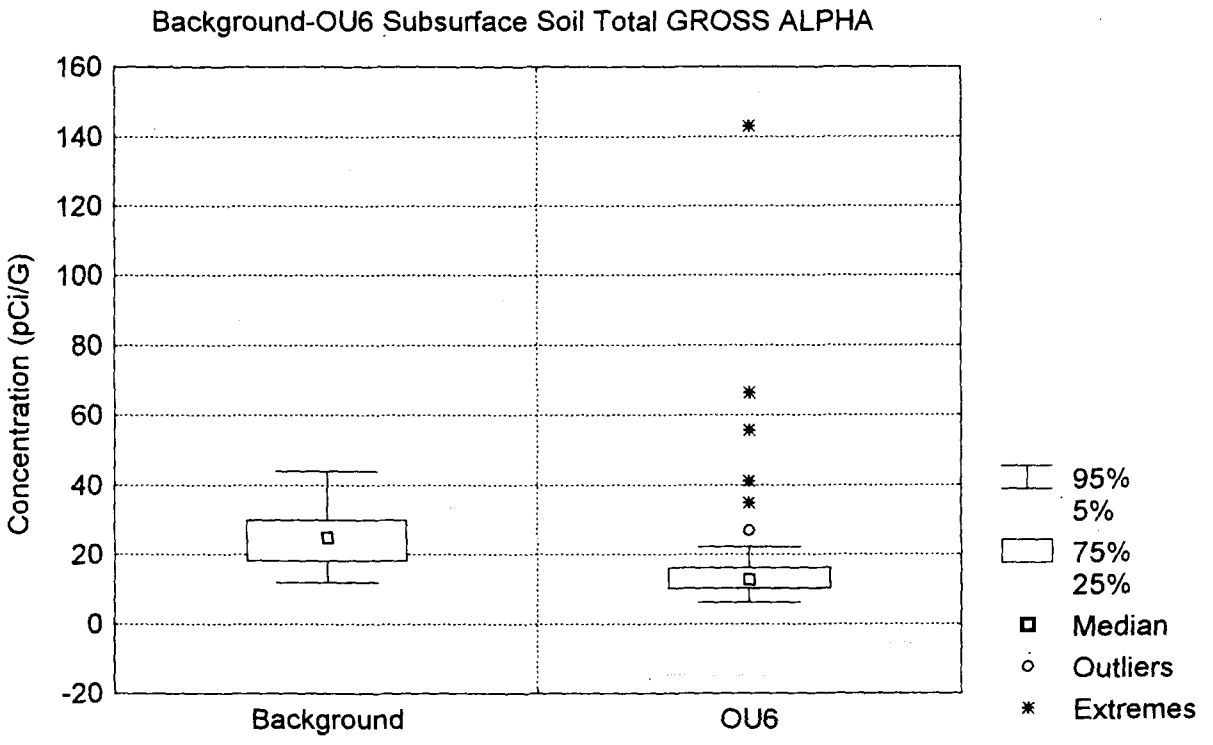

Background-OU6 Subsurface Soil Managanese
Concentration (mg/kg)
4000
3500
3000
2500
2000
1500
1000
500
0
-500
Background
OU6
95%
5%
75%
25%
Median
Outliers
Extremes

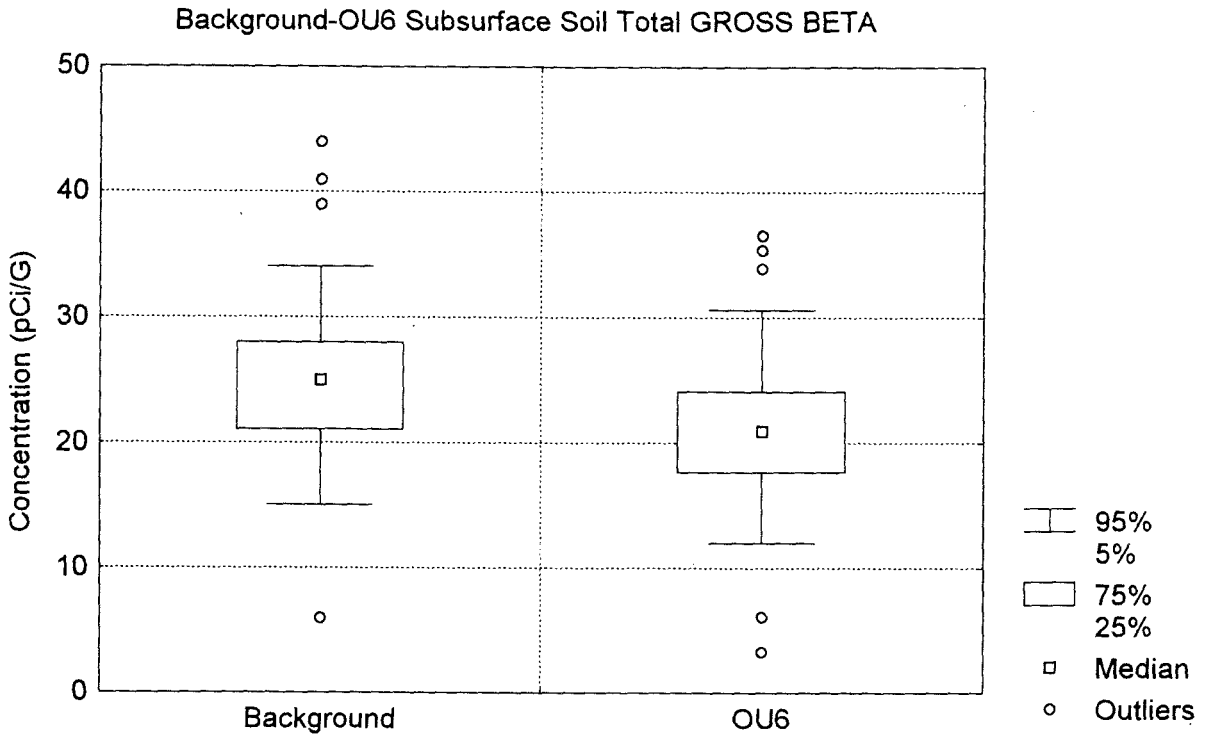

Background-OU6 Subsurface Soil Nickel
Concentration (mg/kg)
220
180
140
100
60
20
-20
Background
OU6
95%
5%
75%
25%
Median
Outliers
Extremes

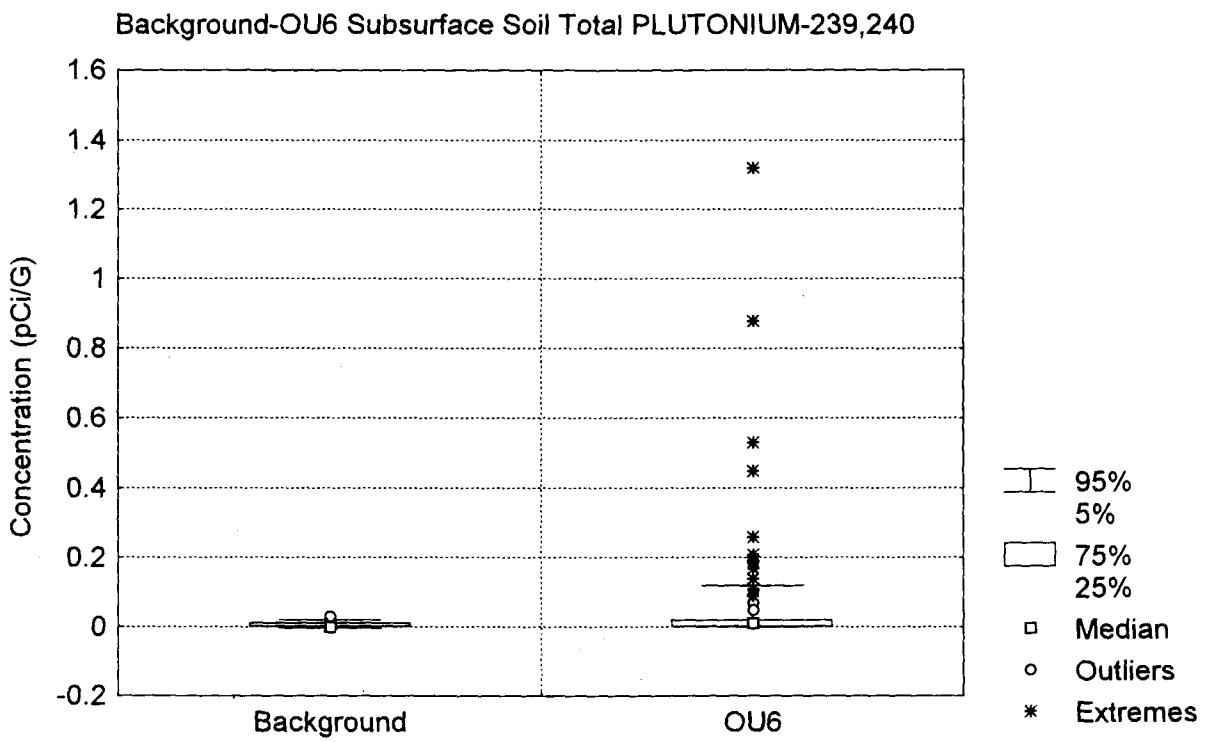

Background-OU6 Subsurface Soil Vanadium
Concentration (mg/kg)
340
280
220
160
100
40
-20
Background
OU6
95%
5%
75%
25%
Median
Outliers
Extremes

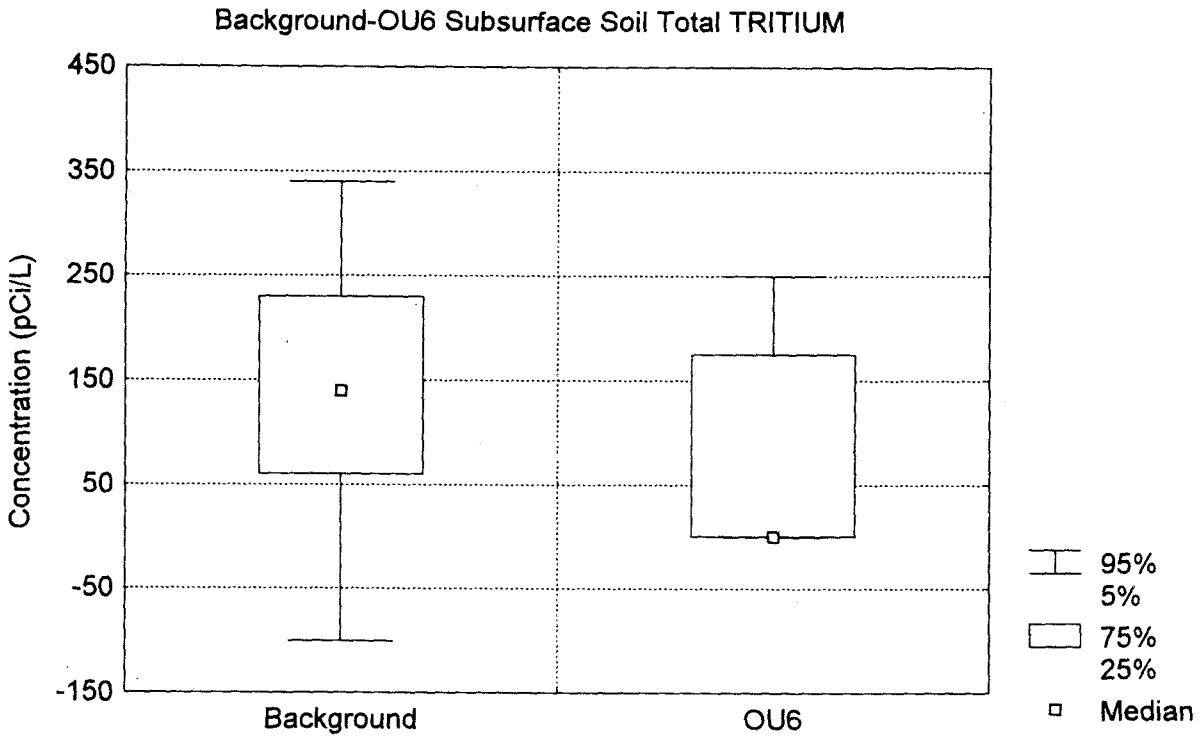

Background-OU6 Subsurface Soil Zinc
Concentration (mg/kg)
800
700
600
500
400
300
200
100
0
-100
Background
OU6
95%
5%
75%
25%
Median
Outliers
Extremes

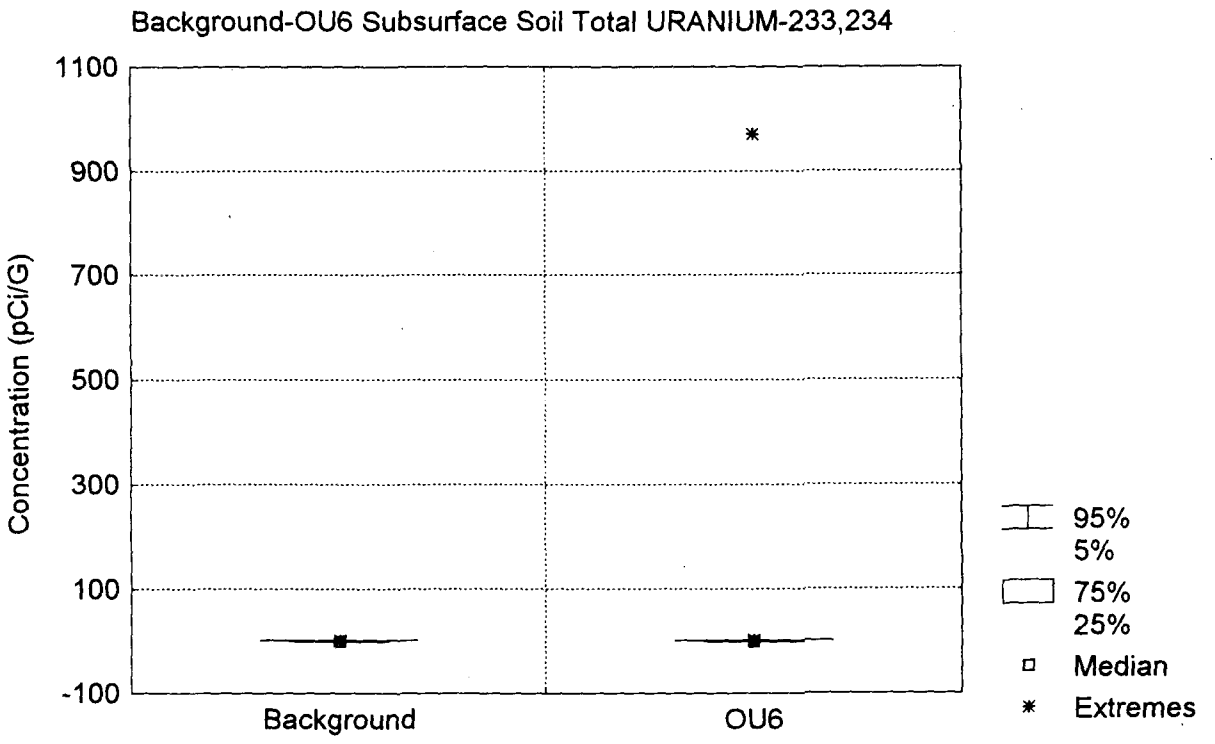

Background-OU6 Subsurface Soil Total AMERICIUM-241
Concentration (pCi/G)
0.55
0.45
0.35
0.25
0.15
0.05
-0.05
Background
OU6
95%
5%
75%
25%
Median
Outliers
Extremes

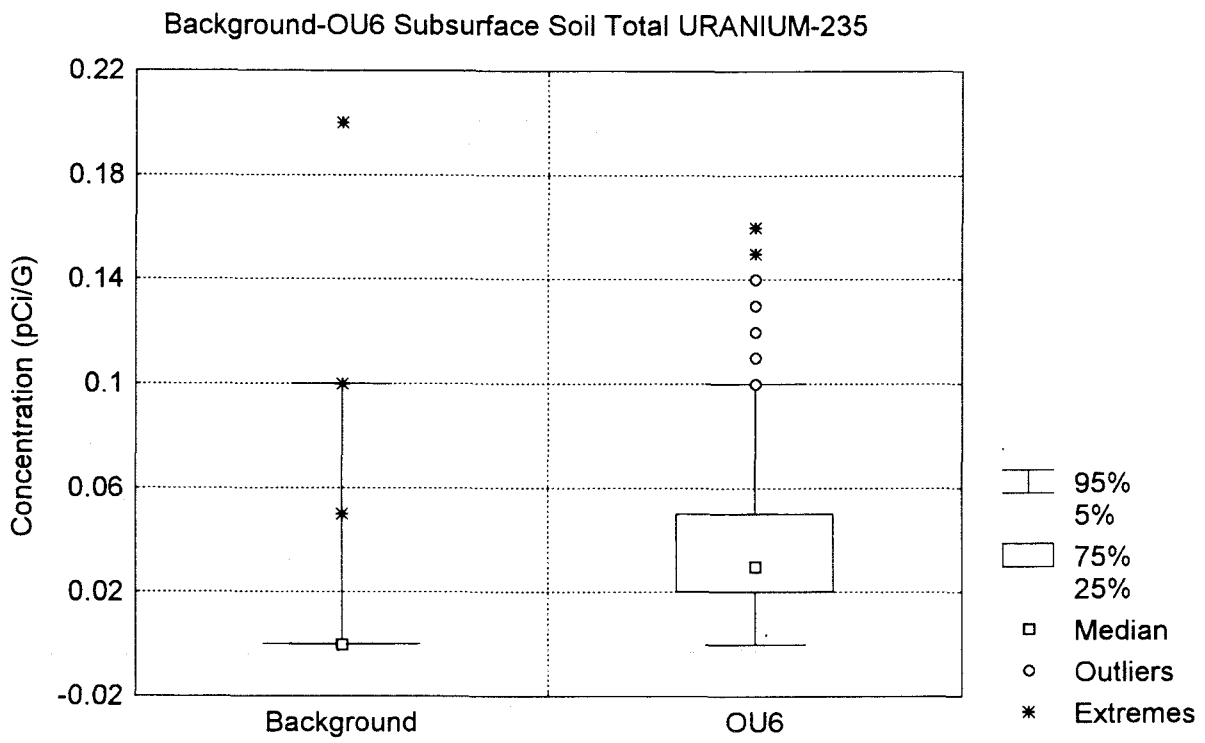

Background-OU6 Subsurface Soil Total GROSS ALPHA
Concentration (pCi/G)
160
140
120
100
80
60
40
20
0
-20
Background
OU6
95%
5%
75%
25%
Median
Outliers
Extremes

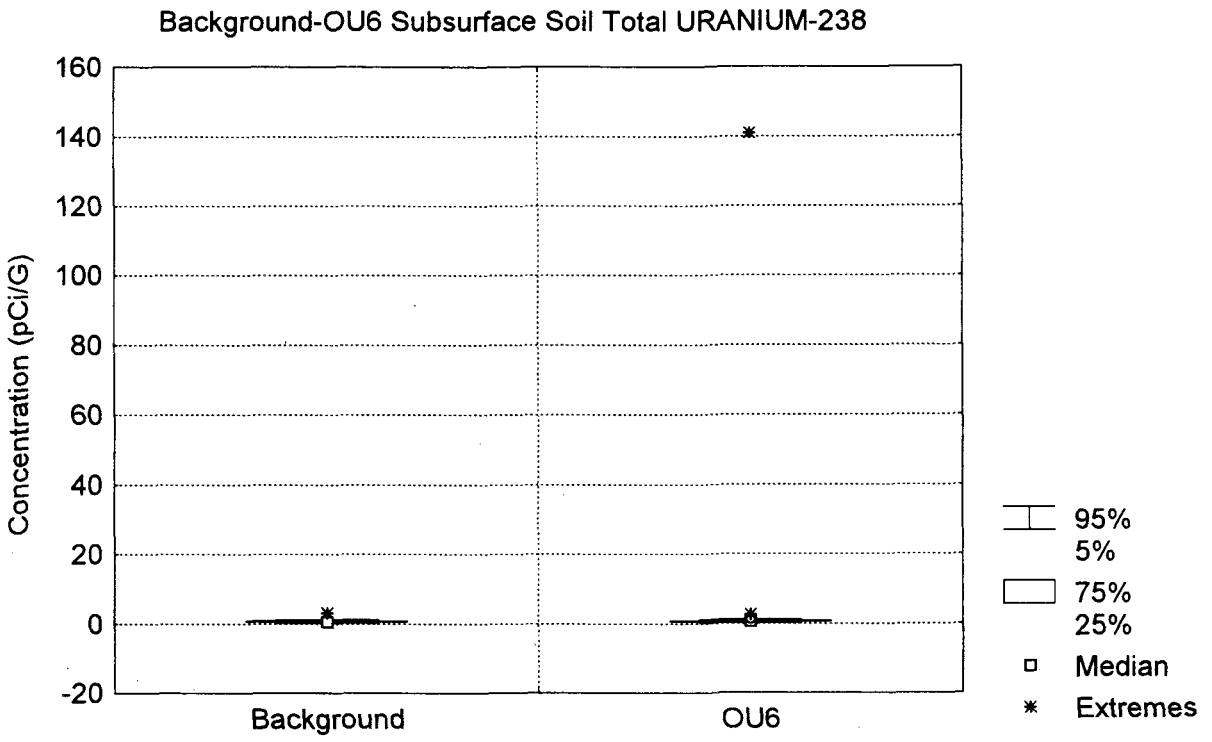

Background-OU6 Subsurface Soil Total GROSS BETA
Concentration (pCi/G)
50
40
30
20
10
0
Background
OU6
95%
5%
75%
25%
Median
Outliers

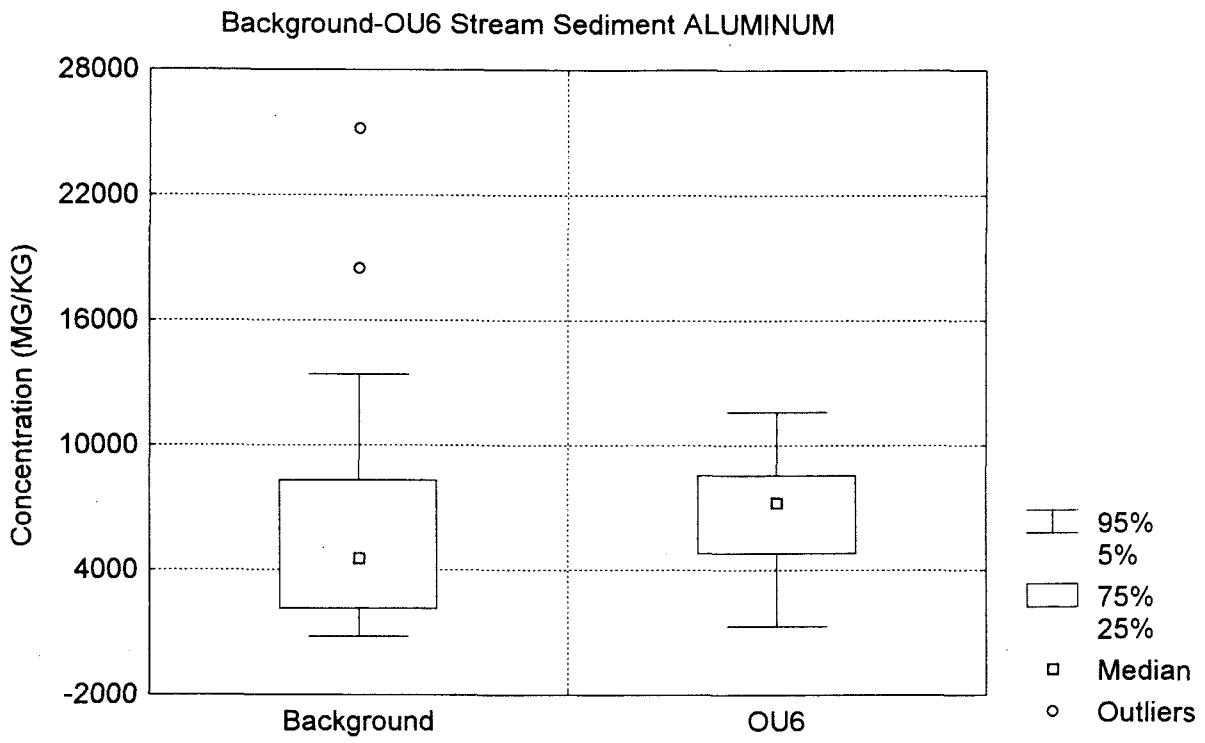

Background-OU6 Subsurface Soil Total PLUTONIUM-239,240
Concentration (pCi/G)
1.6
1.4
1.2
1
0.8
0.6
0.4
0.2
0
-0.2
Background
OU6
95%
5%
75%
25%
Median
Outliers
Extremes

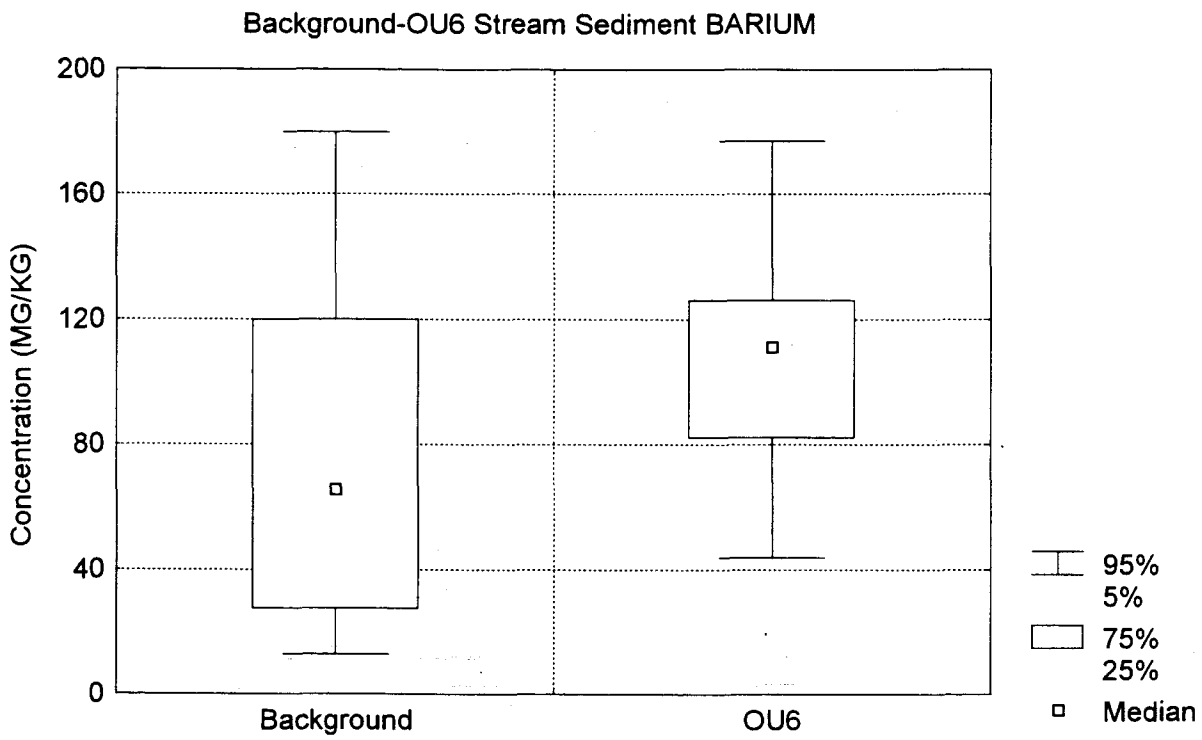

Background-OU6 Subsurface Soil Total TRITIUM
Concentration (pCi/L)
450
350
250
150
50
-50
-150
Background
OU6
95%
5%
75%
25%
Median

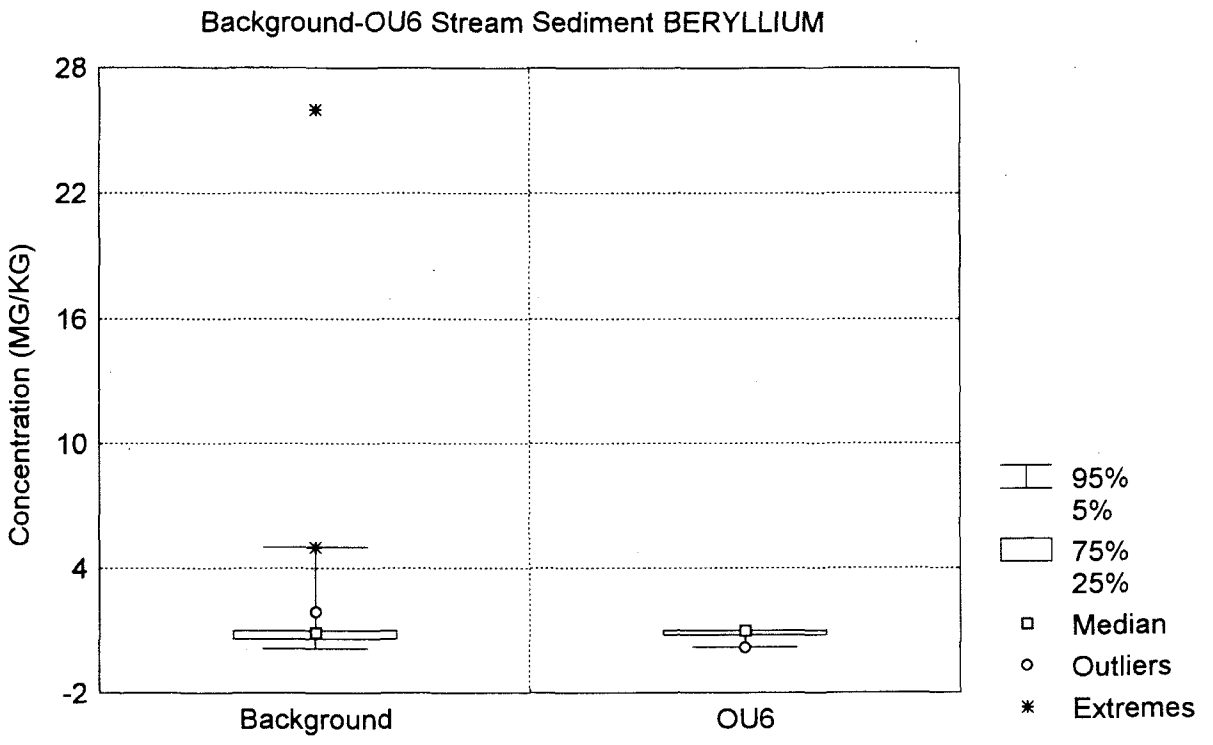

Background-OU6 Subsurface Soil Total URANIUM-233,234
Concentration (pCi/G)
1100
900
700
500
300
100
-100
Background
OU6
95%
5%
75%
25%
Median
Extremes

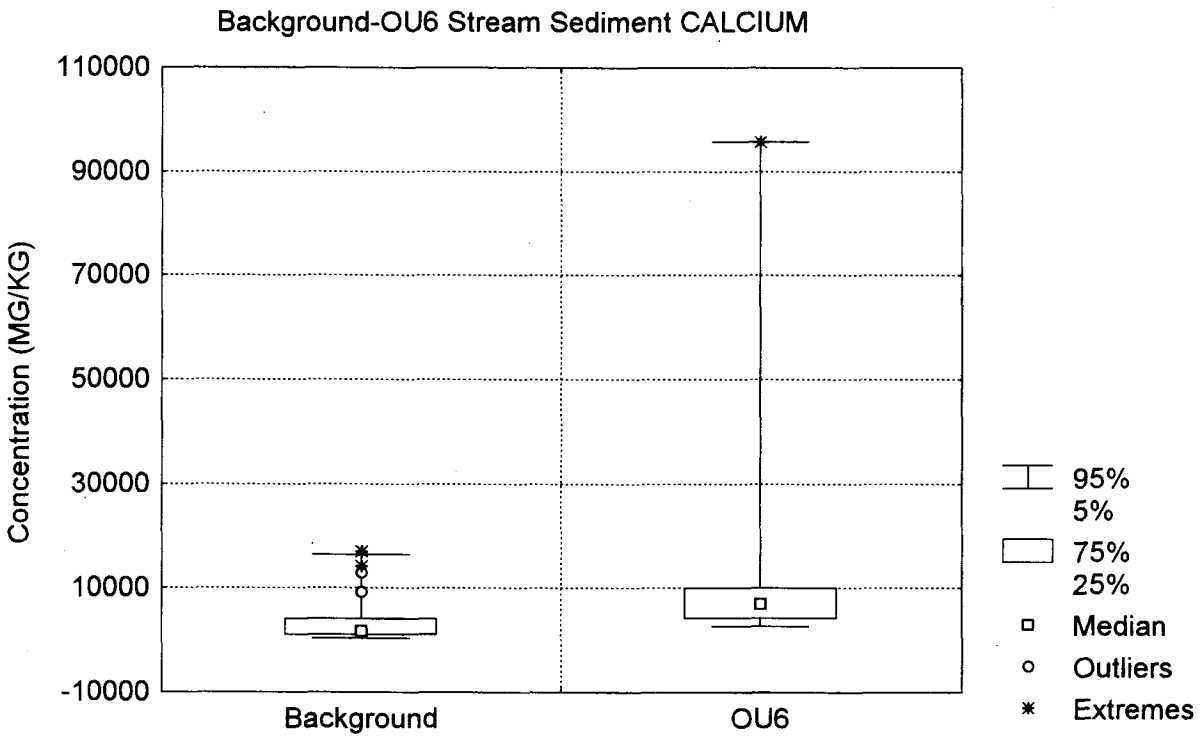

Background-OU6 Subsurface Soil Total URANIUM-235
Concentration (pCi/G)
0.22
0.18
0.14
0.1
0.06
0.02
-0.02
Background
OU6
95%
5%
75%
25%
Median
Outliers
Extremes

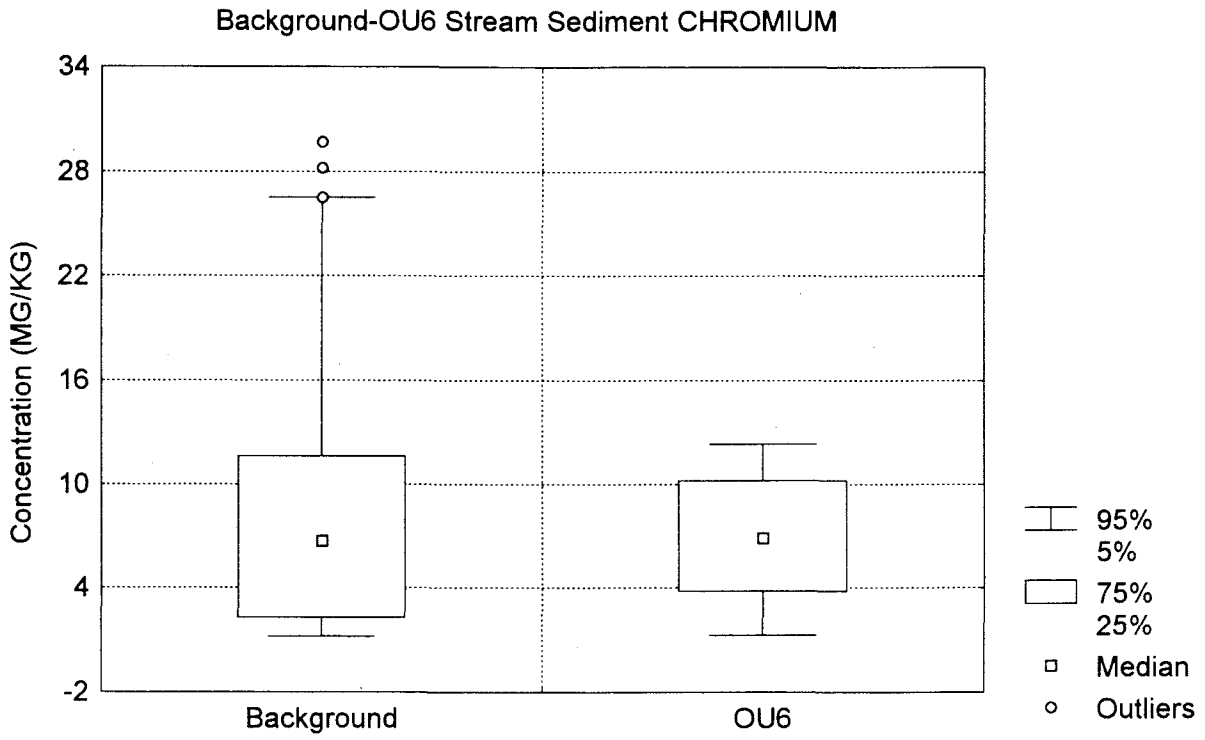

Background-OU6 Subsurface Soil Total URANIUM-238
Concentration (pCi/G)
160
140
120
100
80
60
40
20
0
-20
Background
OU6
95%
5%
75%
25%
Median
Extremes

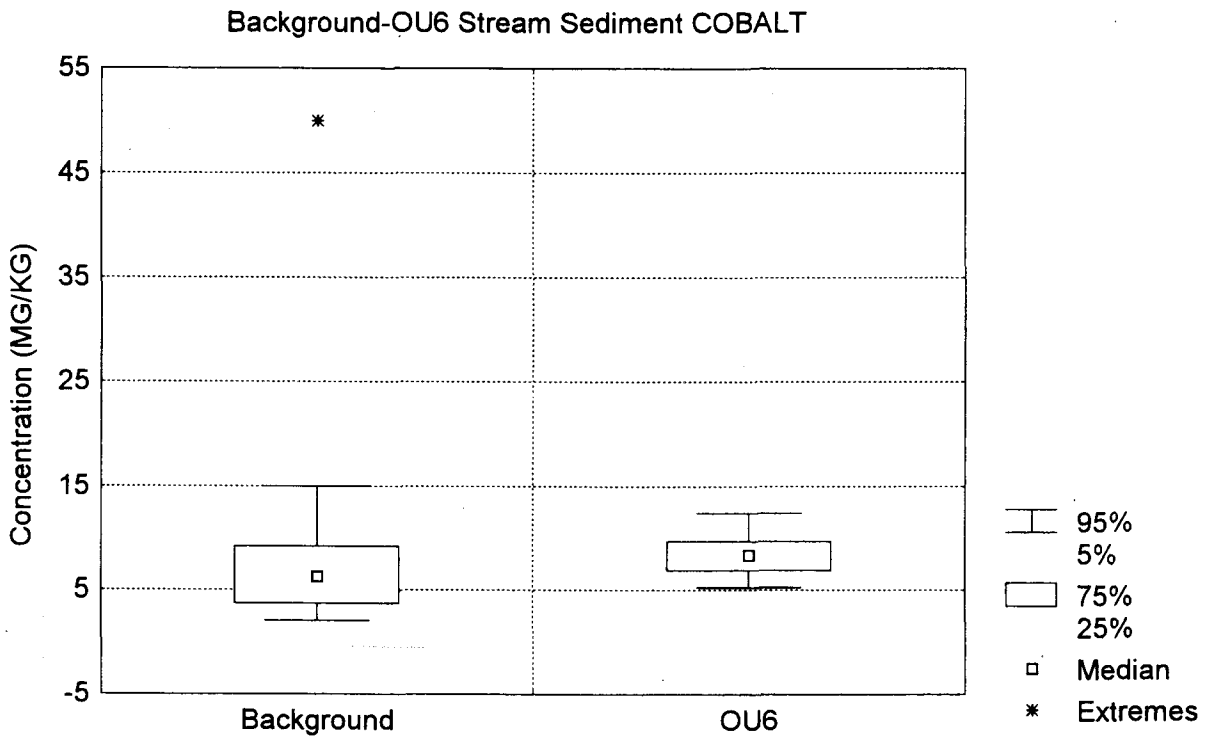

Background-OU6 Stream Sediment ALUMINUM
Concentration (MG/KG)
28000
22000
16000
10000
4000
-2000
Background
OU6
95%
5%
75%
25%
Median
Outliers

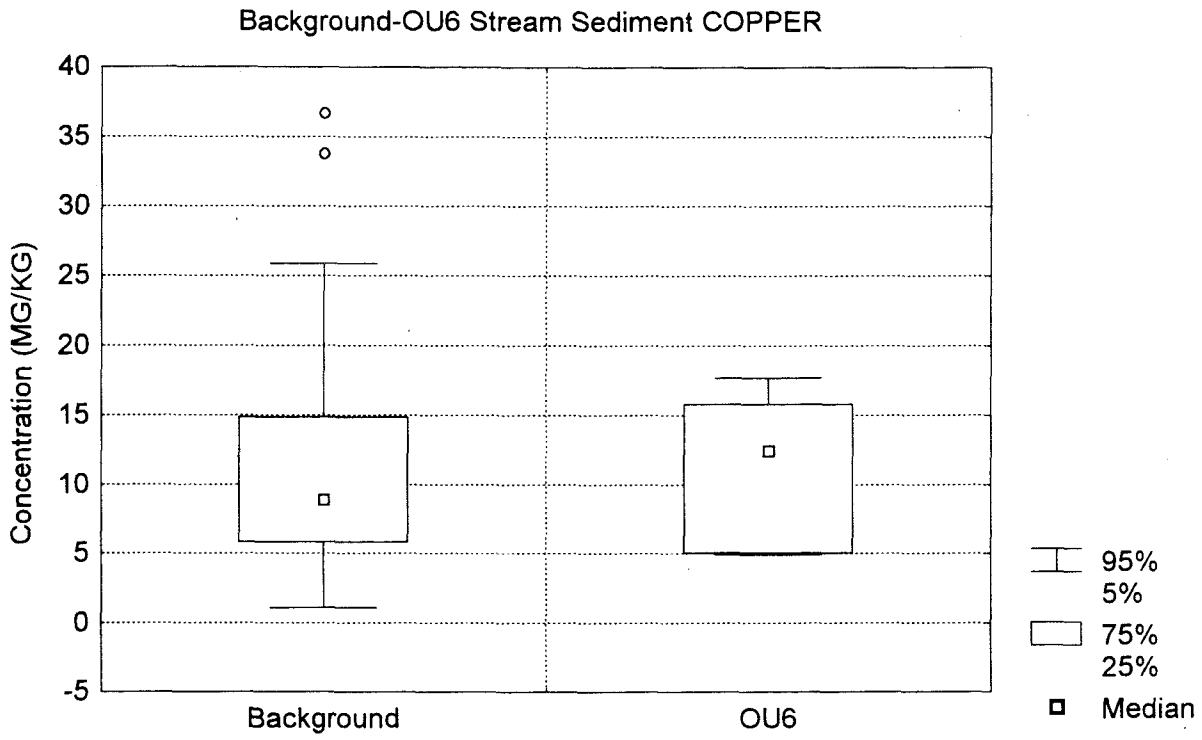

Background-OU6 Stream Sediment BARIUM
Concentration (MG/KG)
200
160
120
80
40
0
Background
OU6
95%
5%
75%
25%
Median

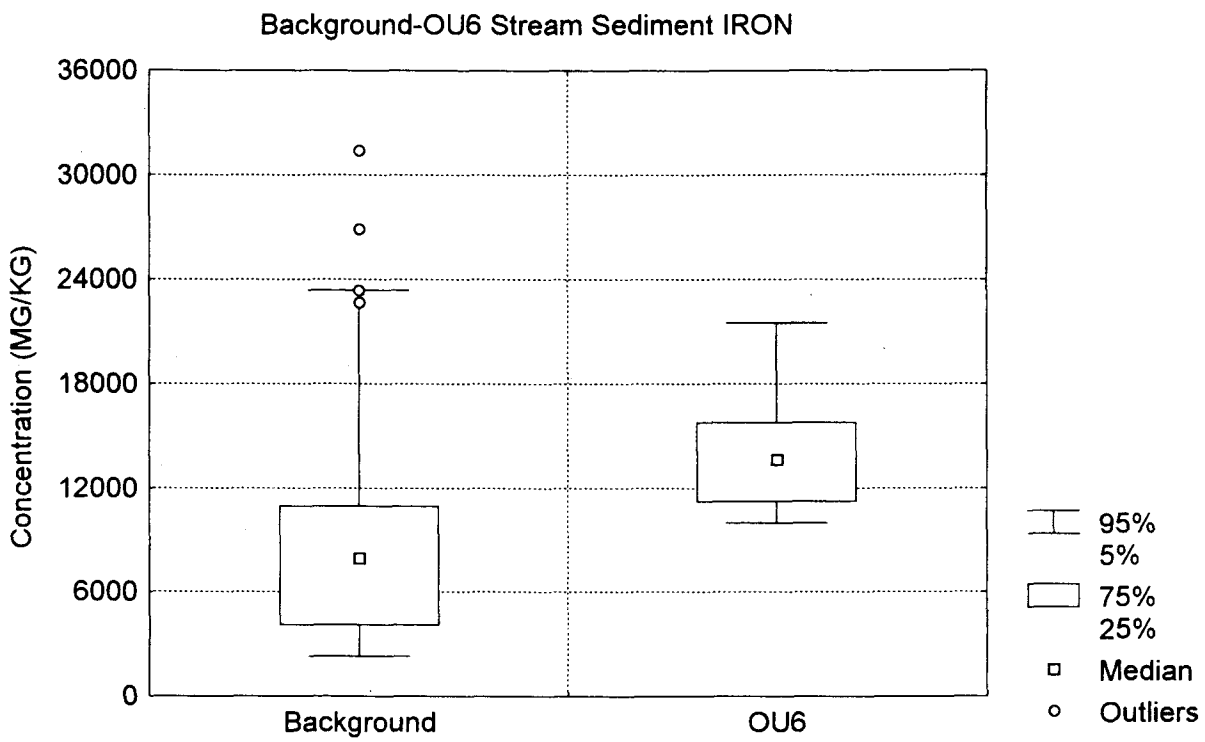

Background-OU6 Stream Sediment BERYLLIUM
Concentration (MG/KG)
28
22
16
10
4
-2
Background
OU6
95%
5%
75%
25%
Median
Outliers
Extremes

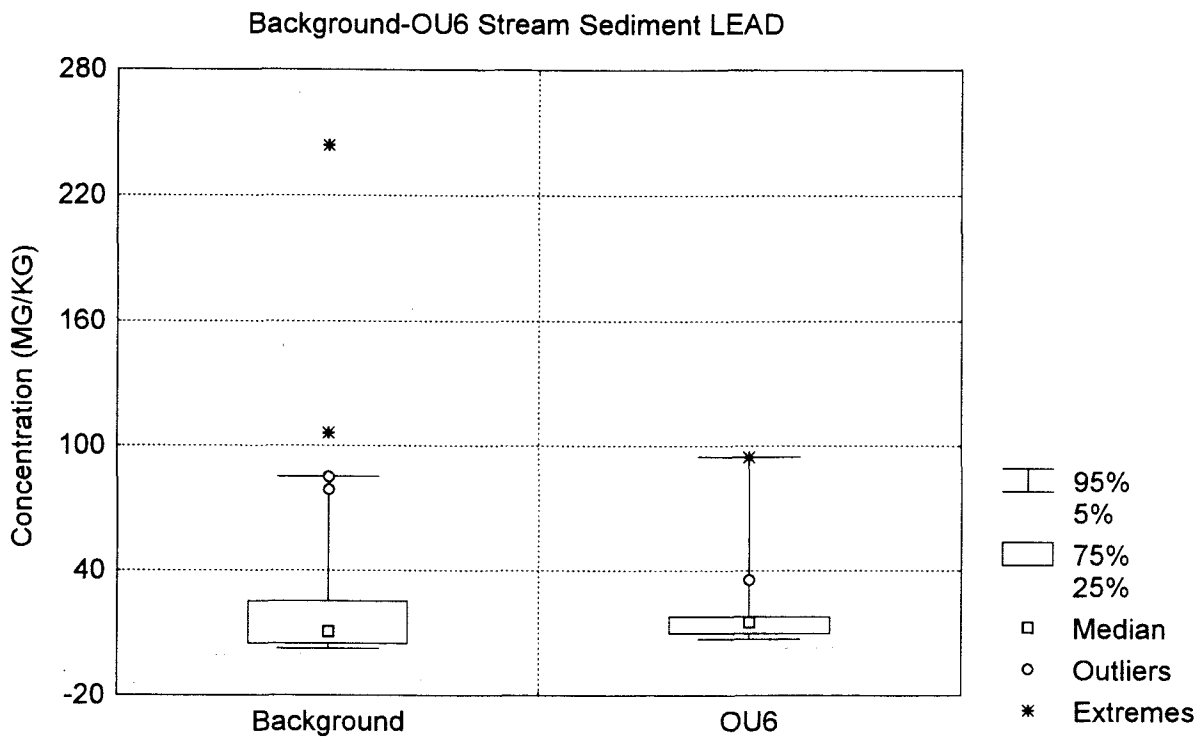

Background-OU6 Stream Sediment CALCIUM
110000
90000
70000
50000
30000
10000
-10000
Concentration (MG/KG)
Background
OU6
95%
5%
75%
25%
Median
Outliers
Extremes

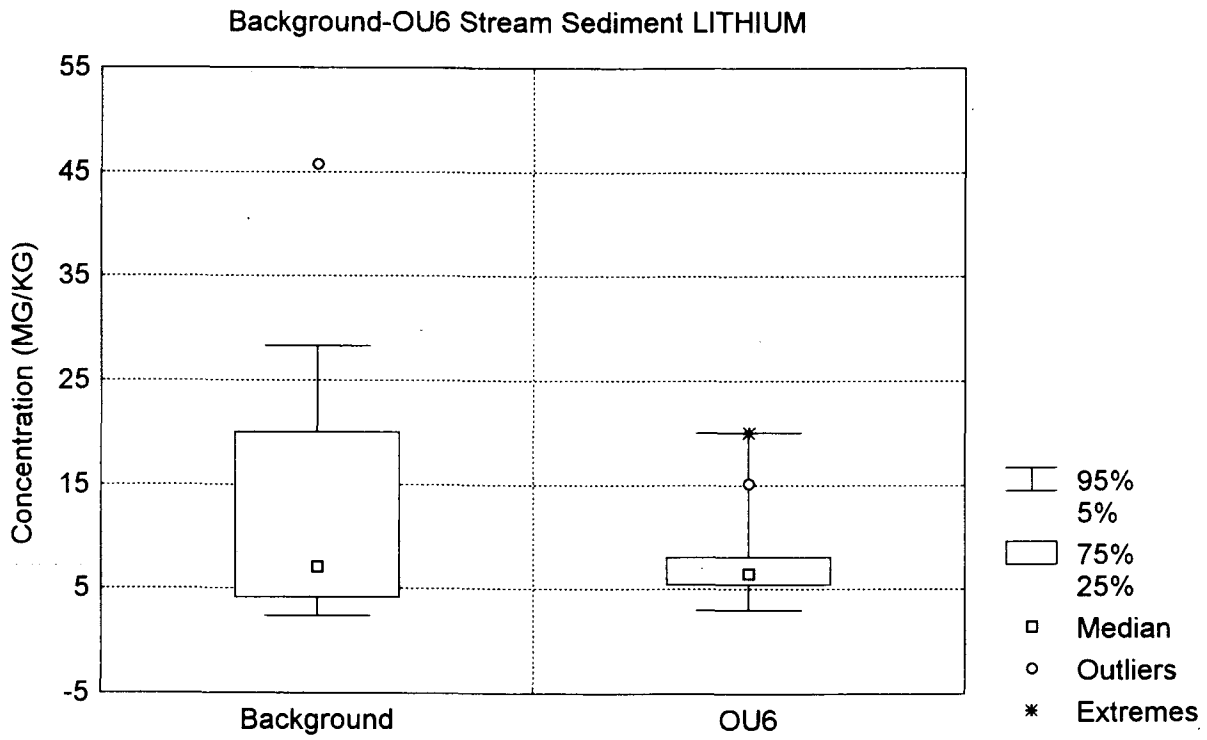

Background-OU6 Stream Sediment CHROMIUM
Concentration (MG/KG)
34
28
22
16
10
4
-2
Background
OU6
95%
5%
75%
25%
Median
Outliers

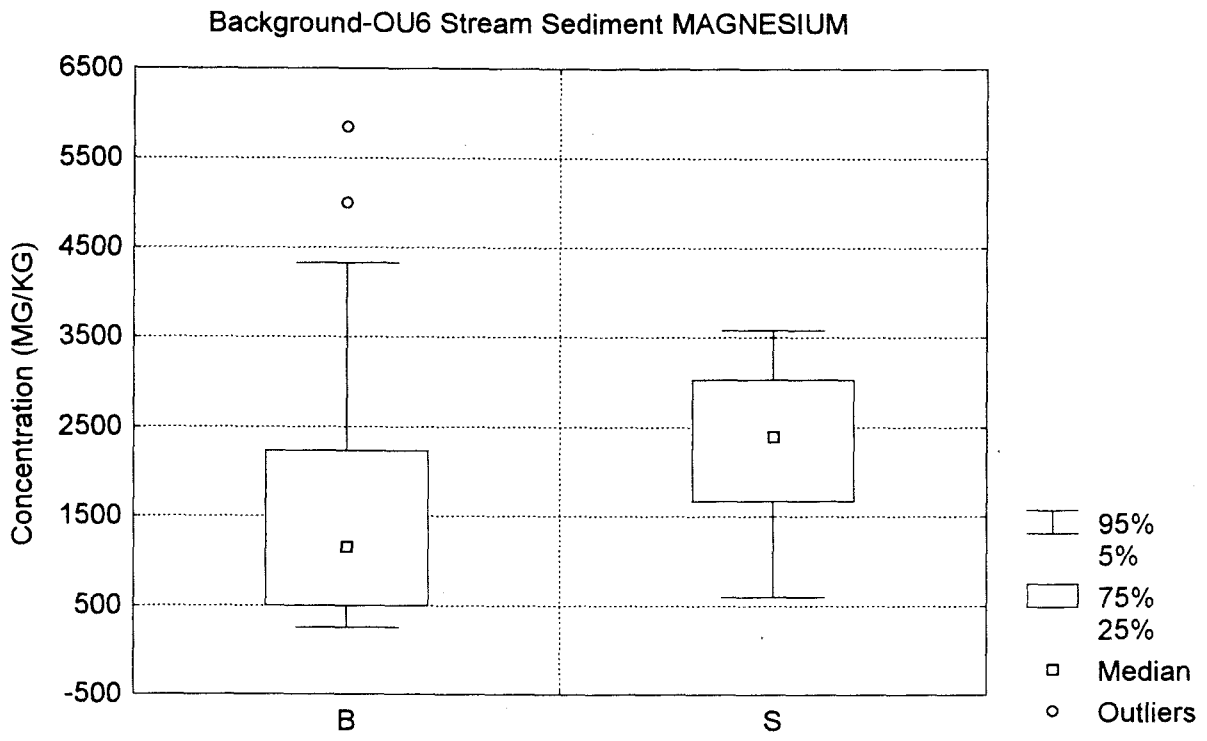

Background-OU6 Stream Sediment COBALT
Concentration (MG/KG)
55
45
35
25
15
5
-5
Background
OU6
95%
5%
75%
25%
Median
Extremes

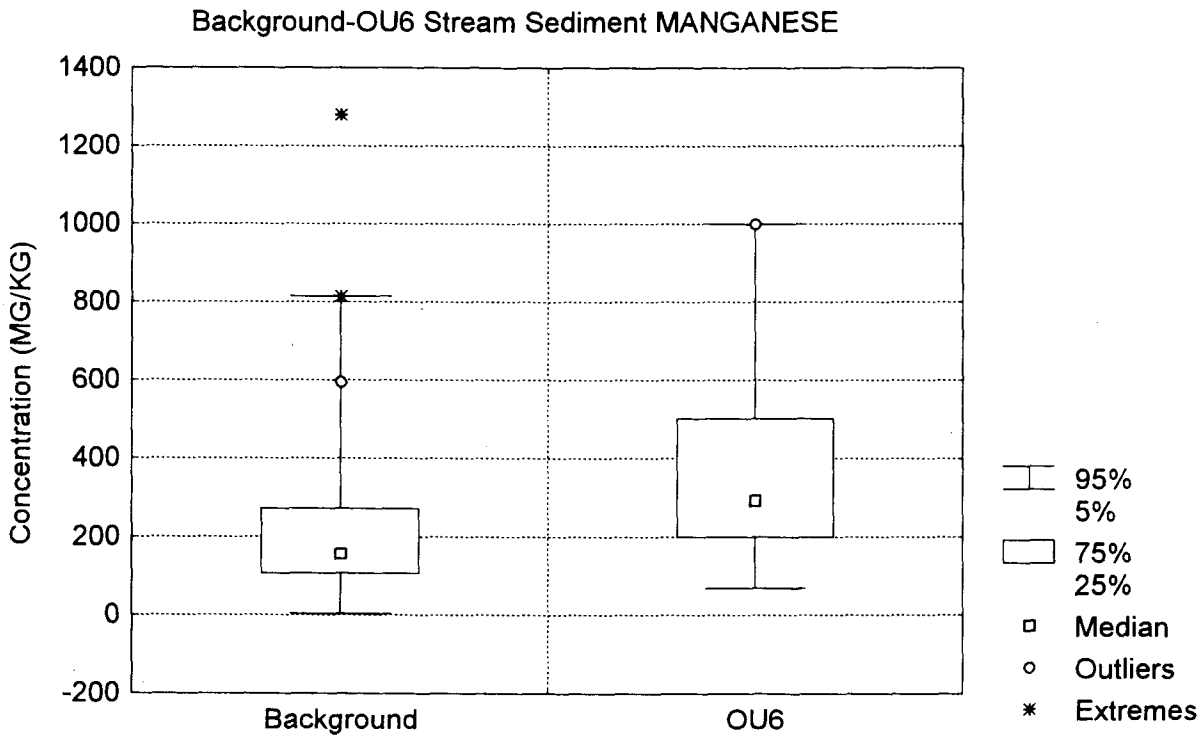

Background-OU6 Stream Sediment COPPER
Concentration (MG/KG)
40
35
30
25
20
15
10
5
0
-5
Background
OU6
95%
5%
75%
25%
Median

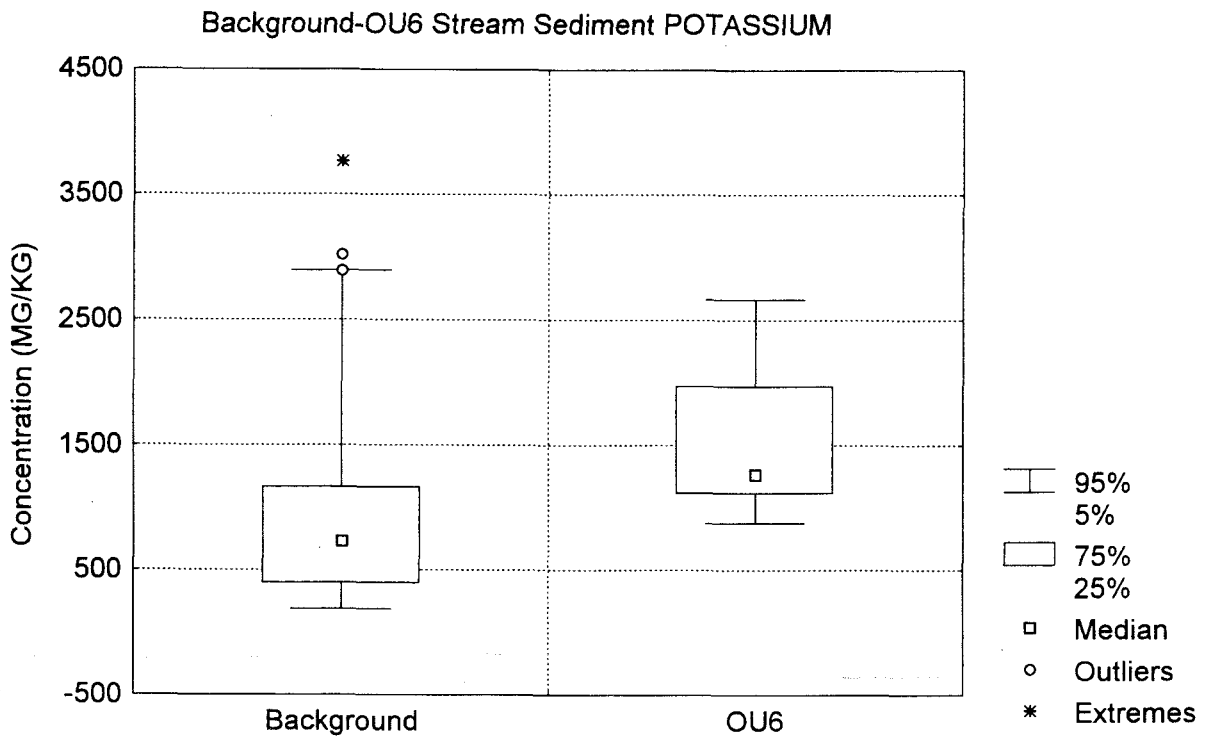

Background-OU6 Stream Sediment IRON
Concentration (MG/KG)
36000
30000
24000
18000
12000
6000
0
Background
OU6
95%
5%
75%
25%
Median
Outliers

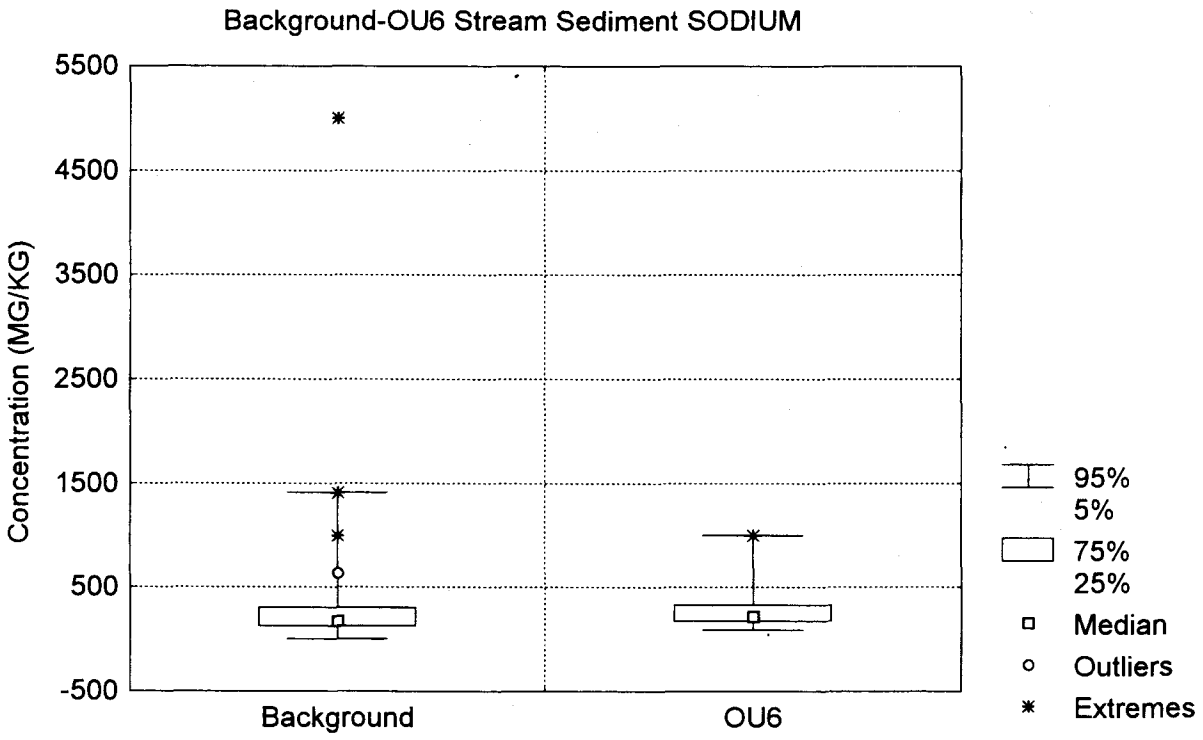

Background-OU6 Stream Sediment LEAD
Concentration (MG/KG)
280
220
160
100
40
-20
Background
OU6
95%
5%
75%
25%
Median
Outliers
Extremes

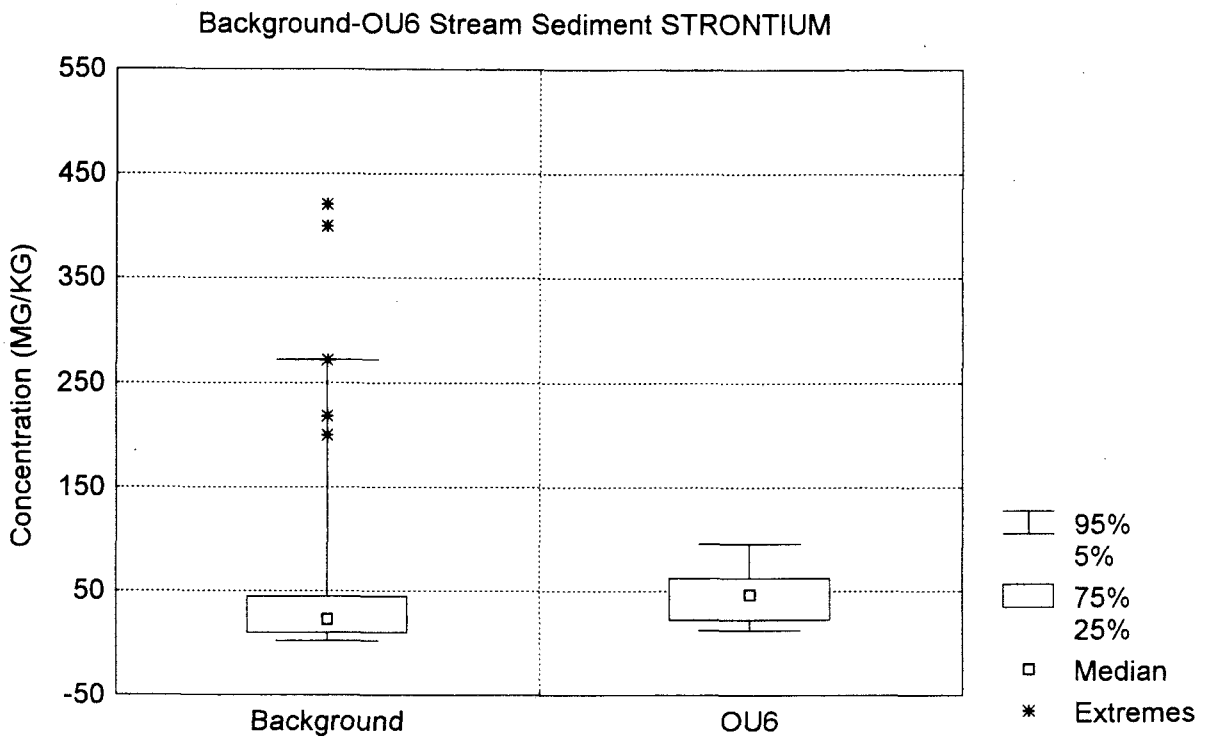

Background-OU6 Stream Sediment LITHIUM
Concentration (MG/KG)
55
45
35
25
15
5
-5
Background
OU6
95%
5%
75%
25%
Median
Outliers
Extremes

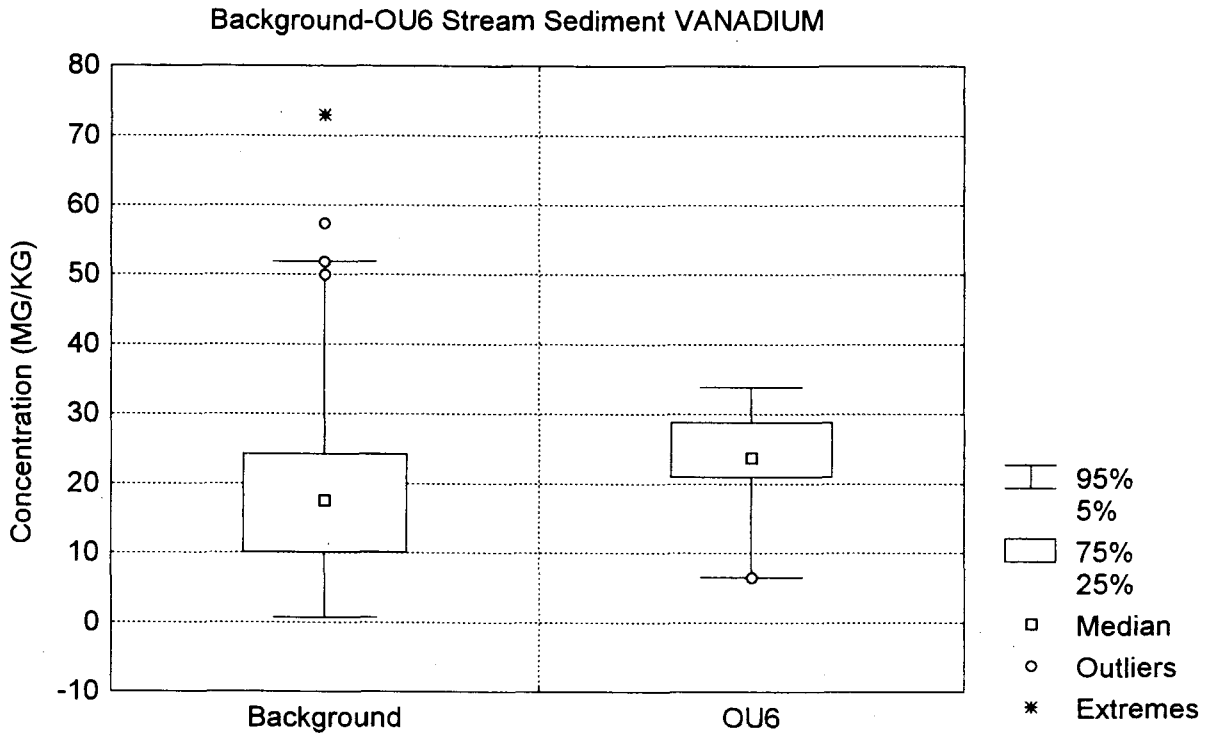

Background-OU6 Stream Sediment MAGNESIUM
Concentration (MG/KG)
6500
5500
4500
3500
2500
1500
500
-500
B
S
95%
5%
75%
25%
Median
Outliers

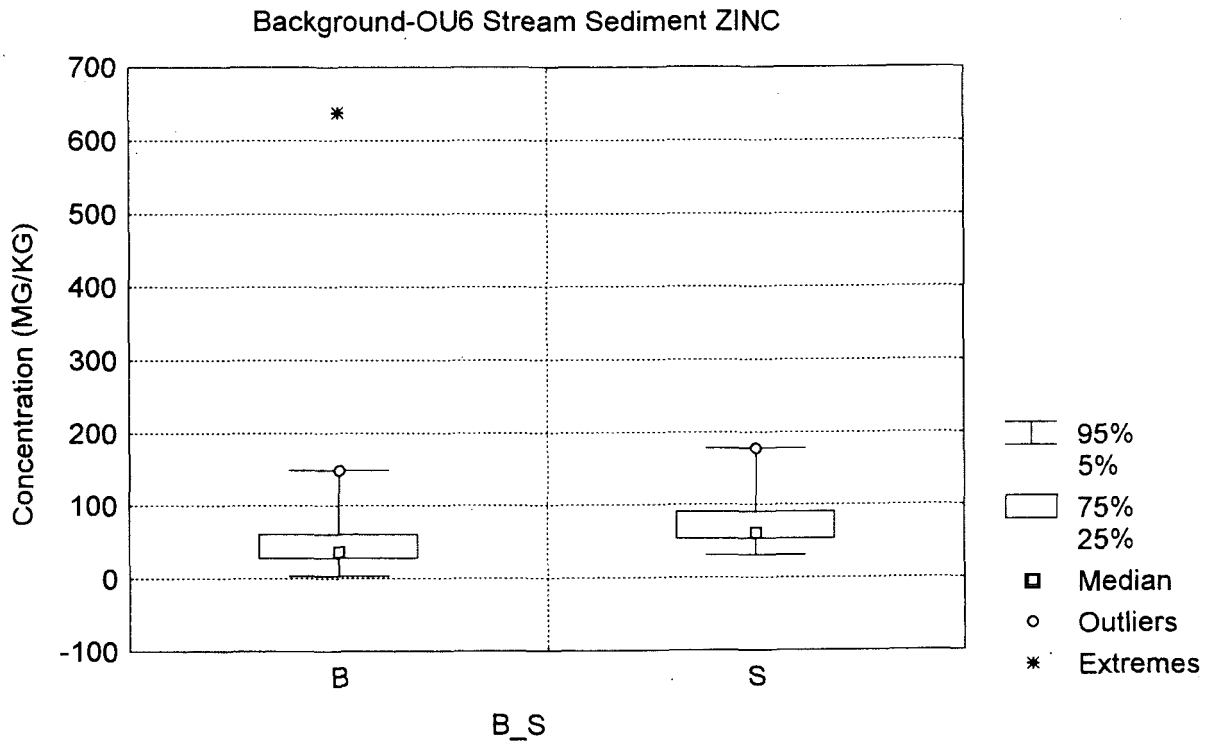

Background-OU6 Stream Sediment MANGANESE
Concentration (MG/KG)
1400
1200
1000
800
600
400
200
0
-200
Background
OU6
95%
5%
75%
25%
Median
Outliers
Extremes

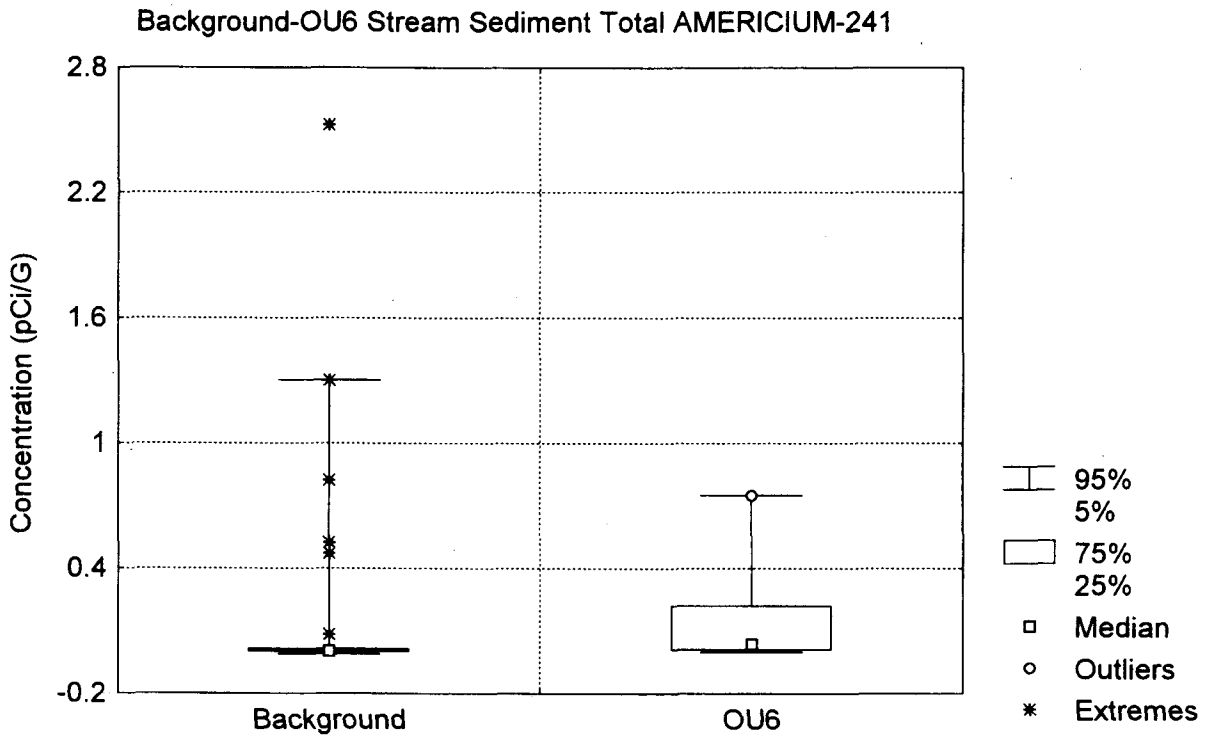

Background-OU6 Stream Sediment POTASSIUM
Concentration (MG/KG)
4500
3500
2500
1500
500
-500
Background
OU6
95%
5%
75%
25%
Median
Outliers
Extremes

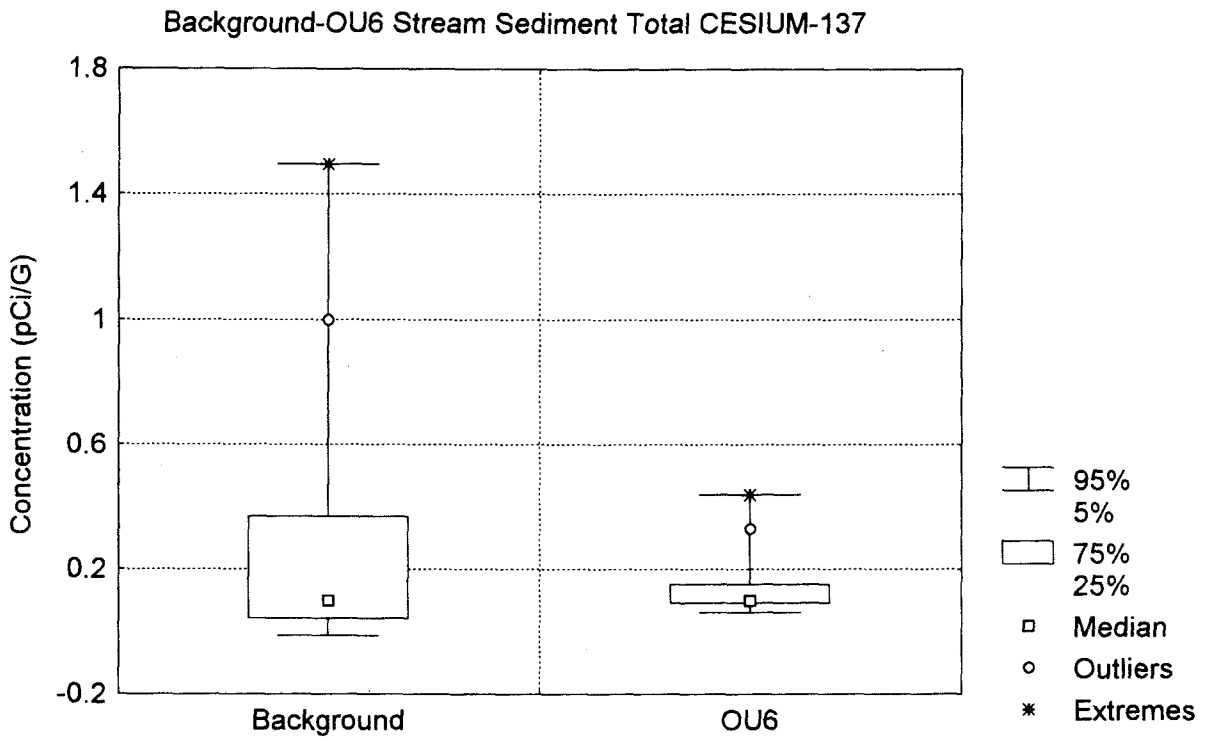

Background-OU6 Stream Sediment SODIUM
Concentration (MG/KG)
5500
4500
3500
2500
1500
500
-500
Background
OU6
95%
5%
75%
25%
Median
Outliers
Extremes

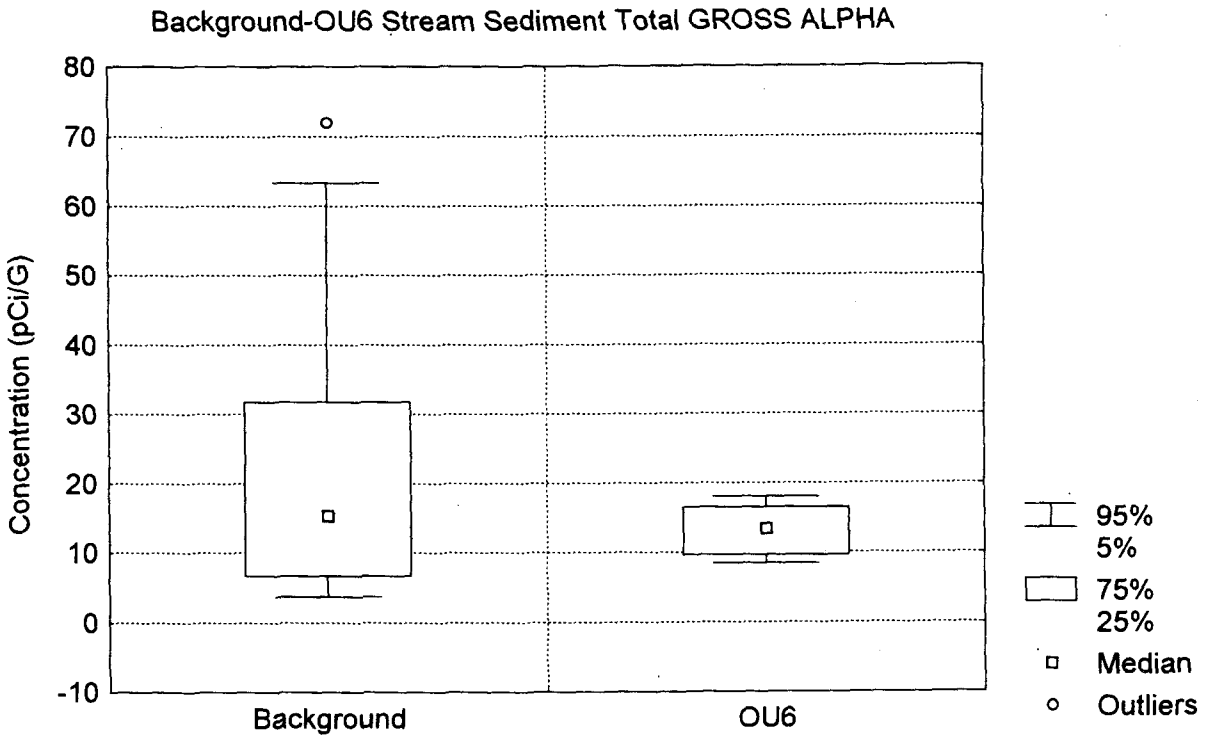

Background-OU6 Stream Sediment STRONTIUM
Concentration (MG/KG)
550
450
350
250
150
50
-50
Background
OU6
95%
5%
75%
25%
Median
Extremes

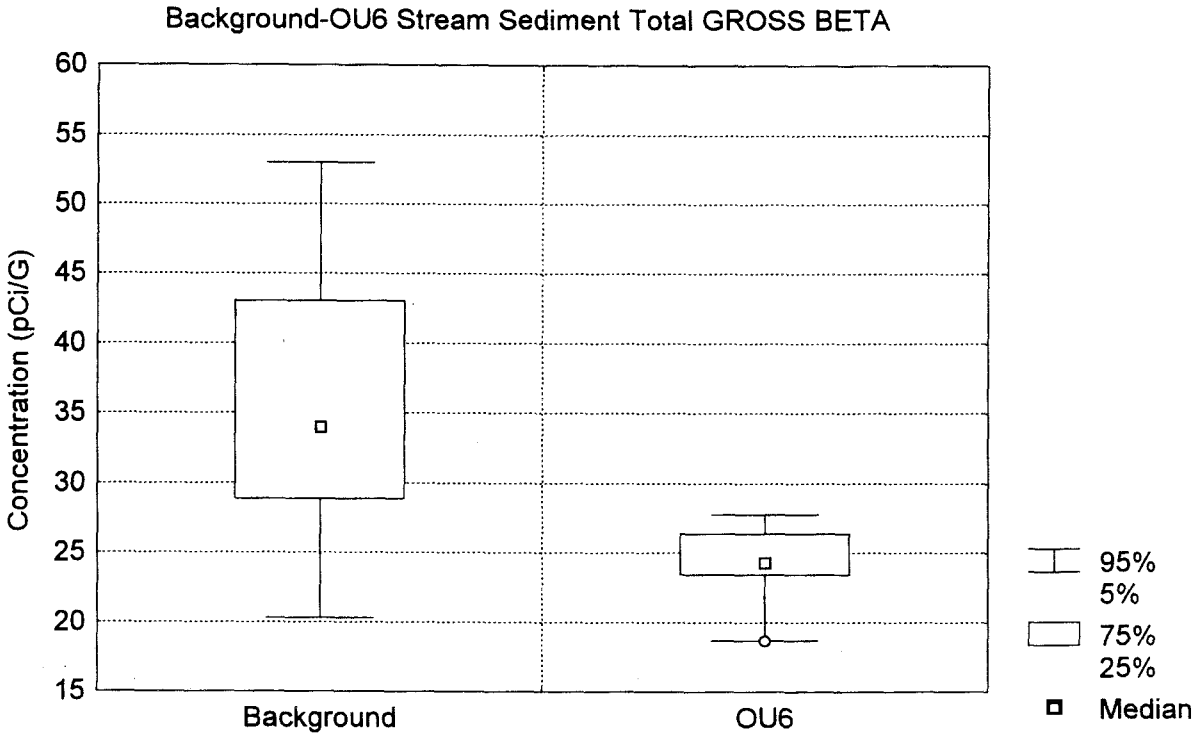

Background-OU6 Stream Sediment VANADIUM
Concentration (MG/KG)
80
70
60
50
40
30
20
10
0
-10
Background
OU6
95%
5%
75%
25%
Median
Outliers
Extremes

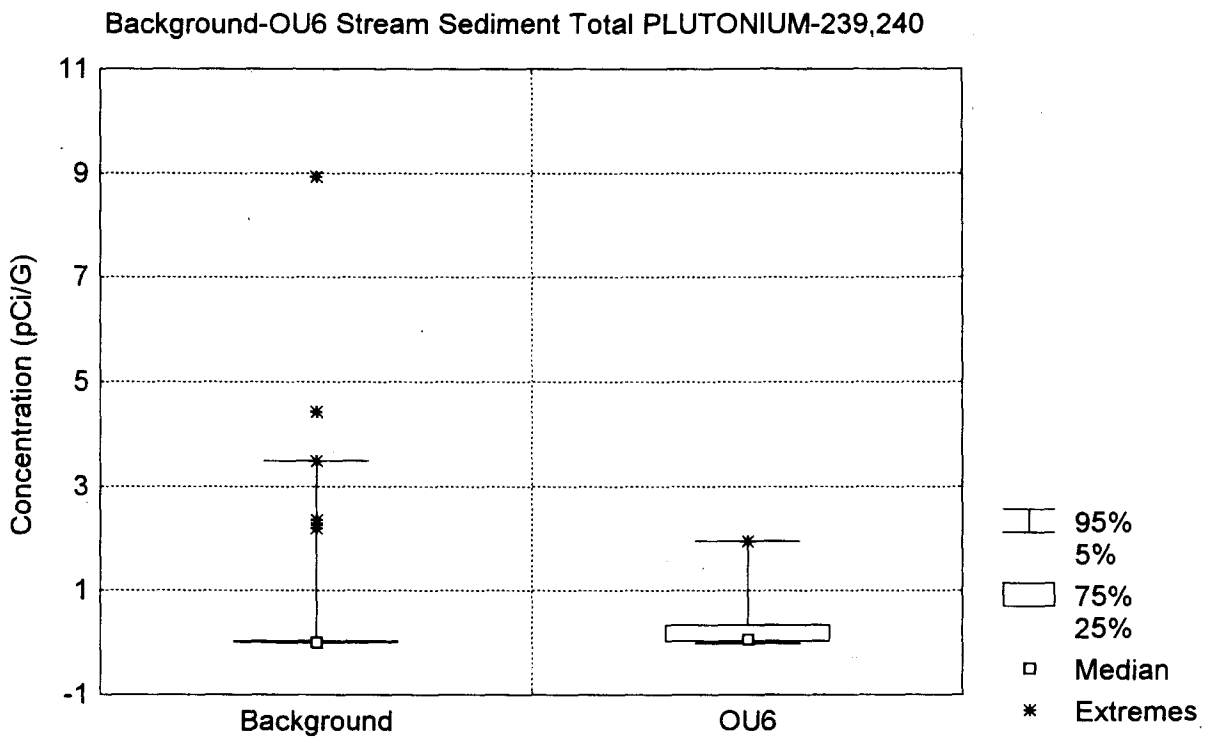

Background-OU6 Stream Sediment ZINC
Concentration (MG/KG)
700
600
500
400
300
200
100
0
-100
B
S
B_S
95%
5%
75%
25%
Median
Outliers
Extremes

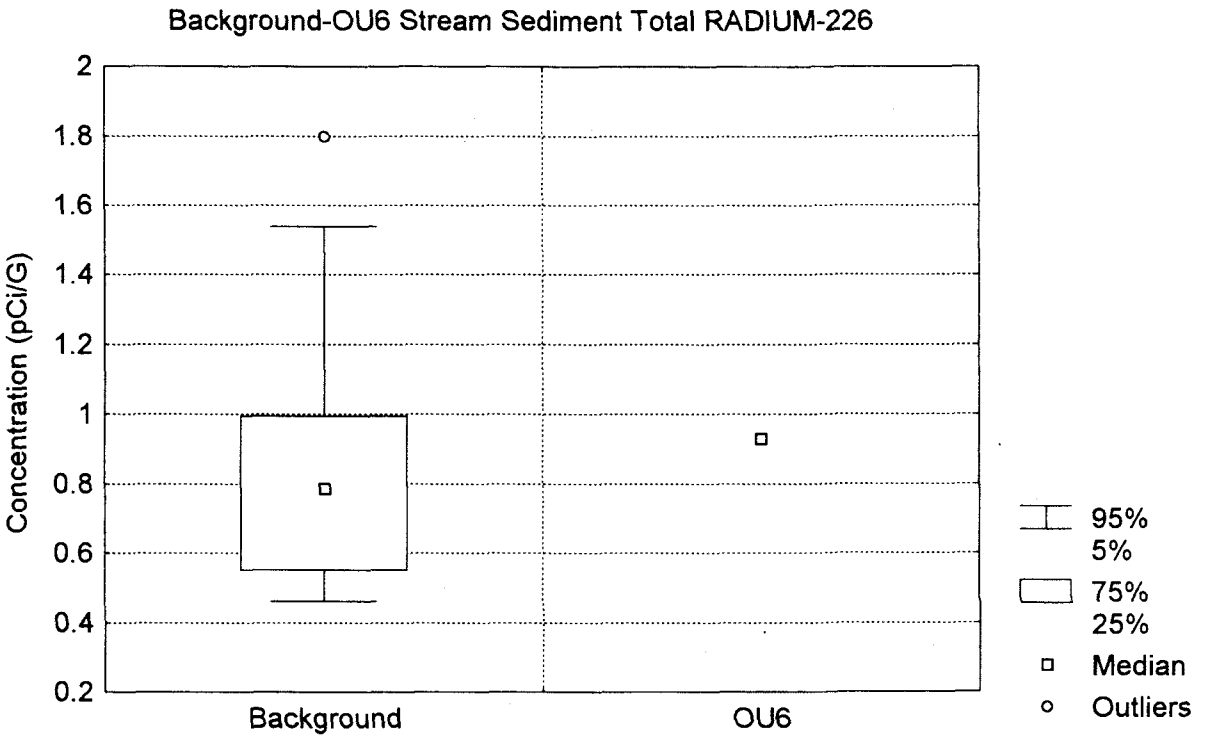

Background-OU6 Stream Sediment Total AMERICIUM-241
Concentration (pCi/G)
2.8
2.2
1.6
1
0.4
-0.2
Background
OU6
95%
5%
75%
25%
Median
Outliers
Extremes

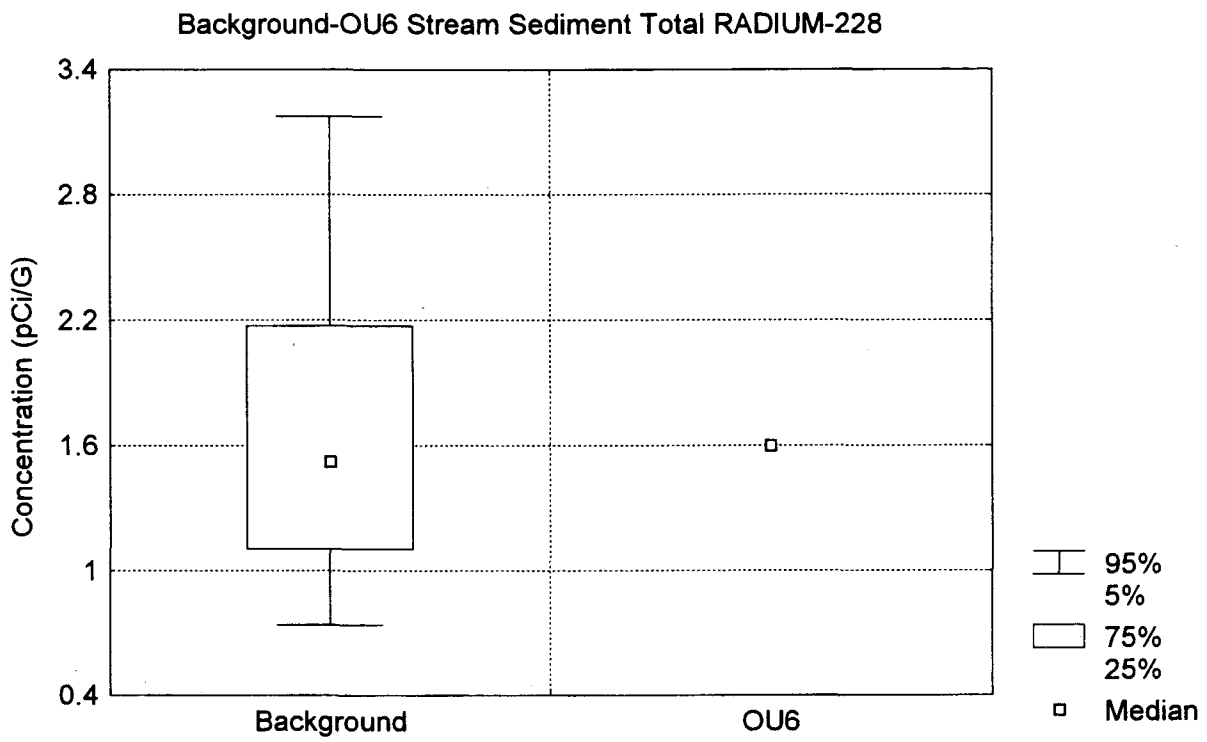

Background-OU6 Stream Sediment Total CESIUM-137
Concentration (pCi/G)
1.8
1.4
1
0.6
0.2
-0.2
Background
OU6
95%
5%
75%
25%
Median
Outliers
Extremes

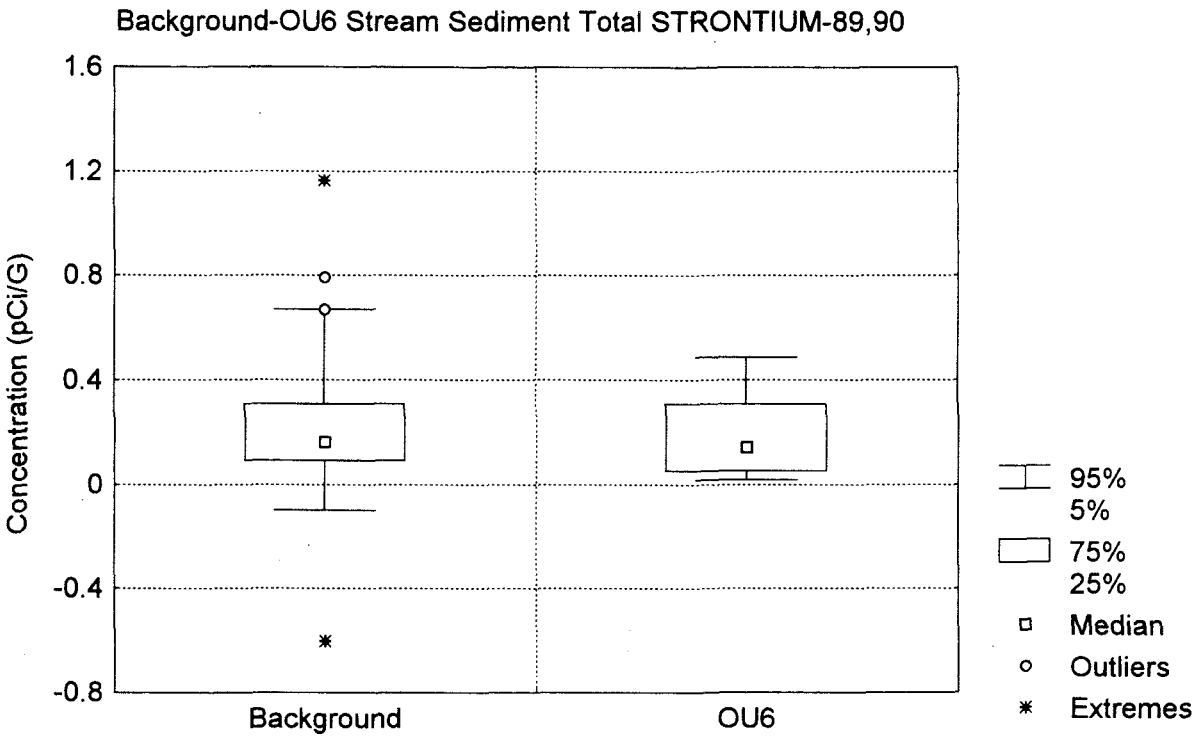

Background-OU6 Stream Sediment Total GROSS ALPHA
Concentration (pCi/G)
80
70
60
50
40
30
20
10
0
-10
Background
OU6
95%
5%
75%
25%
Median
Outliers

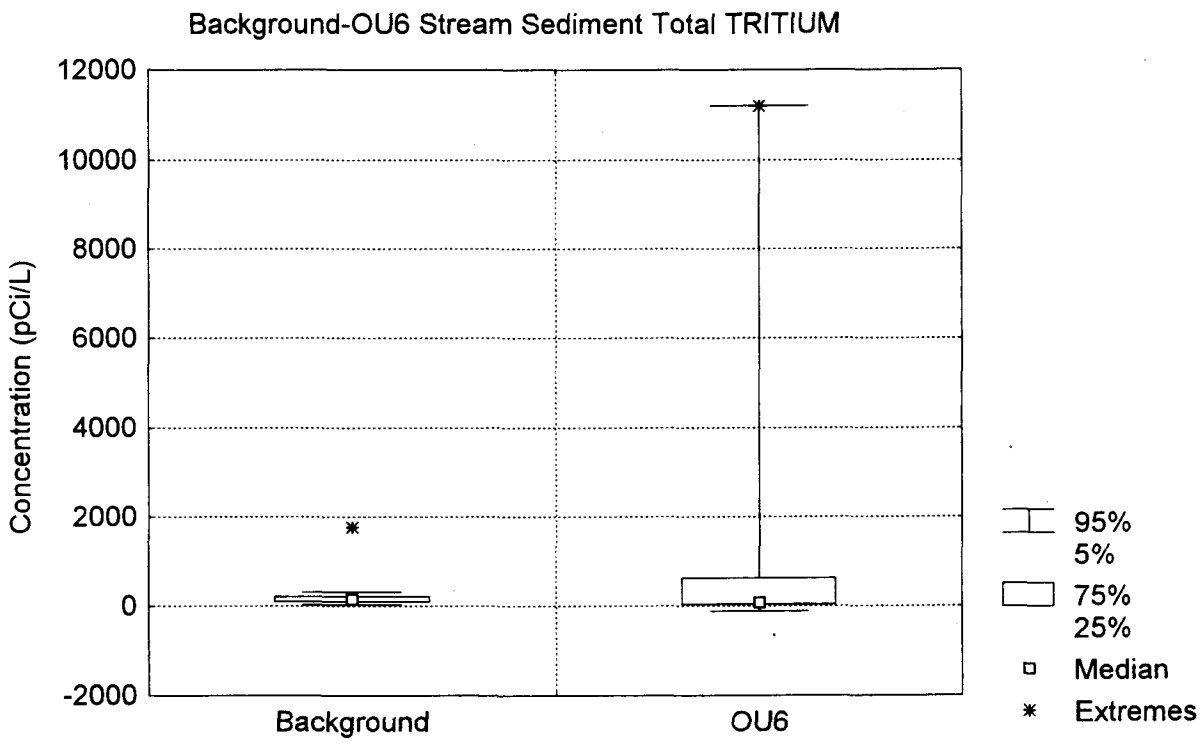

Background-OU6 Stream Sediment Total GROSS BETA
Concentration (pCi/G)
60
55
50
45
40
35
30
25
20
15
Background
OU6
95%
5%
75%
25%
Median

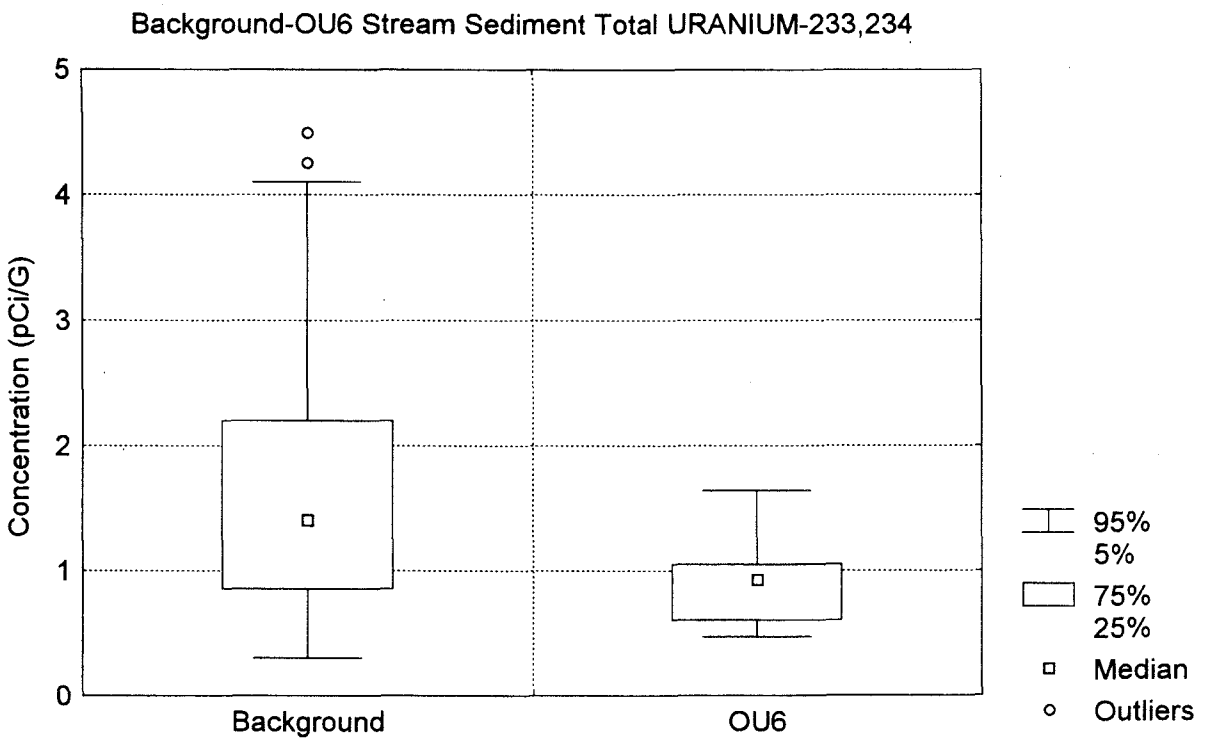

Background-OU6 Stream Sediment Total PLUTONIUM-239,240
Concentration (pCi/G)
11
9
7
5
3
1
-1
Background
OU6
95%
5%
75%
25%
Median
Extremes

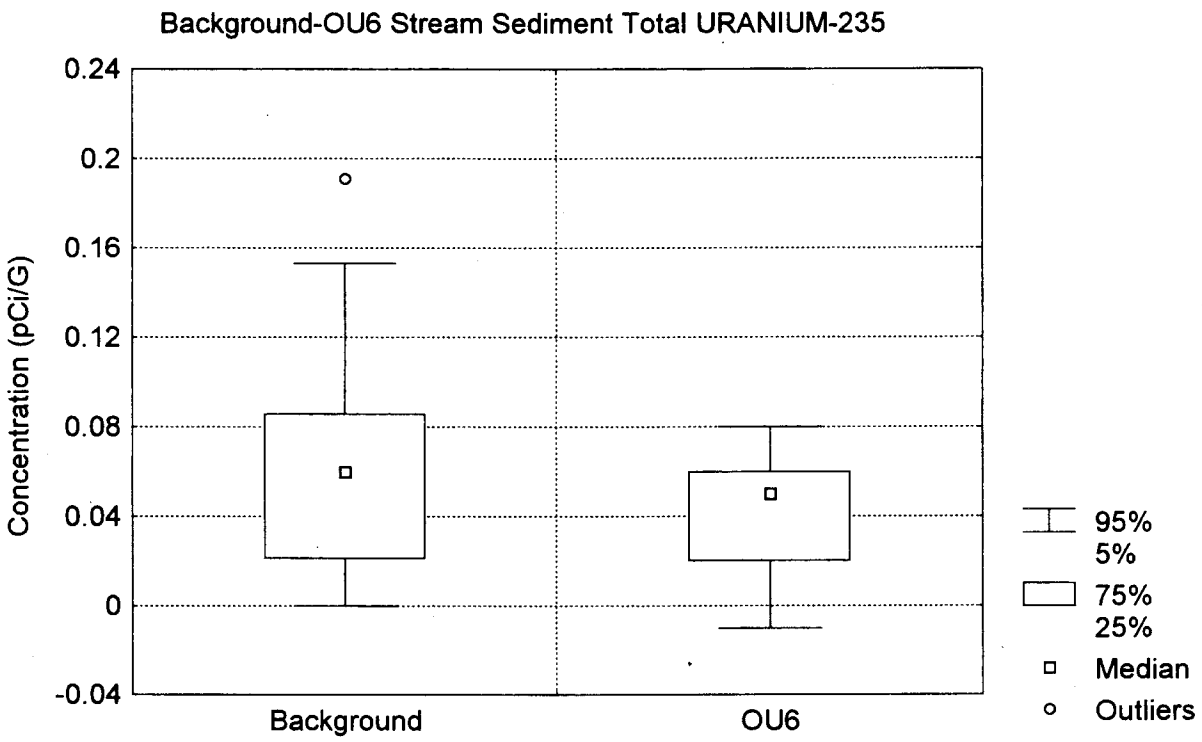

Background-OU6 Stream Sediment Total RADIUM-226
Concentration (pCi/G)
2
1.8
1.6
1.4
1.2
1
0.8
0.6
0.4
0.2
Background
OU6
95%
5%
75%
25%
Median
Outliers

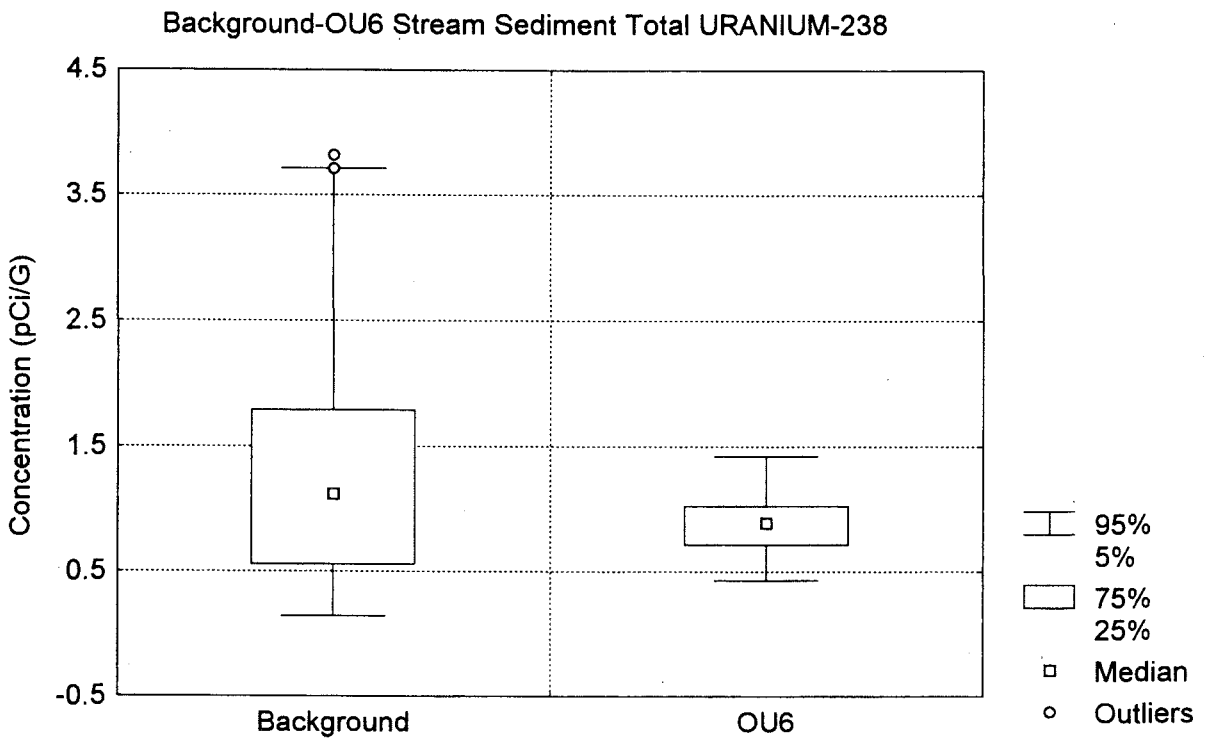

Background-OU6 Stream Sediment Total RADIUM-228
Concentration (pCi/G)
3.4
2.8
2.2
1.6
1
0.4
Background
OU6
95%
5%
75%
25%
Median

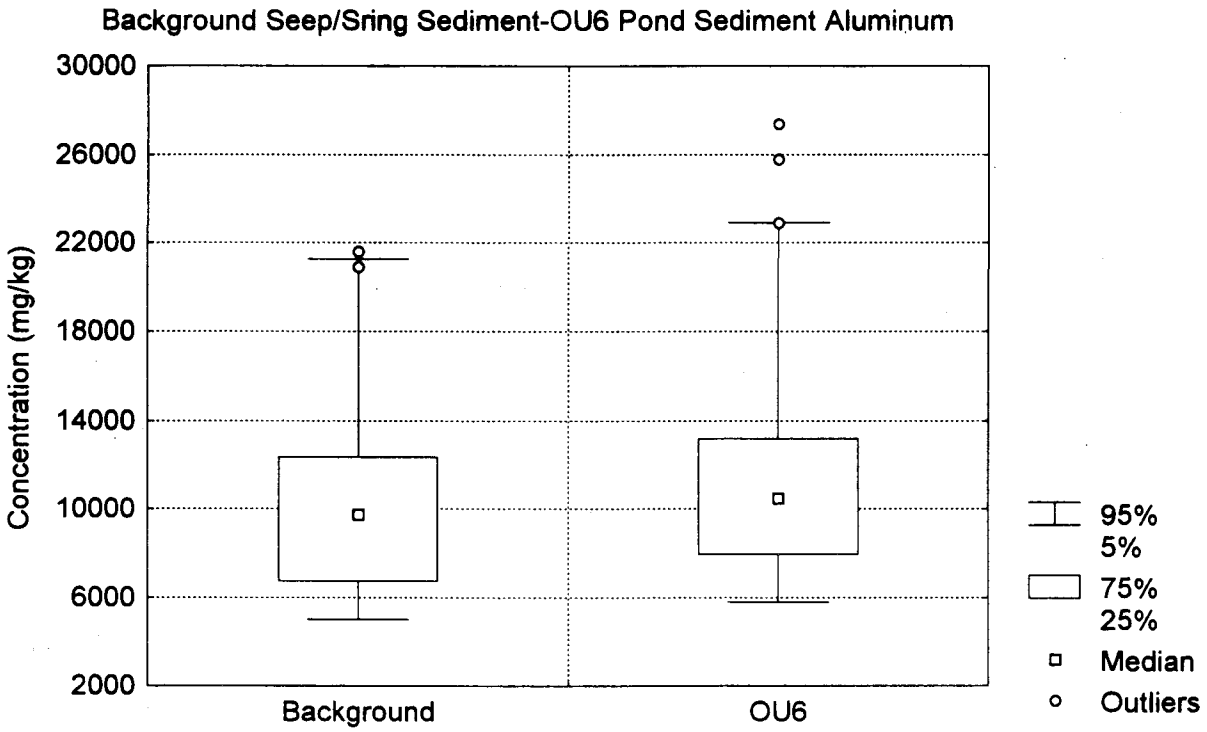

Background-OU6 Stream Sediment Total STRONTIUM-89,90
Concentration (pCi/G)
1.6
1.2
0.8
0.4
0
-0.4
-0.8
Background
OU6
95%
5%
75%
25%
Median
Outliers
Extremes

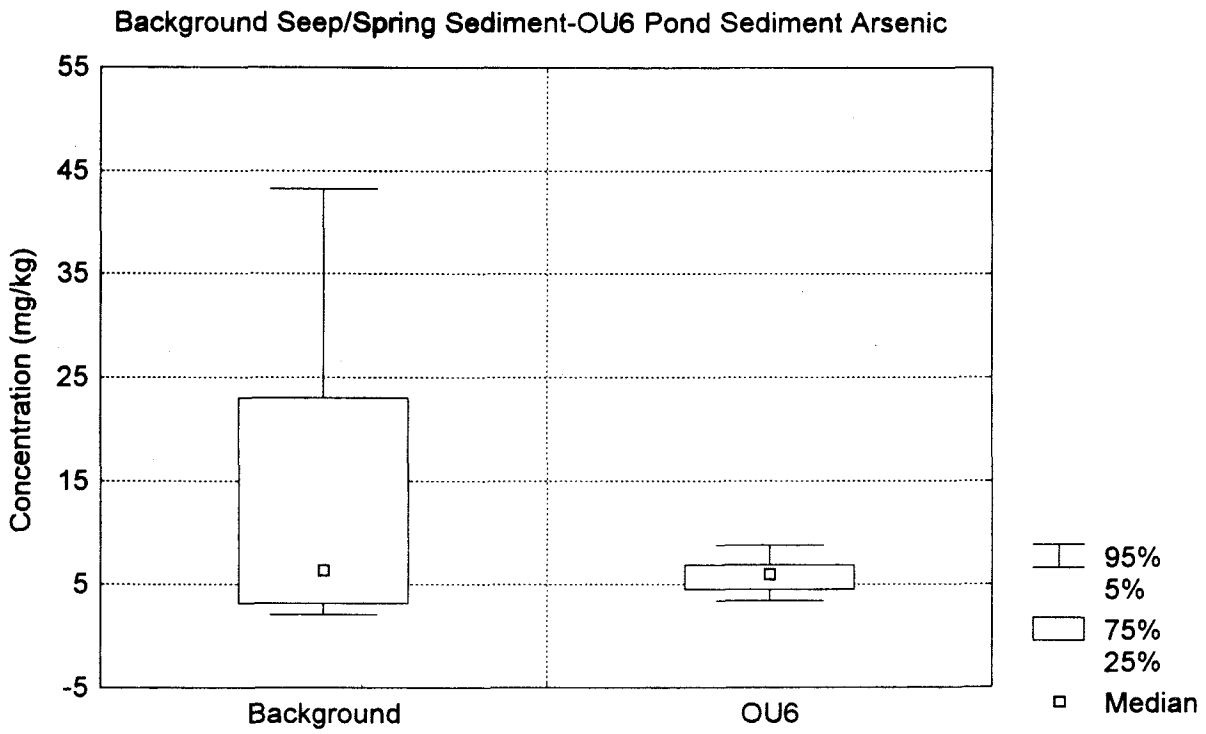

Background-OU6 Stream Sediment Total TRITIUM
Concentration (pCi/L)
12000
10000
8000
6000
4000
2000
0
-2000
Background
OU6
95%
5%
75%
25%
Median
Extremes

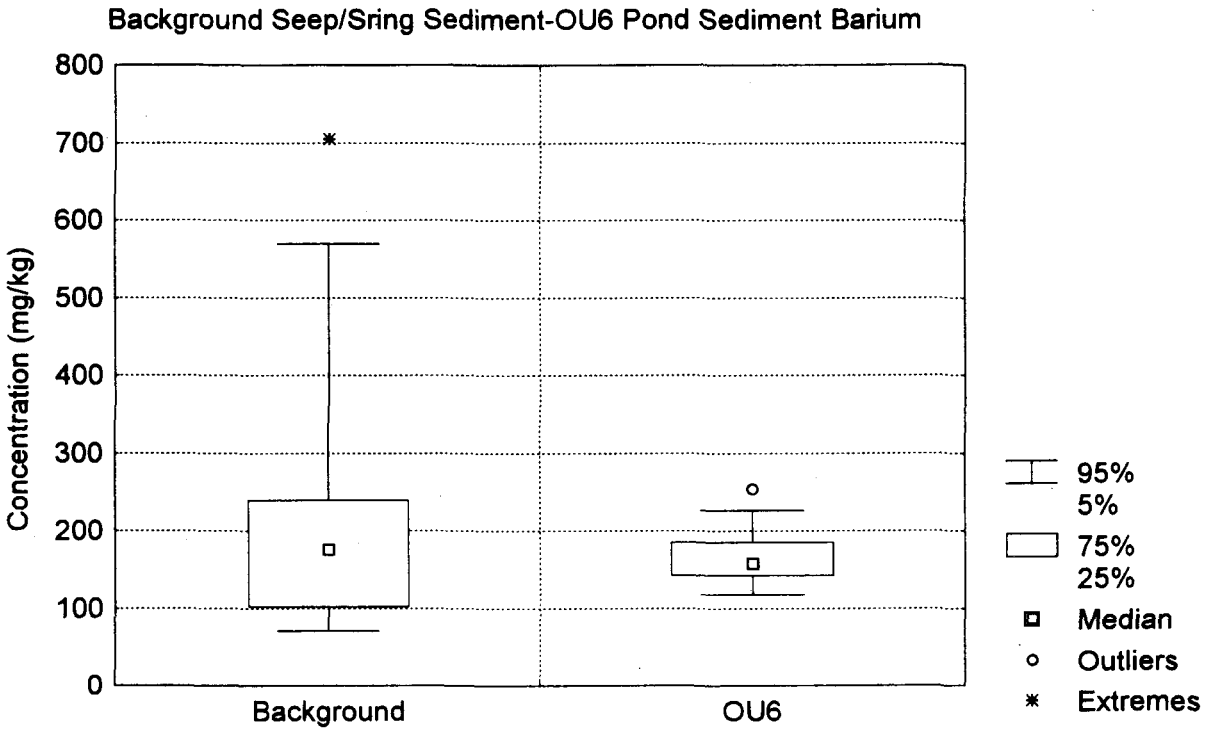

Background-OU6 Stream Sediment Total URANIUM-233,234
Concentration (pCi/G)
5
4
3
2
1
0
Background
OU6
95%
5%
75%
25%
Median
Outliers

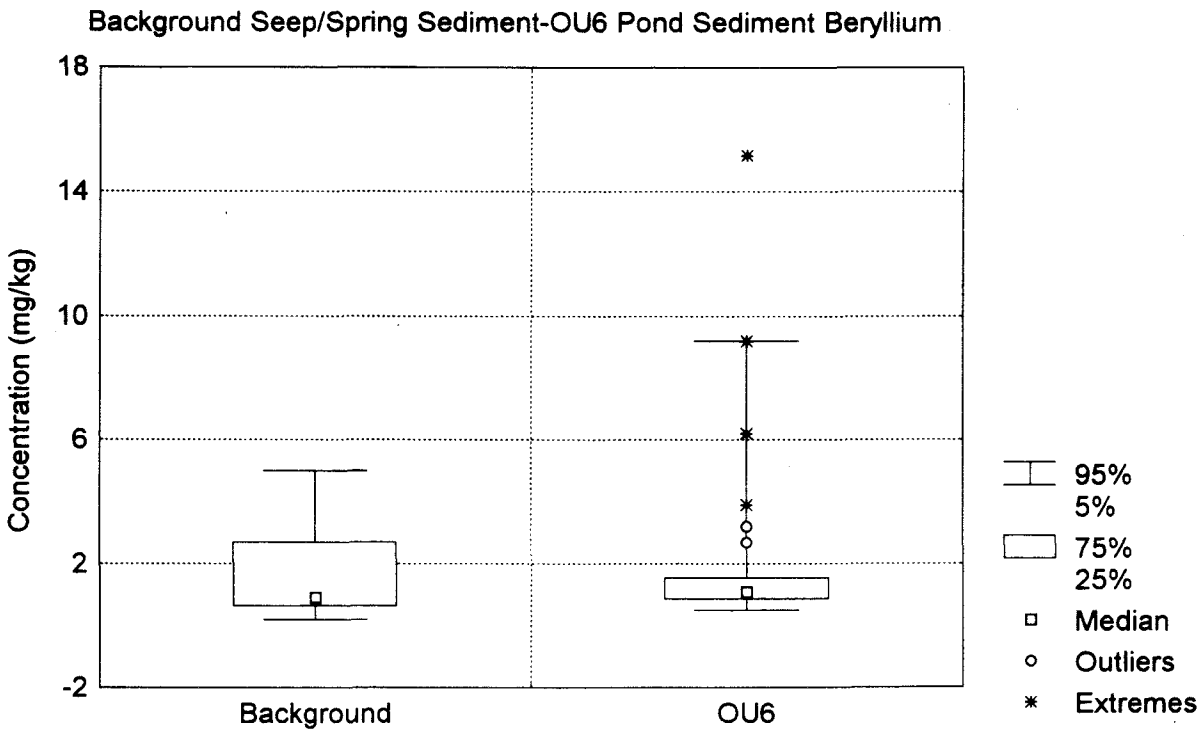

Background-OU6 Stream Sediment Total URANIUM-235
Concentration (pCi/G)
0.24
0.2
0.16
0.12
0.08
0.04
0
-0.04
Background
OU6
95%
5%
75%
25%
Median
Outliers

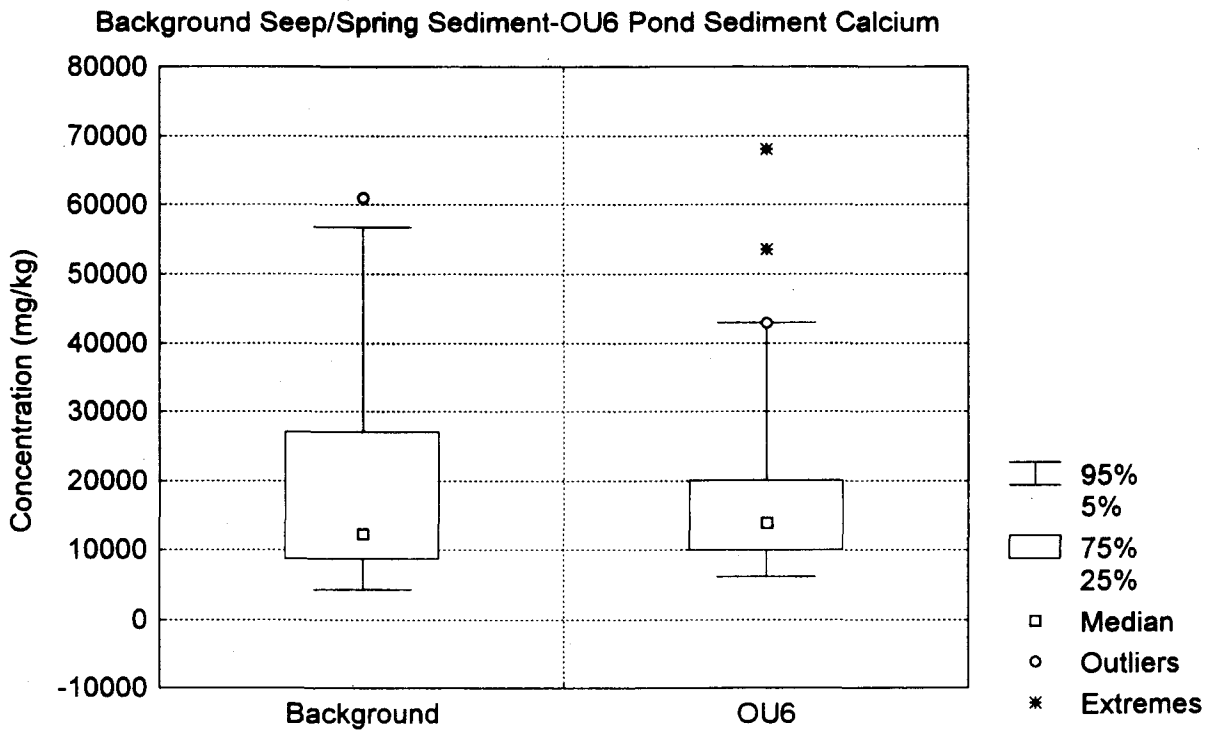

Background-OU6 Stream Sediment Total URANIUM-238
Concentration (pCi/G)
4.5
3.5
2.5
1.5
0.5
-0.5
Background
OU6
95%
5%
75%
25%
Median
Outliers

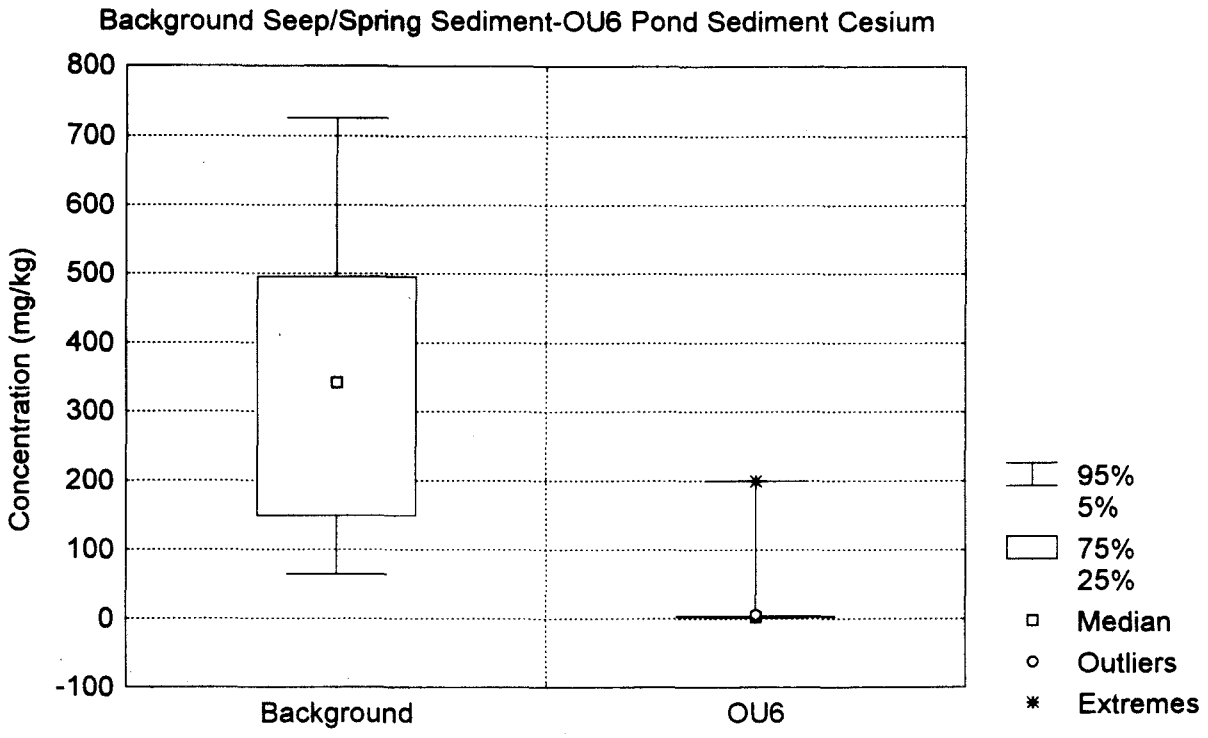

Background Seep/Sring Sediment-OU6 Pond Sediment Aluminum
Concentration (mg/kg)
30000
26000
22000
18000
14000
10000
6000
2000
Background
OU6
95%
5%
75%
25%
Median
Outliers

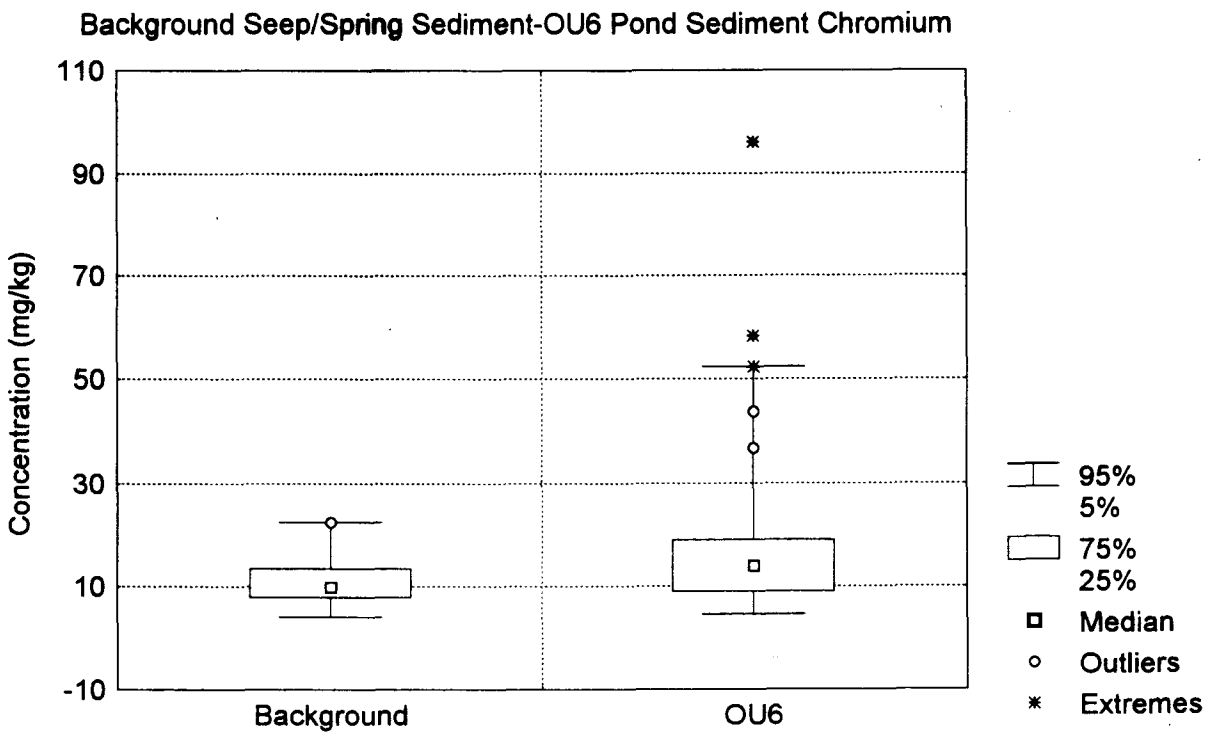

Background Seep/Spring Sediment-OU6 Pond Sediment Arsenic
Concentration (mg/kg)
55
45
35
25
15
5
-5
Background
OU6
95%
5%
75%
25%
Median

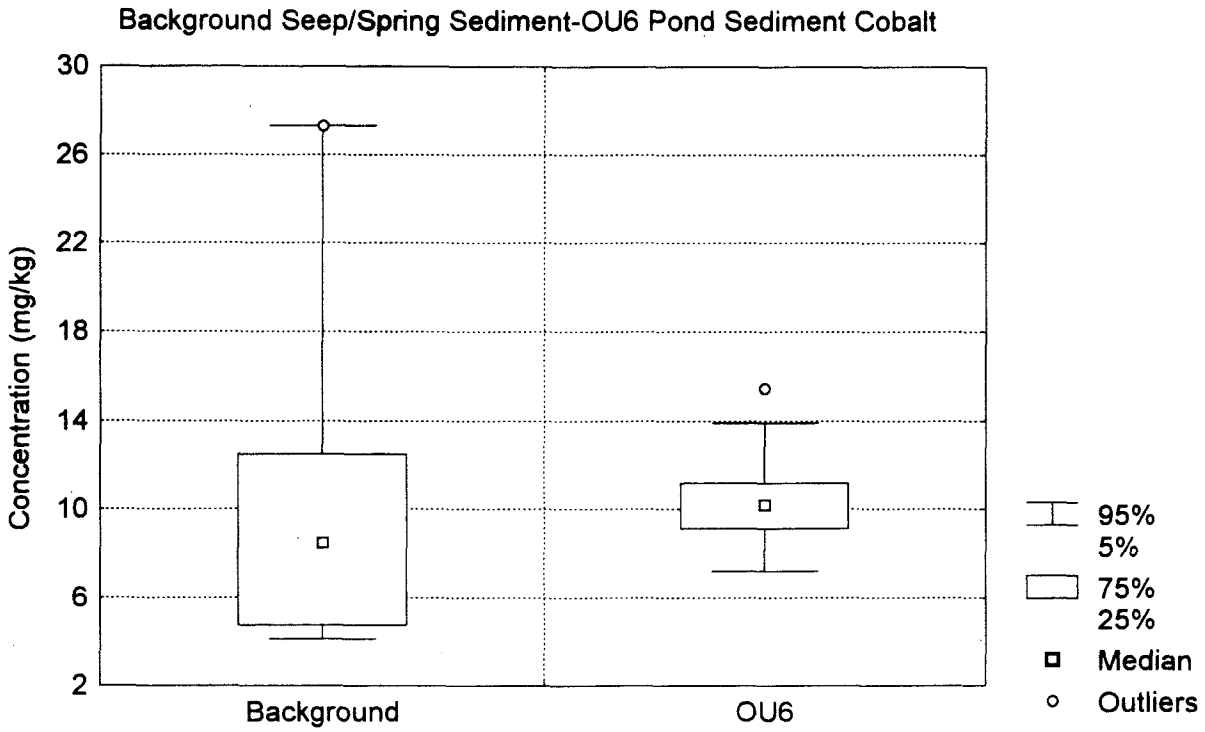

Background Seep/Sring Sediment-OU6 Pond Sediment Barium
Concentration (mg/kg)
800
700
600
500
400
300
200
100
0
Background
OU6
95%
5%
75%
25%
Median
Outliers
Extremes

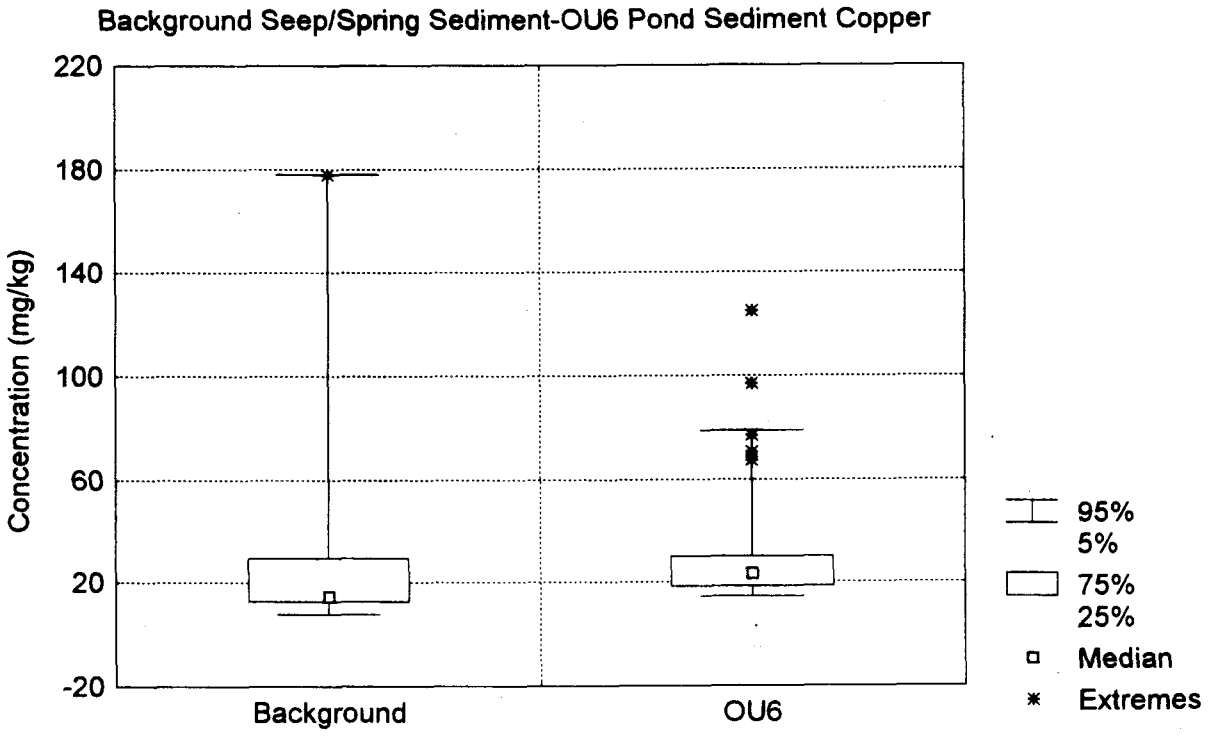

Background Seep/Spring Sediment-OU6 Pond Sediment Beryllium
Concentration (mg/kg)
18
14
10
6
2
-2
Background
OU6
95%
5%
75%
25%
Median
Outliers
Extremes

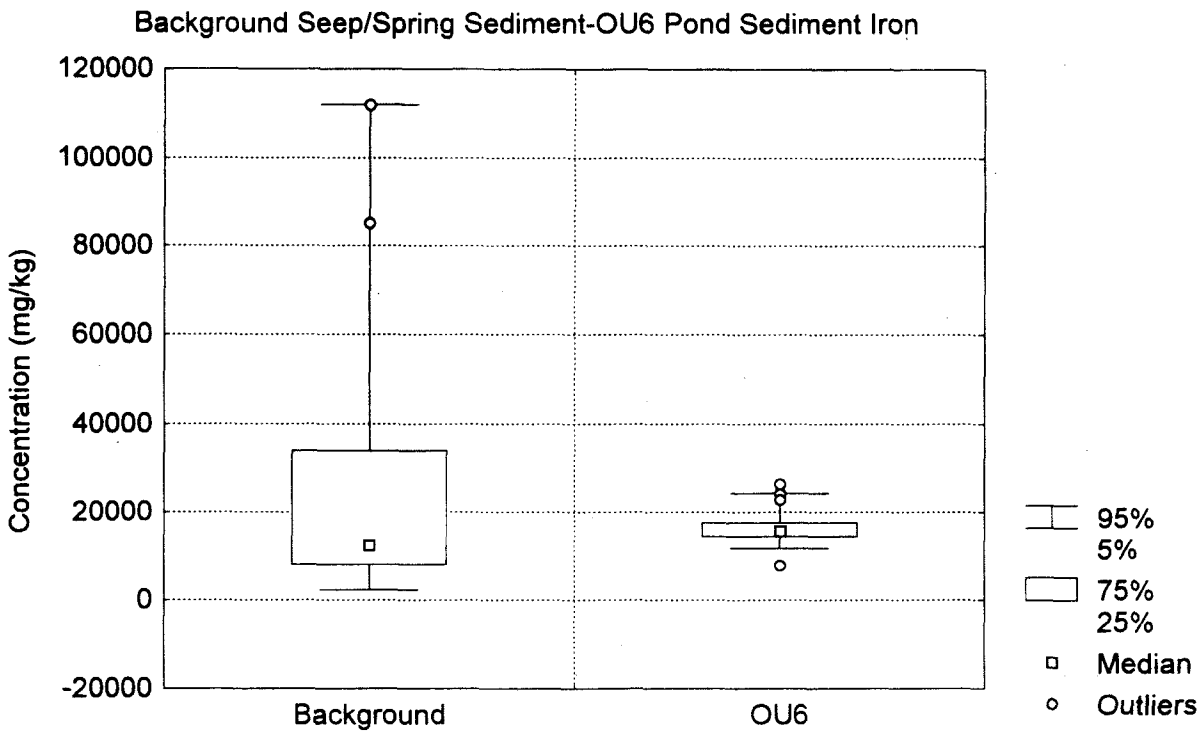

Background Seep/Spring Sediment-OU6 Pond Sediment Calcium
Concentration (mg/kg)
80000
70000
60000
50000
40000
30000
20000
10000
0
-10000
Background
OU6
95%
5%
75%
25%
Median
Outliers
Extremes

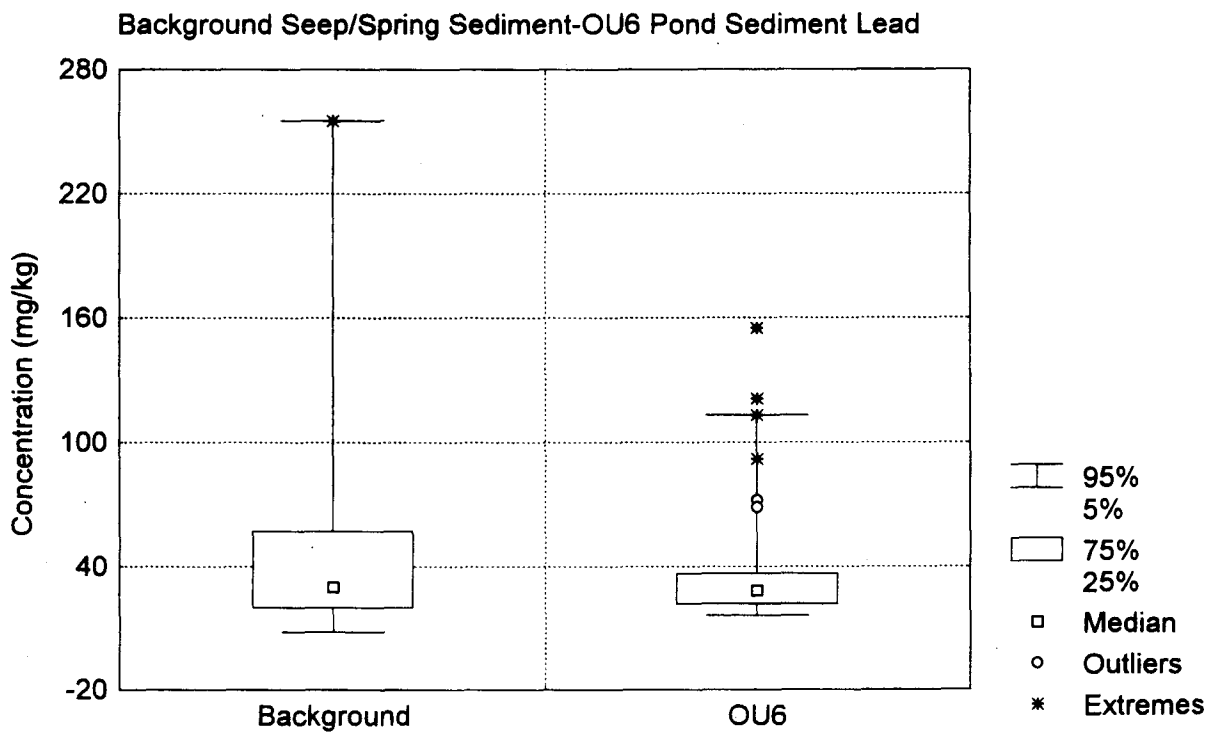

Background Seep/Spring Sediment-OU6 Pond Sediment Cesium
Concentration (mg/kg)
800
700
600
500
400
300
200
100
0
-100
Background
OU6
95%
5%
75%
25%
Median
Outliers
Extremes

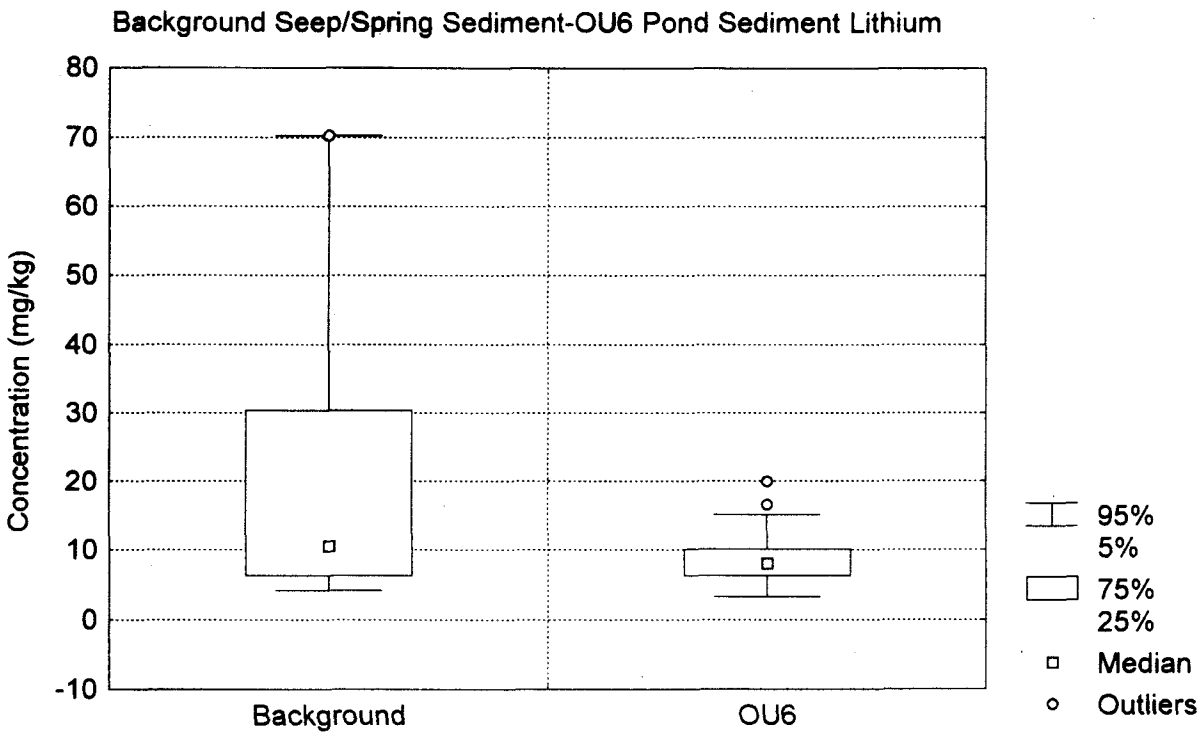

Background Seep/Spring Sediment-OU6 Pond Sediment Chromium
Concentration (mg/kg)
110
90
70
50
30
10
-10
Background
OU6
95%
5%
75%
25%
Median
Outliers
Extremes

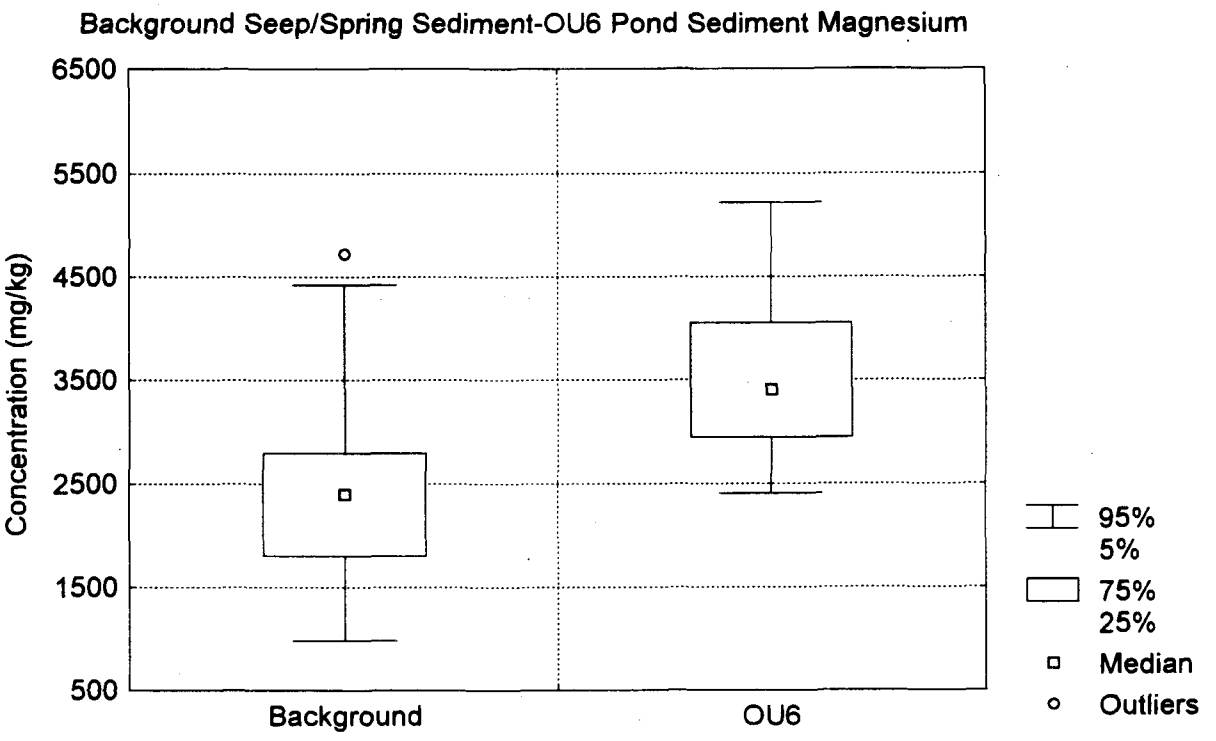

Background Seep/Spring Sediment-OU6 Pond Sediment Cobalt
Concentration (mg/kg)
30
26
22
18
14
10
6
2
Background
OU6
95%
5%
75%
25%
Median
Outliers

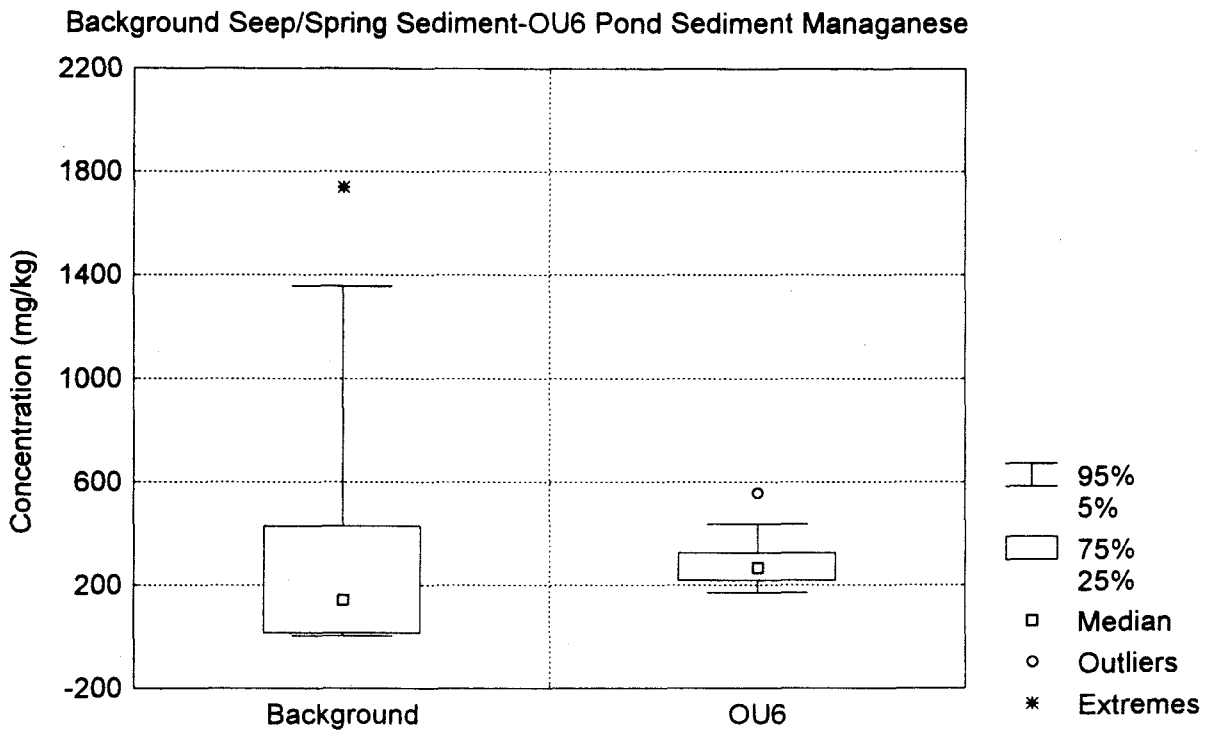

Background Seep/Spring Sediment-OU6 Pond Sediment Copper
Concentration (mg/kg)
220
180
140
100
60
20
-20
Background
OU6
95%
5%
75%
25%
Median
Extremes

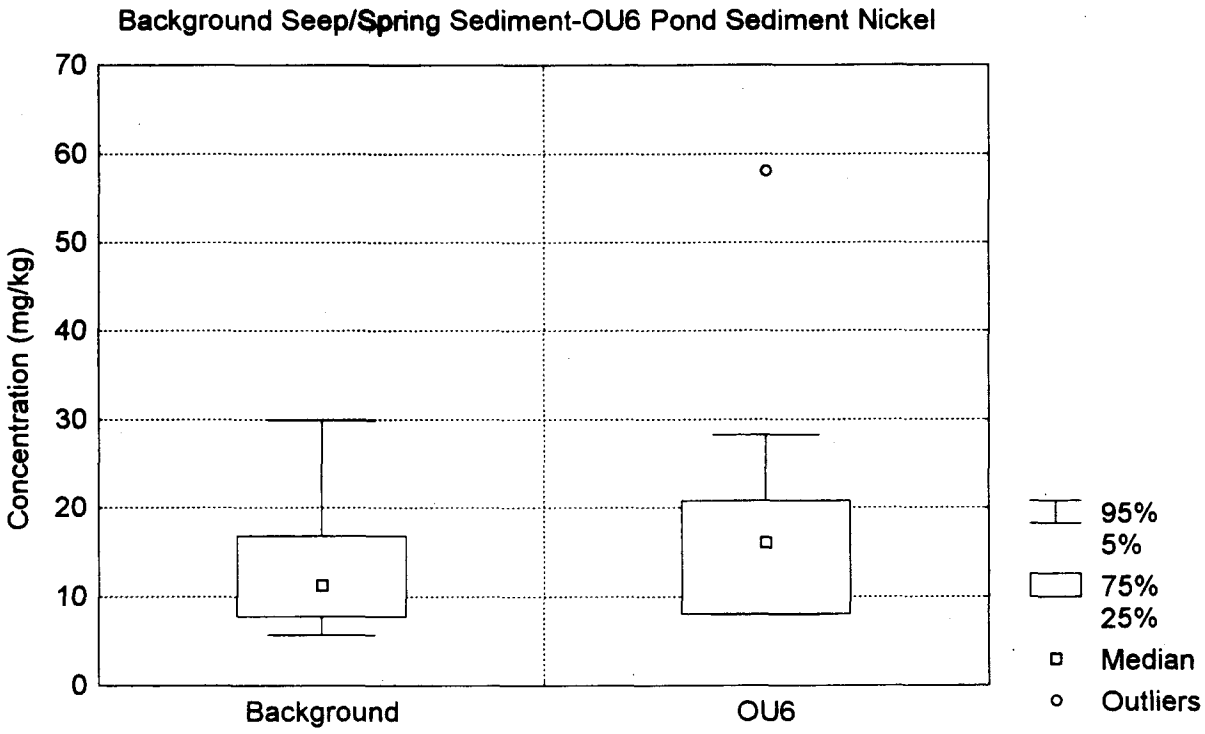

Background Seep/Spring Sediment-OU6 Pond Sediment Iron
Concentration (mg/kg)
120000
100000
80000
60000
40000
20000
0
-20000
Background
OU6
95%
5%
75%
25%
Median
Outliers

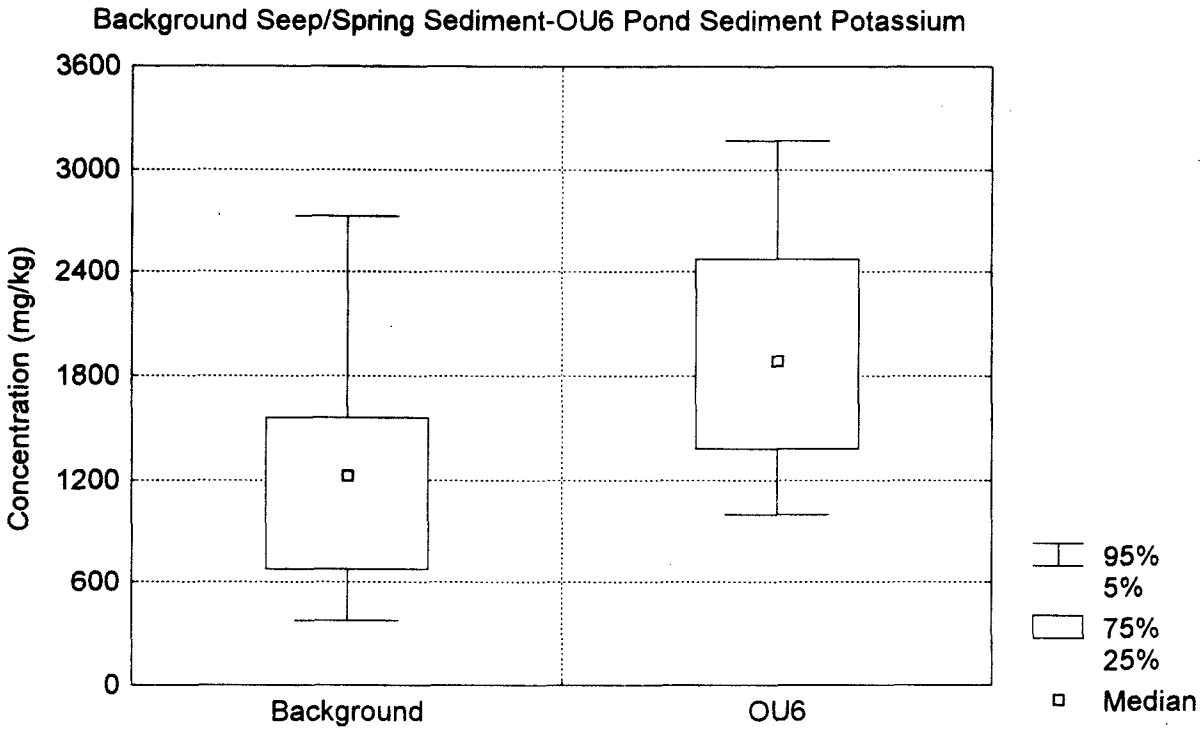

Background Seep/Spring Sediment-OU6 Pond Sediment Lead
280
220
160
100
40
-20
Concentration (mg/kg)
Background
OU6
95%
5%
75%
25%
Median
Outliers
Extremes

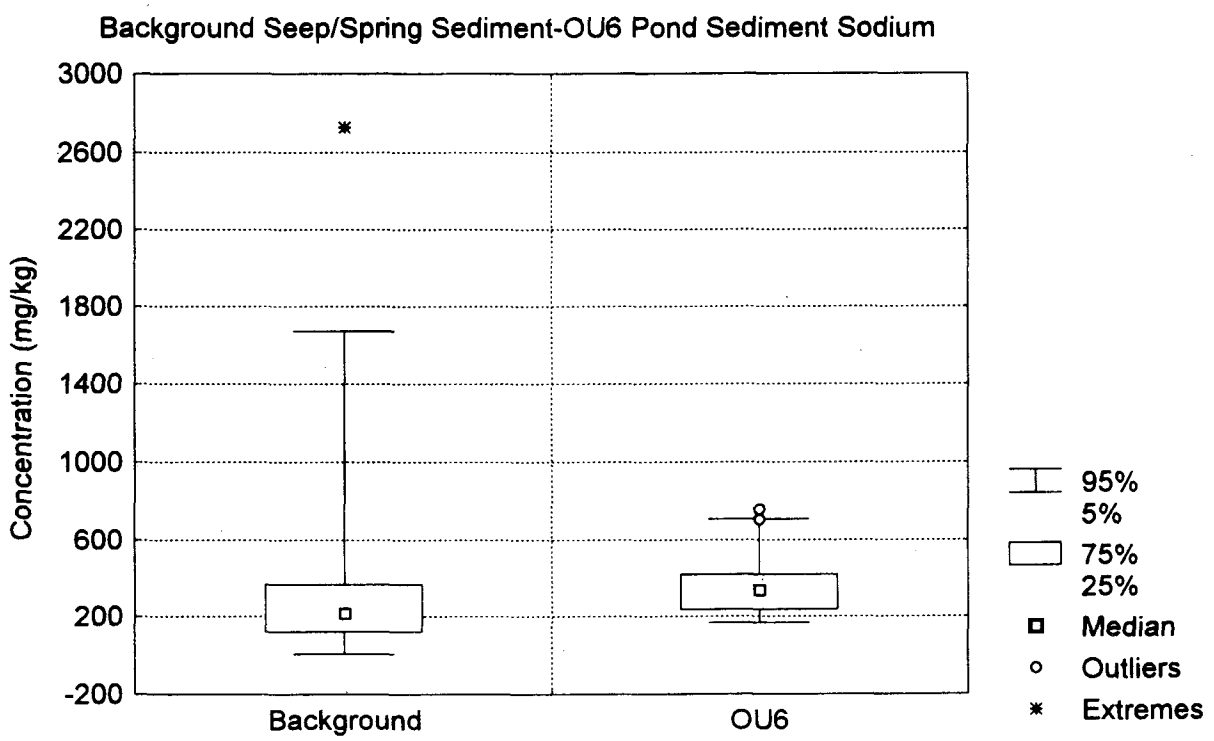

Background Seep/Spring Sediment-OU6 Pond Sediment Lithium
Concentration (mg/kg)
80
70
60
50
40
30
20
10
0
-10
Background
OU6
95%
5%
75%
25%
Median
Outliers

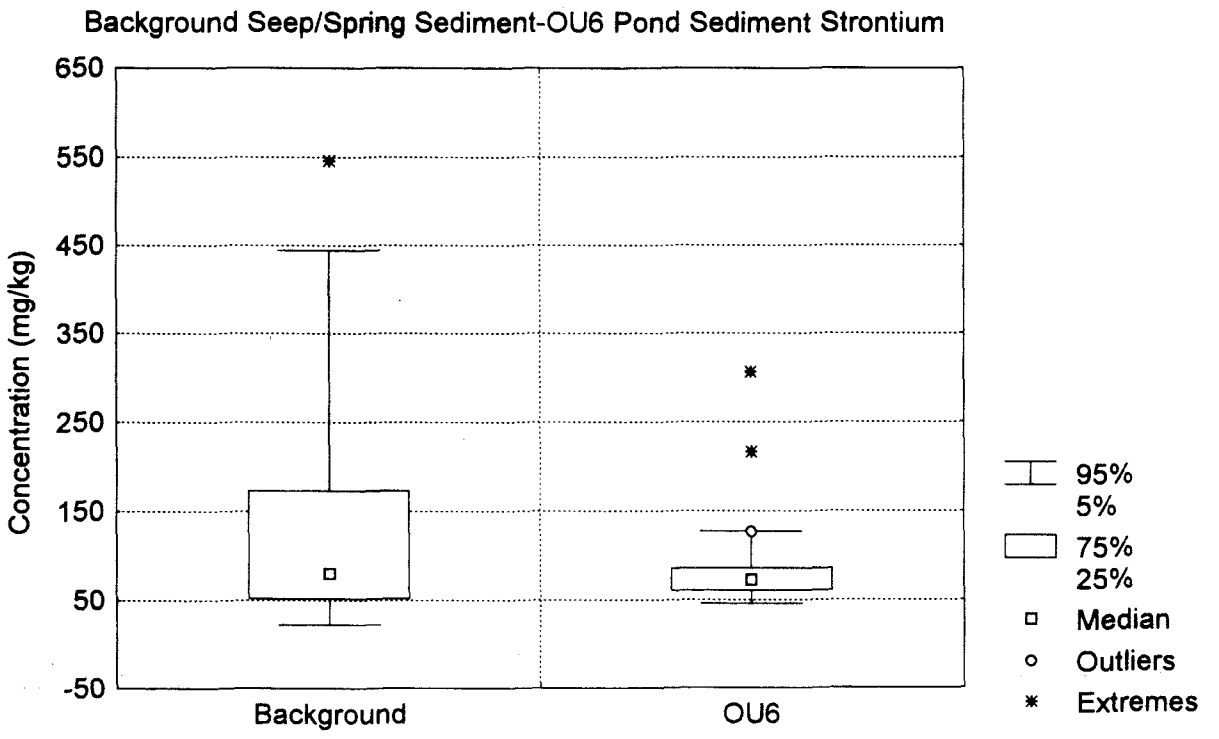

Background Seep/Spring Sediment-OU6 Pond Sediment Magnesium
Concentration (mg/kg)
6500
5500
4500
3500
2500
1500
500
Background
OU6
95%
5%
75%
25%
Median
Outliers

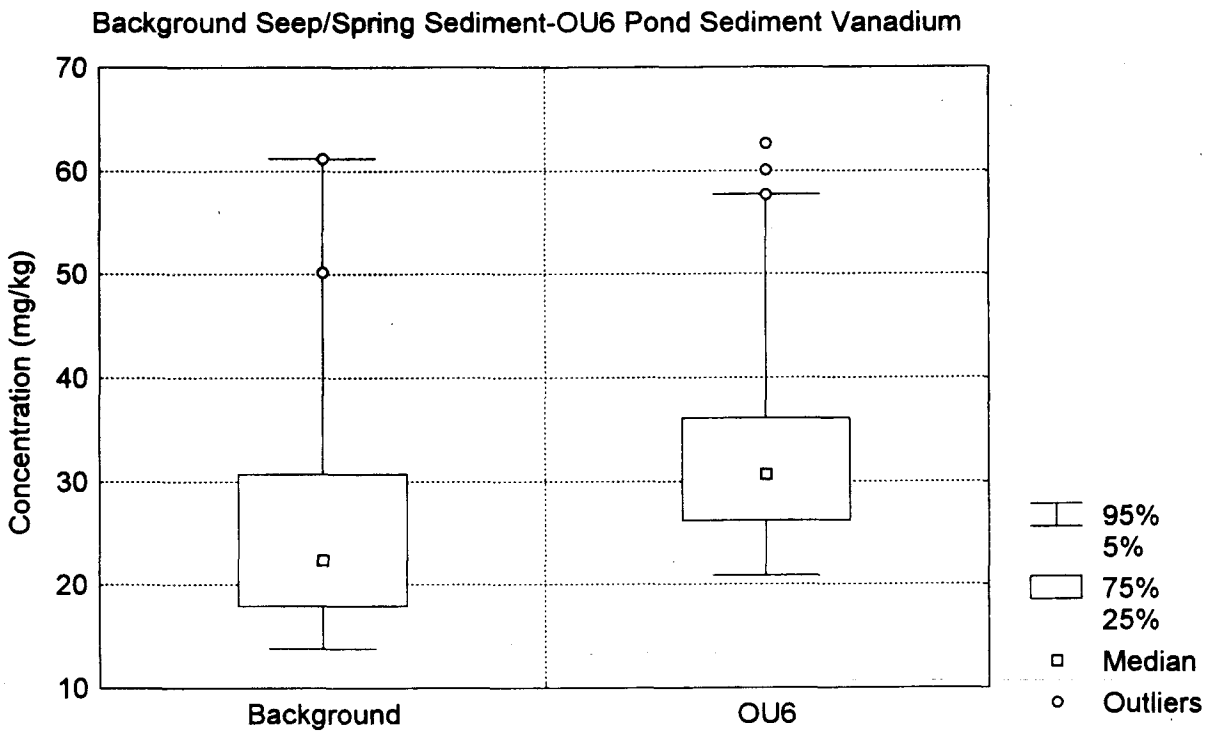

Background Seep/Spring Sediment-OU6 Pond Sediment Managanese
Concentration (mg/kg)
2200
1800
1400
1000
600
200
-200
Background
OU6
95%
5%
75%
25%
Median
Outliers
Extremes

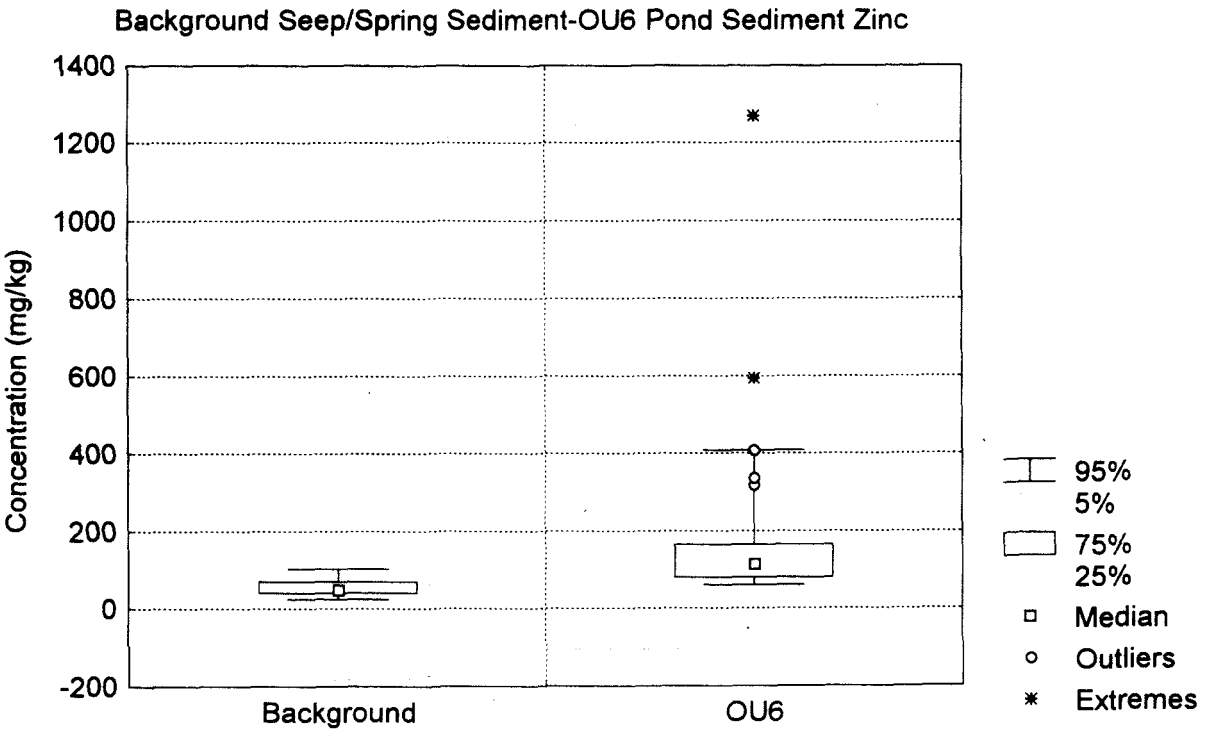

Background Seep/Spring Sediment-OU6 Pond Sediment Nickel
Concentration (mg/kg)
70
60
50
40
30
20
10
0
Background
OU6
95%
5%
75%
25%
Median
Outliers

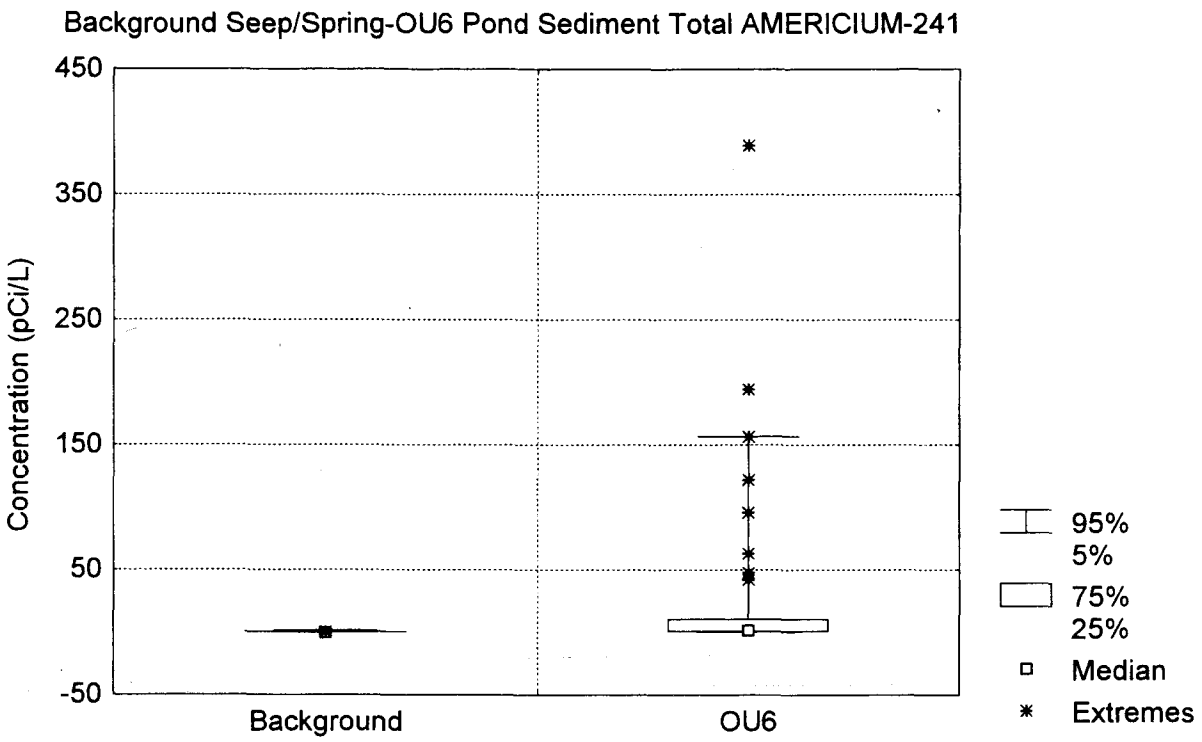

Background Seep/Spring Sediment-OU6 Pond Sediment Potassium
Concentration (mg/kg)
3600
3000
2400
1800
1200
600
0
Background
OU6
95%
5%
75%
25%
Median

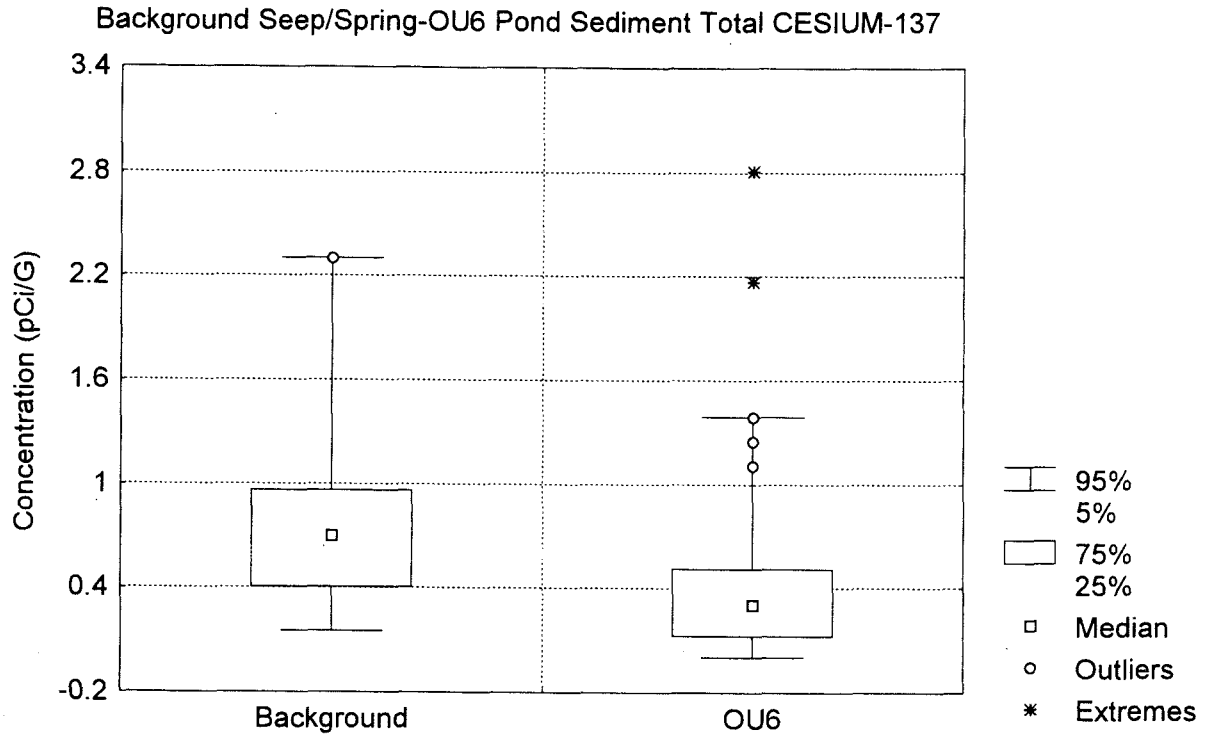

Background Seep/Spring Sediment-OU6 Pond Sediment Sodium
Concentration (mg/kg)
3000
2600
2200
1800
1400
1000
600
200
-200
Background
OU6
95%
5%
75%
25%
Median
Outliers
Extremes

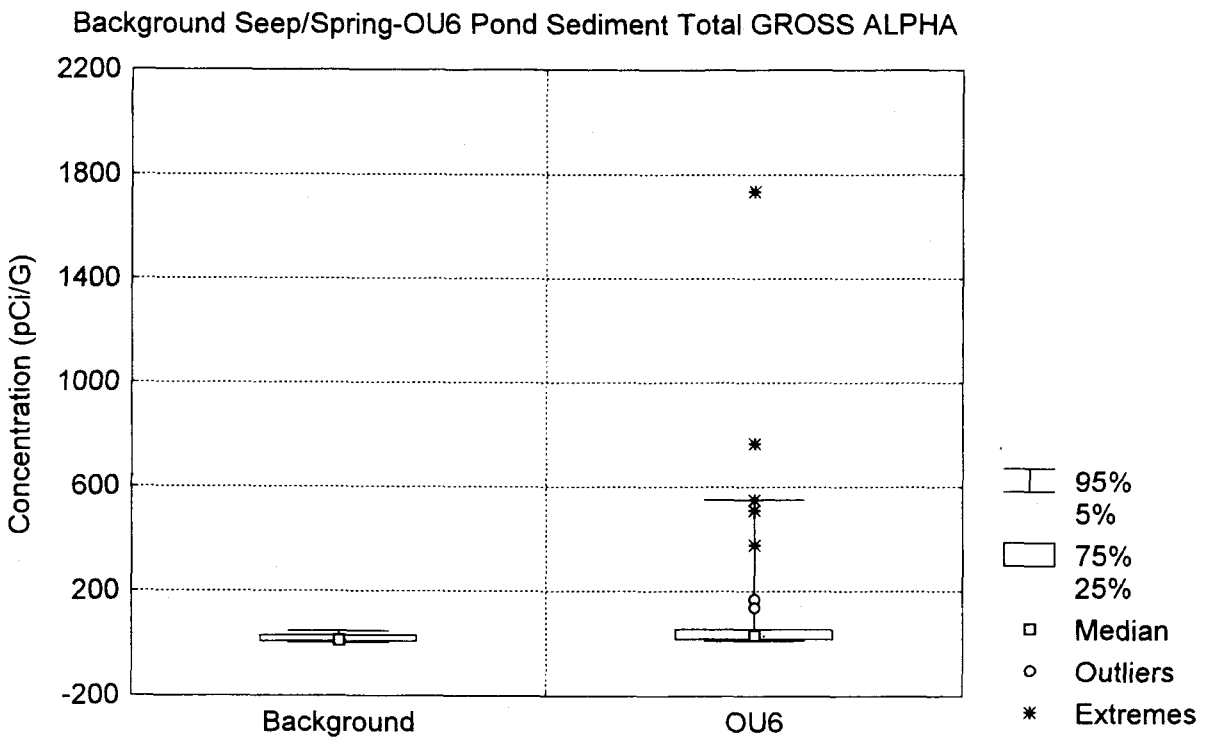

Background Seep/Spring Sediment-OU6 Pond Sediment Strontium
650
550
450
350
250
150
50
-50
Concentration (mg/kg)
Background
OU6
95%
5%
75%
25%
Median
Outliers
Extremes

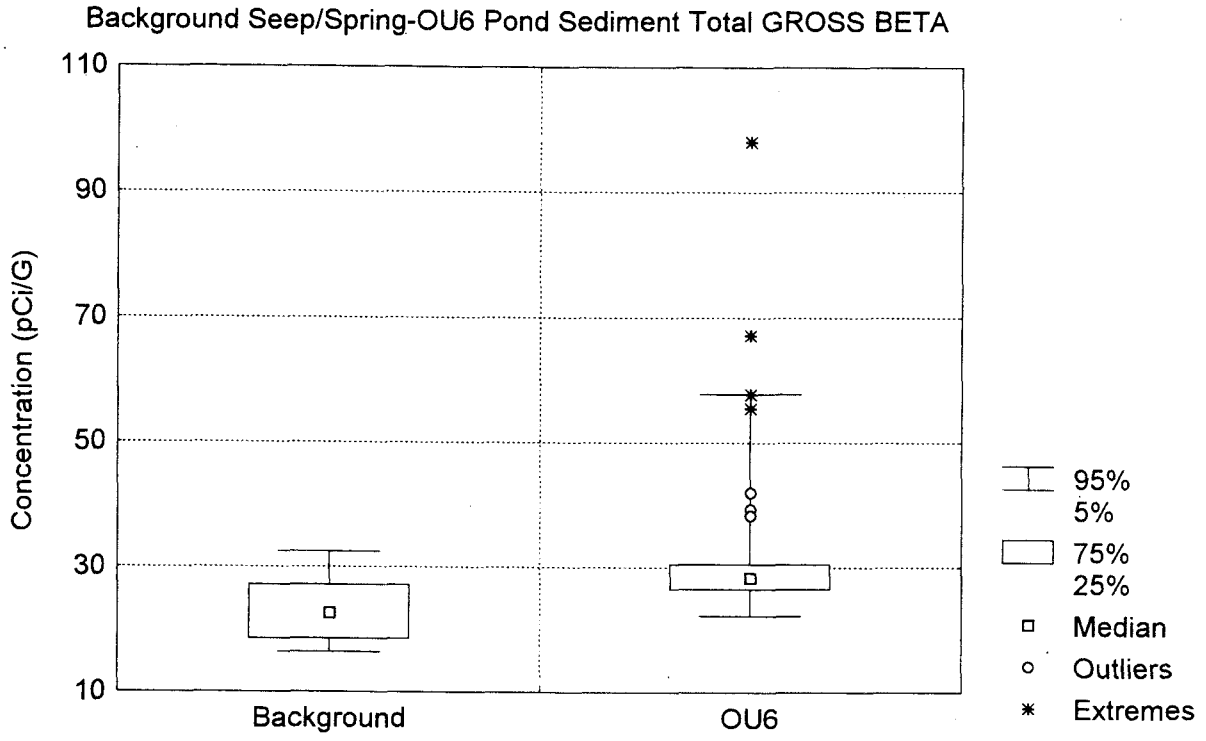

Background Seep/Spring Sediment-OU6 Pond Sediment Vanadium
Concentration (mg/kg)
70
60
50
40
30
20
10
Background
OU6
95%
5%
75%
25%
Median
Outliers


Background Seep/Spring Sediment-OU6 Pond Sediment Zinc
Concentration (mg/kg)
1400
1200
1000
800
600
400
200
0
-200
Background
OU6
95%
5%
75%
25%
Median
Outliers
Extremes

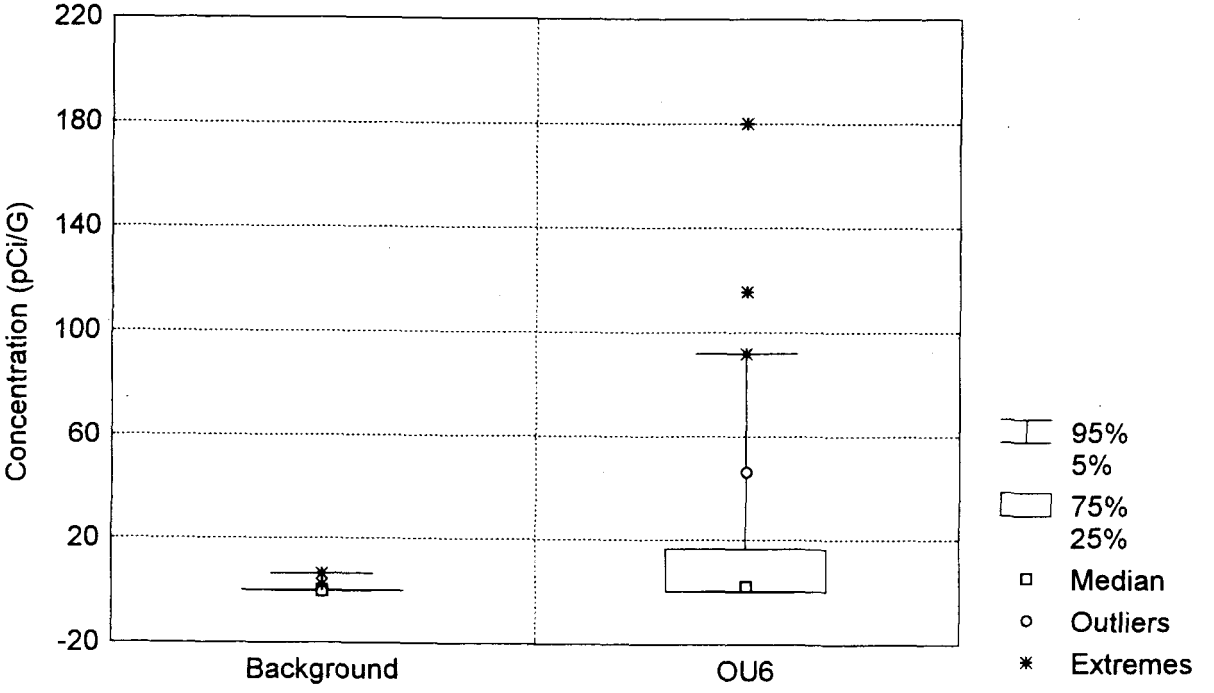

Background Seep/Spring-OU6 Pond Sediment Total AMERICIUM-241
Concentration (pCi/L)
450
350
250
150
50
-50
Background
OU6
95%
5%
75%
25%
Median
Extremes

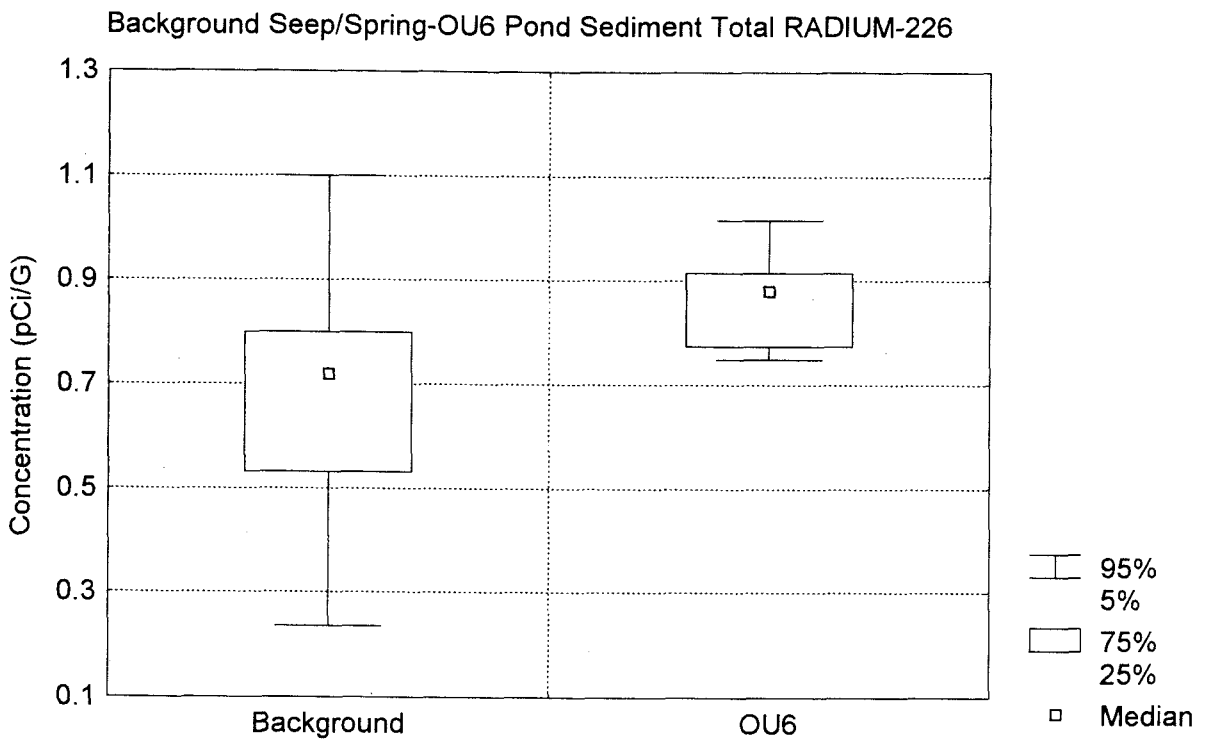

Background Seep/Spring-OU6 Pond Sediment Total CESIUM-137
Concentration (pCi/G)
3.4
2.8
2.2
1.6
1
0.4
-0.2
Background
OU6
95%
5%
75%
25%
Median
Outliers
Extremes

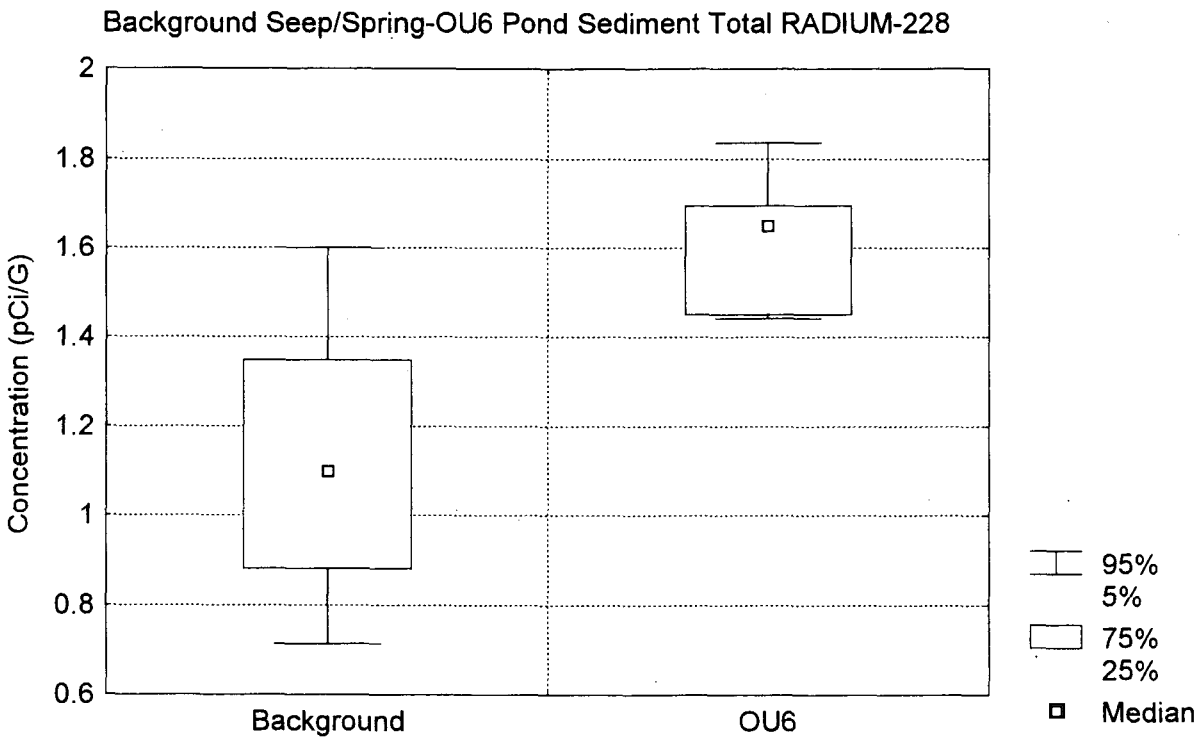

Background Seep/Spring-OU6 Pond Sediment Total GROSS ALPHA
Concentration (pCi/G)
2200
1800
1400
1000
600
200
-200
Background
OU6
95%
5%
75%
25%
Median
Outliers
Extremes

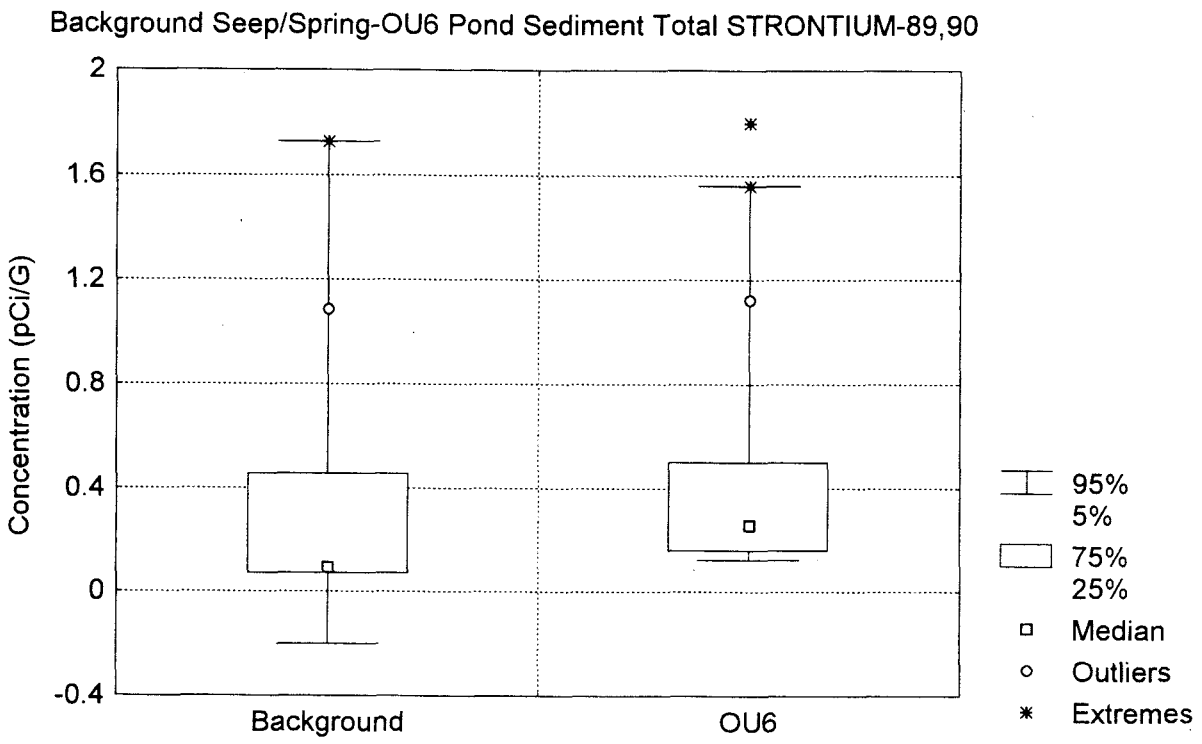

Background Seep/Spring-OU6 Pond Sediment Total GROSS BETA
Concentration (pCi/G)
110
90
70
50
30
10
Background
OU6
95%
5%
75%
25%
Median
Outliers
Extremes

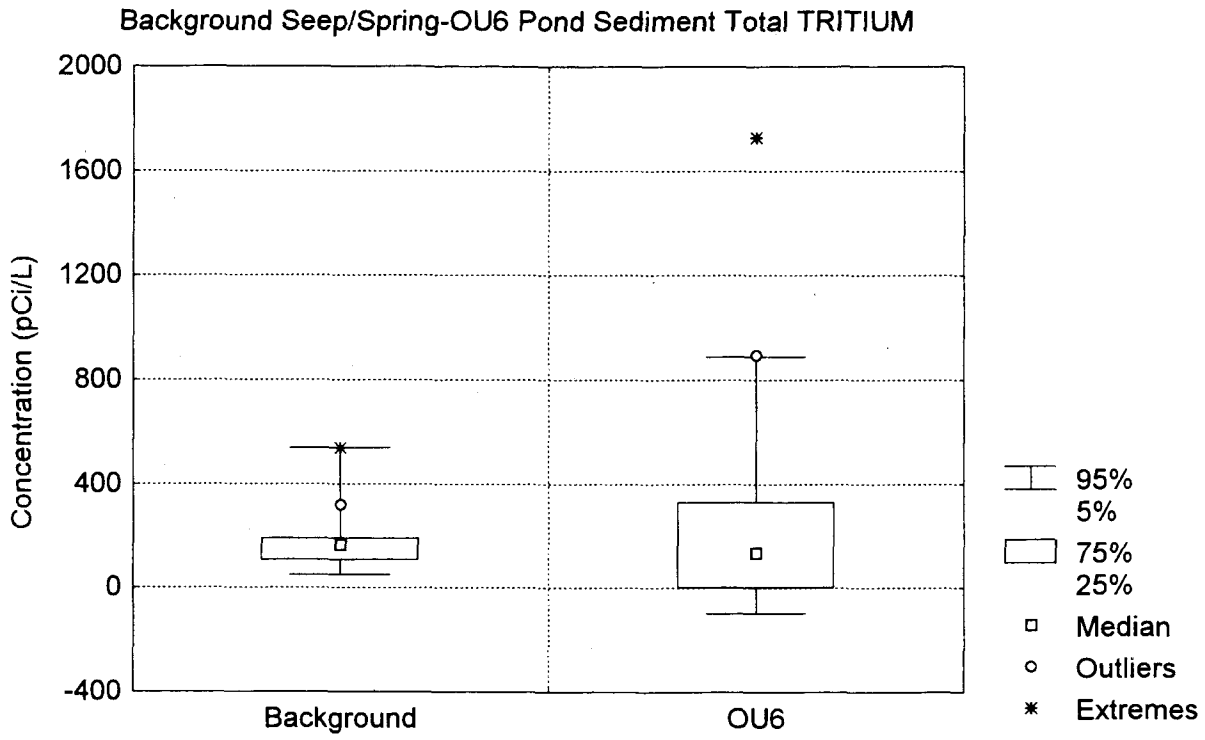
Background Seep/Spring-OU6 Pond Sediment Total PLUTONIUM-239,240



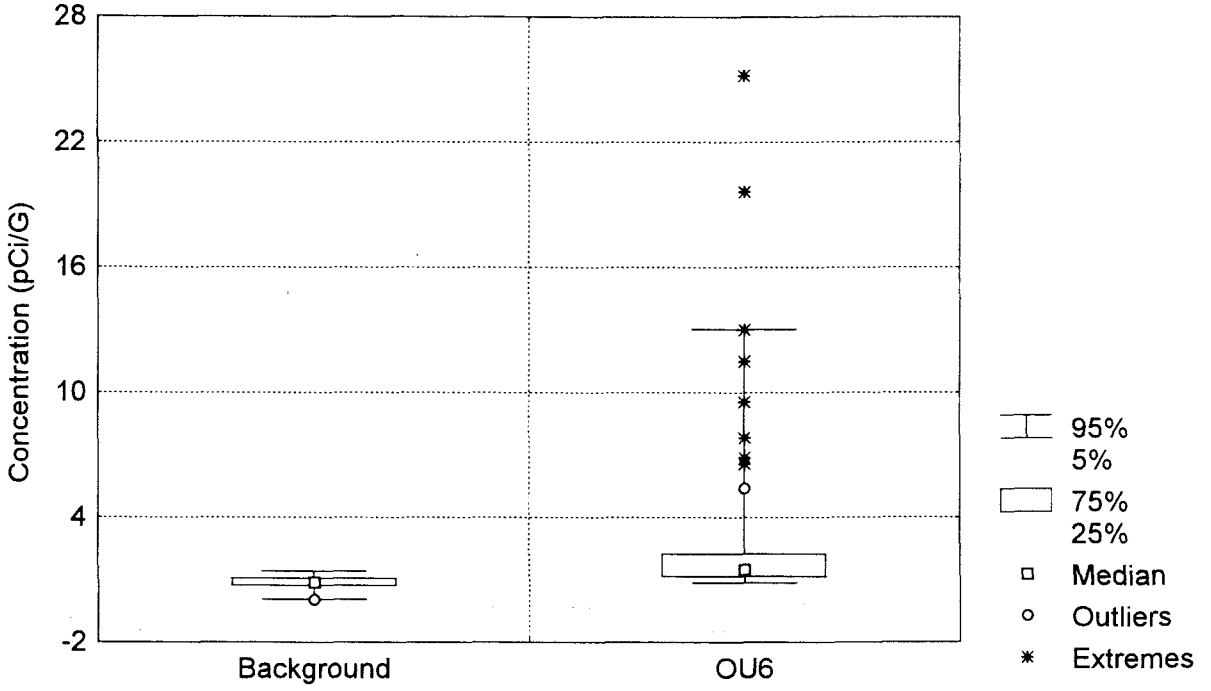

Background Seep/Spring-OU6 Pond Sediment Total RADIUM-226
Concentration (pCi/G)
1.3
1.1
0.9
0.7
0.5
0.3
0.1
Background
OU6
95%
5%
75%
25%
Median

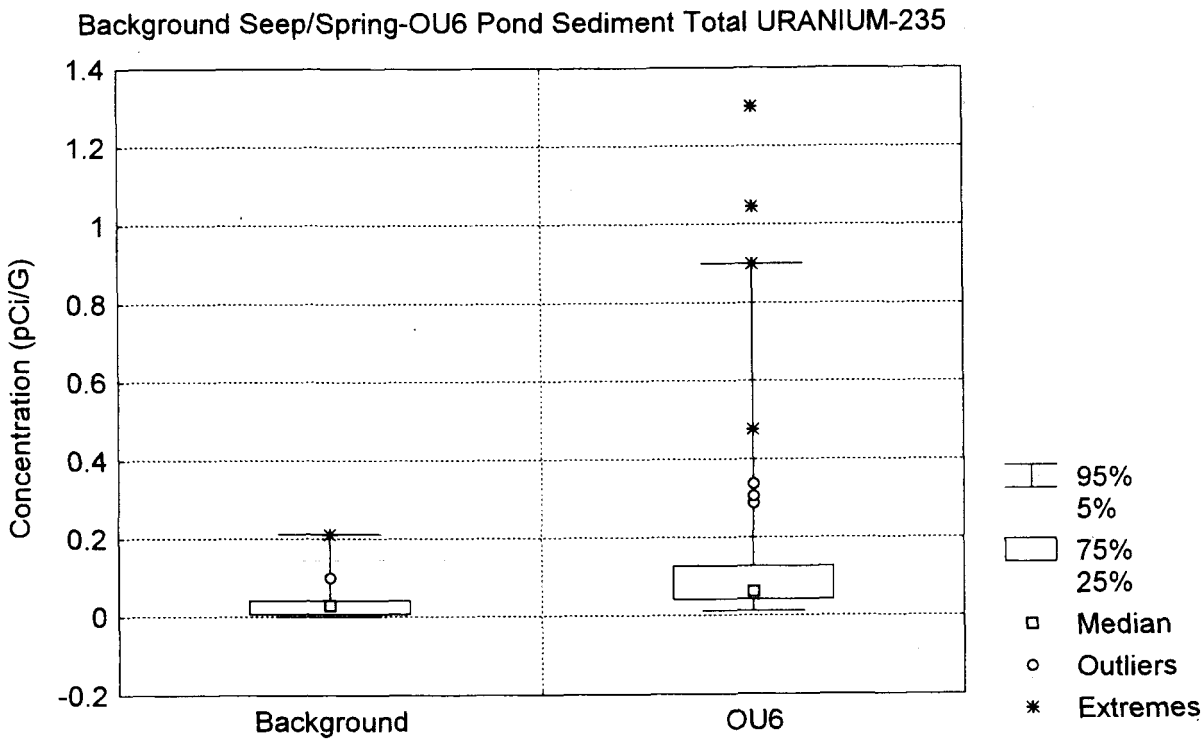

Background Seep/Spring-OU6 Pond Sediment Total RADIUM-228
Concentration (pCi/G)
2
1.8
1.6
1.4
1.2
1
0.8
0.6
Background
OU6
95%
5%
75%
25%
Median

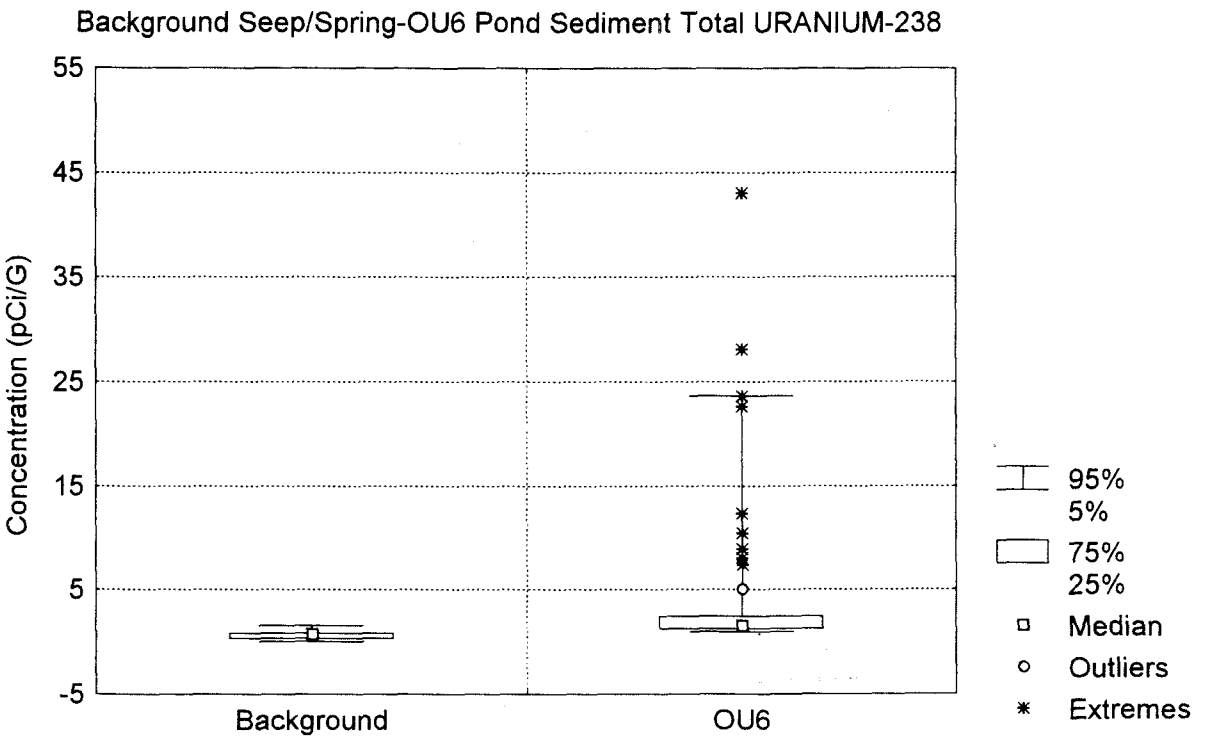

Background Seep/Spring-OU6 Pond Sediment Total STRONTIUM-89,90
Concentration (pCi/G)
2
1.6
1.2
0.8
0.4
0
-0.4
Background
OU6
95%
5%
75%
25%
Median
Outliers
Extremes

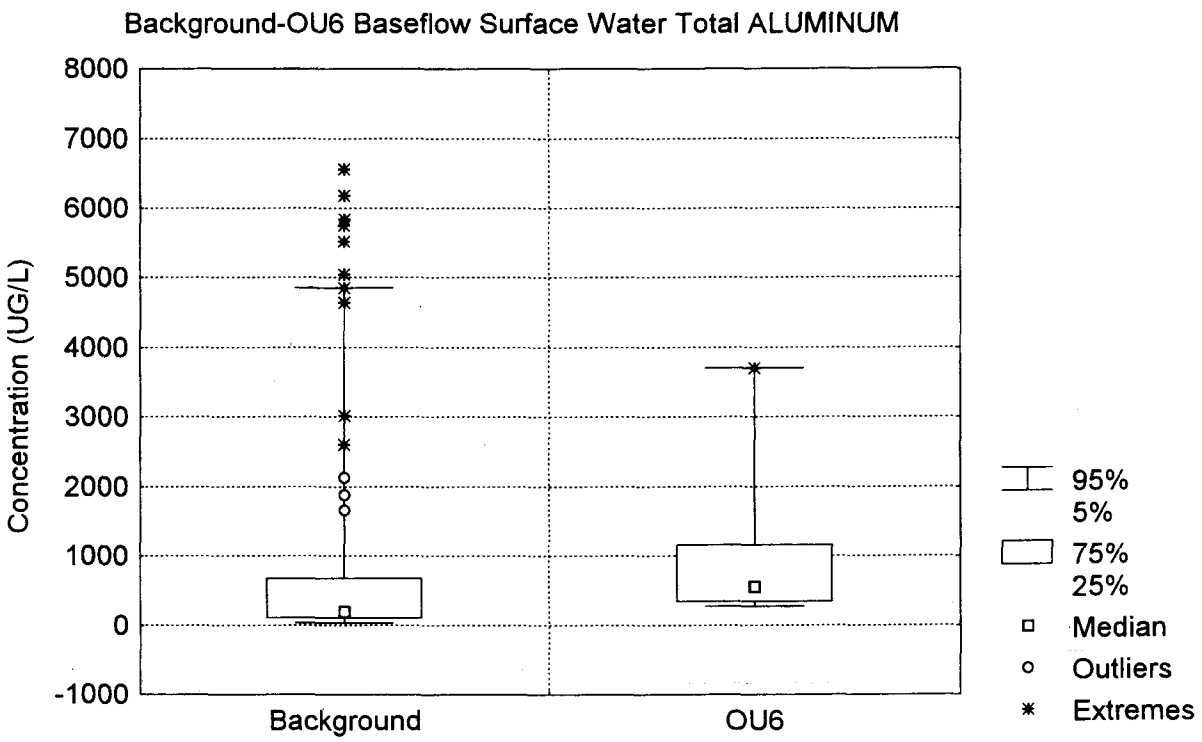

Background Seep/Spring-OU6 Pond Sediment Total TRITIUM
Concentration (pCi/L)
2000
1600
1200
800
400
0
-400
Background
OU6
95%
5%
75%
25%
Median
Outliers
Extremes

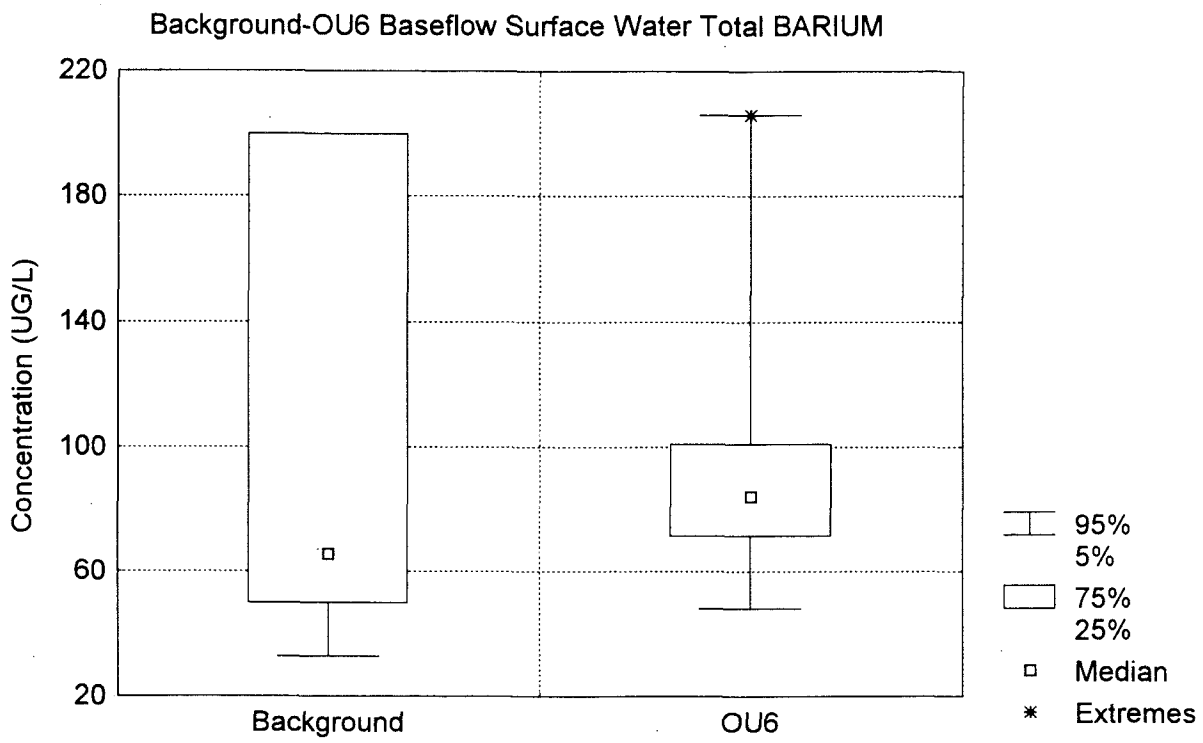
Background Seep/Spring-OU6 Pond Sediment Total URANIUM-233,234

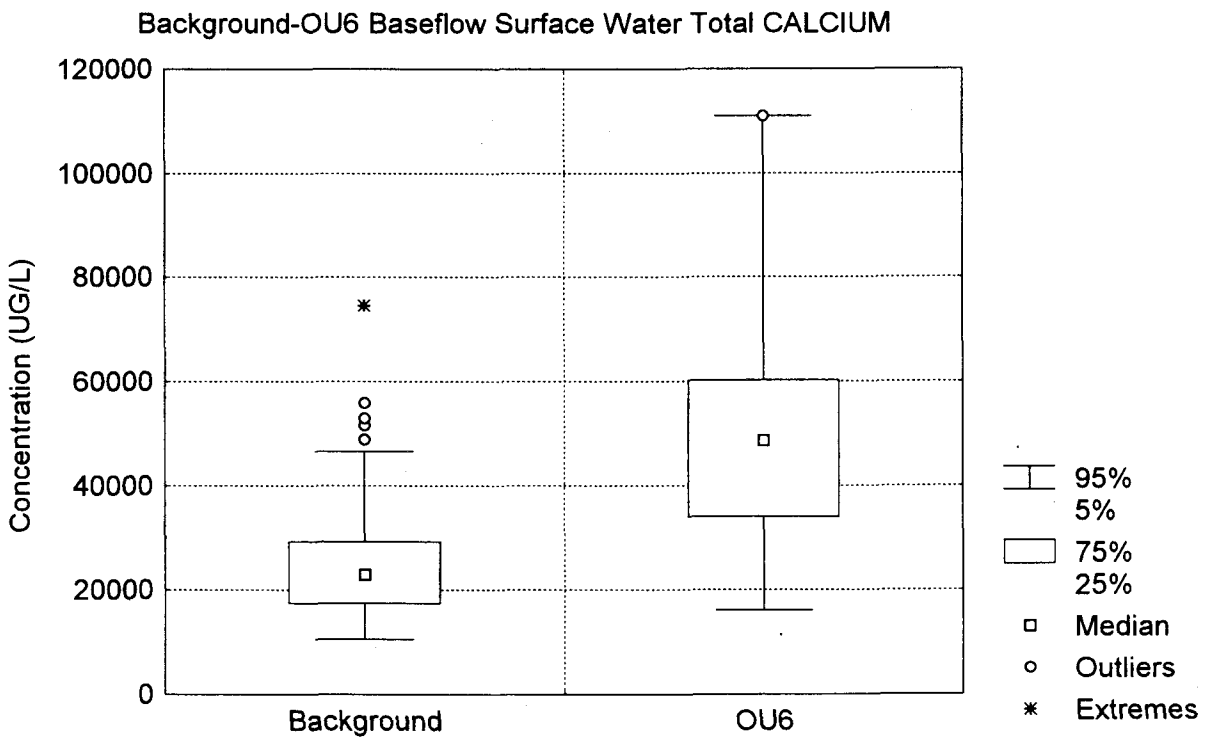


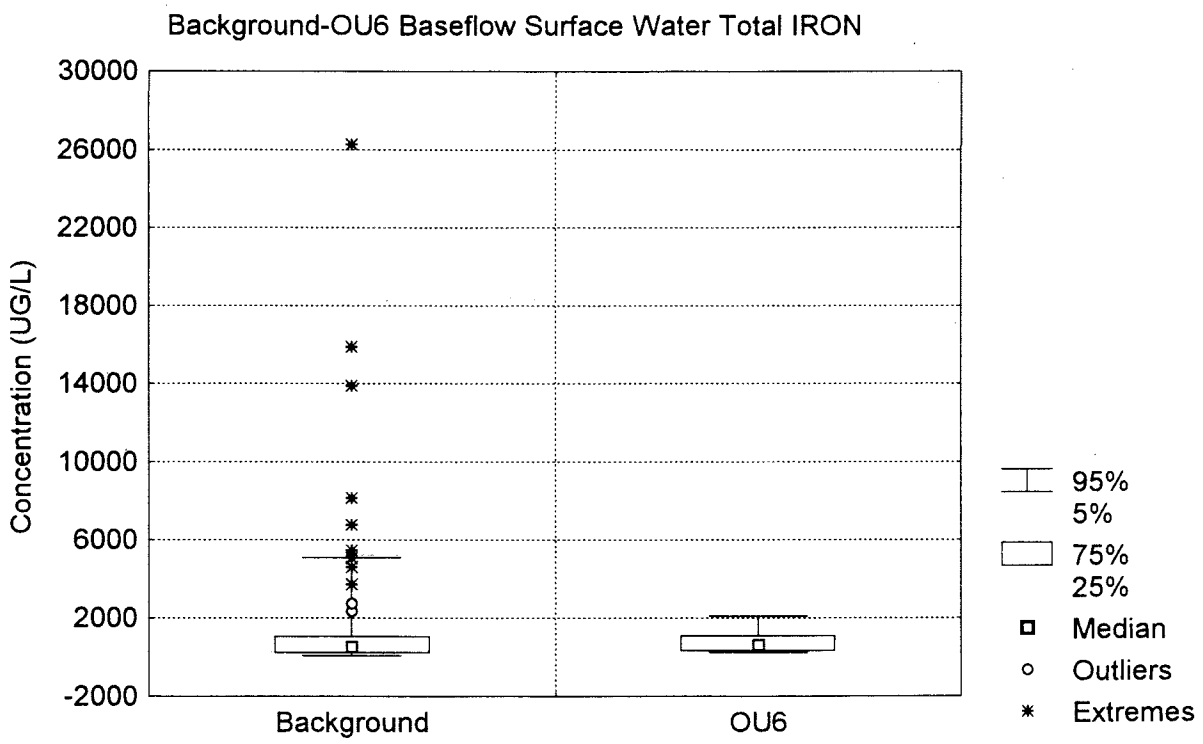

Background Seep/Spring-OU6 Pond Sediment Total URANIUM-235
Concentration (pCi/G)
1.4
1.2
1
0.8
0.6
0.4
0.2
0
-0.2
Background
OU6
95%
5%
75%
25%
Median
Outliers
Extremes

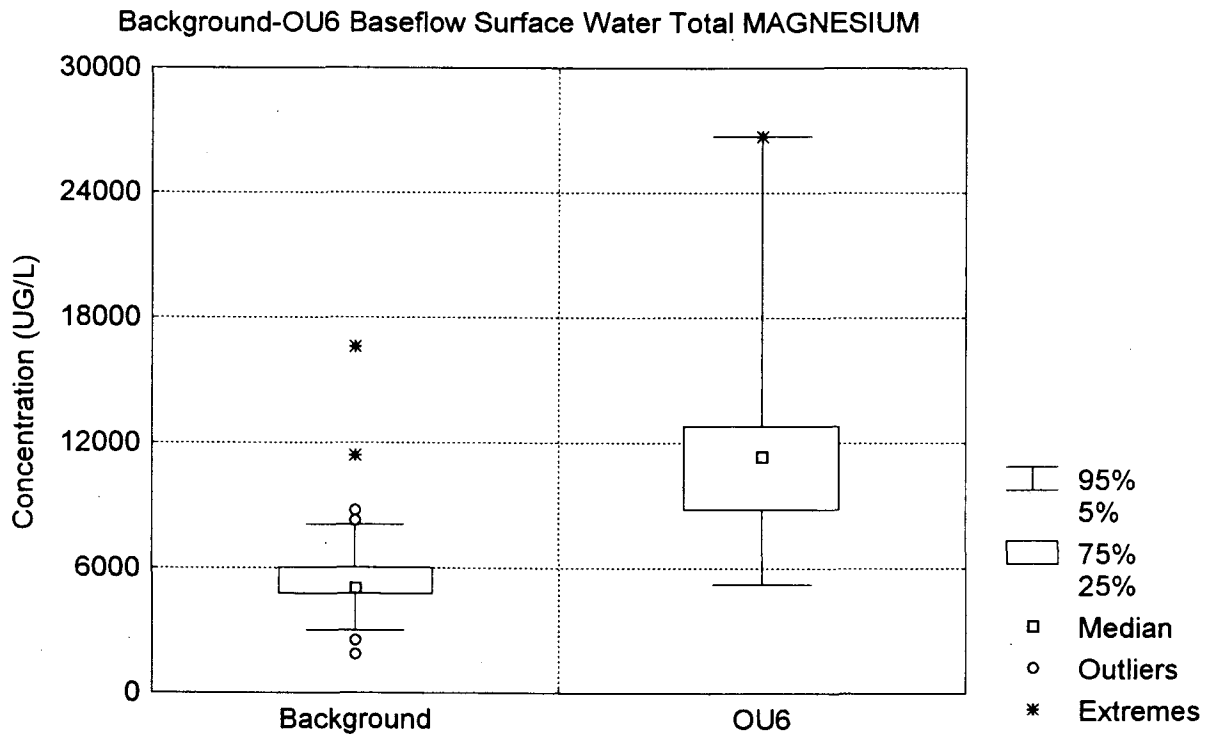

Background Seep/Spring-OU6 Pond Sediment Total URANIUM-238
Concentration (pCi/G)
55
45
35
25
15
5
-5
Background
OU6
95%
5%
75%
25%
Median
Outliers
Extremes

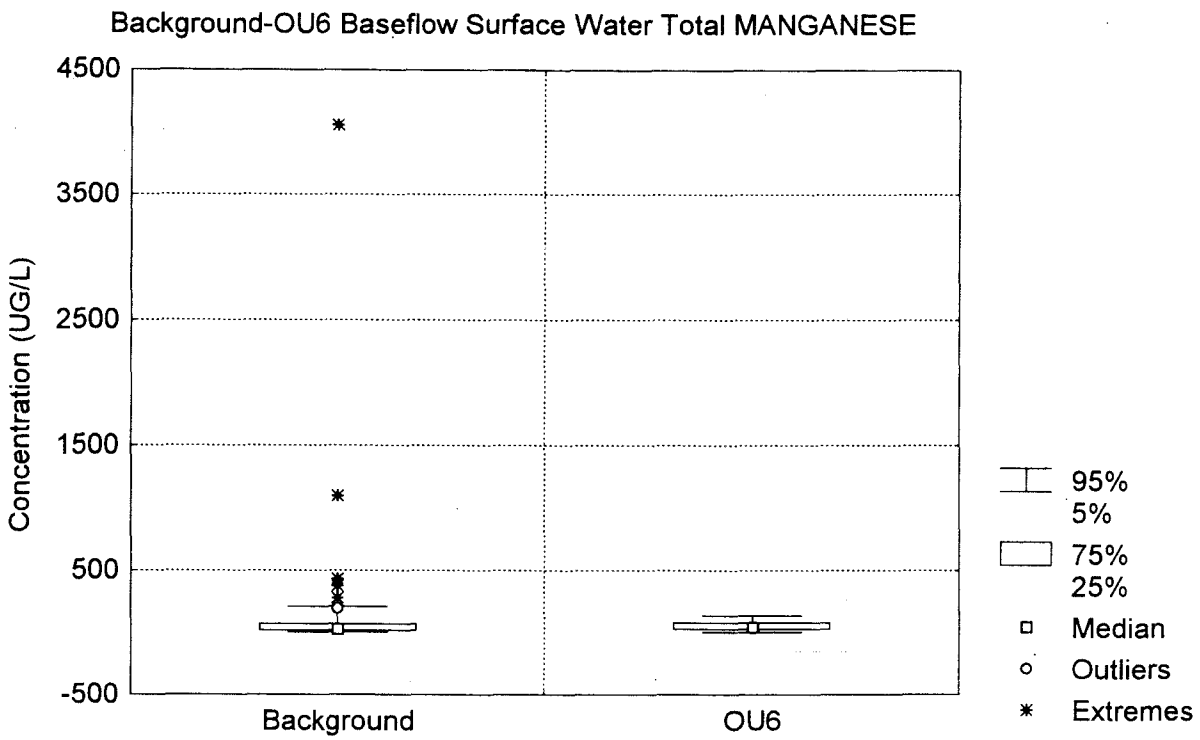

Background-OU6 Baseflow Surface Water Total ALUMINUM
Concentration (UG/L)
8000
7000
6000
5000
4000
3000
2000
1000
0
-1000
Background
OU6
95%
5%
75%
25%
Median
Outliers
Extremes

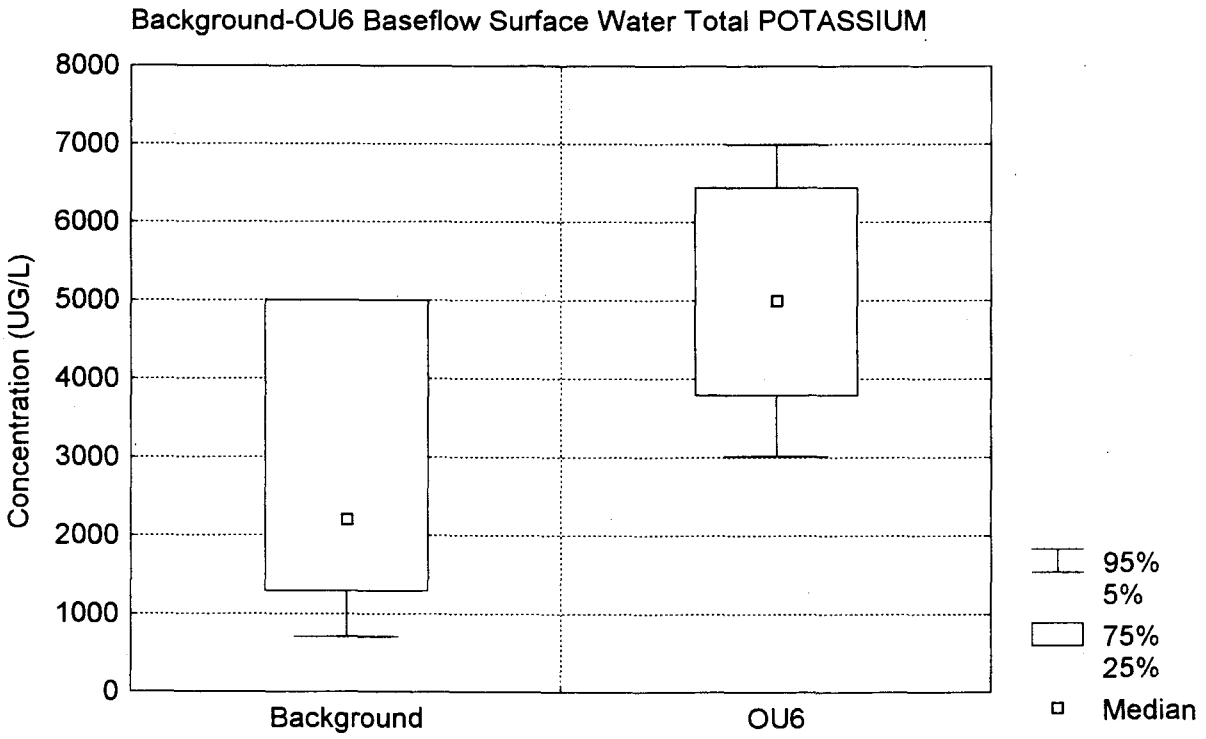

Background-OU6 Baseflow Surface Water Total BARIUM
Concentration (UG/L)
220
180
140
100
60
20
Background
OU6
95%
5%
75%
25%
Median
Extremes

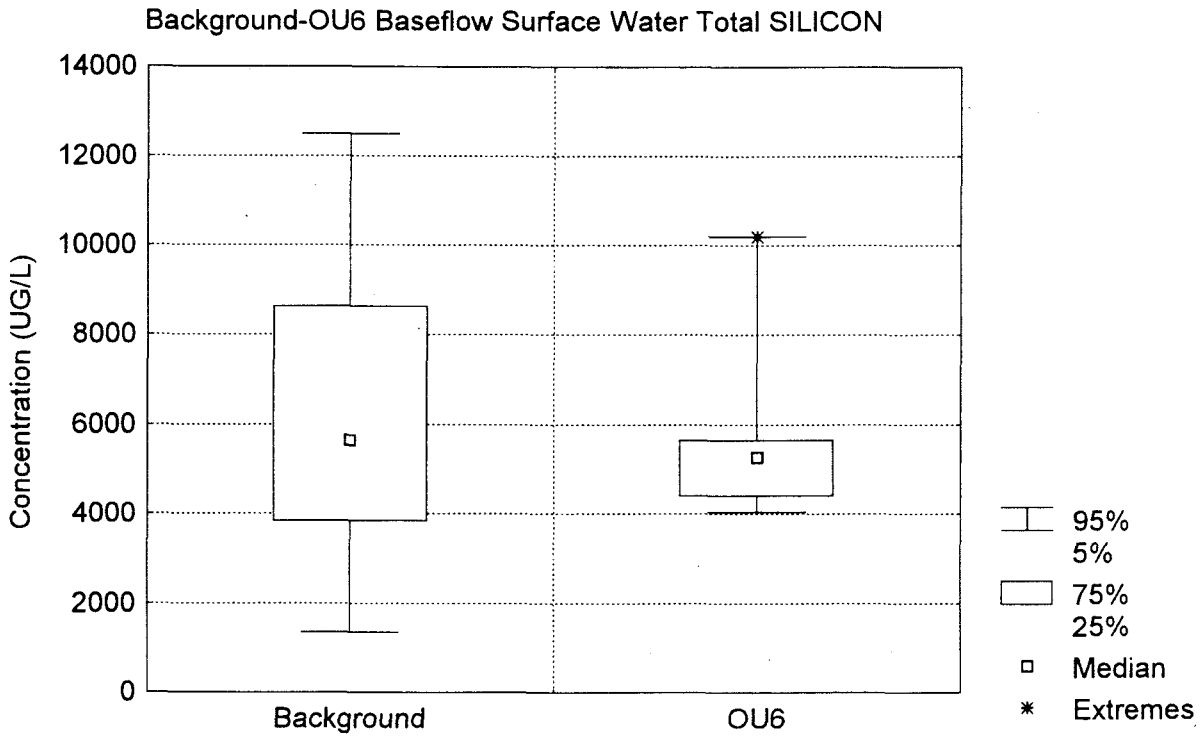

Background-OU6 Baseflow Surface Water Total CALCIUM
Concentration (UG/L)
120000
100000
80000
60000
40000
20000
0
Background
OU6
95%
5%
75%
25%
Median
Outliers
Extremes

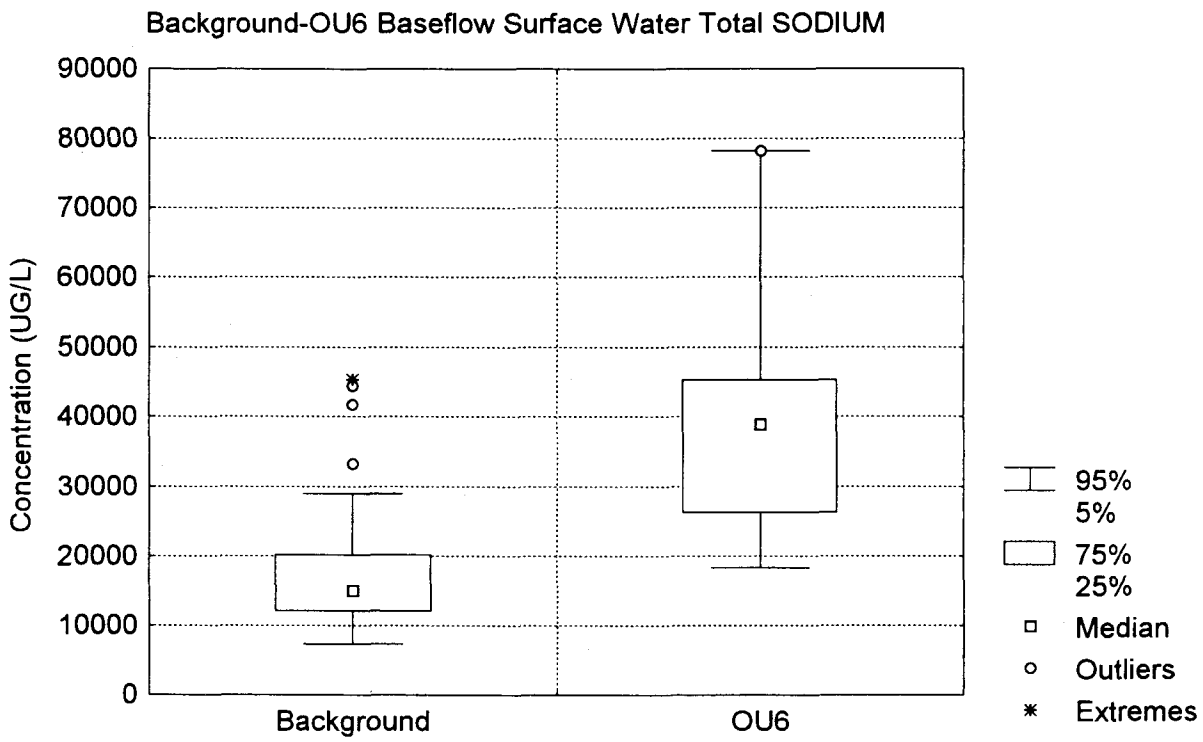

Background-OU6 Baseflow Surface Water Total IRON
Concentration (UG/L)
30000
26000
22000
18000
14000
10000
6000
2000
-2000
Background
OU6
95%
5%
75%
25%
Median
Outliers
Extremes

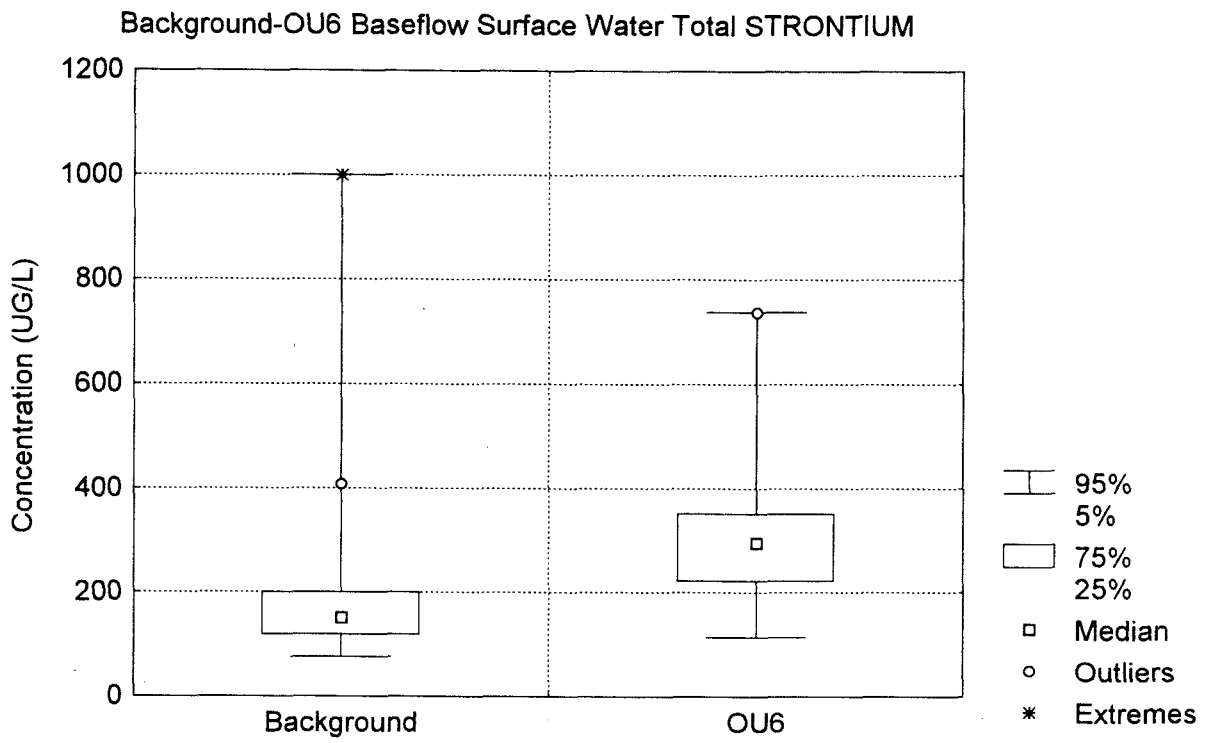

Background-OU6 Baseflow Surface Water Total MAGNESIUM
Concentration (UG/L)
30000
24000
18000
12000
6000
0
Background
OU6
95%
5%
75%
25%
Median
Outliers
Extremes

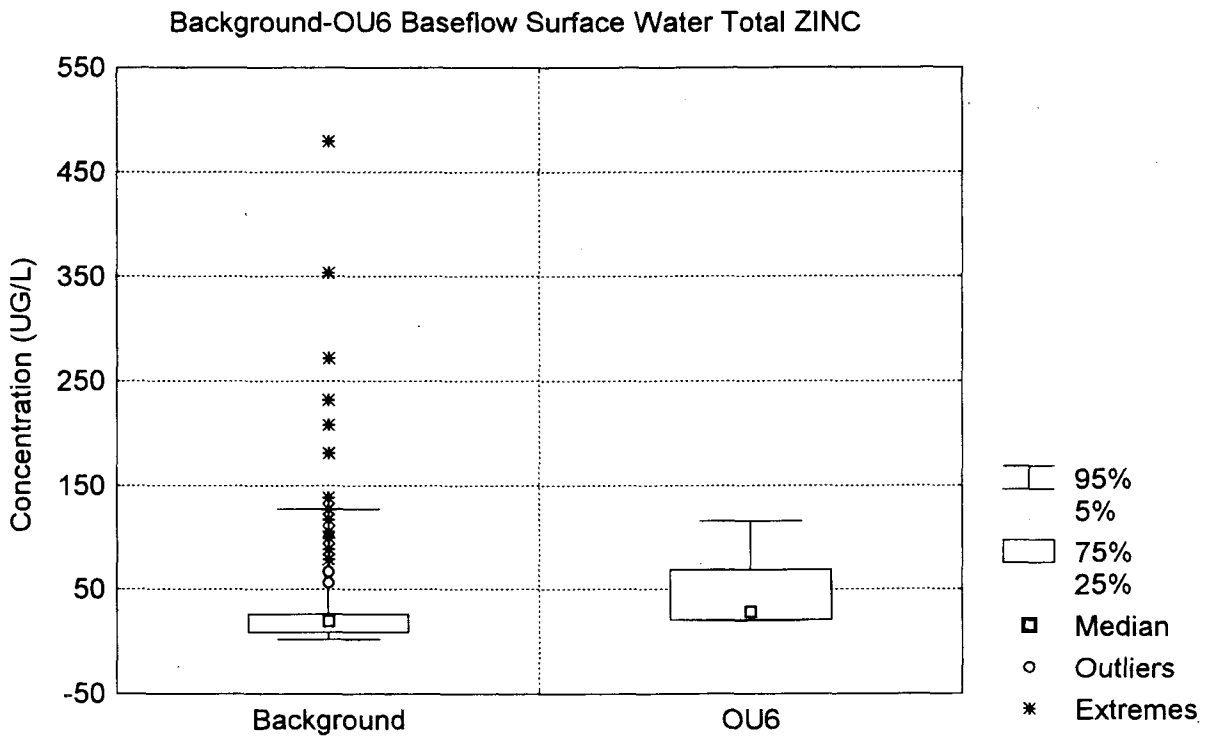

Background-OU6 Baseflow Surface Water Total MANGANESE
Concentration (UG/L)
4500
3500
2500
1500
500
-500
Background
OU6
95%
5%
75%
25%
Median
Outliers
Extremes

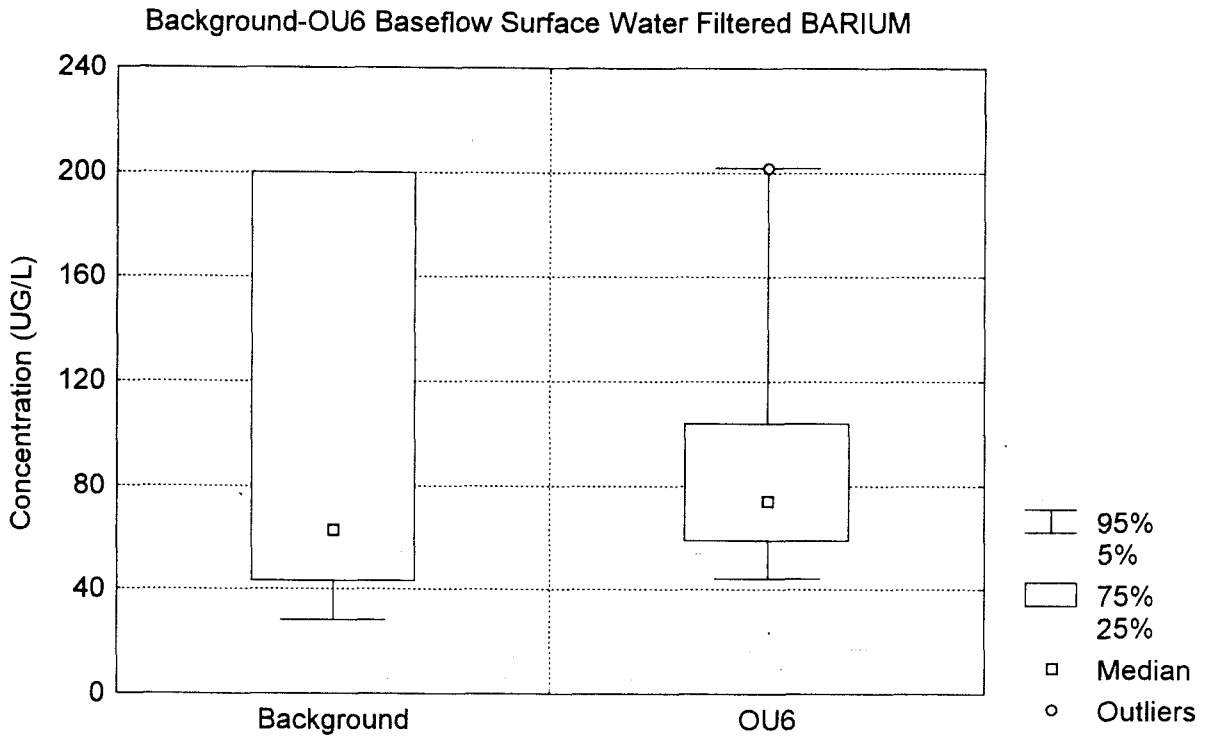

Background-OU6 Baseflow Surface Water Total POTASSIUM
Concentration (UG/L)
8000
7000
6000
5000
4000
3000
2000
1000
0
Background
OU6
95%
5%
75%
25%
Median

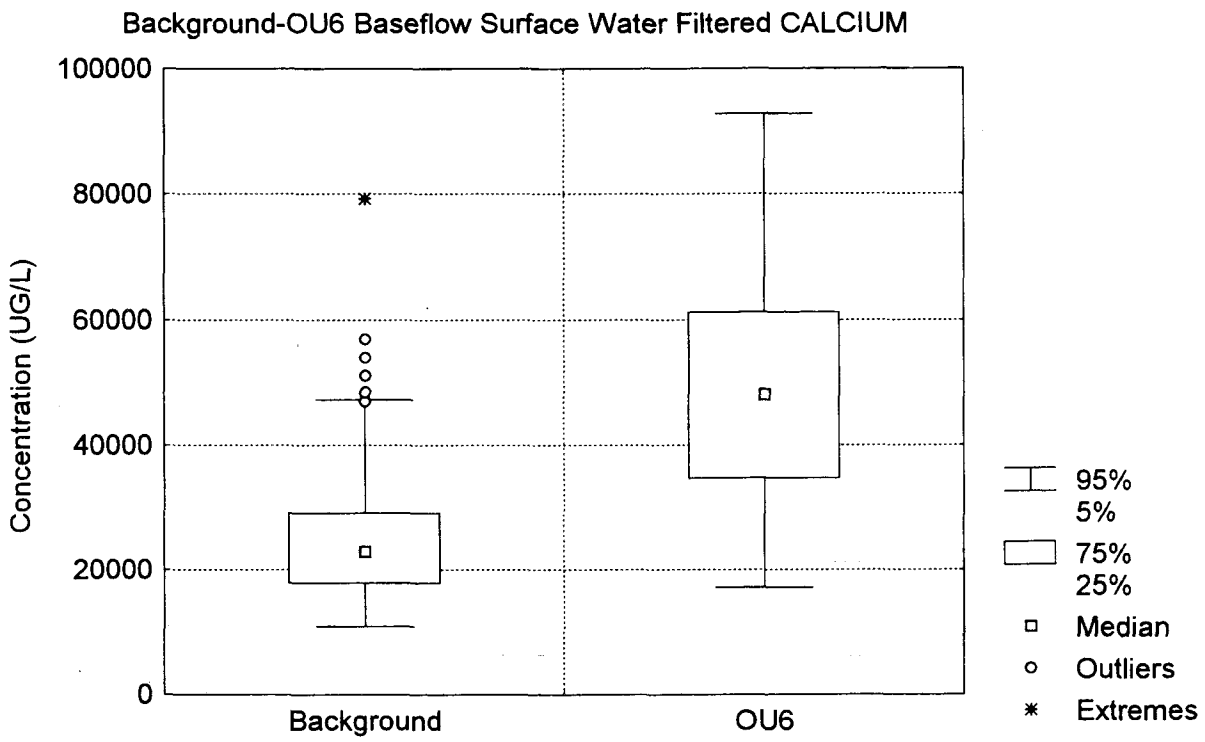

Background-OU6 Baseflow Surface Water Total SILICON
Concentration (UG/L)
14000
12000
10000
8000
6000
4000
2000
0
Background
OU6
95%
5%
75%
25%
Median
Extremes

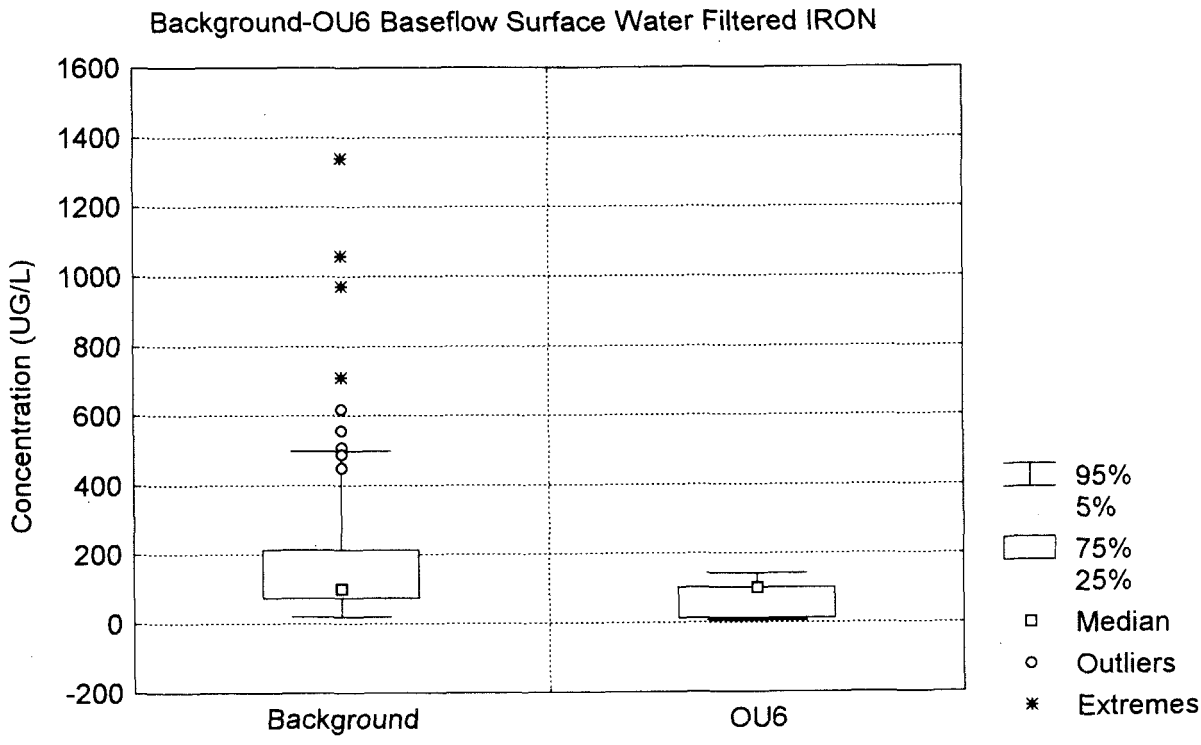

Background-OU6 Baseflow Surface Water Total SODIUM
Concentration (UG/L)
90000
80000
70000
60000
50000
40000
30000
20000
10000
0
Background
OU6
95%
5%
75%
25%
Median
Outliers
Extremes

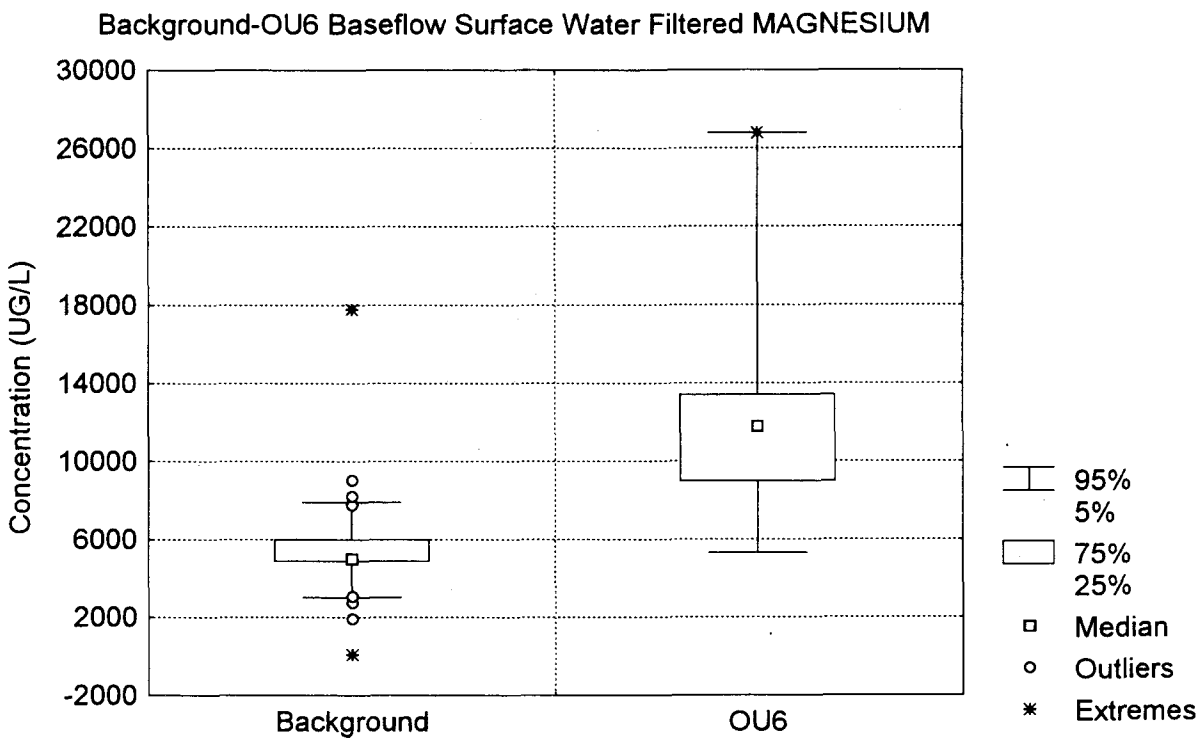

Background-OU6 Baseflow Surface Water Total STRONTIUM
Concentration (UG/L)
1200
1000
800
600
400
200
0
Background
OU6
95%
5%
75%
25%
Median
Outliers
Extremes

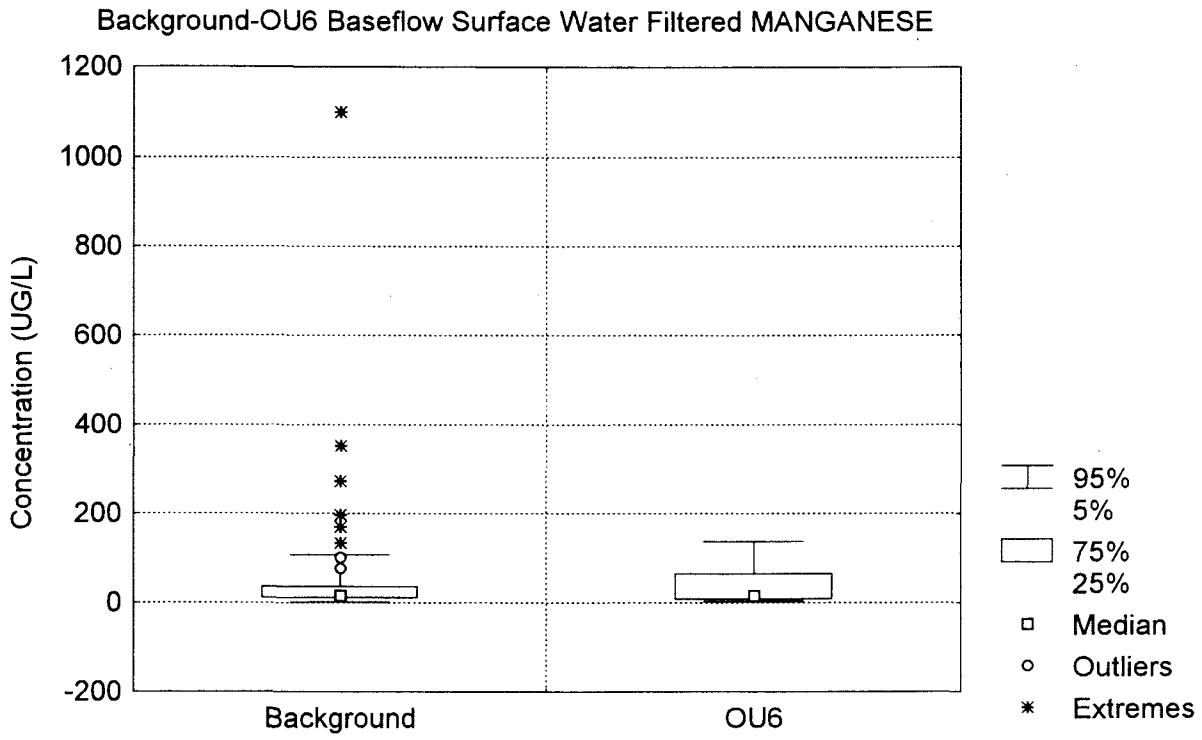

Background-OU6 Baseflow Surface Water Total ZINC
Concentration (UG/L)
550
450
350
250
150
50
-50
Background
OU6
95%
5%
75%
25%
Median
Outliers
Extremes

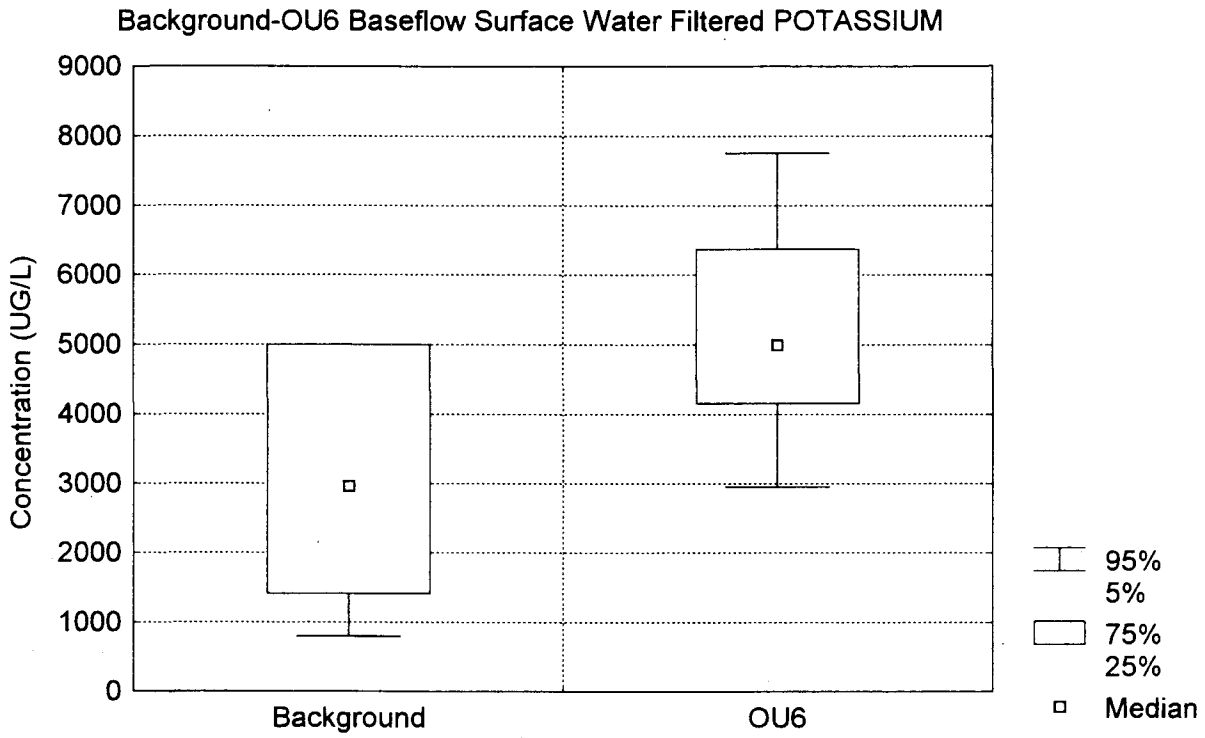

Background-OU6 Baseflow Surface Water Filtered BARIUM
Concentration (UG/L)
240
200
160
120
80
40
0
Background
OU6
95%
5%
75%
25%
Median
Outliers

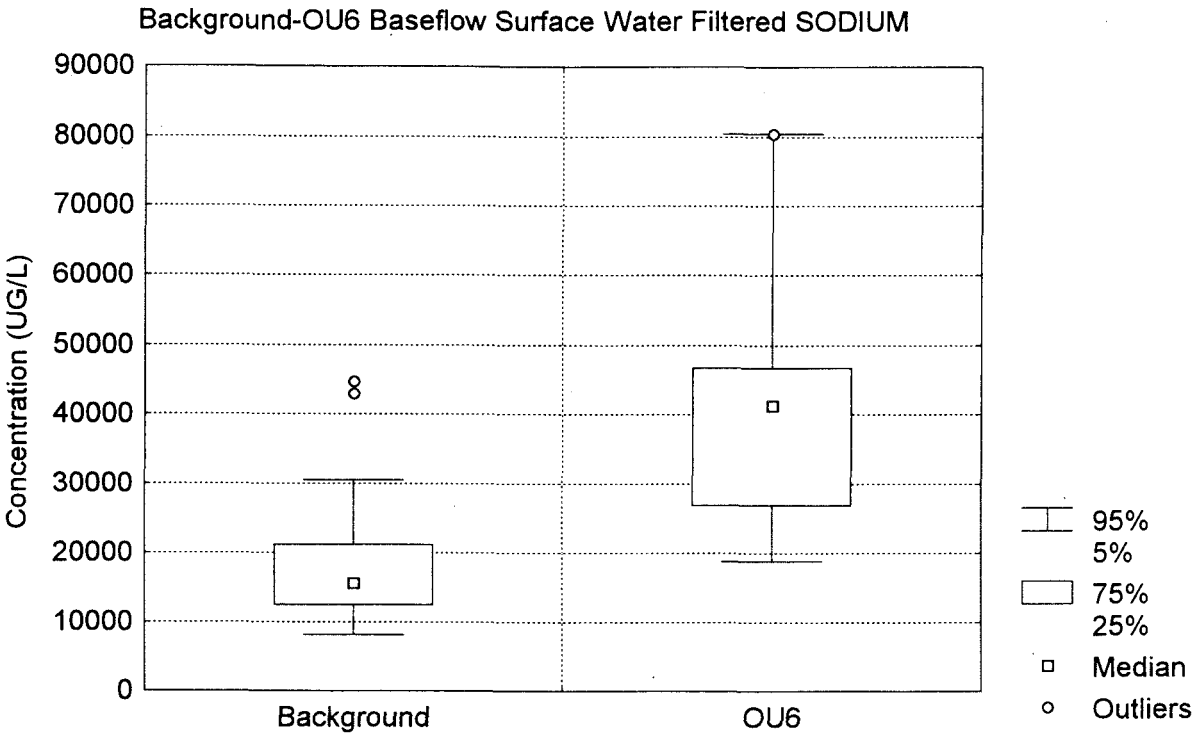

Background-OU6 Baseflow Surface Water Filtered CALCIUM
Concentration (UG/L)
100000
80000
60000
40000
20000
0
Background
OU6
95%
5%
75%
25%
Median
Outliers
Extremes

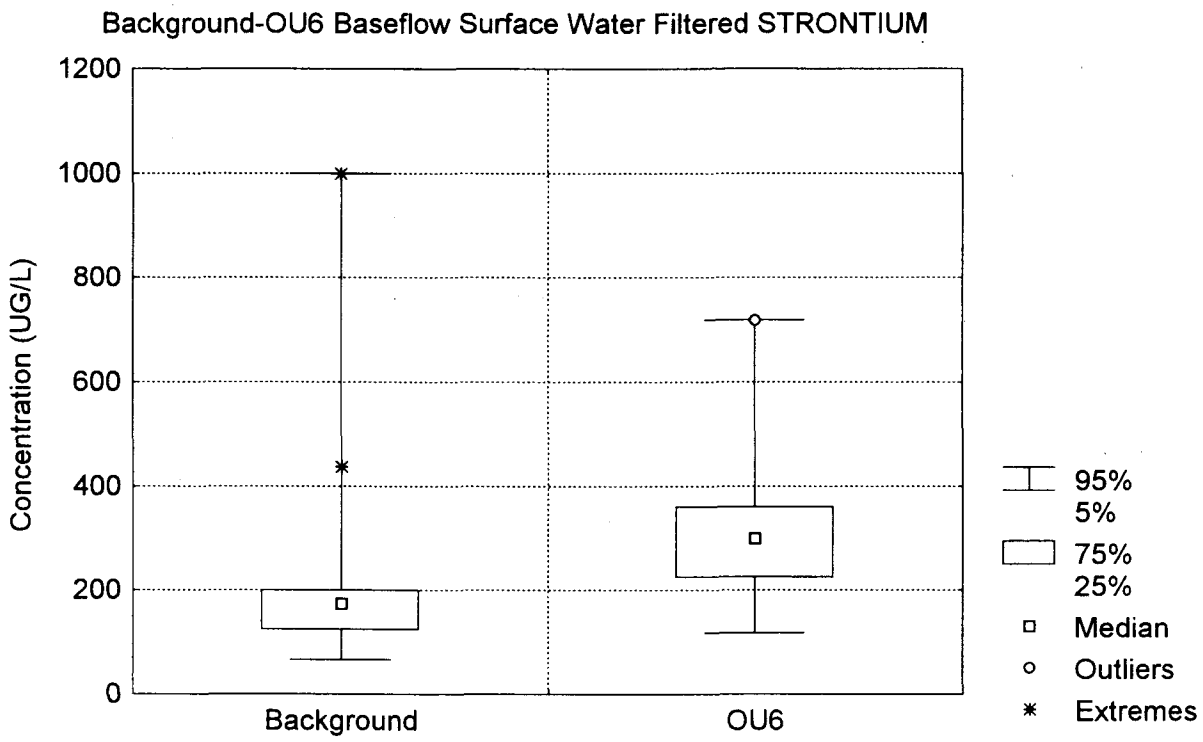

Background-OU6 Baseflow Surface Water Filtered IRON
Concentration (UG/L)
1600
1400
1200
1000
800
600
400
200
0
-200
Background
OU6
95%
5%
75%
25%
Median
Outliers
Extremes

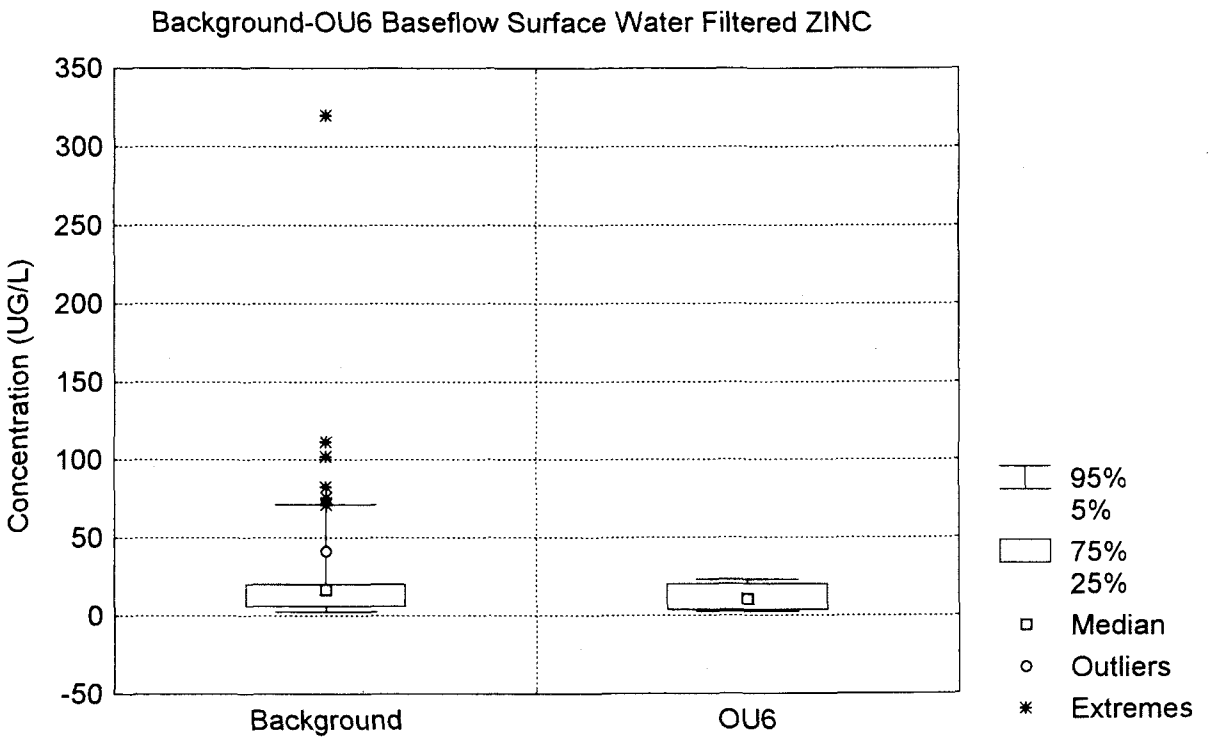

Background-OU6 Baseflow Surface Water Filtered MAGNESIUM
Concentration (UG/L)
30000
26000
22000
18000
14000
10000
6000
2000
-2000
Background
OU6
95%
5%
75%
25%
Median
Outliers
Extremes

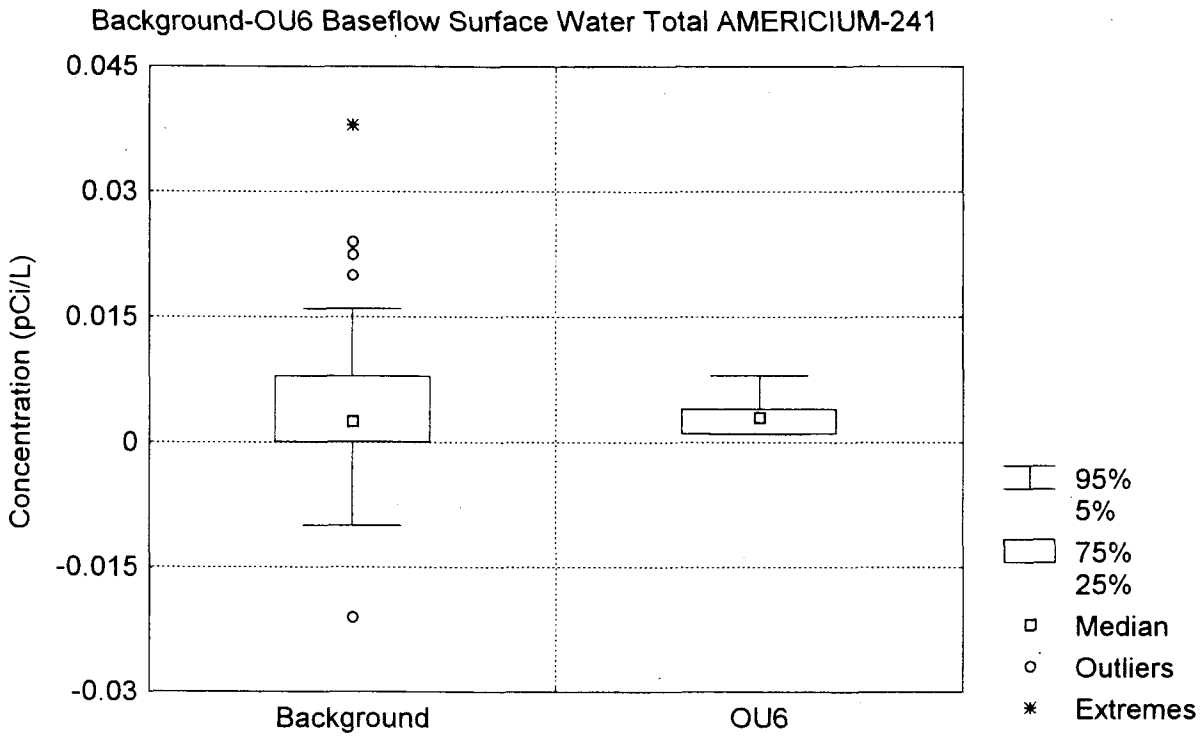

Background-OU6 Baseflow Surface Water Filtered MANGANESE
Concentration (UG/L)
1200
1000
800
600
400
200
0
-200
Background
OU6
95%
5%
75%
25%
Median
Outliers
Extremes

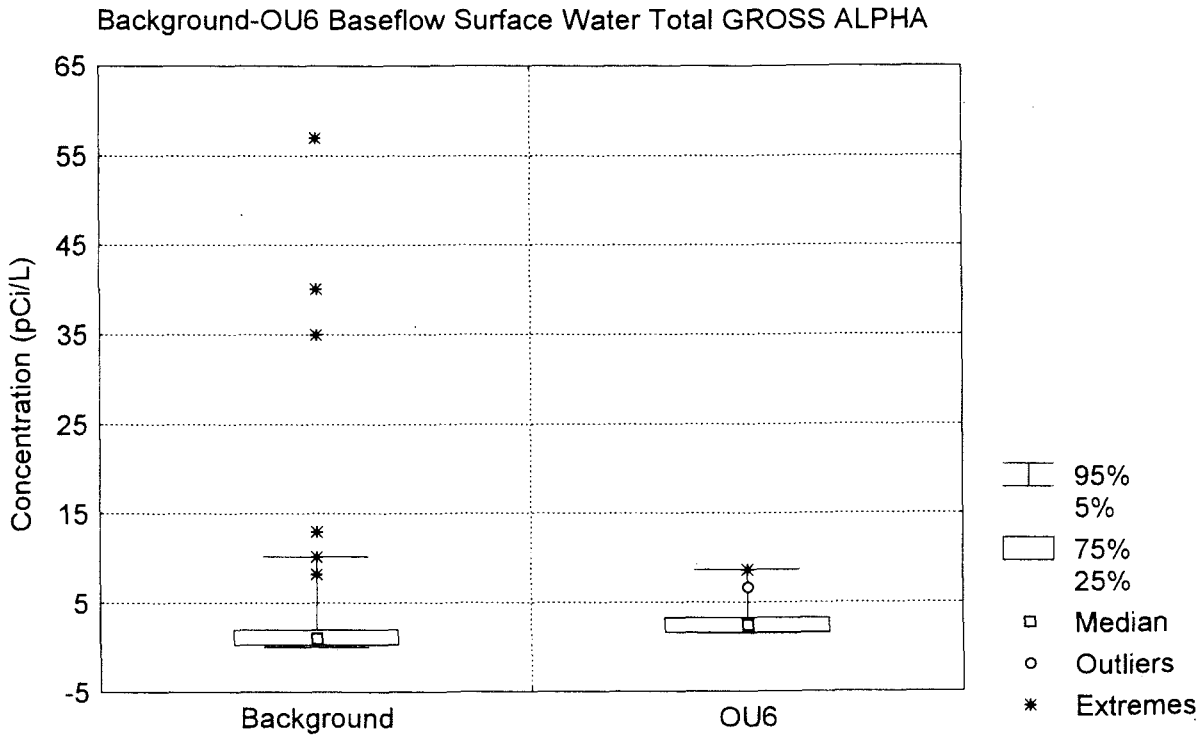

Background-OU6 Baseflow Surface Water Filtered POTASSIUM
Concentration (UG/L)
9000
8000
7000
6000
5000
4000
3000
2000
1000
0
Background
OU6
95%
5%
75%
25%
Median

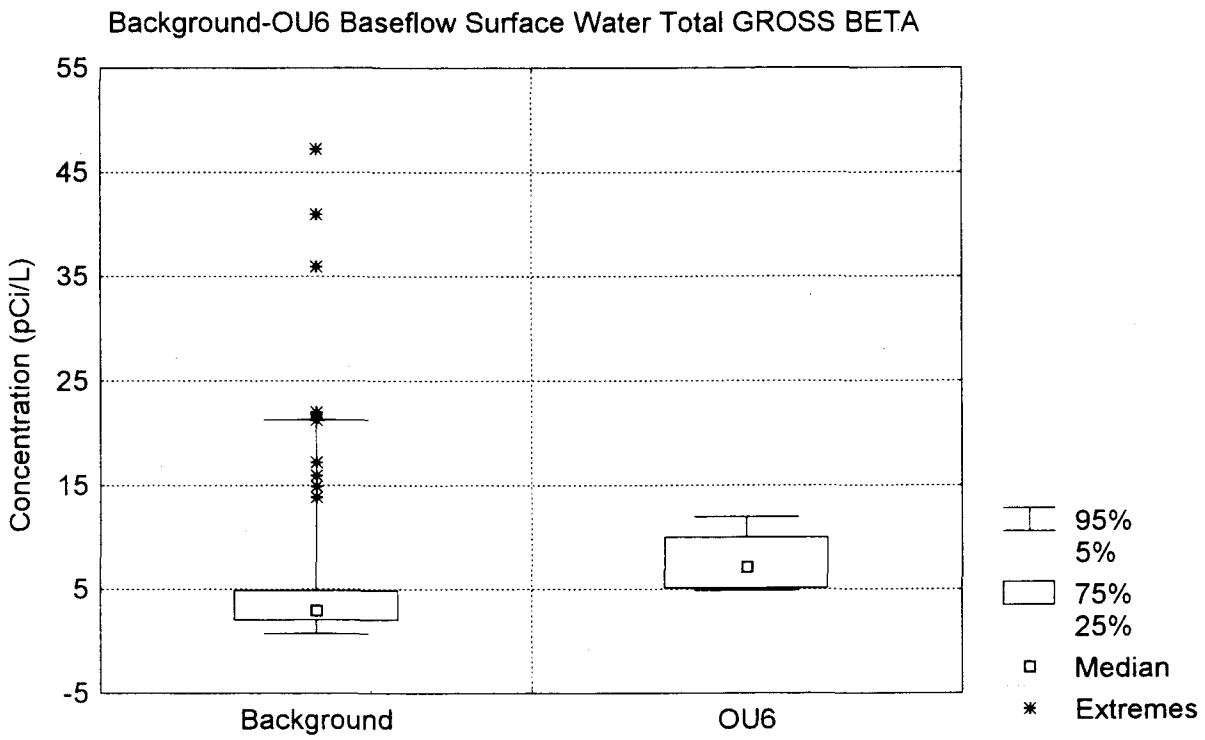

Background-OU6 Baseflow Surface Water Filtered SODIUM
Concentration (UG/L)
90000
80000
70000
60000
50000
40000
30000
20000
10000
0
Background
OU6
95%
5%
75%
25%
Median
Outliers

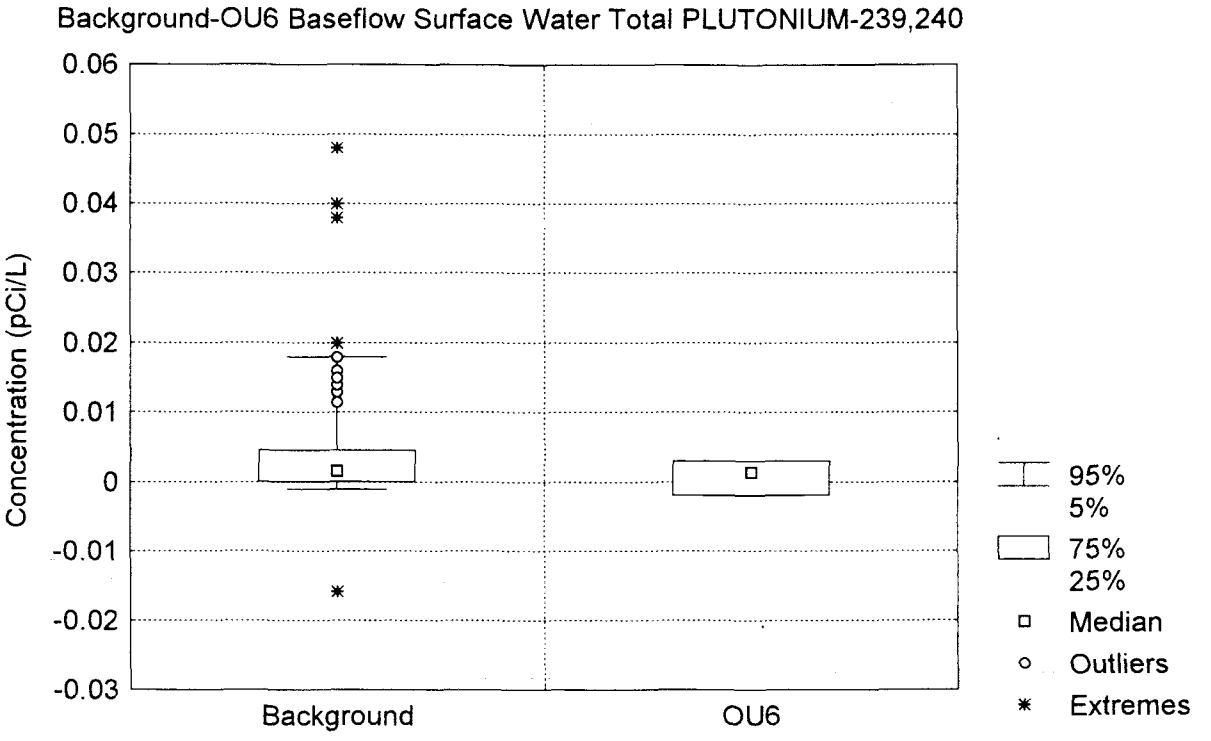

Background-OU6 Baseflow Surface Water Filtered STRONTIUM
Concentration (UG/L)
1200
1000
800
600
400
200
0
Background
OU6
95%
5%
75%
25%
Median
Outliers
Extremes

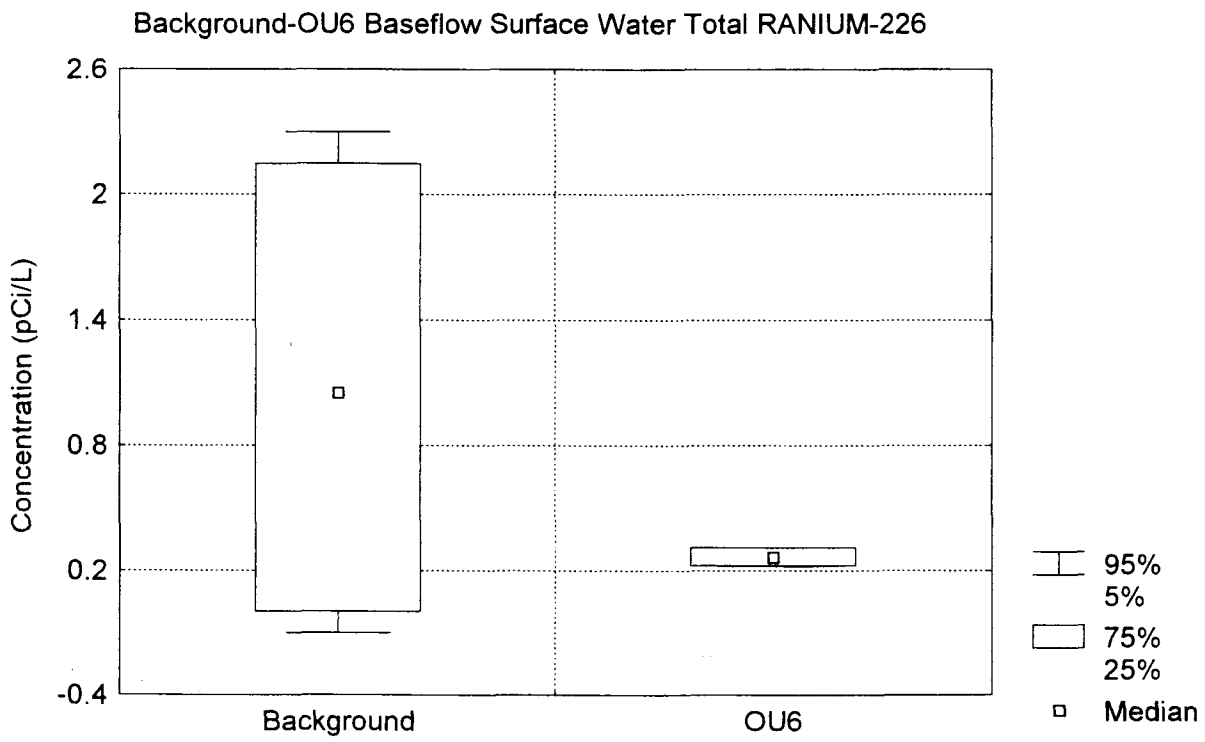

Background-OU6 Baseflow Surface Water Filtered ZINC
Concentration (UG/L)
350
300
250
200
150
100
50
0
-50
Background
OU6
95%
5%
75%
25%
Median
Outliers
Extremes

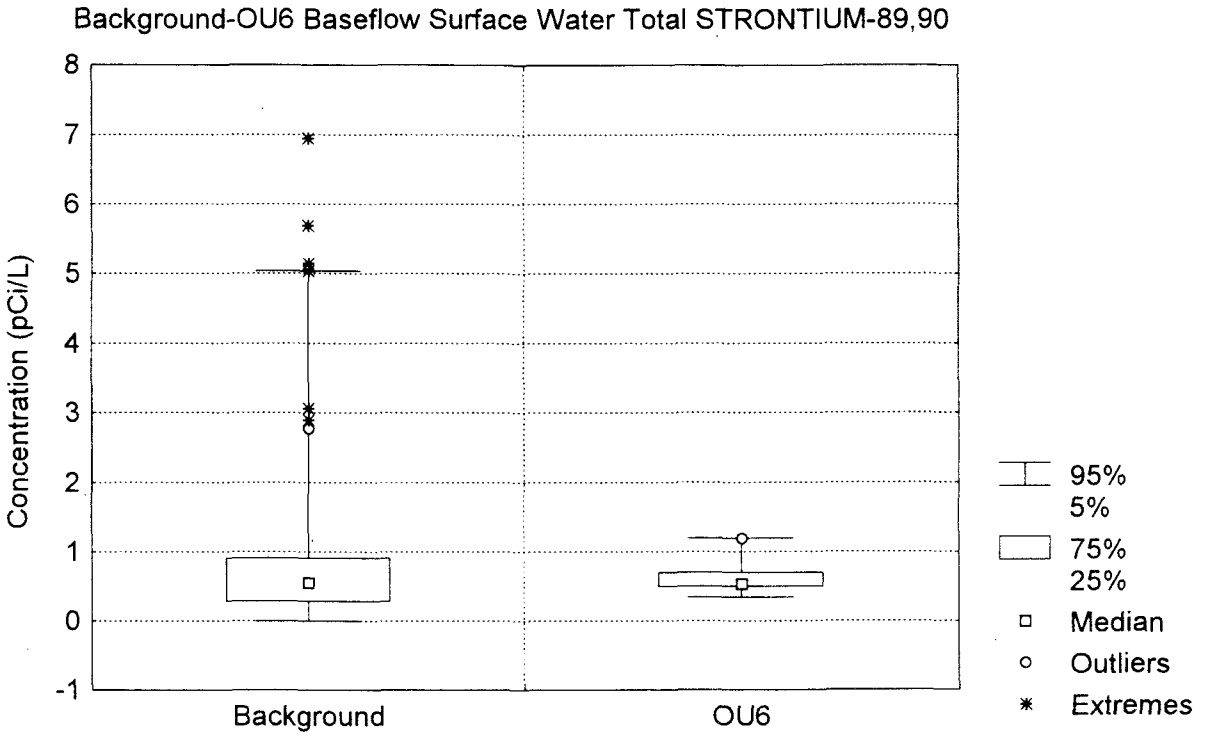

Background-OU6 Baseflow Surface Water Total AMERICIUM-241
0.045
0.03
0.015
0
-0.015
-0.03
Concentration (pCi/L)
Background
OU6
95%
5%
75%
25%
Median
Outliers
Extremes

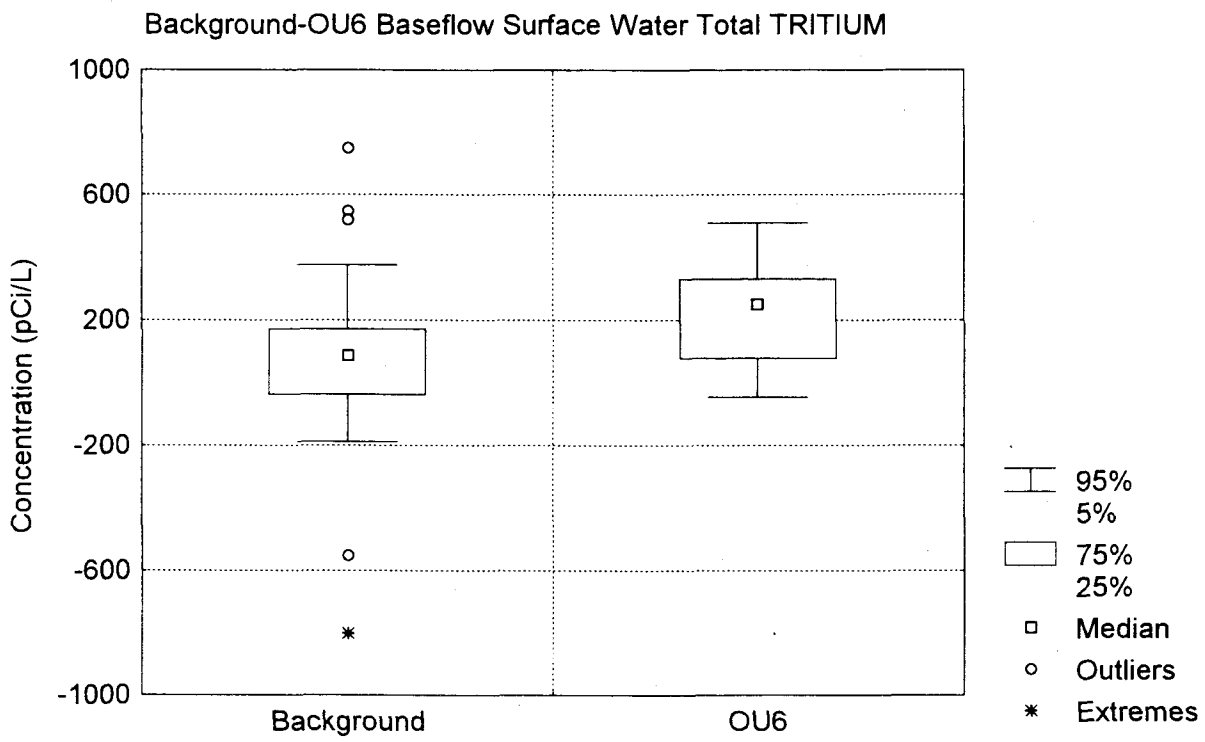

Background-OU6 Baseflow Surface Water Total GROSS ALPHA
Concentration (pCi/L)
65
55
45
35
25
15
5
-5
Background
OU6
95%
5%
75%
25%
Median
Outliers
Extremes

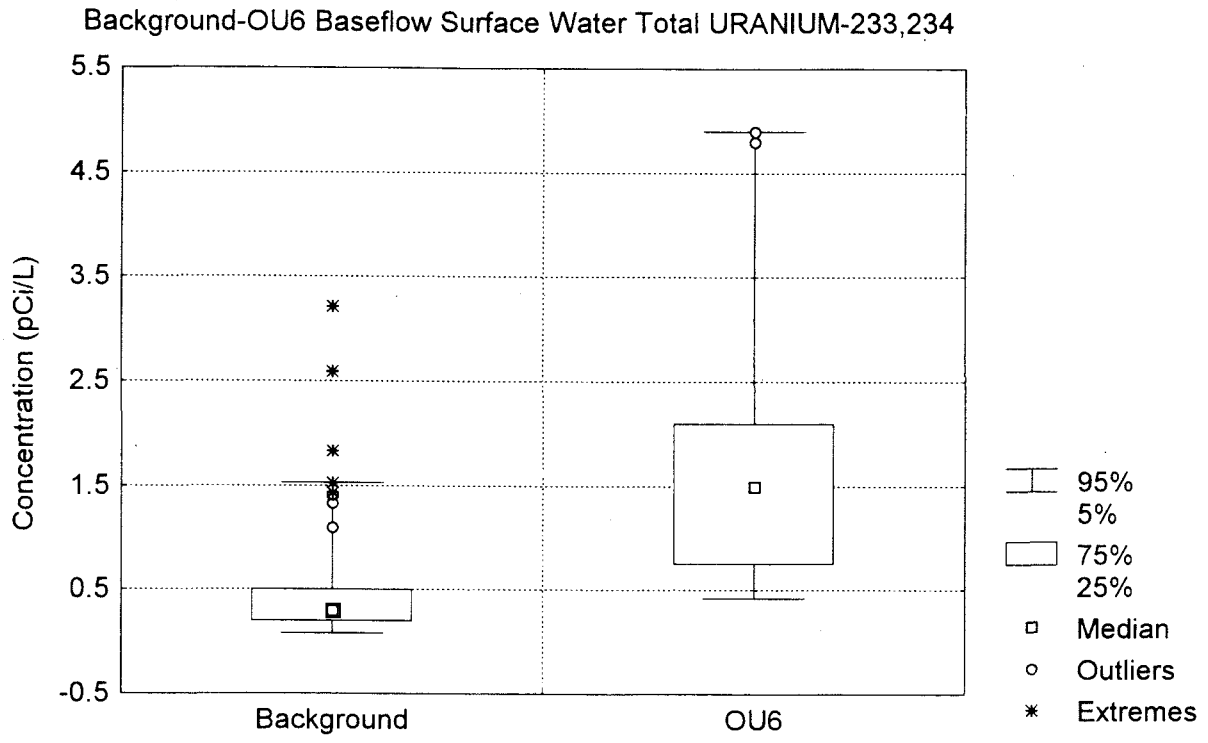

Background-OU6 Baseflow Surface Water Total GROSS BETA
Concentration (pCi/L)
55
45
35
25
15
5
-5
Background
OU6
95%
5%
75%
25%
Median
Extremes

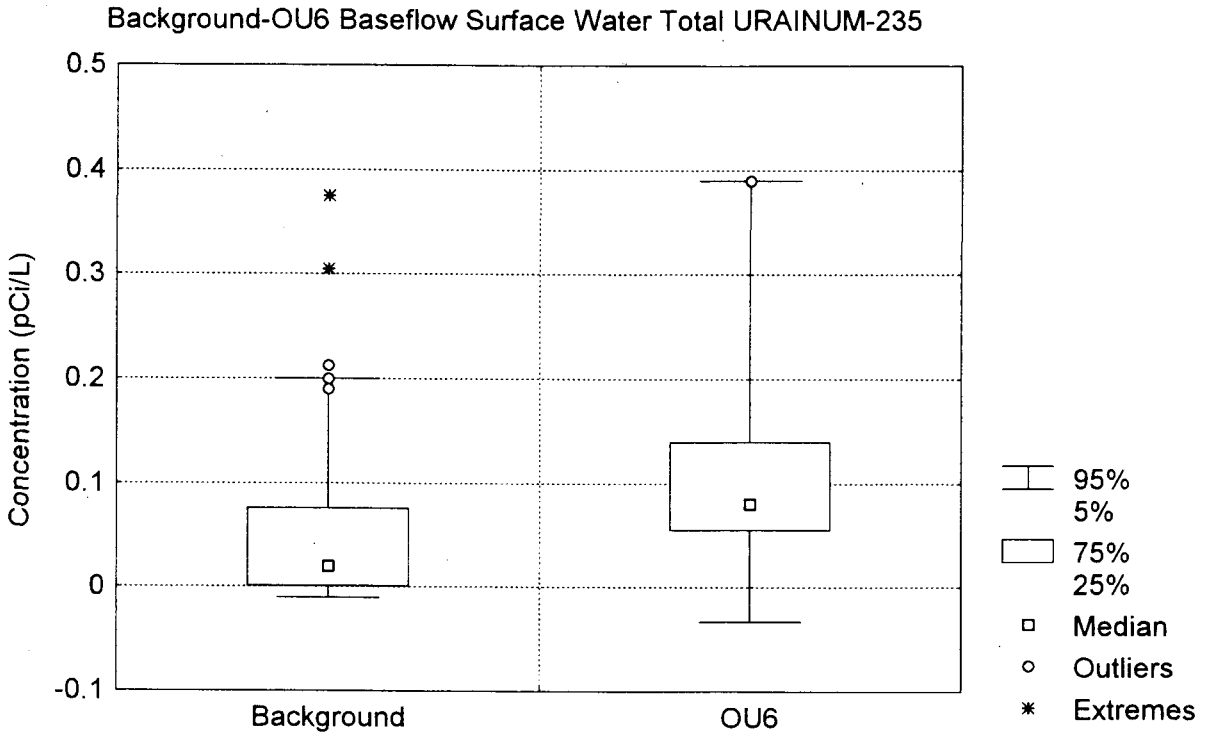

Background-OU6 Baseflow Surface Water Total PLUTONIUM-239,240
Concentration (pCi/L)
0.06
0.05
0.04
0.03
0.02
0.01
0
-0.01
-0.02
-0.03
Background
OU6
95%
5%
75%
25%
Median
Outliers
Extremes

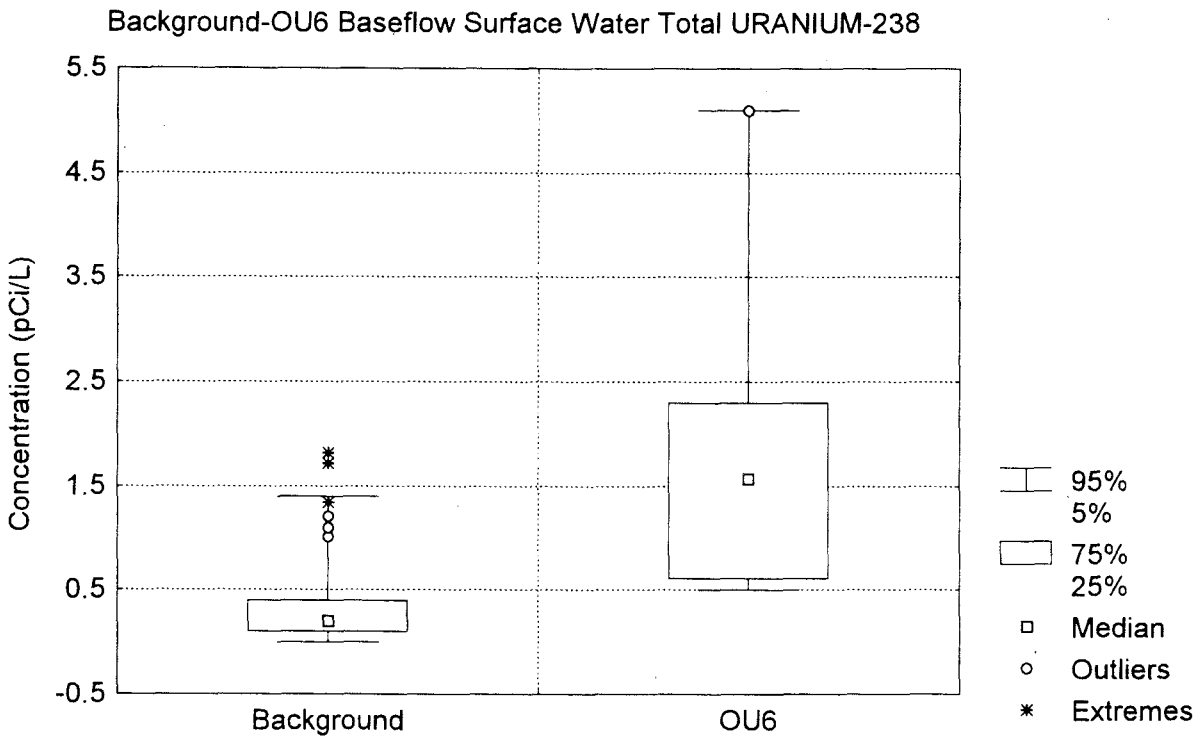

Background-OU6 Baseflow Surface Water Total RANIUM-226
Concentration (pCi/L)
2.6
2
1.4
0.8
0.2
-0.4
Background
OU6
95%
5%
75%
25%
Median

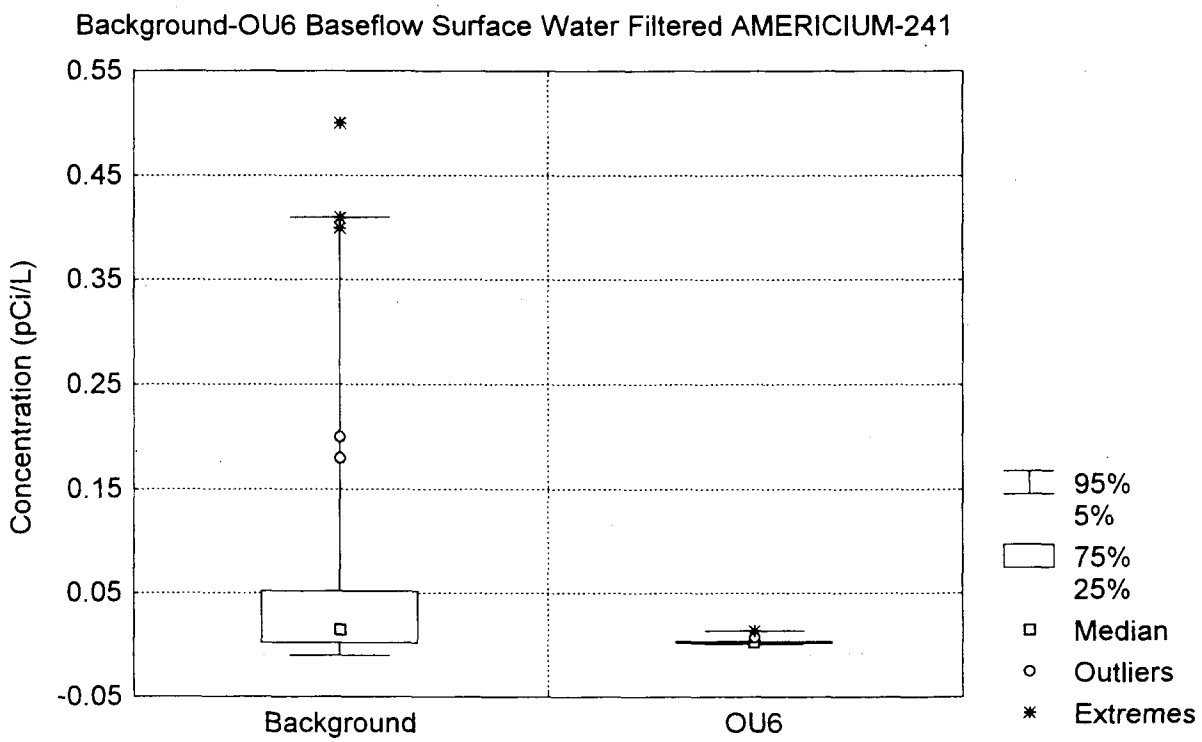

Background-OU6 Baseflow Surface Water Total STRONTIUM-89,90
Concentration (pCi/L)
8
7
6
5
4
3
2
1
0
-1
Background
OU6
95%
5%
75%
25%
Median
Outliers
Extremes

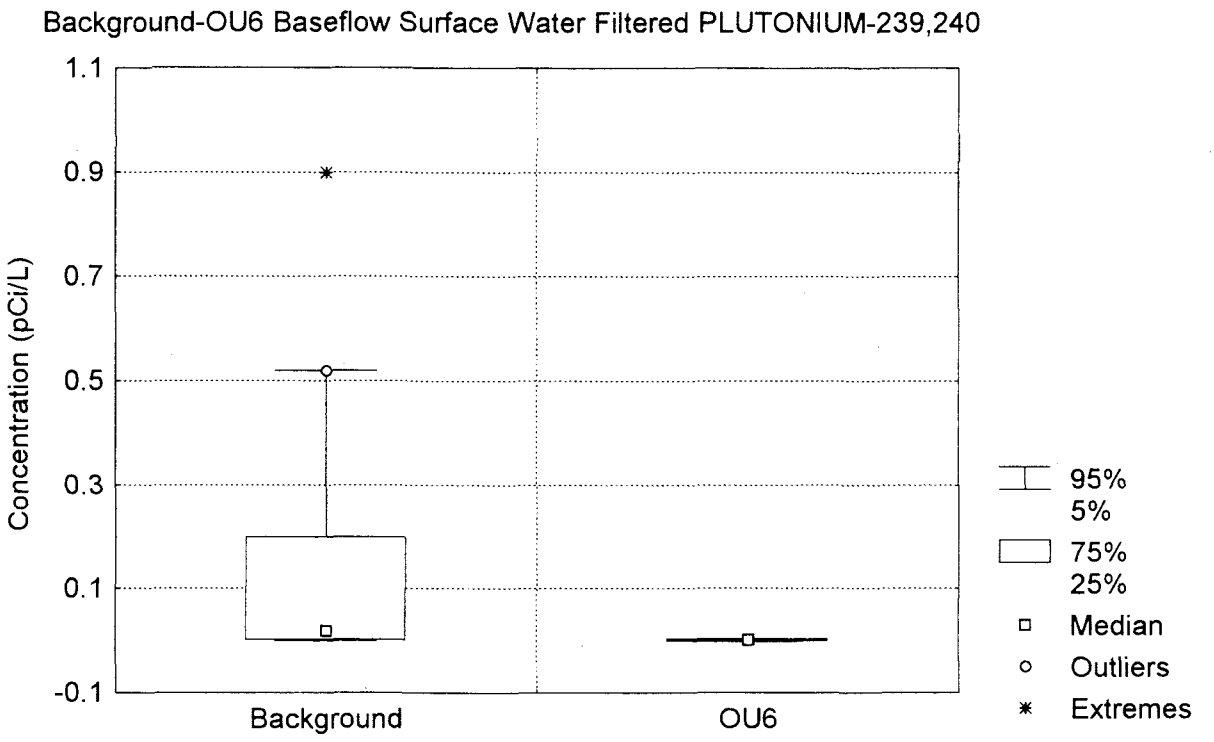

Background-OU6 Baseflow Surface Water Total TRITIUM
1000
600
200
-200
-600
-1000
Concentration (pCi/L)
8
Background
OU6
95%
5%
75%
25%
Median
Outliers
Extremes

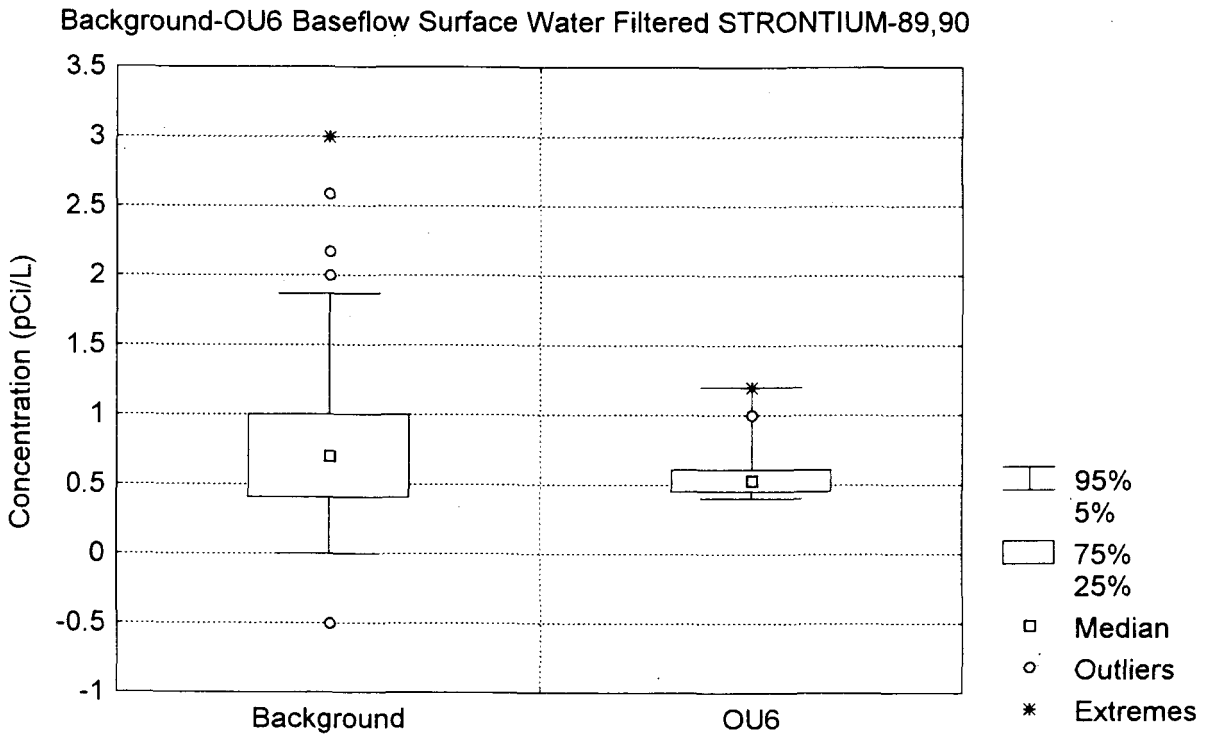

Background-OU6 Baseflow Surface Water Total URANIUM-233,234
Concentration (pCi/L)
5.5
4.5
3.5
2.5
1.5
0.5
-0.5
Background
OU6
95%
5%
75%
25%
Median
Outliers
Extremes

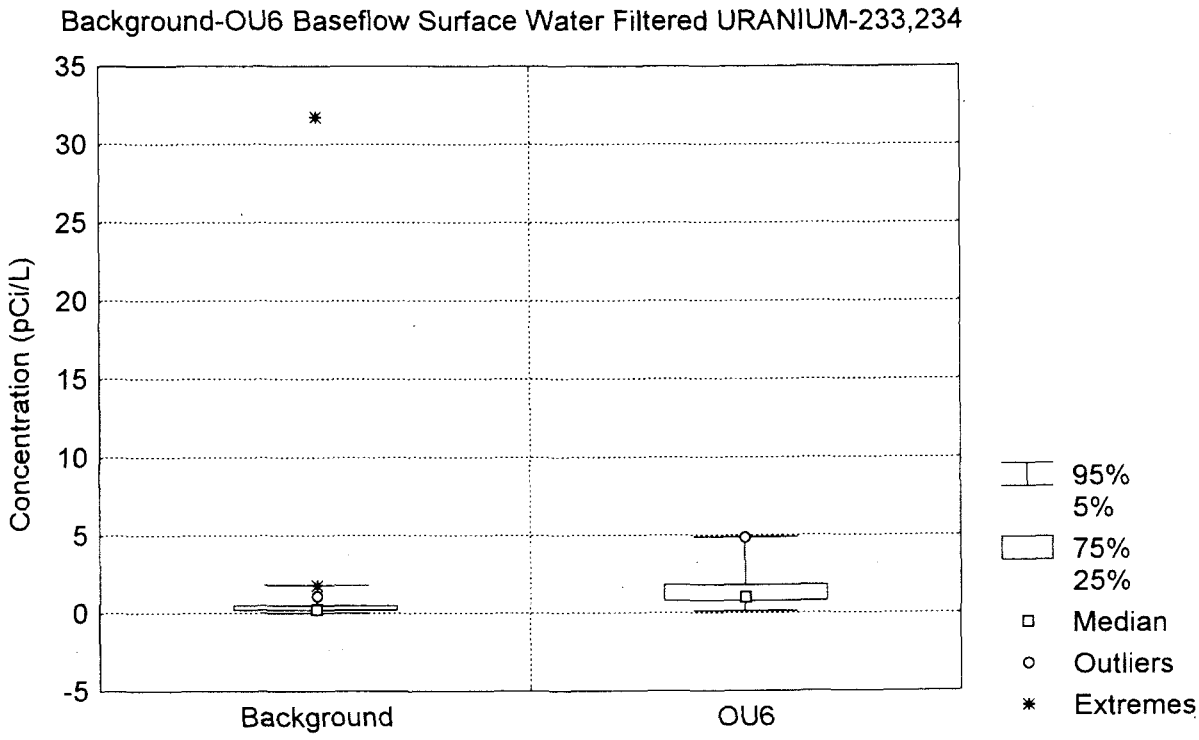

Background-OU6 Baseflow Surface Water Total URAINUM-235
Concentration (pCi/L)
0.5
0.4
0.3
0.2
0.1
0
-0.1
Background
OU6
95%
5%
75%
25%
Median
Outliers
Extremes

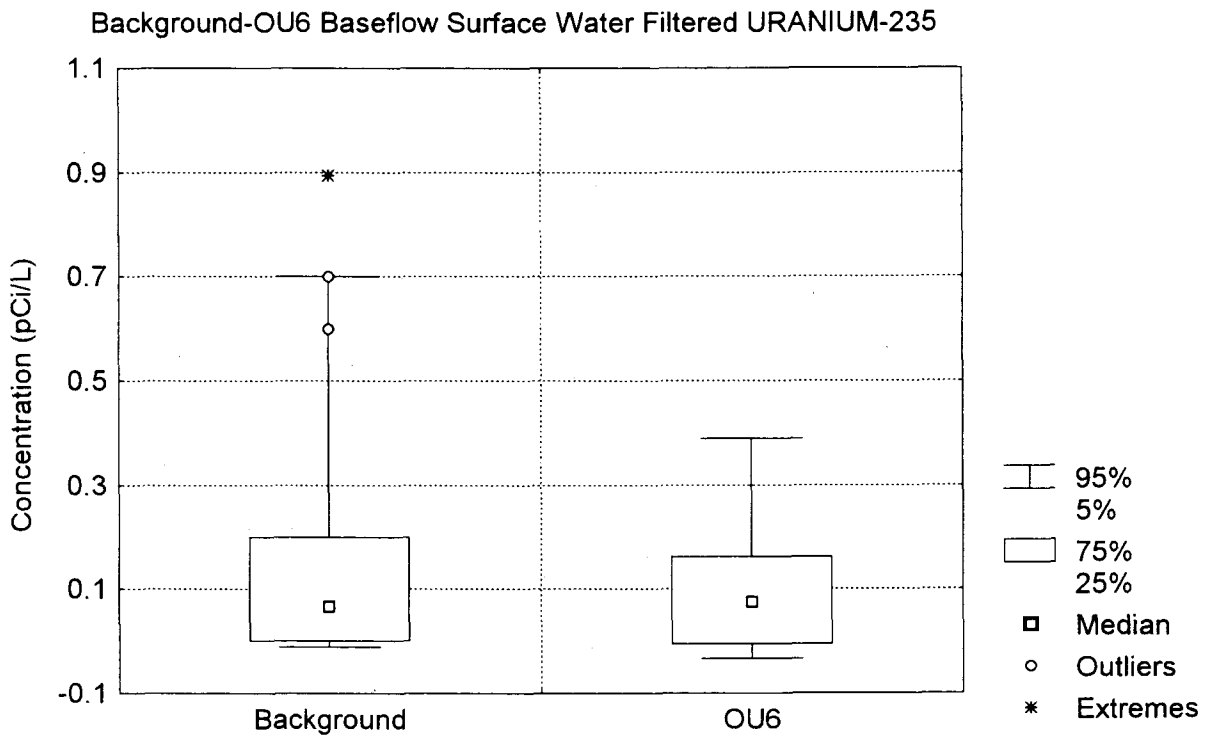

Background-OU6 Baseflow Surface Water Total URANIUM-238
Concentration (pCi/L)
5.5
4.5
3.5
2.5
1.5
0.5
-0.5
Background
OU6
95%
5%
75%
25%
Median
Outliers
Extremes

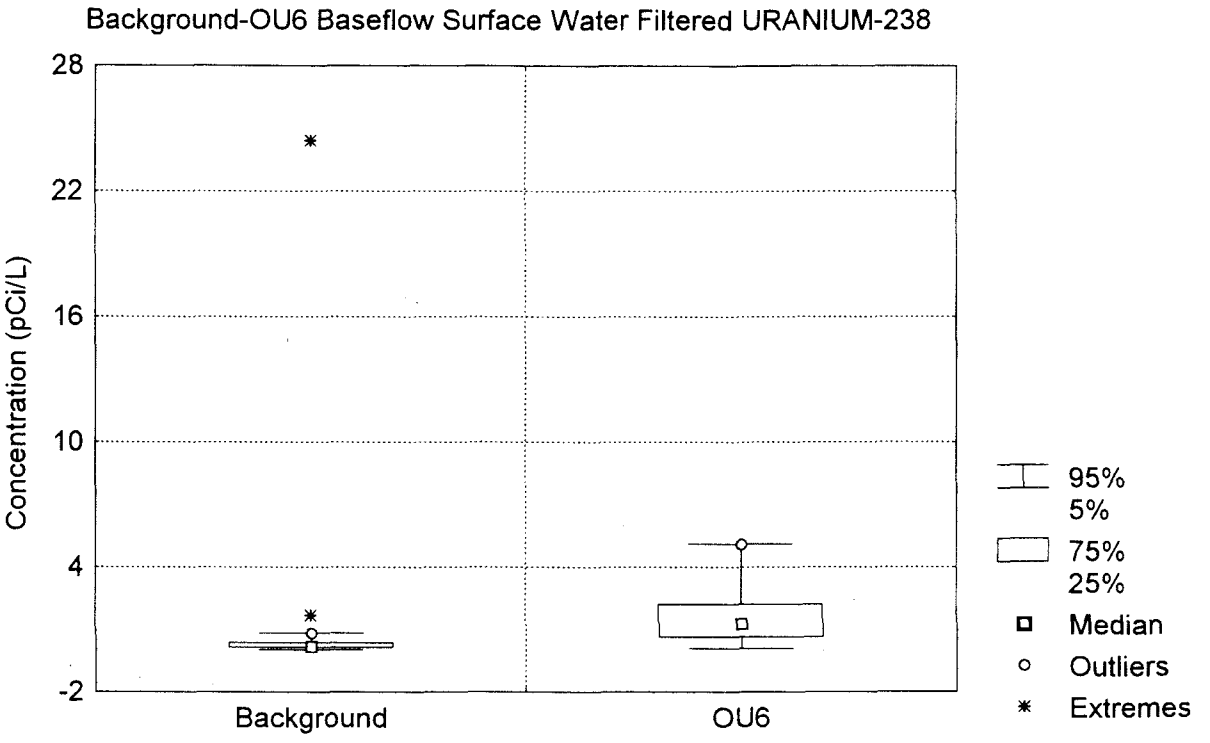

Background-OU6 Baseflow Surface Water Filtered AMERICIUM-241
Concentration (pCi/L)
0.55
0.45
0.35
0.25
0.15
0.05
-0.05
Background
OU6
95%
5%
75%
25%
Median
Outliers
Extremes

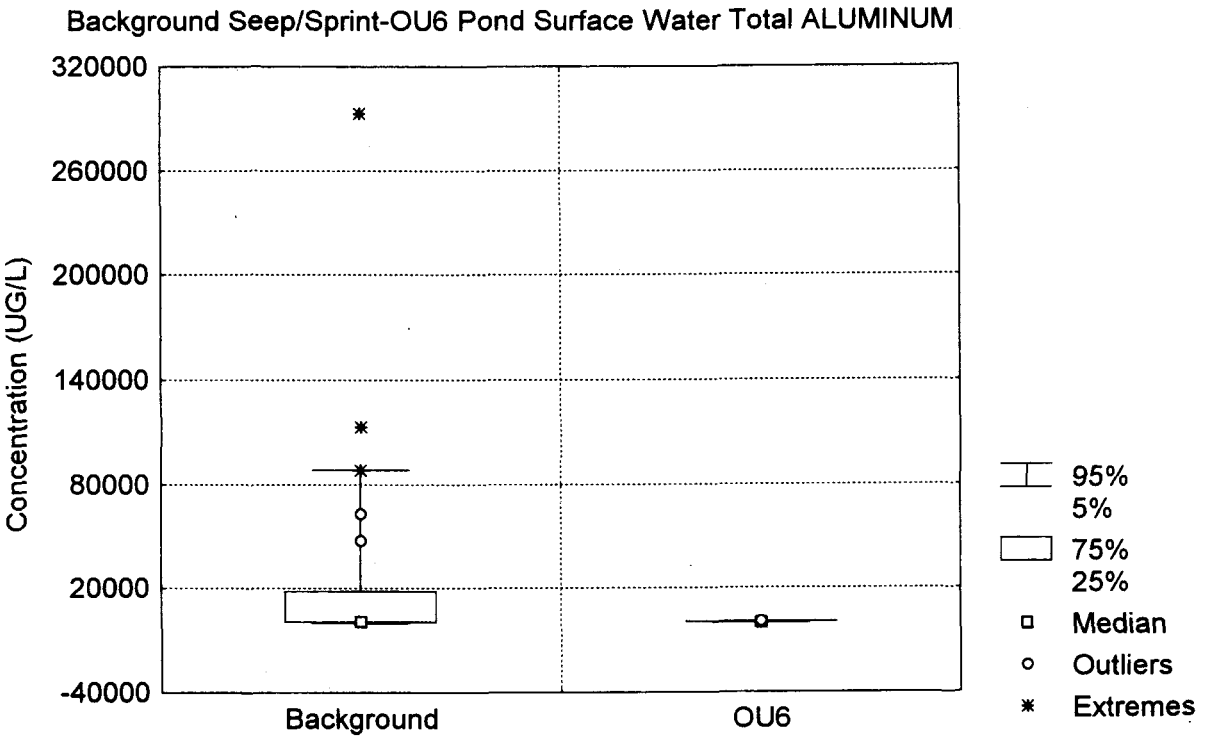

Background-OU6 Baseflow Surface Water Filtered PLUTONIUM-239,240
Concentration (pCi/L)
1.1
0.9
0.7
0.5
0.3
0.1
-0.1
Background
OU6
95%
5%
75%
25%
Median
Outliers
Extremes

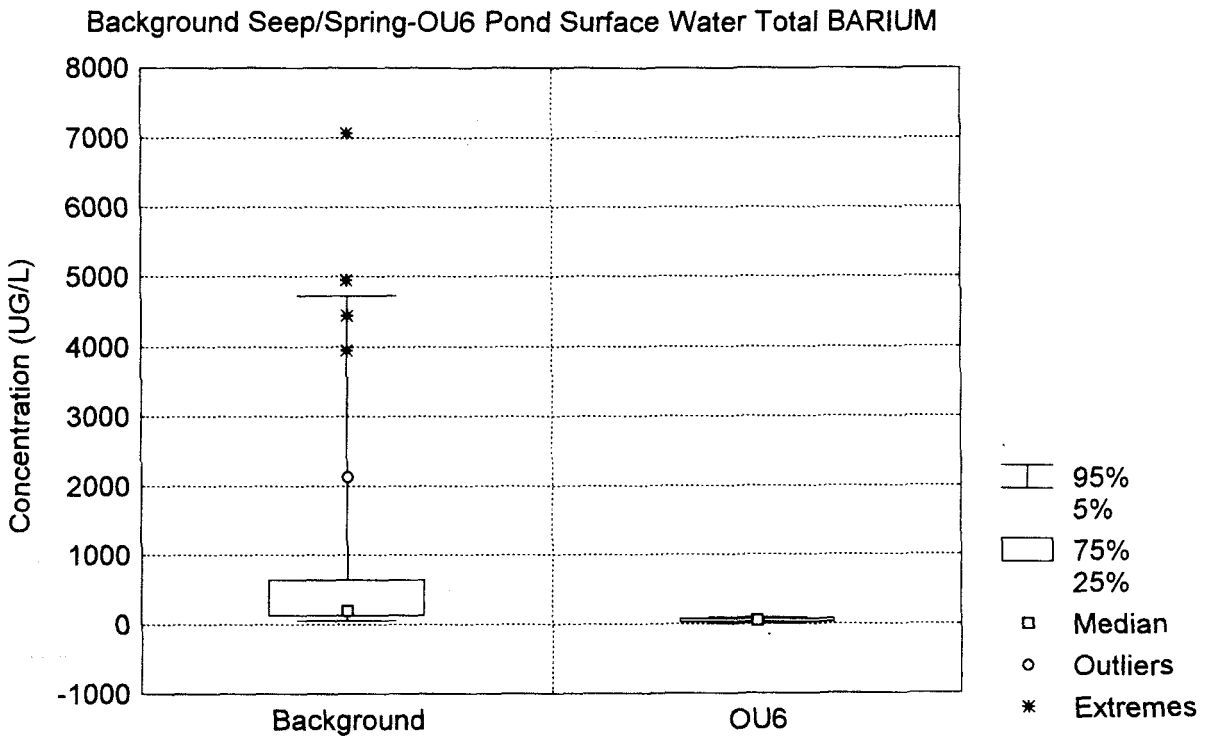

Background-OU6 Baseflow Surface Water Filtered STRONTIUM-89,90
Concentration (pCi/L)
3.5
3
2.5
2
1.5
1
0.5
0
-0.5
-1
Background
OU6
95%
5%
75%
25%
Median
Outliers
Extremes

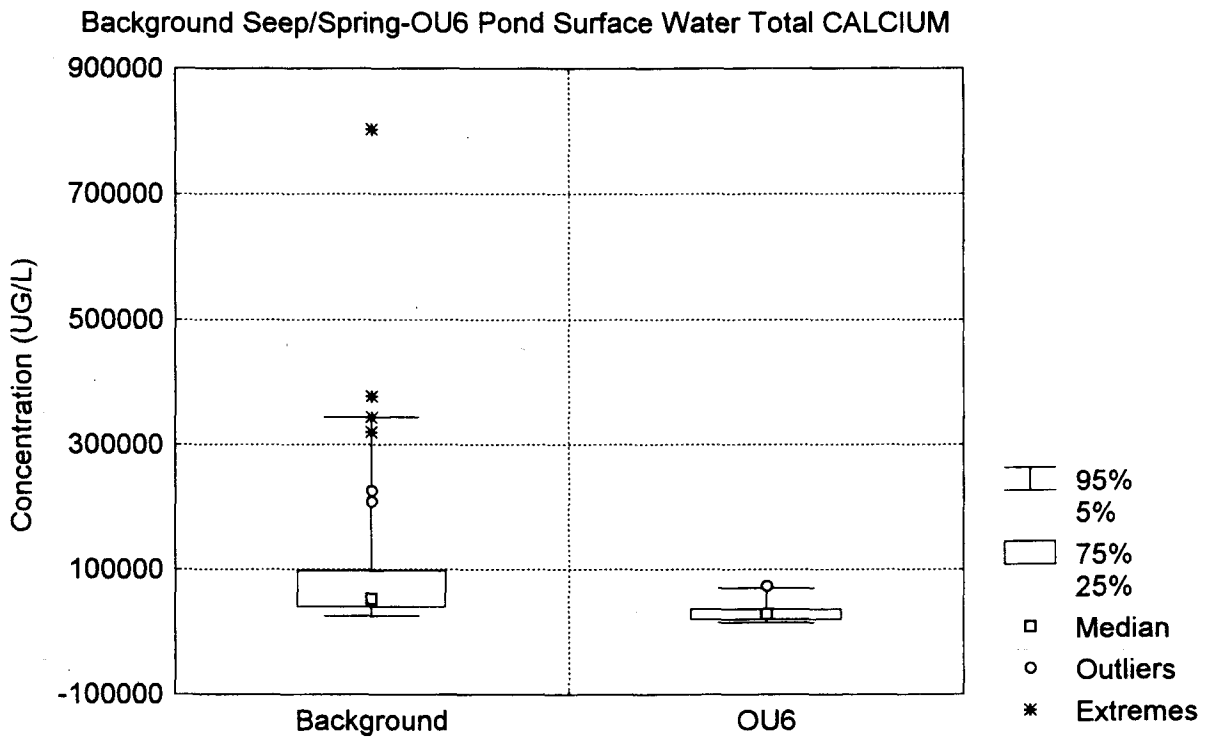

Background-OU6 Baseflow Surface Water Filtered URANIUM-233,234
Concentration (pCi/L)
35
30
25
20
15
10
5
0
-5
Background
OU6
95%
5%
75%
25%
Median
Outliers
Extremes

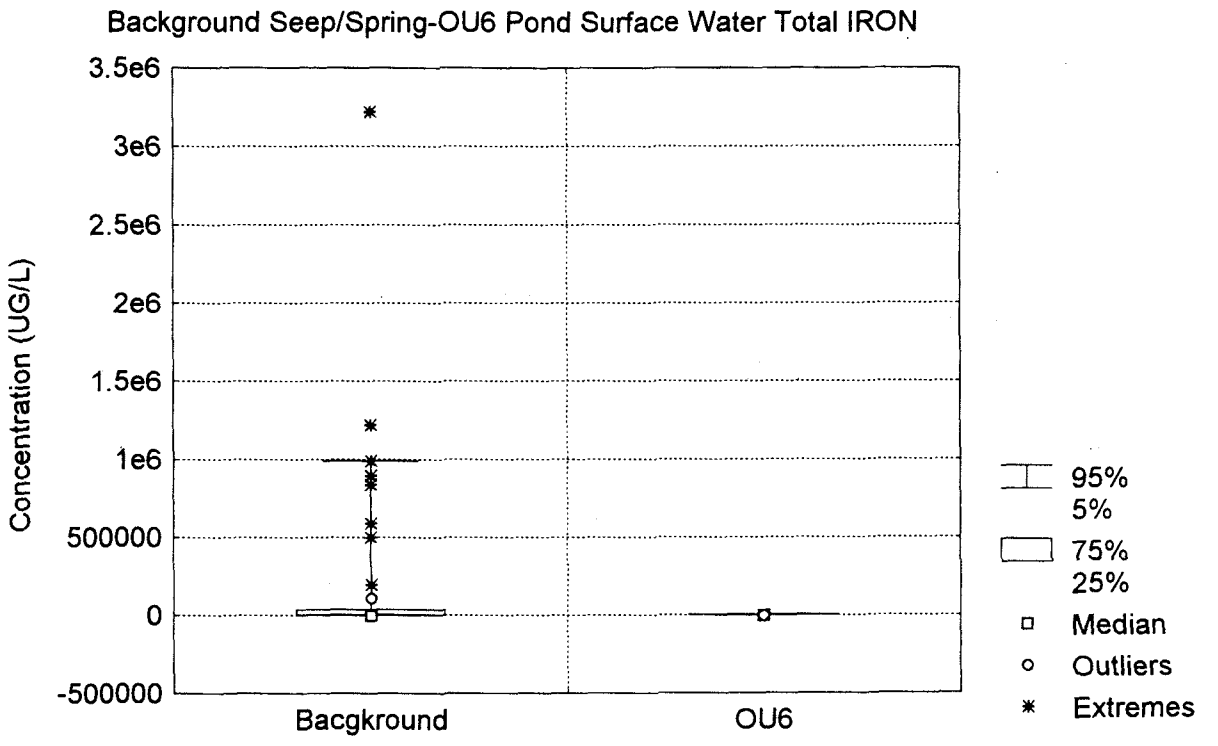

Background-OU6 Baseflow Surface Water Filtered URANIUM-235
Concentration (pCi/L)
1.1
0.9
0.7
0.5
0.3
0.1
-0.1
Background
OU6
95%
5%
75%
25%
Median
Outliers
Extremes

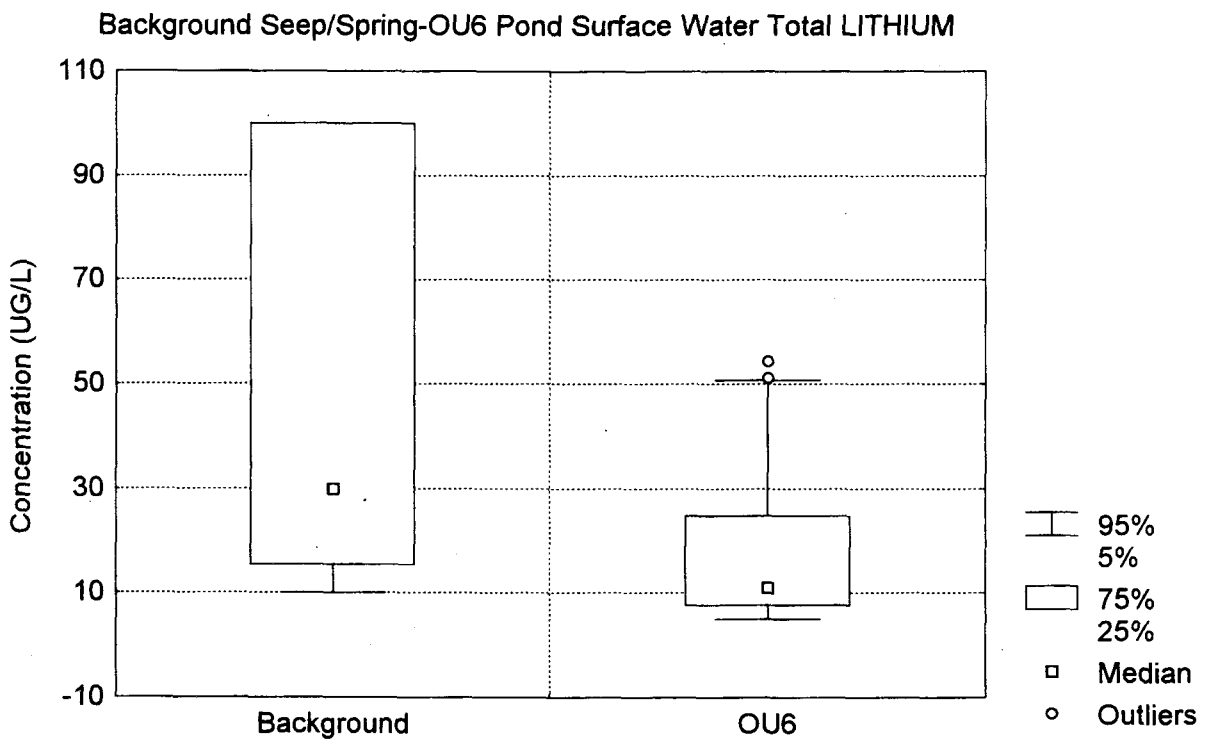

Background-OU6 Baseflow Surface Water Filtered URANIUM-238
Concentration (pCi/L)
28
22
16
10
4
-2
Background
OU6
95%
5%
75%
25%
Median
Outliers
Extremes

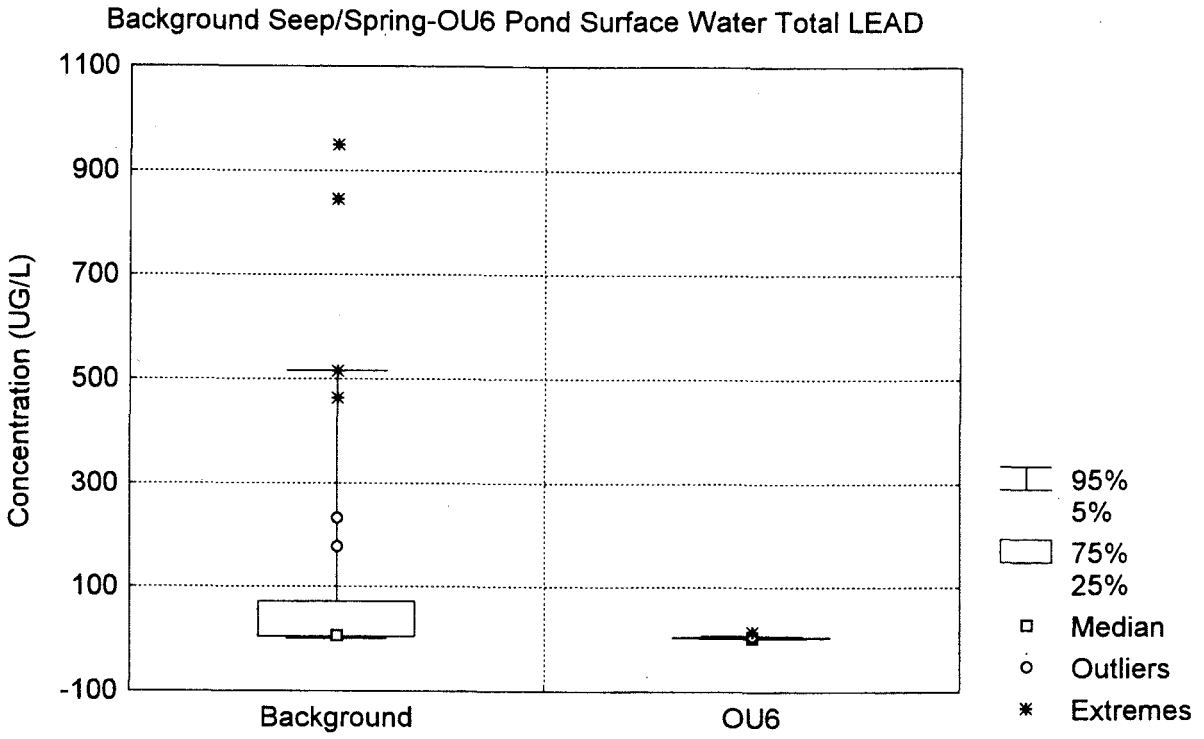

Background Seep/Sprint-OU6 Pond Surface Water Total ALUMINUM
Concentration (UG/L)
320000
260000
200000
140000
80000
20000
-40000
Background
OU6
95%
5%
75%
25%
Median
Outliers
Extremes

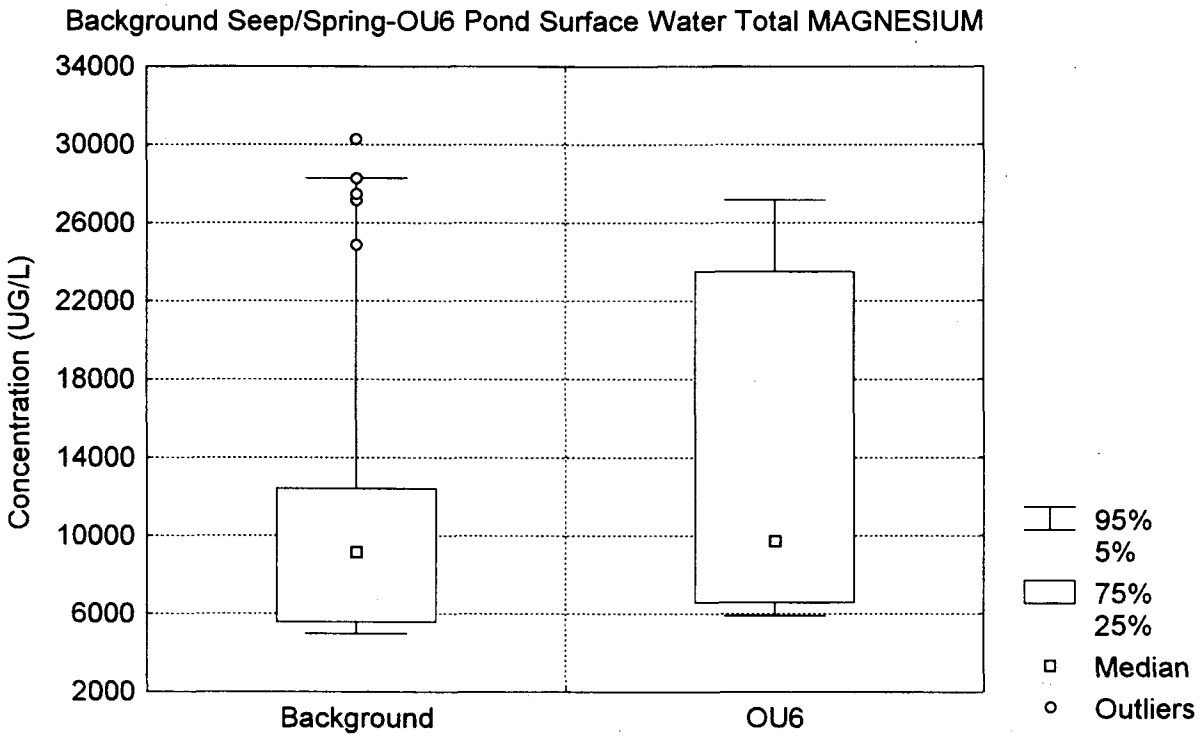

Background Seep/Spring-OU6 Pond Surface Water Total BARIUM
Concentration (UG/L)
8000
7000
6000
5000
4000
3000
2000
1000
0
-1000
Background
OU6
95%
5%
75%
25%
Median
Outliers
Extremes

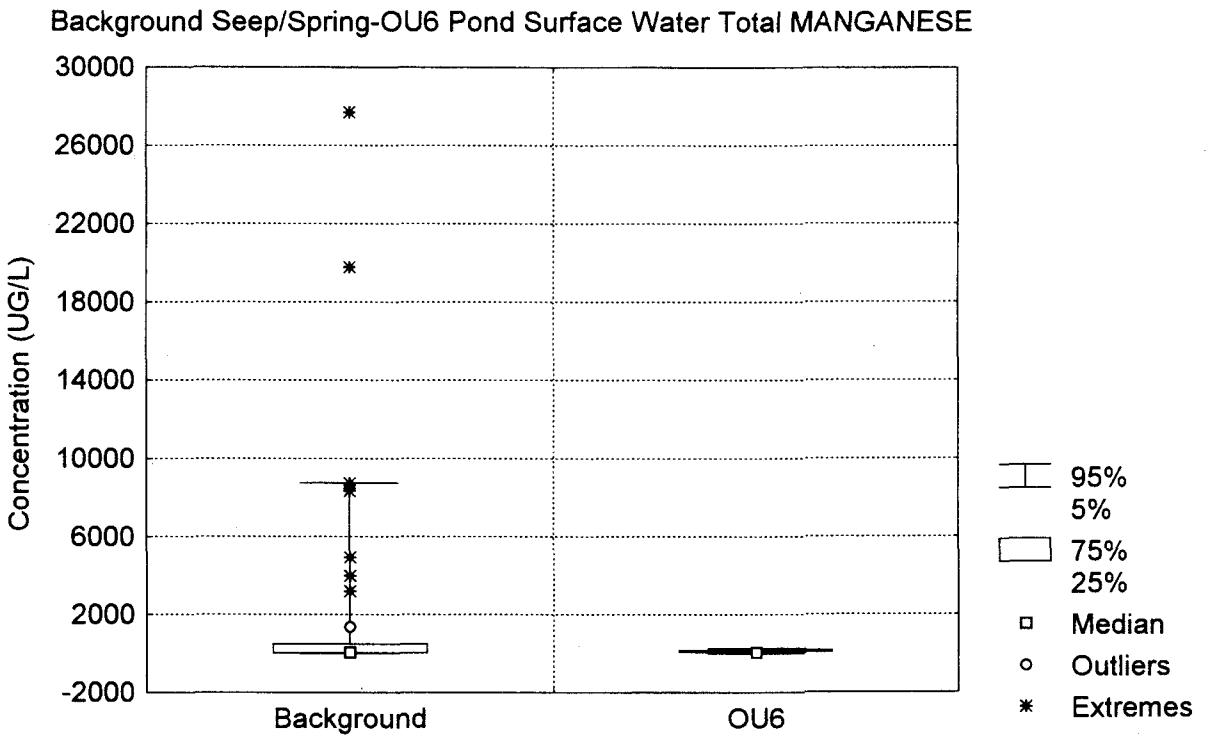

Background Seep/Spring-OU6 Pond Surface Water Total CALCIUM
900000
700000
500000
300000
100000
-100000
Concentration (UG/L)
Background
OU6
95%
5%
75%
25%
Median
Outliers
Extremes

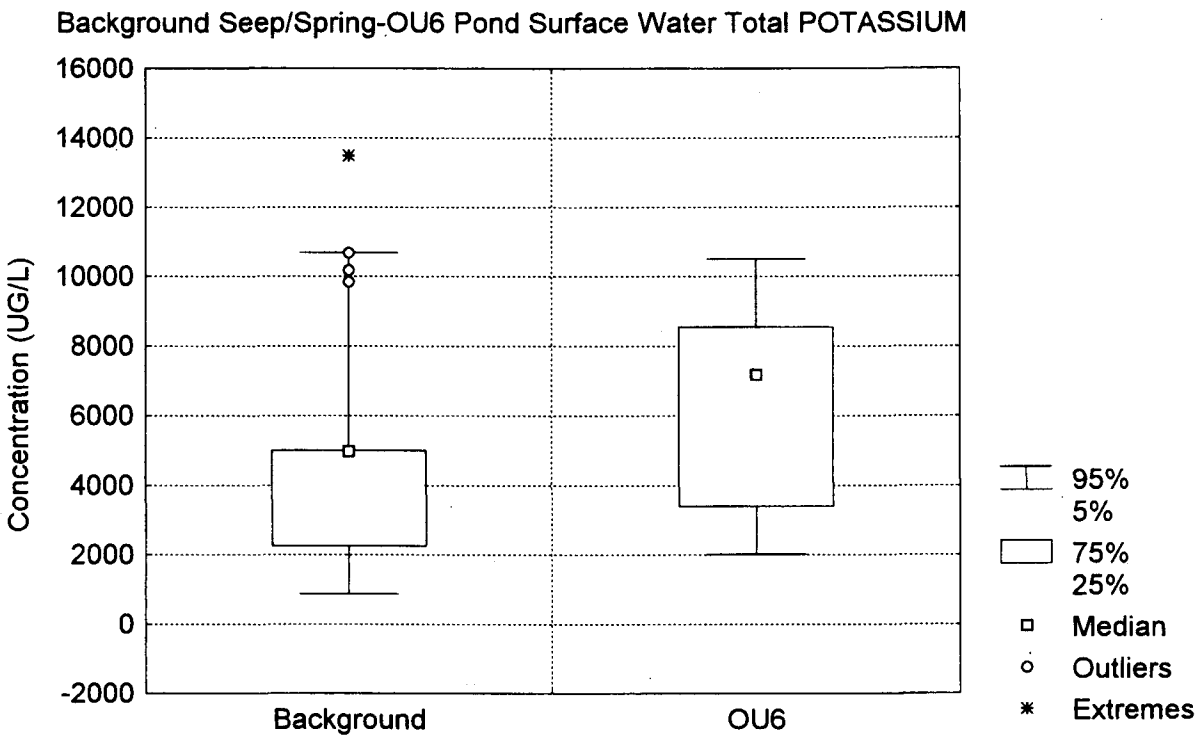

Background Seep/Spring-OU6 Pond Surface Water Total IRON
Concentration (UG/L)
3.5e6
3e6
2.5e6
2e6
1.5e6
1e6
500000
0
-500000
Bacgkround
OU6
95%
5%
75%
25%
Median
Outliers
Extremes

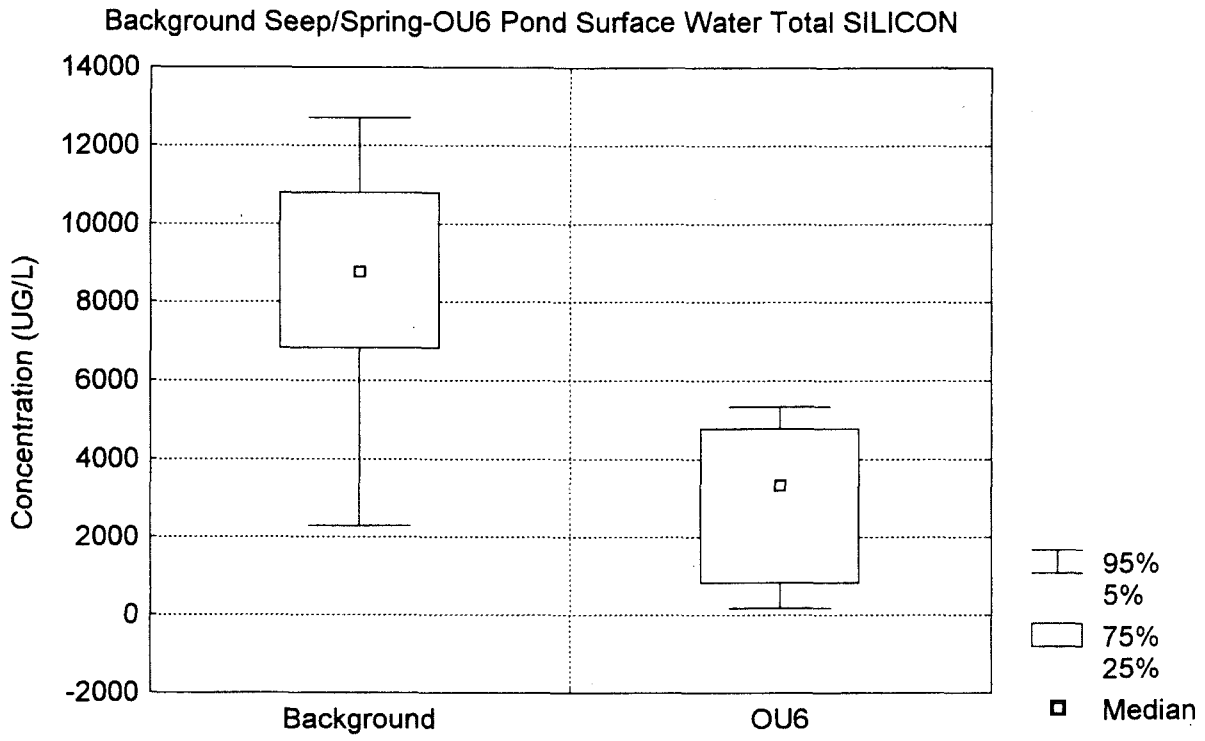

Background Seep/Spring-OU6 Pond Surface Water Total LITHIUM
Concentration (UG/L)
110
90
70
50
30
10
-10
Background
OU6
95%
5%
75%
25%
Median
Outliers

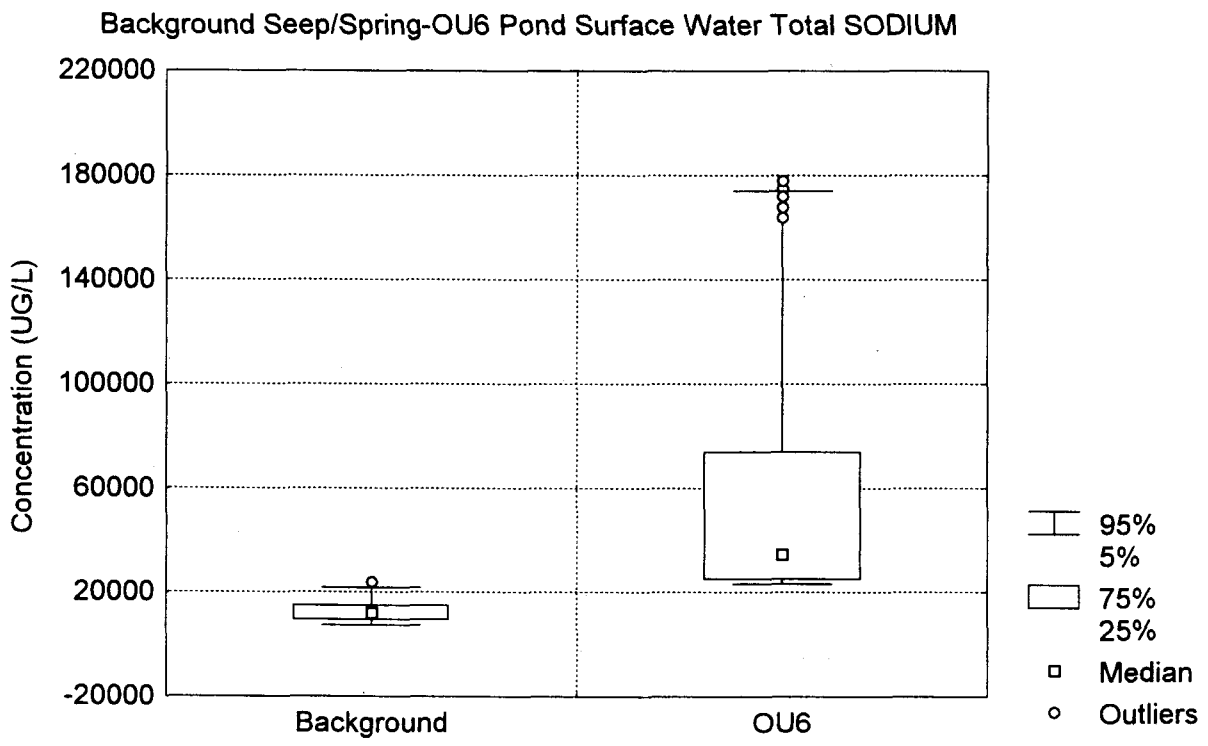

Background Seep/Spring-OU6 Pond Surface Water Total LEAD
Concentration (UG/L)
1100
900
700
500
300
100
-100
Background
OU6
95%
5%
75%
25%
Median
Outliers
Extremes

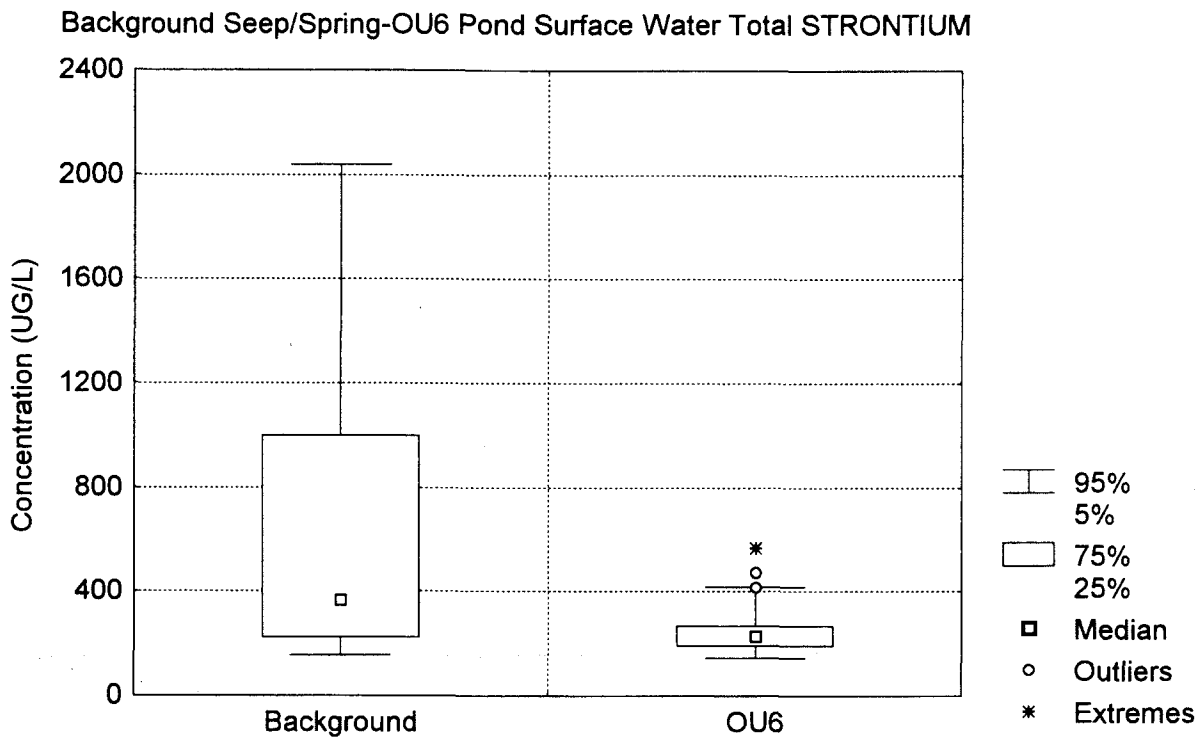

Background Seep/Spring-OU6 Pond Surface Water Total MAGNESIUM
Concentration (UG/L)
34000
30000
26000
22000
18000
14000
10000
6000
2000
Background
OU6
95%
5%
75%
25%
Median
Outliers

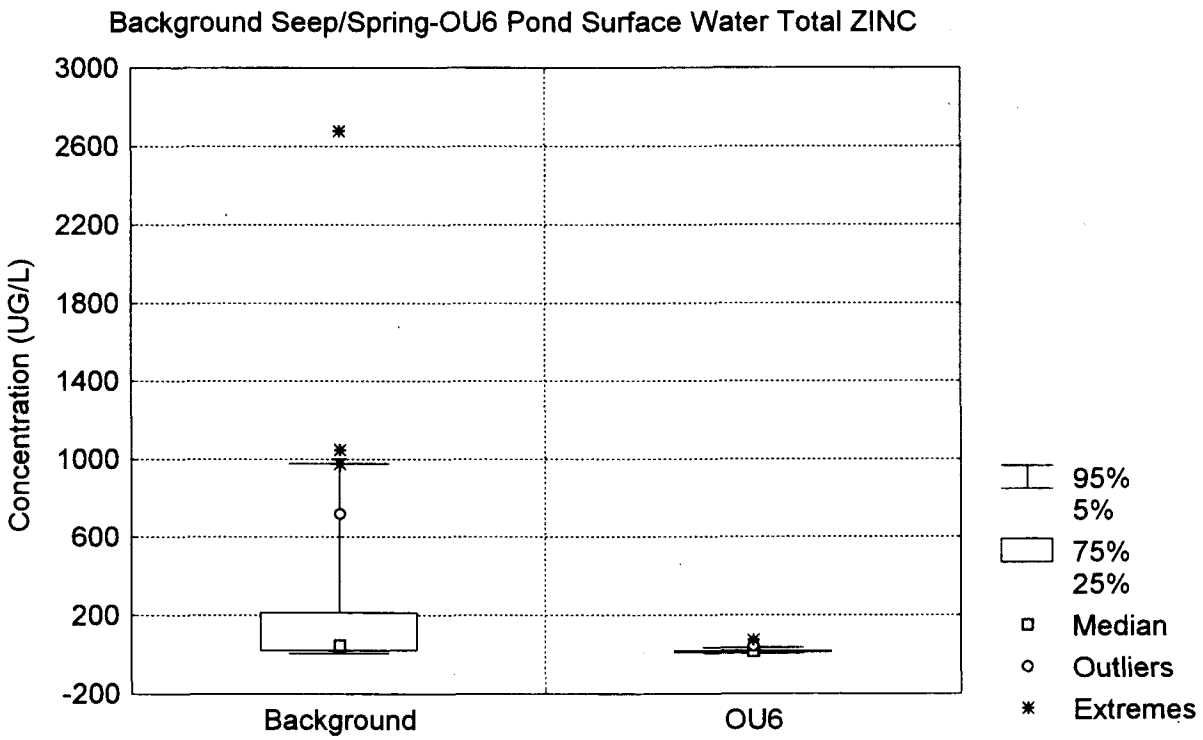

Background Seep/Spring-OU6 Pond Surface Water Total MANGANESE
Concentration (UG/L)
30000
26000
22000
18000
14000
10000
6000
2000
-2000
Background
OU6
95%
5%
75%
25%
Median
Outliers
Extremes

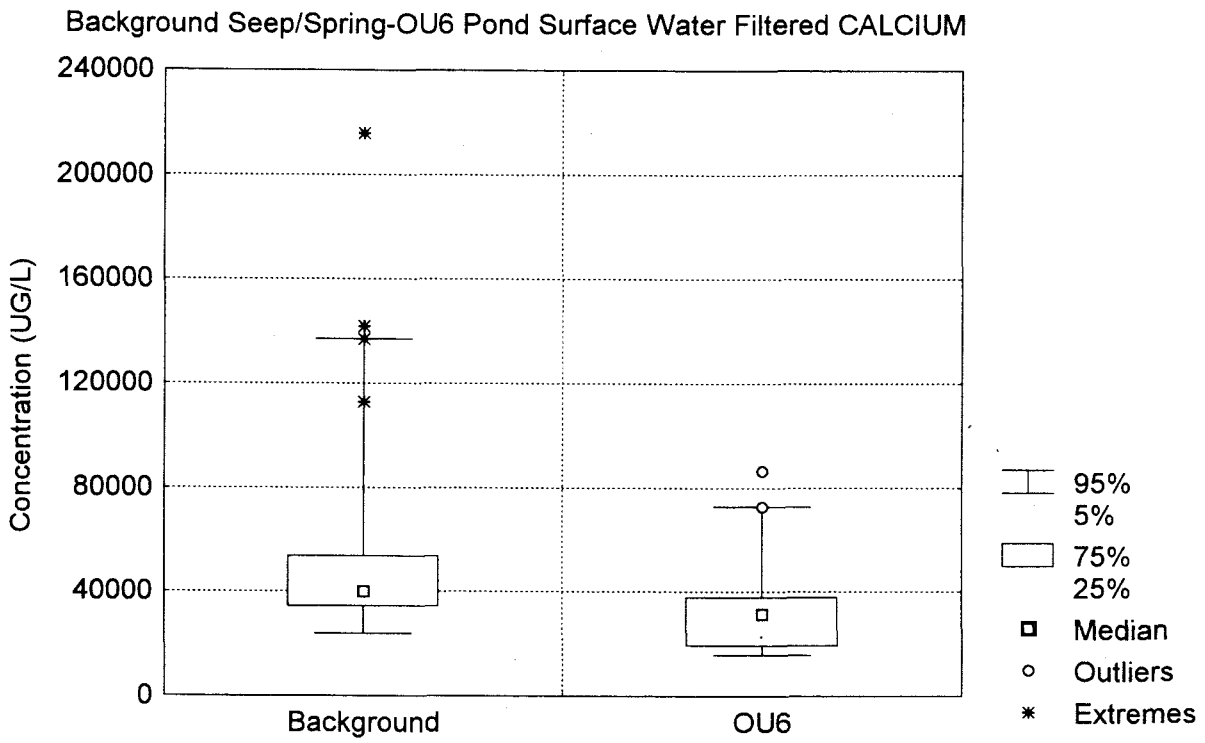

Background Seep/Spring-OU6 Pond Surface Water Total POTASSIUM
Concentration (UG/L)
16000
14000
12000
10000
8000
6000
4000
2000
0
-2000
Background
OU6
95%
5%
75%
25%
Median
Outliers
Extremes

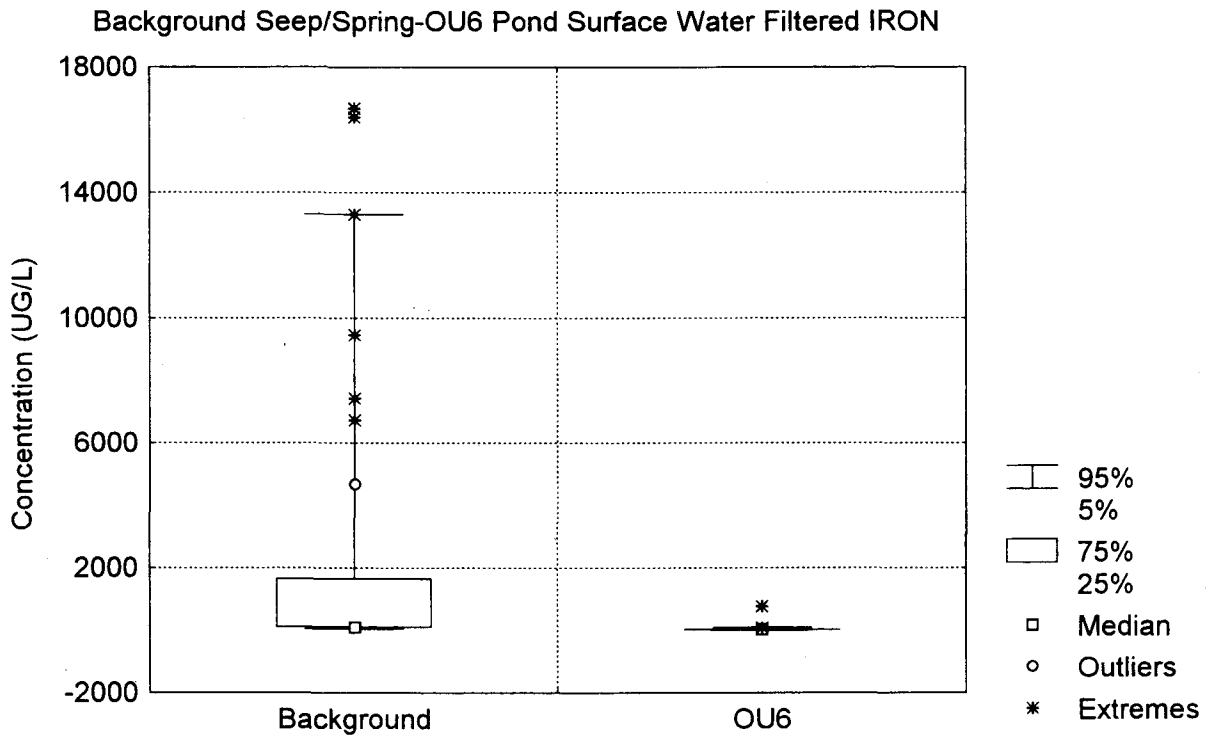

Background Seep/Spring-OU6 Pond Surface Water Total SILICON
Concentration (UG/L)
14000
12000
10000
8000
6000
4000
2000
0
-2000
Background
OU6
95%
5%
75%
25%
Median

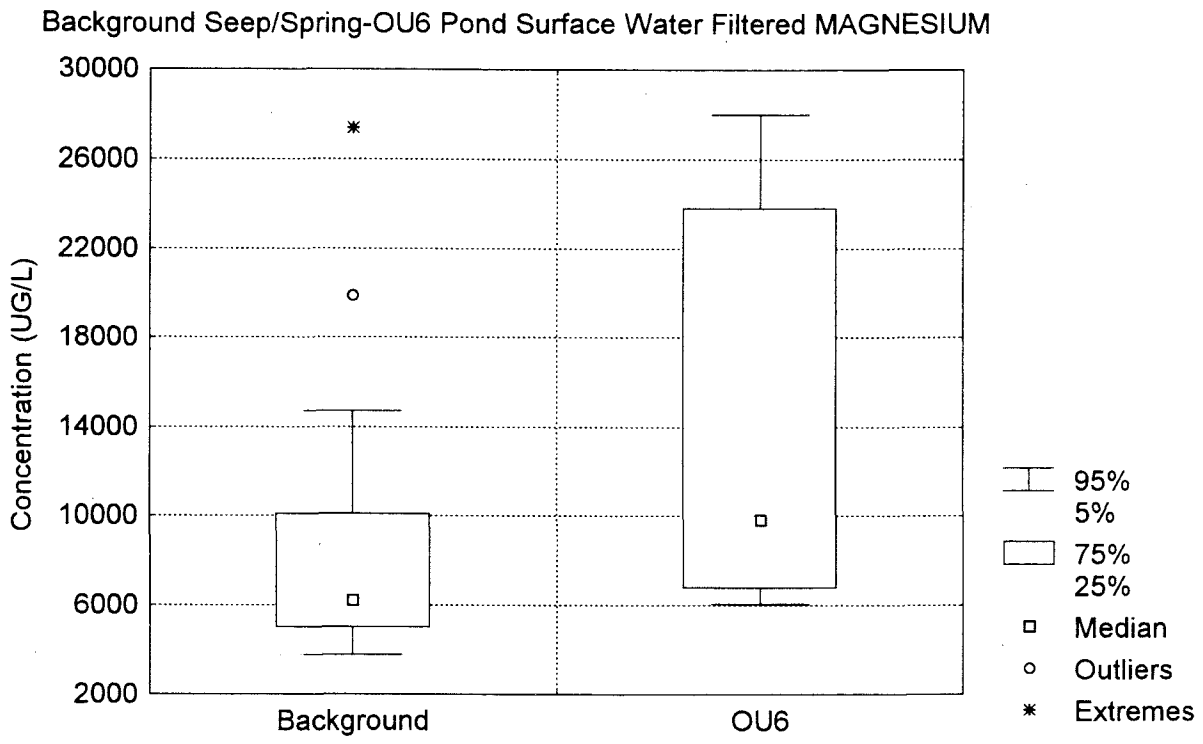

Background Seep/Spring-OU6 Pond Surface Water Total SODIUM
220000
180000
140000
100000
60000
20000
-20000
Concentration (UG/L)
Background
OU6
95%
5%
75%
25%
Median
Outliers

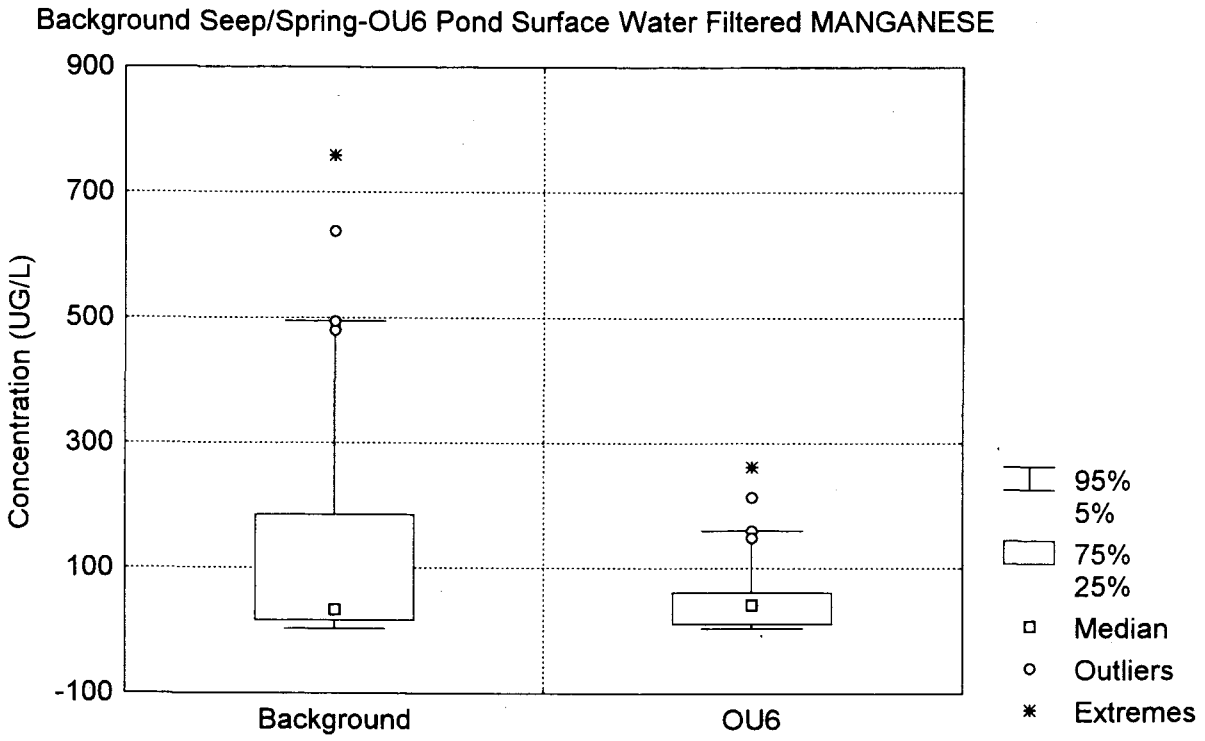

Background Seep/Spring-OU6 Pond Surface Water Total STRONTIUM
Concentration (UG/L)
2400
2000
1600
1200
800
400
0
Background
OU6
95%
5%
75%
25%
Median
Outliers
Extremes

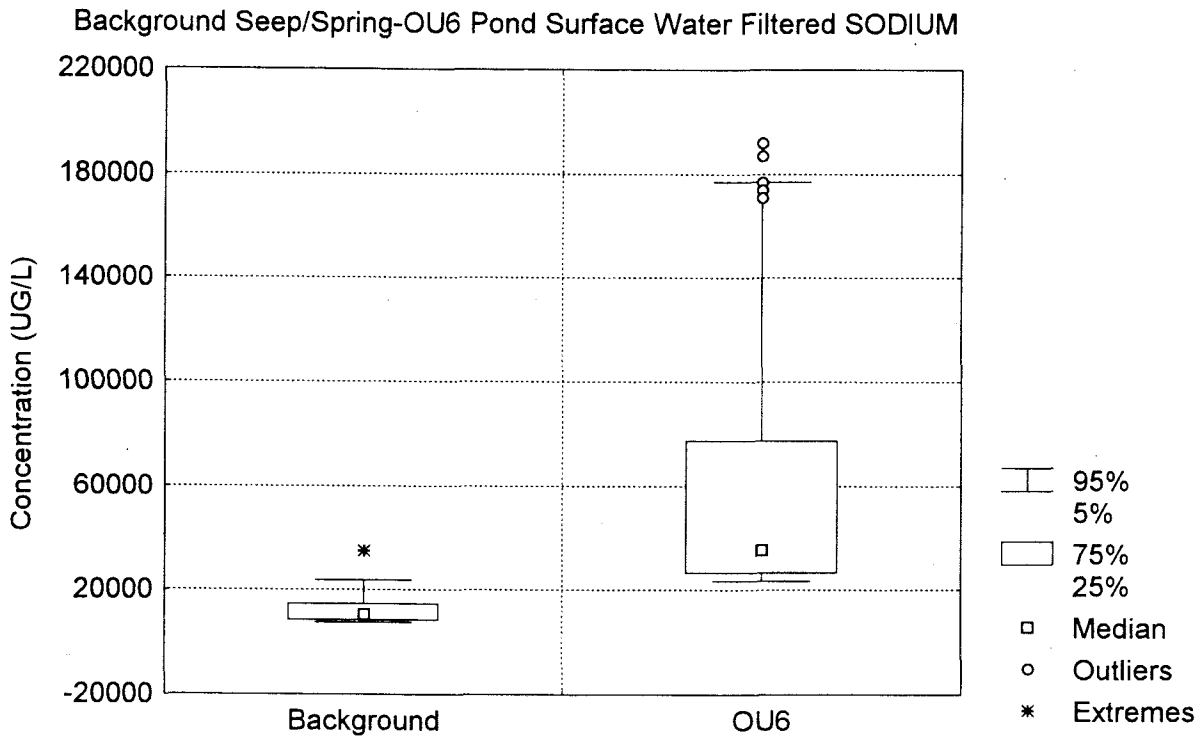

Background Seep/Spring-OU6 Pond Surface Water Total ZINC
Concentration (UG/L)
3000
2600
2200
1800
1400
1000
600
200
-200
Background
OU6
95%
5%
75%
25%
Median
Outliers
Extremes

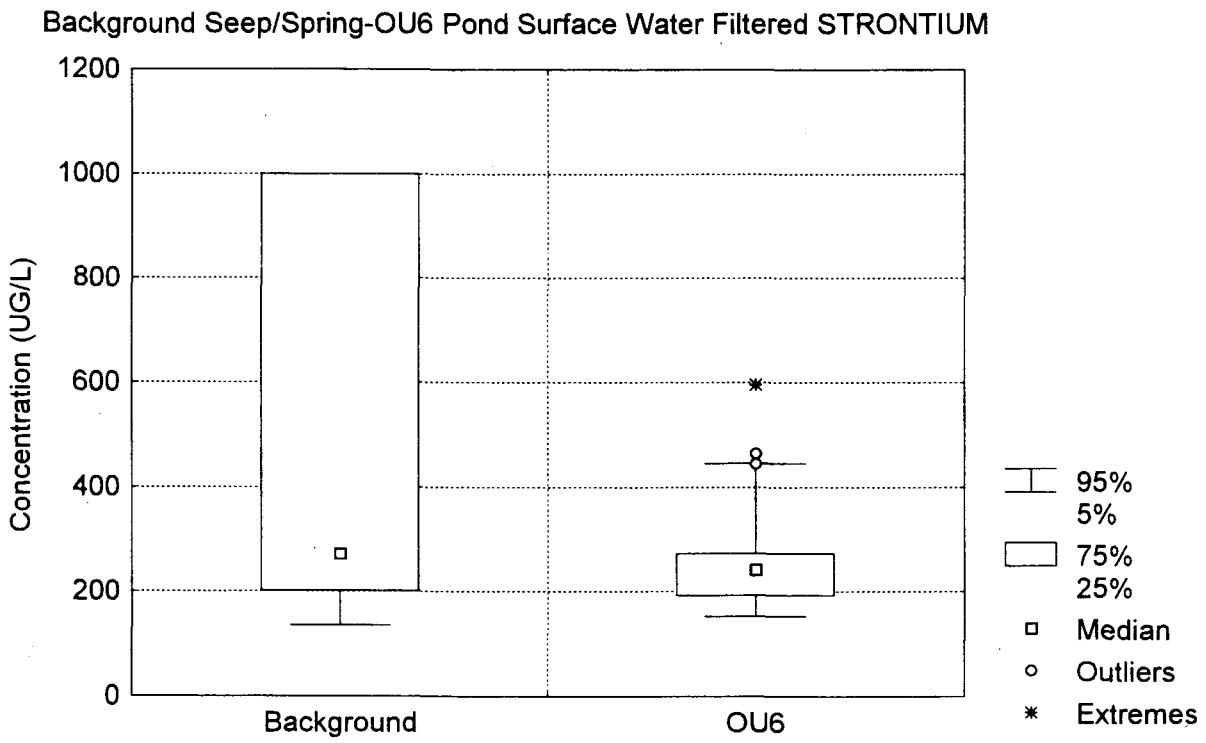

Background Seep/Spring-OU6 Pond Surface Water Filtered CALCIUM
Concentration (UG/L)
240000
200000
160000
120000
80000
40000
0
Background
OU6
95%
5%
75%
25%
Median
Outliers
Extremes

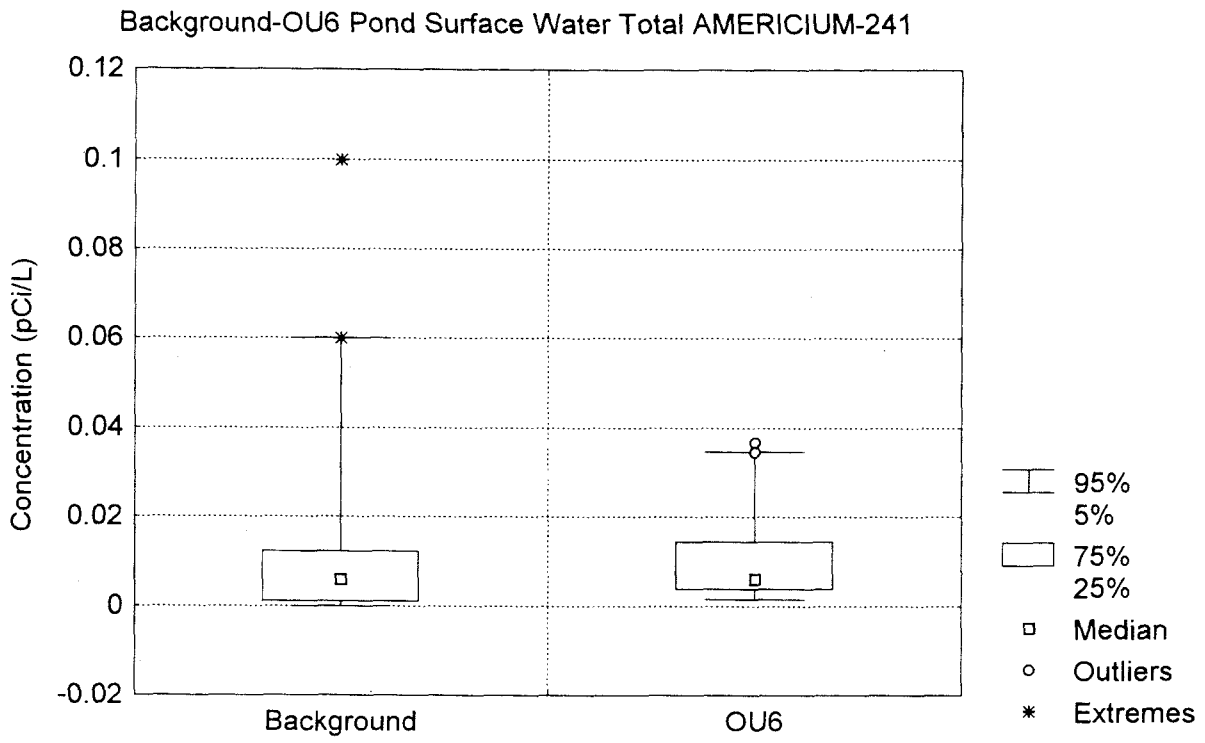

Background Seep/Spring-OU6 Pond Surface Water Filtered IRON
18000
14000
10000
6000
2000
-2000
Concentration (UG/L)
Background
OU6
95%
5%
75%
25%
Median
Outliers
Extremes

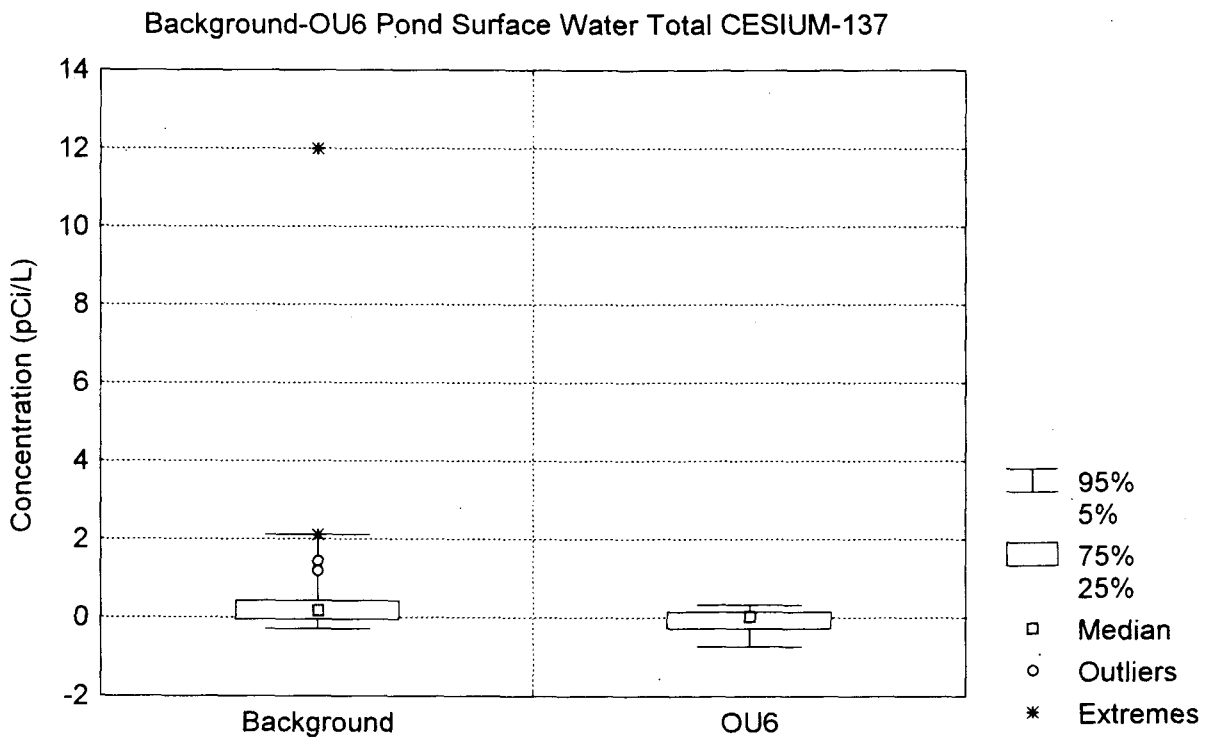

Background Seep/Spring-OU6 Pond Surface Water Filtered MAGNESIUM
Concentration (UG/L)
30000
26000
22000
18000
14000
10000
6000
2000
Background
OU6
95%
5%
75%
25%
Median
Outliers
Extremes

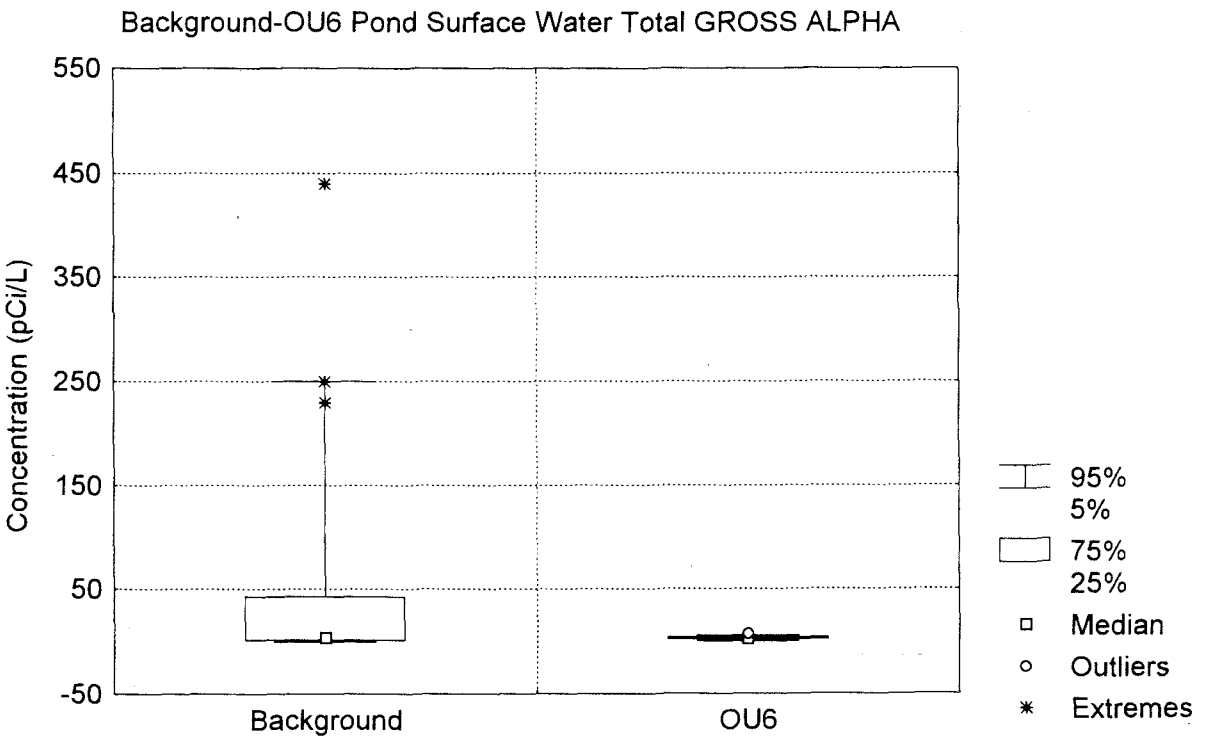

Background Seep/Spring-OU6 Pond Surface Water Filtered MANGANESE
Concentration (UG/L)
900
700
500
300
100
-100
Background
OU6
95%
5%
75%
25%
Median
Outliers
Extremes

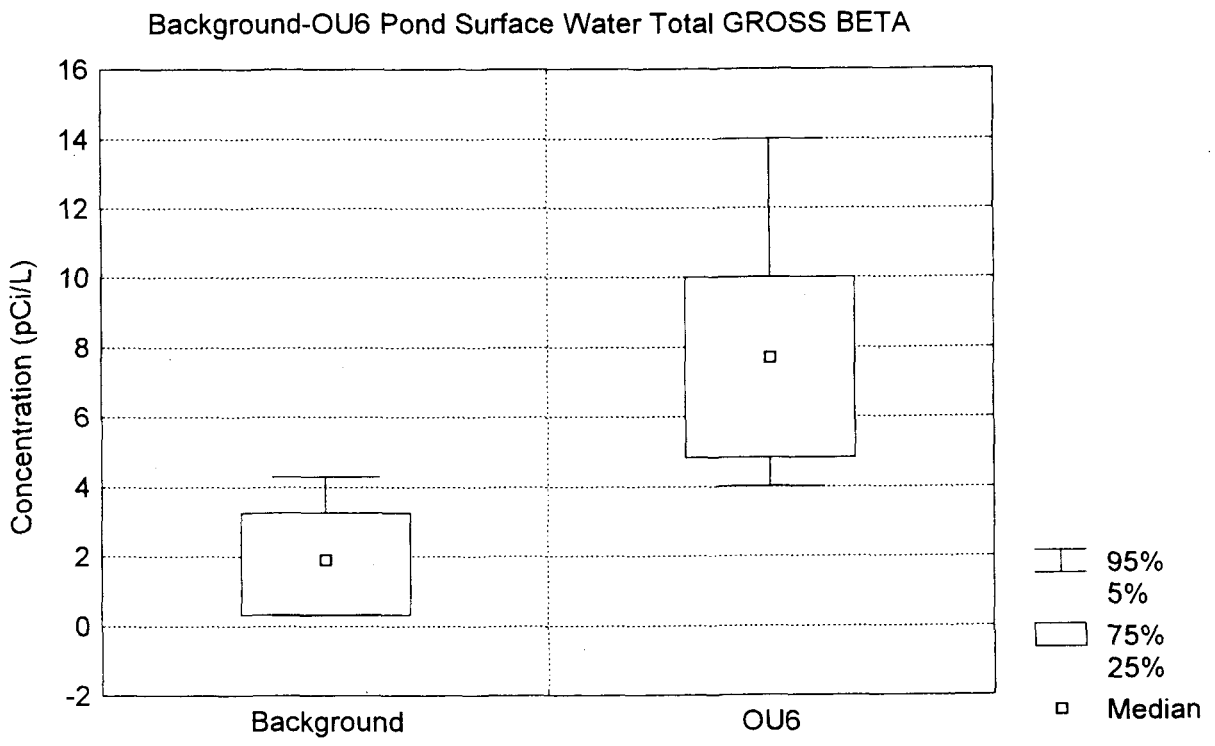

Background Seep/Spring-OU6 Pond Surface Water Filtered SODIUM
Concentration (UG/L)
220000
180000
140000
100000
60000
20000
-20000
Background
OU6
95%
5%
75%
25%
Median
Outliers
Extremes

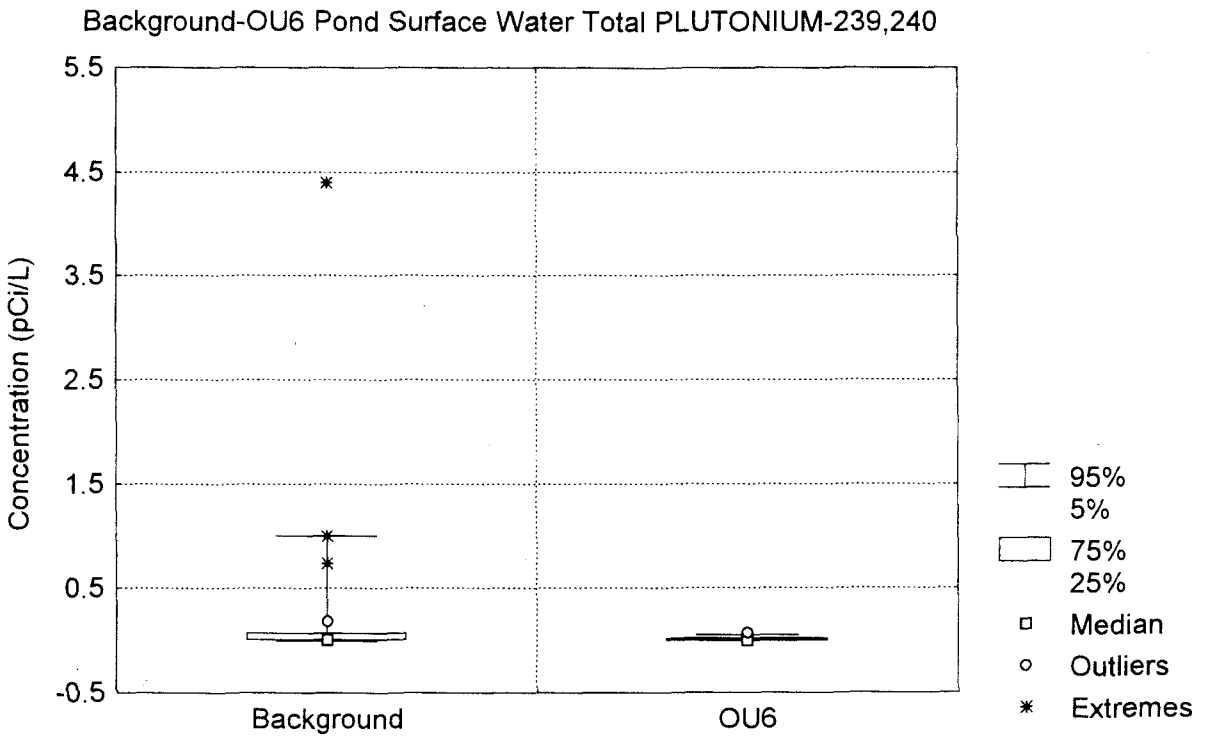

Background Seep/Spring-OU6 Pond Surface Water Filtered STRONTIUM
Concentration (UG/L)
1200
1000
800
600
400
200
0
Background
OU6
95%
5%
75%
25%
Median
Outliers
Extremes

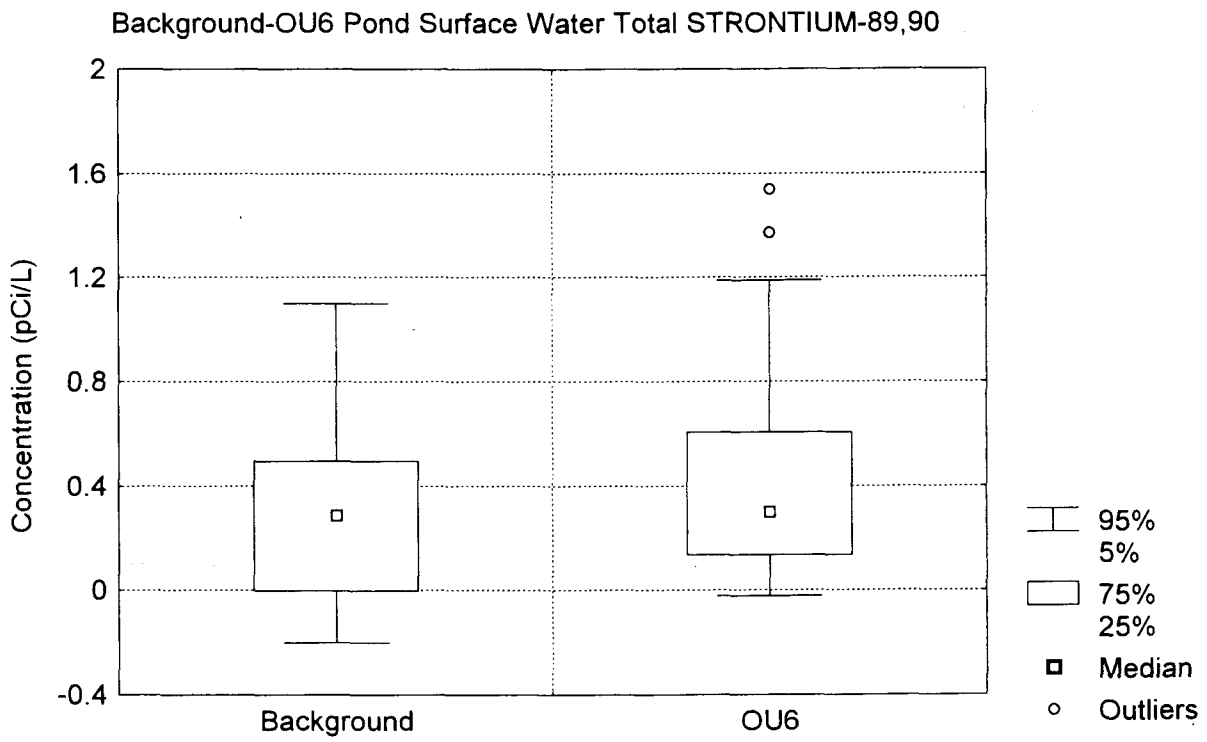

Background-OU6 Pond Surface Water Total AMERICIUM-241
Concentration (pCi/L)
0.12
0.1
0.08
0.06
0.04
0.02
0
-0.02
Background
OU6
95%
5%
75%
25%
Median
Outliers
Extremes

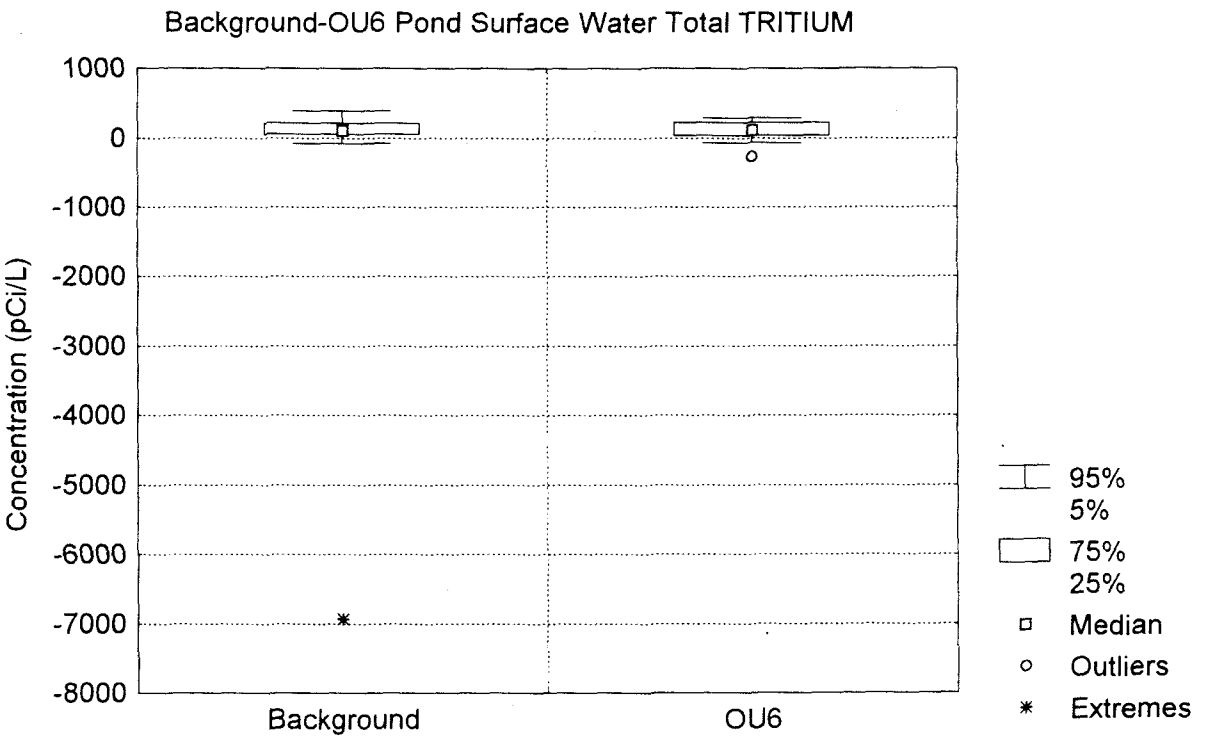

Background-OU6 Pond Surface Water Total CESIUM-137
Concentration (pCi/L)
14
12
10
8
6
4
2
0
-2
Background
OU6
95%
5%
75%
25%
Median
Outliers
Extremes

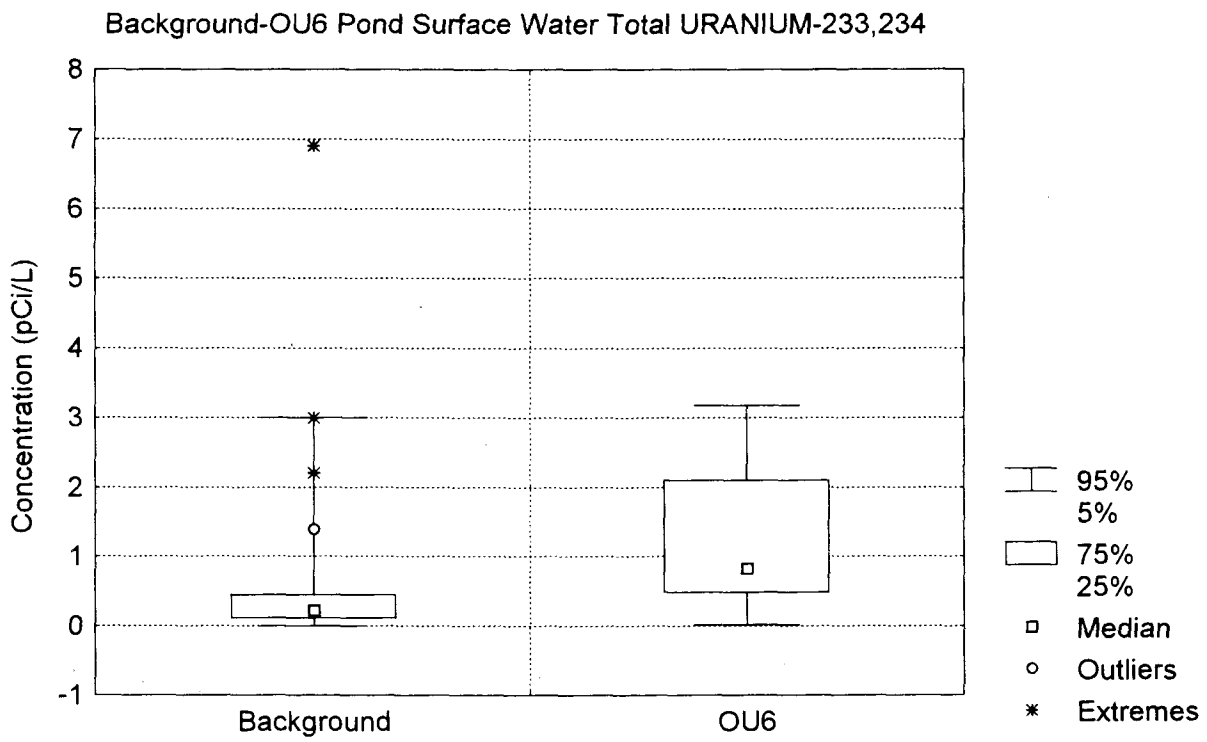

Background-OU6 Pond Surface Water Total GROSS ALPHA
550
450
350
250
150
50
-50
Concentration (pCi/L)
Background
OU6
95%
5%
75%
25%
Median
Outliers
Extremes

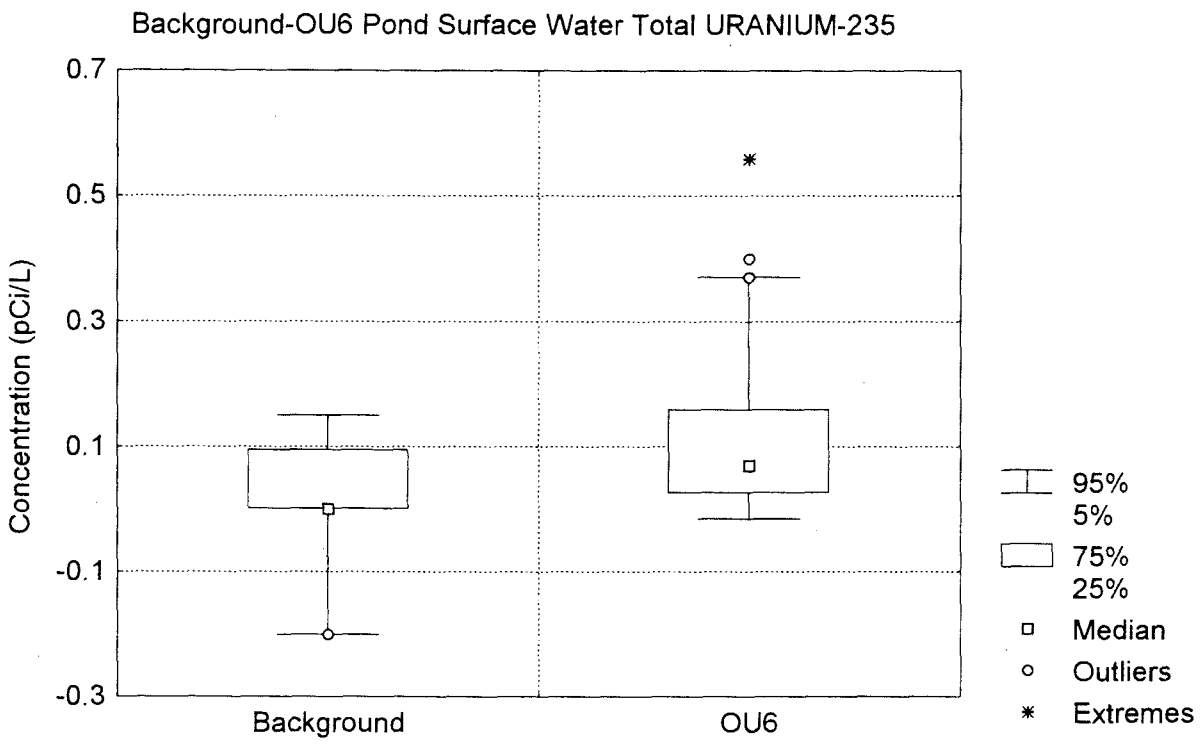

Background-OU6 Pond Surface Water Total GROSS BETA
Concentration (pCi/L)
16
14
12
10
8
6
4
2
0
-2
Background
OU6
95%
5%
75%
25%
Median

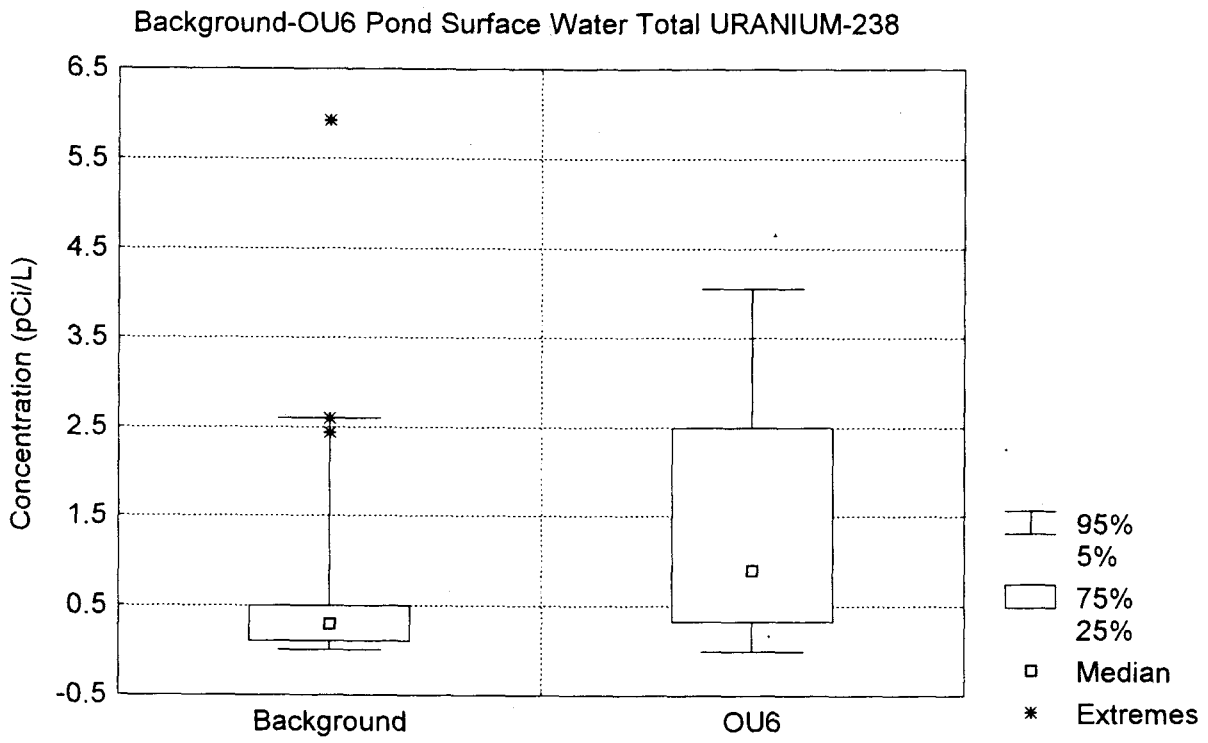

Background-OU6 Pond Surface Water Total PLUTONIUM-239,240
Concentration (pCi/L)
5.5
4.5
3.5
2.5
1.5
0.5
-0.5
Background
OU6
95%
5%
75%
25%
Median
Outliers
Extremes

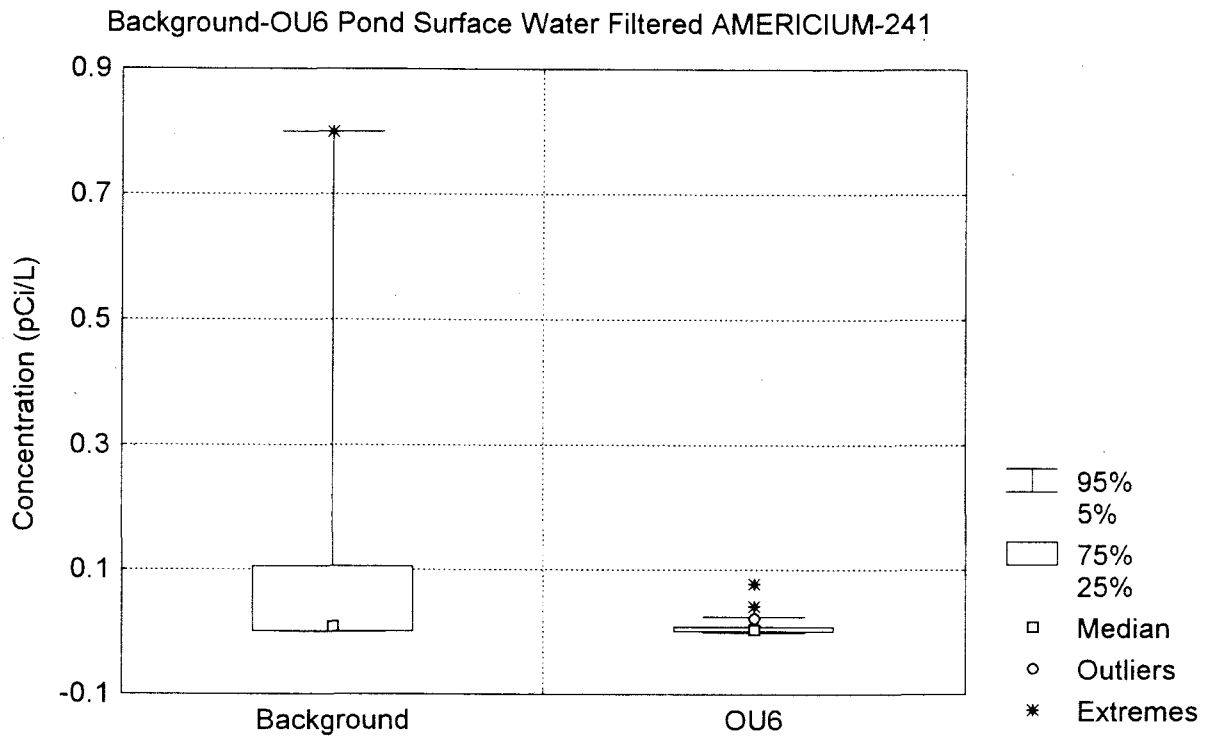

Background-OU6 Pond Surface Water Total STRONTIUM-89,90
Concentration (pCi/L)
2
1.6
1.2
0.8
0.4
0
-0.4
Background
OU6
95%
5%
75%
25%
Median
Outliers

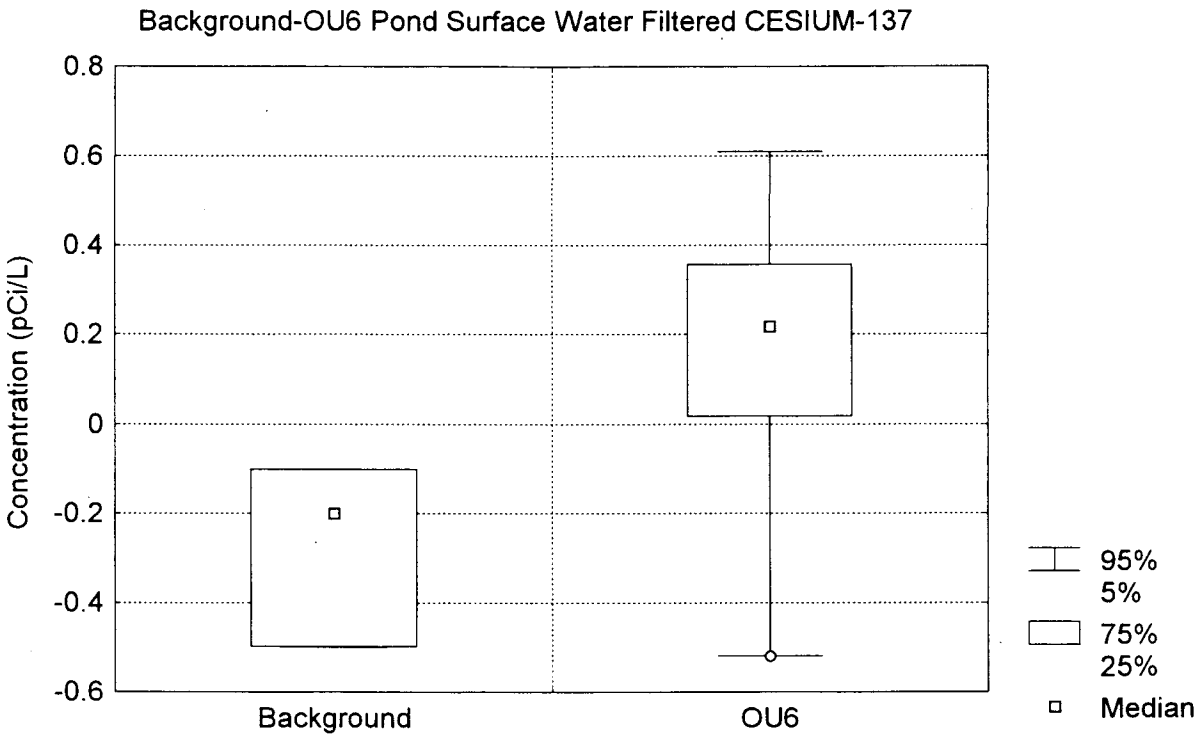

Background-OU6 Pond Surface Water Total TRITIUM
1000
0
-1000
-2000
-3000
-4000
-5000
-6000
-7000
-8000
Concentration (pCi/L)
Background
OU6
95%
5%
75%
25%
Median
Outliers
Extremes

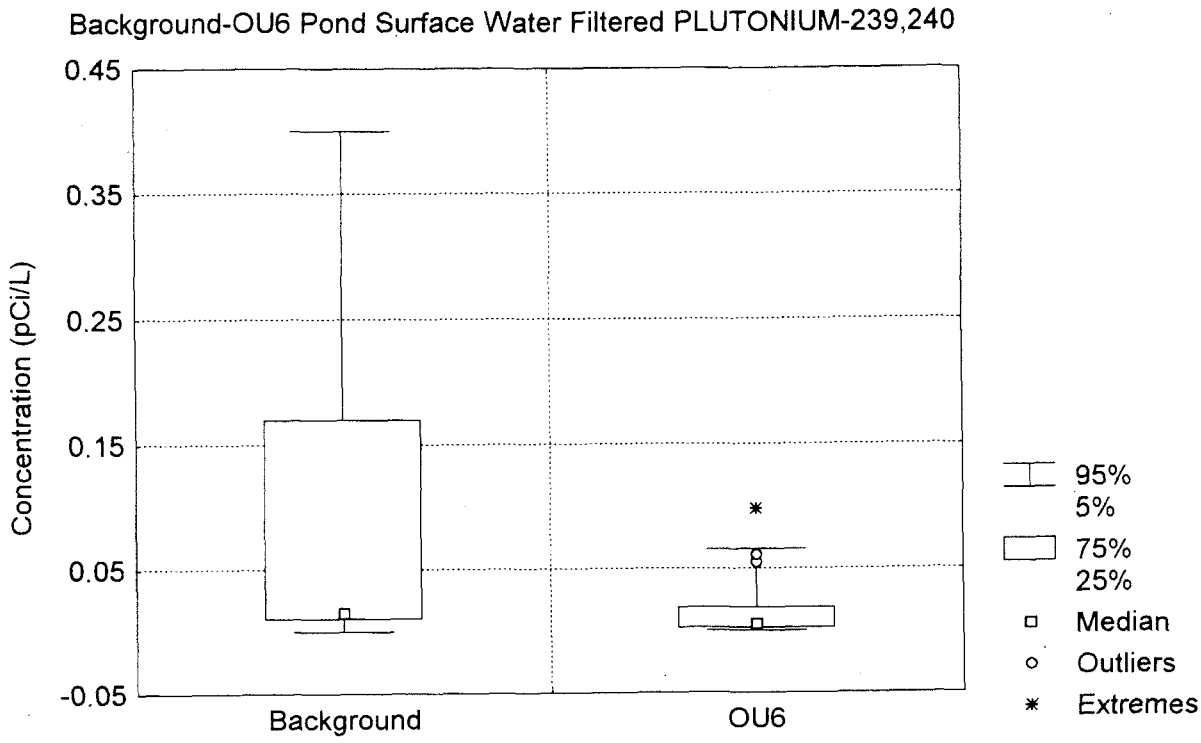

Background-OU6 Pond Surface Water Total URANIUM-233,234
Concentration (pCi/L)
8
7
6
5
4
3
2
1
0
-1
Background
OU6
95%
5%
75%
25%
Median
Outliers
Extremes

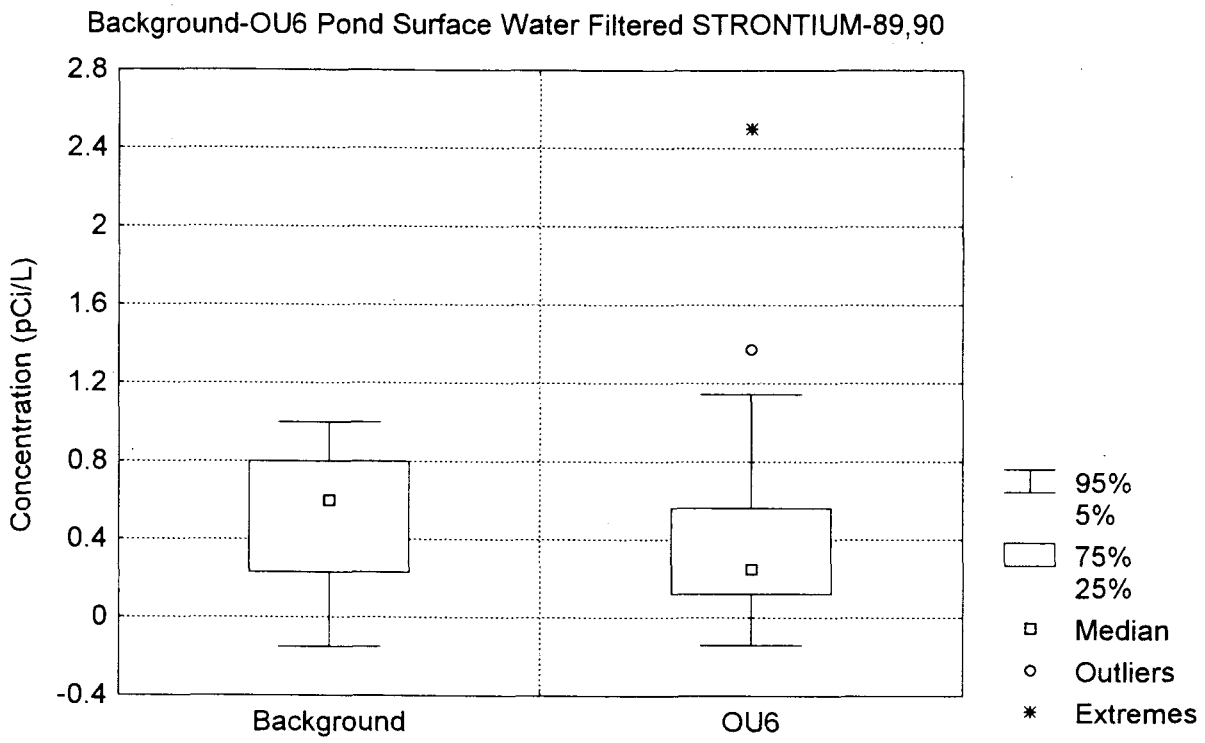

Background-OU6 Pond Surface Water Total URANIUM-235
Concentration (pCi/L)
0.7
0.5
0.3
0.1
-0.1
-0.3
Background
OU6
95%
5%
75%
25%
Median
Outliers
Extremes

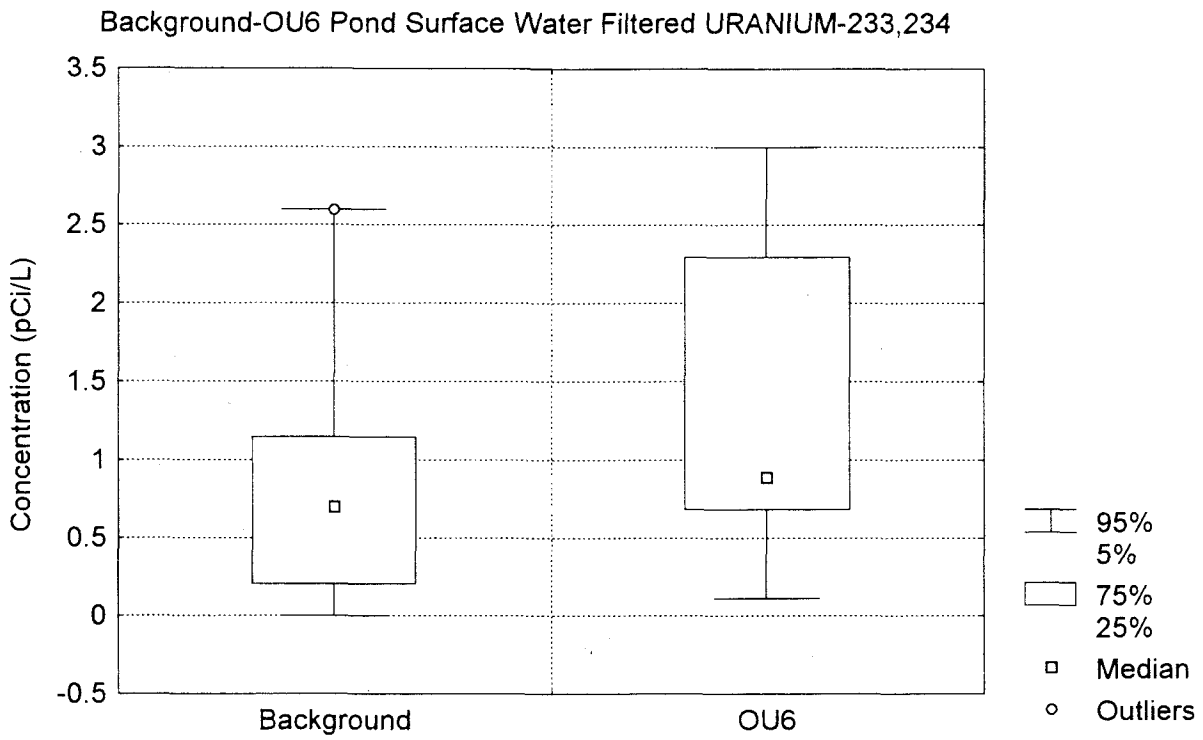

Background-OU6 Pond Surface Water Total URANIUM-238
Concentration (pCi/L)
6.5
5.5
4.5
3.5
2.5
1.5
0.5
-0.5
Background
OU6
95%
5%
75%
25%
Median
Extremes

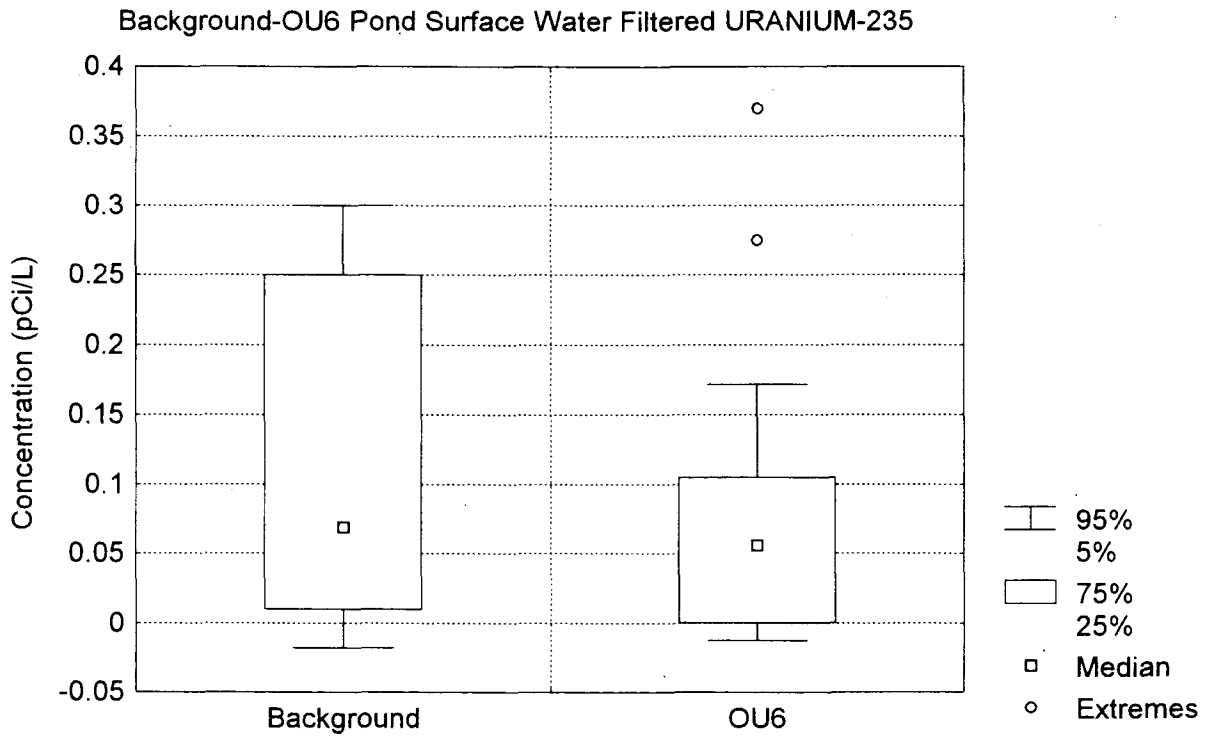

Background-OU6 Pond Surface Water Filtered AMERICIUM-241
Concentration (pCi/L)
0.9
0.7
0.5
0.3
0.1
-0.1
Background
OU6
95%
5%
75%
25%
Median
Outliers
Extremes

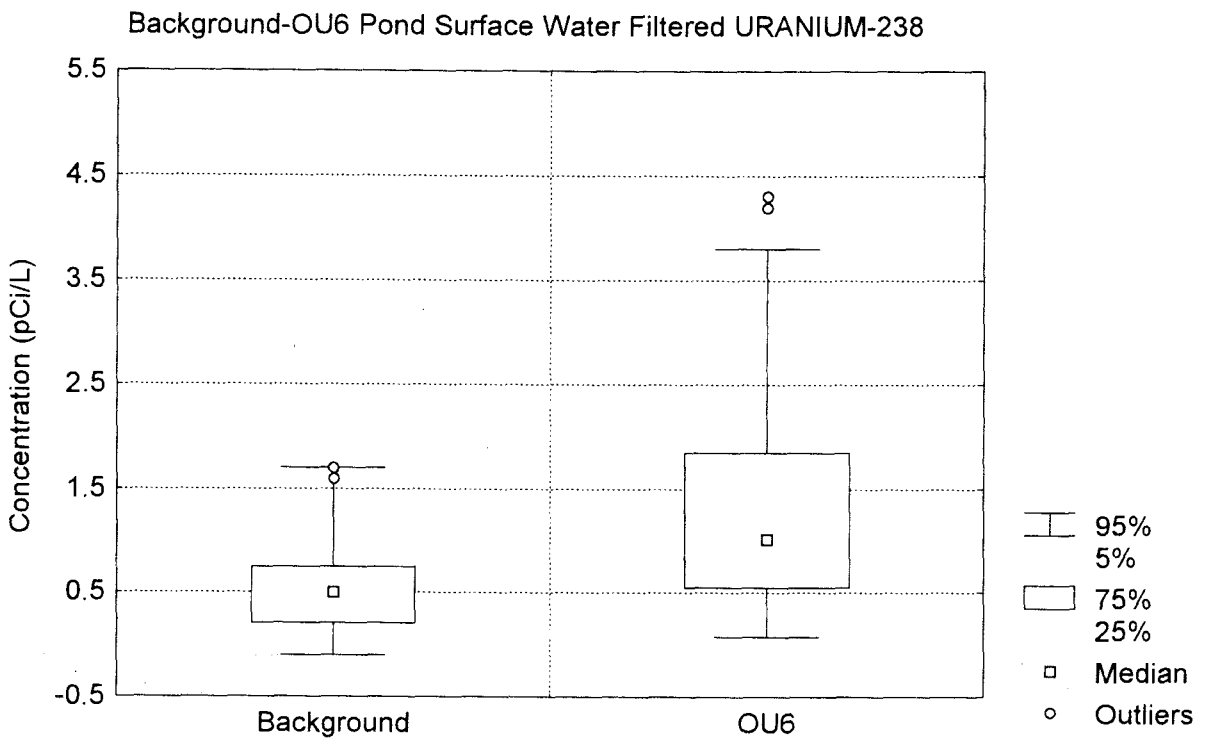

Background-OU6 Pond Surface Water Filtered CESIUM-137
Concentration (pCi/L)
0.8
0.6
0.4
0.2
0
-0.2
-0.4
-0.6
Background
OU6
95%
5%
75%
25%
Median

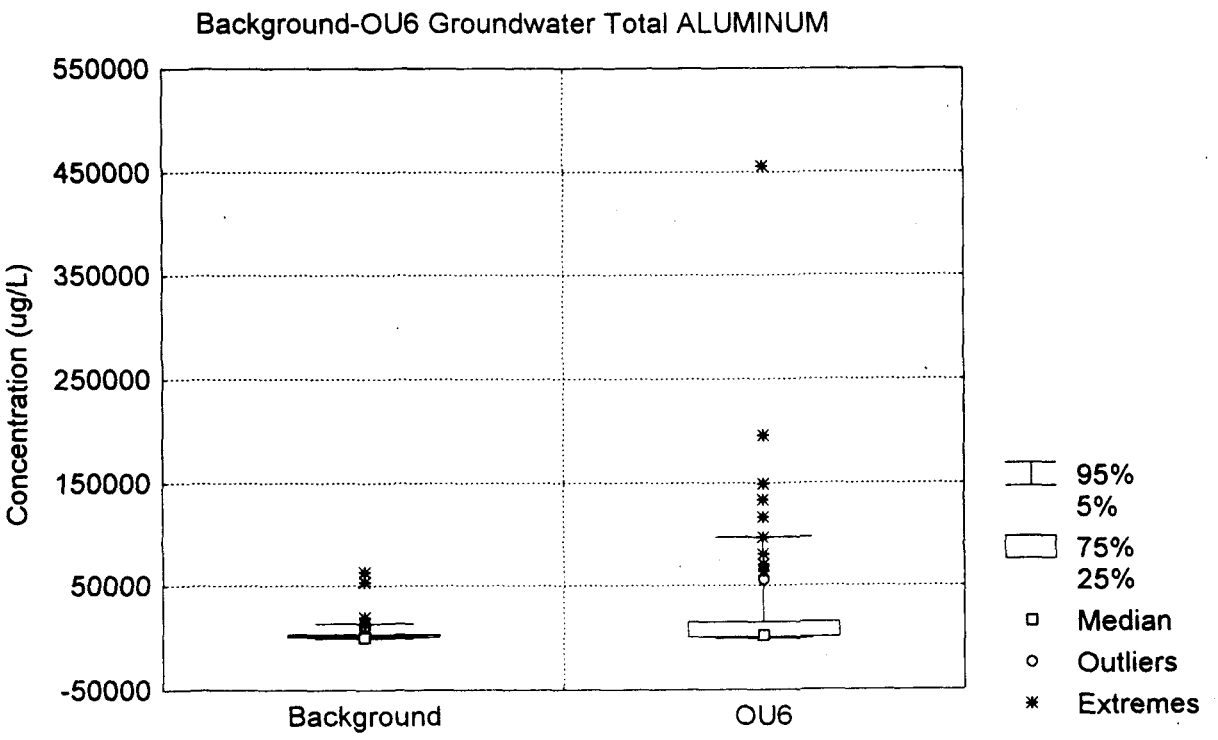

Background-OU6 Pond Surface Water Filtered PLUTONIUM-239,240
Concentration (pCi/L)
0.45
0.35
0.25
0.15
0.05
-0.05
Background
OU6
95%
5%
75%
25%
Median
Outliers
Extremes

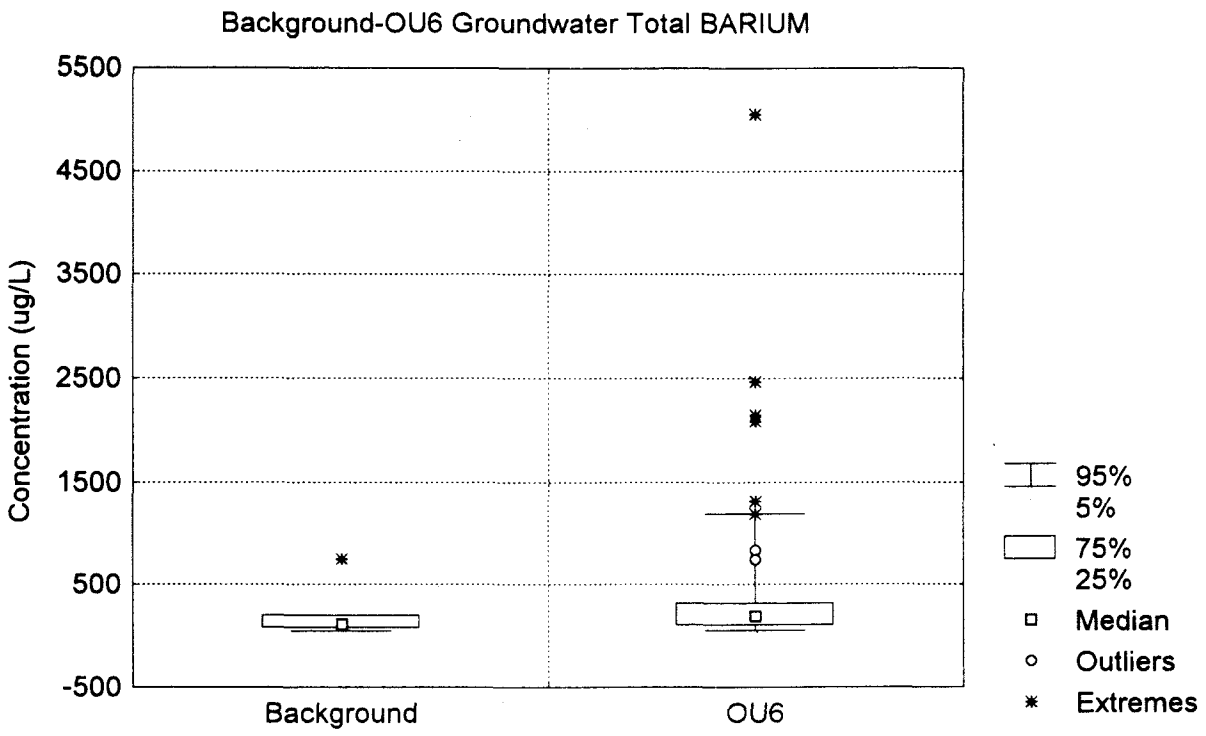

Background-OU6 Pond Surface Water Filtered STRONTIUM-89,90
Concentration (pCi/L)
2.8
2.4
2
1.6
1.2
0.8
0.4
0
-0.4
Background
OU6
95%
5%
75%
25%
Median
Outliers
Extremes

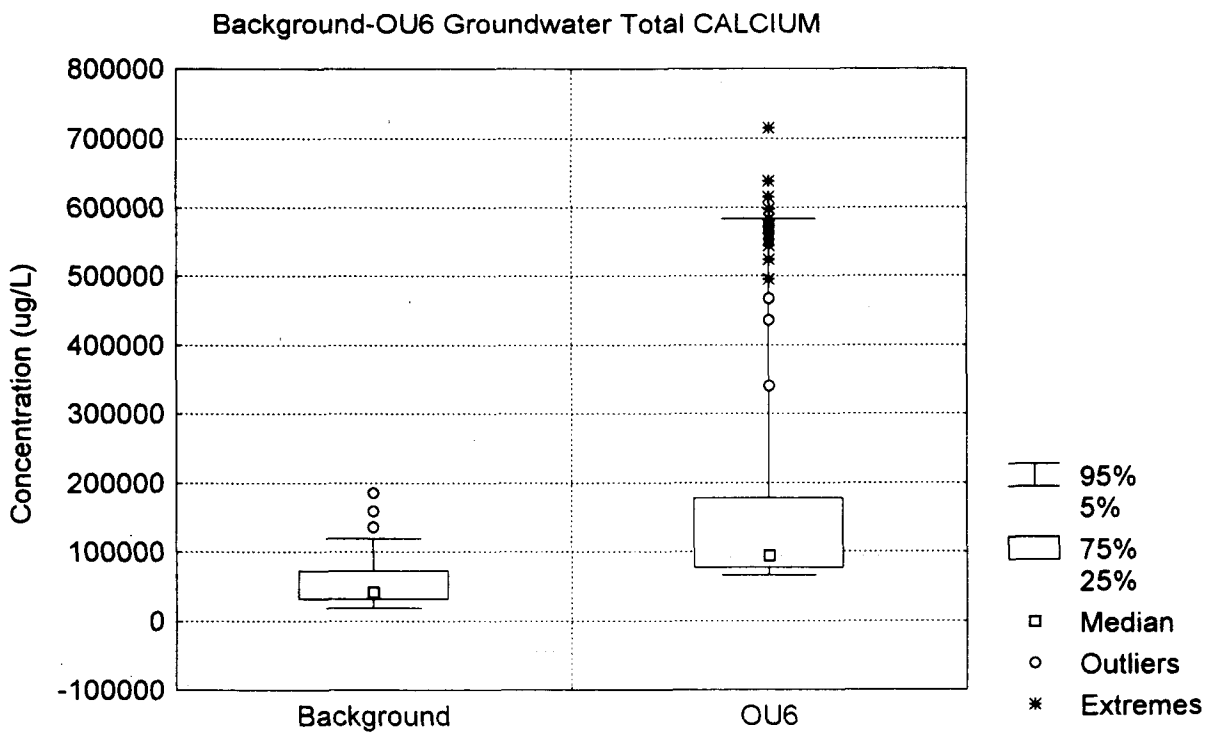

Background-OU6 Pond Surface Water Filtered URANIUM-233,234
Concentration (pCi/L)
3.5
3
2.5
2
1.5
1
0.5
0
-0.5
Background
OU6
95%
5%
75%
25%
Median
Outliers

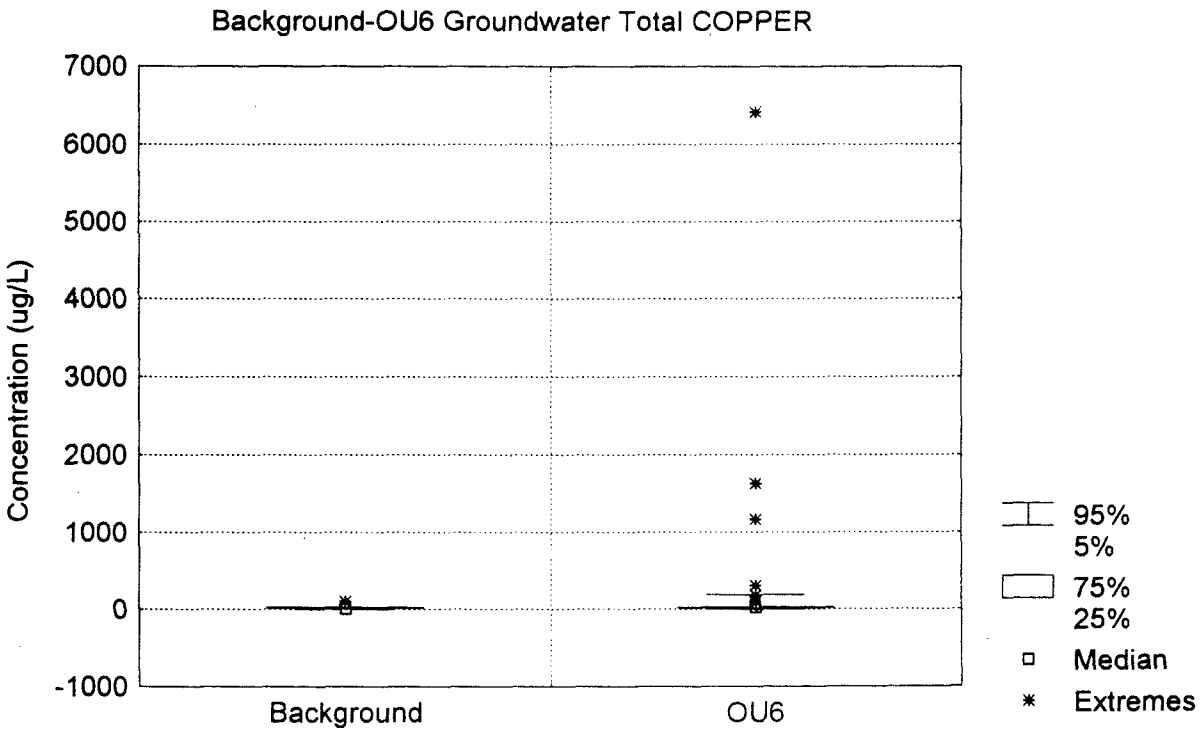

Background-OU6 Pond Surface Water Filtered URANIUM-235
Concentration (pCi/L)
0.4
0.35
0.3
0.25
0.2
0.15
0.1
0.05
0
-0.05
Background
OU6
95%
5%
75%
25%
Median
Extremes

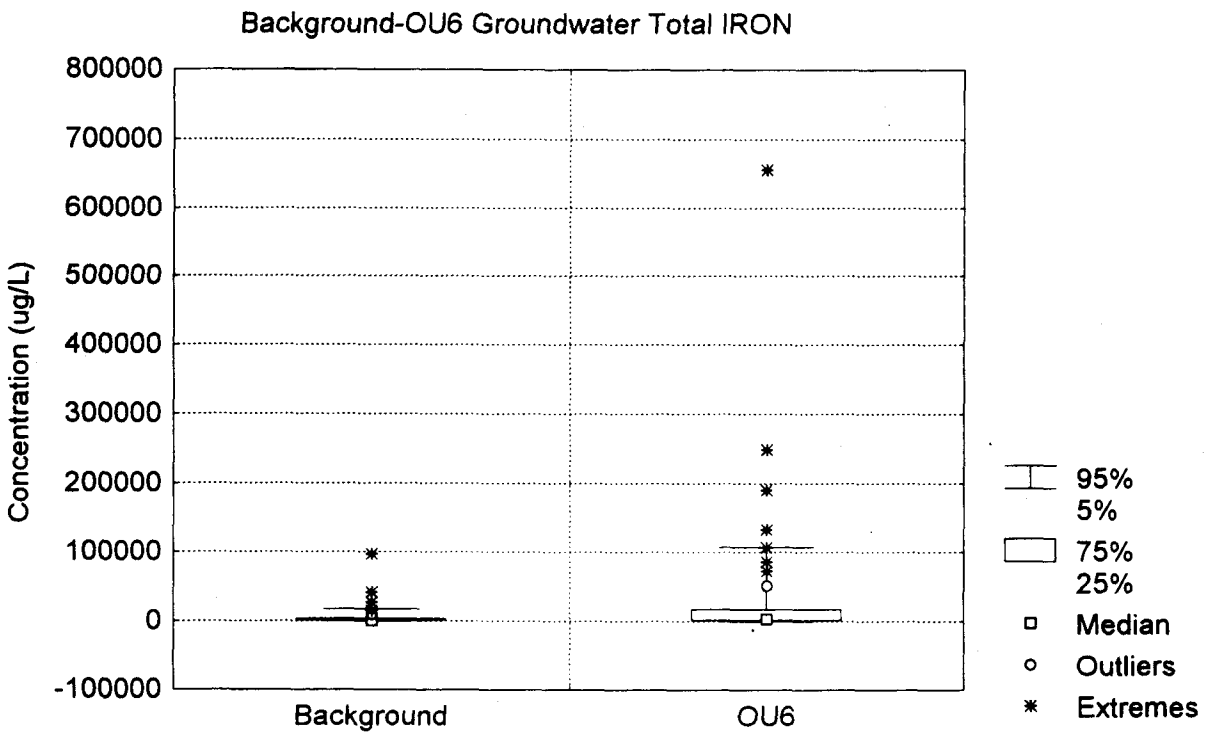

Background-OU6 Pond Surface Water Filtered URANIUM-238
Concentration (pCi/L)
5.5
4.5
3.5
2.5
1.5
0.5
-0.5
Background
OU6
95%
5%
75%
25%
Median
Outliers

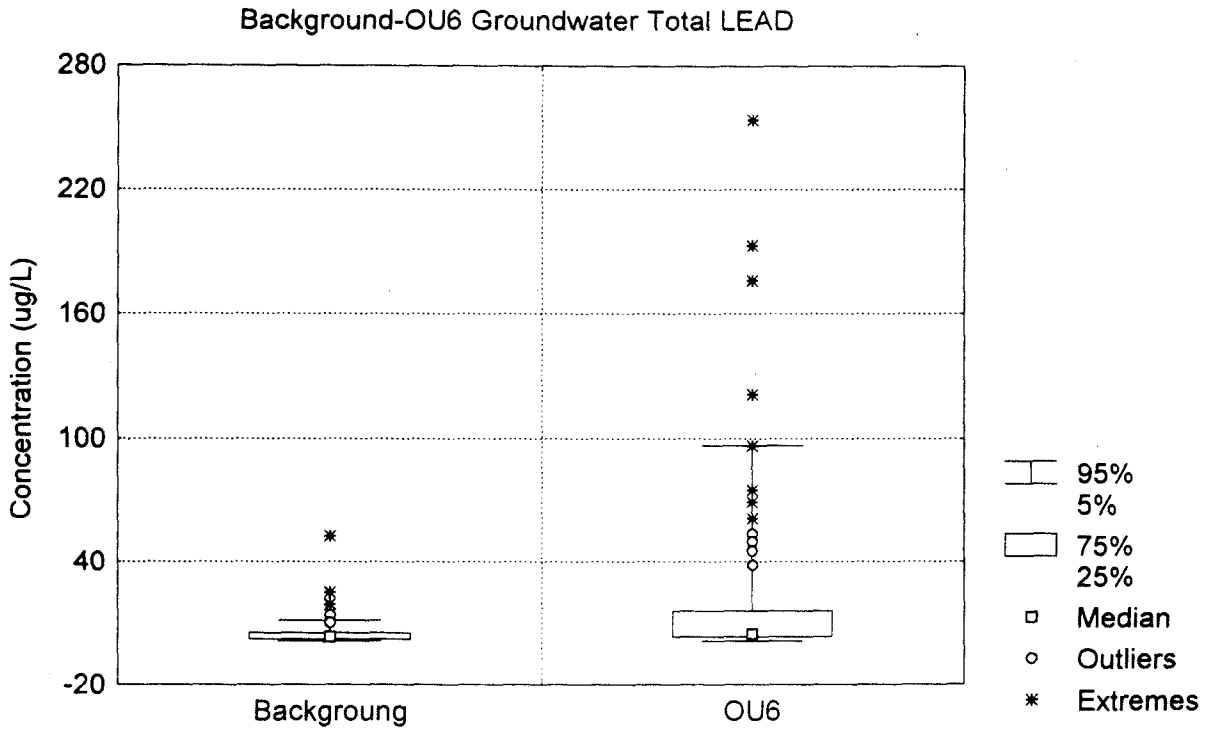

Background-OU6 Groundwater Total ALUMINUM
550000
450000
350000
250000
150000
50000
-50000
Concentration (ug/L)
Background
OU6
95%
5%
75%
25%
Median
Outliers
Extremes

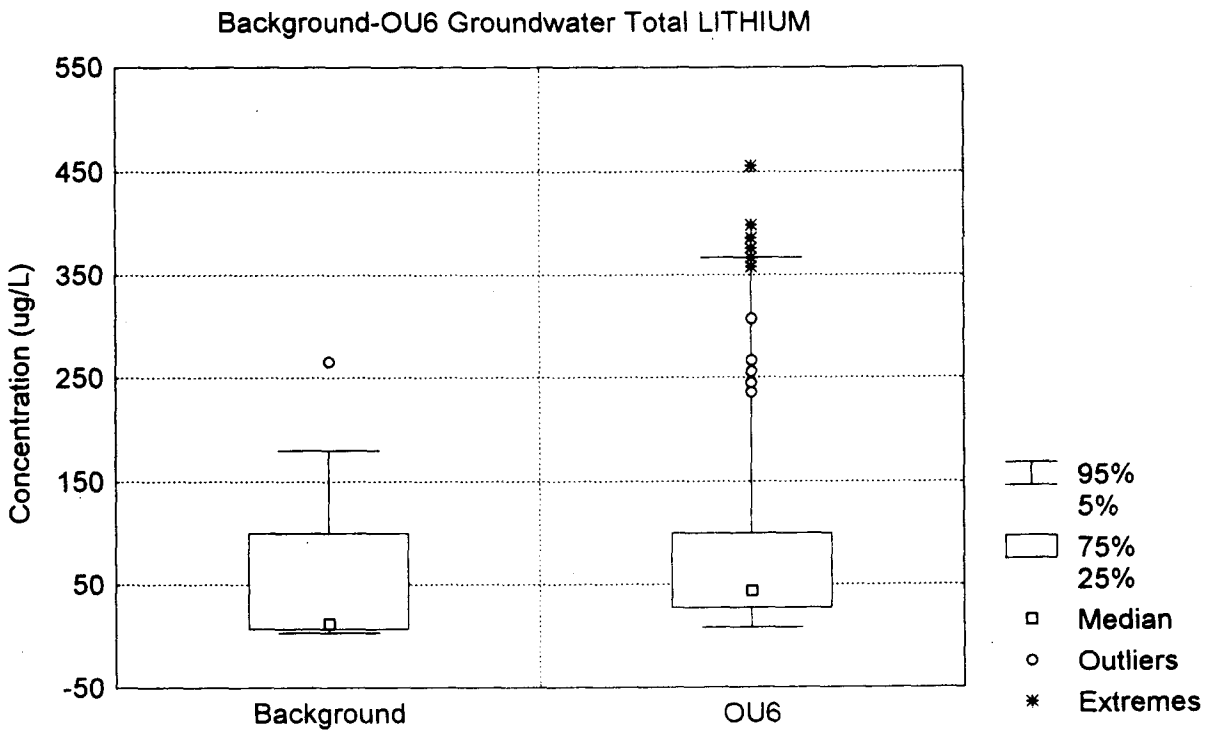

Background-OU6 Groundwater Total BARIUM
Concentration (ug/L)
5500
4500
3500
2500
1500
500
-500
Background
OU6
95%
5%
75%
25%
Median
Outliers
Extremes

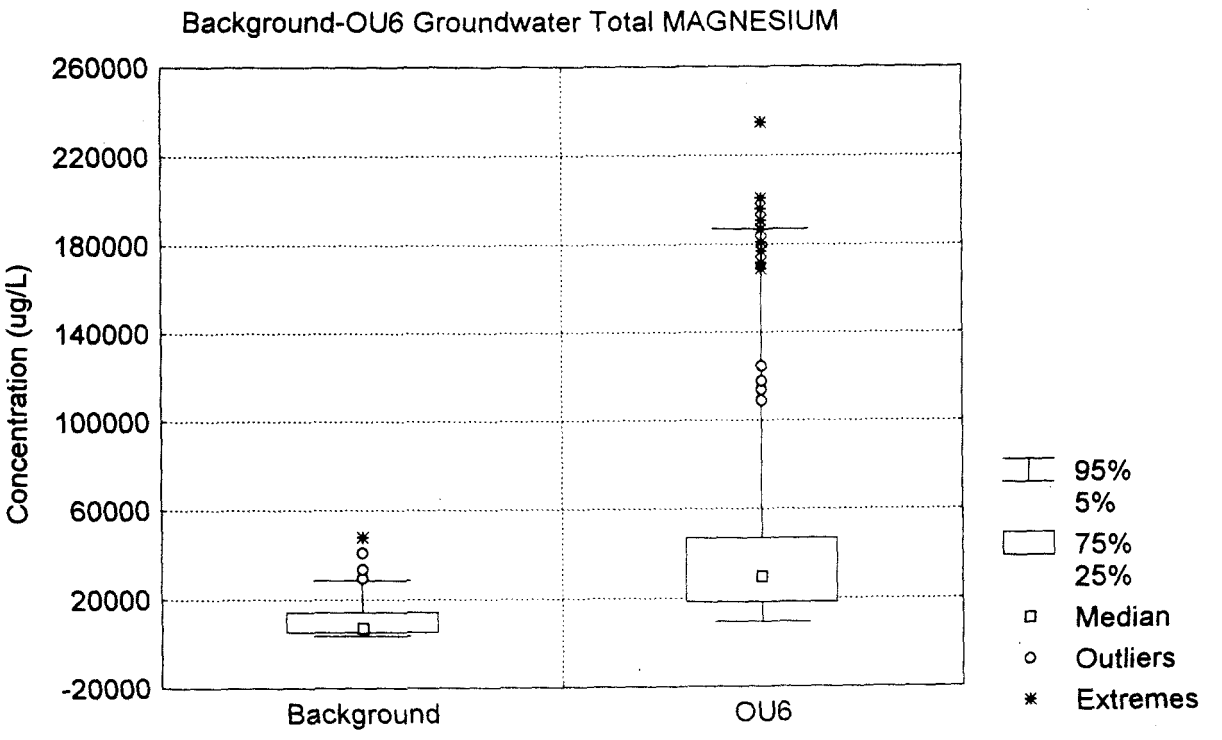

Background-OU6 Groundwater Total CALCIUM
Concentration (ug/L)
800000
700000
600000
500000
400000
300000
200000
100000
0
-100000
Background
OU6
95%
5%
75%
25%
Median
Outliers
Extremes

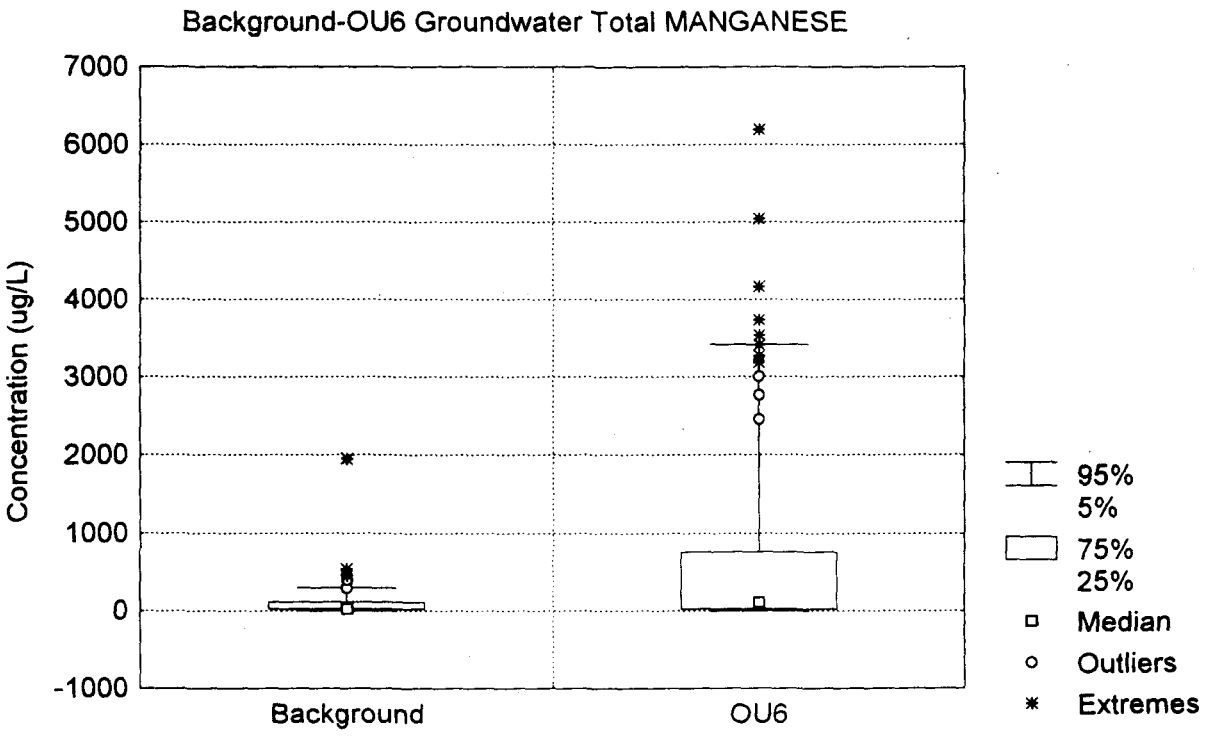

Background-OU6 Groundwater Total COPPER
Concentration (ug/L)
7000
6000
5000
4000
3000
2000
1000
0
-1000
Background
OU6
95%
5%
75%
25%
Median
Extremes

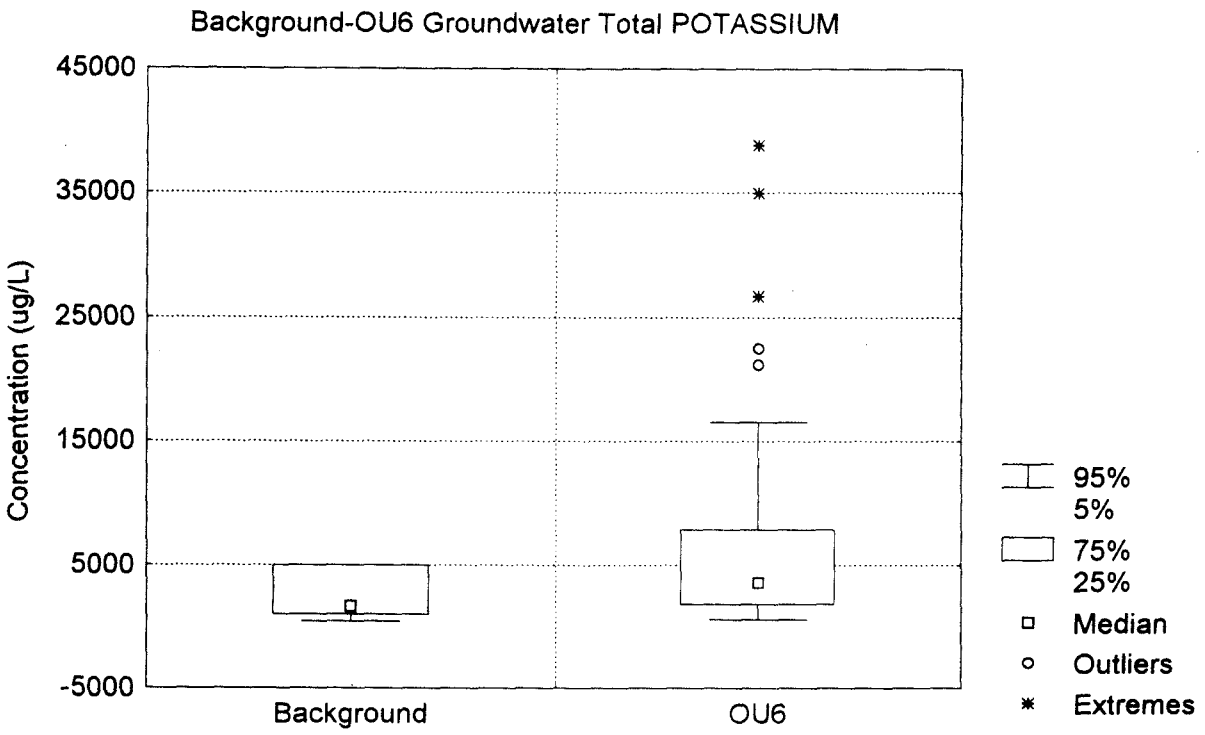

Background-OU6 Groundwater Total IRON
800000
700000
600000
500000
400000
300000
200000
100000
0
-100000
Concentration (ug/L)
Background
OU6
95%
5%
75%
25%
Median
Outliers
Extremes

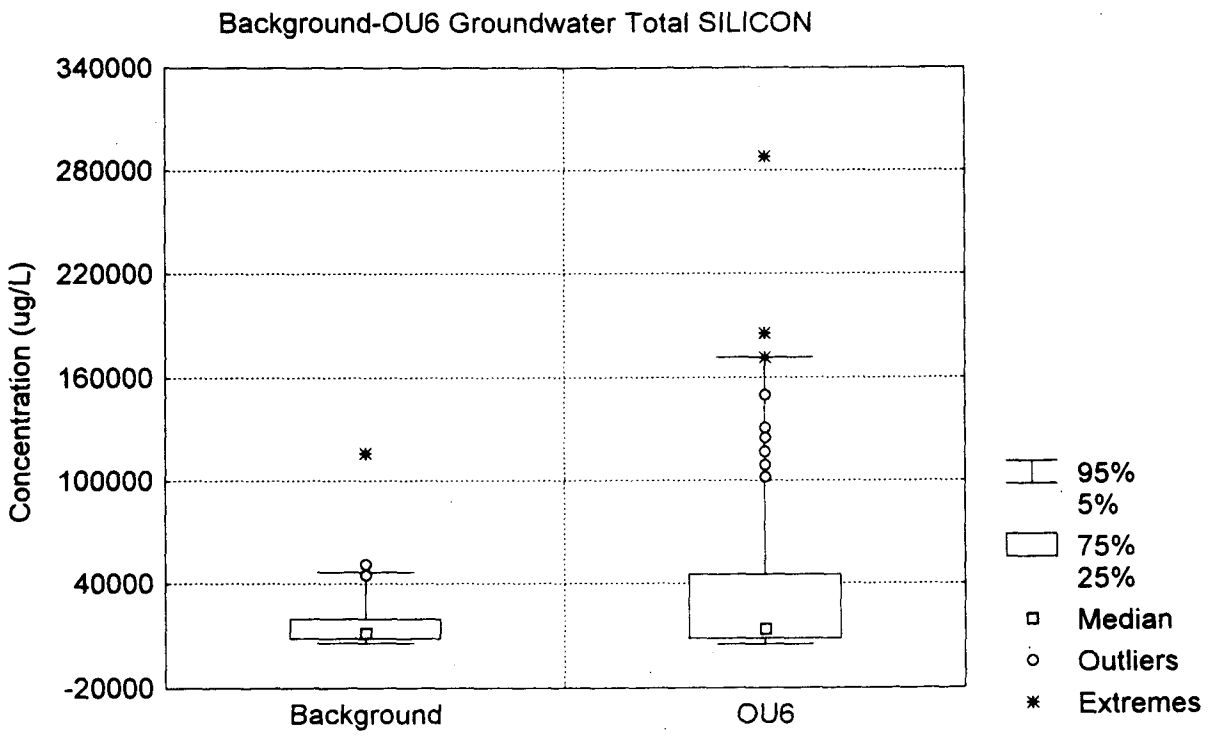

Background-OU6 Groundwater Total LEAD
Concentration (ug/L)
280
220
160
100
40
-20
Backgroung
OU6
95%
5%
75%
25%
Median
Outliers
Extremes

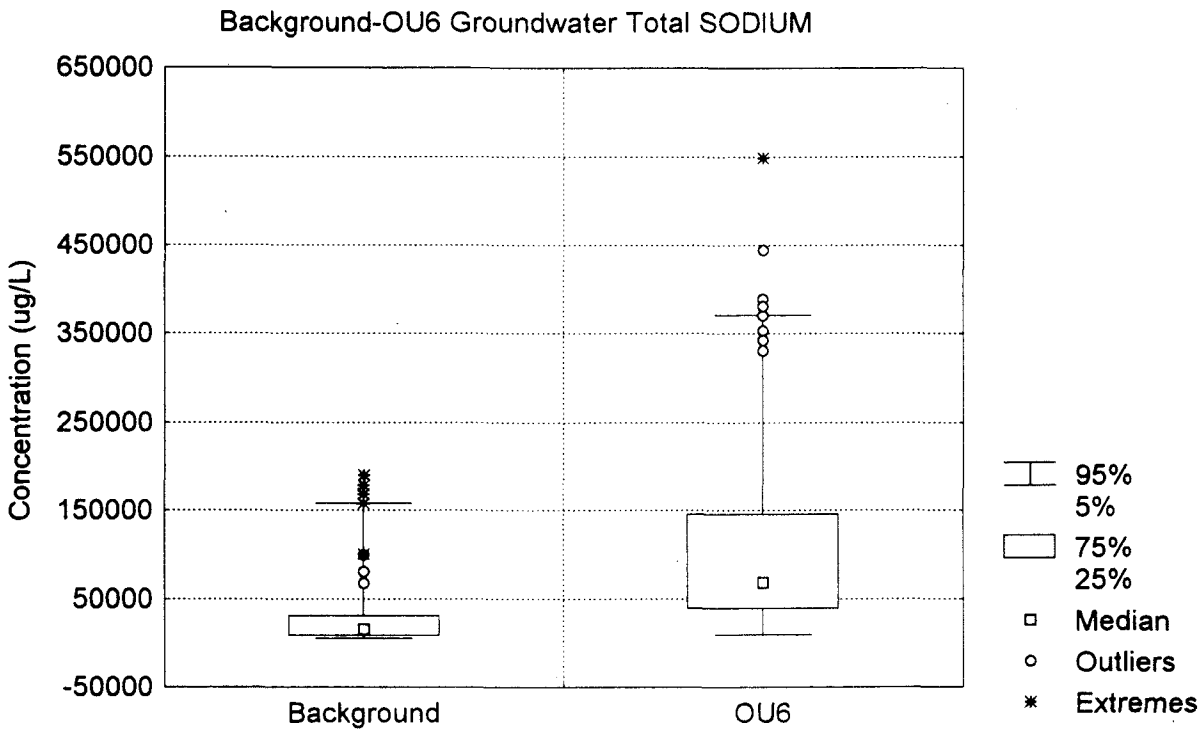

Background-OU6 Groundwater Total LITHIUM
Concentration (ug/L)
550
450
350
250
150
50
-50
Background
OU6
95%
5%
75%
25%
Median
Outliers
Extremes

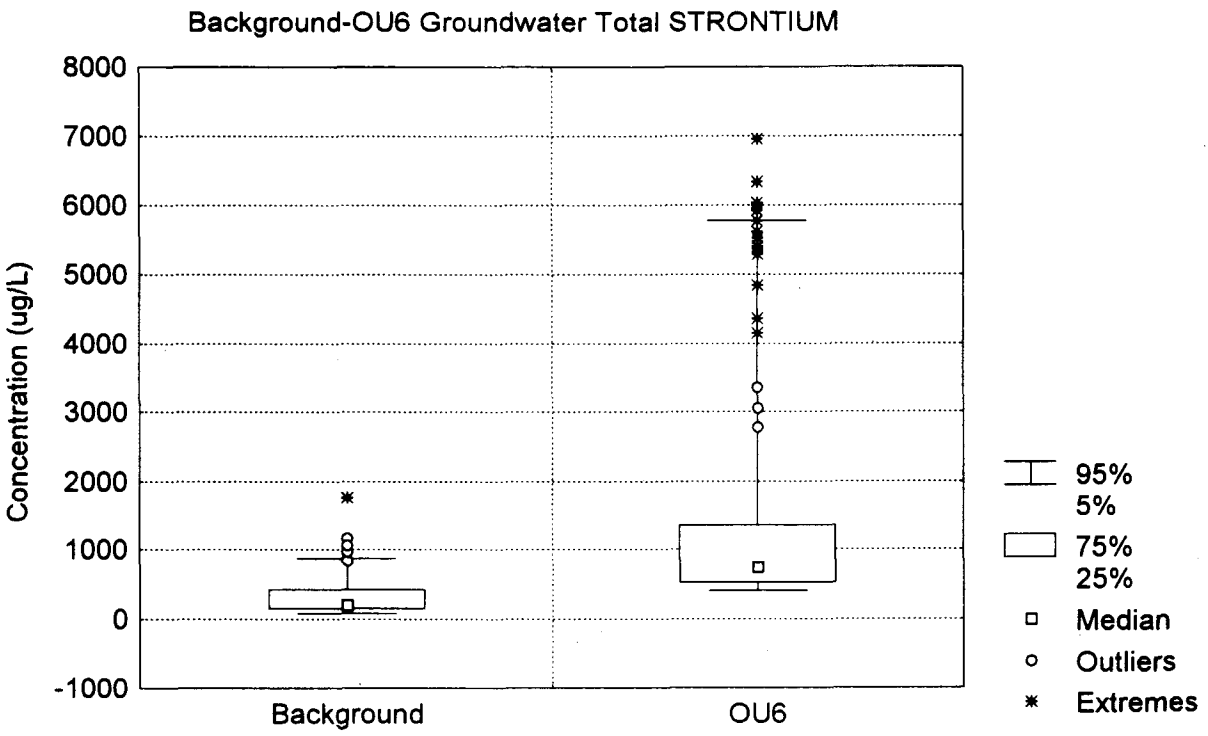

Background-OU6 Groundwater Total MAGNESIUM
Concentration (ug/L)
260000
220000
180000
140000
100000
60000
20000
-20000
Background
OU6
95%
5%
75%
25%
Median
Outliers
Extremes

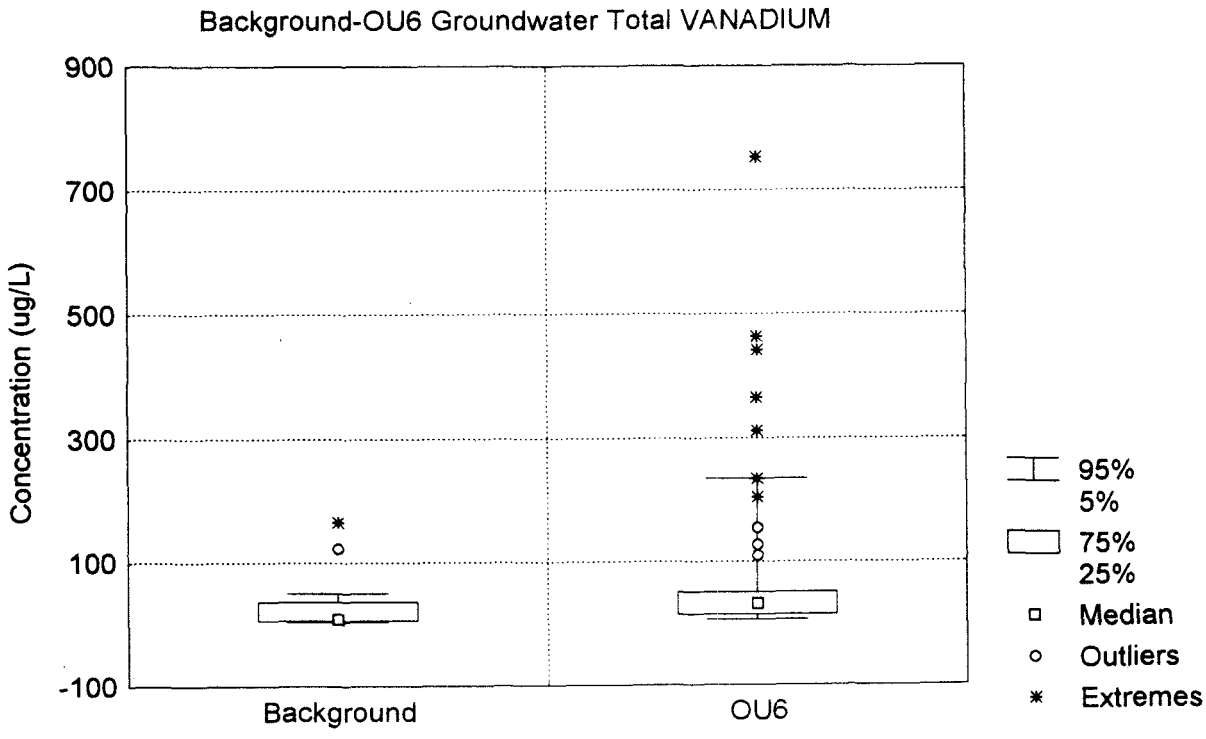

Background-OU6 Groundwater Total MANGANESE
Concentration (ug/L)
7000
6000
5000
4000
3000
2000
1000
0
-1000
Background
OU6
95%
5%
75%
25%
Median
Outliers
Extremes

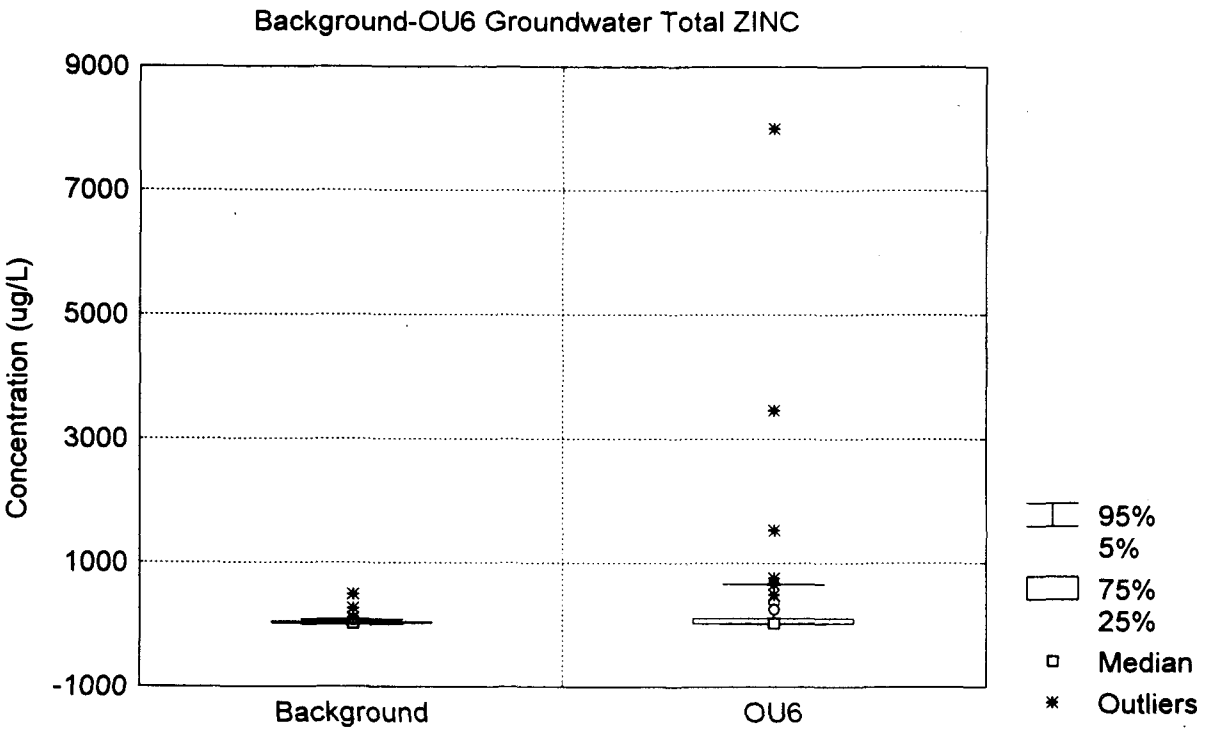

Background-OU6 Groundwater Total POTASSIUM
45000
35000
25000
15000
5000
-5000
Concentration (ug/L)
Background
OU6
95%
5%
75%
25%
Median
Outliers
Extremes

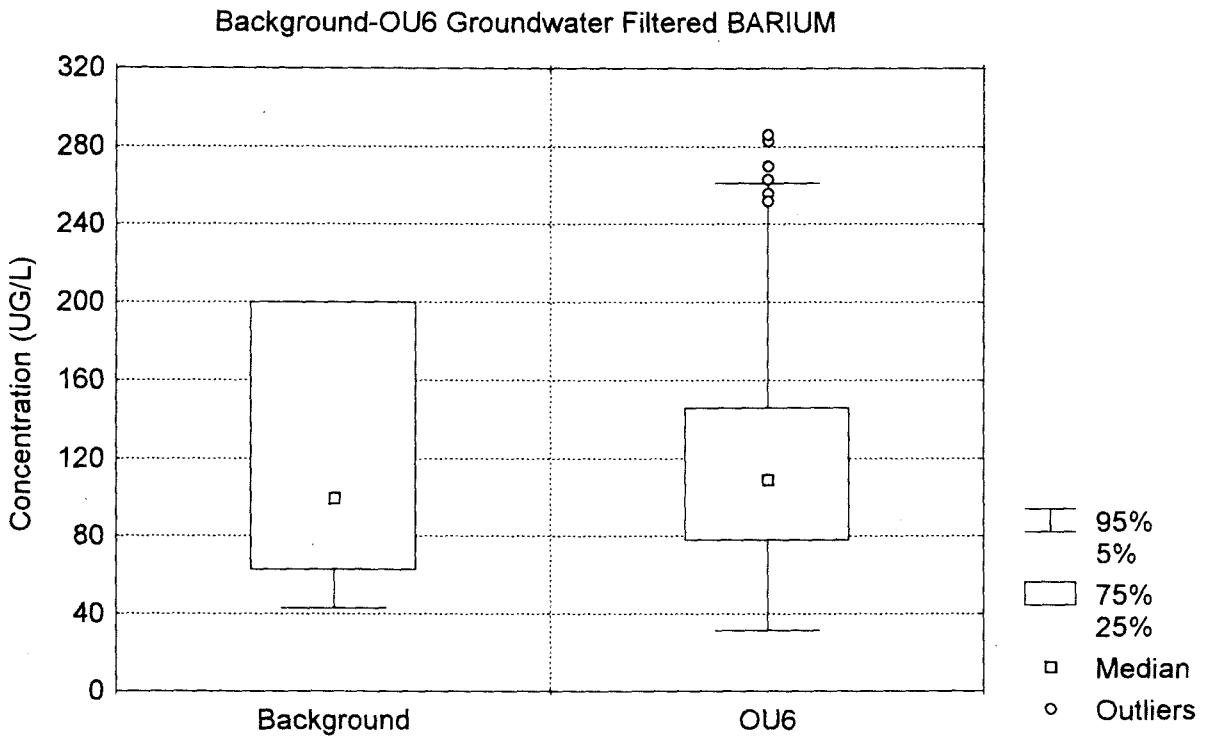

Background-OU6 Groundwater Total SILICON
Concentration (ug/L)
340000
280000
220000
160000
100000
40000
-20000
Background
OU6
95%
5%
75%
25%
Median
Outliers
Extremes

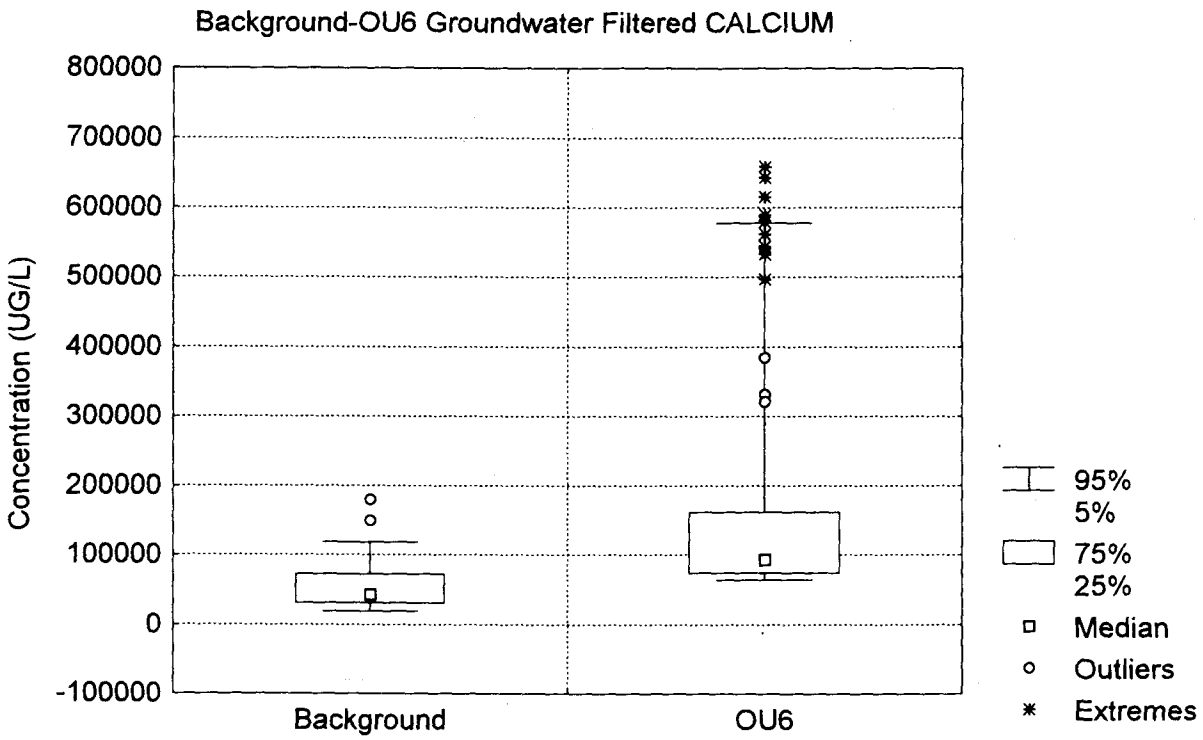

Background-OU6 Groundwater Total SODIUM
650000
550000
450000
350000
250000
150000
50000
-50000
Concentration (ug/L)
Background
OU6
95%
5%
75%
25%
Median
Outliers
Extremes

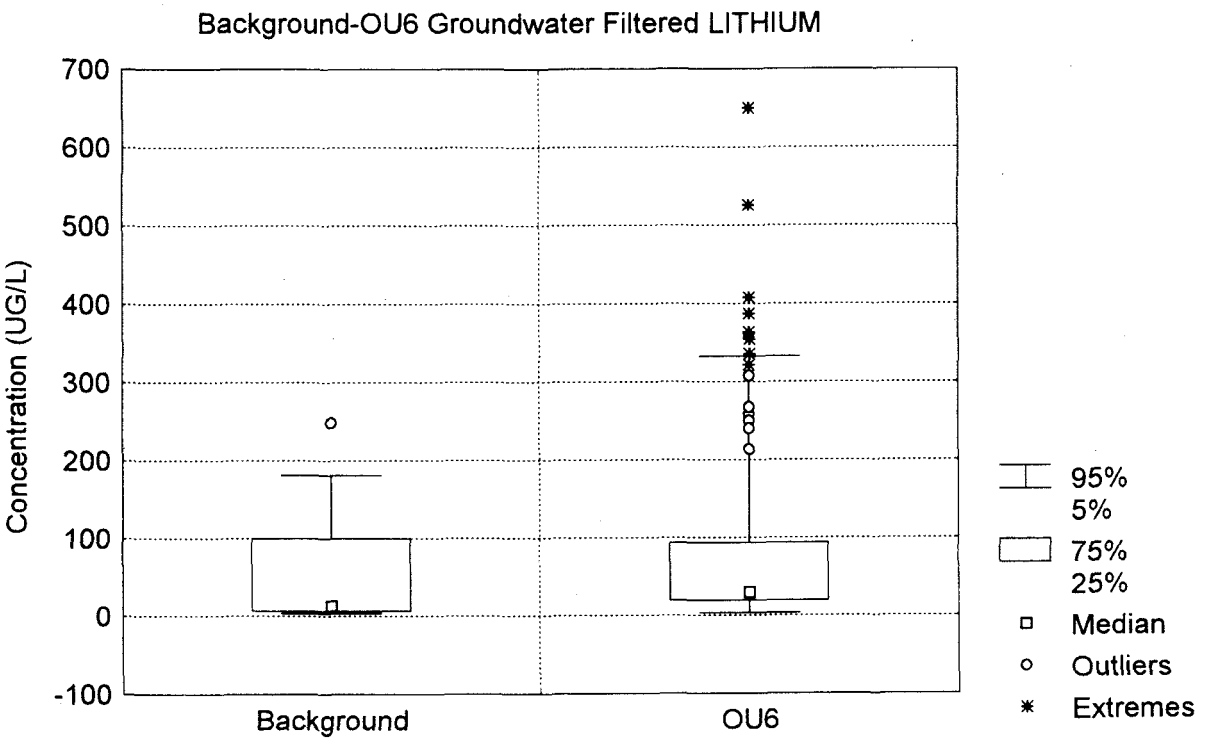

Background-OU6 Groundwater Total STRONTIUM
Concentration (ug/L)
8000
7000
6000
5000
4000
3000
2000
1000
0
-1000
Background
OU6
95%
5%
75%
25%
Median
Outliers
Extremes

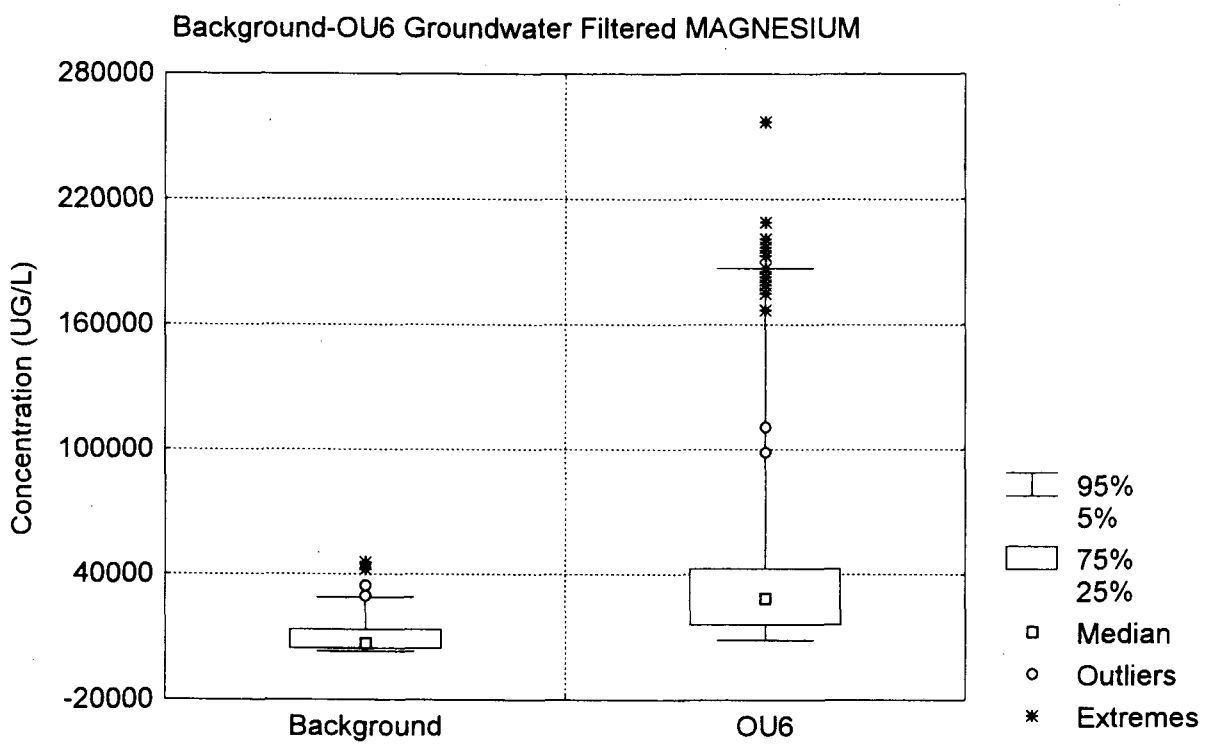

Background-OU6 Groundwater Total VANADIUM
900
700
500
300
100
-100
Concentration (ug/L)
Background
OU6
95%
5%
75%
25%
Median
Outliers
Extremes

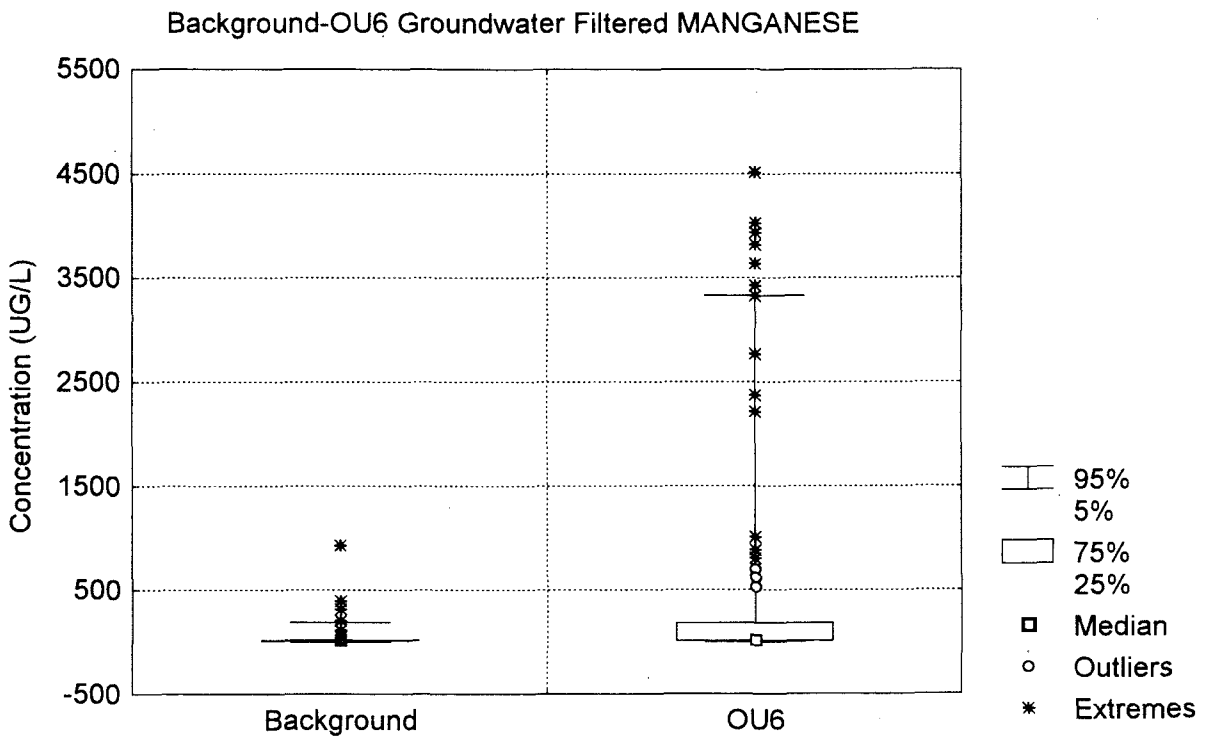

Background-OU6 Groundwater Total ZINC
9000
7000
5000
3000
1000
-1000
Concentration (ug/L)
Background
OU6
95%
5%
75%
25%
Median
Outliers

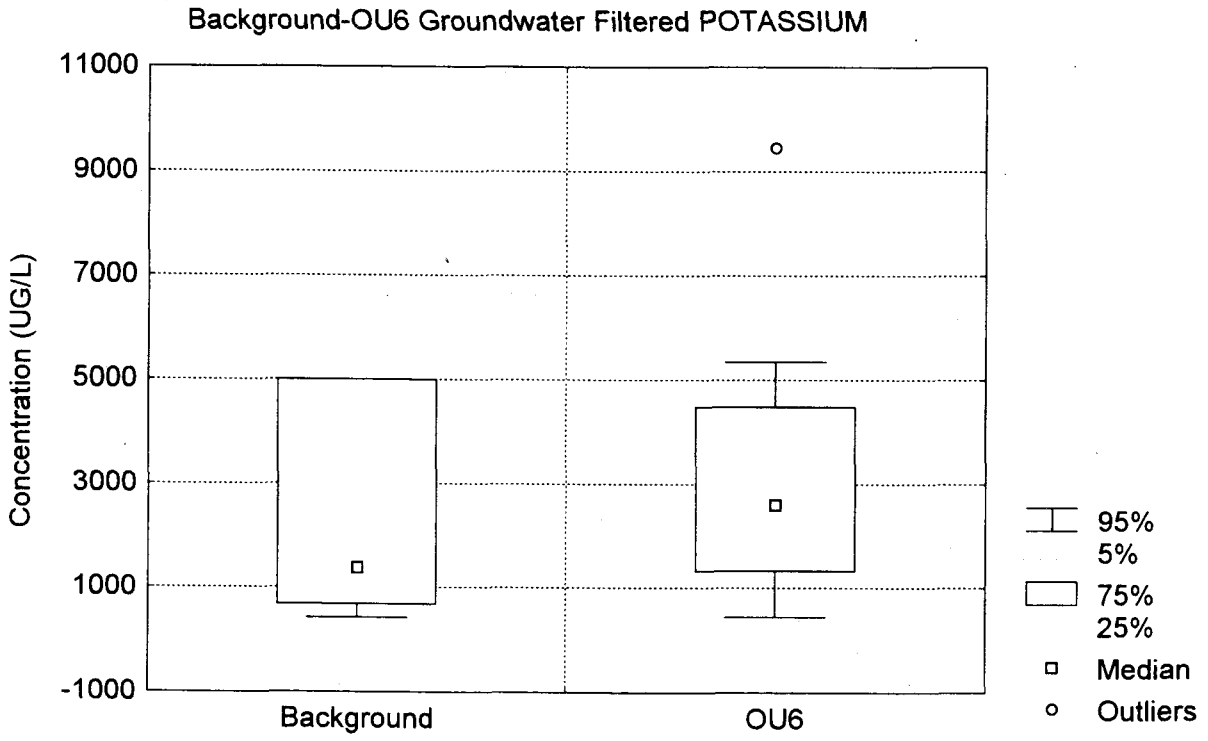

Background-OU6 Groundwater Filtered BARIUM
Concentration (UG/L)
320
280
240
200
160
120
80
40
0
Background
OU6
95%
5%
75%
25%
Median
Outliers

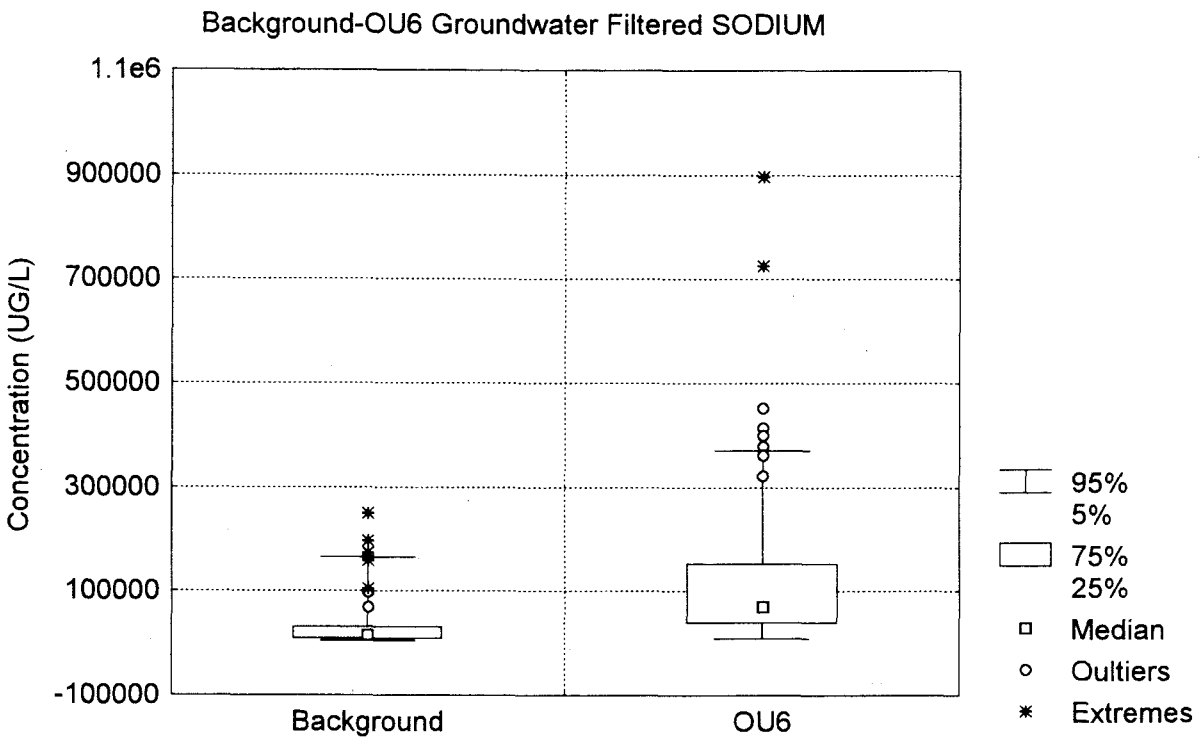

Background-OU6 Groundwater Filtered CALCIUM
Concentration (UG/L)
800000
700000
600000
500000
400000
300000
200000
100000
0
-100000
Background
OU6
95%
5%
75%
25%
Median
Outliers
Extremes

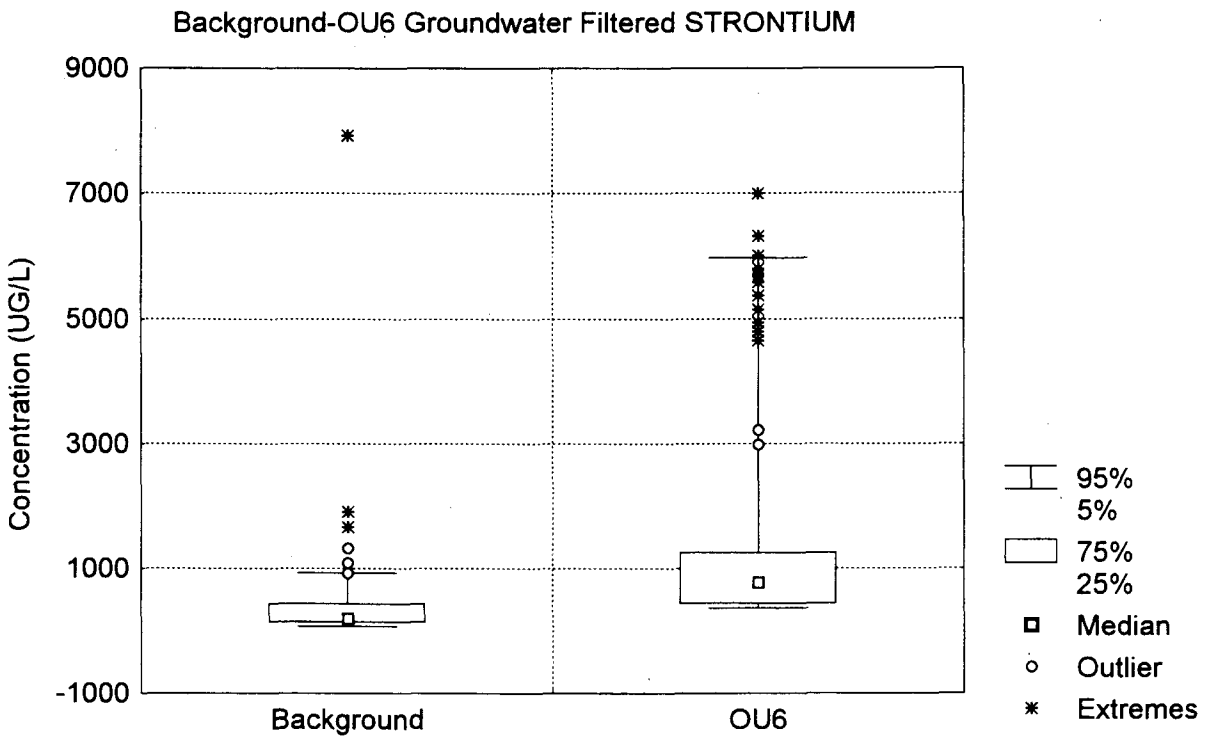

Background-OU6 Groundwater Filtered LITHIUM
Concentration (UG/L)
700
600
500
400
300
200
100
0
-100
Background
OU6
95%
5%
75%
25%
Median
Outliers
Extremes

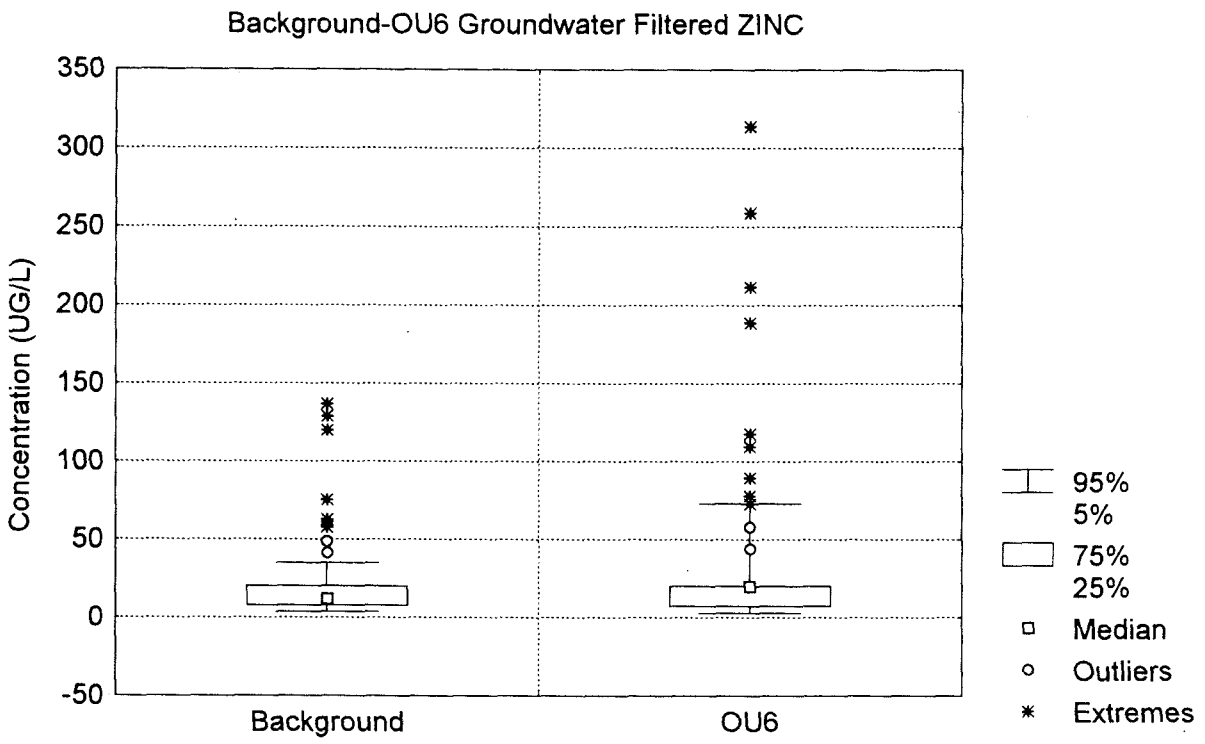

Background-OU6 Groundwater Filtered MAGNESIUM
280000
220000
160000
100000
40000
-20000
Concentration (UG/L)
Background
OU6
95%
5%
75%
25%
Median
Outliers
Extremes

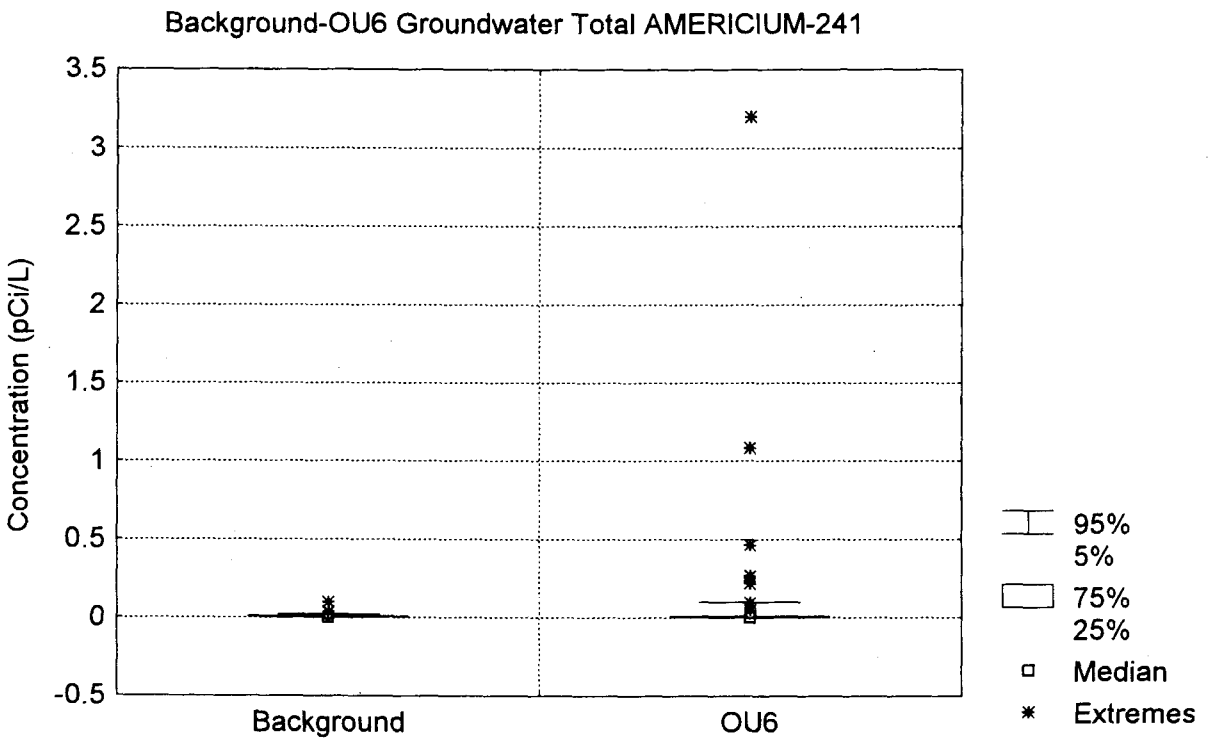

Background-OU6 Groundwater Filtered MANGANESE
Concentration (UG/L)
5500
4500
3500
2500
1500
500
-500
Background
OU6
95%
5%
75%
25%
Median
Outliers
Extremes

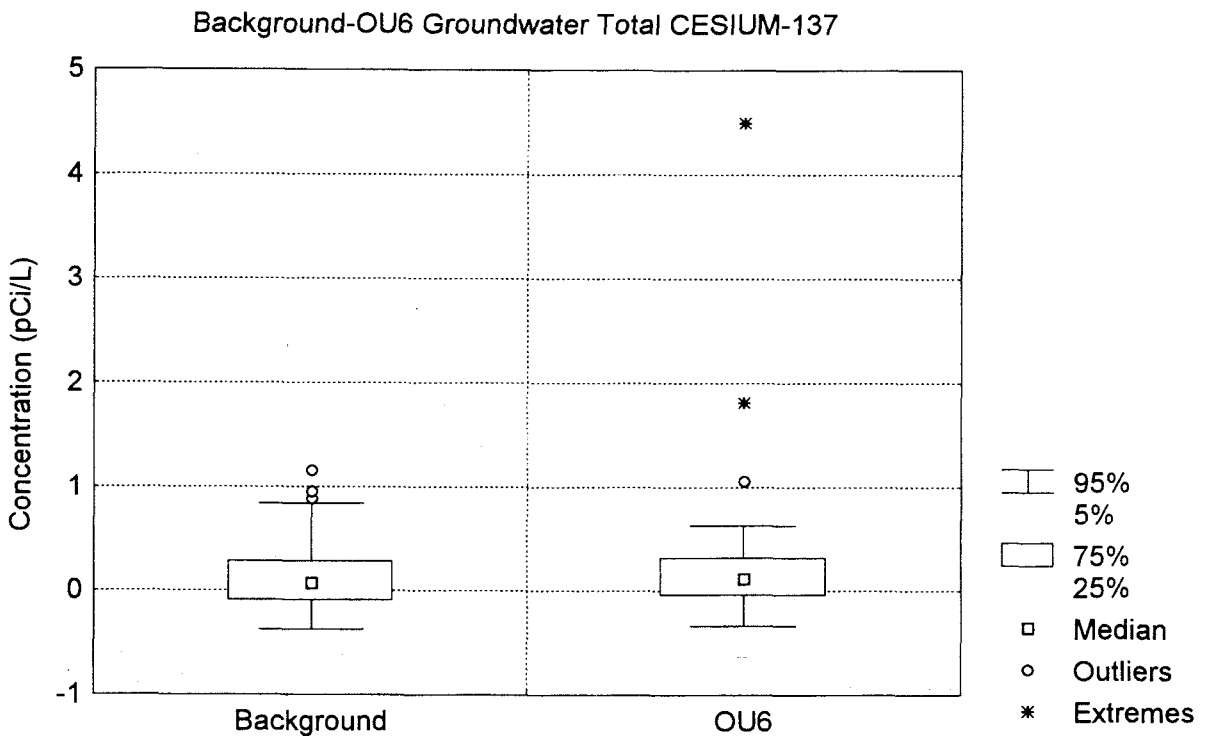

Background-OU6 Groundwater Filtered POTASSIUM
Concentration (UG/L)
11000
9000
7000
5000
3000
1000
-1000
Background
OU6
95%
5%
75%
25%
Median
Outliers

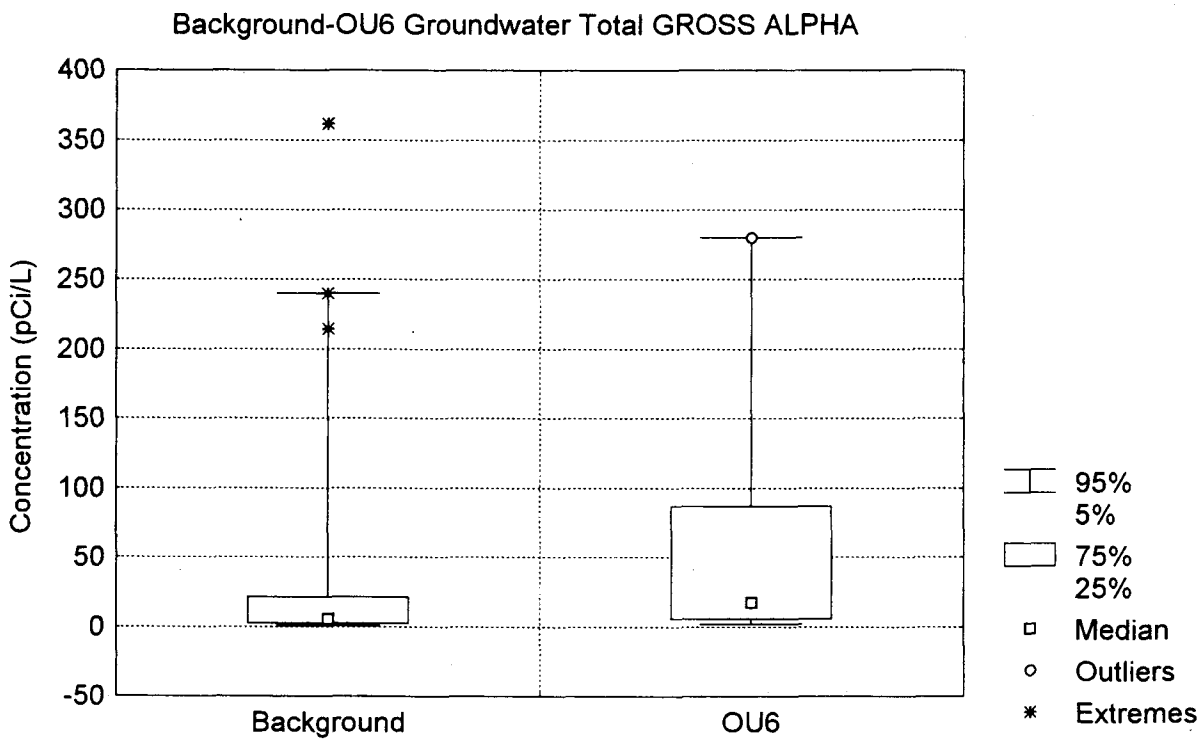

Background-OU6 Groundwater Filtered SODIUM
1.1e6
900000
700000
500000
300000
100000
-100000
Concentration (UG/L)
Background
OU6
95%
5%
75%
25%
Median
Oultiers
Extremes

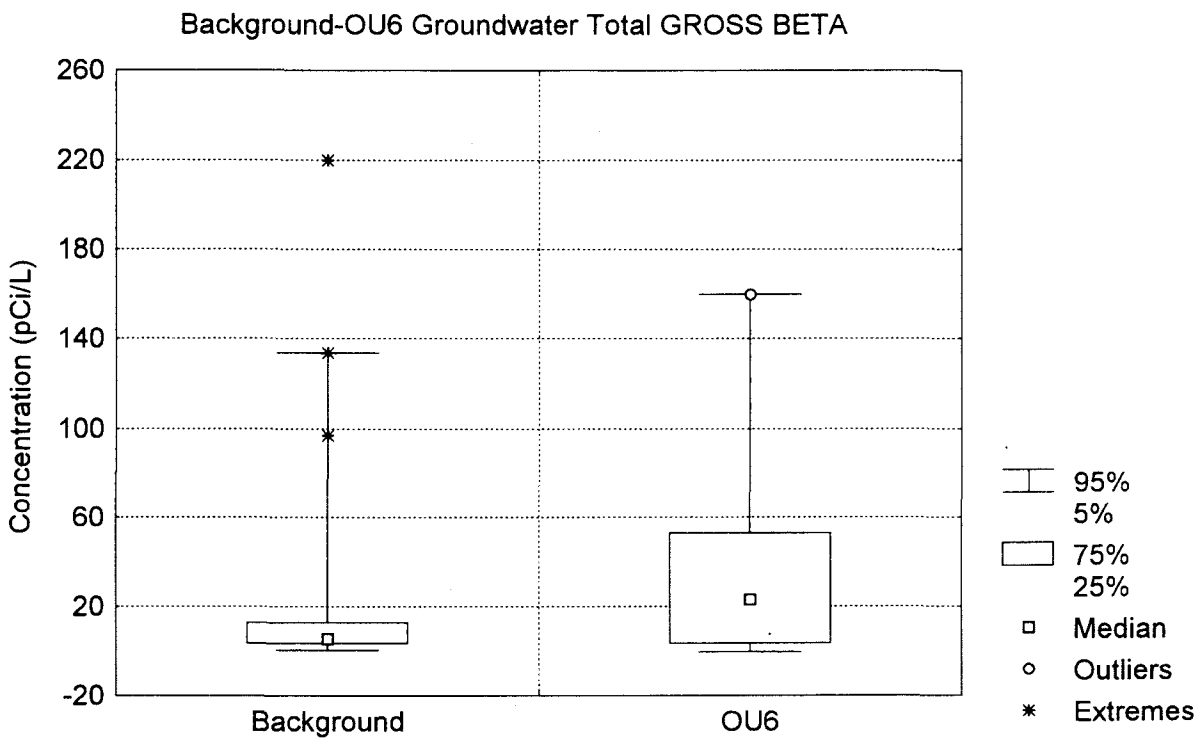

Background-OU6 Groundwater Filtered STRONTIUM
9000
7000
5000
3000
1000
-1000
Concentration (UG/L)
Background
OU6
95%
5%
75%
25%
Median
Outlier
Extremes

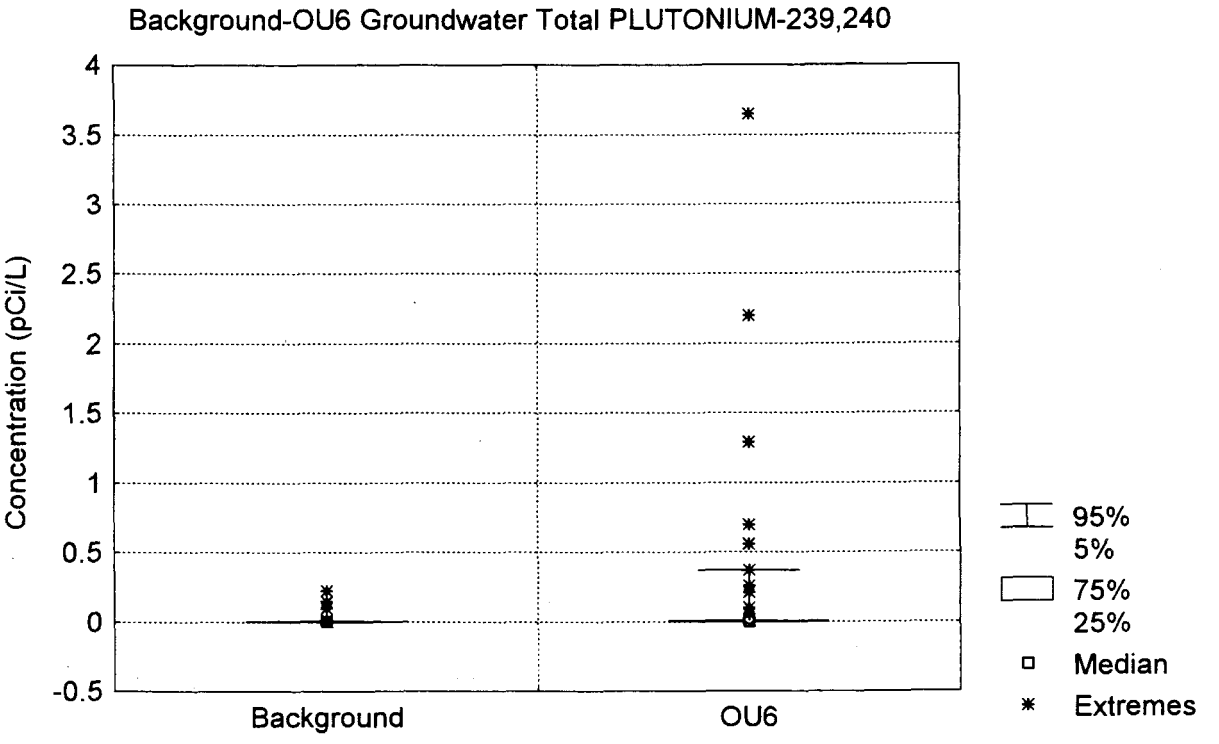

Background-OU6 Groundwater Filtered ZINC
Concentration (UG/L)
350
300
250
200
150
100
50
0
-50
Background
OU6
95%
5%
75%
25%
Median
Outliers
Extremes

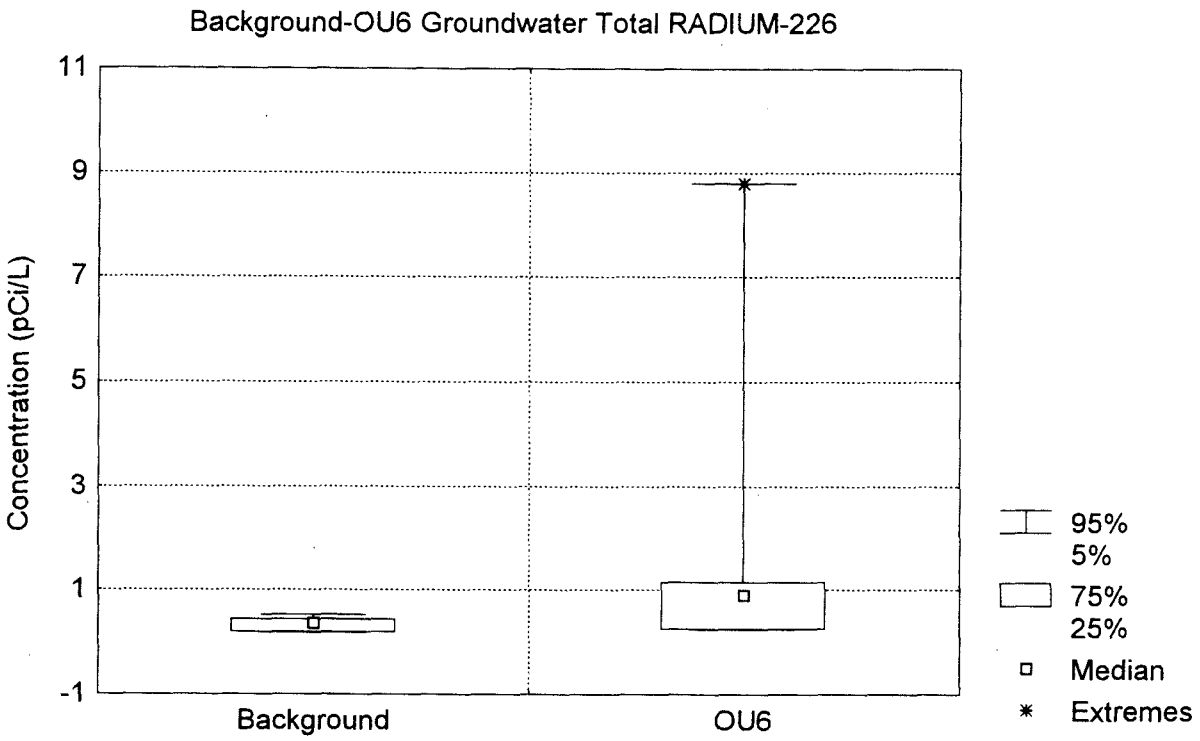

Background-OU6 Groundwater Total AMERICIUM-241
Concentration (pCi/L)
3.5
3
2.5
2
1.5
1
0.5
0
-0.5
Background
OU6
95%
5%
75%
25%
Median
Extremes

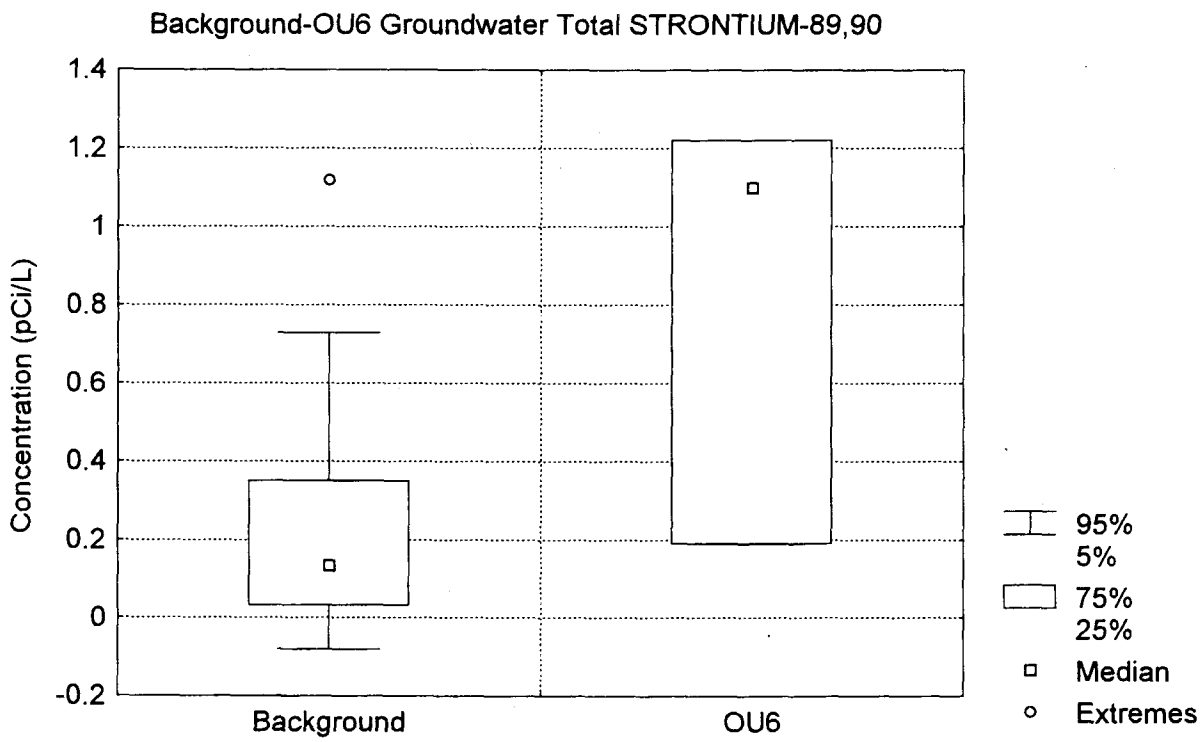

Background-OU6 Groundwater Total CESIUM-137
Concentration (pCi/L)
5
4
3
2
1
0
-1
Background
OU6
95%
5%
75%
25%
Median
Outliers
Extremes

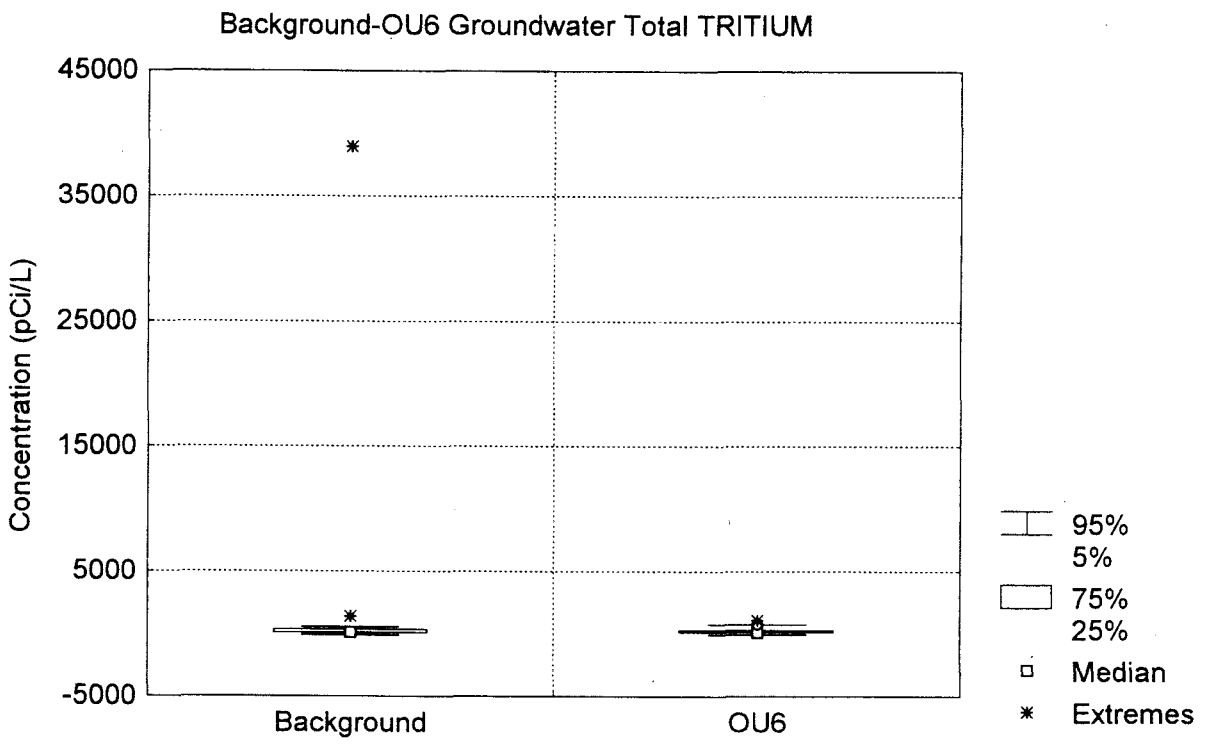

Background-OU6 Groundwater Total GROSS ALPHA
Concentration (pCi/L)
400
350
300
250
200
150
100
50
0
-50
Background
OU6
95%
5%
75%
25%
Median
Outliers
Extremes

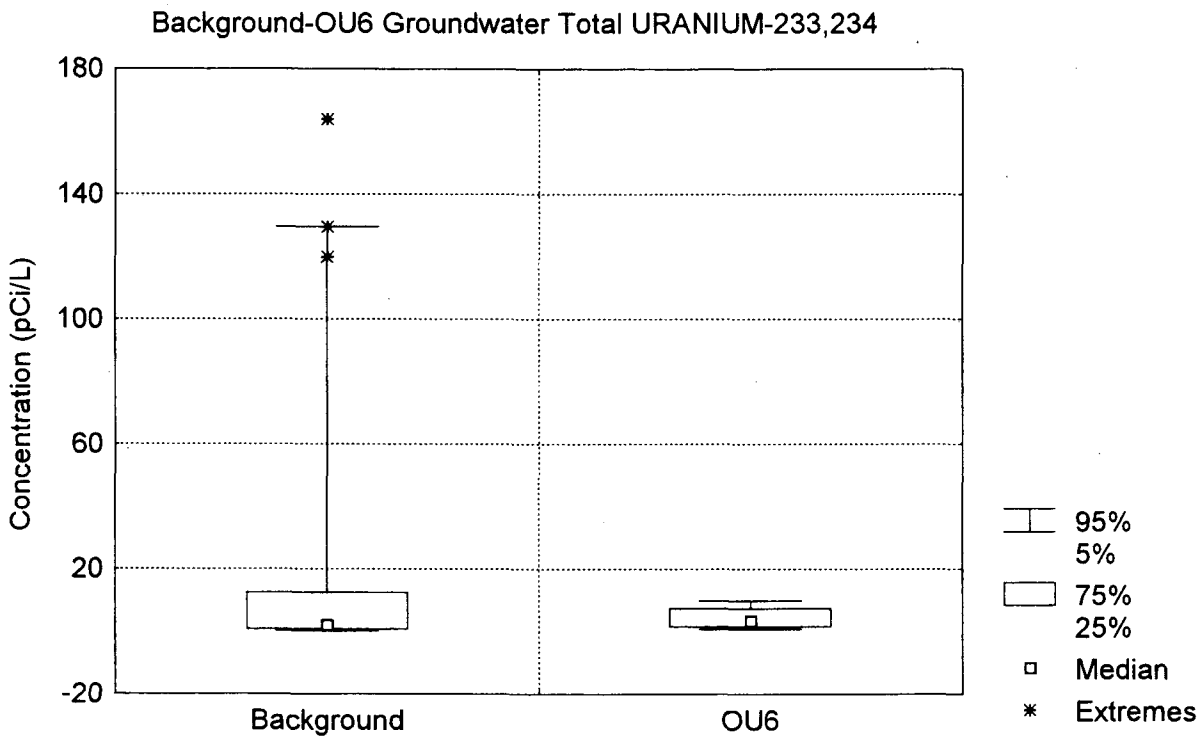

Background-OU6 Groundwater Total GROSS BETA
Concentration (pCi/L)
260
220
180
140
100
60
20
-20
Background
OU6
95%
5%
75%
25%
Median
Outliers
Extremes

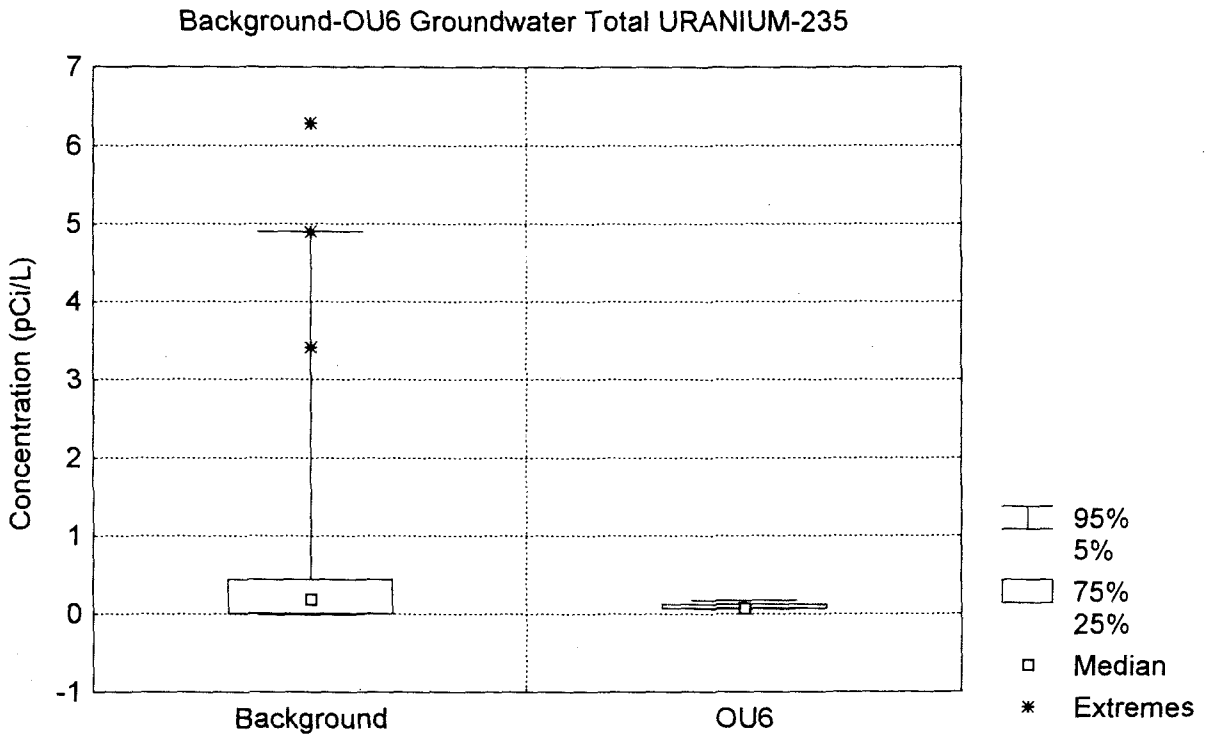

Background-OU6 Groundwater Total PLUTONIUM-239,240
Concentration (pCi/L)
4
3.5
3
2.5
2
1.5
1
0.5
0
-0.5
Background
OU6
95%
5%
75%
25%
Median
Extremes

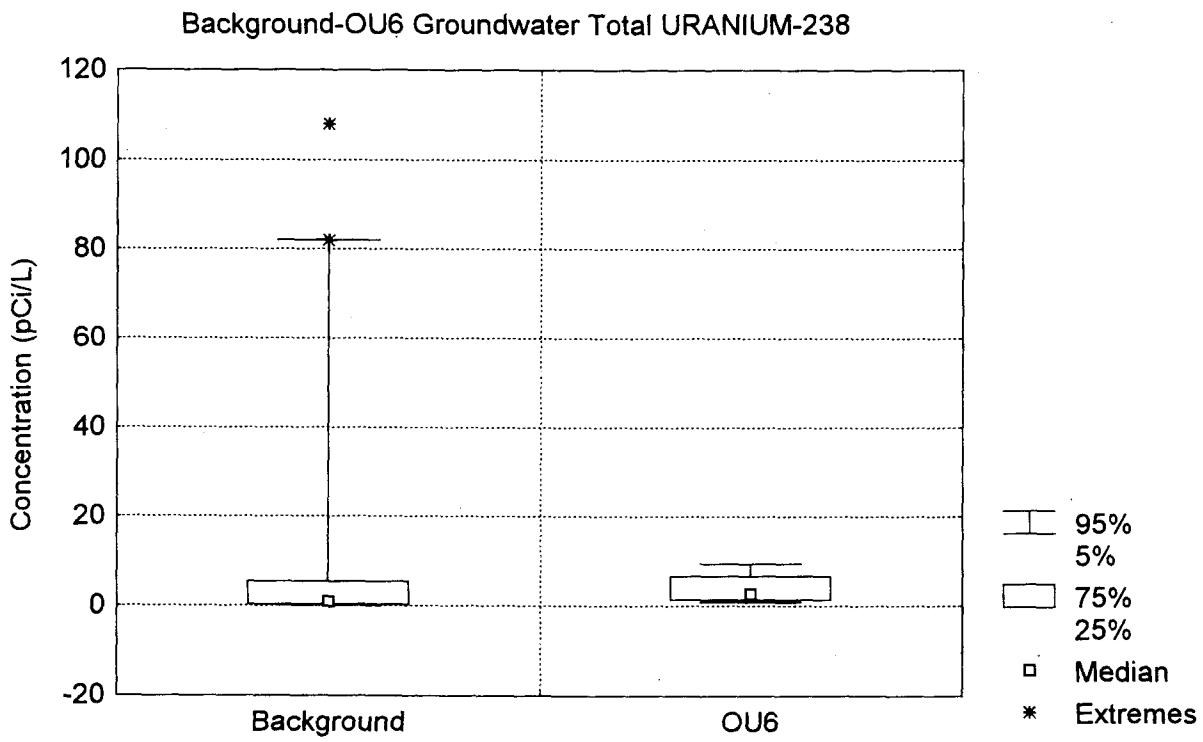

Background-OU6 Groundwater Total RADIUM-226
Concentration (pCi/L)
11
9
7
5
3
1
-1
Background
OU6
95%
5%
75%
25%
Median
Extremes

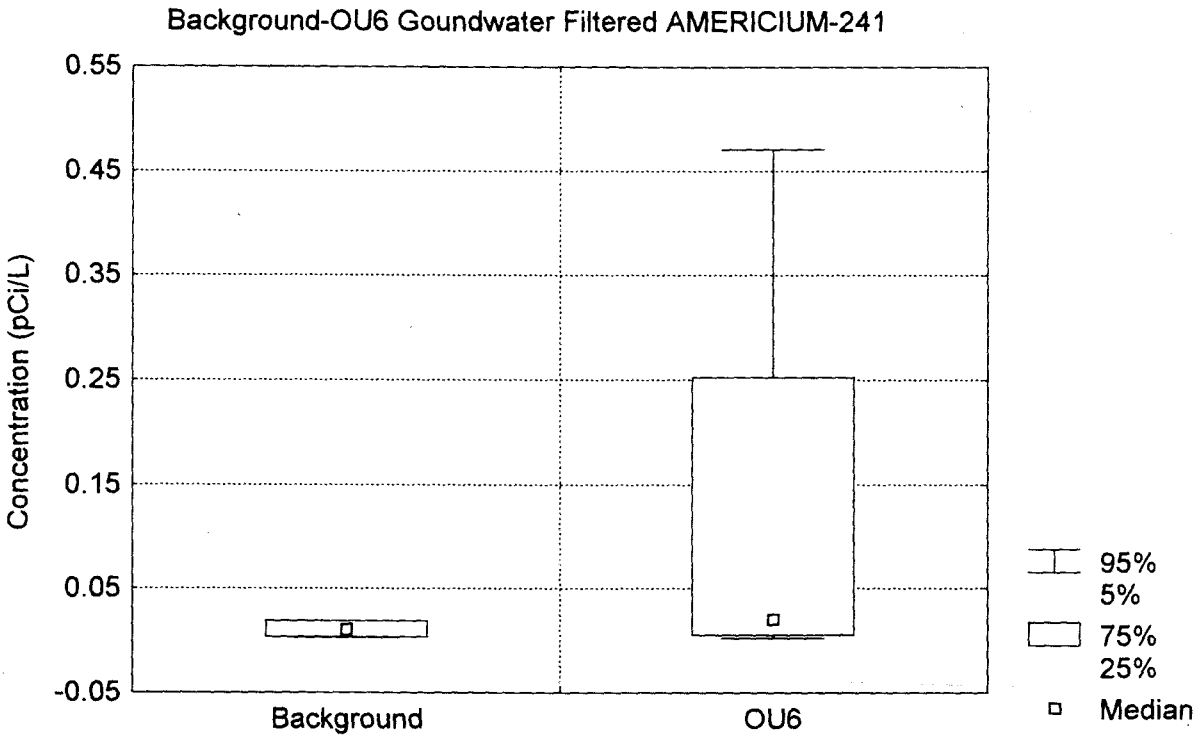

Background-OU6 Groundwater Total STRONTIUM-89,90
Concentration (pCi/L)
1.4
1.2
1
0.8
0.6
0.4
0.2
0
-0.2
Background
OU6
95%
5%
75%
25%
Median
Extremes

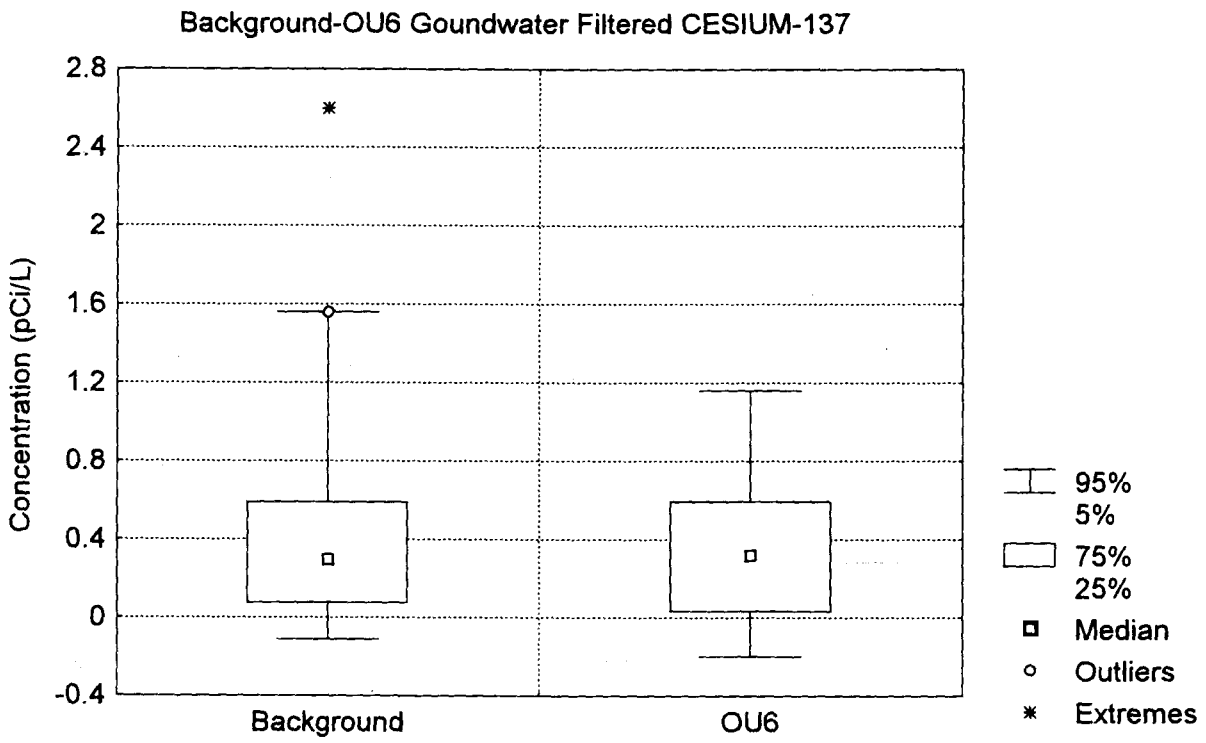

Background-OU6 Groundwater Total TRITIUM
45000
35000
25000
15000
5000
-5000
Concentration (pCi/L)
Background
OU6
95%
5%
75%
25%
Median
Extremes

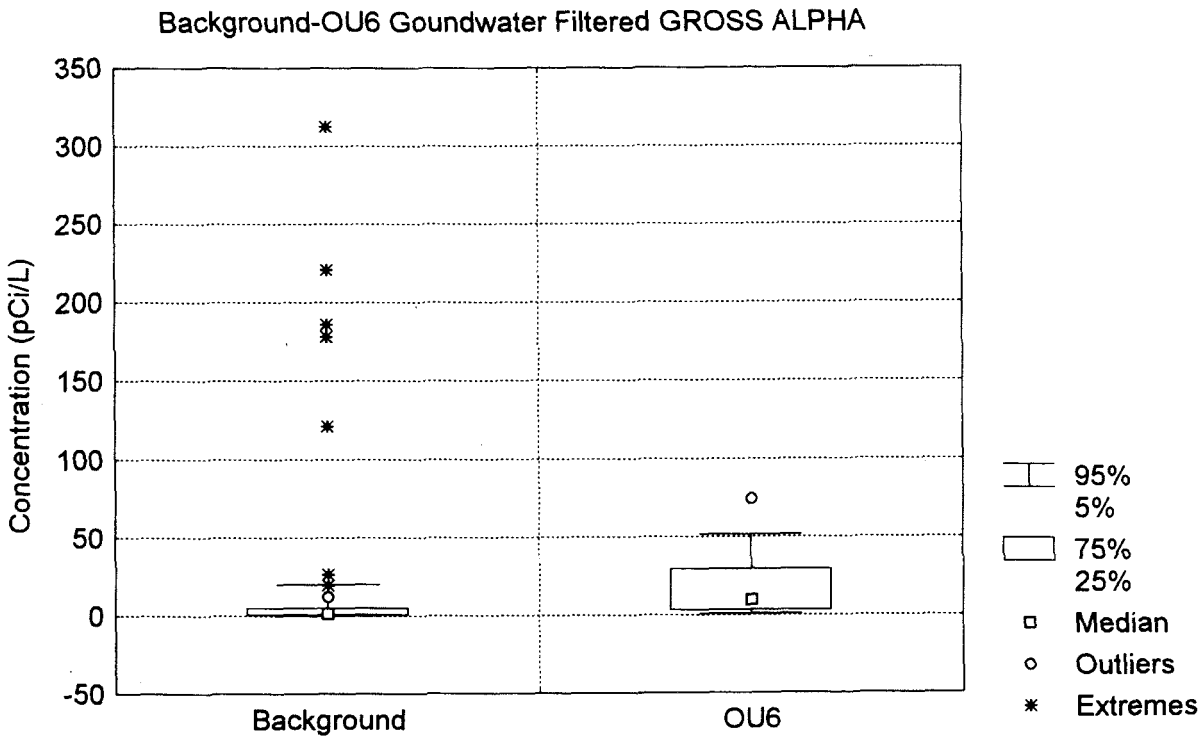

Background-OU6 Groundwater Total URANIUM-233,234
Concentration (pCi/L)
180
140
100
60
20
-20
Background
OU6
95%
5%
75%
25%
Median
Extremes

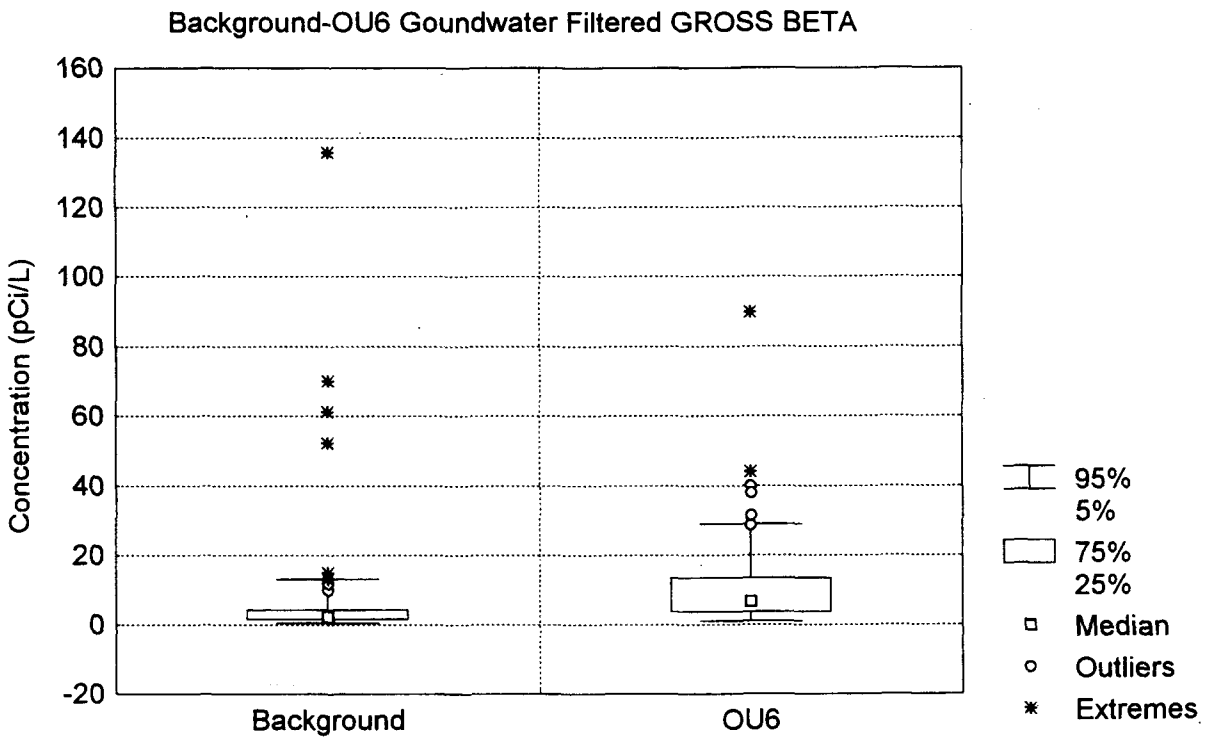

Background-OU6 Groundwater Total URANIUM-235
Concentration (pCi/L)
7
6
5
4
3
2
1
0
-1
Background
OU6
95%
5%
75%
25%
Median
Extremes

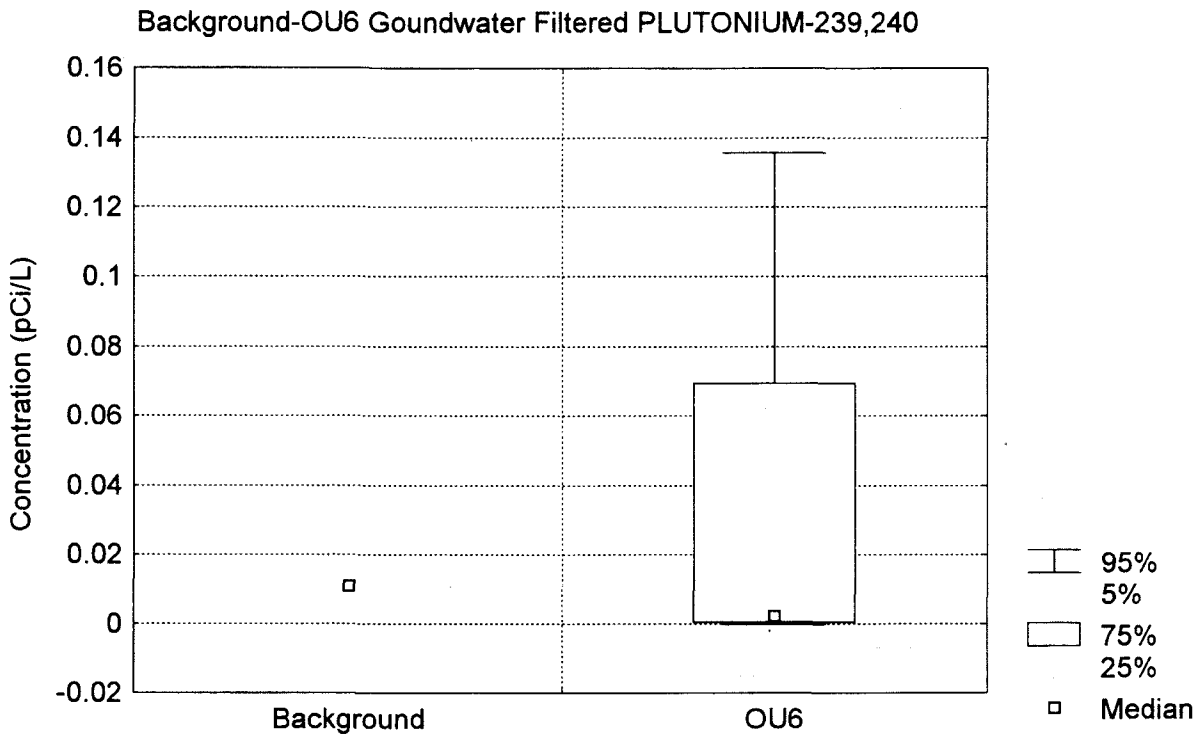

Background-OU6 Groundwater Total URANIUM-238
Concentration (pCi/L)
120
100
80
60
40
20
0
-20
Background
OU6
95%
5%
75%
25%
Median
Extremes

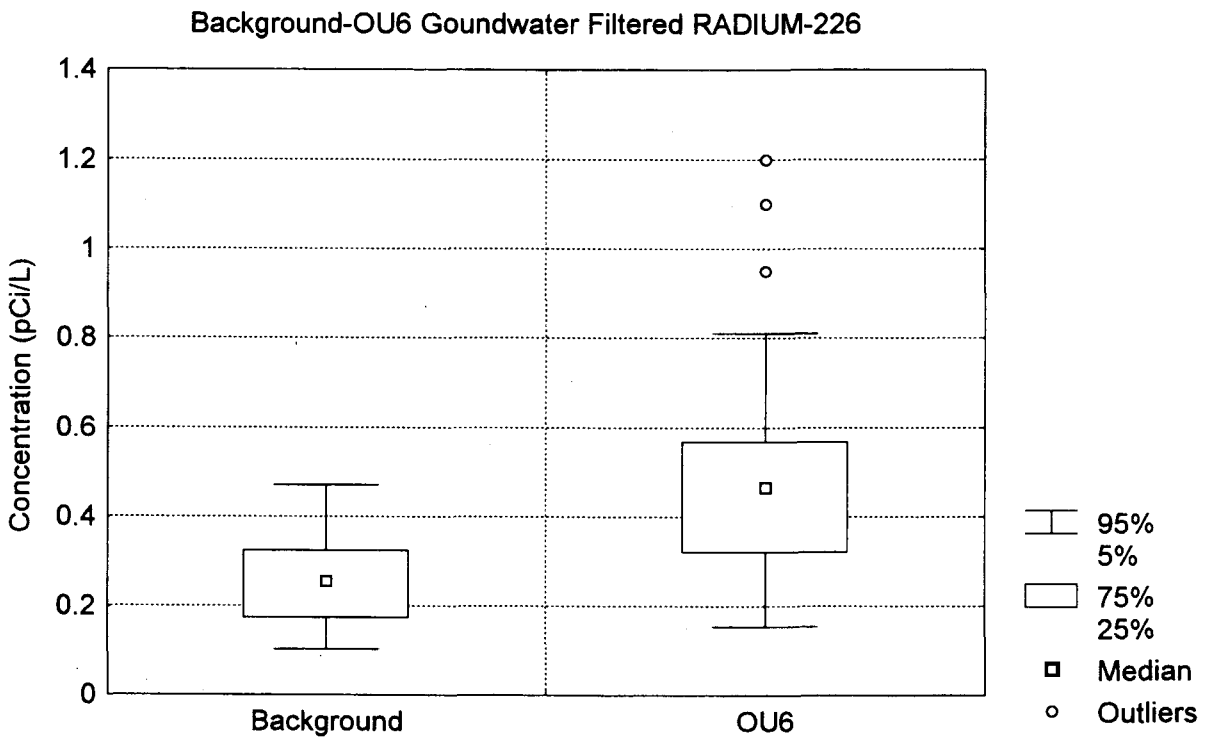

Background-OU6 Goundwater Filtered AMERICIUM-241
Concentration (pCi/L)
0.55
0.45
0.35
0.25
0.15
0.05
-0.05
Background
OU6
95%
5%
75%
25%
Median

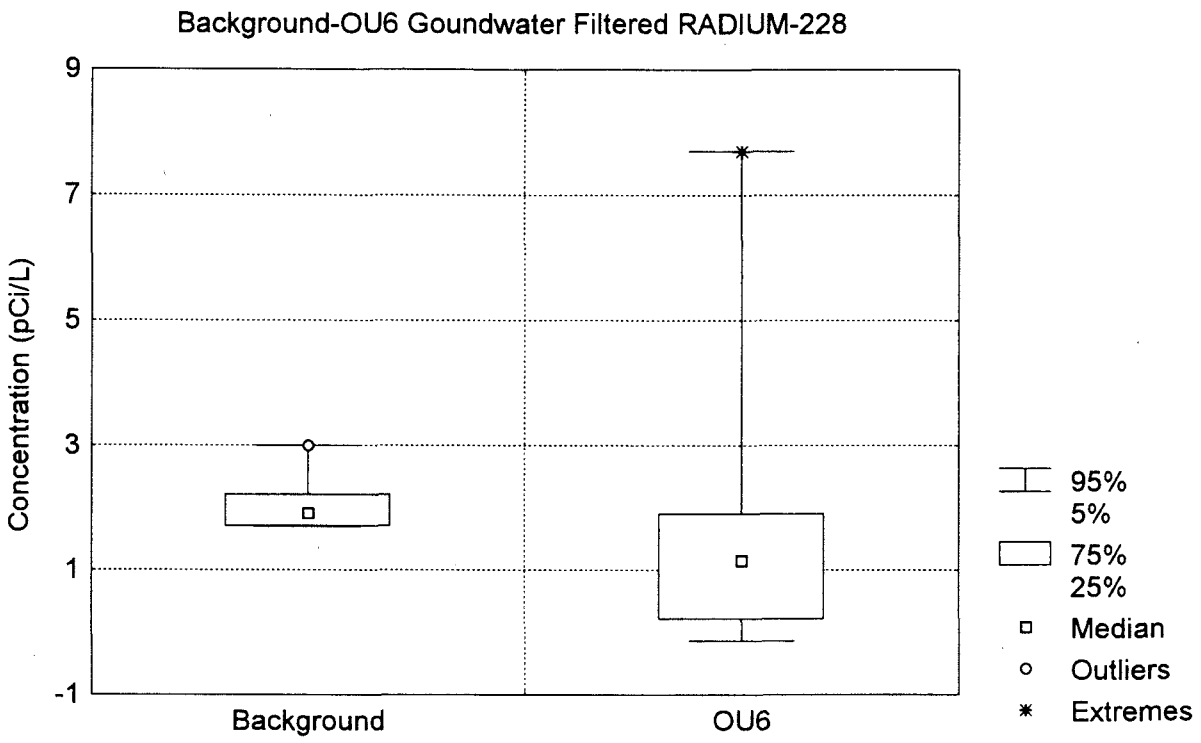

Background-OU6 Goundwater Filtered CESIUM-137
Concentration (pCi/L)
2.8
2.4
2
1.6
1.2
0.8
0.4
0
-0.4
Background
OU6
95%
5%
75%
25%
Median
Outliers
Extremes

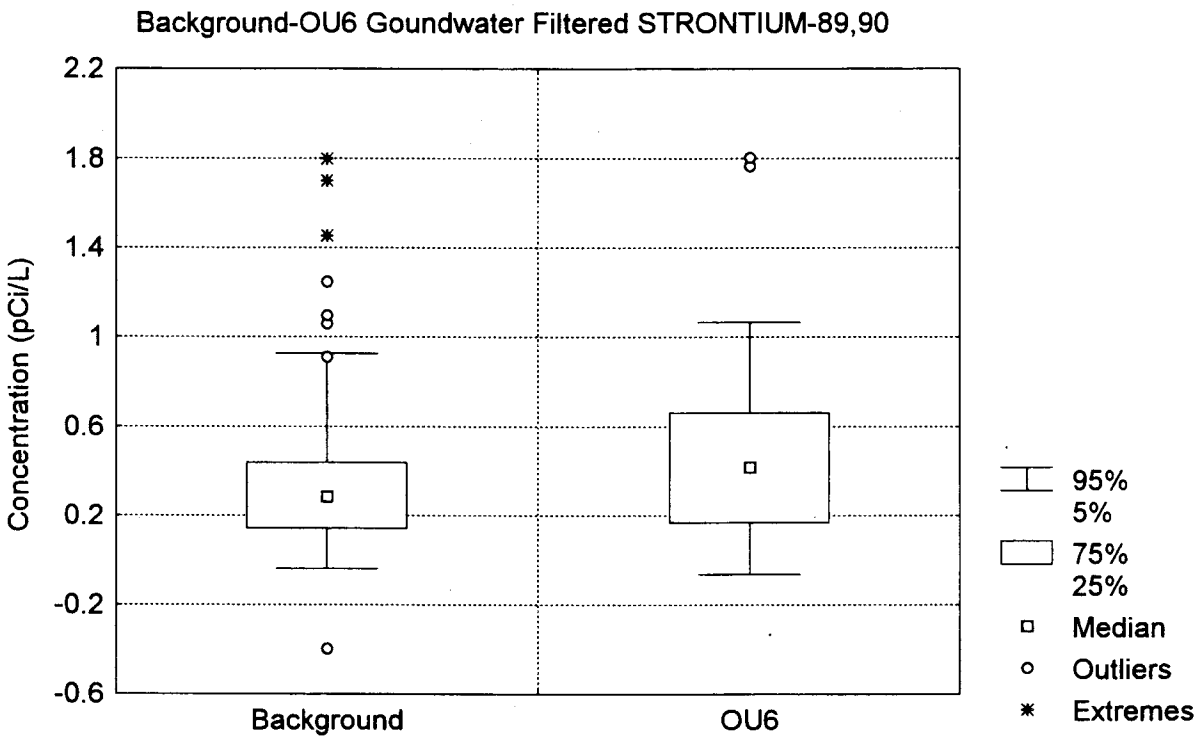

Background-OU6 Goundwater Filtered GROSS ALPHA
Concentration (pCi/L)
350
300
250
200
150
100
50
0
-50
Background
OU6
95%
5%
75%
25%
Median
Outliers
Extremes

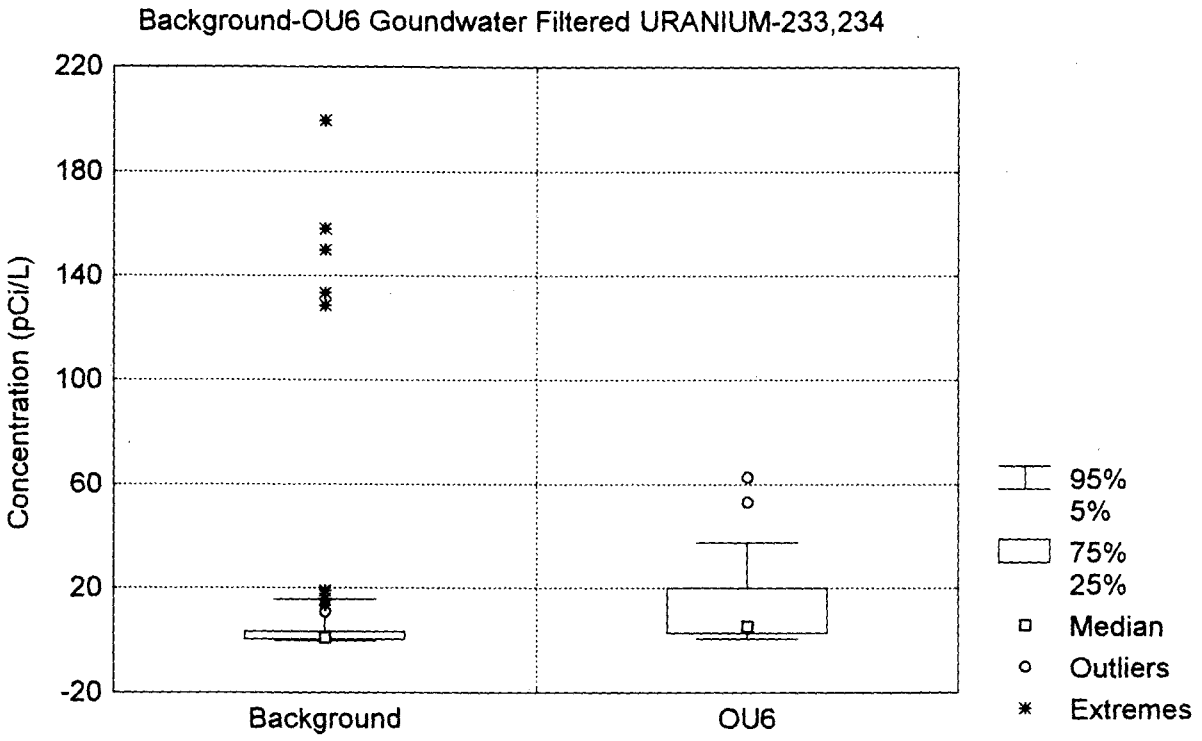

Background-OU6 Goundwater Filtered GROSS BETA
Concentration (pCi/L)
160
140
120
100
80
60
40
20
0
-20
Background
OU6
95%
5%
75%
25%
Median
Outliers
Extremes

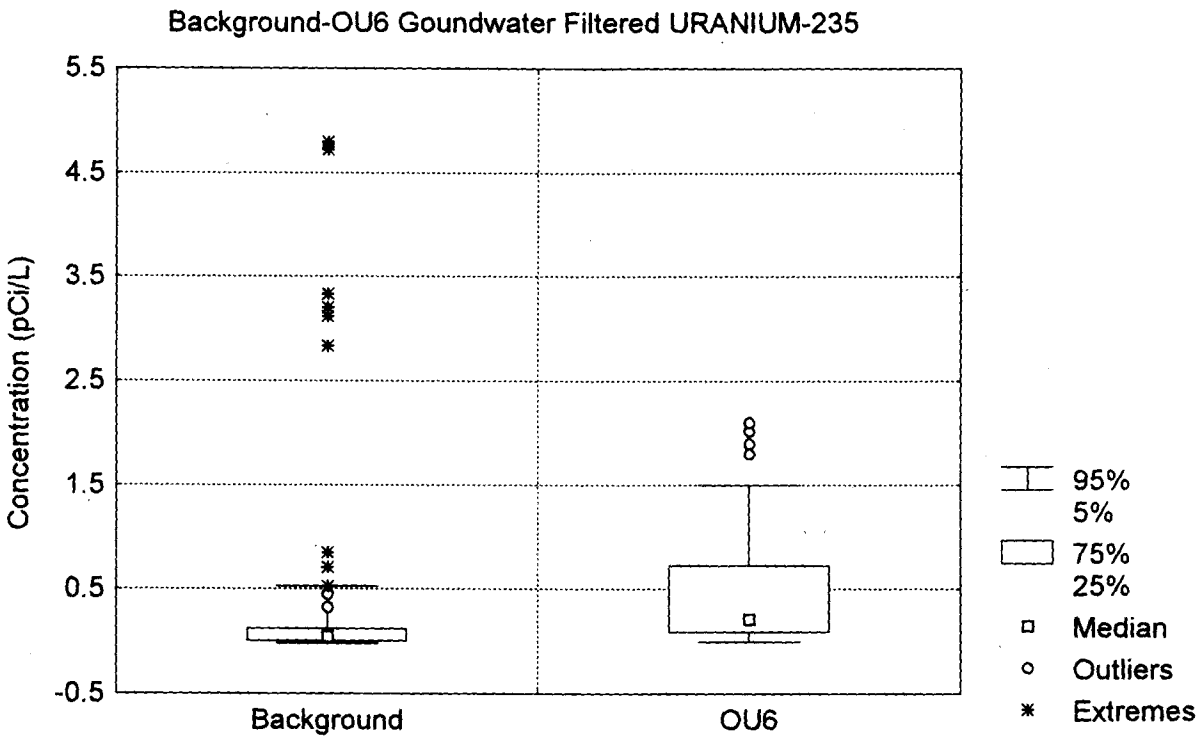

Background-OU6 Goundwater Filtered PLUTONIUM-239,240
Concentration (pCi/L)
0.16
0.14
0.12
0.1
0.08
0.06
0.04
0.02
0
-0.02
Background
OU6
95%
5%
75%
25%
Median

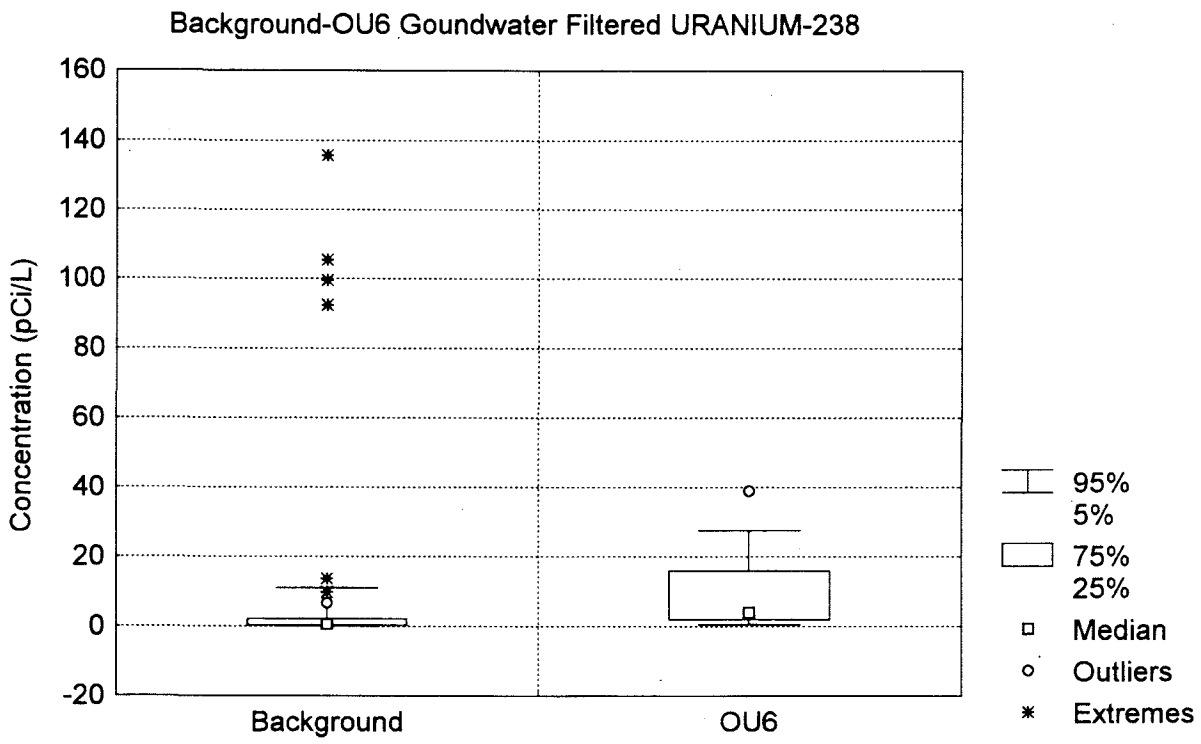

Background-OU6 Goundwater Filtered RADIUM-226
Concentration (pCi/L)
1.4
1.2
1
0.8
0.6
0.4
0.2
0
Background
OU6
95%
5%
75%
25%
Median
Outliers


Background-OU6 Goundwater Filtered RADIUM-228
Concentration (pCi/L)
9
7
5
3
1
-1
Background
OU6
95%
5%
75%
25%
Median
Outliers
Extremes

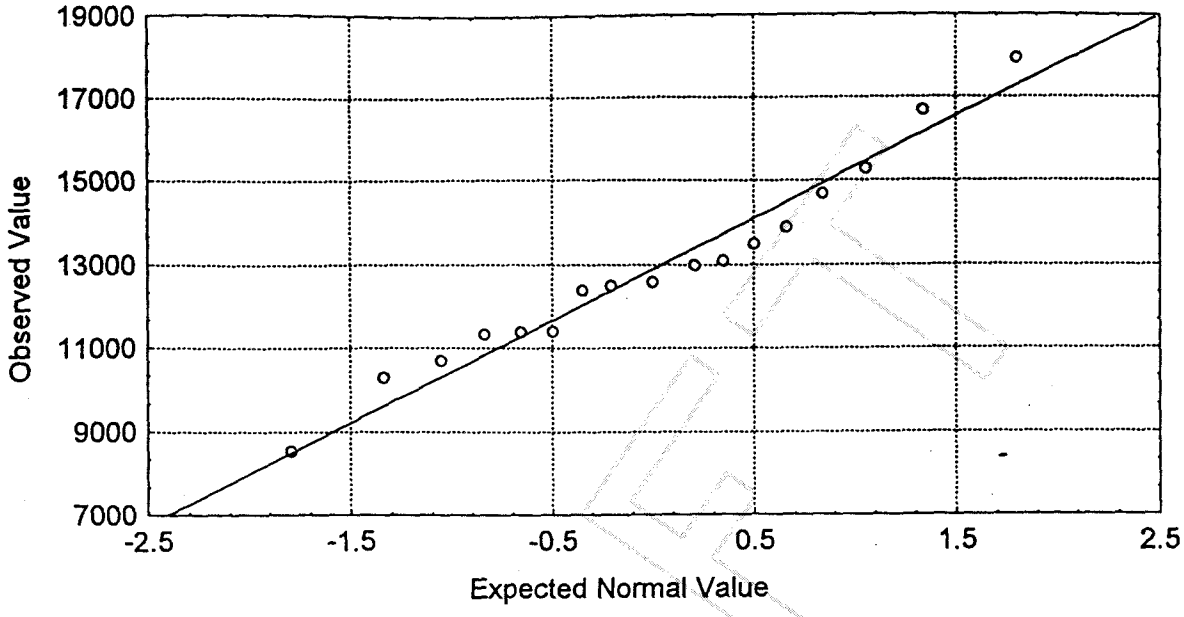

Background-OU6 Goundwater Filtered STRONTIUM-89,90
Concentration (pCi/L)
2.2
1.8
1.4
1
0.6
0.2
-0.2
-0.6
Background
OU6
95%
5%
75%
25%
Median
Outliers
Extremes


Background-OU6 Goundwater Filtered URANIUM-233,234
Concentration (pCi/L)
220
180
140
100
60
20
-20
Background
OU6
95%
5%
75%
25%
Median
Outliers
Extremes

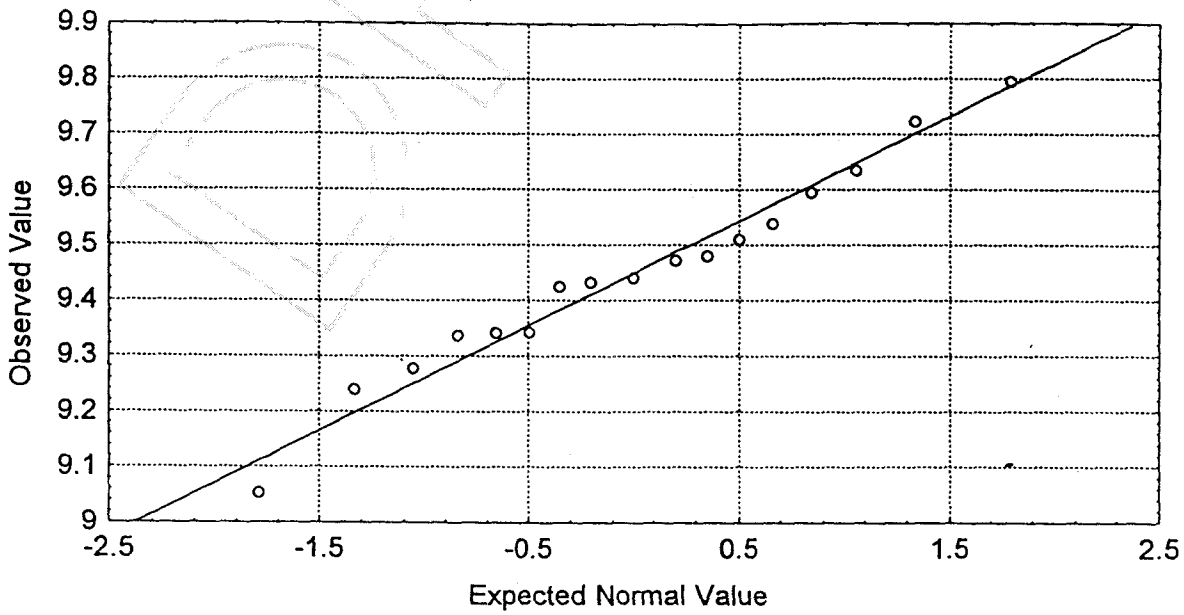

Background-OU6 Goundwater Filtered URANIUM-235
Concentration (pCi/L)
5.5
4.5
3.5
2.5
1.5
0.5
-0.5
Background
OU6
95%
5%
75%
25%
Median
Outliers
Extremes


Background-OU6 Goundwater Filtered URANIUM-238
Concentration (pCi/L)
160
140
120
100
80
60
40
20
0
-20
Background
OU6
95%
5%
75%
25%
Median
Outliers
Extremes

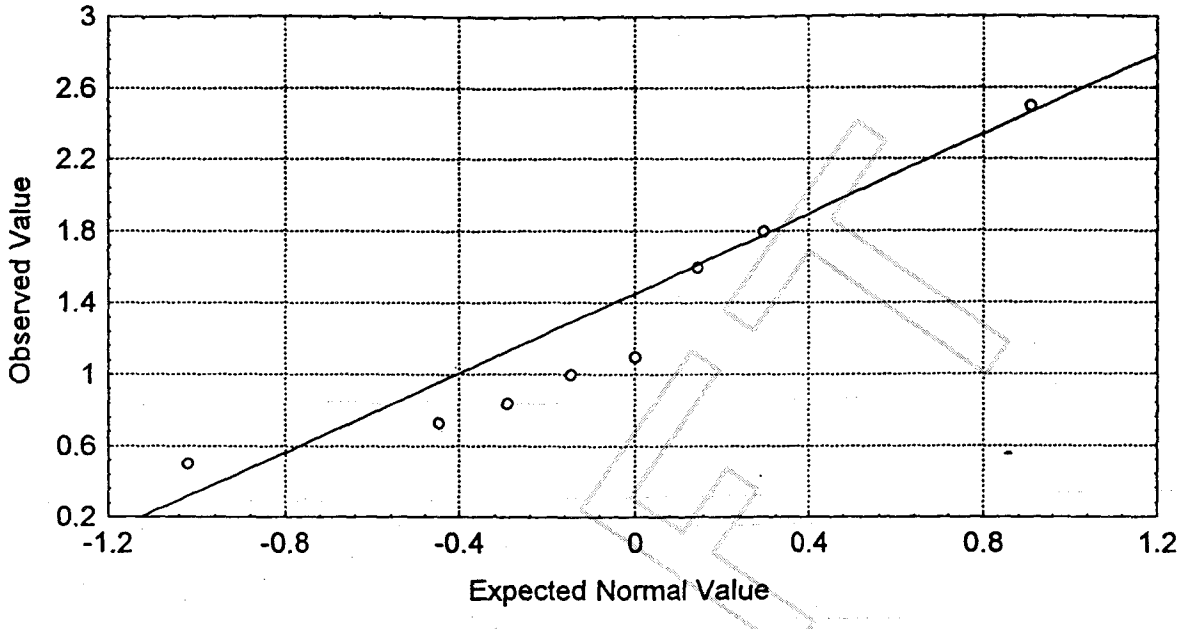
Plot D8-1
OU6 Surface Soil Aluminum
Normal Probability Plot of RESULT
y = -5.27+0*x+eps



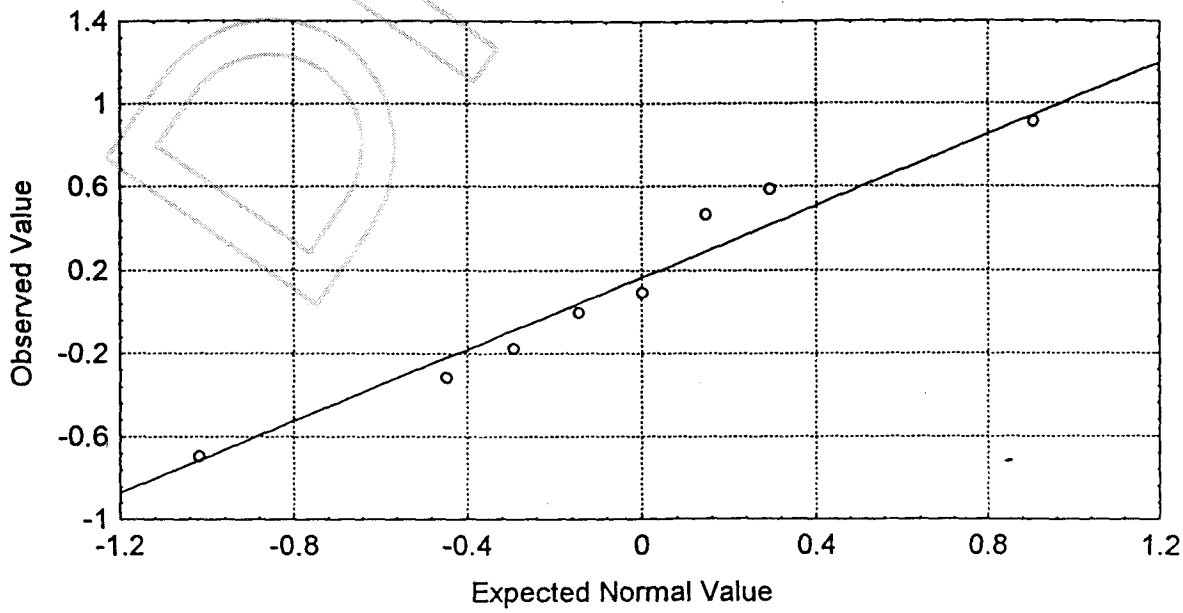
Plot D8-2
OU6 Surface Soil Aluminum
Log-normal Probability Plot of RESULT
y = -50.096+5.302*x+eps



Plot D8-3
OU6 Surface Soil Cadmium
Normal Probability Plot of RESULT
y = -1.308+0.9*x+eps



Plot D8-4
OU6 Surface Soil Cadmium
Log-normal Probability Plot of RESULT
y = -0.191+1.161*x+eps



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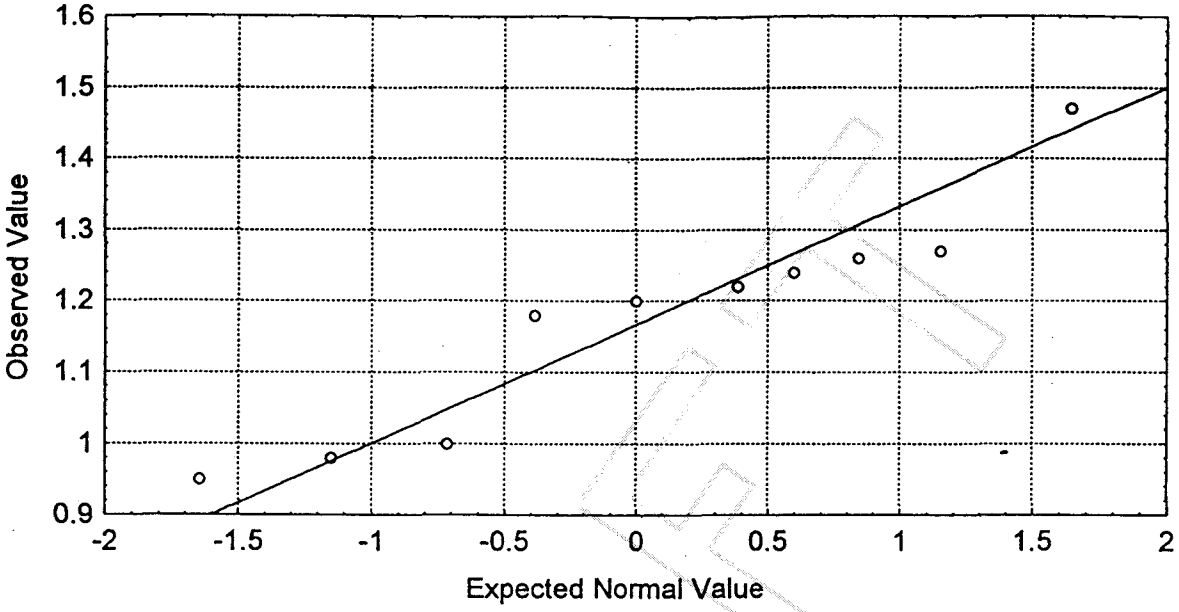
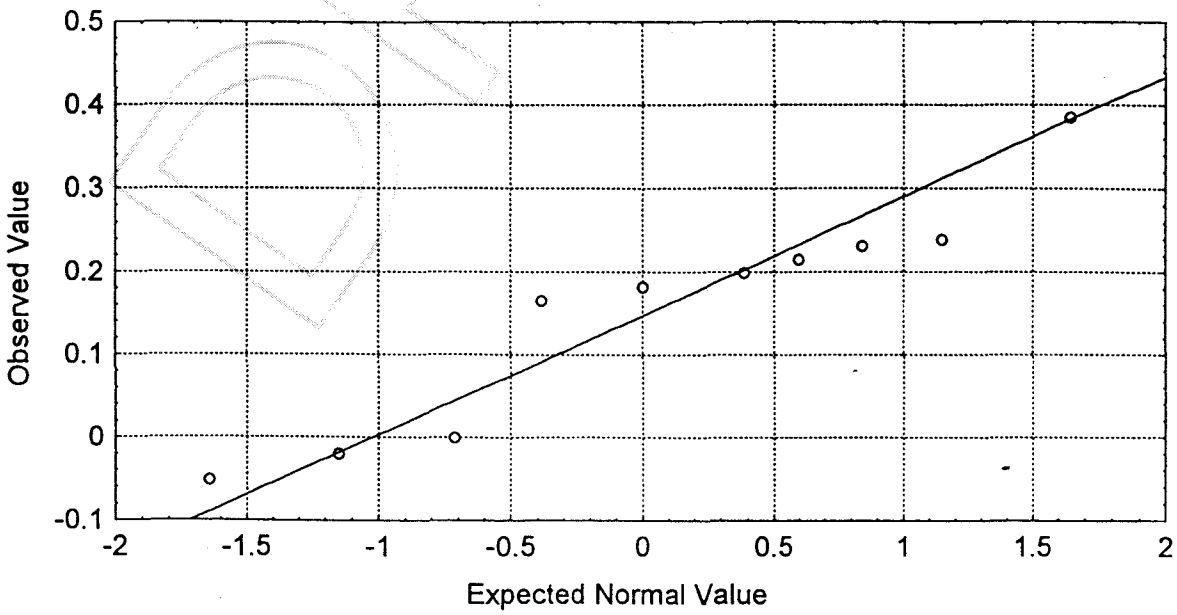
Plot D8-5
OU6 Surface Soil Uranium-233/234
Normal Probability Plot of RESULT
y = -7.01+6.008*x+eps



Plot D8-6
OU6 Surface Soil Uranium-233/234
Log-normal Probability Plot of RESULT
y = -1.021+6.954*x+eps



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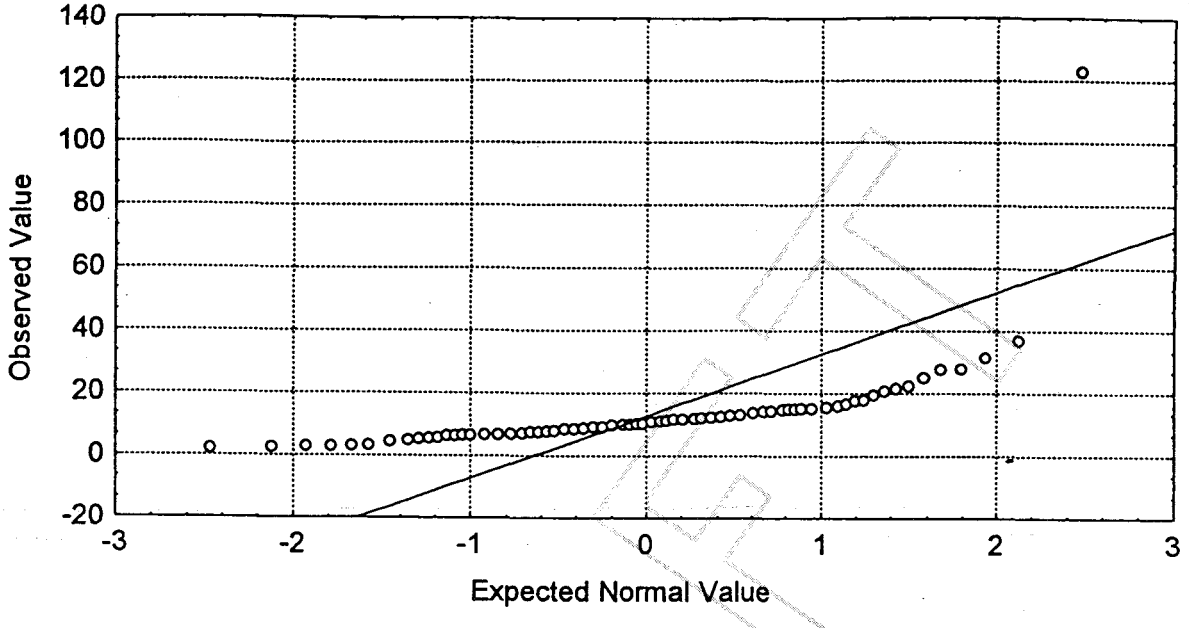
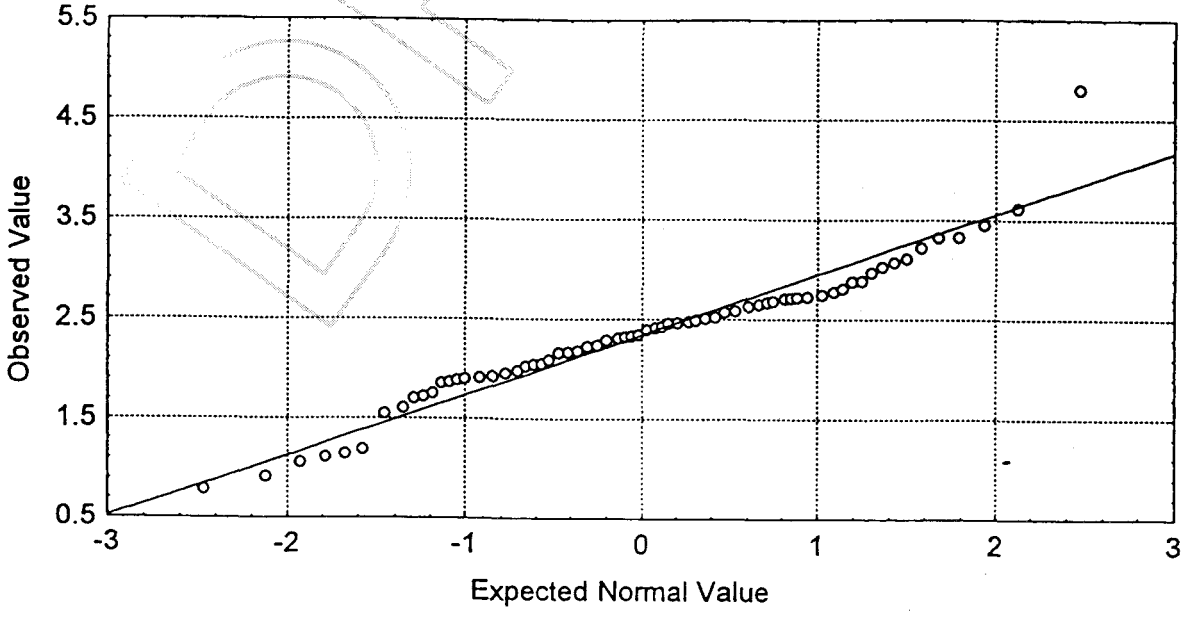
Plot D8-7
OU6 Subsurface Soil Copper
Normal Probability Plot of RESULT
y = -0.639+0.05*x+eps



Plot D8-8
OU6 Subsurface Soil Copper
Log-normal Probability Plot of RESULT
y = -3.851+1.644*x+eps



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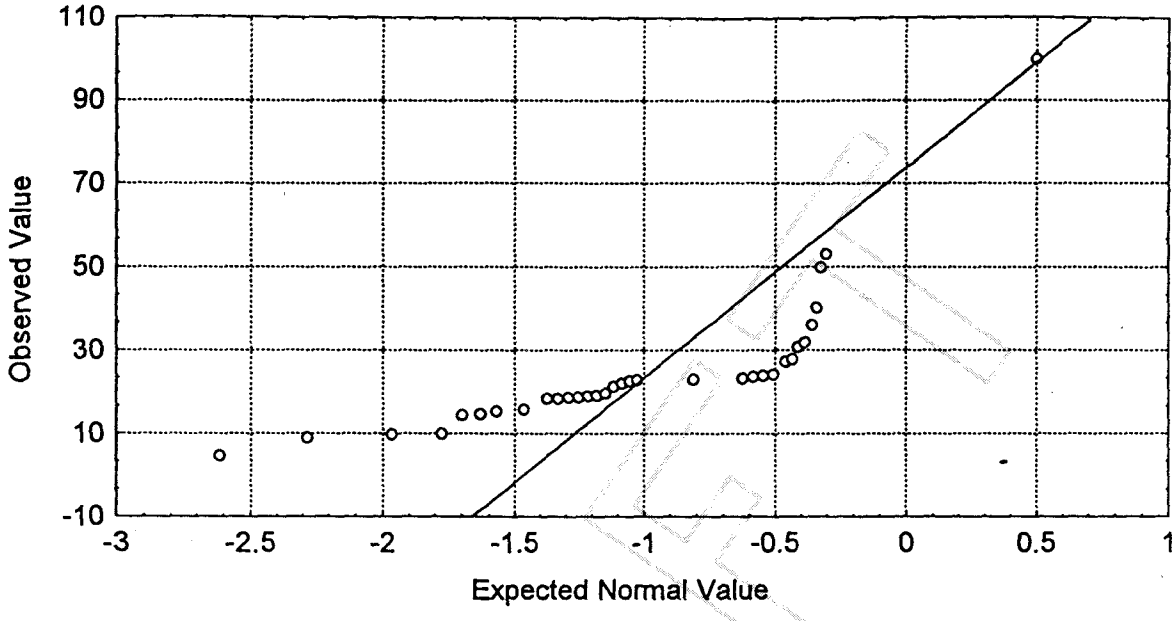
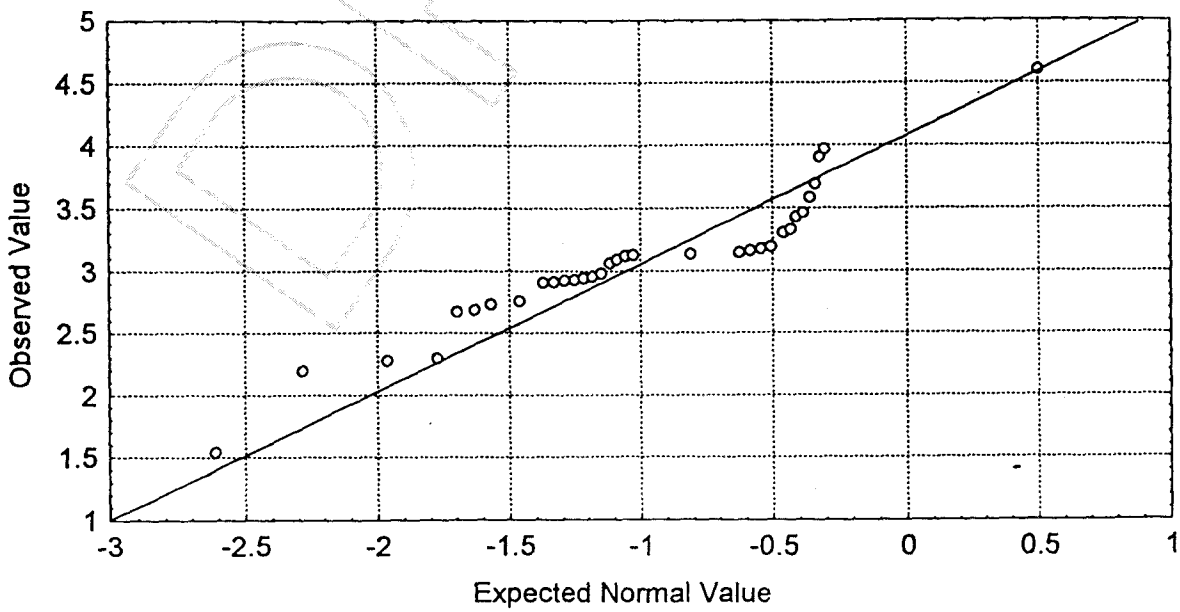
Plot D8-9
OU6 GroundwaterTotal Tin
Normal Probability Plot of RESULT
y = -1.464+0.02*x+eps



Plot D8-10
OU6 GroundwaterTotal Tin
Log-normal Probability Plot of RESULT
y = -3.986+0.977*x+eps



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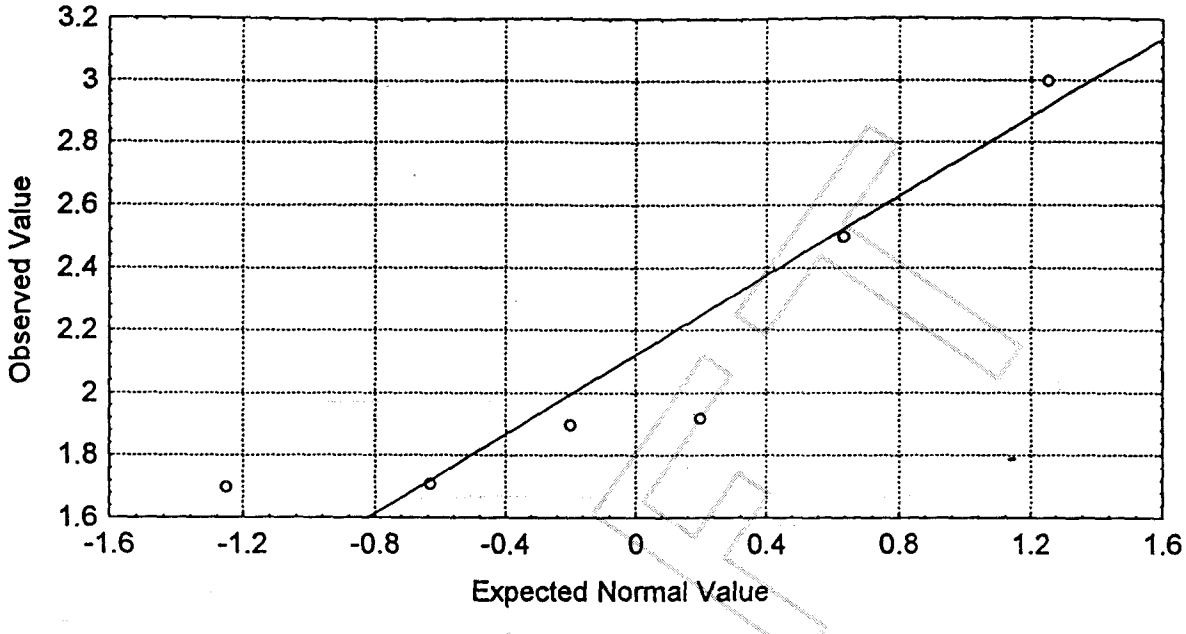
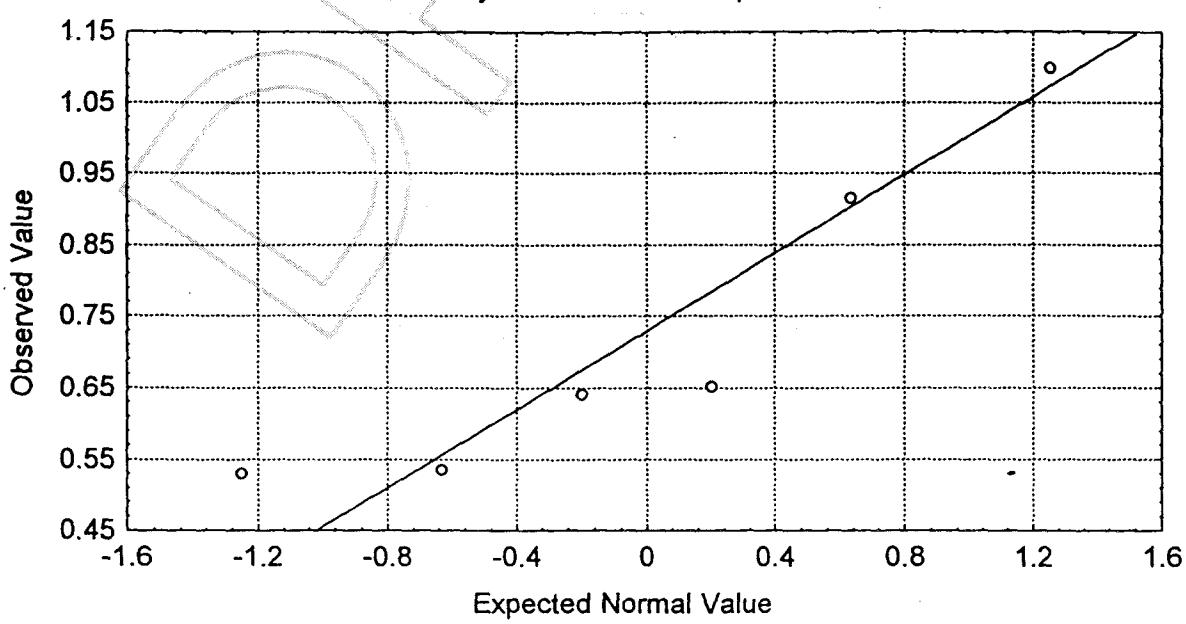
Plot D8-11
OU6 Groundwater Filtered Radium-228
Normal Probability Plot of RESULT
y = -3.347+1.578*x+eps



Plot D8-12
OU6 Groundwater Filtered Radium-228
Log-normal Probability Plot of RESULT
y = -2.66+3.647*x+eps



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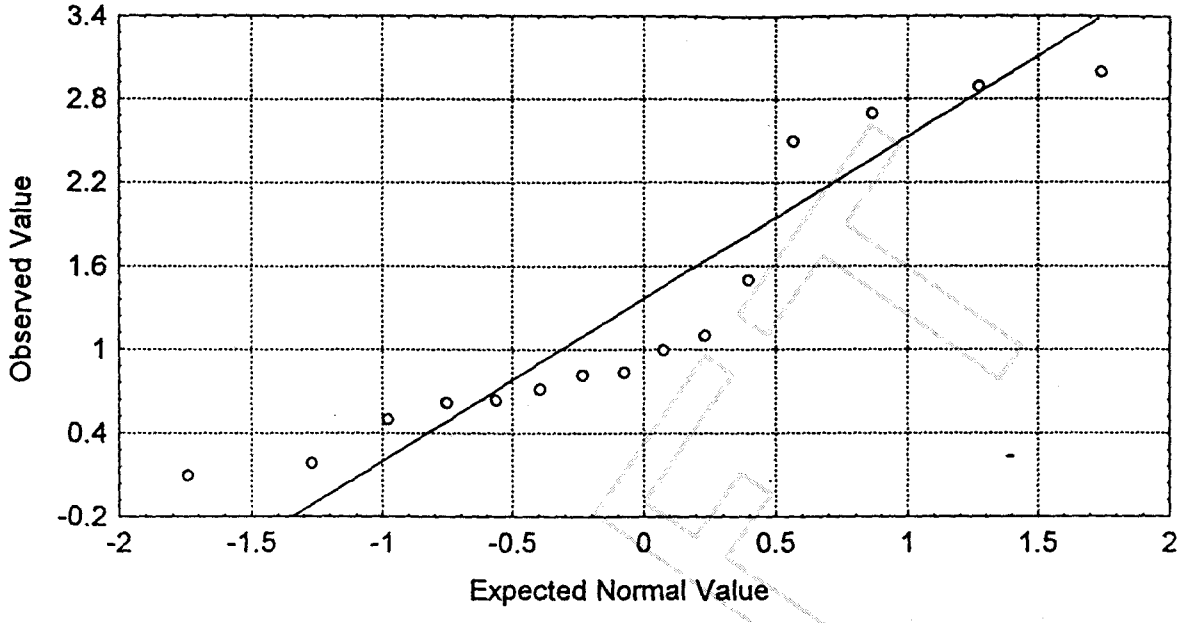
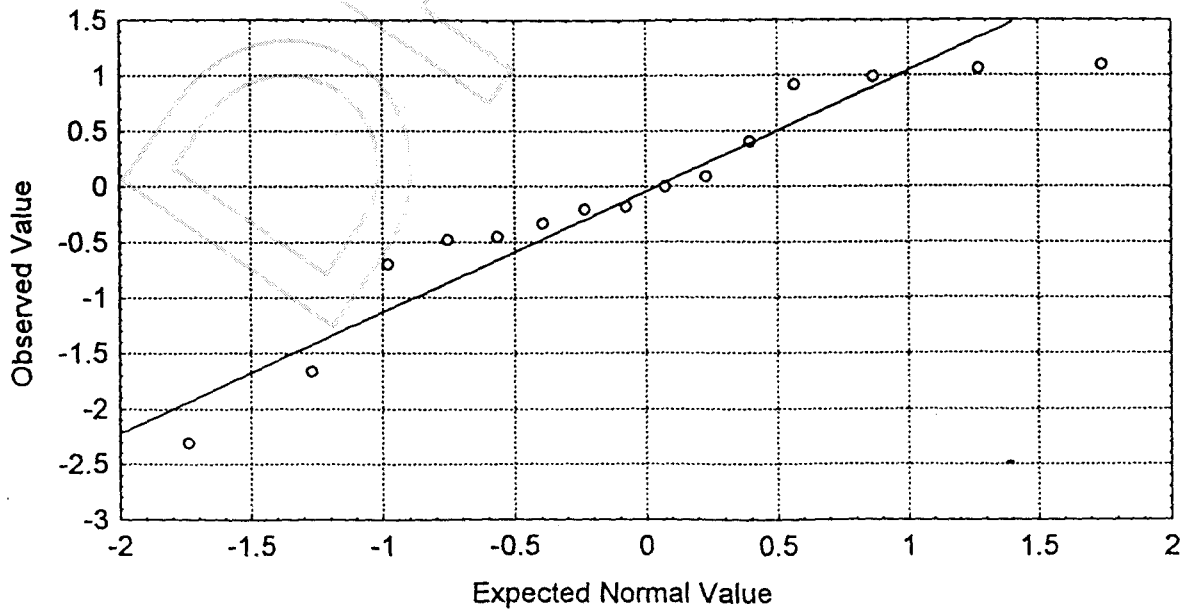
Plot D8-13
OU6 Pond Sediment Beryllium

Normal Probability Plot of RESULT
y = -1.172+0.858*x+eps



Plot D8-14
OU6 Pond Sediment Beryllium

Log-normal Probability Plot of RESULT
y = 0.04+0.92*x+eps



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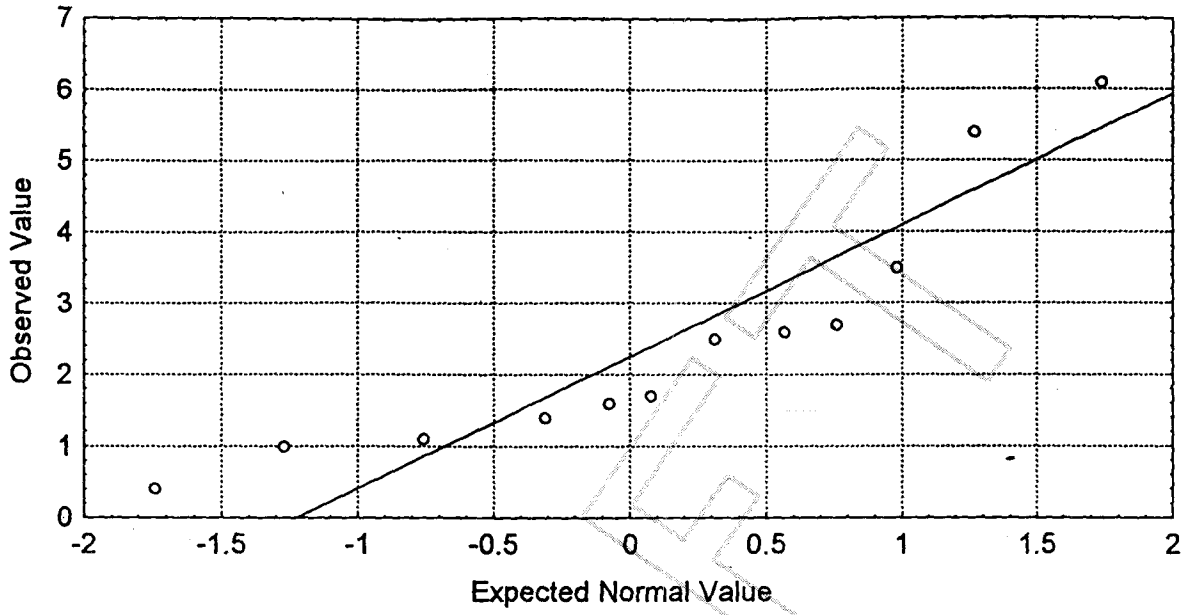
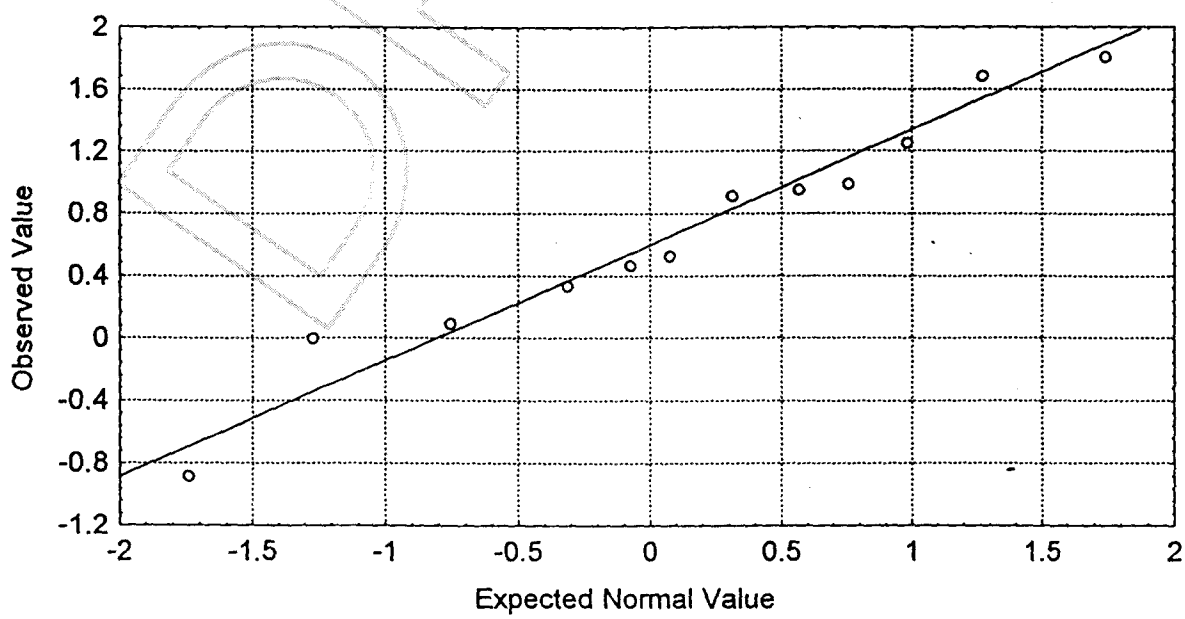
Plot D8-15
OU6 Pond Sediment Cadmium
Normal Probability Plot of RESULT
y = -1.225+0.544*x+eps



Plot D8-16
OU6 Pond Sediment Cadmium
Log-normal Probability Plot of RESULT
y = -0.808+1.349*x+eps



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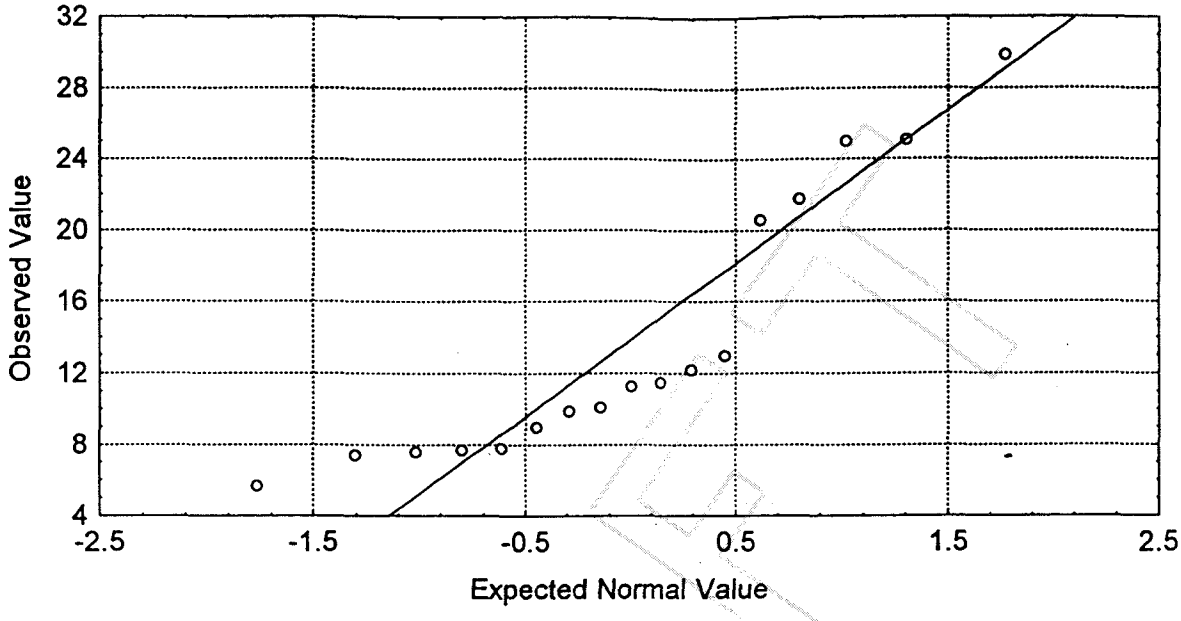
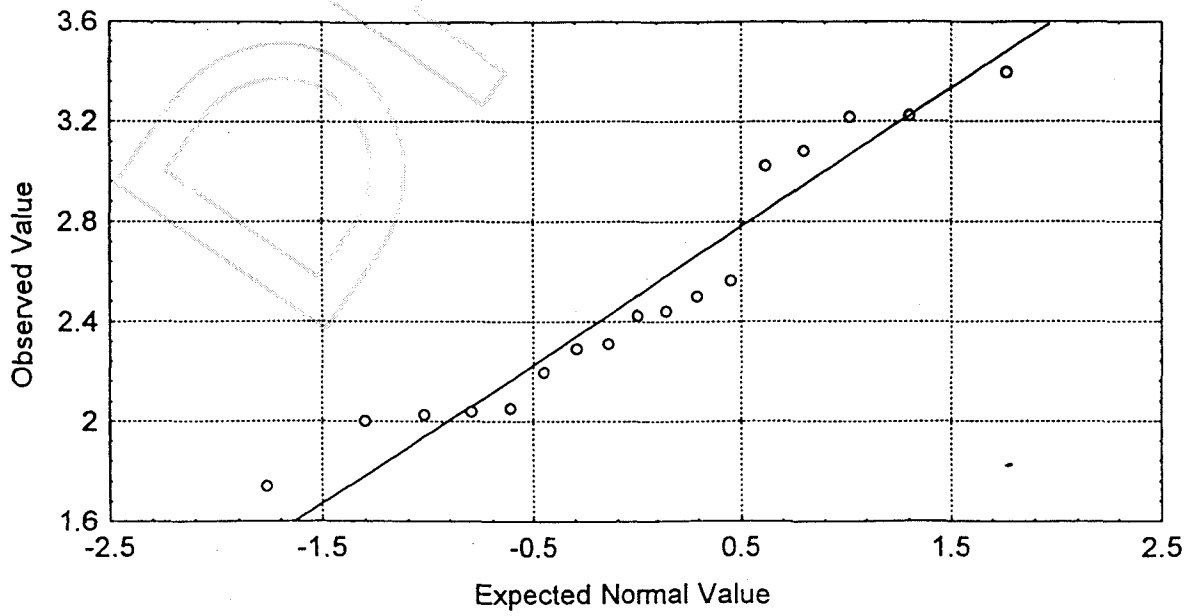
Plot D8-17
OU6 Pond Sediment Nickel
Normal Probability Plot of RESULT
y = -1.611+0.116*x+eps



Plot D8-18
OU6 Pond Sediment Nickel
Log-normal Probability Plot of RESULT
y = -4.526+1.808*x+eps



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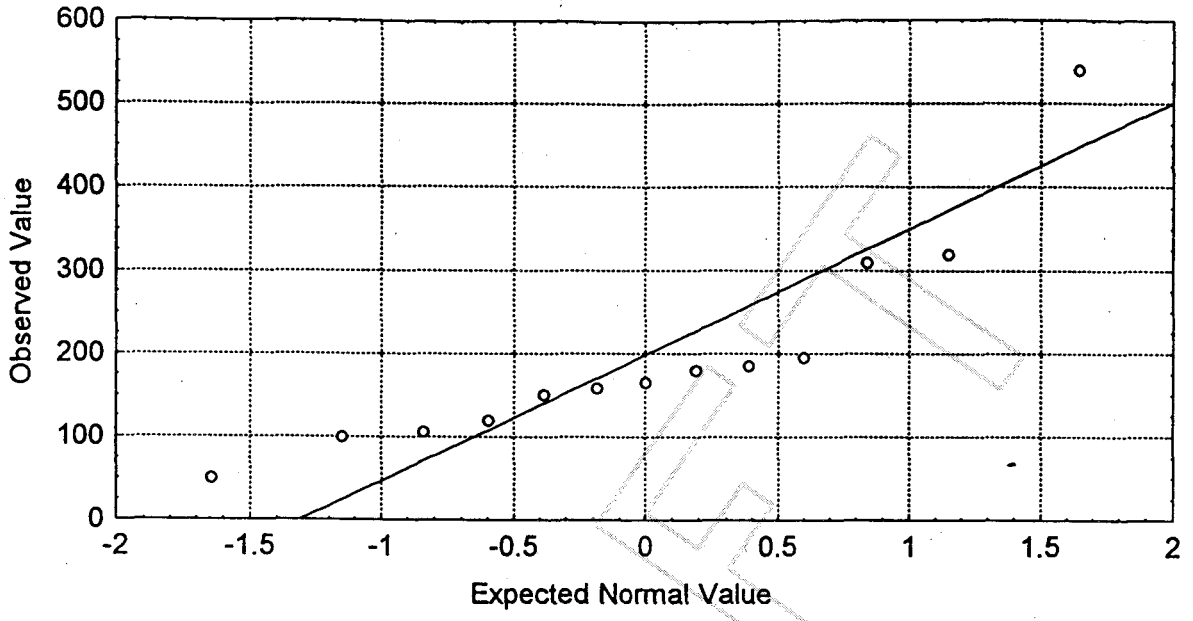
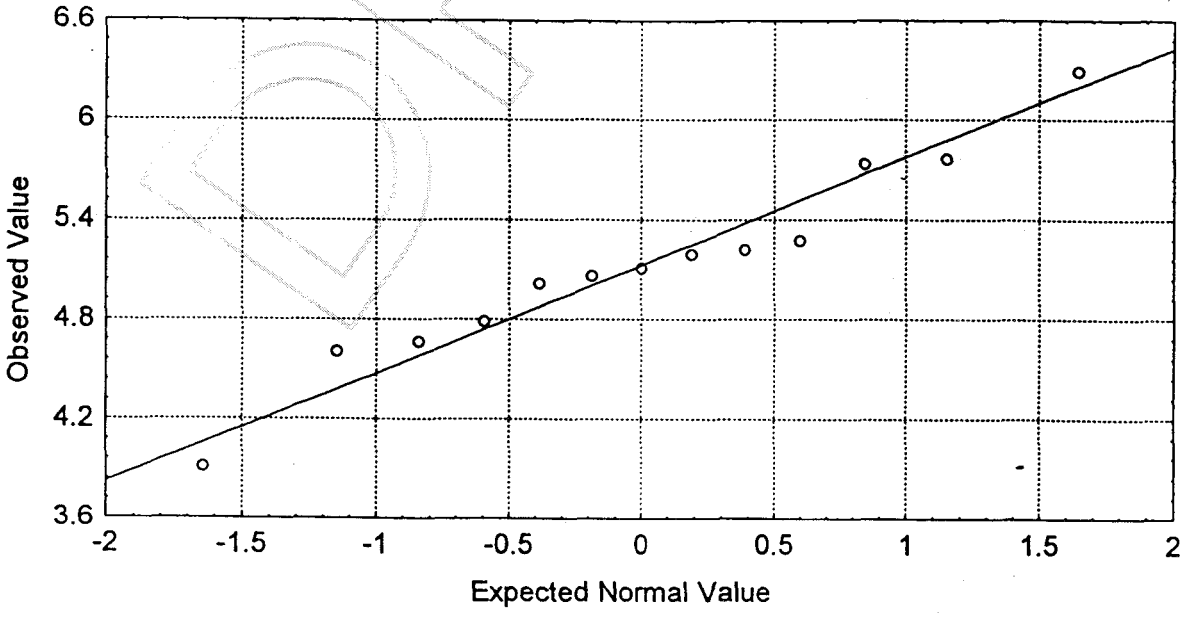
Plot D8-19
OU6 Pond Sediment Tritium
Normal Probability Plot of RESULT
y = -1.311+0.007*x+eps



Plot D8-20
OU6 Pond Sediment Tritium
Log-normal Probability Plot of RESULT
y = -7.865+1.534*x+eps



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LIST OF ACRONYMS

CDQOs	Chemical Data Quality Objectives
CLP	Contract Laboratory Program
CRDL	Contract Required Detection Limit
CRQL	Contract Required Quantitation Limit
DMR	Document Modification Request
GRRASP	General Radiochemistry and Routine Analytical Services Protocol
IDL	Instrument Detection Limit
IHSS	Individual Hazardous Substance Site
LCS	laboratory control spike
MDA	minimum detectable activity
MDL	Method Detection Limit
MS/MSD	matrix spike/matrix spike duplicates
MSA	Method of Standard Addition
OU	operable unit
PAH	polynuclear aromatic hydrocarbons
PARCC	precision, accuracy, representativeness, comparability, and completeness
PCB	polychlorinated biphenyl
PCE	tetrachloroethene
pCi/g	picocuries per gram
pCi/l	picocuries per liter
ppb	parts per billion
QA/QC	Quality Assurance/Quality Control
QAA	Quality Assurance Addenda
QAPjP	Quality Assurance Project Plan
RDL	Required Detection Limit
RFEDS	Rocky Flats Environmental Data Systems
RFETS	Rocky Flats Environmental Technology Site
RPD	relative percent difference
SOP	Standard Operating Procedure
SOW	Statement of Work

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SQL	Sample Quantitation Limit
SVOC	semivolatile organic compound
TCE	trichloroethene
TIC	tentatively identified compound
TOC	Total Organic Carbon
USEPA	United States Environmental Protection Agency
VOC	volatile organic compound
WQPL	Water Quality Parameter List

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APPENDIX E
PHASE I QUALITY ASSURANCE / QUALITY CONTROL (QA/QC)

E1.0 INTRODUCTION

The purpose of this evaluation is to determine whether or not data quality objectives were reported in accordance with the project specific chemical data quality objectives (CDQOs) specified in Section E3.0. This appendix discusses the CDQOs established for the Operable Unit No. 6 (OU6) Phase I investigation, the specific documents implemented to achieve those CDQOs, the procedures used to assess the quality of the analytical data, and the results of that assessment..

Section E2.0 lists the guidance documents developed for the OU6 investigation. Section E3.0 summarizes the CDQOs established for OU6. Section E4.0 outlines the sample types and associated field QC collected for the OU6 investigation, and Section E5.0 discusses the chemical parameters selected for evaluation. The analytical data qualifiers assigned by the laboratories, and codes assigned by the validator, are defined in Section E6.0. Section E6.0 also describes how the detection limits, for the various methods performed, how the OU6 analytical data were acquired from the Rocky Flats Environmental Data Systems (RFEDS), steps taken to review the data, and how the data were used. Section E7.0 defines the procedure used to assess the quality of the analytical data; referred to as precision, accuracy, representativeness, comparability, and completeness (PARCC). Section E7.0 also presents the results of the PARCC evaluation. Section E8.0 concludes the QA/QC overall assessment and data usability.

E2.0 WORK DOCUMENTS AND GUIDELINES

The OU6 Phase I field investigation required specific protocol for all associated procedures (i.e, sampling procedures, document control, analytical methodology, data validation, and data management). The purpose of employing standard QC procedures in both the field and laboratory was to provide accurate, precise, consistent, and comparable results. These protocol are described in detail through the use of agency approved, procedural documents (e.g., Standard Operating Procedures [SOPs]) and methodologies, which are referenced

throughout the Quality Assurance Addenda (QAA) of the OU6 Phase I Work Plan (DOE 1992) and the General Radiochemistry and Routine Analytical Services Protocol (GRRASP) (EG&G 1991a). The QAA is an addendum to the Rocky Flats Environmental Technology Site (RFETS) site-wide Quality Assurance Project Plan (QAPjP) (EG&G 1991b). The QAA provides project directives on the usage and applicability of SOPs governing field activities, and in conjunction with the GRRASP and provides directives on the use of analytical methodologies. The OU6 Work Plan specifies control criteria such as sample locations, sample matrices, analytical holding times, quantitation limits, level of laboratory QC, and collection frequency of field QC samples.

E3.0 CHEMICAL DQOs

The Field Sampling Plan (Section 7.0 of the OU6 Work Plan) was designed to obtain data necessary to characterize the physical and hydrologic setting of the Individual Hazardous Substance Sites (IHSSs) within the Walnut Creek Priority Drainage area, assess the presence or absence of contamination, characterize the nature and extent of contamination at the sites, and support a Baseline Risk Assessment and Environmental Evaluation. The CDQOs evaluated in the OU6 QAA were as follows:

- All data were validated in accordance with Data Validation Functional Guidelines (EG&G 1990) by a qualified EG&G subcontractor.

- Analytical precision and accuracy were assessed by the qualified EG&G subcontractor during the data validation process. As a result of data reported outside of QC acceptance criteria the data were qualified accordingly.

- Analytical precision was assessed by calculating the relative percent difference (RPD) in both laboratory and field duplicates. The QC acceptance criteria for precision is 30 percent in water and 40 percent in soil matrix.

- The analytical accuracy of the reported data was assessed by evaluating the percent recovery of surrogate compounds and natural matrix spikes (matrix spike/matrix spike duplicates [MS/MSDs]). The QC acceptance criteria for

accuracy is defined in the Data Validation Functional Guidelines (EG&G 1990) for both soil and water matrix.

- Representativeness is a qualitative parameter that was ensured by implementation of the OU6 sampling and analysis workplan. Field QC samples results were validated for sample type, sample collection frequency, method of analysis, and reported concentrations. RPDs of the sample and associated field duplicate were calculated to assess representativeness. The results of this assessment are discussed in E4.2, Field QC Samples and E7.0, PARCC Assessment.

- The target completeness objective for both field and analytical data was set at 100 percent with a minimum acceptable of 90 percent. The results of this assessment are discussed in section E7.0, PARCC Parameters.

- Comparability is a qualitative objective that was optimized by implementing the OU6 sampling and analysis workplan, which dictated the use of standardized sampling and analytical protocol. The results of this assessment are discussed in section E7.0, PARCC Parameters.

E4.0 FIELD SAMPLES EVALUATED

The type and number of field samples selected for chemical evaluation are presented below. Section E4.1 summarizes the investigative samples, and Section E4.2 describes the associated field QC samples selected for each matrix, and the frequency at which field QC samples were collected.

E4.1 INVESTIGATIVE SAMPLES

Five types of sample media were collected during the OU6 Phase I field investigation which included: surface soils, subsurface soils, groundwaters, surface waters, and sediments. The number of samples collected varied for each IHSS investigated. Samples were generally collected for volatile organic compounds (VOCs), semivolatile organic compounds (SVOCs), pesticides/polychlorinated biphenyls (PCBs), inorganics, metals, and radionuclides (see

Section E5.0 for more detail on parameters). The associated analytical data for these analyte groups were acquired from RFEDS. The investigative samples collected for OU6 are summarized as follows:

- One hundred thirty-three surface soil samples were collected from September 1992 through February 1993.

- Six hundred forty subsurface soil samples were collected from October 1992 through February 1993. Sample depths varied for each IHSS.

- Three hundred eleven groundwater samples were collected from first quarter 1991 through fourth quarter 1993.

- Seventy surface water samples were collected from three different surface water programs. Five samples were collected from each of the A and B-Series Ponds, and the W&I Pond. Eleven samples were collected from stream surface waters during baseflow conditions, and nine samples were collected from stream surface waters during a storm event.

- Eighty-eight sediment samples were collected during three different sediment sampling events. Fifty-five pond sediment samples were collected from the A and B-Series Ponds, and from the W&I Pond; eighteen dry sediment samples were collected , and fifteen baseflow sediment samples were collected.

E4.2 FIELD QC SAMPLES

Field QC samples were collected alongside the OU6 investigative samples as a means of monitoring the integrity of the sample collection process, and subsequent analytical process. Analytical data obtained from field QC samples may also give an indication of variability inherent in the matrix (i.e., field duplicate variability or poor matrix spike recovery). The field QC samples that were required for OU6 included equipment rinsate blanks (rinsates), field duplicates, MS/MSD, and trip blanks. Trip blanks were collected and analyzed for pond surface water samples in accordance with the OU6 workplan. The OU6 Work Plan specified the following collection frequency:

- Field Duplicates, all media: 1 field duplicate per 10 investigative samples (10 percent)
- Rinsates, all media: 1 rinsate per day per media, or 1 rinsate per 20 investigative samples, whichever was greater (~ 5 percent)
- MS/MSD, all media: 1 MS/MSD per 20 investigative samples (5 percent)
- Trip Blanks, surface waters only: 1 trip blank per 20 investigative samples collected for VOCs (5 percent)

Table E4-1 presents the actual number of field QC samples collected, and whether or not the specified collection frequency (by percentage) was met. Table E4-1 presents the specified collection frequency was met for all parameters, all media, with the following exceptions:

- Surface water (pond samples) field duplicates, all parameters.
- Subsurface soil and sediment field duplicates, for VOCs.
- Subsurface soils, for SVOCs and Water Quality Parameter List (WQPL) parameters.
- Subsurface soil, sediment, and surface water MS/MSD samples, for VOCs.

The analytical data obtained from the field QC samples and an evaluation of the results are discussed in Section E7.0.

E5.0 CHEMICAL PARAMETERS

This section describes the chemical parameters and associated methods of analyses selected for the OU6 Phase I investigation. The chemical groups measured generally consisted of VOCs, SVOCs, pesticides/PCBs, metals, cyanide, select inorganic parameters, and select radionuclides. Section E5.1 discusses routine analytical methods as defined by the United States Environmental Protection Agency (USEPA) Contract Laboratory Program (CLP). Section E5.2 discusses the non-routine analytical methods. Section E5.3 describes how the associated detection limits are interpreted.

E5.1 ROUTINE ANALYTICAL METHODS

The CLP parameters and methodology were selected for most of the VOCs, and all of the SVOCs, pesticides/PCBs, metals, and cyanide. The CLP methods are thoroughly documented and have very specific analytical and reporting protocol. Likewise, these methods follow well established Data Validation Functional Guidelines (EG&G 1990). The CLP parameters and methods are published in documents generally known as the EPA Organic Statement of Work (SOW) and EPA Inorganic SOW, which are subsets of the GRRASP (EG&G 1991a) adhered to at RFETS. The Organic SOW covers VOCs, SVOCs, and pesticides/PCBs; the Inorganic SOW covers metals and cyanide. These SOWs are uniformly followed regardless of the laboratory performing the work.

E5.2 NON-ROUTINE ANALYTICAL METHODS

Several of the groundwater samples were analyzed for VOCs using non-CLP, EPA Methods 502.2 and 524.2. These methods are established drinking water methods, and therefore, have lower quantitation limits. The list of target analytes also varies between the three VOC methods. The differences are discussed in more detail in Section E7.2.4. The QAA, in conjunction with the GRRASP (EG&G 1991a), specified the minimum requirements for the 502.2 and 524.2 methods. Validation guidelines (EG&G 1990) were developed for the evaluation of these parameters.

Samples were analyzed for a variety of inorganic parameters (e.g., Total Organic Carbon [TOC] and carbonate) that are not included in the CLP list. The QAA, in conjunction with the GRRASP, specified the minimum requirements for these parameters, and validation guidelines were developed specially for the evaluation of these parameters for operable units at RFETS.

Samples were analyzed for radionuclides, which included the following: gross alpha, gross beta, americium, tritium, and isotopes of uranium, plutonium, strontium, cesium, and radium. The QAA, in conjunction with the GRRASP, specified the minimum requirements for the radionuclides and data validation guidelines.

E5.3 DETECTION LIMITS DEFINITION

The phrase "detection limit" hereinafter refers to a nominal value, and does not reflect adjustments made for factors such as dry weight, sample amount, or dilutions. The phrase "detection limit" refers to the Contract Required Quantitation Limit (CRQL) for CLP organics, the MDL (Method Detection Limit) for volatile organics by Methods 502.2 and 524.2, the CRDL (Contract Required Detection Limit) for CLP metals and cyanide, or the RDL (Required Detection Limit) for radiochemistry parameters. The nominal values for these detection limits are found in the GRRASP (EG&G 1991a). The phrase "sample quantitation limit" (SQL) hereinafter refers to an adjustment made to the detection limit which accounts for sample dry weight, dilutions, and sample volume. The SQL, in some cases, may be equivalent to the detection limit, depending on "how clean" the sample is.

E6.0 ANALYTICAL DATA QUALIFIERS AND CODES

The analytical data used to characterize OU6 were compiled from the RFEDS database. The acquisition of the RFEDS data, and the subsequent evaluation process is described in Section E9.0. Section E6.1 defines the analytical data qualifiers assigned by the laboratories. Section E6.2 defines the validation codes assigned by the validation contractor.

E6.1 LABORATORY QUALIFIERS

The OU6 database contains the following analytical qualifiers and are defined as follows:

<u>Organic Data Only</u>

A - indicates an a tentatively identified compound (TIC) suspected aldol-condensation product.

B - indicates that the chemical was found in both the sample and the associated laboratory method blank.

C - when applied to pesticide results, this qualifier indicates that the detection was confirmed by gas chromatography/mass spectrometry.

D - indicates compounds identified using secondary dilution factor.

E - indicates that the reported result exceeded the linear calibration range.

F - indicates the estimated compound was reported outside the calibration range using both columns.

X - indicates the result was manually quantitated and entered by the laboratory.

Y - non-target analyte (TIC) indicates an indistinguishable isomer.

* - indicates the result is reported outside contract required QC limits.

Inorganic Data Only

B - indicates that the reported concentration is greater than the instrument detection limit (IDL) but less than the CRDL for that analyte.

E - indicates estimation due to interference.

G - indicates the target analyte was reported greater than four times the spike concentration.

N - indicates the spike recovery was not reported within acceptable control limits.

S - indicates the reported concentration determined by the Method of Standard Addition (MSA).

W - indicates that the post digestion spike (analytical spike) was not reported within acceptable control limits.

X - when assigned to inorganic results, this qualifier indicates the detection limit is greater than normal due to matrix interference.

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* - when assigned to metal results, this qualifier indicates that the matrix duplicate analysis did not meet QC acceptance limits.

\+ - indicates that the MSA correlation coefficient is reported less than 0.995.

Radionuclides Only

B - indicates that the activity in the associated laboratory method blank exceeded the minimum detectable activity (MDA).

X - indicates the result was calculated according to GRRASP.

Y - indicates that the chemical yield exceeded acceptance QC limits.

Organic, Inorganic, and Radionuclides

D - indicates no surrogate or matrix spike recovery, sample extract was diluted.

I - indicates interference of the analyte.

J - indicates an estimated result less than the sample detection limit.

U - indicates the target analyte was not detected above the quantitation limit (non-detect).

E6.2 VALIDATION CODES

The OU6 database contains the following validation codes and are defined as follows:

A - indicates that the result is acceptable with qualifications.

J - applied to any analysis during validation, indicates that the result is estimated for a variety of reasons such as: sample was analyzed outside the holding time, the sample was improperly preserved, or results were reported outside of laboratory QC

acceptance criteria (e.g., initial and continuing calibration). In these instances, numerical reason codes were typically added to indicate what criteria were not met.

R - indicates that the result was rejected.

V - indicates that the reported result has been validated, by the EG&G sub-contractor and considered valid.

Y - indicates that the analytical results are in the validation process (this validation code is internal to RFEDS only).

Z - indicates validation was not requested or performed (this validation code is internal to RFEDS only).

The following documents were used, and/or developed, to validate analytical data.

- General Radiochemistry and Routine Analytical Services Protocol (GRRASP). Part A, Organics, Inorganics, Water Quality Parameters, Biochemistry, Biota. EMD, RFP. Version 2.1. July 2. (EG&G 1991a).

- Draft Laboratory Data Validation Functional Guidelines for Evaluating Inorganic Analyses. July 1. (EPA 1988).

- Draft National Functional Guidelines for Organic Data Review. Revised June. (EPA 1991).

E6.3 RFEDS DATA ACQUISITION, REVIEW, AND USE

This section describes how RFEDS data were acquired, evaluated, and interpreted for use. Section E6.3.1 describes the data acquisition and evaluation process. Section E6.3.2 briefly summarizes how the data were interpreted for use.

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E6.3.1 RFEDS Data Acquisition and Review

Analytical data were requested from RFEDS for the samples described in section E4.1. The data were requested and received, periodically, up to January 15, 1994, and one additional extraction was received on April 22, 1994. Each data deliverable was transferred electronically by diskette, and loaded into a relational database outside the RFEDS. This task was performed by a data manager. The data were then extracted into temporary EXCEL@ tables for a completeness review, prior to being used in any statistical or mapping process. The completeness review was performed by a chemist on an ongoing basis, as the data were received and uploaded.

The preliminary review of the data revealed that multiple records were often reported for a single sample analysis. This was mostly caused by the presence of validated and non-validated data records for the same sample analysis, successive dilutions run for the same sample analysis, and the same record being delivered more than once. Since only one analytical record per sample analysis was used in the OU6 evaluation and mapping processes, it was necessary to use professional judgement in determining which multiple records to retain, and which to delete from the database by a qualified chemist. The final decision for data retention and/or deletion were made by EG&G Sample Management. The records chosen for deletion were then taken out of the relational database (this does not refer to the RFEDS).

Once the relational database was considered clean, and free of replicate records, data were extracted and reviewed a second time. The second review focused on data usability issues, as discussed in section E6.3.2., by a qualified chemist. Once all data usability issues were resolved and/or addressed, working datasets were prepared accordingly (i.e., rejected data were removed, and reported concentrations for the field duplicate samples were averaged). The working datasets were then issued for statistical evaluation and mapping.

E6.3.2 Data Usability

All analytical data acquired from RFEDS (see section E4.0), validated and non-validated, were used for the chemical evaluation of OU6, with the exception of rejected data (i.e., validation code was R).

For statistical calculation assessment, evaluation, and data mapping, the reported concentration used for field duplicates (e.g., REAL and DUP samples) were averaged. The reported concentration (e.g., result) for each analyte in the REAL and DUP sample analysis was averaged using the following guidelines:

- If one result (i.e., reported concentration for either the REAL or DUP) was U qualified, and the other result was a detect, then only the detect was used.
- If one result was rejected (validation code equal R), and the other result was not rejected, then only the result that was not rejected was used.
- If only one result was available, then only that result was used.
- If both results were U qualified, the detection limit was used.

The averaged result, or the selected result using the above criteria, was then used as the reported concentration. Whenever an averaged result was used, the averaged result was put into the Result field of the REAL data record, and the result was flagged with an asterisk. (Note: this was done with a working copy of the data, not the original dataset). In all cases, only one datum point was reported, and/or used (i.e., either the REAL or the DUP result value, or the averaged value reported in the REAL aliquot).

Several radiochemical results were reported as negative values by the laboratory. These negative values were used, as reported, in all evaluations.

There were many instances where data looked questionable. For example, there were many detection limits equal to zero for radionuclides. Questionable data retained by RFEDS, such as these, were verified by EG&G Sample Management, and if necessary data were corrected and new data were issued. Otherwise, these data were used as reported.

For most data, the value reported in the RFEDS Detection Limit field reflected the nominal detection limit, and not the SQL (see section E5.3 for more explanation). For data that were U qualified, the SQL was typically reported in the RFEDS Result field. Therefore, the value in the Detection Limit field was often less than, or greater than, the value in the Result field,

for U qualified data. An example of the value in the Result field exceeding the value in the Detection Limit field (for U qualified results) include sample results adjusted for moisture content and reported above the SQL. In this case, the Result field reflected a raised detection limit (i.e., SQL for VOCs in soil) proportional to the dry weight of the sample, whereas the Detection Limit field reflected the nominal detection limit (i.e., CRQL for CLP VOCs). An example of the value in the Result field being less than the value in the Detection Limit field (for U qualified data) include metals analyses where the sample was quantitated to the IDL, and no concentrations of analyte were detected. The IDL is lower than the CRDL. For these reasons, the following criteria were followed in using U qualified data:

- In all evaluations for determining which analytes were not detected, only the U qualifier was used (i.e., the value in the Result field was not compared to the value in the Detection Limit field).

- To maintain consistency, the value in the Detection Limit field was used in statistical evaluations. This included using one half the detection limit for the reported concentration of U qualified data for background comparison.

E7.0 PARCC PARAMETERS

In this section the data are assessed using the PARCC data quality indicators. Section E7.1 defines what the PARCC parameters are, and how they will be applied to the OU6 data. Section E7.2 provides the results of the PARCC assessment.

E7.1 PARCC DEFINITION

Precision is a quantitative measure which refers to the reproducibility among replicate measurements of a single chemical. Precision is expressed as the RPD between the measured concentration of a chemical in a sample and sample duplicate. Precision may refer to laboratory control samples or field duplicate samples. Section E7.2.1 evaluates precision of the field duplicate samples collected for OU6. The RPD between field duplicate samples may be an indication of sample homogeneity, sample matrix (i.e., dilutions), sampling precision, and/or analytical precision.

Accuracy is a quantitative measure which refers to the degree of difference between a measured value and the true value. The closer to the true value (or concentration), the more accurate the measurement. Accuracy, or bias of a laboratory analysis, is evaluated by analyzing standards of a known concentration both before and during sample analysis (e.g., initial calibrations, continuing calibration, and laboratory control samples). Accuracy is also evaluated by spiking a sample with a known quantity of a chemical and comparing the actual versus expected recovery. Similarly, any bias introduced by laboratory contaminants are detected during the method blank analysis. Accuracy may refer to laboratory control samples (e.g., blank spike), or field samples (e.g., matrix spike, surrogate spike). Section E7.2.2 discusses the accuracy of analytical results for OU6 only in terms of the validation reason codes that were assigned during the validation process. Therefore, accuracy is assessed for only those data which were validated.

Representativeness is a qualitative measure of data quality defined by the degree to which the data accurately and precisely represent a characteristic of a population, parameter variations at a sampling point, a process condition, or an environmental condition. The possible introduction of contaminants into OU6 environmental samples during collection and handling is evaluated using data obtained from equipment rinsate blanks and trip blanks. Also included in this evaluation is a discussion regarding possible toluene contamination originating from electrical tape that was used during the borehole sampling process. Details of this evaluation are presented in Section E7.2.3.

Comparability is a qualitative measurement which expresses the confidence with which one data set can be compared to another data set measuring the same property. Comparability is optimized through the use of established and approved analytical methods, consistency in the basis of analysis (e.g., dry weight and volume), consistency in reporting units (e.g., parts per billion [ppb] and parts per million [ppm]), and analysis of standard reference materials. Likewise, comparability is optimized through the use of established and approved sampling methods. Differences in field and laboratory procedures can greatly affect comparability. Comparability is assessed in Section E7.2.4 primarily by referring to the analytical methods used for OU6, and how consistently they were used across the data sets. Sampling methods are evaluated (in Section E7.2.4) to the extent of whether or not the same SOP was in place throughout the life of the program.

Completeness is a quantitative measure of how much usable data were obtained from a sampling program. Completeness may be expressed in terms of the percentage of data returned from the laboratory, the percentage of validated data returned from the validation contractor, and the percentage of data that were accepted during validation. These percentages have been calculated for OU6 data, and the results are discussed in Section E7.2.5.

E7.2 PARCC ASSESSMENT

The following sections describe the OU6 data that were used for each PARCC parameter, identify advisory criteria given in the workplan, and summarize the outcome of each PARCC assessment.

E7.2.1 Precision

Precision was assessed by evaluating the RPDs for field duplicate samples collected at OU6. Advisory RPDs for field duplicates were provided in the OU6 Work Plan as 30 percent for water samples and 40 percent for soil matrices (EG&G 1991b). These QC acceptance limits are similar to those set for laboratory control samples. The purpose of this discussion, the RPD values of 30 and 40 percent are referred to as advisory limits. The RPD values were calculated using the following equation:

$$\frac{|S - D|}{\frac{(S + D)}{2}} \times 100 = \% \text{ RPD}$$

where

S = Reported concentration of analyte in the field sample (REAL)
D = Reported concentration of analyte in the field duplicate (DUP)

Only data that were rejected during validation were removed from the data set prior to calculating the RPDs; all other field duplicate data were used. The results of the RPD computations are presented in Appendix E data tables. RPDs that exceeded the advisory limits are summarized in Tables E7-1 and E7-2. Table E7-1 summarizes the percentage of RPDs that were reported within advisory limits for each media sampled. Table E7-2 summarizes the analytes that exceeded advisory QC limits for precision. A brief overview by analyte group is presented below.

In general, many of the RPDs that exceeded the advisory limits were due to reported concentrations very near, or below, the associated SQL for one or both of the measured analytes (i.e., the S and D values). Other RPDs that exceeded the advisory limit were due to measured concentrations that were high enough to necessitate a dilution. The remaining RPDs, that exceeded the advisory limits, possibly resulted from a nonhomogeneous sample, an anomalous matrix, questionable field sampling technique, and/or analytical precision.

VOCs

Precision values for VOCs in soil matrices were reported within advisory limits, with the exception of acetone, 2-butanone, methylene chloride, benzene, toluene, and chloroform. The high RPDs for these compounds occurred in subsurface soils and pond sediments, and were mostly attributable to reported concentrations very near, or below, the SQL. There were two instances of 2-butanone exceeding the RPD limit as a result of measured concentrations that necessitated a dilution. The reason for variability for several toluene results was not readily apparent.

Precision values for VOCs in water samples were reported within advisory limits, with the exception of methylene chloride and chloroform in pond surface water. These high RPD values were attributable to reported concentrations very near, or below, the SQL.

SVOCs

Precision values for SVOCs in soil matrices were reported within advisory limits, with the exception of polynuclear aromatic hydrocarbons (PAHs) and phthalate esters. The high RPDs for these compounds were attributable to reported concentrations very near or below the SQL.

Precision values for SVOCs in water were reported within the advisory limits, without exception.

Pesticides/PCBs

Precision values for pesticides/PCBs were reported within the advisory limits for each of the five matrices sampled and analyzed. An exception for aroclor-1254 was noted in one surface soil field duplicate pair. The reason for the variability was not readily apparent.

Metals

Precision values for metals in soil matrices indicate a higher degree of variability (i.e., analytes exceeding the advisory RPD limit), than those for organic chemicals. The calculated RPDs for metals in soil matrices are presented in Tables E7-1 and E7-2. With the exception of filtered metals for storm event surface waters, subsurface soils had the lowest percentage of RPDs within advisory limits. For subsurface soils, analytes that exceeded the RPD limit were attributable to reported concentrations very near or below the SQL. These analytes included arsenic, beryllium, cesium, cobalt, lithium, sodium, and strontium. The reason for variability for other analytes listed on Table E7-2 was not readily apparent.

Precision on metals in surface soils were similar to those found in subsurface soils, although there were fewer occurrences of analytes exceeding the RPD limits in surface soils. This may be due, in part, to a smaller sample population for surface soils. For surface soils, analytes that exceeded the RPD limit due to reported concentrations very near or below the SQL, included antimony, arsenic, beryllium, cesium, cobalt, lithium, and thallium. The reason for variability for other analytes listed on Table E7-2 was not readily apparent.

Precision value trends for metals in sediment samples were also similar to those found in subsurface soils, although there were fewer occurrences of analytes exceeding the RPD limits in sediments. This may be due, in part, to a smaller sample population for sediments. Of the soil matrices, sediments had the smallest sample population. For sediment samples, analytes that exceeded the RPD limit due to reported concentrations very near or below the

SQL, included cesium, chromium, potassium, silver, and thallium. The reason for variability for other analytes listed on Table E7-2 was not readily apparent.

Precision values for metals in water samples varied between filtered (dissolved metals) and unfiltered (total metals) fractions. Metals in stream baseflow and storm event water samples indicate greater variability in the filtered fraction, whereas the groundwaters indicate greater variability in the unfiltered fraction. For the water samples in general, variability was the greatest in the storm event filtered fraction. Overall, the sample population for distinct water samples (i.e., not counting filtered and unfiltered fractions) was about the same as the sediment sample population.

In general, for filtered fractions, analytes that exceeded the RPD limit were due to reported concentrations very near or below the SQL, included aluminum, calcium, iron, lead, magnesium, mercury molybdenum, silicon, and zinc. For filtered storm event waters, variability was identified for aluminum, calcium, iron, magnesium, and silicon.

In general, for unfiltered fractions, analytes that exceeded the RPD limit due to reported concentrations very near or below the SQL. Theses metals were aluminum, antimony, cobalt, iron, lead, manganese, molybdenum, nickel, silicon, thallium, and zinc.

Radionuclides

Precision values for radionuclides were consistently more variable (i.e., indicated the lowest percentage of RPD values within advisory limits) for all media sampled. Low RPD values have been generally attributed to analytical variability inherent in radiochemistry. Examples of this include counting errors and detector efficiency. Due to variability in isotopic particle size and specific activity, analytical difficulties are also encountered in attempting to prepare two representative aliquots for the same sample. As with the other chemical groups, many of the high RPD values were attributable to reported activity levels (i.e., picocuries per gram [pCi/g] and picocuries per liter [pCi/L]) that were very near, or below, the MDA. Finally, there were several cases where activity levels were reported as a negative number. In these cases, only one value in the RPD equation was a negative number (i.e., either the REAL [S] or DUP [D]), causing the RPD value to be extraordinarily high.

It is concluded that RPD calculations are questionable for evaluating precision for radionuclide analyses.

E7.2.2 Accuracy

Accuracy was assessed and evaluated by a qualified EG&G subcontractor. The scope of Appendix E did not include validation, and the data necessary to evaluate accuracy. Therefore, this discussion is limited to a general explanation of how data were coded for accuracy by the EG&G subcontractor.

As part of the validation process, data were qualified based on the overall quality of the sample data, and associated laboratory QC. In addition to the validation codes of A, AJ, V, VA, and R (see E6.2), another coding system was developed to describe why data were deemed A, AJ, VA, or R (accepted with qualifications, or rejected). Data validated with a V code do not require reason codes. These additional codes are referred to as "Reason Codes" and generally consist of one to two digits, ranging from 1-99. The reason codes are displayed with the data in Appendix D. The reason codes that apply specifically to accuracy are listed below:

- 10 - Laboratory Control Sample recovery criteria were not met (all chemical groups).
- 12 - Predigestion matrix spike criteria were not met (± 25 percent).
- 13 - Predigestion matrix spike criteria were not met (< 30 percent).
- 14 - Postdigestion matrix spike recovery criteria were not met.
- 27 - Recovery criteria were not met for radionuclides.
- 32 - Laboratory Control samples > ± 3 sigma for radionuclides.
- 33 - Laboratory control samples > ± 2 sigma and < ± 3 sigma for radionuclides.
- 42 - Surrogates were outside criteria (organics).
- 62 - Laboratory control spike (LCS) sampes relative percent error criteria not met (radionuclides)
- 63 - LCS expected value not submitted or verifiable.
- 68 - Frequency of quality control samples not met.
- 74 - LCS data not submitted.

Accuracy was evaluated for investigative samples (e.g., reason codes 12, 13, 14, 27, 42) by spiking an investigative sample with a known quantity of standard material (e.g., surrogate spike and MS/MSD spiking material) and comparing the actual versus expected recovery. Although spike recovery limits are established for investigative samples, natural matrix variance may cause erratic (i.e., very low or very high) recoveries. Usually, the laboratory will reprepare and reanalyze the investigative sample to confirm spike recoveries outside established limits, demonstrating that the laboratory was in control. (In the case of a MS/MSD pair, a confirmation may not be necessary.) Another way of demonstrating control, is by preparing and analyzing LCS along-side the investigative samples using the exact same standards and procedures (e.g., reason codes 10, 32, 33, 62, 63, 74). Recovery control limits established for LCSs are strictly adhered to, however, there are occasions when errors are made in preparation or analysis. In these situations, the laboratory must be able to clearly demonstrate that the problem was isolated to the LCS in question, and that the associated data are acceptable (data may be validated with qualifications [e.g., AJ]). If the laboratory is unable to prove control, the samples may be reprepared and reanalyzed, or the data may be rejected by the data validator.

Any data that were validated, and not rejected, are deemed by the validator to be usable data regardless of the reason code. Therefore, validated, but not rejected, data have been used to evaluate chemical distribution in OU6.

E7.2.3 Representativeness

Equipment rinsates were used to assess the efficiency of the decontamination process, and possible cross-contamination between environmental samples. The OU6 Work Plan determined that equipment rinsates were considered acceptable (with no need for data qualification) if the concentration of target analyte(s) was less than three times the required detection limit (EG&G 1991b).

Equipment rinsates blanks (identified as RNS in the RFEDS database) were first reviewed to determine whether or not any analytes had reported concentrations which exceeded three times the required detection limit (hereinafter referred to as the 3x criteria). Only rinsate samples that met this criteria were further evaluated. The next step in the evaluation process was to determine which REAL (or investigative) samples were associated with those rinsates.

This was generally done by matching the sampling location and collection date. Once the associated REAL samples were identified, the analyte that met the 3x criteria in the rinsate sample was evaluated in the REAL samples. For example, if methylene chloride met the 3x criteria in the rinsate, only methylene chloride was evaluated in the associated REAL samples. The analyte in the REAL sample was evaluated using the 5x/10x rule for blank contamination, as established in the National Functional Guidelines for Organic Data Review (EPA 1991). The common laboratory contaminants methylene chloride, 2-butanone, acetone, and phthalate esters were evaluated using the 10x rule, and other contaminants were evaluated using the 5x rule. If the analyte of interest in the REAL sample had a reported concentration greater than or equal to the 5x/10x criteria, then the contaminant was deemed present in the sample and no qualification was necessary. If the analyte of interest was less than the 5x/10x criteria, then the contaminant was deemed an artifact of sampling procedure (i.e., not present in the sample), and the reported concentration was qualified UB (not detected, blank contamination).

For OU6, only methylene chloride and acetone met the 3x criteria in equipment rinsate blanks. There were 54 borehole soil samples and 2 pond surface water samples qualified UB for acetone, and 19 borehole soils and 3 pond surface waters qualified UB for methylene chloride. Table E7-3 presents the REAL subsurface soil samples and associated concentrations of acetone and methylene chloride that were qualified UB.

Trip blanks were used to assess possible contamination originating from sample transport, to and from the field, and laboratory. For OU6, trip blanks were collected only for surface water VOCs. Since evaluation guidelines were not specified for trip blanks, the same guidelines required for the equipment rinsate blanks were applied. No analytes met the 3x criteria in trip blanks collected for OU6; therefore, no further evaluation was required.

Toluene concentrations in borehole soils and pond sediments may be considered suspect due to the sampling SOP GT.02 followed during the OU6 investigation. The SOP specified collecting discrete soil samples in a stainless steel liner capped with teflon and plastic caps sealed with black electrical tape. Analytical data revealed that toluene was consistently detected in borehole soils, but not in the OU6 groundwaters, surface soils, or pond sediments. Likewise, the equipment rinsate blanks and laboratory method blanks associated with the borehole soils did not have reported concentrations of toluene. Upon further investigation,

it was also determined that electrical tape was not typically used for other types of sampling. Subsequent to these observations, two rolls of the electrical tape were analyzed at the RFETS 881 Laboratory. The results of the analysis, described in detail in Appendix E3.0, reported significant concentrations of toluene present in the adhesive of the electrical tape. In an effort to eliminate possible introduction of toluene into environmental samples during collection and handling, the use of electrical tape has since been omitted from the borehole soil sampling SOP GT.02 (Document Modification Request (DMR) No. 699, 1994).

E7.2.4 Comparability

Comparability of chemical analyses was optimized by establishing minimum requirements and acceptance criteria for all OU6 samples submitted for chemical analysis. This was accomplished by mandating the use of standard EPA CLP methods for routine chemical analyses, and for non-routine analyses, meeting minimum requirements dictated in the GRRASP (EG&G 1991a). In addition to acquiring consistent data in the laboratories, data were validated consistently by requiring the use of established validation guidelines (see Section E6.1 for validation documents used).

The three groundwater volatiles methods (502.2, 524.2, and CLP) differ in terms of the target analytes, and respective detection limits (see Table E7-4). Although the analyte lists vary, the upper hydrostratigraphic unit groundwater chemicals of concern (i.e., tetrachloroethene [PCE], trichloroethene [TCE]) are common to all three lists. The 500 series methods are commonly used for drinking water analysis, and therefore, have lower detection limits than the CLP CRQLs for VOCs. For instance, the detection limit for PCE is 0.02 ppb in Method 502.2, 0.05 ppb in 524.2, and 5.0 ppb in CLP volatiles. Accordingly, reported concentrations close to, or below, 5.0 ppb may not be considered comparable from one data set to the next. However, reported concentrations that significantly exceed the CRQL of 5.0 ppb are considered comparable.

Comparability of sampling methodology was optimized by implementing well established, documented protocol for the OU6 field investigation. A detailed account of the sampling SOPs used is contained in Section 2.0 of the report. The same SOPs, respective of the media being sampled, were consistently used throughout the OU6 investigation. Based on this rating

factor, comparability has been rated high. Comparability of sampling procedure for background samples is unknown.

E7.2.5 Completeness

Completeness was assessed for each chemical group, per sampling media, by calculating the percentage of data returned from the laboratory (expressed as the percentage of analytical records received from RFEDS), the percentage of data that were validated, and the percentage of data that were rejected during validation. These percentages are tabulated for OU6 in Table E7-5. The OU6 Work Plan specified a goal of 90 percent for field and analytical completeness (EG&G 1991b). Each data set was greater than 90 percent complete for data received from RFEDS. For the entire data set, approximately 95 percent of the results were validated in accordance with Data Validation Functional Guidelines (EG&G 1990). The percentage validated varies by medium and by analyte group. By medium, the percentage varies by 82 percent (groundwater) and 100 percent (subsurface soil). The percentage validated by analyte group varies by 94 percent (dissolved radionuclides) and 100 percent (pesticides/PCBs).

Five percent of the data were not validated at the writing of the OU6 Phase I RFI/RI Report. When no validated record was available and a non-validated record was reported, the non-validated record was used in the report.

Two hundred forty-eight records were collected from various media and analytical methods, but no results were reported (and are not expected to be reported) with these samples. Results have been reported for 99.35 percent of the records collected and sent for analysis. It has been determined that 99.4 percent of the records collected from RFEDS represents 100 percent of the samples collected and analyzed.

All percentages were calculated in terms of the number of analytical records per sample analysis. Typically, record counts are as follows: a SVOC analysis had 65 records per sample, a VOC analysis had 34 records per sample, a pesticides/PCBs analysis had 27 records per sample, and a metals analysis had 28 records per sample. Radionuclides and inorganics (non-metals) typically had one record per analysis, and up to twelve radionuclide and/or inorganic analyses may be associated with one sample.

E8.0 QA/QC OVERALL ASSESSMENT

This section is a summary of the OU6 data review. PARCC parameters were the focus of the data review. Precision, representativeness, comparability, and completeness were evaluated and reviewed. Accuracy was assessed by the qualified EG&G data validation subcontractor.

Precision was assessed quantitatively by reviewing the RPDs of the real sample and associated field duplicate. Table E7-1 is a summation of the RPD calculations by sample media and method. The OU6 CDQOs for RPDs of soil and water were 40 percent and 30 percent, respectively. The percent of RPDs that were reported within these CDQOs for each sample media and method was calculated. Of the RPDs reported within control, 90 percent were arbitrarily used to address if there was reproducibility of the analytical data. The 90 percent criteria was met for most sample media and methods. The consistent methods that did not meet this criteria were radionuclides and WQPLs. The statistical nature of radiochemistry (i.e., one of the two results was reported with a negative result and the other was positive) is the cause for the radionuclides not meeting the criteria. The low number of samples collected for WQPL analyses is the reason for the poor precision of the WQPLs. Based upon the QC acceptance criteria established for precision, data are usable as qualified.

Accuracy was addressed during data validation, with less than 2 percent of the data being rejected. Based upon the QC acceptance criteria specified for this program accuracy, data are usable as qualified.

The review for representativeness was focused on efficiency of the decontamination process. Five volatile records were blank corrected due to equipment rinsate detections. Acetone and methylene chloride were the analytes affected by the equipment rinsate correction. Based upon the QC acceptance criteria specified for representativeness, data are usable as qualified.

Comparability was ensured by the OU6 Work Plan using consistent analytical methods, reporting units, and sample collection procedures. The only exceptions were the three different analytical methods used for the groundwater analyses. As mentioned earlier, the groundwater samples were collected over a two-year period by the sitewide groundwater program. The analytical method, identified in the OU6 Work Plan, was followed for

collection of groundwater volatile samples from the wells installed during the OU6 Phase I investigation.

The completeness CDQO of 90 percent was met for all sample media and analytical methods. Results were reported for 99.3 percent of the analytical records submitted for analysis. The 0.7 percent of analytical records not having results were due to insufficient sample volumes or sample breakage. Of the analytical records received, 95 percent were validated. Based upon the QC acceptance criteria specified for representativeness, data are usable as qualified.

Based on the review of the data presented in Appendix E, the data obtained during the OU6 Phase I field investigation met the CDQOs of the OU6 Work Plan and are usable for the evaluation.

E9.0 REFERENCES

DOE. 1992. Final Phase I RFI/RI Work Plan for Operable Unit 6, Walnut Creek Priority Drainage. Manual No. 21100-WP-OU 6.01. May.

EG&G. 1990. Data Validation Functional Guidelines. ERD. Rocky Flats Plant. March.

EG&G. 1991a. General Radiochemistry and Routine Analytical Services Protocol (GRRASP). Part A, Organics, Inorganics, Water Quality Parameters, Biochemistry, Biota. EMD, RFP. Version 2.1. July 2.

EG&G. 1991b. Draft Rocky Flats Plant Site-Wide Quality Assurance Project Plan for CERCLA Remedial Investigations/Feasibility Studies and RCRA Facility Investigations/Corrective Measures Studies Activities. ERP, Rocky Flats Plant. Revision 0.0. March 1.

EPA. 1988. Draft Laboratory Data Validation Functional Guidelines for Evaluating Inorganic Analyses. July 1.

EPA. 1991. Draft National Functional Guidelines for Organic Data Review. Revised June.

TABLE E4-1
OU6 FIELD FREQUENCY

Sample Medium	Analytical Method	Number of Real Samples Collected	Number of Field Duplicates Collected	Number of Equipment Rinsates Collected	Number of MS/MSD Samples Collected	Number of Trip Blanks Collected	Percent of Field Duplicates Collected (10% REQUIRED)	Percent of Equipment Rinsates Collected (20% REQUIRED)	Percent of MS/MSD Samples Collected (20% REQURED)	Percent of Trip Blanks (20% REQUIRED)
Subsurface Soil	VOCs	383	24	56	11	NA	6	15	3	NA
	SVOCs	35	3	13	3	NA	9	37	9	NA
	Pesticides/PCBs	8	1	5	1	NA	11	56	11	NA
	Total Metals	257	25	64	13	NA	10	25	5	NA
	Total Radionuclides	257	25	64	13	NA	10	25	5	NA
	Inorganics	106	10	25	6	NA	9	24	6	NA
Surface Soil	SVOCs	4	1	1	1	NA	25	25	25	NA
	Pesticides/PCBs	56	6	14	5	NA	11	25	9	NA
	Total Metals	133	14	32	12	NA	11	24	9	NA
	Total Radionuclides	133	14	32	12	NA	11	24	9	NA
	Inorganics	133	14	32	12	NA	11	24	9	NA
Sediments	VOCs	70	5	18	3	NA	7	26	4	NA
	SVOCs	88	9	28	4	NA	10	32	5	NA
	Pesticides/PCBs	88	9	27	4	NA	10	31	5	NA
	Total Metals	88	9	28	4	NA	10	31	5	NA
	Total Radionuclides	88	9	28	4	NA	10	31	5	NA
	Inorganics	88	9	28	4	NA	10	31	5	NA
Surface Water	VOCs	70	5	15	4	15	7	24	6	21
	SVOCs	70	5	15	4	NA	7	24	6	NA
	Dissolved Metals	70	5	15	4	NA	7	24	6	NA
	Dissolved Radionuclides	70	5	15	4	NA	7	24	6	NA
	Total Metals	70	5	15	4	NA	7	24	6	NA
	Total Radionuclides	70	5	15	4	NA	7	24	6	NA
	Inorganics	70	5	15	4	NA	7	24	6	NA

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TABLE E7-1
RPD SUMMARY TABLE OF PRECISION

Sample Medium	Analytical Suite	Required RPD Value	Number of calculated RPDs	Number of records > RPD limit	Percent of RPDs within limit[1]
Subsurface Soils	**Pesticides/PCBs**	< 41%	27	0	100
	Semivolatiles	< 41%	195	3	98
	Volatiles	< 41%	782	24	97
	Metals	< 41%	754	90	88
	Radionuclides	< 41%	154	52	66
	WQPLs	< 41%	8	2	75
Surface Soils	**Pesticides/PCBs**	< 41%	162	1	99
	Semivolatiles	< 41%	65	4	94
	Metals	< 41%	406	20	95
	Radionuclides	< 41%	100	14	86
	WQPLs	< 41%	15	1	93
Pond Sediments	**Pesticides/PCBs**	< 41%	135	0	100
	Semivolatiles	< 41%	325	26	92
	Volatiles	< 41%	170	9	95
	Metals	< 41%	145	6	96
	Radionuclides	< 41%	39	10	74
	WQPLs	< 41%	7	2	71
Stream Sediments	**Pesticides/PCBs**	< 41%	27	0	100
	Semivolatiles	< 41%	65	0	100
	Volatiles	< 41%	34	0	100
	Metals	< 41%	29	1	97
	Radionuclides	< 41%	9	3	67
	WQPLs	< 41%	2	1	50
Dry Sediments	**Pesticides/PCBs**	< 41%	81	0	100
	Semivolatiles	< 41%	195	13	93
	Metals	< 41%	87	5	94
	Radionuclides	< 41%	29	8	72
	WQPLs	< 41%	2	1	50
Pond Surface Water	**Semivolatiles**	< 31%	195	0	100
	Volatiles	< 31%	102	2	98
	Filtered Metals	< 31%	87	5	94
	Unfiltered Metals	< 31%	87	5	94
	Filtered Radionuclides	< 31%	21	8	62
	Unfiltered Radionuclid	< 31%	30	10	67
	WQPLs	< 31%	18	0	100

[1] Percent of RPDs within limit calculation: [(# of calculated RPDs - # of records > RPD limit) / # of calculated RPDs] * 100; example shown as follows: [(195 - 3) / 195] * 100 = 98

TABLE E7-1
RPD SUMMARY TABLE OF PRECISION

Sample Medium	Analytical Suite	Required RPD Value	Number of calculated RPDs	Number of records > RPD limit	Percent of RPDs within limit[1]
Stream Surface Water (Baseflow)	Semivolatiles	< 31%	65	0	100
	Volatiles	< 31%	34	0	100
	Filtered Metals	< 31%	29	1	97
	Unfiltered Metals	< 31%	29	0	100
	Filtered Radionuclides	< 31%	7	1	86
	Unfiltered Radionuclid	< 31%	7	1	86
	WQPLs	< 31%	11	0	100
Stream Surface Water (Storm Event)	Semivolatiles	< 31%	65	0	100
	Volatiles	< 31%	34	0	100
	Filtered Metals	< 31%	29	9	69
	Unfiltered Metals	< 31%	29	0	100
	Filtered Radionuclides	< 31%	4	1	75
	Unfiltered Radionuclid	< 31%	9	2	78
	WQPLs	< 31%	13	0	100
Groundwater (Historic Only)	Volatiles	< 31%	227	0	100
	Filtered Metals	< 31%	189	3	98
	Unfiltered Metals	< 31%	75	6	92
	Filtered Radionuclides	< 31%	42	17	60
	Unfiltered Radionuclid	< 31%	18	12	33
	WQPLs	< 31%	90	10	89

[1] Percent of RPDs within limit calculation: [(# of calculated RPDs - # of records > RPD limit) / # of calculated RPDs] * 100; example shown as follows: [(195 - 3) / 195] * 100 = 98

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TABLE E7-2

SUMMARY OF ANALYTES EXCEEDING THE RPD LIMIT FOR FIELD DUPLICATES

Method/ Analytes > RPD Limit	Subsurface Soil Number of Field Duplicates	Subsurface Soil Analytes > RPD Limit	Surface Soil Number of Field Duplicates	Surface Soil Analytes > RPD Limit	Sediments Number of Field Duplicates	Sediments Analytes > RPD Limit	Unfiltered Surface Water Number of Field Duplicates	Unfiltered Surface Water Analytes > RPD Limit	Filtered Surface Water Number of Field Duplicates	Filtered Surface Water Analytes > RPD Limit	Unfiltered Groundwater Number of Field Duplicates	Unfiltered Groundwater Analytes > RPD Limit	Filtered Groundwater Number of Field Duplicates	Filtered Groundwater Analytes > RPD Limit
PESTICIDES/PCBs	1		6		9									
4,4'-DDD		0		0		0								
4,4'-DDE		0		0		0								
4,4'-DDT		0		0		0								
ALDRIN		0		0		0								
alpha-BHC		0		0		0								
alpha-CHLORDANE		0		0		0								
AROCLOR-1016		0		0		0								
AROCLOR-1221		0		0		0								
AROCLOR-1232		0		0		0								
AROCLOR-1242		0		0		0								
AROCLOR-1248		0		0		0								
AROCHLOR-1254		0		1		0								
AROCLOR-1260		0		0		0								
beta-BHC		0		0		0								
delta-BHC		0		0		0								
DIELDRIN		0		0		0								
ENDOSULFAN I		0		0		0								
ENDOSULFAN II		0		0		0								
ENDOSULFAN SULFATE		0		0		0								
ENDRIN		0		0		0								
ENDRIN KETONE		0		0		0								
gamma-BHC (LINDANE)		0		0		0								
gamma-CHLORDANE		0		0		0								
HEPTACHLOR		0		0		0								
HEPTACHLOR EPOXIDE		0		0		0								
METHOXYCHLOR		0		0		0								
TOXAPHENE		0		0		0								
CLP/VOA	23				6		5				7			
1,1,1-TRICHLOROETHANE		0				0		0				0		
1,1,2,2-TETRACHLOROETHANE		0				0		0				0		
1,1,2-TRICHLOROETHANE		0				0		0				0		
1,1-DICHLOROETHANE		0				0		0				0		
1,1-DICHLOROETHENE		0				0		0				0		
1,2-DICHLOROETHANE		0				0		0				0		
1,2-DICHLOROETHENE		0				0		0				0		
1,2-DICHLOROPROPANE		0				0		0				0		
2-BUTANONE		2				3		0				0		
2-HEXANONE		0				0		0				0		
4-METHYL-2-PENTANONE		0				0		0				0		
ACETONE		10				3		0				0		
BENZENE		0				1		0				0		
BROMODICHLOROMETHANE		0				0		0				0		
BROMOFORM		0				0		0				0		
BROMOMETHANE		0				0		0				0		
CARBON DISULFIDE		0				0		0				0		
CARBON TETRACHLORIDE		0				0		0				0		
CHLOROBENZENE		0				0		0				0		

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TABLE E7-2
SUMMARY OF ANALYTES EXCEEDING THE RPD LIMIT FOR FIELD DUPLICATES

Method/ Analytes > RPD Limit	Subsurface Soil Number of Field Duplicates	Subsurface Soil Analytes > RPD Limit	Surface Soil Number of Field Duplicates	Surface Soil Analytes > RPD Limit	Sediments Number of Field Duplicates	Sediments Analytes > RPD Limit	Unfiltered Surface Water Number of Field Duplicates	Unfiltered Surface Water Analytes > RPD Limit	Filtered Surface Water Number of Field Duplicates	Filtered Surface Water Analytes > RPD Limit	Unfiltered Groundwater Number of Field Duplicates	Unfiltered Groundwater Analytes > RPD Limit	Filtered Groundwater Number of Field Duplicates	Filtered Groundwater Analytes > RPD Limit
CHLOROETHANE		0				0		0				0		
CHLOROFORM		0				0		1				0		
CHLOROMETHANE		0				0		0				0		
cis-1,3-DICHLOROPROPENE		0				0		0				0		
DIBROMOCHLOROMETHANE		0				0		0				0		
ETHYLBENZENE		0				0		0				0		
METHYLENE CHLORIDE		1				0		1				0		
STYRENE		0				0		0				0		
TETRACHLOROETHENE		0				0		0				0		
TOLUENE		13				2		0				0		
TOTAL XYLENES		0				0		0				0		
trans-1,3-DICHLOROPROPENE		0				0		0				0		
TRICHLOROETHENE		0				0		0				0		
VINYL ACETATE		0				0		0				0		
VINYL CHLORIDE		0				0		0				0		
CLP/SVOC	3		1		9		5							
1,2,4-TRICHLOROBENZENE		0		0		0		0						
1,2-DICHLOROBENZENE		0		0		0		0						
1,3-DICHLOROBENZENE		0		0		0		0						
1,4-DICHLOROBENZENE		0		0		0		0						
2,4,5-TRICHLOROPHENOL		0		0		0		0						
2,4,6-TRICHLOROPHENOL		0		0		0		0						
2,4-DICHLOROPHENOL		0		0		0		0						
2,4-DIMETHYLPHENOL		0		0		0		0						
2,4-DINITROPHENOL		0		0		0		0						
2,4-DINITROTOLUENE		0		0		0		0						
2,6-DINITROTOLUENE		0		0		0		0						
2-CHLORONAPHTHALENE		0		0		0		0						
2-CHLOROPHENOL		0		0		0		0						
2-METHYLNAPHTHALENE		0		0		0		0						
2-METHYLPHENOL		0		0		0		0						
2-NITROANILINE		0		0		0		0						
2-NITROPHENOL		0		0		0		0						
3,3'-DICHLOROBENZIDINE		0		0		0		0						
3-NITROANILINE		0		0		0		0						
4,6-DINITRO-2-METHYLPHENOL		0		0		0		0						
4-BROMOPHENYL PHENYL ETHER		0		0		0		0						
4-CHLORO-3-METHYLPHENOL		0		0		0		0						
4-CHLOROANILINE		0		0		0		0						
4-CHLOROPHENYL PHENYL ETHER		0		0		0		0						
4-METHYLPHENOL		0		0		0		0						
4-NITROANILINE		0		0		0		0						
4-NITROPHENOL		0		0		0		0						
ACENAPHTHENE		0		0		0		0						
ACENAPHTHYLENE		0		0		0		0						
ANTHRACENE		0		0		0		0						
BENZO(a)ANTHRACENE		0		0		2		0						
BENZO(a)PYRENE		0		0		2		0						
BENZO(b)FLUORANTHENE		0		1		2		0						

TABLE E7-2

SUMMARY OF ANALYTES EXCEEDING THE RPD LIMIT FOR FIELD DUPLICATES

Method/ Analytes > RPD Limit	Subsurface Soil Number of Field Duplicates	Subsurface Soil Analytes > RPD Limit	Surface Soil Number of Field Duplicates	Surface Soil Analytes > RPD Limit	Sediments Number of Field Duplicates	Sediments Analytes > RPD Limit	Unfiltered Surface Water Number of Field Duplicates	Unfiltered Surface Water Analytes > RPD Limit	Filtered Surface Water Number of Field Duplicates	Filtered Surface Water Analytes > RPD Limit	Unfiltered Groundwater Number of Field Duplicates	Unfiltered Groundwater Analytes > RPD Limit	Filtered Groundwater Number of Field Duplicates	Filtered Groundwater Analytes > RPD Limit
BENZO(ghi)PERYLENE		0		0		1		0						
BENZO(k)FLUORANTHENE		0		0		2		0						
BENZOIC ACID		0		1		0		0						
BENZYL ALCOHOL		0		0		0		0						
BIS(2-CHLOROETHOXY)METHANE		0		0		0		0						
BIS(2-CHLOROETHYL)ETHER		0		0		0		0						
BIS(2-CHLOROISOPROPYL)ETHER		0		0		0		0						
BIS(2-ETHYLHEXYL)PHTHALATE		1		0		3		0						
BUTYL BENZYL PHTHALATE		0		0		1		0						
CHRYSENE		0		0		3		0						
DI-n-BUTYL PHTHALATE		0		0		0		0						
DI-n-OCTYL PHTHALATE		0		0		2		0						
DIBENZO(a,h)ANTHRACENE		0		0		1		0						
DIBENZOFURAN		0		0		1		0						
DIETHYL PHTHALATE		0		0		0		0						
DIMETHYL PHTHALATE		0		0		0		0						
FLUORANTHENE		1		1		4		0						
FLUORENE		0		0		0		0						
HEXACHLOROBENZENE		0		0		0		0						
HEXACHLOROBUTADIENE		0		0		0		0						
HEXACHLOROCYCLOPENTADIENE		0		0		0		0						
HEXACHLOROETHANE		0		0		0		0						
INDENO(1,2,3-cd)PYRENE		0		0		0		0						
ISOPHORONE		0		0		0		0						
N-NITROSO-DI-n-PROPYLAMINE		0		0		0		0						
N-NITROSODIPHENYLAMINE		0		0		0		0						
NAPHTHALENE		0		0		0		0						
NITROBENZENE		0		0		0		0						
PENTACHLOROPHENOL		0		0		0		0						
PHENANTHRENE		1		1		3		0						
PHENOL		0		0		0		0						
PYRENE		0		0		4		0						
TAL METALS	26		14		9		5		5		3		7	
ALUMINUM		7		2		0		1		3		1		0
ANTIMONY		0		2		0		1		0		0		0
ARSENIC		9		1		0		0		1		0		0
BARIUM		6		1		0		0		0		0		0
BERYLLIUM		3		2		0		0		0		0		0
CADMIUM		0		0		0		0		0		0		0
CALCIUM		7		0		1		0		1		0		0
CESIUM		3		0		3		0		0		0		0
CHROMIUM		7		4		3		0		0		0		0
COBALT		6		1		0		1		1		0		0
COPPER		3		0		0		0		0		0		1
IRON		2		1		0		1		3		1		1
LEAD		4		0		0		1		1		0		0
LITHIUM		1		1		0		0		1		0		0
MAGNESIUM		4		0		0		0		0		0		0
MANGANESE		10		1		0		0		1		1		0

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TABLE E7-2
SUMMARY OF ANALYTES EXCEEDING THE RPD LIMIT FOR FIELD DUPLICATES

Method/ Analytes > RPD Limit	Subsurface Soil Number of Field Duplicates	Subsurface Soil Analytes > RPD Limit	Surface Soil Number of Field Duplicates	Surface Soil Analytes > RPD Limit	Sediments Number of Field Duplicates	Sediments Analytes > RPD Limit	Unfiltered Surface Water Number of Field Duplicates	Unfiltered Surface Water Analytes > RPD Limit	Filtered Surface Water Number of Field Duplicates	Filtered Surface Water Analytes > RPD Limit	Unfiltered Groundwater Number of Field Duplicates	Unfiltered Groundwater Analytes > RPD Limit	Filtered Groundwater Number of Field Duplicates	Filtered Groundwater Analytes > RPD Limit
MERCURY		0		0		0		0		1		0		0
MOLYBDENUM		0		0		0		1		2		0		0
NICKEL		1		0		1		0		1		1		0
POTASSIUM		2		2		2		0		0		0		0
SELENIUM		0		0		0		0		0		0		0
SILICON		0		0		0		0		1		1		0
SILVER		0		0		1		0		0		0		0
SODIUM		3		0		0		0		0		0		0
STRONTIUM		4		0		0		0		0		0		0
THALLIUM		0		1		1		1		0		0		0
TIN		0		0		0		0		0		0		0
VANADIUM		4		1		0		0		1		1		0
ZINC		3		0		0		3		1		0		1
TOTAL RADIONUCLIDES	22		14		9		5		5		6		7	
Am-241		14		2		2		2		1				3
GROSS ALPHA		3		0		1		1				2		
GROSS BETA		0		0		0		3				2		
Cs-137						0		2		1		1		1
Pu-239/240		11		4		2		2		2		0		4
Sr-89/90						3		1		2		2		
TRITIUM		1		1		5		1		0				4
U-233/234		3		0		1		2		1		1		
U-235		14		6		6		2		2		4		
U-238		4		0		1		0		2		5		
INORGANICS			14		9		5				7			
NO3		0		0		1		0				0		
TOC		2		0		3		0				1		
BICARBONATE								0				0		
CARBONATE								0				1		
CHLORIDE								0				1		
SULFATE								0				0		
TOTAL DISSOLVED SOLIDS								0				0		
AMMONIA												1		
COD												1		
CYANIDE												1		
FLUORIDE												0		
O-PHOSHPHATE												0		
SILICA												0		
TOTAL SUSPENDED SOLIDS												3		

TABLE E7-3
SUBSURFACE SOIL VOC SAMPLES QUALIFIED DUE TO EQUIPMENT RINSATE DETECTIONS > 3X CRQL

Sample Date	IHSS	Sample Site	Sample Number	VOC Analytes	Result (µg/kg)	CRQL OR RDL (µg/kg)	Old Laboratory Qualifier	New Laboratory Qualifier	Validation Code
12/10/92	156.2	74092	BH60316WC	ACETONE	24	10	B	UB	JA
12/10/92	156.2	74092	BH60317WC	ACETONE	30	10	B	UB	JA
12/10/92	156.2	74092	BH60318WC	ACETONE	30	10	B	UB	JA
12/10/92	156.2	74092	BH60319WC	ACETONE	34	10	B	UB	JA
12/10/92	156.2	74092	BH60320WC	ACETONE	27.5	10	B	UB	JA
12/10/92	156.2	73792	BH60325WC	ACETONE	23	10	B	UB	JA
12/10/92	156.2	73792	BH60326WC	ACETONE	12	10	B	UB	JA
12/10/92	156.2	73792	BH60327WC	ACETONE	12	10	B	UB	JA
12/14/92	156.2	74892	BH60377WC	ACETONE	35	10	B	UB	JA
12/14/92	156.2	74892	BH60378WC	ACETONE	23	10	B	UB	JA
12/14/92	156.2	74892	BH60379WC	ACETONE	59	10	B	UB	JA
12/14/92	156.2	74892	BH60380WC	ACETONE	24	10	B	UB	JA
12/14/92	156.2	74992	BH60396WC	ACETONE	58	10	B	UB	JA
12/14/92	156.2	74992	BH60397WC	ACETONE	23	10	BJ	UBJ	JA
12/14/92	156.2	74992	BH60398WC	ACETONE	75	10	B	UB	JA
12/14/92	156.2	74992	BH60399WC	ACETONE	110	10	B	UB	JA
12/14/92	156.2	74992	BH60400WC	ACETONE	29	10	B	UB	JA
12/14/92	156.2	74992	BH60401WC	ACETONE	28	10	B	UB	JA
1/27/93	165	72792	BH60687WC	ACETONE	31	10		UB	V
1/27/93	165	72792	BH60688WC	ACETONE	51	10		UB	V
1/27/93	165	72792	BH60689WC	ACETONE	40	10	B	UB	JA
1/27/93	165	72792	BH60690WC	ACETONE	27	10		UB	V
1/27/93	165	72792	BH60691WC	ACETONE	31	10		UB	V
1/27/93	165	72792	BH60692WC	ACETONE	29	10		UB	V
1/27/93	165	72792	BH60693WC	ACETONE	27	10		UB	V
1/27/93	165	72792	BH60694WC	ACETONE	25	10		UB	V
1/27/93	165	72792	BH60695WC	ACETONE	57	10	B	UB	JA
1/27/93	165	72792	BH60711WC	ACETONE	28	10	B	UB	JA
1/27/93	165	72792	BH60712WC	ACETONE	22	10	B	UB	JA
1/27/93	165	72792	BH60713WC	ACETONE	120	10	B	UB	JA
1/27/93	165	72492	BH60714WC	ACETONE	41	10		UB	V
1/27/93	165	72492	BH60715WC	ACETONE	25	10		UB	V
12/10/92	166.3	68392	BH60334WC	ACETONE	37	10	B	UB	JA
12/10/92	166.3	68392	BH60335WC	ACETONE	21	10	B	UB	JA
12/10/92	166.3	68392	BH60336WC	ACETONE	16	10	B	UB	JA
12/10/92	166.3	68392	BH60337WC	ACETONE	14	10	B	UB	JA
12/10/92	166.3	68392	BH60338WC	ACETONE	37	10	B	UB	JA
12/10/92	166.3	68392	BH60339WC	ACETONE	20	10	B	UB	JA
12/10/92	166.3	68492	BH60343WC	ACETONE	23	10	B	UB	JA
12/10/92	166.3	68492	BH60344WC	ACETONE	15	10	B	UB	JA
12/10/92	166.3	68492	BH60345WC	ACETONE	30	10	B	UB	JA
12/10/92	166.3	68492	BH60346WC	ACETONE	30	10	B	UB	JA

TABLE E7-3
SUBSURFACE SOIL VOC SAMPLES QUALIFIED DUE TO EQUIPMENT RINSATE DETECTIONS > 3X CRQL

Sample Date	IHSS	Sample Site	Sample Number	VOC Analytes	Result (µg/kg)	CRQL OR RDL (µg/kg)	Old Laboratory Qualifier	New Laboratory Qualifier	Validation Code
12/10/92	166.3	68492	BH60347WC	ACETONE	13	10	B	UB	JA
12/10/92	166.3	68492	BH60348WC	ACETONE	16	10	B	UB	JA
12/14/92	166.3	68692	BH60366WC	ACETONE	23	10	B	UB	JA
12/14/92	166.3	68692	BH60367WC	ACETONE	49	10	B	UB	JA
12/14/92	166.3	68692	BH60368WC	ACETONE	22	10	B	UB	JA
12/14/92	166.3	68692	BH60369WC	ACETONE	15	10	B	UB	JA
12/14/92	166.3	68692	BH60370WC	ACETONE	23	10	B	UB	JA
12/14/92	166.3	68792	BH60386WC	ACETONE	81	10	B	UB	JA
12/14/92	166.3	68792	BH60387WC	ACETONE	29	10	B	UB	JA
12/14/92	166.3	68792	BH60388WC	ACETONE	29	10	B	UB	JA
12/14/92	166.3	68792	BH60389WC	ACETONE	23	10	B	UB	JA
12/14/92	166.3	68792	BH60391WC	ACETONE	29	10	B	UB	JA
12/10/92	156.2	74092	BH60316WC	METHYLENE CHLORIDE	6	5	BJ	UBJ	JA
12/10/92	156.2	74092	BH60317WC	METHYLENE CHLORIDE	6	5	BJ	UBJ	JA
12/10/92	156.2	74092	BH60319WC	METHYLENE CHLORIDE	6	5	BJ	UBJ	JA
12/10/92	156.2	74092	BH60320WC	METHYLENE CHLORIDE	6	5	BJ	UBJ	JA
12/10/92	156.2	73792	BH60325WC	METHYLENE CHLORIDE	5	5	BJ	UBJ	JA
12/10/92	156.2	73792	BH60326WC	METHYLENE CHLORIDE	5	5	BJ	UBJ	JA
12/10/92	156.2	73792	BH60327WC	METHYLENE CHLORIDE	5	5	BJ	UBJ	JA
12/10/92	166.3	68392	BH60334WC	METHYLENE CHLORIDE	6	5	BJ	UBJ	JA
12/10/92	166.3	68392	BH60335WC	METHYLENE CHLORIDE	6	5	BJ	UBJ	JA
12/10/92	166.3	68392	BH60336WC	METHYLENE CHLORIDE	6	5	BJ	UBJ	JA
12/10/92	166.3	68392	BH60337WC	METHYLENE CHLORIDE	6	5	BJ	UBJ	JA
12/10/92	166.3	68392	BH60338WC	METHYLENE CHLORIDE	6	5	BJ	UBJ	JA
12/10/92	166.3	68392	BH60339WC	METHYLENE CHLORIDE	6	5	BJ	UBJ	JA
12/10/92	166.3	68492	BH60343WC	METHYLENE CHLORIDE	6	5	BJ	UBJ	JA
12/10/92	166.3	68492	BH60344WC	METHYLENE CHLORIDE	5	5	BJ	UBJ	JA
12/10/92	166.3	68492	BH60345WC	METHYLENE CHLORIDE	6	5	BJ	UBJ	JA
12/10/92	166.3	68492	BH60346WC	METHYLENE CHLORIDE	6	5	BJ	UBJ	JA
12/10/92	166.3	68492	BH60347WC	METHYLENE CHLORIDE	6	5	BJ	UBJ	JA
12/10/92	166.3	68492	BH60348WC	METHYLENE CHLORIDE	6	5	BJ	UBJ	JA

Explanation:
µg/kg - micrograms per kilogram
A - indicates that the result is acceptable with qualifications.
B - indicates that the chemical was found in both the sample and the associated laboratory method blank.
J - indicates an estimated result less than the sample detection limit.
U - indicates the target analyte was not detected above the quantitation limit (non-detect).
CRQL - Contractor Required Quantitation Limit
RDL - Required Detection Limit

TABLE E7-4
VOLATILE GROUNDWATER METHODS 502.2, 524.2 VOA-CLP

ANALYTE	VOA502.2 (µg/l)	VOA524.2 (µg/l)	VOACLP (µg/l)
1,1,1,2-TETRACHLOROETHANE	0.01	0.04	
1,1,1-TRICHLOROETHANE	0.01	0.04	5
1,1,2,2-TETRACHLOROETHANE	0.01	0.2	5
1,1,2-TRICHLOROETHANE	0.04	0.03	5
1,1-DICHLOROETHANE	0.03	0.03	5
1,1-DICHLOROETHENE	0.04	0.05	5
1,1-DICHLOROPROPENE	0.02	0.02	
1,2,3-TRICHLOROBENZENE	0.05	0.04	
1,2,3-TRICHLOROPROPANE	0.02	0.03	
1,2,4-TRICHLOROBENZENE	0.06	0.2	
1,2-DIBROMOETHANE	0.17	0.02	
1,2-DICHLOROBENZENE	0.03	0.05	
1,2-DICHLOROETHANE	0.03	0.02	5
1,2-DICHLOROETHENE			5
1,2-DICHLOROPROPANE	0.03	0.02	5
1,3-DICHLOROBENZENE	0.02	0.05	
1,3-DICHLOROPROPANE	0.02	0.04	
1,4-DICHLOROBENZENE	0.03	0.04	
2,2-DICHLOROPROPANE	0.05	0.05	
2-BUTANONE			10
2-HEXANONE			10
4-ISOPROPYLTOLUENE	0.02	0.26	
4-METHYL-2-PENTANONE			10
ACETONE			10
BENZENE	0.01	0.03	5
BENZENE, 1,2,4-TRIMETHYL	0.02	0.04	
BENZENE, 1,3,5-TRIMETHYL-	0.03	0.02	
BROMOBENZENE	0.04	0.11	
BROMOCHLOROMETHANE	0.01	0.07	
BROMODICHLOROMETHANE	0.1	0.03	5
BROMOFORM	0.09	0.2	5
BROMOMETHANE	0.19	0.06	10
CARBON DISULFIDE			5
CARBON TETRACHLORIDE	0.02	0.08	5
CHLOROBENZENE	0.02	0.03	5
CHLOROETHANE	0.13	0.02	10
CHLOROFORM	0.01	0.02	5
CHLOROMETHANE	0.1	0.05	10
cis-1,2-DICHLOROETHENE	0.03	0.06	
cis-1,3-DICHLOROPROPENE	0.06		5
DIBROMOCHLOROMETHANE	0.05	0.07	5
DIBROMOMETHANE	0.1	0.03	
DICHLORODIFLUOROMETHANE	0.29	0.11	
ETHYLBENZENE	0.04	0.03	5
HEXACHLOROBUTADIENE	0.05	0.04	
ISOPROPYLBENZENE	0.02	0.1	
m-XYLENE	0.02	0.03	

TABLE E7-4
VOLATILE GROUNDWATER METHODS 502.2, 524.2 VOA-CLP

ANALYTE	VOA502.2 (µg/l)	VOA524.2 (µg/l)	VOACLP (µg/l)
METHYLENE CHLORIDE	0.01	0.09	5
n-BUTYLBENZENE	0.03	0.03	
n-PROPYLBENZENE	0.03	0.06	
NAPHTHALENE	0.02	0.04	
o-CHLOROTOLUENE	0.03	0.05	
o-XYLENE	0.02	0.06	
p-CHLOROTOLUENE	0.02	0.05	
p-XYLENE	0.02	0.06	
PROPANE, 1,2-DIBROMO-3-CHLORO-	0.2	0.05	
sec-BUTYLBENZENE	0.03	0.12	
STYRENE	0.1	0.06	5
tert-BUTYLBENZENE	0.06	0.33	
TETRACHLOROETHENE	0.02	0.05	5
TOLUENE	0.02	0.08	5
TOTAL XYLENES			5
trans-1,2-DICHLOROETHENE	0.03	0.03	
trans-1,3-DICHLOROPROPENE	0.06		5
TRICHLOROETHENE	0.03	0.02	5
TRICHLOROFLUOROMETHANE	0.34	0.07	
VINYL ACETATE			10
VINYL CHLORIDE	0.01	0.04	10

Explanation:
CLP - Contract Laboratory Program
VOA - Volatile Organic Analyses
µg/l - micrograms per liter

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TABLE E7-5
OU6 SAMPLE SUMMARY OF DATA COMPLETENESS

Sample Medium	Analytical Method	Number of Data Records Collected	Number of Data Records Received from RFEDS	Percent of Records Received	Number of Records Validated	Percent of Records Validated	Number of Records Rejected	Percent of Rejected Records
Subsurface Soil	VOCs	15810	15810	100	15810	100	67	<1
	SVOCs	3315	3120	94	3120	100	1	<1
	Pesticide/PCB	378	378	100	378	100	1	<1
	Total Metals	11932	11932	100	11932	100	139	1
	Total Radionuclides	2452	2397	98	2158	90	107	5
	WQPL	144	144	100	144	100	0	0
Surface Soil	SVOCs	390	390	100	390	100	0	0
	Pesticide/PCB	2133	2133	100	2133	100	0	0
	Total Metals	5191	4909	95	4825	98	25	1
	Total Radionuclides	1505	1497	99	1426	95	108	7
	WQPL	184	184	100	171	93	12	7
Dry Sediments	Pesticide/PCB	810	810	100	810	100	1	<1
	SVOCs	2015	2015	100	2015	100	0	0
	Total Metals	616	616	100	616	100	0	0
	Total Radionuclides	76	75	99	75	100	6	8
	WQPL	25	25	100	25	100	0	0
Pond Sediments	Pesticide/PCB	2079	2079	100	2079	100	18	1
	VOCs	2346	2346	100	2346	100	41	2
	SVOCs	4940	4875	99	4875	100	34	1
	Total Metals	2171	2171	100	2153	99	43	2
	Total Radionuclides	885	875	99	865	99	182	21
	WQPL	149	149	97	145	97	40	27
Stream Sediments	VOCs	646	612	95	612	100	4	<1
	SVOCs	1300	1300	100	1300	100	0	0
	Total Metals	813	813	100	381	39	0	0
	Total Radionuclides	189	179	95	33	17	6	3
	WQPL	40	40	100	10	25	0	0
Surface Water (Baseflow)	Dissolved Metals	435	435	100	435	100	0	0
	Dissolved Radionuclide	105	105	100	105	100	0	0
	VOCs	510	510	100	510	100	0	0
	SVOCs	975	975	100	975	100	10	<1
	Total Metals	435	435	100	435	100	1	<1
	Total Radionuclides	113	113	100	113	100	0	0
	WQPL	180	180	100	180	100	0	0
Pond Surface Water	Dissolved Metals	1898	1898	100	1898	100	22	1
	Dissolved Radionuclide	478	478	100	478	100	5	1
	VOCs	2208	2174	98	2174	100	43	2
	SVOCs	4225	4225	100	4225	100	361	9
	Total Metals	1884	1884	100	1884	100	16	1
	Total Radionuclides	655	654	99	654	100	15	2
	WQPL	390	390	100	390	100	2	1
Surface Water (Storm Event)	Dissolved Metals	290	290	100	290	100	0	0
	Dissolved Radionuclide	61	61	100	61	100	0	0
	VOCs	340	340	100	340	100	0	0
	SVOCs	650	650	100	650	100	0	0
	Total Metals	290	290	100	290	100	1	<1
	Total Radionuclides	106	106	100	106	100	7	7
	WQPL	130	130	100	130	100	0	0

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TABLE E7-5
OU6 SAMPLE SUMMARY OF DATA COMPLETENESS

Sample Medium	Analytical Method	Number of Data Records Collected	Number of Data Records Received from RFEDS	Percent of Records Received	Number of Records Validated	Percent of Records Validated	Number of Records Rejected	Percent of Rejected Records
Groundwater (Historical)	Dissolved Metals*	7472	7472	100	5986	80	43	1
	Dissolved Radionuclide	1833	1833	100	1696	93	82	4
	VOCs*	9686	9686	100	8020	83	370	4
	SVOCs	555	555	100	490	88	5	1
	Pesticide/PCBs	135	135	100	135	100	0	0
	Total Metals	3061	3061	100	2568	84	39	1
	Total Radionuclides	926	926	100	869	94	51	6
	WQPL	2609	2609	100	2190	84	26	1
Groundwater	Dissolved Metals	145	145	100	87	60	0	0
	Dissolved Radionuclide	8	8	100	3	38	0	0
	VOCs	363	363	100	227	63	3	1
	SVOCs	516	516	100	256	50	0	0
	Total Metals	87	87	100	87	100	5	6
	Total Radionuclides	25	25	100	2	8	0	0
	WQPL	30	30	100	100	0	0	
	Totals	106343	105648	99	99866	95	1942	2

Note:
* Data records for 1994 were included in the record counts.

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