

915043

RADIOCHEMICAL ANALYSIS

ADDENDUM NO. 1 : GROUNDWATER

PFOHL BROTHERS LANDFILL

Cheektowaga, New York, Erie County

Site No. 09-15-043

MARCH 1990

Reported By:

New York State Department of Health
Bureau of Environmental Exposure Investigation
Bureau of Environmental Radiation Protection
New York State Department of Environmental Conservation
Division of Hazardous Waste Remediation /
Hazardous Substance Regulation

OBJECTIVES

1. Determine if the levels of radioactivity in the groundwater at the site and at the site perimeter indicate off-site migration of radioactive materials.
2. Determine if the standards for the best usage of groundwater as drinking water had been contravened by the radioactive materials present in the landfill.

SAMPLING METHODOLOGY

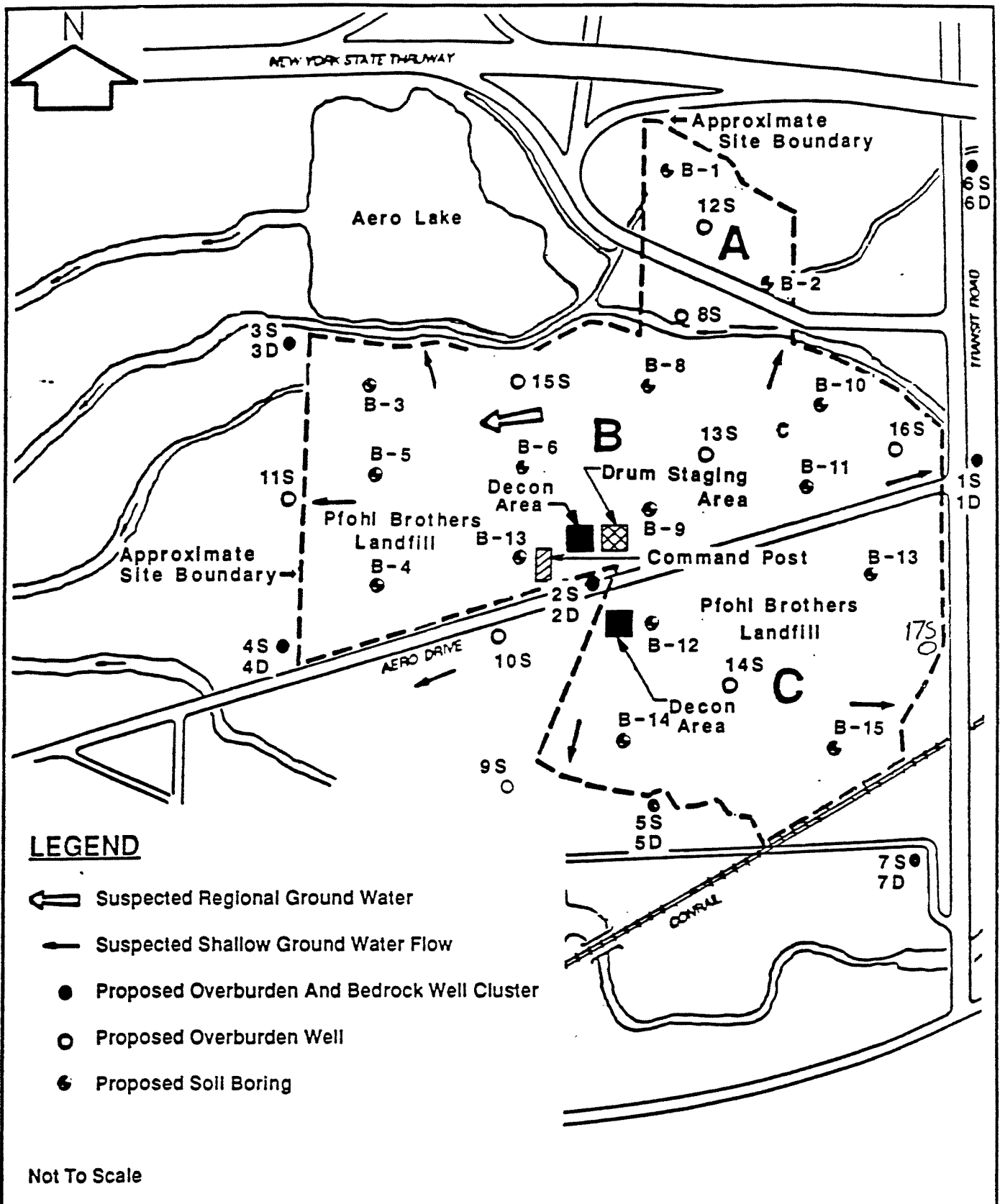
Site Map Figure C-1 shows the locations of both the shallow and deep wells installed at the site. Appendix A provides the typical construction details of of a deep and shallow monitoring well. The shallow wells are labeled with an "S" and the deep wells with a "D". For example well 1S, 1D is a location with a shallow well "1S" and a deep well "1D".

In collecting a sample for analysis, each monitoring well was purged and a representative sample of water placed into two separate two-liter plastic bottles by the New York State Department of Environmental Conservation (NYSDEC) consultant, Camp Dresser & McKee's, field personnel. The samples were then sent to the NYSDEC for analysis by the Clean Harbors, Inc. laboratory.

During the month of August, 1989 samples were collected from the 16 monitoring wells in place at that time, which included 10 shallow wells and 6 deep wells. Fourteen of these wells were perimeter wells either off site or at the boundary of the site and the remaining two wells were installed in Area A.

After the first round of sampling an additional 8 wells were installed which included 7 on site wells and one perimeter well.

A second round of groundwater sampling was conducted in December 1989 which included all 24 monitoring wells installed at the site. The data sheets



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environmental engineers, scientists
planners & management consultants

Figure C-1

Proposed Monitoring Well And Soil Borings

Pfohl Brothers Landfill, Cheektowaga, New York

showing the analytical results from both rounds of sampling are contained in Appendix B.

The August, 1989 samples were analyzed for gross alpha and beta radiation, (Table 1-2), uranium series radionuclides (Table 1-3), thorium series radionuclides (Table 1-4) and other radionuclides (Table 1-5).

The samples from the second round of sampling were analyzed for gross alpha and beta radiation (Table 1-2), the primary indicators of all radionuclides present.

DISCUSSION - RESULTS

The gross alpha and gross beta radioactivity analyses are the primary radioactivity indicator analysis for water samples, as previously explained in the Radiochemical Analyses Report issued in October 1989.

Table 2 shows a comparison of the minimum and maximum concentrations of gross alpha and beta activities in the Pfohl Brothers site groundwater samples with the acceptable New York State standards for groundwater. As can be seen from the Table, there is no contravention of standards detected in the analysis.

One trend that can be found in the data is that the on site shallow wells are somewhat higher in gross beta radiation than are the shallow perimeter wells or the deep bedrock wells. Figure 1 shows the comparison of these values.

Figure 1

	<u>On-Site Wells</u>	<u>Deep Wells</u>	<u>Off-Site Shallow Wells</u>
Well No.:	13S,14S,15S,2S, 2S,16S,17S,10S,9S	All "D" Wells	1S,3S,4S,5S,6S,7S,8S, 11S,12S
Gross Beta:			
Minimum	.007	.0019	.0012
Average	.024	.0081	.0037
Maximum	.068	.0250	.0080

It is expected that the shallow wells on site would have higher Gross Beta radiation readings due to the presence of radioactive materials on the site. Nevertheless, none of the values obtained contravened the drinking water standards for New York State, which is the most stringent classification of the use of waters. In addition, the October 1989 Radiochemical Analysis Report showed that the leachate seep water leaving the site also did not contravene the New York State drinking water standards. While the on-site wells average radiation reading appears to be three times the average reading of radiation found in the deep wells, this is still some forty times less than the New York State standard. Using the maximum reading of 0.068 pCi/ml Gross Beta radiation for the on-site wells still results in 15 times less than the regulatory standard of 1.0 pCi/ml for drinking water. The drinking water standard is used for comparison only in that it is the most stringent regulatory category. The on-site wells are only monitoring wells and there are no on-site uses of water for drinking water purposes.

CONCLUSIONS

1. All water sample analysis were below the .015 pCi/ml for gross alpha or 1.0 pCi/ml for gross beta drinking water standards.

2. There is little impact of Naturally Occurring Radioactive Materials (NORM) on groundwater at the site since they are predominately alpha emitters and no elevated alpha readings were found in the water.
3. Based on the groundwater monitoring results obtained to date, there is no migration of radioactive contamination in the groundwater to off-site locations.
4. The site does not represent an immediate radiological health hazard.

ABBREVIATION KEY

LT	Less than 2 standard deviations in the net count rate or the procedure detection limit.
+/-	Plus or Minus the uncertainty in the analytical results
pCi/g	Picocuries per gram
pCi/l	Picocuries per liter
pCi/ml	Picocuries per milliliter
U-235	Uranium-235
U-238	Uranium-238
RA-226	Radium-226
TL-210	Thallium-210
ACT-228	Actinium-228
PB-212	Lead-212
TL-208	Thallium-208
CO-60	Cobalt-60
K-40	Potassium-40
CS-137	Cesium-137

TABLES

1-1	Cross-reference of sample numbers and monitoring well numbers
1-2	Sample results; gross beta and gross alpha
1-3	Sample results; Uranium Series
1-4	Sample results; Thorium Series
1-5	Samples results; Other radionuclides
2	Comparison of results to standards

TABLE 1-1

RADIONUCLIDE ANALYSIS RESULTS
PFOHL BROTHERS LANDFILL 09-15-043
CHEEKTOWAGA N.Y., ERIE CO.
CROSSREFERENCE TABLE 1-1

SAMPLE DATE	WELL NO.	UNITS	SAMPLE NUMBER	MEDIA SAMPLED
08/07/89	MW-5D	pCi/ml	082889001	GROUNDWATER
08/07/89	MW-9S	pCi/ml	082889002	GROUNDWATER
08/08/89	MW-5S	pCi/ml	082889003	GROUNDWATER
08/16/89	MW-4D	pCi/ml	082889004	GROUNDWATER
08/16/89	MW-7D	pCi/ml	082889005	GROUNDWATER
08/11/89	MW-7S	pCi/ml	082889006	GROUNDWATER
08/15/89	MW-3S	pCi/ml	082889007	GROUNDWATER
08/15/89	MW-3D	pCi/ml	082889008	GROUNDWATER
08/11/89	MW-8S	pCi/ml	082889009	GROUNDWATER
08/08/89	MW-4S	pCi/ml	082889010	GROUNDWATER
08/09/89	MW10S	pCi/ml	082889011	GROUNDWATER
08/09/89	MW12S	pCi/ml	082889012	GROUNDWATER
08/08/89	MW-6D	pCi/ml	082889013	GROUNDWATER
08/10/89	MW-1S	pCi/ml	082889014	GROUNDWATER
08/10/89	MW-1D	pCi/ml	082889015	GROUNDWATER
08/11/89	MW-6S	pCi/ml	082889016	GROUNDWATER
12/11/89	MW-7D	pCi/ml	122889001	GROUNDWATER
12/19/89	MW-9S	pCi/ml	122889002	GROUNDWATER
12/19/89	MW10S	pCi/ml	122889003	GROUNDWATER
12/05/89	MW-1S	pCi/ml	122889004	GROUNDWATER
12/06/89	MW-1D	pCi/ml	122889005	GROUNDWATER
12/18/89	MW-2S	pCi/ml	122889006	GROUNDWATER
12/21/89	MW-8S	pCi/ml	122889007	GROUNDWATER
12/21/89	MW11S	pCi/ml	122889008	GROUNDWATER

TABLE 1-2

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RADIONUCLIDE ANALYSIS RESULTS
PFOHL BROTHERS LANDFILL 09-15-043
CHEEKTOWAGA N.Y., ERIE CO.
TABLE 1-2

SAMPLE DATE	WELL NO.	UNITS	GROSS ALPHA	GROSS BETA
08/07/89	MW-5D	pCi/ml	.01 +/- .006	.008+/- .004
08/07/89	MW-9S	pCi/ml	.002+/- .002	.035+/- .004
08/08/89	MW-5S	pCi/ml	LT 0.0008	.0012+- .009
08/16/89	MW-4D	pCi/ml	.004+/- .002	0.01+/- .002
08/16/89	MW-7D	pCi/ml	LT .002	.021+/- .003
08/11/89	MW-7S	pCi/ml	LT .0009	.0031+- .001
08/15/89	MW-3S	pCi/ml	.003+/- .002	.005+/- .002
08/15/89	MW-3D	pCi/ml	.0013+- .001	.025+/- .003
08/11/89	MW-8S	pCi/ml	.0023+- .001	.0034+- .001
08/08/89	MW-4S	pCi/ml	.0015+- .001	.0023+- .001
08/09/89	MW10S	pCi/ml	.004 +/- .003	.021 +/- .009
08/09/89	MW12S	pCi/ml	LT 0.004	.008+/- .004
08/08/89	MW-6D	pCi/ml	LT 0.0015	.004+/- .002
08/10/89	MW-1S	pCi/ml	LT 0.0020	.0019+- .001
08/10/89	MW-1D	pCi/ml	.0021+- .001	.0042+- .001
08/11/89	MW-6S	pCi/ml	.002+- .002	.008 +/- .003
12/11/89	MW-7D	pCi/ml	LT 0.004	.009+/- .004
12/19/89	MW-9S	pCi/ml	.0012+- .001	.018+/- .003
12/19/89	MW10S	pCi/ml	.006+/- .005	.012+/- .004
12/05/89	MW-1S	pCi/ml	LT 0.004	LT 0.003
12/06/89	MW-1D	pCi/ml	LT 0.002	LT 0.003
12/18/89	MW-2S	pCi/ml	LT 0.005	.017+/- .005
12/21/89	MW-8S	pCi/ml	.005+/- .003	.002+/- .002
12/21/89	MW11S	pCi/ml	.004+/- .002	.004+/- .002

TABLE 1-3

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RADIONUCLIDE ANALYSIS RESULTS
PFOHL BROTHERS LANDFILL 09-15-043
CHEEKTOWAGA N.Y., ERIE CO.
URANIUM SERIES TABLE 1-3

WELL NO.	UNITS	U-235	U-238	RA-226	TL-210
MW-5D	pCi/ml	.011+/-0.01	LT 1.4	LT 0.02	LT 0.009
MW-9S	pCi/ml	LT 0.01	LT 1.3	LT 0.02	.009+/- .008
MW-5S	pCi/ml	LT 0.01	LT 1.5	LT 0.02	LT 0.008
MW-4D	pCi/ml	LT 0.009	LT 1.5	LT 0.02	LT 0.008
MW-7D	pCi/ml	LT 0.01	LT 1.3	LT 0.02	LT 0.008
MW-7S	pCi/ml	LT 0.009	LT 1.4	.03+/-0.02	LT 0.008
MW-3S	pCi/ml	LT 0.01	LT 1.5	LT 0.02	.009+/- .008
MW-3D	pCi/ml	LT 0.01	LT 1.4	LT 0.02	LT 0.009
MW-8S	pCi/ml	.012+/- .01	LT 1.5	LT 0.02	LT 0.009
MW-4S	pCi/ml	LT 0.009	LT 1.3	LT 0.02	LT 0.008
MW10S	pCi/ml	LT 0.009	LT 1.3	LT 0.02	LT 0.009
MW12S	pCi/ml	.009+/- .009	LT 1.4	LT 0.02	LT 0.009
MW-6D	pCi/ml	LT 0.01	LT 1.4	LT 0.02	LT 0.008
MW-1S	pCi/ml	.012+/- .009	LT 1.5	.02+/-0.02	LT 0.008
MW-1D	pCi/ml	LT 0.01	LT 1.5	LT 0.02	LT 0.007
MW-6S	pCi/ml	LT 0.009	LT 1.3	LT 0.02	LT 0.007

TABLE 1-4

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RADIONUCLIDE ANALYSIS RESULTS
PFOHL BROTHERS LANDFILL 09-15-043
CHEEKTOWAGA N.Y., ERIE CO.
THORIUM SERIES TABLE 1-4

SAMPLE NUMBER	WELL NO.	UNITS	ACT-228	PB-212	TL-208
082889001	MW-5D	pCi/ml	LT 0.04	LT 0.015	LT 0.03
082889002	MW-9S	pCi/ml	LT 0.04	LT 0.014	LT 0.03
082889003	MW-5S	pCi/ml	LT 0.04	LT 0.014	LT 0.03
082889004	MW-4D	pCi/ml	LT 0.04	LT 0.014	LT 0.03
082889005	MW-7D	pCi/ml	0.05+/-0.04	LT 0.014	LT 0.02
082889006	MW-7S	pCi/ml	0.05+/-0.04	LT 0.014	LT 0.02
082889007	MW-3S	pCi/ml	LT 0.04	.019+/-0.015	LT 0.02
082889008	MW-3D	pCi/ml	LT 0.04	LT 0.02	LT 0.03
082889009	MW-8S	pCi/ml	LT 0.04	LT 0.014	LT 0.03
082889010	MW-4S	pCi/ml	LT 0.04	LT 0.015	LT 0.02
082889011	MW10S	pCi/ml	LT 0.04	LT 0.014	LT 0.02
082889012	MW12S	pCi/ml	LT 0.04	LT 0.014	LT 0.03
082889013	MW-6D	pCi/ml	LT 0.04	LT 0.015	LT 0.02
082889014	MW-1S	pCi/ml	LT 0.04	LT 0.013	LT 0.02
082889015	MW-1D	pCi/ml	LT 0.04	LT 0.014	LT 0.03
082889016	MW-6S	pCi/ml	LT 0.03	LT 0.014	LT 0.02

TABLE 1-5

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RADIONUCLIDE ANALYSIS RESULTS
PFOHL BROTHERS LANDFILL 09-15-043
CHEEKTOWAGA N.Y., ERIE CO.
OTHER RADIONUCLIDES TABLE 1-5

SAMPLE DATE	WELL NO.	UNITS	CO-60	K-40	CS-137
08/07/89	MW-5D	pCi/ml	LT 0.009	LT 0.2	LT 0.009
08/07/89	MW-9S	pCi/ml	LT 0.009	LT 0.02	LT 0.009
08/08/89	MW-5S	pCi/ml	LT 0.01	LT 0.2	LT 0.008
08/16/89	MW-4D	pCi/ml	LT 0.009	LT 0.2	LT 0.008
08/16/89	MW-7D	pCi/ml	LT 0.01	LT 0.2	LT 0.009
08/11/89	MW-7S	pCi/ml	LT 0.009	LT 0.2	LT 0.008
08/15/89	MW-3S	pCi/ml	LT 0.009	LT 0.2	LT 0.009
08/15/89	MW-3D	pCi/ml	LT 0.008	LT 0.2	LT 0.008
08/11/89	MW-8S	pCi/ml	LT 0.009	LT 0.02	LT 0.008
08/08/89	MW-4S	pCi/ml	LT 0.010	LT 0.02	LT 0.008
08/09/89	MW10S	pCi/ml	LT 0.008	LT 0.2	LT 0.009
08/09/89	MW12S	pCi/ml	LT 0.01	LT 0.2	LT 0.008
08/08/89	MW-6D	pCi/ml	LT 0.01	LT 0.2	LT 0.008
08/10/89	MW-1S	pCi/ml	LT 0.008	LT 0.2	LT 0.008
08/10/89	MW-1D	pCi/ml	LT 0.01	LT 0.2	LT 0.009
08/11/89	MW-6S	pCi/ml	LT 0.009	LT 0.2	LT 0.008

Table 2

Pfohl Brothers Site August and December 1989 Groundwater Sample
Radioactivity Comparison

All Units in pCi/ml

	Site (1)	Standard (2)
Gross Alpha		
Min	< 0.0006	
Max	.01 ± .006	.015
Gross Beta		
Min	.0012 ± 0.0005	
Max	.068 ± .007	1.0

- (1) Minimum and maximum values of all samples collected from groundwater monitoring wells in and around Pfohl Brothers Landfill during August and December 1989.
- (2) New York State gross alpha (excluding radon and uranium) and radioactivity standards applicable to Class "GA" groundwaters, for which the best usage is as a drinking water supply and any other usage. Source: NYSDEC 6NYCRR Part 703, March 1986.

Appendix A

Typical Well Construction Detail

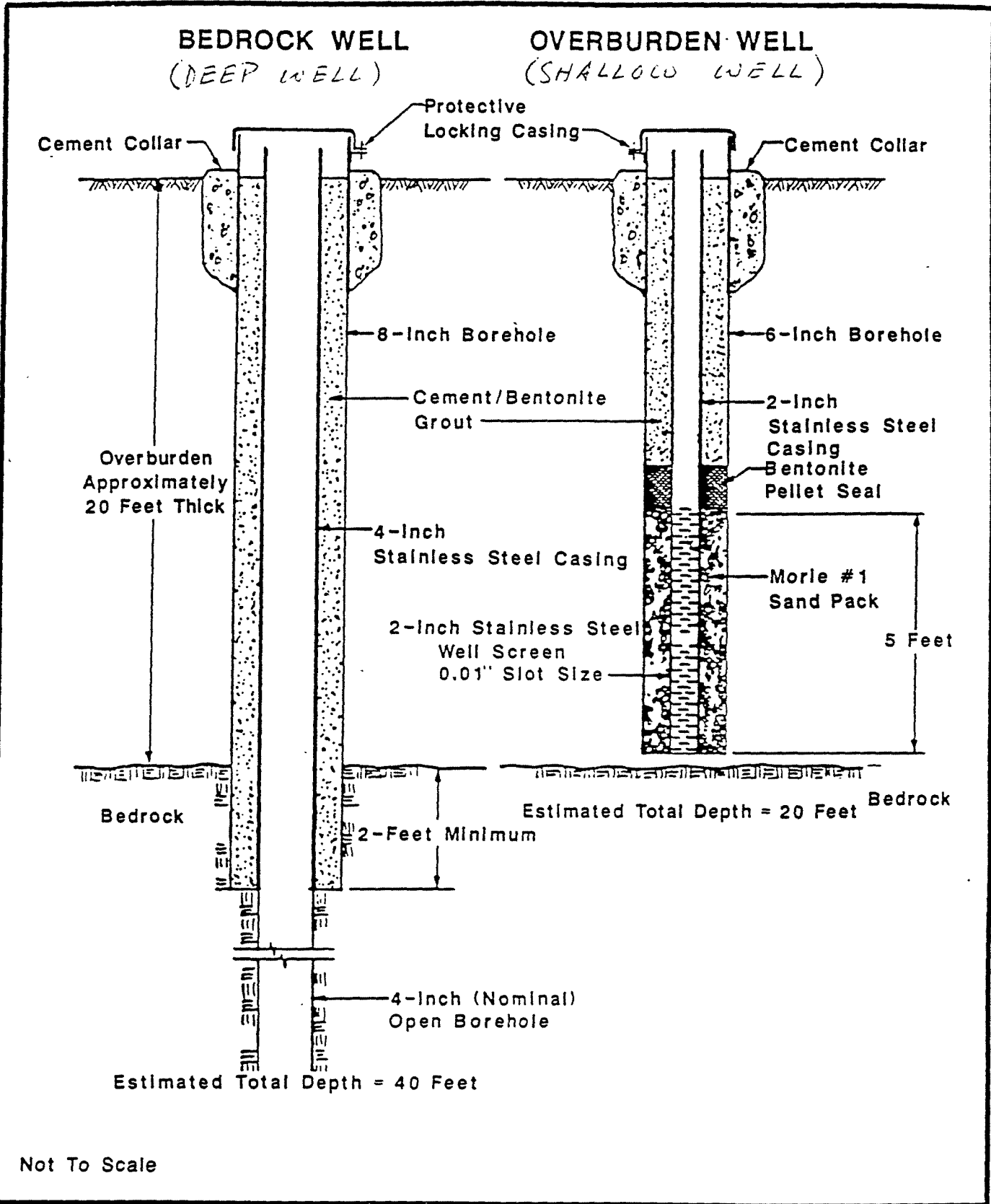


Figure 5-2

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environmental engineers, scientists,
planners & management consultants

Schematic Well Construction Details

Pfohl Brothers Landfill, Cheektowaga, New York

05/84/10

Appendix B

Groundwater Sample Results



REPORT OF ANALYSIS

New York State Department
of Environmental Conservation
50 Wolf Road
Albany, NY 12233-7255

Attn: Mr. Ed Johnson

Collected By: Bureau of Radiation

Sampling Date: 08/07/89

Case No.: NR-9-89 SDG No.: 001

Sample No.: 082889001

Matrix: Groundwater

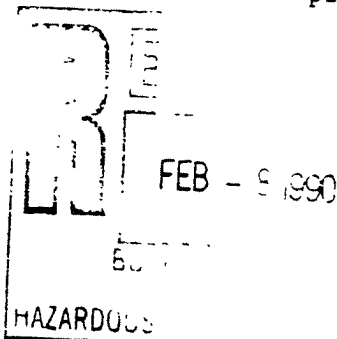
CHAS Lab. No.: 8909042-01

Uranium Series	Concentration (pCi/ml)
Uranium-235	0.011 ± 0.010
Uranium-238	LT 1.4
Radium-226	LT 0.02
Thallium-210	LT 0.009
Thorium Series	
Actinium-228	LT 0.04
Lead-212	LT 0.015
Thallium-208	LT 0.03
Other Nuclides	
Cobalt-60	LT 0.009
Potassium-40	LT 0.2
Cesium-137	LT 0.009
Gross Alpha	0.010 ± 0.006
Gross Beta	0.008 ± 0.004

Note: LT - Less than 2 standard deviations in the net count rate or the procedure detection limit.

The information contained in this report is, to the best of my knowledge, accurate and complete.

Per/Date: Richard C. Fix 10/31/89
Richard C. Fix
Director, Technical Services





REPORT OF ANALYSIS

New York State Department
of Environmental Conservation
50 Wolf Road
Albany, NY 12233-7255

Attn: Mr. Ed Johnson

Collected By: Bureau of Radiation

Sampling Date: 08/07/89

Case No.: NR-9-89 SDG No.: 001

Sample No.: 082889002

Matrix: Groundwater

CHAS Lab. No.: 8909042-02

	Concentration (pCi/ml)
Uranium Series	
Uranium-235	LT 0.010
Uranium-238	LT 1.3
Radium-226	LT 0.02
Thallium-210	0.009 ± 0.008
Thorium Series	
Actinium-228	LT 0.04
Lead-212	LT 0.014
Thallium-208	LT 0.03
Other Nuclides	
Cobalt-60	LT 0.009
Potassium-40	LT 0.02
Cesium-137	LT 0.009
Gross Alpha	0.002 ± 0.002
Gross Beta	0.035 ± 0.004

Note: LT = Less than 2 standard deviations in the net count rate or the procedure detection limit.

The information contained in this report is, to the best of my knowledge, accurate and complete.

Per/Date: Richard C. Fix 10/31/89
Richard C. Fix
Director, Technical Services

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REPORT OF ANALYSIS

New York State Department
of Environmental Conservation
50 Wolf Road
Albany, NY 12233-7255

Attn: Mr. Ed Johnson

Collected By: Bureau of Radiation

Sampling Date: 08/08/89

Case No.: NR-9-89 SDG No.: 001

Sample No.: 082889003

Matrix: Groundwater

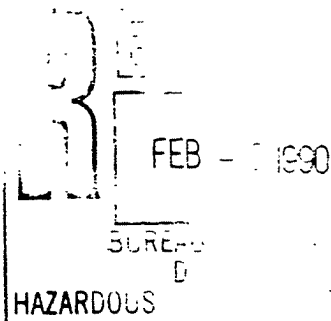
CHAS Lab. No.: 8909042-03

	Concentration (pCi/ml)
Uranium Series	
Uranium-235	LT 0.010
Uranium-238	LT 1.5
Radium-226	LT 0.02
Thallium-210	LT 0.008
Thorium Series	
Actinium-228	LT 0.04
Lead-212	LT 0.014
Thallium-208	LT 0.03
Other Nuclides	
Cobalt-60	LT 0.010
Potassium-40	LT 0.2
Cesium-137	LT 0.008
Gross Alpha	LT 0.0008
Gross Beta	0.0012 ± 0.0009

Note: LT = Less than 2 standard deviations in the net count rate or the procedure detection limit.

The information contained in this report is, to the best of my knowledge, accurate and complete.

Per/Date: Richard C. Fix 10/31/89
Richard C. Fix
Director, Technical Services





REPORT OF ANALYSIS

New York State Department
of Environmental Conservation
50 Wolf Road
Albany, NY 12233-7255

Attn: Mr. Ed Johnson

Collected By: Bureau of Radiation

Sampling Date: 08/16/89

Case No.: NR-9-89 SDG No.: 001

Sample No.: 082889004

Matrix: Groundwater

CHAS Lab. No.: 8909042-04

Uranium Series	Concentration (pCi/ml)
Uranium-235	LT 0.009
Uranium-238	LT 1.5
Radium-226	LT 0.02
Thallium-210	LT 0.008
Thorium Series	
Actinium-228	LT 0.04
Lead-212	LT 0.014
Thallium-208	LT 0.03
Other Nuclides	
Cobalt-60	LT 0.009
Potassium-40	LT 0.2
Cesium-137	LT 0.008
Gross Alpha	0.004 ± 0.002
Gross Beta	0.010 ± 0.002

Note: LT - Less than 2 standard deviations in the net count rate or the procedure detection limit.

The information contained in this report is, to the best of my knowledge, accurate and complete.

Per/Date: Richard C. Fix 10/31/89
Richard C. Fix
Director, Technical Services

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FEB - 1990
B
HAZARDOUS



REPORT OF ANALYSIS

New York State Department
of Environmental Conservation
50 Wolf Road
Albany, NY 12233-7255

Attn: Mr. Ed Johnson

Collected By: Bureau of Radiation

Sampling Date: 08/16/89

Case No.: NR-9-89 SDG No.: 001

Sample No.: 082889005

Matrix: Groundwater

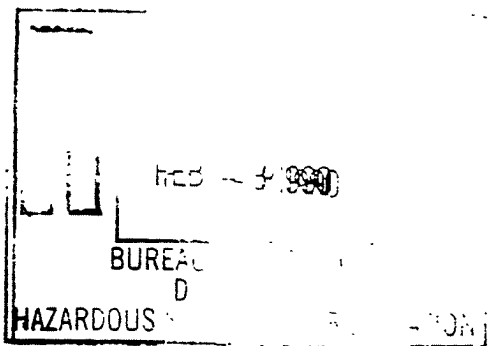
CHAS Lab. No.: 8909042-05

	Concentration (pCi/ml)
Uranium Series	
Uranium-235	LT 0.010
Uranium-238	LT 1.3
Radium-226	LT 0.02
Thallium-210	LT 0.008
Thorium Series	
Actinium-228	0.05 ± 0.04
Lead-212	LT 0.014
Thallium-208	LT 0.02
Other Nuclides	
Cobalt-60	LT 0.010
Potassium-40	LT 0.2
Cesium-137	LT 0.009
Gross Alpha	LT 0.002
Gross Beta	0.021 ± 0.003

Note: LT - Less than 2 standard deviations in the net count rate or the procedure detection limit.

The information contained in this report is, to the best of my knowledge, accurate and complete.

Per/Date: Richard C. Fix 10/31/89
Richard C. Fix
Director, Technical Services





REPORT OF ANALYSIS

New York State Department
of Environmental Conservation
50 Wolf Road
Albany, NY 12233-7255

Attn: Mr. Ed Johnson

Collected By: Bureau of Radiation

Sampling Date: 08/11/89

Case No.: NR-9-89 SDG No.: 001

Sample No.: 082889006

Matrix: Groundwater

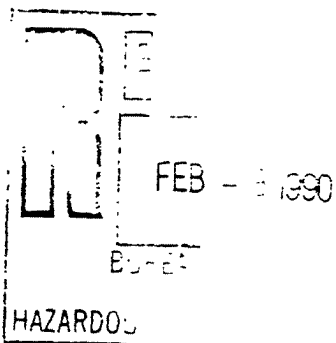
CHAS Lab. No.: 8909042-06

	Concentration (pCi/ml)
Uranium Series	
Uranium-235	0.010 ± 0.009
Uranium-238	LT 1.4
Radium-226	0.03 ± 0.02
Thallium-210	LT 0.008
Thorium Series	
Actinium-228	0.05 ± 0.04
Lead-212	LT 0.014
Thallium-208	LT 0.02
Other Nuclides	
Cobalt-60	LT 0.009
Potassium-40	LT 0.2
Cesium-137	LT 0.008
Gross Alpha	LT 0.0009
Gross Beta	0.0031 ± 0.0011

Note: LT = Less than 2 standard deviations in the net count rate or the procedure detection limit.

The information contained in this report is, to the best of my knowledge, accurate and complete.

Per/Date: Richard C. Fix 10/31/89
Richard C. Fix
Director, Technical Services





REPORT OF ANALYSIS

New York State Department
of Environmental Conservation
50 Wolf Road
Albany, NY 12233-7255

Attn: Mr. Ed Johnson

Collected By: Bureau of Radiation

Sampling Date: 08/15/89

Case No.: NR-9-89 SDG No.: 001

Sample No.: 082889007

Matrix: Groundwater

CHAS Lab. No.: 8909042-07

	Concentration (pCi/ml)
Uranium Series	
Uranium-235	LT 0.010
Uranium-238	LT 1.5
Radium-226	LT 0.02
Thallium-210	0.009 ± 0.008
Thorium Series	
Actinium-228	LT 0.04
Lead-212	0.019 ± 0.015
Thallium-208	LT 0.02
Other Nuclides	
Cobalt-60	LT 0.009
Potassium-40	LT 0.2
Cesium-137	LT 0.009
Gross Alpha	0.003 ± 0.002
Gross Beta	0.005 ± 0.002

Note: LT = Less than 2 standard deviations in the net count rate or the procedure detection limit.

The information contained in this report is, to the best of my knowledge, accurate and complete.

Per/Date: Richard C. Fix 10/31/89
Richard C. Fix
Director, Technical Services





REPORT OF ANALYSIS

New York State Department
of Environmental Conservation
50 Wolf Road
Albany, NY 12233-7255

Attn: Mr. Ed Johnson

Collected By: Bureau of Radiation

Sampling Date: 08/15/89

Case No.: NR-9-89 SDG No.: 001

Sample No.: 082889008

Matrix: Groundwater

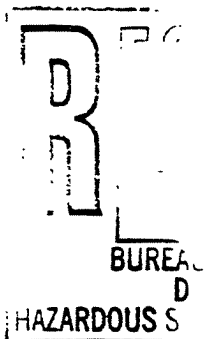
CHAS Lab. No.: 8909042-08

	Concentration (pCi/ml)
Uranium Series	
Uranium-235	LT 0.010
Uranium-238	LT 1.4
Radium-226	LT 0.02
Thallium-210	LT 0.009
Thorium Series	
Actinium-228	LT 0.04
Lead-212	LT 0.02
Thallium-208	LT 0.03
Other Nuclides	
Cobalt-60	LT 0.008
Potassium-40	LT 0.2
Cesium-137	LT 0.008
Gross Alpha	0.0013 ± 0.0012
Gross Beta	0.025 ± 0.003

Note: LT = Less than 2 standard deviations in the net count rate or the procedure detection limit.

The information contained in this report is, to the best of my knowledge, accurate and complete.

Per/Date: Richard C. Fix 10/31/89
Richard C. Fix
Director, Technical Services



1990



REPORT OF ANALYSIS

New York State Department
of Environmental Conservation
50 Wolf Road
Albany, NY 12233-7255

Attn: Mr. Ed Johnson

Collected By: Bureau of Radiation

Sampling Date: 08/11/89

Case No.: NR-9-89 SDG No.: 001

Sample No.: 082889009

Matrix: Groundwater

CHAS Lab. No.: 8909042-09

	Concentration (pCi/ml)
Uranium Series	
Uranium-235	0.012 ± 0.010
Uranium-238	LT 1.5
Radium-226	LT 0.02
Thallium-210	LT 0.009
Thorium Series	
Actinium-228	LT 0.04
Lead-212	LT 0.014
Thallium-208	LT 0.03
Other Nuclides	
Cobalt-60	LT 0.009
Potassium-40	LT 0.02
Cesium-137	LT 0.008
Gross Alpha	0.0023 ± 0.0010
Gross Beta	0.0034 ± 0.0009

Note: LT = Less than 2 standard deviations in the net count rate or the procedure detection limit.

The information contained in this report is, to the best of my knowledge, accurate and complete.

Per/Date: Richard C. Fix 10/31/89
Richard C. Fix
Director, Technical Services



990



REPORT OF ANALYSIS

New York State Department
of Environmental Conservation
50 Wolf Road
Albany, NY 12233-7255

Attn: Mr. Ed Johnson

Collected By: Bureau of Radiation

Sampling Date: 08/08/89

Case No.: NR-9-89 SDG No.: 001

Sample No.: 082889010

Matrix: Groundwater

CHAS Lab. No.: 8909042-10

	Concentration (pCi/ml)
Uranium Series	
Uranium-235	LT 0.009
Uranium-238	LT 1.3
Radium-226	LT 0.02
Thallium-210	LT 0.008
Thorium Series	
Actinium-228	LT 0.04
Lead-212	LT 0.015
Thallium-208	LT 0.02
Other Nuclides	
Cobalt-60	LT 0.010
Potassium-40	LT 0.02
Cesium-137	LT 0.008
Gross Alpha	0.0015 ± 0.0008
Gross Beta	0.0023 ± 0.0011

Note: LT = Less than 2 standard deviations in the net count rate or the procedure detection limit.

The information contained in this report is, to the best of my knowledge, accurate and complete.

Per/Date: Richard C. Fix 10/31/89
Richard C. Fix
Director, Technical Services



1990



REPORT OF ANALYSIS

New York State Department
of Environmental Conservation
50 Wolf Road
Albany, NY 12233-7255

Attn: Mr. Ed Johnson

Collected By: Bureau of Radiation

Sampling Date: 08/09/89

Case No.: NR-9-89 SDG No.: 001

Sample No.: 082889011

Matrix: Groundwater

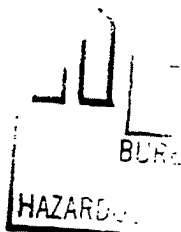
CHAS Lab. No.: 8909042-11

	Concentration (pCi/ml)
Uranium Series	
Uranium-235	LT 0.009
Uranium-238	LT 1.3
Radium-226	LT 0.02
Thallium-210	LT 0.009
Thorium Series	
Actinium-228	LT 0.04
Lead-212	LT 0.014
Thallium-208	LT 0.02
Other Nuclides	
Cobalt-60	LT 0.008
Potassium-40	LT 0.2
Cesium-137	LT 0.009
Gross Alpha	0.004 ± 0.003
Gross Beta	0.021 ± 0.009

Note: LT = Less than 2 standard deviations in the net count rate or the procedure detection limit.

The information contained in this report is, to the best of my knowledge, accurate and complete.

Per/Date: Richard C. Fix 10/31/89
Richard C. Fix
Director, Technical Services





REPORT OF ANALYSIS

New York State Department
of Environmental Conservation
50 Wolf Road
Albany, NY 12233-7255

Attn: Mr. Ed Johnson

Collected By: Bureau of Radiation

Sampling Date: 08/09/89

Case No.: NR-9-89 SDG No.: 001

Sample No.: 082889012

Matrix: Groundwater

CHAS Lab. No.: 8909042-12

Uranium Series	Concentration (pCi/ml)
Uranium-235	0.009 ± 0.009
Uranium-238	LT 1.4
Radium-226	LT 0.02
Thallium-210	LT 0.008
Thorium Series	
Actinium-228	LT 0.04
Lead-212	LT 0.014
Thallium-208	LT 0.03
Other Nuclides	
Cobalt-60	LT 0.010
Potassium-40	LT 0.2
Cesium-137	LT 0.008
Gross Alpha	LT 0.004
Gross Beta	0.008 ± 0.004

Note: LT = Less than 2 standard deviations in the net count rate or the procedure detection limit.

The information contained in this report is, to the best of my knowledge, accurate and complete.

Per/Date: Richard C. Fix 10/31/89
Richard C. Fix
Director, Technical Services

FEB - 1990
HAZARDOUS



REPORT OF ANALYSIS

New York State Department
of Environmental Conservation
50 Wolf Road
Albany, NY 12233-7255

Attn: Mr. Ed Johnson

Collected By: Bureau of Radiation

Sampling Date: 08/08/89

Case No.: NR-9-89 SDG No.: 001

Sample No.: 082889013

Matrix: Groundwater

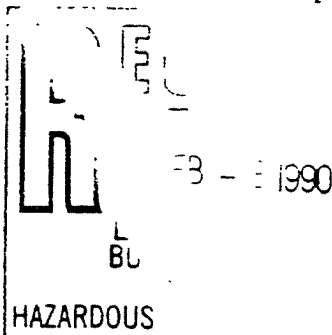
CHAS Lab. No.: 8909042-13

Uranium Series	Concentration (pCi/ml)
Uranium-235	LT 0.010
Uranium-238	LT 1.4
Radium-226	LT 0.02
Thallium-210	LT 0.008
Thorium Series	
Actinium-228	LT 0.04
Lead-212	LT 0.015
Thallium-208	LT 0.02
Other Nuclides	
Cobalt-60	LT 0.010
Potassium-40	LT 0.2
Cesium-137	LT 0.008
Gross Alpha	LT 0.0015
Gross Beta	0.004 ± 0.002

Note: LT = Less than 2 standard deviations in the net count rate or the procedure detection limit.

The information contained in this report is, to the best of my knowledge, accurate and complete.

Per/Date: Richard C. Fix 10/31/89
Richard C. Fix
Director, Technical Services





REPORT OF ANALYSIS

New York State Department
of Environmental Conservation
50 Wolf Road
Albany, NY 12233-7255

Attn: Mr. Ed Johnson

Collected By: Bureau of Radiation

Sampling Date: 08/10/89

Case No.: NR-9-89 SDG No.: 001

Sample No.: 082889014

Matrix: Groundwater

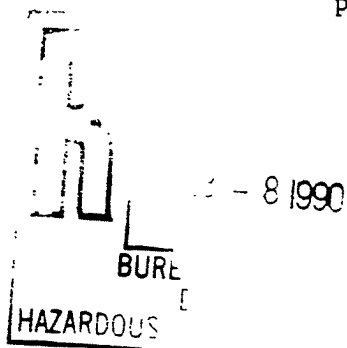
CHAS Lab. No.: 8909042-14

	Concentration (pCi/ml)
Uranium Series	
Uranium-235	0.012 ± 0.009
Uranium-238	LT 1.5
Radium-226	0.02 ± 0.02
Thallium-210	LT 0.008
Thorium Series	
Actinium-228	LT 0.04
Lead-212	LT 0.013
Thallium-208	LT 0.02
Other Nuclides	
Cobalt-60	LT 0.008
Potassium-40	LT 0.2
Cesium-137	LT 0.008
Gross Alpha	LT 0.002
Gross Beta	0.0019 ± 0.0012

Note: LT = Less than 2 standard deviations in the net count rate or the procedure detection limit.

The information contained in this report is, to the best of my knowledge, accurate and complete.

Per/Date: Richard C. Fix 10/31/89
Richard C. Fix
Director, Technical Services





REPORT OF ANALYSIS

New York State Department
of Environmental Conservation
50 Wolf Road
Albany, NY 12233-7255

Attn: Mr. Ed Johnson

Collected By: Bureau of Radiation

Sampling Date: 08/10/89

Case No.: NR-9-89 SDG No.: 001

Sample No.: 082889015

Matrix: Groundwater

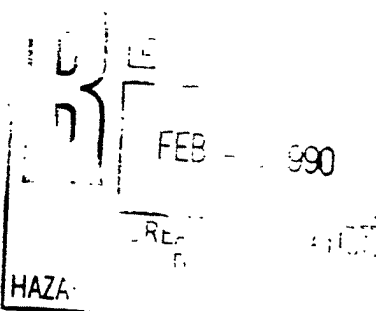
CHAS Lab. No.: 8909042-15

	Concentration (pCi/ml)
Uranium Series	
Uranium-235	LT 0.010
Uranium-238	LT 1.5
Radium-226	LT 0.02
Thallium-210	LT 0.007
Thorium Series	
Actinium-228	LT 0.04
Lead-212	LT 0.014
Thallium-208	LT 0.03
Other Nuclides	
Cobalt-60	LT 0.010
Potassium-40	LT 0.2
Cesium-137	LT 0.009
Gross Alpha	0.0021 ± 0.0012
Gross Beta	0.0042 ± 0.0011

Note: LT = Less than 2 standard deviations in the net count rate or the procedure detection limit.

The information contained in this report is, to the best of my knowledge, accurate and complete.

Per/Date: Richard C. Fix 10/31/89
Richard C. Fix
Director, Technical Services





REPORT OF ANALYSIS

New York State Department
of Environmental Conservation
50 Wolf Road
Albany, NY 12233-7255

Attn: Mr. Ed Johnson

Collected By: Bureau of Radiation

Sampling Date: 08/11/89

Case No.: NR-9-89 SDG No.: 001

Sample No.: 082889016

Matrix: Groundwater

CHAS Lab. No.: 8909042-16

	Concentration (pCi/ml)
Uranium Series	
Uranium-235	LT 0.009
Uranium-238	LT 1.3
Radium-226	0.02 ± 0.02
Thallium-210	LT 0.007
Thorium Series	
Actinium-228	LT 0.03
Lead-212	LT 0.014
Thallium-208	LT 0.02
Other Nuclides	
Cobalt-60	LT 0.009
Potassium-40	LT 0.2
Cesium-137	LT 0.008
Gross Alpha	0.002 ± 0.002
Gross Beta	0.008 ± 0.003

Note: LT - Less than 2 standard deviations in the net count rate or the procedure detection limit.

The information contained in this report is, to the best of my knowledge, accurate and complete.

Per/Date: Richard C. Fix 10/31/89
Richard C. Fix
Director, Technical Services

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REPORT OF ANALYSIS

New York State Department
of Environmental Conservation
50 Wolf Road
Albany, NY 12233-7255

Attn: Mr. Ed Johnson

Collected By: Bureau of Radiation

Sampling Date: 12/11/89

Case No.: NR-9-89 SDG No.: 001

Sample No.: 122889001

Matrix: Groundwater

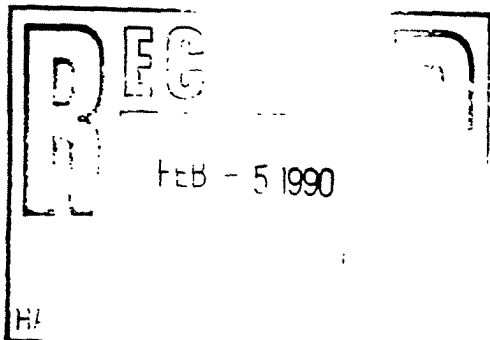
CHAS Lab. No.: 9001062-01W

	Concentration (pCi/l)
Gross Alpha	LT 4
Gross Beta	9 ± 4

Note: LT - Less than 2 standard deviations in the net count rate or the procedure detection limit.

The information contained in this report is, to the best of my knowledge, accurate and complete.

Per/Date: Richard C. Fix 1/30/90
Richard C. Fix
Director, Technical Services





REPORT OF ANALYSIS

New York State Department
of Environmental Conservation
50 Wolf Road
Albany, NY 12233-7255

Attn: Mr. Ed Johnson

Collected By: Bureau of Radiation

Sampling Date: 12/19/89

Case No.: NR-9-89 SDG No.: 001

Sample No.: 122889002

Matrix: Groundwater

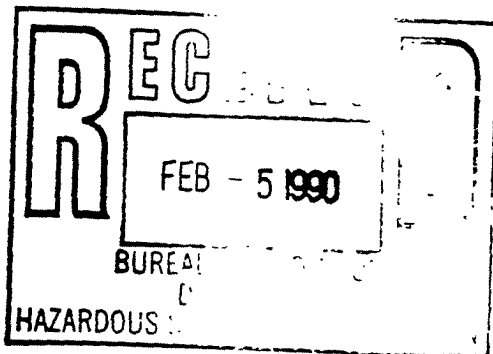
CHAS Lab. No.: 9001062-02W

	Concentration (pCi/l)
Gross Alpha	1.2 ± 1.1
Gross Beta	18 ± 3

Note: LT - Less than 2 standard deviations in the net count rate or the procedure detection limit.

The information contained in this report is, to the best of my knowledge, accurate and complete.

Per/Date: Richard C. Fix 1/30/90
Richard C. Fix
Director, Technical Services





REPORT OF ANALYSIS

New York State Department
of Environmental Conservation
50 Wolf Road
Albany, NY 12233-7255

Attn: Mr. Ed Johnson

Collected By: Bureau of Radiation

Sampling Date: 12/19/89

Case No.: NR-9-89 SDG No.: 001

Sample No.: 122889003

Matrix: Groundwater

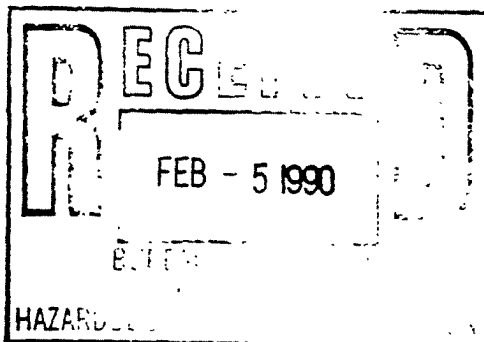
CHAS Lab. No.: 9001062-03W

	Concentration (pCi/l)
Gross Alpha	6 ± 5
Gross Beta	12 ± 4

Note: LT - Less than 2 standard deviations in the net count rate or the procedure detection limit.

The information contained in this report is, to the best of my knowledge, accurate and complete.

Per/Date: Richard C. Fix 1/30/90
Richard C. Fix
Director, Technical Services





REPORT OF ANALYSIS

New York State Department
of Environmental Conservation
50 Wolf Road
Albany, NY 12233-7255

Attn: Mr. Ed Johnson

Collected By: Bureau of Radiation

Sampling Date: 12/05/89

Case No.: NR-9-89 SDG No.: 001

Sample No.: 122889004

Matrix: Groundwater

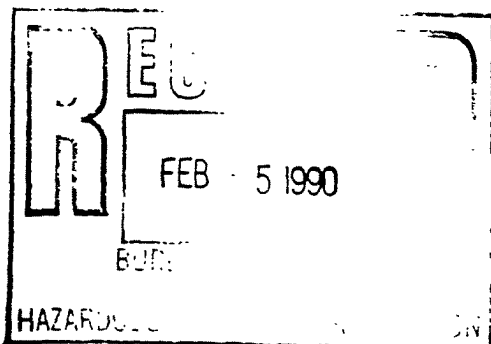
CHAS Lab. No.: 9001064-01W

	Concentration (pCi/l)
Gross Alpha	LT 4
Gross Beta	LT 3

Note: LT - Less than 2 standard deviations in the net count rate or the procedure detection limit.

The information contained in this report is, to the best of my knowledge, accurate and complete.

Per/Date: Richard C. Fix 1/30/90
Richard C. Fix
Director, Technical Services





REPORT OF ANALYSIS

New York State Department
of Environmental Conservation
50 Wolf Road
Albany, NY 12233-7255

Attn: Mr. Ed Johnson

Collected By: Bureau of Radiation

Sampling Date: 12/06/89

Case No.: NR-9-89 SDG No.: 001

Sample No.: 122889005

Matrix: Groundwater

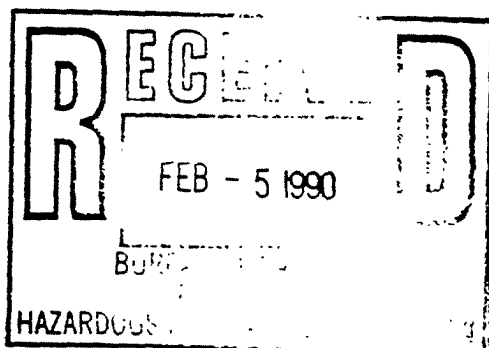
CHAS Lab. No.: 9001064-02W

	Concentration (pCi/l)
Gross Alpha	LT 2
Gross Beta	LT 3

Note: LT = Less than 2 standard deviations in the net count rate or the procedure detection limit.

The information contained in this report is, to the best of my knowledge, accurate and complete.

Per/Date: Richard C. Fix 1/30/90
Richard C. Fix
Director, Technical Services





REPORT OF ANALYSIS

New York State Department
of Environmental Conservation
50 Wolf Road
Albany, NY 12233-7255

Attn: Mr. Ed Johnson

Collected By: Bureau of Radiation

Sampling Date: 12/18/89

Case No.: NR-9-89 SDG No.: 001

Sample No.: 122889006

Matrix: Groundwater

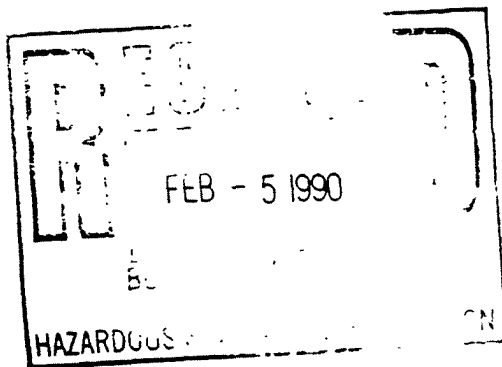
CHAS Lab. No.: 9001064-03W

	Concentration (pCi/l)
Gross Alpha	LT 5
Gross Beta	17 ± 5

Note: LT = Less than 2 standard deviations in the net count rate or the procedure detection limit.

The information contained in this report is, to the best of my knowledge, accurate and complete.

Per/Date: Richard C. Fix 1/30/90
Richard C. Fix
Director, Technical Services





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REPORT OF ANALYSIS

New York State Department
of Environmental Conservation
50 Wolf Road
Albany, NY 12233-7255

Attn: Mr. Ed Johnson

Collected By: Bureau of Radiation

Sampling Date: 12/21/89

Case No.: NR-9-89 SDG No.: 001

Sample No.: 122889007

Matrix: Groundwater

CHAS Lab. No.: 9001061-01W

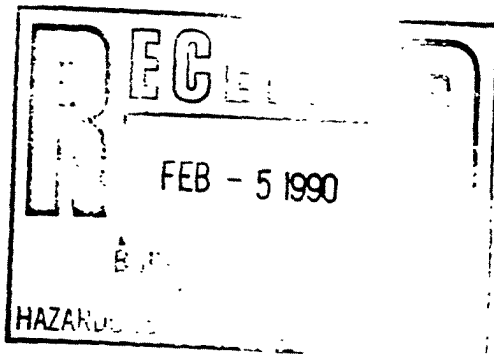
Concentration
(pCi/l)

Gross Alpha	5 ± 3
Gross Beta	2 ± 2

Note: LT = Less than 2 standard deviations in the net count rate or the procedure detection limit.

The information contained in this report is, to the best of my knowledge, accurate and complete.

Per/Date: Richard C. Fix 1/30/90
Richard C. Fix
Director, Technical Services





REPORT OF ANALYSIS

New York State Department
of Environmental Conservation
50 Wolf Road
Albany, NY 12233-7255

Attn: Mr. Ed Johnson

Collected By: Bureau of Radiation

Sampling Date: 12/21/89

Case No.: NR-9-89 SDG No.: 001

Sample No.: 122889008

Matrix: Groundwater

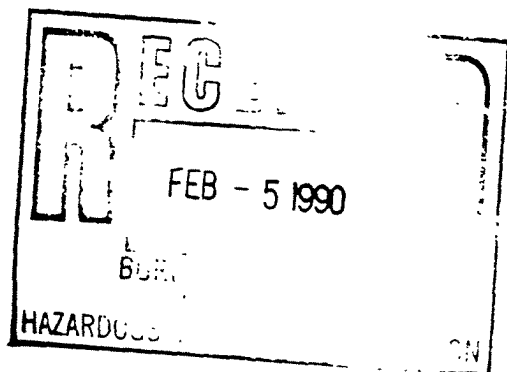
CHAS Lab. No.: 9001061-02W

	Concentration (pCi/l)
Gross Alpha	4 ± 2
Gross Beta	4 ± 2

Note: LT = Less than 2 standard deviations in the net count rate or the procedure detection limit.

The information contained in this report is, to the best of my knowledge, accurate and complete.

Per/Date: Richard C. Fix 1/30/90
Richard C. Fix
Director, Technical Services





REPORT OF ANALYSIS

New York State Department
of Environmental Conservation
50 Wolf Road
Albany, NY 12233-7255

Attn: Mr. Ed Johnson

Collected By: Bureau of Radiation

Sampling Date: 12/21/89

Case No.: NR-9-89 SDG No.: 001

Sample No.: 122889009

Matrix: Groundwater

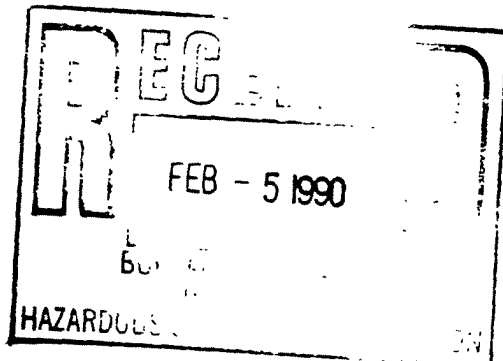
CHAS Lab. No.: 9001061-03W

	Concentration (pCi/l)
Gross Alpha	LT 8
Gross Beta	7 ± 6

Note: LT - Less than 2 standard deviations in the net count rate or the procedure detection limit.

The information contained in this report is, to the best of my knowledge, accurate and complete.

Per/Date: Richard C. Fix 1/30/90
Richard C. Fix
Director, Technical Services





REPORT OF ANALYSIS

New York State Department
of Environmental Conservation
50 Wolf Road
Albany, NY 12233-7255

Attn: Mr. Ed Johnson

Collected By: Bureau of Radiation

Sampling Date: 12/21/89

Case No.: NR-9-89 SDG No.: 001

Sample No.: 122889010

Matrix: Groundwater

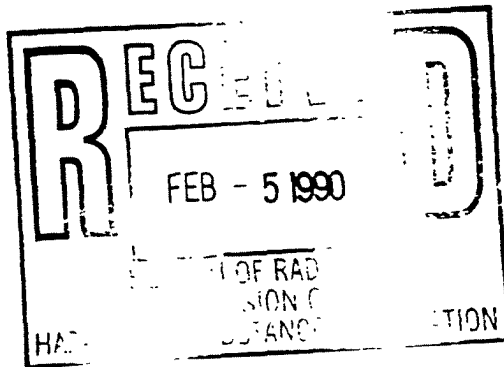
CHAS Lab. No.: 9001068-01W

	Concentration (pCi/l)
Gross Alpha	LT 2
Gross Beta	8 ± 3

Note: LT - Less than 2 standard deviations in the net count rate or the procedure detection limit.

The information contained in this report is, to the best of my knowledge, accurate and complete.

Per/Date: Richard C. Fix 1/30/90
Richard C. Fix
Director, Technical Services





REPORT OF ANALYSIS

New York State Department
of Environmental Conservation
50 Wolf Road
Albany, NY 12233-7255

Attn: Mr. Ed Johnson

Collected By: Bureau of Radiation

Sampling Date: 12/21/89

Case No.: NR-9-89 SDG No.: 001

Sample No.: 122889011

Matrix: Groundwater

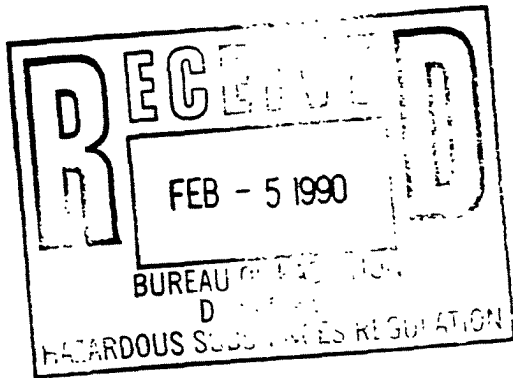
CHAS Lab. No.: 9001068-02W

	Concentration (pCi/l)
Gross Alpha	LT 4
Gross Beta	18 ± 3

Note: LT - Less than 2 standard deviations in the net count rate or the procedure detection limit.

The information contained in this report is, to the best of my knowledge, accurate and complete.

Per/Date: Richard C. Fix 1/30/90
Richard C. Fix
Director, Technical Services





REPORT OF ANALYSIS

New York State Department
of Environmental Conservation
50 Wolf Road
Albany, NY 12233-7255

Attn: Mr. Ed Johnson

Collected By: Bureau of Radiation

Sampling Date: 12/21/89

Case No.: NR-9-89 SDG No.: 001

Sample No.: 122889012

Matrix: Groundwater

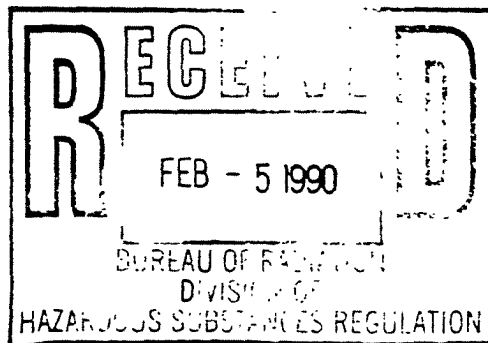
CHAS Lab. No.: 9001068-03W

	Concentration (pCi/l)
Gross Alpha	2 ± 2
Gross Beta	16 ± 3

Note: LT - Less than 2 standard deviations in the net count rate or the procedure detection limit.

The information contained in this report is, to the best of my knowledge, accurate and complete.

Per/Date: Richard C. Fix 1/30/90
Richard C. Fix
Director, Technical Services





REPORT OF ANALYSIS

New York State Department
of Environmental Conservation
50 Wolf Road
Albany, NY 12233-7255

Attn: Mr. Ed Johnson

Collected By: Bureau of Radiation

Sampling Date: 12/13/89

Case No.: NR-9-89 SDG No.: 001

Sample No.: 122889013

Matrix: Groundwater

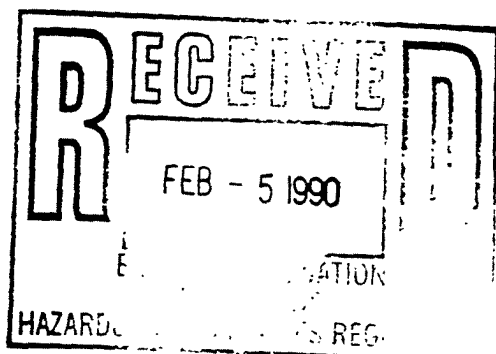
CHAS Lab. No.: 9001067-01W

	Concentration (pCi/l)
Gross Alpha	1.1 ± 1.0
Gross Beta	1.9 ± 0.8

Note: LT = Less than 2 standard deviations in the net count rate or the procedure detection limit.

The information contained in this report is, to the best of my knowledge, accurate and complete.

Per/Date: Richard C. Fix 1/30/90
Richard C. Fix
Director, Technical Services





REPORT OF ANALYSIS

New York State Department
of Environmental Conservation
50 Wolf Road
Albany, NY 12233-7255

Attn: Mr. Ed Johnson

Collected By: Bureau of Radiation

Sampling Date: 12/07/89

Case No.: NR-9-89 SDG No.: 001

Sample No.: 122889014

Matrix: Groundwater

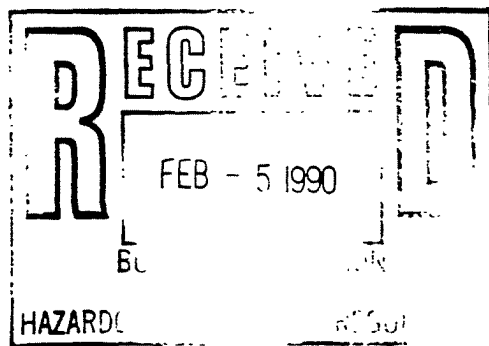
CHAS Lab. No.: 9001067-02W

	Concentration (pCi/l)
Gross Alpha	LT 0.6
Gross Beta	1.2 ± 0.5

Note: LT - Less than 2 standard deviations in the net count rate or the procedure detection limit.

The information contained in this report is, to the best of my knowledge, accurate and complete.

Per/Date: Richard C. Fix 1/30/90
Richard C. Fix
Director, Technical Services





REPORT OF ANALYSIS

New York State Department
of Environmental Conservation
50 Wolf Road
Albany, NY 12233-7255

Attn: Mr. Ed Johnson

Collected By: Bureau of Radiation

Sampling Date: 12/08/89

Case No.: NR-9-89 SDG No.: 001

Sample No.: 122889015

Matrix: Groundwater

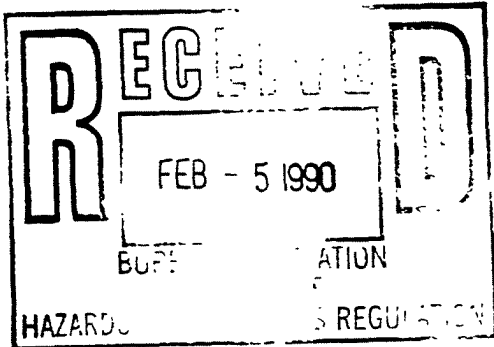
CHAS Lab. No.: 9001067-03W

	Concentration (pCi/l)
Gross Alpha	LT 5
Gross Beta	5 ± 5

Note: LT - Less than 2 standard deviations in the net count rate or the procedure detection limit.

The information contained in this report is, to the best of my knowledge, accurate and complete.

Per/Date: Richard C. Fix 1/30/90
Richard C. Fix
Director, Technical Services





REPORT OF ANALYSIS

New York State Department
of Environmental Conservation
50 Wolf Road
Albany, NY 12233-7255

Attn: Mr. Ed Johnson

Collected By: Bureau of Radiation

Sampling Date: 12/13/89

Case No.: NR-9-89 SDG No.: 001

Sample No.: 122889016

Matrix: Groundwater

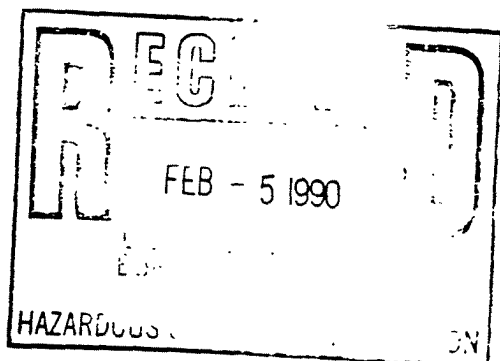
CHAS Lab. No.: 9001065-01W

	Concentration (pCi/l)
Gross Alpha	4 ± 4
Gross Beta	32 ± 4

Note: LT - Less than 2 standard deviations in the net count rate or the procedure detection limit.

The information contained in this report is, to the best of my knowledge, accurate and complete.

Per/Date: Richard C. Fix 1/30/90
Richard C. Fix
Director, Technical Services





REPORT OF ANALYSIS

New York State Department
of Environmental Conservation
50 Wolf Road
Albany, NY 12233-7255

Attn: Mr. Ed Johnson

Collected By: Bureau of Radiation

Sampling Date: 12/13/89

Case No.: NR-9-89 SDG No.: 001

Sample No.: 122889017

Matrix: Groundwater

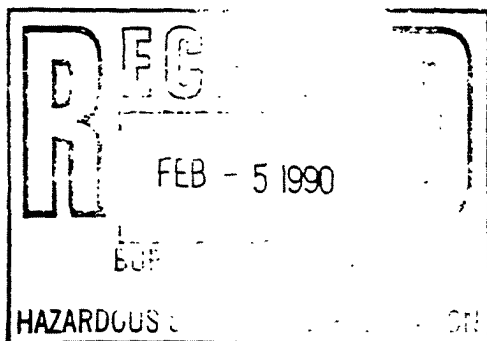
CHAS Lab. No.: 9001065-02W

	Concentration (pCi/l)
Gross Alpha	LT 5
Gross Beta	68 ± 7

Note: LT = Less than 2 standard deviations in the net count rate or the procedure detection limit.

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Per/Date: Richard C. Fix 1/30/90
Richard C. Fix
Director, Technical Services





REPORT OF ANALYSIS

New York State Department
of Environmental Conservation
50 Wolf Road
Albany, NY 12233-7255

Attn: Mr. Ed Johnson

Collected By: Bureau of Radiation

Sampling Date: 12/13/89

Case No.: NR-9-89 SDG No.: 001

Sample No.: 122889018

Matrix: Groundwater

CHAS Lab. No.: 9001065-03W

Concentration
(pCi/l)

Gross Alpha

LT 3

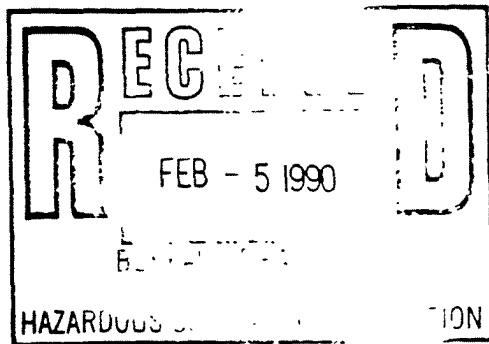
Gross Beta

7 ± 3

Note: LT - Less than 2 standard deviations in the net count rate or the procedure detection limit.

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Per/Date: Richard C. Fix 1/30/90
Richard C. Fix
Director, Technical Services





REPORT OF ANALYSIS

New York State Department
of Environmental Conservation
50 Wolf Road
Albany, NY 12233-7255

Attn: Mr. Ed Johnson

Collected By: Bureau of Radiation

Sampling Date: 12/06/89

Case No.: NR-9-89 SDG No.: 001

Sample No.: 122889019

Matrix: Groundwater

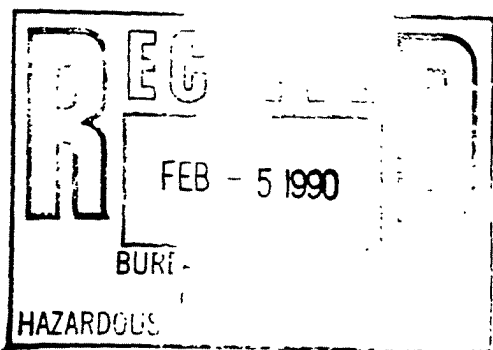
CHAS Lab. No.: 9001063-01W

	Concentration (pCi/l)
Gross Alpha	4 ± 4
Gross Beta	6 ± 2

Note: LT = Less than 2 standard deviations in the net count rate or the procedure detection limit.

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Per/Date: Richard C. Fix 1/30/90
Richard C. Fix
Director, Technical Services





REPORT OF ANALYSIS

New York State Department
of Environmental Conservation
50 Wolf Road
Albany, NY 12233-7255

Attn: Mr. Ed Johnson

Collected By: Bureau of Radiation

Sampling Date: 12/06/89

Case No.: NR-9-89 SDG No.: 001

Sample No.: 122889020

Matrix: Groundwater

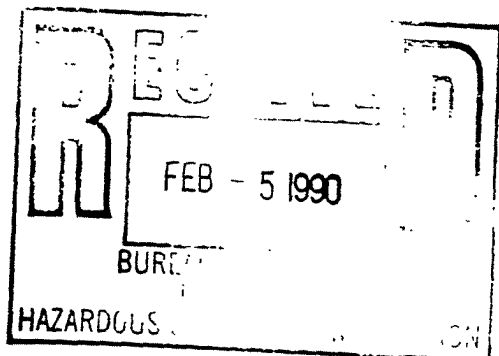
CHAS Lab. No.: 9001063-02W

	Concentration (pCi/l)
Gross Alpha	LT 2
Gross Beta	2.6 ± 1.4

Note: LT - Less than 2 standard deviations in the net count rate or the procedure detection limit.

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Per/Date: Richard C. Fix 1/30/90
Richard C. Fix
Director, Technical Services





REPORT OF ANALYSIS

New York State Department
of Environmental Conservation
50 Wolf Road
Albany, NY 12233-7255

Attn: Mr. Ed Johnson

Collected By: Bureau of Radiation

Sampling Date: 12/11/89

Case No.: NR-9-89 SDG No.: 001

Sample No.: 122889021

Matrix: Groundwater

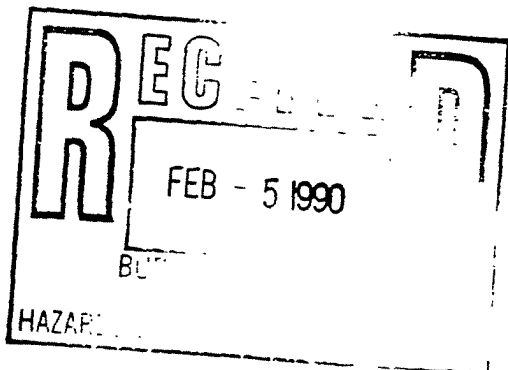
CHAS Lab. No.: 9001063-03W

	Concentration (pCi/l)
Gross Alpha	1.3 ± 1.0
Gross Beta	2.2 ± 0.9

Note: LT - Less than 2 standard deviations in the net count rate or the procedure detection limit.

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Per/Date: Richard C. Fix 1/30/90
Richard C. Fix
Director, Technical Services





REPORT OF ANALYSIS

New York State Department
of Environmental Conservation
50 Wolf Road
Albany, NY 12233-7255

Attn: Mr. Ed Johnson

Collected By: Bureau of Radiation

Sampling Date: 12/12/89

Case No.: NR-9-89 SDG No.: 001

Sample No.: 122889022

Matrix: Groundwater

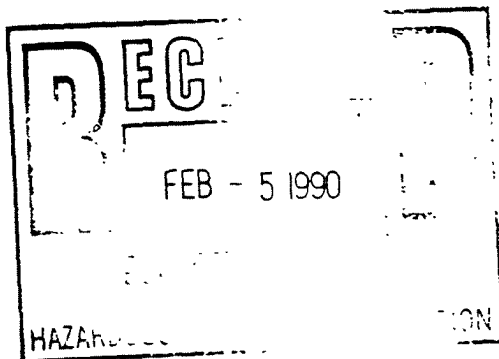
CHAS Lab. No.: 9001066-01W

	Concentration (pCi/l)
Gross Alpha	3 ± 2
Gross Beta	2.4 ± 1.2

Note: LT = Less than 2 standard deviations in the net count rate or the procedure detection limit.

The information contained in this report is, to the best of my knowledge, accurate and complete.

Per/Date: Richard C. Fix 1/30/90
Richard C. Fix
Director, Technical Services





REPORT OF ANALYSIS

New York State Department
of Environmental Conservation
50 Wolf Road
Albany, NY 12233-7255

Attn: Mr. Ed Johnson

Collected By: Bureau of Radiation

Sampling Date: 12/12/89

Case No.: NR-9-89 SDG No.: 001

Sample No.: 122889023

Matrix: Groundwater

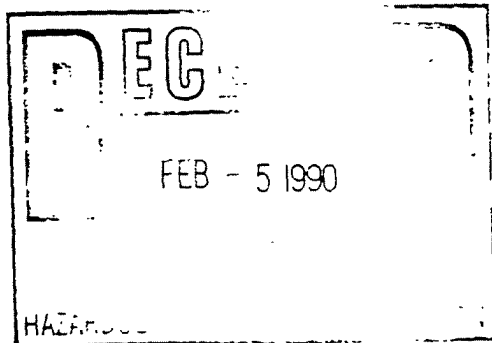
CHAS Lab. No.: 9001066-02W

	Concentration (pCi/l)
Gross Alpha	3 ± 3
Gross Beta	3 ± 2

Note: LT - Less than 2 standard deviations in the net count rate or the procedure detection limit.

The information contained in this report is, to the best of my knowledge, accurate and complete.

Per/Date: Richard C. Fix 1/30/90
Richard C. Fix
Director, Technical Services





REPORT OF ANALYSIS

New York State Department
of Environmental Conservation
50 Wolf Road
Albany, NY 12233-7255

Attn: Mr. Ed Johnson

Collected By: Bureau of Radiation

Sampling Date: 12/19/89

Case No.: NR-9-89 SDG No.: 001

Sample No.: 122889024

Matrix: Groundwater

CHAS Lab. No.: 9001066-03W

	Concentration (pCi/l)
Gross Alpha	LT 0.8
Gross Beta	1.6 ± 0.8

Note: LT - Less than 2 standard deviations in the net count rate or the procedure detection limit.

The information contained in this report is, to the best of my knowledge, accurate and complete.

Per/Date: Richard C. Fix 1/30/90
Richard C. Fix
Director, Technical Services

