UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION III
799 ROOSEVELT ROAD
GLEN ELLYN, ILLINOIS 60137

Foote Mineral Company
ATTN: Richard N. Jacobson, Ph.D.
Vice President, Research
and Engineering
Route 100
Exton, PA 19341

License No.: SMB-850

Gentlemen:

This will acknowledge receipt of your letter dated March 2, 1987, and my telephone conversation with Dr. Jacobson on April 23, 1987 regarding Foote's intention to sell its Cambridge, Ohio plant to the Shieldalloy Corporation. Furthermore, it was indicated that slag waste materials containing residual thorium and uranium from past operations is present at your facility.

Before the NRC will authorize release of your properties for unrestricted use, it will be necessary to submit additional information regarding the following:

Submit a radiation survey report to establish the levels of residual radioactive contamination. The survey report shall contain, at a minimum, the following information.

1. Report levels of radiation in units of microrads per hour beta and gamma radiation at one centimeter and gamma radiation at one meter from surfaces.

2. Report levels of radioactivity in units of disintegration per minute (or microcuries) per 100 square centimeters removable and fixed surfaces.

3. Specify activity in water as microcuries per milliliter.

4. Specify contamination in solids as picocuries per gram.

5. Specify the survey instrument(s) used and certify that each instrument is appropriate for the type radiation measured, properly calibrated and tested.

6. Provide the name(s) and credential(s) of the individuals performing the survey.

As discussed during our telephone conversation, a decision will be made (e.g., the need for decontamination of facilities and removal of contaminated wastes to approved burial sites, conditional or complete release from NRC license

A/2

control) after we have reviewed the survey results for your plant and adjoining properties. To assist in preparation of your survey report and to provide information on NRC policy regarding the release of facilities, we have forwarded to you under separate cover the following documents.

1. Termination of Byproduct, Source and Special Nuclear Materials, NRC Policy and Guidance Directive FC83-23.

2. Disposal or Onsite Storage of Residual Thorium and Uranium (Either as Natural Ores or Without Daughters Present From Past Operations), NRC Uranium Fuel Licensing Branch, technical position paper dated October 5, 1981.

In addition to the above, until the Commission has notified you in writing that your license has been terminated, it will be necessary to assure the following:

1. Limit actions involving source material to those related to decontamination and other activities related to preparation for release for unrestricted use; and

2. Control entry to contaminated areas until they are suitable for release for unrestricted use.

We shall look forward to receiving the above information within 30 days from the date of this letter. Should you have any questions, you may contact us at (312) 790-5625.

Sincerely,

George M. McCann

George M. McCann
Materials Licensing Section

ATTACHMENT 3

Shieldalloy Corporation
U. S. Nuclear Regulatory Commission
Meeting of March 30, 1987

Participants	Facility
Robert Swenson	Shieldalloy Corp.
Dennis Kelley	O'Kelley
John Austin	Arter & Hadden
Rich Fahey	Arter & Hadden
Michael Morgenstern	Shieldalloy Corp.
George M. McCann	U. S. NRC
Bruce S. Mallett, Ph.D.	U. S. NRC
John Coffman	Certified Health Physicist Consultant for Shieldalloy (arrived late)

RE: Foote Mineral Company
SMB-850

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ATTACHMENT 4

March 18, 1987

Michael R. Morgenstern, CHMM
Shieldalloy Corporation
West Boulevard
Newfield, N.J. 08344

Dear Mr. Morgenstern,

Enclosed is my report of the radiological survey that Bob Kurz and myself performed at the Foote Minerals site in Cambridge, Ohio. As we discussed, I kept the report as straight forward as possible. I think we took a significant step forward in quantifying the situation at this site. I am looking forward to discussing the results of the samples that we sent to the lab.

If there is anything further that I can assist you with please do not hesitate to contact me.

Sincerely,

John H. Coffman

John H. Coffman
Certified Health Physicist

3615 Rio Rancho Blvd. NW
Suite 203B
Albuquerque, N.M. 87048
(505)897-7227

JHC:tp

SUMMARY OF FINDINGS

The East Slag Pile appears to contain approximately 1.6 million cubic feet of slag material with relatively consistent elevated readings in excess of 25 times background. The area was covered with a one (1) to two (2) foot thick granular material that appeared to shield the underlying material. The slag material that exhibited the elevated readings was a large rock-like material. The ultimate handling or disposition of this material will depend upon the results of the samples sent to a laboratory for analysis. If this material had to be removed and transported to the Low Level Radioactive Disposal Facility at Barnwell, South Carolina, we estimate that it would cost approximately $75 million. This option is obviously cost prohibitive and it is also unlikely that anyone could obtain authority from South Carolina for this disposal.

The pilot plant, pond area, grainol slag pile, and the large West Slag Pile were also surveyed. Each of these produced what appeared to be small localized areas of elevated readings. Once the disposition of the East Slag Pile has been determined, these smaller areas could be removed, if necessary, and placed with the larger quantity of material for a small incremental cost. It should be noted that all of the disposal areas with slag present exhibited radiological readings of two (2) to three (3) times the background for this area of Ohio.

If on site storage or disposal is determined to be the most cost effective method of handling this situation, the East Slag Pile's location in a wet area is a potential problem. For planning purposes, I recommend that relocation of this pile be considered as one of the alternatives. As there appears to be similar slag material at another plant, an additional alternative to be considered is to combine <u>all</u> the material at one location.

SCOPING SURVEY OF SUSPECTED THORIUM BEARING SLAG MATERIAL AT FOOTE MINERALS

Introduction

At the request of Michael R. Morgenstern of Shieldalloy Corporation, John Coffman aned Bob Kurz performed a radiological survey of the Foote Minerals plant site in Cambridge, Ohio. The survey was perrormed with two inch (2") NaI probes (Ludlum Model 44-10). The survey was intended to locate and quantify the extent of thorium and uranium containing slag on the site. There was not sufficient time to grid the area to better locate the radiological readings. There was no correlation made between counts per minute and pCi/g of material. Representative samples of material was sent to a laboratory by Shieldalloy for aralysis. All surveys are reported as a multiple of the background count rate. The background count rate was 10,400 cpm and was taken at the golf course across State Road 209.

East Slag Pile

The East Slag Pile was identified as the area that contained most of the slag material with elevated thorium and uranium. The pile was paced off and is approximately 450 x 300 x 12 feet. This is approximately 1.6 million cubic feet of material.

The survey was made primarily on the face of the perifery of the pile. The readings on the top of the pile were from four (4) to six (6) times background. This compares to readings in excess of fifty (50) times background on the face of the perifery. There was about a two foot (2')thick layer of material described as "quench slag" on top of the pile. This appeared to be shielding the underlying material. A backhoe was brought in to dig two (2) holes in this cover material. The backhoe was unable to dig more than a few feet in this material. The readings in the holes were three (3) to five (5) times greater than the readings at the surface. This would appear to confirm the shielding by the quench slag. Therefore the readings of the unshielded face should be representative of the whole pile.

The survey results are attached.

Grainol Slag Pile

The Grainol Slag Pile was surveyed and found to have readings higher than the background levels. The readings around the Grainol Pile were also taken on the face of the perifery due to "quench slag" placed on the surface. The entire pile never exceeded more than eight (8) times background with most of the readings in the two (2) to three (3) times background range. It is not expected that this material is of a major concern. The pile is approximately 165 x 105 x 12 feet or 208,000 cubic feet.

The survey is attached.

Pilot Plant

The area designated as the Pilot Plant was surveyed. The area north of the plant had readings from two (2) to fifteen (15) times background. A soil sample was taken at the spot of the highest reading. The total area is estimated to be 200 x 75 x 1 feet or 15,000 cubic feet.

Pond

The area surrounding the pond on the north side of the plant was surveyed. There was some slag material that had readings of eight (8) times background. A sample was taken of that material. The rest of the Pond area did not have elevated readings.

West Slag Pile

The entire West Slag Pile was walked over holding the probes approximately one (1) foot off the ground. Several areas were found with slag readings eight (8) times background on contact. These are not expected to be areas of concern.

There were several areas in the vicinity of the "iron buttons" that had readings from ten (10) up to ninety (90) times background. The ninety (90) times background was the highest reading found on the site. Soil sample #1 was taken at this spot. The backhoe was brought in and several holes were dug in attempt to determine the extent of these elevated readings. The backhoe could get no deeper than three (3) feet. Some holes indicated the materal was at the surface, one indicated a sub-surface layer of material, and no conclusion could be drawn from others. It appears that the material in this area is localized and not very large quantities.

Soil Samples

After conferring with Michael Morgenstern, we identified eleven (11) areas of concern from which samples were taken. Six (6) of these samples were sent to a laboratory for analysis and the other five (5) samples will be held by Mr. Morgenstern.

A map indicating where the samples were taken is attached. A summary of the samples are as follows:

* #1. A sample was taken of soil and rock at the location of the highest surface reading on the West Pile.

  #2. A sample was taken of the slag that had elevated readings on the west side of the pond.

* #3. A sample was taken of the slag that had the highest reading on the Grainol Pile.

  #4. A sample was taken of the granular surface cover on the Grainol Pile.

* #5. A sample of slag was taken on the East Pile from the middle of the western face.

* #6. A sample of slag was taken on the East Pile from the bottom of the southern face.

  #7. A sample of slag was taken on the East Pile from the bottom of the northern face.

* #8. A sample of rock was taken from the bottom of a three foot (3') hole dug just west of the "iron buttons" on the West Pile

  #9. A sample was taken of a greenish rock found near the "buttons" on the West Pile.

  #10. A sample of slag was taken from areas with elevated readings eight (8) times background found on the walkover survey of the West Pile.

* #11. A sample of slag was taken from the area north of the Pilot Plant that had the highest readings.

*Indicates samples that were sent to a laboratory for analysis.

ADDENDUM TO SUMMARY OF FINDINGS
SCOPING SURVEY OF FOOTE MINERALS

The soil/slag samples that were taken at different locations of the Foote Minerals site were analyzed by Teledyn Isotopes of Westwood, New Jersey (see attached data sheet). The samples were analyzed by gamma ray spectros copy utilizing a Germanium (Lithium doped) detector. As only the x or gamma ray emitting isotopes could be detected, key elements in the decay chain that could be detected were used as bench marks for Uranium-238, Thorium-232, and Radium-226. For this discussion 100% equilibrium is assumed for the decay chains. For this discussion;

Ac-228 is equivalent to Th-232,
Ac-228 is equivalent to Ra-228,
Th-234 is equivalent to U-238, and
Pb-214 is equivalent to Ra-226.

Discussion of Samples

Sample #1. This sample was taken at the location of the highest readings. The analysis indicates that there are several hundreds of pCi/g of U-238 and Th-232. These numbers are in the order of what was expected from the Uranium and Thorium bearing ores.

Sample #2. This sample was not analyzed.

Sample #3. This sample was taken from the "Grainol Slag" and indicates levels for U-238 of 6.32 pCi/g, for Th-232 of 6.23 pCi/g, and for Ra-226 of 10.3 pCi/g.

Sample #4. This sample was not analyzed.

Sample #5, #6 and #7. These samples are from the same slag pile and as hoped the results are almost identical. The results are, however, unusual and not expected. The samples indicate less than detectable levels of U-238 (less than 4 pCi/g) and less than detectable levels of Th-232 (less than 1.0 pCi/g) for all three samples. With less than detectable levels of Uranium and Thorium it is surprising to find approximately 80 pCi/g of Ra-226 in Sample #5, 147 pCi/g of Ra-226 in Sample #6, and 93 pCi/g of Ra-226 in Sample #7. It appears that this material is the result of a process or processes that has removed the Uranium and Thorium or a process that concentrates Radium. Ra-223 in Samples #5 and #7 appears to be unusually high at around 25 pCi/g.

Sample #8. This sample is from the west slag pile. It indicates less than 3 pCi/g of U-238 and less than 1 pCi/g of Th-232. This sample also has elevated levels of Ra-226 of the order of 80 pCi/g.

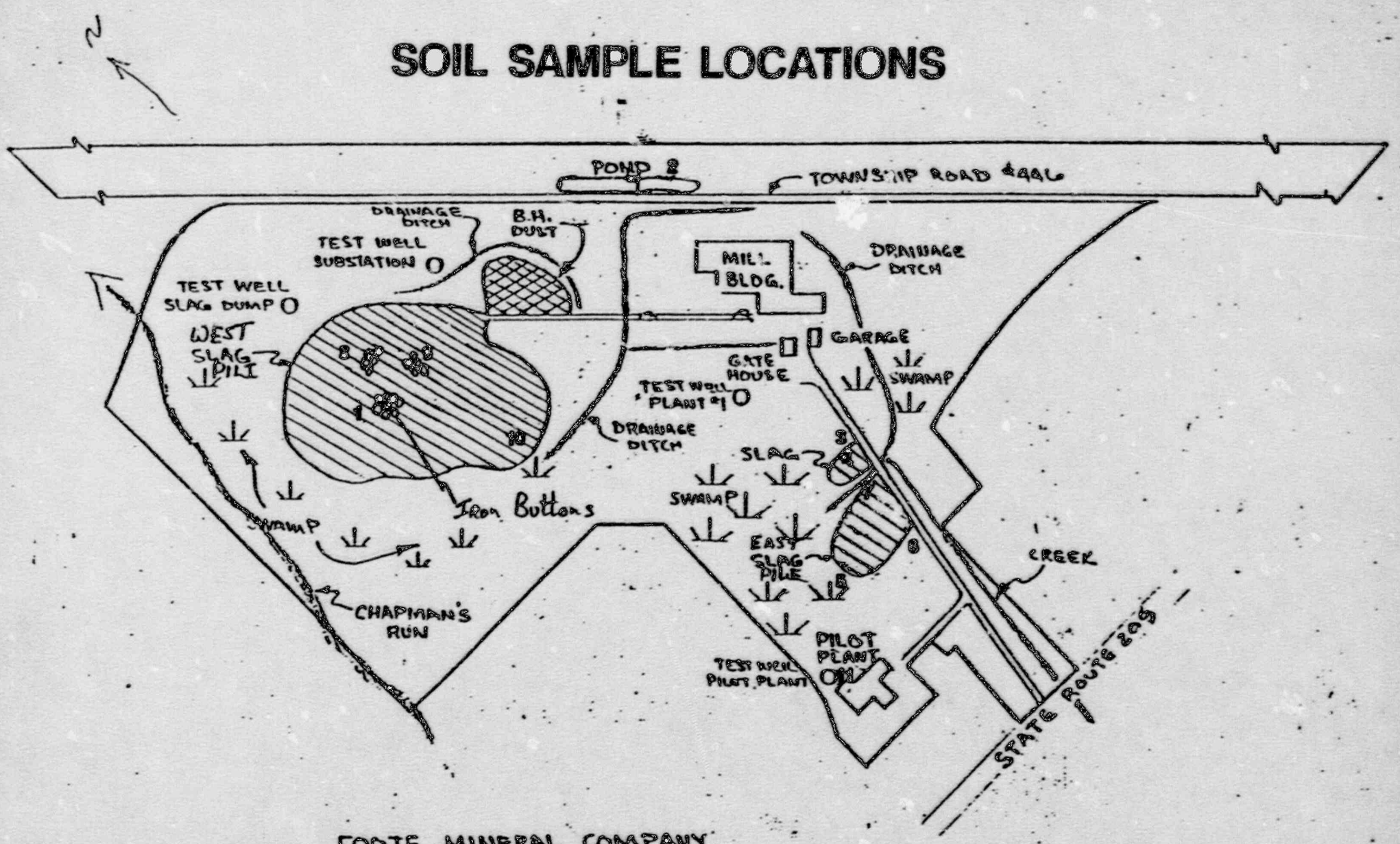
Sample #9. This sample was not analyzed.

Sample #10. This sample was not analyzed.

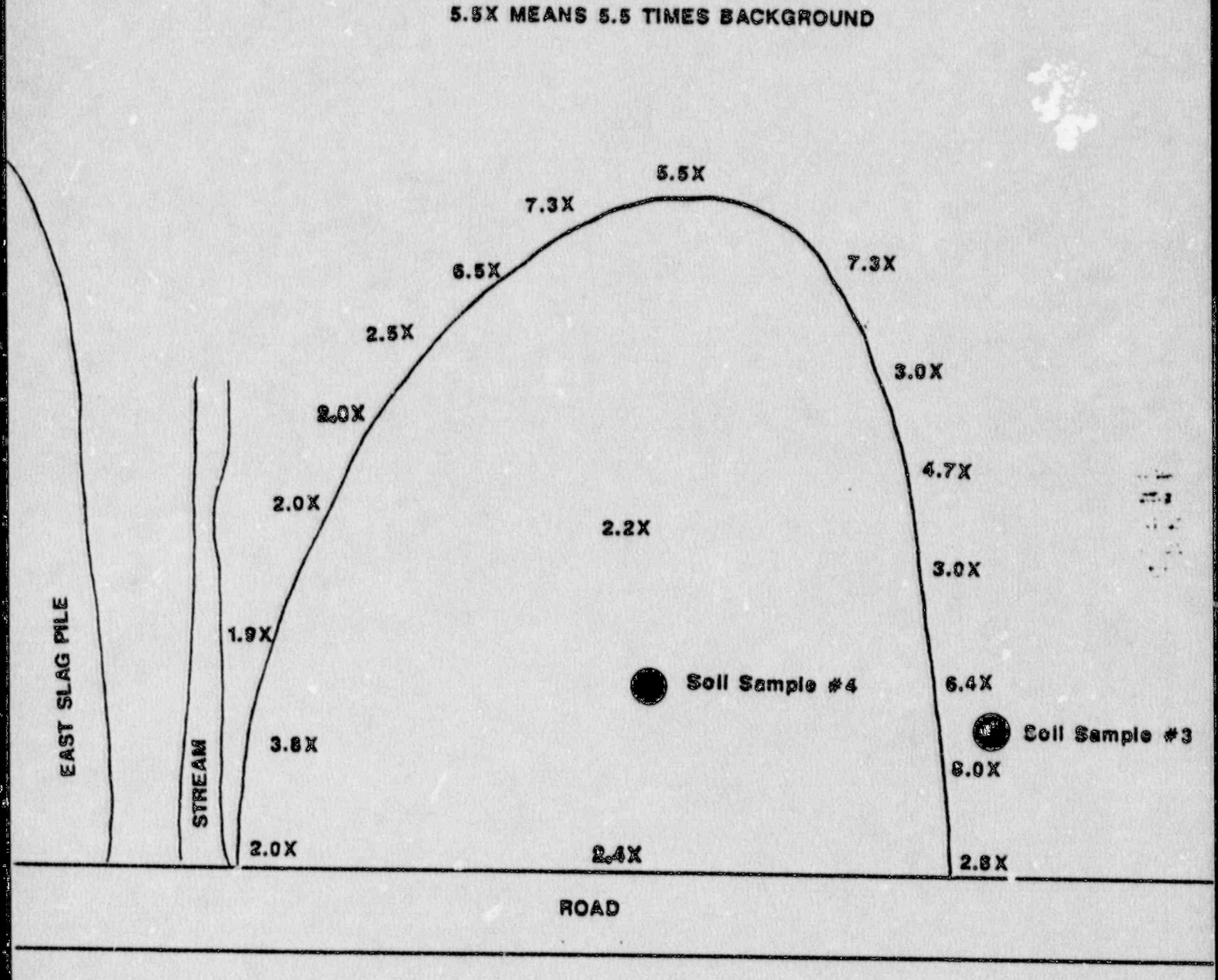
Sample #11. This sample was taken from the pilot plant area. It indicates levels for U-238 of 27.3 pCi/g, for Th-232 of 0.8 pCi/g, for Ra-226 of 16.7 pCi/g, and for Ra-233 of 33.8 pCi/g.

John H. Coffman
CHP

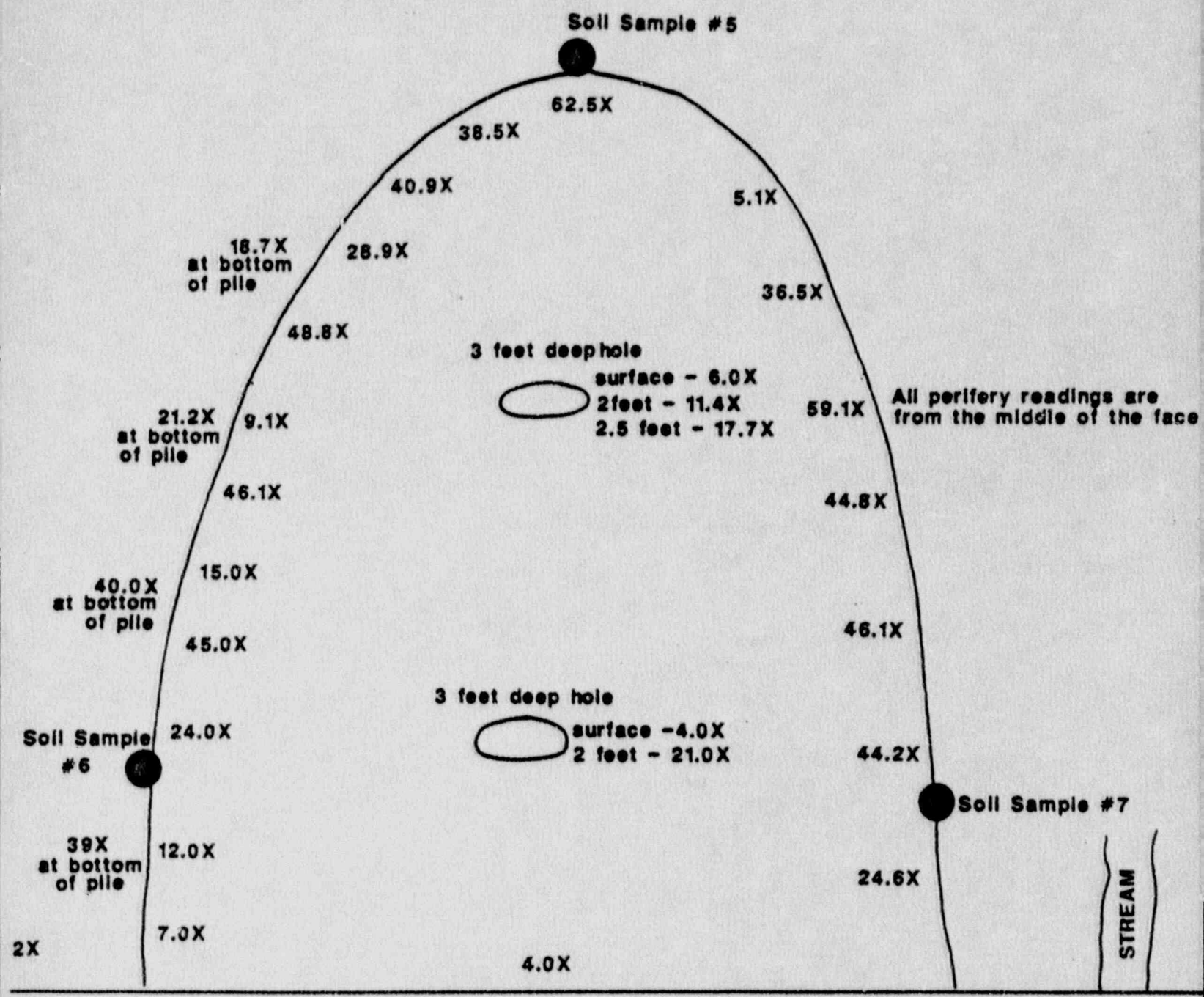
SOIL SAMPLE LOCATIONS



FOOTE MINERAL COMPANY
CAMBRIDGE PLANT
PLOT PLAN
SCALE 1" = 500 FT.



Radiological Survey of Grainol Pile taken March 16, 1987 with a 2"x2" Nal Probe



Radiological Survey of East Slag Pile taken March 16, 1987 with a 2"x2" Nal Probe

ATTACHMENT 5

Groundwater Characterization Survey

Burgess & Niple, Limited were retained to prepare a Groundwater Characterization Survey at the Cambridge Facility.

The results of the radionuclide analysis are shown in Table 1. Initially, samples from the ten wells shown on Figure 1 were analyzed by gamma ray spectroscopy to determine the presence of gamma emitting substances. The presence of both lead (Pb)-214 and bismuth (Bi)-214 was noted in nine of the well samples. The highest reported level was slightly less than 200 picoCuries per liter (pCi/l). Activity levels of potassium (K)-40 and thallium (Tl)-208 were also noted in a few of the wells. The laboratory was later requested to analyze for gross alpha and beta. Gross alpha activity was below detection levels in all but one sample (MW8), while gross beta activity ranged from below the detection limit to slightly over 5 pCi/l. Drinking water standards have been established for gross alpha and beta with all these results well below the respective standard. In comparing to background levels, reference is made to the publication, "Nationwide Occurrence of Radon and Other Natural Radioactivity in Public Water Supplies," EPA 520/5-85-008, October 1985 and "Exposures from the Uranium Series with Emphasis on Radon and Its Daughters," National Council on Radiation Protection and Measurements Report No. 77, 1984. This publication indicates the activity levels shown in Table 1 are within normal background levels for the area considering that the activity levels of Pb-214 and Bi-214 approximate the level for Radon (Ra)-222.

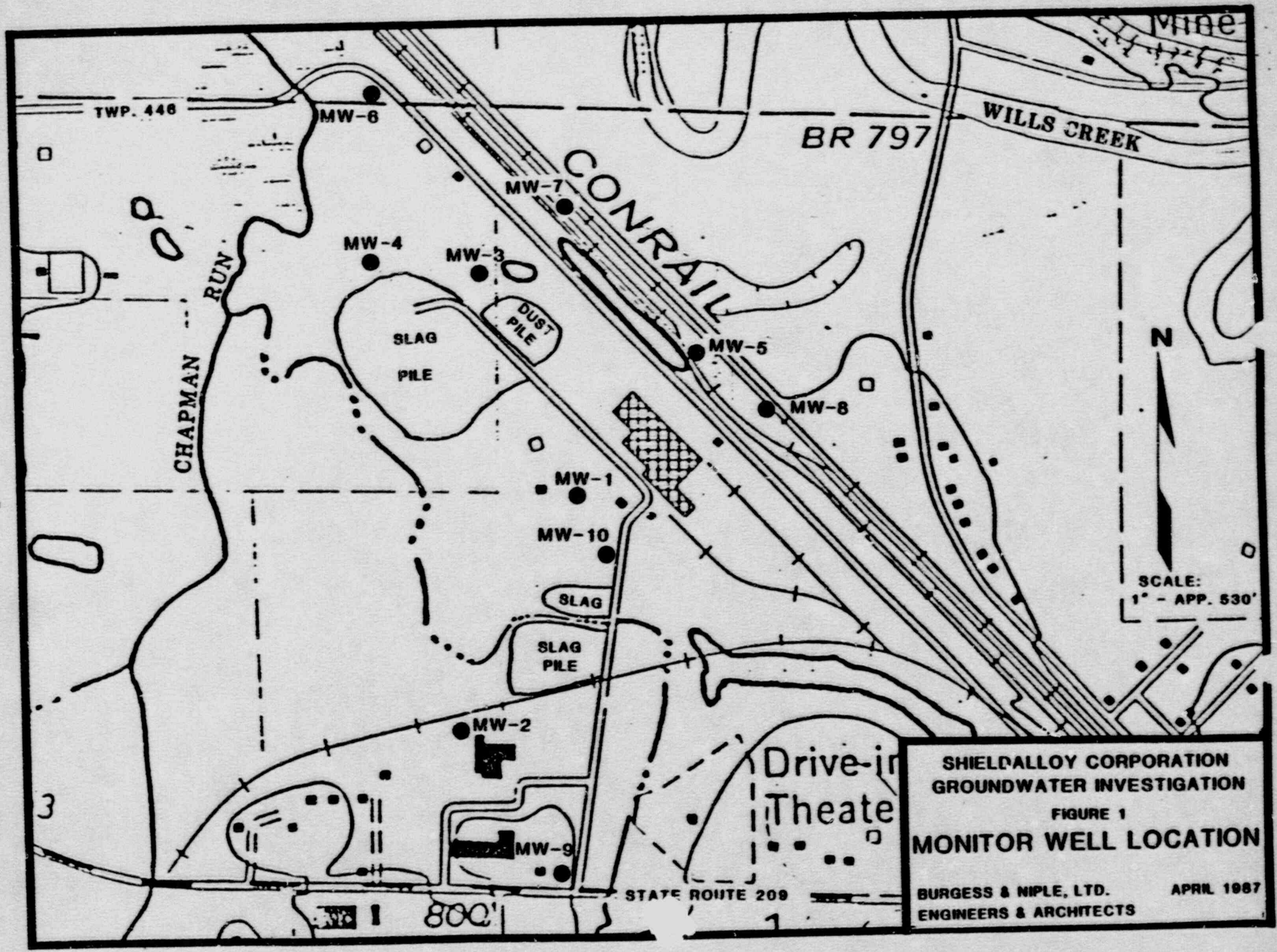

TWP. 446
MW-6
BR 797
WILLS CREEK
MW-7
CONRAIL
MW-4
MW-3
CHAPMAN RUN
DUST PILE
SLAG PILE
MW-5
MW-8
N
MW-1
MW-10
SCALE:
1" - APP. 530'
SLAG
SLAG PILE
MW-2
Drive-in Theate
MW-9
STATE ROUTE 209
800'
SHIELDALLOY CORPORATION
GROUNDWATER INVESTIGATION
FIGURE 1
MONITOR WELL LOCATION
BURGESS & NIPLE, LTD.
ENGINEERS & ARCHITECTS
APRIL 1987

Table 1

Groundwater Quality Results
Foote Mineral Company
Cambridge, Ohio
(Results in pCi/l)

Parameter	MW1	MW2	MW3	MW4	MW5	MW6	MW7	MW8	MW9	MW10	Drinking Water Standard
Thorium-234	<80	<90	<60	<100	<100	<80	<90	<40	<90	<90	-
Radium-223	<20	<30	<20	<30	<40	<20	<30	<30	<30	<30	-
Lead-214	146±15	49.7±9.3	<20	82.7±11.2	47.1±12.3	44.2±9.9	55.1±9.9	87.1±11.7	105±11	176±18	-
Bismuth-214	129±13	47.8±8.0	<10	73.9± 9.6	47.7± 9.9	35.9±7.8	57.8±8.7	58.5± 8.7	101±96	166±17	-
Actinium-228	<20	<20	<20	<20	<30	<20	<20	<20	<20	<20	-
Lead-212	<9	<9	<8	<10	<10	<9	<9	<9	<9	<10	-
Thallium-208	<20	<10	20.7± 9.7	<20	<20	<10	<20	<10	<10	<20	-
Potassium-40	<60	<60	58.8±29.5	103±39	<90	<60	<70	74.3±32.7	<60	95.2±36	-
Gross Alpha	<3	<3	<3	<3	<3	<4	<5	3.6± 2.7	<2	<3	15
Gross Beta	<2	2.7±1.2	2.7± 1.2	3.8± 1.3	<2	3.9± 1.5	2.4±1.6	2.6±1.1	2.5±1.0	2.4±1.2	50

ATTACHMENT 6

United States
Environmental Protection
Agency

Eastern Environmental
Radiation Facility
1890 Federal Drive
Montgomery, AL 36109

EPA 520/5-85-008
October 1985

Radiation

EPA

Nationwide Occurrence of Radon and Other Natural Radioactivity in Public Water Supplies

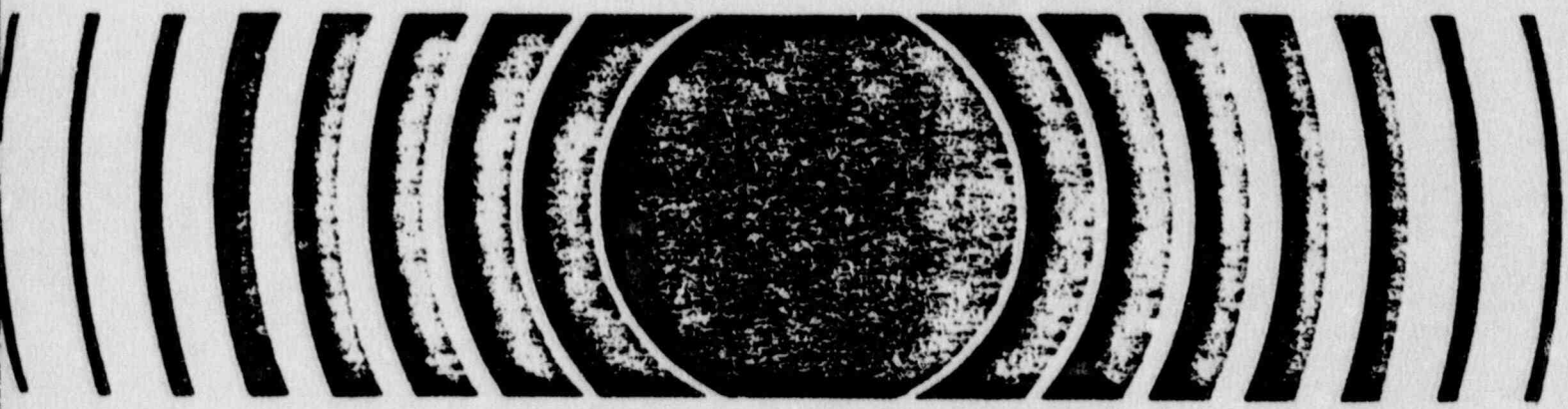


Table B.23 Natural radioactivity in public groundwater systems-Ohio

EPA ID#	LOCATION	COLLECT DATE	Rn-222 (pCi/l)	2SIGMA ERROR	ALPHA (pCi/l)	2SIGMA ERR	BETA (pCi/l)	2SIG ERR	Ra-226 (pCi/l)	2SIGMA ERR	Ra-228 (pCi/l)	2SIGMA ERR	U-234 (pCi/l)	2SIGMA ERR	U-238 (pCi/l)	2SIGMA ERROR
USRN15262	OH:ANDOVER	72981	0.0	66.3	0.4	0.6	2.0	1.0	NA		NA		NA		NA	
USRN14050	OH:ATHENS	62281	232.2	90.5	1.1	0.9	1.5	1.0	NA		NA		NA		NA	
USRN14050X	OH:ATHENS	62281	117.5	74.5	0.3	0.8	2.2	1.2	NA		NA		NA		NA	
USRN12739	OH:BELLE FONTAINE	42981	487.6	138.9	1.4	0.8	1.3	0.7	NA		NA		NA		NA	
USRN14074	OH:BELPRE	62281	372.0	81.7	0.4	0.7	1.1	0.9	NA		NA		NA		NA	
USRN12677	OH:BRYAN	42981	5.8	60.5	1.2	0.8	1.9	0.9	NA		NA		NA		NA	
USRN15260X	OH:CANTON	8 481	121.6	65.6	0.8	1.6	3.8	2.1	NA		NA		NA		NA	
USRN15260	OH:CANTON	8 481	108.1	63.2	0.2	1.1	2.6	2.0	NA		NA		NA		NA	
USRN14051	OH:CHILLICOTHE	62381	77.6	64.7	0.8	0.8	2.3	1.0	NA		NA		NA		NA	
USRN14046	OH:CHILLICOTHE	62381	76.7	63.7	0.4	0.3	1.8	1.0	NA		NA		NA		NA	
USRN14049	OH:CHILLICOTHE	62381	181.5	72.9	0.9	0.8	1.6	1.1	NA		NA		NA		NA	
USRN14917	OH:COLUMBIANA	72281	54.0	66.4	0.2	0.4	1.5	0.9	NA		NA		NA		NA	
USRN14849	OH:COSHOCTON	72181	218.5	64.0	0.3	0.5	1.6	1.0	NA		NA		NA		NA	
USRN12944	OH:CRESTLINE	5 581	203.6	73.9	0.6	0.7	1.8	1.0	NA		NA		NA		NA	
USRN15176	OH:CUYAHOGA FALLS	72981	82.1	69.5	1.2	1.8	-1.2	5.4	NA		NA		NA		NA	
USRN15612	OH:DAYTON	81881	189.4	59.3	0.1	0.5	2.0	1.0	NA		NA		NA		NA	
USRN12680	OH:DELPHOS	42981	NA		2.9	2.5	0.3	1.1	1.7	0.1	NA		NA		NA	
USRN12680X	OH:DELPHOS	42981	11.0	61.7	2.4	2.0	5.5	3.8	NA		NA		0.3	0.1	0.1	0.0
USRN14852	OH:DOVER	72181	201.9	62.8	0.2	0.7	2.3	1.1	NA		NA		NA		NA	
USRN14915	OH:EAST PALESTINE	72281	180.1	68.4	0.6	0.6	1.5	1.0	NA		NA		NA		NA	
USRN15497	OH:EATON	81081	40.3	59.9	1.7	0.9	1.3	0.8	NA		NA		NA		NA	
USRN15608	OH:ENGLEWOOD	81881	289.4	60.6	0.8	1.2	6.5	4.3	NA		NA		NA		NA	
USRN14140	OH:FAIRBORN	62481	-6.7	108.5	0.4	0.7	0.0	0.3	NA		NA		NA		NA	
USRN14140X	OH:FAIRBORN	62481	44.1	62.9	1.1	0.8	-0.2	0.4	NA		NA		NA		NA	
USRN15503	OH:FRANKLIN	8 581	110.9	64.0	0.1	0.6	2.2	1.0	NA		NA		NA		NA	
USRN14656	OH:FRANKLIN	71481	337.4	69.1	0.2	0.5	1.8	1.0	NA		NA		NA		NA	
USRN14048	OH:GALLIPOLIS	62381	367.1	70.4	0.2	0.7	1.7	1.0	NA		NA		NA		NA	
USRN14053	OH:GALLIPOLIS	62381	130.9	61.4	0.2	0.5	1.9	1.1	NA		NA		NA		NA	
USRN15350X	OH:GERMANTOWN	8 681	218.6	89.7	0.4	0.7	1.8	1.0	NA		NA		NA		NA	
USRN15350	OH:GERMANTOWN	8 681	234.8	97.1	0.6	0.7	2.9	1.1	NA		NA		NA		NA	
USRN14373	OH:GRANVILLE	62981	54.0	59.3	0.3	0.5	1.8	0.9	NA		NA		NA		NA	
USRN14217	OH:GREENFIELD	63081	647.2	70.7	0.8	0.7	3.2	1.2	NA		NA		NA		NA	
USRN15496	OH:HAMILTON	81081	133.4	74.3	0.0	0.0	2.0	1.0	NA		NA		NA		NA	
USRN15310X	OH:HARRISON	8 581	212.9	69.6	0.4	0.8	1.7	1.1	NA		NA		NA		NA	
USRN15310	OH:HARRISON	8 581	247.1	92.6	0.2	0.6	1.6	1.1	NA		NA		NA		NA	
USRN14219	OH:HILLSBORO	63081	38.0	59.8	0.4	0.5	0.8	0.9	NA		NA		NA		NA	
USRN15117	OH:HUBBARD	73081	1.1	88.8	0.3	0.5	3.3	1.1	NA		NA		NA		NA	
USRN15609	OH:HUBER HEIGHTS	81881	685.9	68.6	1.9	1.7	1.7	2.8	NA		NA		NA		NA	
USRN15504	OH:HUNTER	8 581	45.1	64.6	1.9	1.8	7.6	4.3	NA		NA		NA		NA	
USRN15095	OH:KENT	72981	35.8	67.1	0.1	0.6	1.5	1.0	NA		NA		NA		NA	
USRN15498	OH:KINGS MILLS	81081	87.5	73.5	0.2	0.6	2.1	1.1	NA		NA		NA		NA	
USRN14179	OH:LANCASTER	62981	31.0	60.3	1.3	1.8	4.1	4.5	NA		NA		NA		NA	
USRN14607	OH:LEBANON	71381	36.8	59.7	0.8	1.3	7.5	4.2	NA		NA		NA		NA	
USRN15308	OH:LOCKLAND	8 581	69.7	67.8	0.3	0.5	1.5	0.9	NA		NA		NA		NA	
USRN14180	OH:LOGAN	62981	70.0	62.6	2.3	2.4	5.6	4.1	NA		NA		NA		NA	
USRN14180X	OH:LOGAN	62981	94.4	60.8	1.2	1.9	4.9	4.5	NA		NA		NA		NA	
USRN12868	OH:LONDON	5 481	110.0	58.9	0.2	0.5	1.2	1.0	NA		NA		NA		NA	
USRN15264	OH:LOUISVILLE	8 481	33.9	60.3	0.5	1.3	3.0	1.9	NA		NA		NA		NA	
USRN15309	OH:LOVELAND	8 581	295.5	70.9	0.7	0.9	3.1	1.1	NA		NA		NA		NA	
USRN14047	OH:LUCASVILLE	62381	95.6	64.9	0.4	0.6	2.1	1.0	NA		NA		NA		NA	
USRN14019	OH:MARIETTA	62281	188.7	78.8	0.0	0.0	2.2	1.2	NA		NA		NA		NA	
USRN14916	OH:MARTINS FERRY	72281	297.6	69.9	0.2	0.8	3.7	1.3	NA		NA		NA		NA	
USRN14603	OH:MASON	71381	57.3	60.2	0.7	0.7	1.7	1.0	NA		NA		NA		NA	

Table B.23 Natural radioactivity in public groundwater systems-Ohio (continued)

EPA ID#	LOCATION	COLLECT DATE	Rn-222 (pCi/l)	2SIGMA ERROR	ALPHA (pCi/l)	2SIGMA ERR	BETA (pCi/l)	2SIG ERR	Ra-226 (pCi/l)	2SIGMA ERR	Ra-228 (pCi/l)	2SIGMA ERR	U-234 (pCi/l)	2SIGMA ERR	U-238 (pCi/l)	2SIGMA ERROR
USRN15263	OH:MASSILLON	8 481	57.5	61.4	0.3	0.6	2.4	1.1	NA		NA		NA		NA	
USRN15349	OH:MIAMISBURG	8 681	-7.4	85.9	1.5	0.9	2.1	1.0	NA		NA		NA		NA	
USRN14636	OH:MIAMISVILLE	71381	550.0	68.6	0.4	0.6	3.1	1.2	NA		NA		NA		NA	
USRN14605	OH:MILFORD	71381	543.9	67.9	0.7	0.8	2.2	1.0	NA		NA		NA		NA	
USRN15499	OH:MILLVILLE	81081	168.3	74.1	0.8	0.7	2.5	1.1	NA		NA		NA		NA	
USRN14979	OH:MINGO JUNCTION	72281	414.0	72.4	0.6	0.7	1.4	0.9	NA		NA		NA		NA	
USRN15611	OH:NORAINE	81881	283.8	62.3	0.6	1.9	5.0	4.2	NA		NA		NA		NA	
USRN14604	OH:NORROU	71381	98.0	62.0	0.4	0.8	2.7	1.2	NA		NA		NA		NA	
USRN14850X	OH:MT. VERNON	72181	76.4	62.3	-0.2	0.4	1.1	1.0	NA		NA		NA		NA	
USRN14850	OH:MT. VERNON	72181	66.8	64.8	-0.1	0.4	1.4	1.0	NA		NA		NA		NA	
USRN15261	OH:N. CANTON	8 481	129.3	62.3	0.5	0.6	2.0	1.0	NA		NA		NA		NA	
USRN12738	OH:NEW CARLISLE	43081	117.3	107.4	0.8	0.8	1.5	0.9	NA		NA		NA		NA	
USRN14851	OH:NEW PHILADELPHI	72181	155.1	62.3	-0.5	2.2	7.4	4.7	NA		NA		NA		NA	
USRN14697	OH:NEW RICHMOND	71381	233.9	101.8	0.8	0.7	2.0	1.0	NA		NA		NA		NA	
USRN15622	OH:OAKWOOD	81881	289.4	73.6	1.4	1.8	7.6	4.3	NA		NA		NA		NA	
USRN15265	OH:ORVILLE	8 481	118.0	63.3	0.4	0.6	2.4	1.0	NA		NA		NA		NA	
USRN15306	OH:OXFORD	8 581	153.7	66.4	0.5	0.7	3.0	1.2	NA		NA		NA		NA	
USRN15094	OH:RAVENNA	72981	54.8	67.4	0.5	0.6	2.3	1.1	NA		NA		NA		NA	
USRN14136	OH:RICKENBACKER AF	62681	19.3	52.4	1.3	2.1	11.2	4.8	NA		NA		NA		NA	
USRN15116	OH:RITTMAN	73081	28.8	87.4	1.5	0.8	1.1	0.7	NA		NA		NA		NA	
USRN14957	OH:SHADYSIDE	72381	327.9	92.0	0.4	1.8	6.1	4.7	NA		NA		NA		NA	
USRN12742	OH:SPRINGFIELD	43081	32.0	89.3	0.1	0.4	2.4	1.0	NA		NA		NA		NA	
USRN12737	OH:SPRINGFIELD	43081	195.8	66.3	1.5	1.0	2.5	1.1	NA		NA		NA		NA	
USRN12678	OH:ST. MARY'S	42981	139.9	65.1	0.2	0.7	3.0	1.1	NA		NA		NA		NA	
USRN12763	OH:TIPP CITY	43081	295.6	96.1	1.1	0.7	2.1	0.9	NA		NA		NA		NA	
USRN15307	OH:TRENTON	8 581	310.0	69.7	1.1	1.5	-0.2	3.4	NA		NA		NA		NA	
USRN12740X	OH:TROY	43081	-42.6	89.6	-0.1	0.5	3.1	1.1	NA		NA		NA		NA	
USRN12740	OH:TROY	43081	18.2	107.1	0.0	0.0	2.8	1.0	NA		NA		NA		NA	
USRN14138	OH:TUPPERS PLAINS	62281	300.4	79.3	0.1	0.7	0.0	0.3	NA		NA		NA		NA	
USRN12741	OH:URBANA	43081	680.5	113.6	0.0	0.0	2.8	1.2	NA		NA		NA		NA	
USRN15610	OH:W. CARROLLTON	81881	257.1	74.0	0.2	1.4	3.4	4.1	NA		NA		NA		NA	
USRN15610X	OH:W. CARROLLTON	81881	292.6	73.1	1.0	2.0	5.8	6.9	NA		NA		NA		NA	
USRN15175	OH:WADSWORTH	72981	14.7	68.6	0.1	0.5	0.8	0.9	NA		NA		NA		NA	
USRN12679	OH:WAPAKONETA	42981	21.3	63.6	0.3	0.4	-0.1	1.4	NA		NA		NA		NA	
USRN14052	OH:WAVERLY	62381	66.8	62.3	1.1	0.7	2.1	0.9	NA		NA		NA		NA	
USRN12841	OH:WESTERVILLE	5 581	51.8	72.6	1.0	0.9	2.6	1.2	NA		NA		NA		NA	
USRN14137	OH:WESTERVILLE	62681	-10.5	72.1	1.0	1.7	2.4	4.1	NA		NA		NA		NA	
USRN15259	OH:WOOSTER	8 481	142.3	63.7	0.2	0.5	1.5	0.9	NA		NA		NA		NA	
USRN15311	OH:WYOMING	8 581	129.4	66.9	0.1	0.5	2.1	1.0	NA		NA		NA		NA	
USRN14139	OH:XENIA	62481	102.1	63.9	1.5	1.0	2.0	1.0	NA		NA		NA		NA	
USRN14958	OH:ZANESVILLE	72381	138.7	83.0	0.5	0.7	2.9	1.2	NA		NA		NA		NA	

Figure E.11. Rn-222 concentrations in public groundwater
Region V 1981-1982

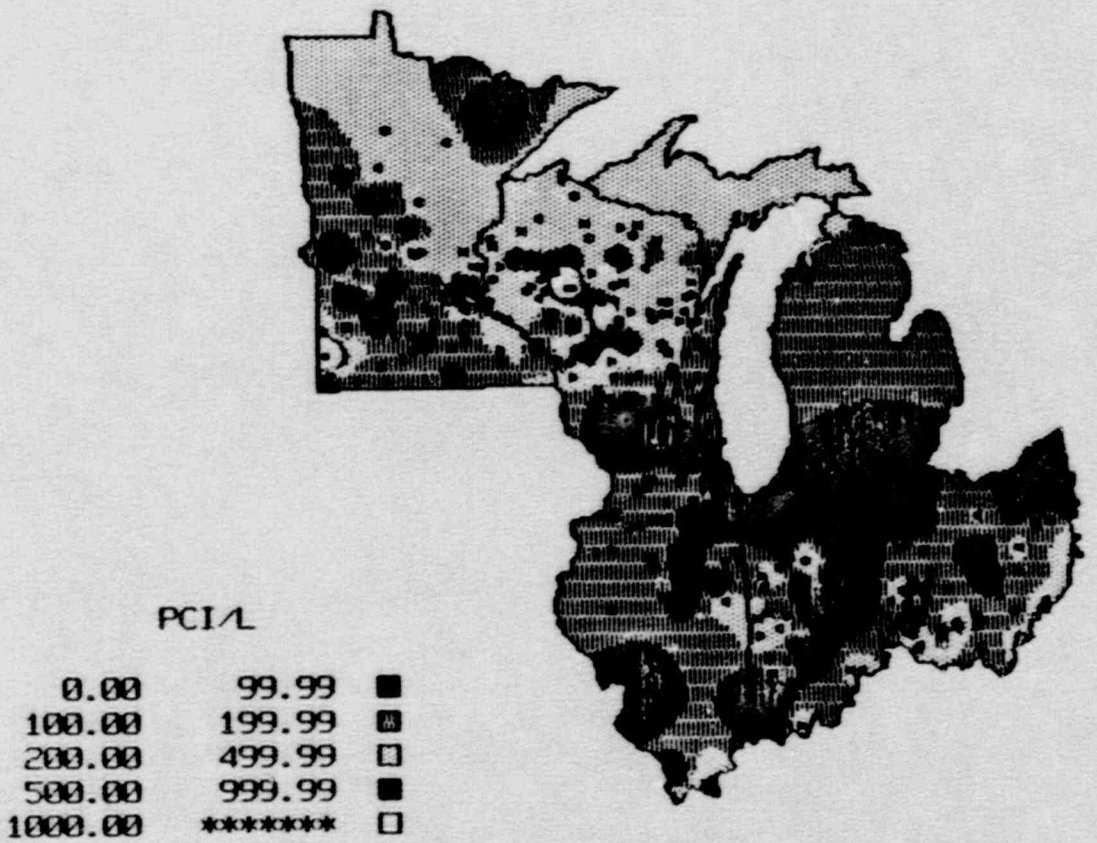


Figure E.12. Gross alpha concentrations in public groundwater
Region V 1981-1982

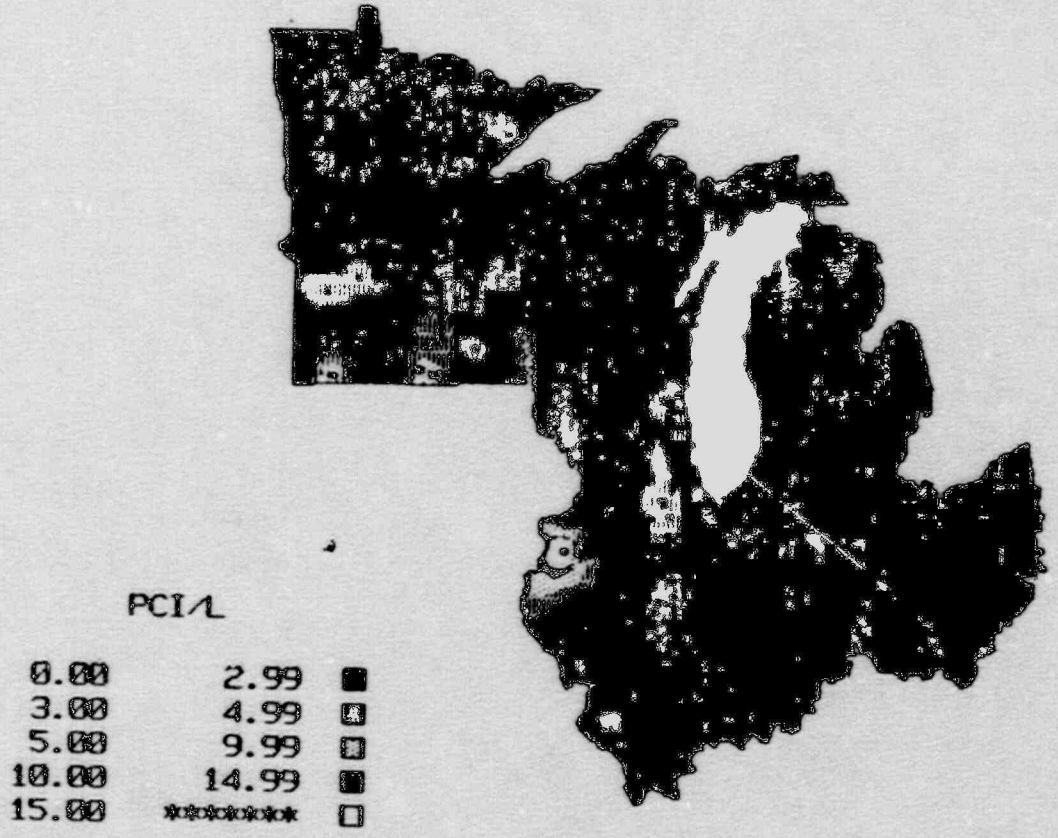


Figure E.13. Ra-226 concentrations in public groundwater
Region V 1981-1982

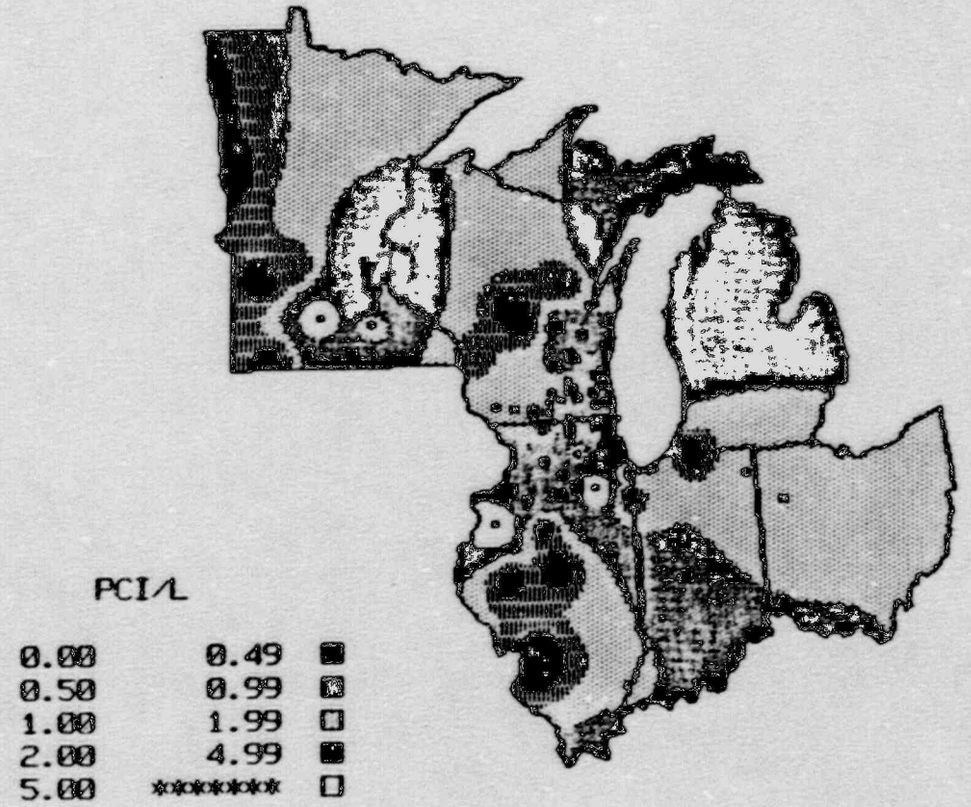
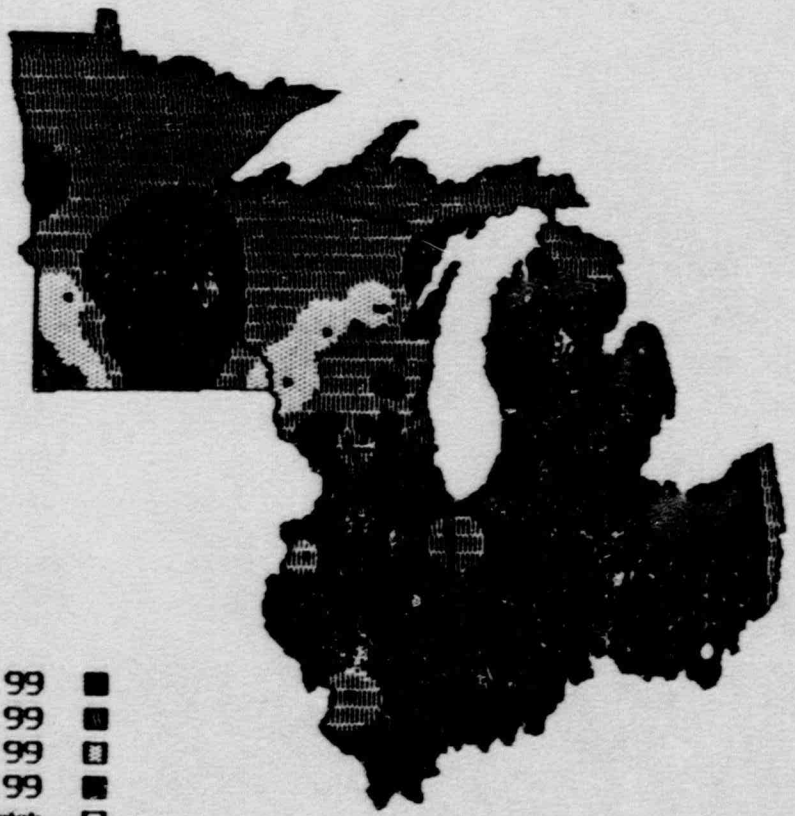


Figure E.14. Total uranium concentrations in public groundwater
Region V 1981-1982



ATTACHMENT 7

Name and Address

Shieldalloy Corporation
West Boulevard
Newfield, New Jersey 08344

(609) 692-4200

Name and Address Where Licensed Material Will Be Used or Possessed

Shieldalloy Corporation
Route 209 South
Cambridge, Ohio 43725

Key Personnel

Michael R. Morgenstern

Holds a B.S. degree in Chemical Engineering from Drexel University. Currently is a Certified Hazardous Material Manager by the Institute of Hazardous Material Managers. Currently overseeing the Shieldalloy Radiation Safety Program in New Jersey. Will have similar responsibility for Cambridge Alloys and Chemicals Incorporated.

Harold P. Hart

Graduated with a B.S. degree in Biological Sciences from Glassboro State College. Responsible for compliance of total plant with OSHA standards and administration of Shieldalloy safety programming.