114131

Radiological Survey Results for Neighboring Properties of the Alba Craft Site Oxford, Ohio

U.S. Department of Energy
Formerly Utilized Sites Remedial Action Program

Index

114131

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~~108159~~
114131

Department of Energy
Washington, DC 20585

SEP 1 1993

Mr. Jeff Schroer
Oxford Real Estate, Inc.
33 West Walnut Street
Oxford, Ohio 45046

Dear Mr. Schoer:

With the consent of the owners, the U.S. Department of Energy (DOE) requested that Oak Ridge National Laboratory (ORNL) perform a further radiological survey of the Village Green Apartments. I have received the enclosed letter report from ORNL with the results of the survey.

During the course of the survey, normal background radiation levels were found, and no elevated levels were identified. Several measurements were made inside the apartment building, and the results were also typical of background levels. No residual uranium from the former Alba Craft Laboratory was identified on the Village Green premises.

I appreciate very much your interest in DOE. If you have any questions, please call me at 301-903-8149.

Sincerely,

W. Alexander Williams, PhD
Designation and Certification Manager
Division of Off-Site Programs
Office of Eastern Area Programs
Office of Environmental Restoration

Enclosure

cc:
D. Adler, OR
M. Murray, ORNL

~~107722~~
114131

OAK RIDGE NATIONAL LABORATORY
OPERATED BY MARTIN MARIETTA ENERGY SYSTEMS, INC.

POST OFFICE BOX 2008
OAK RIDGE, TENNESSEE 37831

1993 AUG 25 PM 2:02

August 23, 1993

Dr. W. A. Williams
Department of Energy
Trevion II Building
EM-421
Washington, D. C. 20585-0002

Dear Dr. Williams:

Radiological Survey of a Vicinity Property of the Former Alba Craft Facility, Oxford, Ohio

On August 2, 1993, additional radiological surveying was conducted at the Village Green Apartments on South Main Street, Oxford, Ohio. A portion of the property was originally surveyed in September 1992 and the results reported in ORNL/RASA-92/14. After the report was published, the property manager requested additional surveying of the entire property and exposure rate measurements in selected apartments.

A walk-over gamma scan was performed over the entire property and detected only natural background radiation. Five exposure rate measurements were performed outside, and three inside using a pressurized ion chamber (PIC) detector. All eight measurements were between eight and eleven micro R/hour, typical of natural background. The inside PIC measurements were located in apartments four and seven, and the downstairs study room; all of which have a window view of the former Alba Craft facility.

The property manager was informed that the survey did not find any radiation distinguishable from natural background. Please call me (615-574-5838) or refer the property manager to me if there are any questions concerning the survey results.

Sincerely,

Michael E. Murray

Michael E. Murray
Measurement Applications
and Development Group

MEM:ec

c: D. G. Adler (DOE-ORO)
W. D. Cottrell
R. D. Foley

~~106484~~
114131

OAK RIDGE NATIONAL LABORATORY
OPERATED BY MARTIN MARIETTA ENERGY SYSTEMS, INC.

POST OFFICE BOX 2008
OAK RIDGE, TENNESSEE 37831

1993 JUL 23 PM 1:40

July 21, 1993

Dr. W. A. Williams
Department of Energy
Trevion II Building
EM-421
Washington, D. C. 20585-0002

Dear Dr. Williams:

Radiological Survey of the Village Green Apartment Property, Oxford, Ohio

In September of last year the Village Green Apartment property was surveyed for potential uranium contamination which could have come from the former Albacraft facility. The results of the survey were reported in ORNL/RASA-92/14. On April 22, 1993 I met with Mr. Jeff Schroer of Oxford Real Estate, Incorporated, who manages the Village Green Apartments, to discuss results of the original survey.

Mr. Schroer and I walked over the property and I pointed out the location of the contamination on the Albacraft property. Using a NaI scintillation detector I showed him the relative readings between where contamination exists and the normal background readings on the Village Green property. I also showed him how quickly the exposure rate dropped off as the instrument was moved away from the contaminated area. The locations of the soil samples taken from the Village Green property were also indicated to him. From the original survey, the maximum reading near the apartment building was eight micro R/h, which is typical background for the Oxford area.

Based on the results from the radiological survey, the occupants of the Village Green apartments should not receive any measurable dose of radiation from the Albacraft facility.

Please call me if you have questions about this information.

Sincerely,

Michael E. Murray

Michael E. Murray
Measurement Applications
and Development Group

MEM:ec

c: D. G. Adler (BNI)
W. D. Cottrell
R. D. Foley
J. Schroer (Oxford, Ohio)

~~103136~~ 93-324 114131

Department of Energy
Field Office, Oak Ridge
P.O. Box 2001
Oak Ridge, Tennessee 37831—8723

April 20, 1993

Mr. Jeff Schroer
S and W Investment Partnership
c/o Oxford Real Estate
33 West Walnut Street
Oxford, Ohio 45056

Dear Mr. Schroer:

OXFORD SITE - TRANSMITTAL OF SURVEY REPORT

As requested, I'm transmitting a copy of the recently completed survey report for the Oxford Site. As you know, this site has been designated for cleanup by the Department of Energy's (DOE) Formerly Utilized Sites Remedial Action Program.

During the 1950's, this site was utilized for various machining activities being conducted in support of the federal government's early atomic energy and defense programs. As a result of these activities, the site now contains residual uranium contamination in excess of very conservative government cleanup guidelines. Most of this contamination is present as traces of uranium present on structural surfaces within the building located on site. Small isolated spots of contaminated soil have also been located outside of the building in areas immediately adjacent to the building.

I want to stress that while detectable levels of contamination are present in and immediately around the on site building, the presence of this contamination does not pose a significant health threat either to building occupants or to residents living on abutting properties. This conclusion is based on direct measurements of air quality and radiation levels within the areas occupied by site workers, both of which indicate that potential worker exposures are essentially at naturally occurring background levels.

As practical matter, the only significant potential for exposure at the site would be dependent upon physical disturbance of contaminated items followed by either ingestion or inhalation of significant quantities of contaminated material. As a precautionary measure, the building owner has been asked to coordinate with DOE prior to engaging in such activities.

Ultimately, the Oxford Site will be decontaminated and released for unrestricted use at no cost to the property owner. Until this effort is completed, I will be available to respond to any questions you may have concerning this matter.

114131
~~103136~~

If there is anything I can do to be of assistance, please feel free to contact me at (615) 576-9634.

Sincerely,

David G. Adler, Site Manager
Former Sites Restoration Division

Enclosure

~~102568~~ 114131

Department of Energy
Field Office, Oak Ridge
P.O. Box 2001
Oak Ridge, Tennessee 37831—8723

March 30, 1993

[redacted]
[redacted] South Main Street
Oxford, Ohio 45046

Dear [redacted]:

OXFORD SITE - RESULTS FROM ENVIRONMENTAL SURVEYS

Enclosed please find a copy of the Oak Ridge National Laboratory report summarizing results from environmental surveys recently conducted on your property. As you may know, this survey primarily focused on radiological conditions at the Oxford Site at 10-14 West Rose Avenue, Oxford, Ohio. Abutting properties were also surveyed.

Results of this survey indicate that residual uranium contamination exists in and around the building in quantities exceeding current DOE guidelines. This contamination poses little health hazard if left undisturbed, and would only present a hazard if significant volumes of contaminated material were either ingested or inhaled. However, because contamination does exceed current cleanup guidelines in isolated areas, the site has been designated for cleanup under the Department of Energy's Formerly Utilized Sites Remedial Action Program (FUSRAP). Ultimately, the site will be restored to conditions suitable for unrestricted use at no cost to property owners.

If you have any questions on this matter please feel free to contact me at (615)-576-9634

Sincerely,

David G. Adler, Site Manager
Former Sites Restoration Division

Enclosure

~~108154~~
114131

Department of Energy
Washington, DC 20585

AUG [illegible] 1993 SEP -7 PM 1:52

[redacted]
[redacted] South Main Street
Oxford, Ohio 45056

Dear [redacted]:

I am enclosing a copy of the preliminary results furnished to the Department of Energy (DOE) by Oak Ridge National Laboratory as a result of the radiological survey at your home on August 2, 1993. A complete radiological survey report is being prepared and will be furnished to you when it is complete early next year.

Inside the house, residual uranium was identified in the den and in a bedroom above the garage. In both locations, the uranium is stuck or fixed in the cracks and grain of the hardwood floor. Under these conditions, there is no significant risk. To avoid the generation of airborne radioactivity, we strongly recommend against any sanding or grinding of the floor in the rooms where the uranium is present. Normal cleaning of the floor with a vacuum cleaner, broom, or dust mop are entirely appropriate; it is only cleaning methods that scour or abrade the floor surface that pose a potential risk.

Two areas of elevated uranium levels were identified in the soil in the yard. The soil around the original front porch of the house has slightly elevated levels of uranium. A spot in your back yard exhibited much higher levels; most of this spot was removed by sampling. These elevated uranium levels, as well as those located inside the house, appear to be related to the former Alba Craft Laboratory operation.

Two other spots of elevated radioactivity were identified during the survey. One of these spots, located near a downspout behind the garage, contained slightly elevated levels of uranium and Cesium-137. The cesium is from fallout from atmospheric nuclear weapons tests; it was deposited on the roof and concentrated near the downspout by the runoff of rainwater from the roof. The low levels of uranium that were identified at this spot may be background levels, may result from fertilizer application, or may be related to the Alba Craft Laboratory operation. The second spot is an electrical switch with a luminescent radium button. This material is not related to the operations at the Alba Craft Laboratory.

The information contained in the letter report should be considered preliminary, because the soil samples have not been processed to precisely determine the uranium concentration. Please call me at 301-903-8149 if I may be of further assistance.

Sincerely,

W. Alexander Williams, PhD
Designation and Certification Manager
Division of Off-Site Programs
Office of Eastern Area Programs
Office of Environmental Restoration

Enclosure

cc:
D. Adler, OR
M. Murray, ORNL

114121
~~107513~~

OAK RIDGE NATIONAL LABORATORY
OPERATED BY MARTIN MARIETTA ENERGY SYSTEMS, INC.

POST OFFICE BOX 2008
OAK RIDGE, TENNESSEE 37831

1993 AUG 19 PM 1:39

August 18, 1993

Dr. W. A. Williams
Department of Energy
Trevion II Building
EM-421
Washington, D. C. 20585-0002

Dear Dr. Williams:

Preliminary Results of the Radiological Survey at [redacted] South Main Street, Oxford, Ohio

Beginning on August 2, 1993, a team from the Oak Ridge National Laboratory (ORNL) conducted a radiological survey of a residence at [redacted] South Main Street, Oxford, Ohio. The work included both inside and outside surveying for the presence of residual uranium, possibly transported from the former Alba Craft facility located on West Rose Avenue (approximately 100 yards away). The current property owners requested the survey upon learning the owner/operator of the former Alba Craft was a former owner of their house. Residual uranium was found outside the house as well as inside. The owners were immediately informed of the field measurements and were told that the radiation exposure was quite low; however, they were advised not to take any action which would disturb the materials in the floor cracks where the uranium was found, such as sanding or remodeling.

The uranium found inside the house was restricted to two rooms which appeared to be part of the original house construction. The den area (20 x 12 feet) has most of the uranium in an area, 4 x 9 feet directly in front of a fireplace. The majority of the uranium was in the cracks of the hardwood floor; however, some activity was in the wood grain. This small area has a typical dose rate of 0.2 milli rad/hr (beta) and a maximum dose rate of 1.4 milli rad/hour (beta). Eight other spots of lesser contamination were also found in the den. The other room where the uranium was found is a bedroom (12.5 x 23 feet) above the garage. Numerous spots were found where the uranium had settled into the hardwood floor cracks and all measured dose rates were less than 0.44 milli rad/hour (beta). Multiple gamma exposure measurements were made with a pressurized ion chamber (PIC) at one meter from the floor. The highest exposure rate was 10 micro R/hour which is typical of background radiation in the southern Ohio area.

The uranium outside the house was primarily found in three locations. The soil around the original front porch had sightly elevated levels of uranium. Preliminary measurements indicate uranium soil concentrations of 180 to 450 pCi/gram. The second location about 27 feet from the house in the backyard, had a surface exposure rate of about 0.25 mR/hour and the maximum uranium concentration of 13,500 pCi/gram. The uranium was located four to eight inches below the soil surface. The vast majority of this uranium was removed by sampling and the hole filled with clean soil. The third location, behind the garage near a downspout, had 5 pCi/gram ^{238}U. It also had approximately 6 pCi/gram of ^{137}Cs, most likely fallout from atmospheric nuclear weapons tests. The ^{137}Cs was concentrated at the location by rain water.

One other spot in the backyard, where elevated gamma measurements were found, turned out not to be uranium. It was an electrical switch with a radium button for visibility in the dark.

All data provided herein is preliminary and should only be used as such. The samples from this site will be expeditiously processed and the results published as soon as possible. Please direct any questions about this survey to R. D. Foley, W. D. Cottrell or M. E. Murray, (615) 574-5838.

Sincerely,

Michael E Murray

Michael E. Murray
Measurement Applications
and Development Group

MEM:ec

c: D. G. Adler (DOE-ORO)
W. D. Cottrell
R. D. Foley
C. Jenkins (BNI)

~~108159~~
114131

Department of Energy
Washington, DC 20585

OCT 1 1993

[redacted]
[redacted] South Main Street
Oxford, Ohio 45046

Dear [redacted]:

With your consent, the U.S. Department of Energy (DOE) requested that Oak Ridge National Laboratory (ORNL) perform an additional radiological survey in the basement of your home. I have received the enclosed letter report from ORNL with the results of the survey.

During the course of the survey, normal background radiation levels were found for all direct measurements of radioactivity, and ambient radiation levels were below typical levels for the area. No uranium from the former Alba Craft Laboratory was identified inside the home.

However, the average radon measurement was 9 picoCuries per liter. While it is possible that the measurement is imprecise because of the short 2-day sampling time, the concentration is in excess of the U.S. Environmental Protection Agency's (EPA) action level of 4 picoCuries per liter in indoor air. The elevated levels of radon result from natural phenomenon and are not related to the former Alba Craft Laboratory.

If you wish to investigate the causes, risks, and mitigation of radon in houses, the U.S. EPA (202-233-9370) and the Ohio Department of Health (800-523-4439) can provide additional information.

I appreciate very much your interest in DOE. If you have any questions, please call me at 301-903-8149.

Sincerely,

W. Alexander Williams, PhD
Designation and Certification Manager
Division of Off-Site Programs
Office of Eastern Area Programs
Office of Environmental Restoration

Enclosure

cc:
D. Adler, OR
M. Murray, ORNL

~~107719~~
114131

OAK RIDGE NATIONAL LABORATORY
OPERATED BY MARTIN MARIETTA ENERGY SYSTEMS, INC.

POST OFFICE BOX 2008
OAK RIDGE, TENNESSEE 37831

1993 AUG 25 PM 2:01

August 23, 1993

Dr. W. A. Williams
Department of Energy
Trevion II Building
EM-421
Washington, D. C. 20585-0002

Dear Dr. Williams:

Radiological Survey of a Vicinity Property of the Former Alba Craft Facility, Oxford, Ohio

On August 2, 1993, additional radiological surveying was conducted at [redacted] South Main Street, Oxford, Ohio. The property was originally surveyed in September 1992 and the results reported in ORNL/RASA-92/14. After the report was published the current owner requested additional surveying in the basement, speculating that the occasional water in the basement could be run-off from the former Alba Craft facility.

Four types of radiation measurements were conducted in the basement. First, a NaI detector was used to measure gamma radiation and then GM survey probes were used to check for beta activity. A pressurized ion chamber (PIC) was used to measure the general exposure rate and electrets left in place to estimate the presence of radon. All direct measurements indicated only the presence of normal background radiation with the general exposure rate being 8 micro R/hour, which is less than typical for the southern Ohio area. The average radon concentration for the two-day sampling period was 9 pCi/liter; however, the presence of radon could not have resulted from any work associated with the former Alba Craft Laboratory because radium (the parent of radon) was not processed in the facility.

The home owner was informed that the survey did not find any evidence of residual uranium possibly transported by water leakage into the basement. Please call me (615-574-5838) or refer the home owner to me if there are any questions concerning the survey results.

Sincerely,

Michael E. Murray

Michael E. Murray
Measurement Applications
and Development Group

c: D. G. Adler (DOE-ORO)
W. D. Cottrell
R. D. Foley

~~102568~~ 114131

Department of Energy
Field Office, Oak Ridge
P.O. Box 2001
Oak Ridge, Tennessee 37831— 8723

March 30, 1993

[redacted]
[redacted] South Main Street
Oxford, Ohio 45046

Dear [redacted]:

OXFORD SITE - RESULTS FROM ENVIRONMENTAL SURVEYS

Enclosed please find a copy of the Oak Ridge National Laboratory report summarizing results from environmental surveys recently conducted on your property. As you may know, this survey primarily focused on radiological conditions at the Oxford Site at 10-14 West Rose Avenue, Oxford, Ohio. Abutting properties were also surveyed.

Results of this survey indicate that residual uranium contamination exists in and around the building in quantities exceeding current DOE guidelines. This contamination poses little health hazard if left undisturbed, and would only present a hazard if significant volumes of contaminated material were either ingested or inhaled. However, because contamination does exceed current cleanup guidelines in isolated areas, the site has been designated for cleanup under the Department of Energy's Formerly Utilized Sites Remedial Action Program (FUSRAP). Ultimately, the site will be restored to conditions suitable for unrestricted use at no cost to property owners.

If you have any questions on this matter please feel free to contact me at (615)-576-9634

Sincerely,

David G. Adler, Site Manager
Former Sites Restoration Division

Enclosure

~~108159~~ 114131

Department of Energy
Washington, DC 20585

SEP 1 1993

[redacted]
[redacted] South Main Street
Oxford, Ohio 45046

Dear [redacted]

With your consent, the U.S. Department of Energy (DOE) requested that Oak Ridge National Laboratory (ORNL) perform an additional radiological survey in the basement of your home. I have received the enclosed letter report from ORNL with the results of the survey.

During the course of the survey, normal background radiation levels were found for all direct measurements of radioactivity, and ambient radiation levels were below typical levels for the area. No uranium from the former Alba Craft Laboratory was identified inside the home.

However, the average radon measurement was 10 picoCuries per liter. While it is possible that the measurement is imprecise because of the short 2-day sampling time, the concentration is in excess of the U.S. Environmental Protection Agency's (EPA) action level of 4 picoCuries per liter in indoor air. The elevated levels of radon result from natural phenomenon and are not related to the former Alba Craft Laboratory.

If you wish to investigate the causes, risks, and mitigation of radon in houses, the U.S. EPA (202-233-9370) and the Ohio Department of Health (800-523-4439) can provide additional information.

I appreciate very much your interest in DOE. If you have any questions, please call me at 301-903-8149.

Sincerely,

W. Alexander Williams, PhD
Designation and Certification Manager
Division of Off-Site Programs
Office of Eastern Area Programs
Office of Environmental Restoration

Enclosure

cc:
D. Adler, OR
M. Murray, ORNL

114121
~~107720~~

OAK RIDGE NATIONAL LABORATORY
OPERATED BY MARTIN MARIETTA ENERGY SYSTEMS, INC.

POST OFFICE BOX 2008
OAK RIDGE, TENNESSEE 37831

1993 AUG 25 PM 2:01

August 23, 1993

Dr. W. A. Williams
Department of Energy
Trevion II Building
EM-421
Washington, D. C. 20585-0002

Dear Dr. Williams:

Radiological Survey of a Vicinity Property of the Former Alba Craft Facility, Oxford, Ohio

On August 2, 1993, additional radiological surveying was conducted at [redacted] South Main Street, Oxford, Ohio. The property was originally surveyed in September 1992 and the results reported in ORNL/RASA-92/14. After the report was published the current owner requested additional surveying in the basement, speculating that the occasional water in the basement could be run-off from the former Alba Craft facility.

Four types of radiation measurements were conducted in the basement. First, a NaI detector was used to measure gamma radiation and then GM survey probes were used to check for beta activity. A pressurized ion chamber (PIC) was used to measure the general exposure rate and electrets left in place to estimate the presence of radon. All direct measurements indicated only the presence of normal background radiation with the general exposure rate being 7 micro R/hour, which is less than typical for the southern Ohio area. The average radon concentration for the two-day sampling period was 10 pCi/liter; however, the presence of radon could not have resulted from any work associated with the former Alba Craft Laboratory because radium (the parent of radon) was not processed in the facility.

The home owner was informed that the survey did not find any evidence of residual uranium, possibly transported by water leakage into the basement. Please call me (615-574-5838) or refer the home owner to me if there are any questions concerning the survey results.

Sincerely,

Michael E. Murray

Michael E. Murray
Measurement Applications
and Development Group

MEM:ec

c: D. G. Adler (DOE-ORO)
W. D. Cottrell
R. D. Foley

~~102568~~
114131

Department of Energy
Field Office, Oak Ridge
P.O. Box 2001
Oak Ridge, Tennessee 37831— 8723

March 30, 1993

[redacted]
[redacted] South Main Street
Oxford, Ohio 45046

Dear [redacted]

OXFORD SITE - RESULTS FROM ENVIRONMENTAL SURVEYS

Enclosed please find a copy of the Oak Ridge National Laboratory report summarizing results from environmental surveys recently conducted on your property. As you may know, this survey primarily focused on radiological conditions at the Oxford Site at 10-14 West Rose Avenue, Oxford, Ohio. Abutting properties were also surveyed.

Results of this survey indicate that residual uranium contamination exists in and around the building in quantities exceeding current DOE guidelines. This contamination poses little health hazard if left undisturbed, and would only present a hazard if significant volumes of contaminated material were either ingested or inhaled. However, because contamination does exceed current cleanup guidelines in isolated areas, the site has been designated for cleanup under the Department of Energy's Formerly Utilized Sites Remedial Action Program (FUSRAP). Ultimately, the site will be restored to conditions suitable for unrestricted use at no cost to property owners.

If you have any questions on this matter please feel free to contact me at (615)-576-9634

Sincerely,

David Adler

David G. Adler, Site Manager
Former Sites Restoration Division

Enclosure

~~108159~~
114131

Department of Energy
Washington, DC 20585

SEP 1 1993

[redacted]
Oxford, Ohio 45046

Dear [redacted]:

With your consent, the U.S. Department of Energy (DOE) requested that Oak Ridge National Laboratory (ORNL) perform an additional radiological survey in the basement of your property at [redacted] South Main Street in Oxford. I have received the enclosed letter report from ORNL with the results of the survey.

During the course of the survey, normal background radiation levels were found for all direct measurements of radioactivity, and ambient radiation levels were below typical levels for the area. No uranium from the former Alba Craft Laboratory was identified inside the home.

However, the average radon measurement was 24 picoCuries per liter. While it is possible that the measurement is imprecise because of the short 2-day sampling time, the concentration is in excess of the U.S. Environmental Protection Agency's (EPA) action level of 4 picoCuries per liter in indoor air. The elevated levels of radon result from natural phenomenon and are not related to the former Alba Craft Laboratory.

If you wish to investigate the causes, risks, and mitigation of radon in houses, the U.S. EPA (202-233-9370) and the Ohio Department of Health (800-523-4439) can provide additional information.

I appreciate very much your interest in DOE. If you have any questions, please call me at 301-903-8149.

Sincerely,

W. Alexander Williams, PhD
Designation and Certification Manager
Division of Off-Site Programs
Office of Eastern Area Programs
Office of Environmental Restoration

Enclosure

cc:
D. Adler, OR
M. Murray, ORNL

~~107721~~
114131

OAK RIDGE NATIONAL LABORATORY
OPERATED BY MARTIN MARIETTA ENERGY SYSTEMS, INC.

POST OFFICE BOX 2008
OAK RIDGE, TENNESSEE 37831

1993 AUG 25 PM 2:01

August 20, 1993

Dr. W. A. Williams
Department of Energy
Trevion II Building
EM-421
Washington, D. C. 20585-0002

Dear Dr. Williams:

Radiological Survey of a Vicinity Property of the Former Alba Craft Facility, Oxford Ohio

On August 2, 1993, additional radiological surveying was conducted at [redacted] South Main Street, Oxford, Ohio. The property was originally surveyed in September 1992 and the results reported in ORNL/RASA-92/14. After the report was published a previous owner requested additional surveying in the basement, speculating that the occasional water in the basement could be run-off from the former Alba Craft facility. The current owner consented to the additional survey work.

Four types of radiation measurements were conducted in the basement. First, a NaI detector was used to measure gamma radiation and then GM survey probes were used to check for beta activity. A pressurized ion chamber (PIC) was used to measure the general exposure rate and electrets left in place to estimate the presence of radon. All direct measurements indicated only the presence of normal background radiation with the general exposure rate being 7 micro R/hour, which is less than typical for the southern Ohio area. The average radon concentration for the two-day sampling period was 24 pCi/liter; however, the presence of radon could not have resulted from any work associated with the former Alba Craft Laboratory because radium (the parent of radon) was not processed in the facility. This radon may be incorrectly high due to the very short sampling time of only two days.

The home owner was informed that the survey did not find any evidence of residual uranium possibly transported by water leakage into the basement. Please call me (615-574-5838) or refer the home owner to me if there are any questions concerning the survey results.

Sincerely,

Michael E. Murray

Michael E. Murray
Measurement Applications
and Development Group

MEM:ec

c: D. G. Adler (DOE-ORO)
W. D. Cottrell
R. D. Foley

~~102500~~ 114131

Department of Energy
Field Office, Oak Ridge
P.O. Box 2001
Oak Ridge, Tennessee 37831—8723

March 30, 1993

[redacted]
Oxford, Ohio 45046

Dear [redacted]

OXFORD SITE - RESULTS FROM ENVIRONMENTAL SURVEYS

Enclosed please find a copy of the Oak Ridge National Laboratory report summarizing results from environmental surveys recently conducted on your property. As you may know, this survey primarily focused on radiological conditions at the Oxford Site at 10-14 West Rose Avenue, Oxford, Ohio. Abutting properties were also surveyed.

Results of this survey indicate that residual uranium contamination exists in and around the building in quantities exceeding current DOE guidelines. This contamination poses little health hazard if left undisturbed, and would only present a hazard if significant volumes of contaminated material were either ingested or inhaled. However, because contamination does exceed current cleanup guidelines in isolated areas, the site has been designated for cleanup under the Department of Energy's Formerly Utilized Sites Remedial Action Program (FUSRAP). Ultimately, the site will be restored to conditions suitable for unrestricted use at no cost to property owners.

If you have any questions on this matter please feel free to contact me at (615)-576-9634

Sincerely,

David G. Adler, Site Manager
Former Sites Restoration Division

Enclosure

~~112677~~
114131

OAK RIDGE NATIONAL LABORATORY
MANAGED BY MARTIN MARIETTA ENERGY SYSTEMS, INC.
FOR THE U.S. DEPARTMENT OF ENERGY

POST OFFICE BOX 2008
OAK RIDGE, TENNESSEE 37831

1994 JAN 24 AM 11:35

January 21, 1994

Dr. W. A. Williams
Department of Energy
Trevion II Building
EM-421
Washington, D.C. 20585-0002

Dear Dr. Williams:

Radiological Survey Results for [redacted] South Main Street, Oxford, Ohio (OXO003)

Please find attached the subject report. D. G. Adler, DOE-OR, is also being provided with this information. Please contact me (615/574-5838) if we may be of further assistance.

Sincerely,

Michael E. Murray

Michael E. Murray
Measurement Applications and Development

MEM:sh

cc: D. G. Adler, DOE-OR (2)
W. D. Cottrell
R. D. Foley
K. R. Kleinhans

~~112677~~
114131

Results of the Radiological Survey at [redacted] South Main Street, Oxford, Ohio

At the request of the property owner and with the Department of Energy's (DOE) concurrence, a radiological survey was conducted in August, 1993, of the property at [redacted] South Main Street, Oxford, Ohio, by members of the Measurement Applications and Development Group (MAD) of Oak Ridge National Laboratory (ORNL). The survey was conducted to ensure that residual radioactive materials exceeding current DOE guidelines had not been redistributed from the facility to the private property. The survey was limited to the outdoor areas of the property, and consisted of a walkover gamma scan using NaI detectors, and the collection of soil samples.

Gamma exposure rates ranged from 8 to 10 μR/h as shown on Fig. 1. No radiation levels were measured on the property that exceed typical background gamma exposure rates found in the general Ohio area (3–11 μR/h, Table 1).

Six soil samples were collected irrespective of gamma exposure rates from three locations as shown on Fig. 1. One surface sample was taken at each location from the top 15 cm of soil. A subsurface sample was removed from beneath each surface sample at a depth of 15-30 cm. The samples were analyzed to determine concentrations of the radionuclides ^{226}Ra, ^{232}Th, and ^{238}U.

As detailed in Table 2, soil samples contained concentrations of ^{238}U ranging from 1.3 to 2.2 pCi/g. Concentrations of ^{226}Ra were 1.1 to 1.3 pCi/g, and ^{232}Th was found at concentrations ranging from 0.74 to 1.1 pCi/g. All values are comparable to typical background concentrations (Table 1).

The results of the radiological survey at [redacted] South Main Street, Oxford, Ohio, do not indicate the presence of any radioactive residuals that may have originated from Atomic Energy Commission (AEC)-related activities previously conducted during the 1950s at the nearby former Alba Craft Laboratory.

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*M. E. Murray, K. S. Brown, and R. A. Mathis, *Results of the Radiological Survey at the Former Alba Craft Laboratory Site Properties, Oxford, Ohio (OXO001)*, ORNL/RASA-92/14, Martin Marietta Energy Systems, Inc., Oak Ridge Natl. Lab., March 1993.

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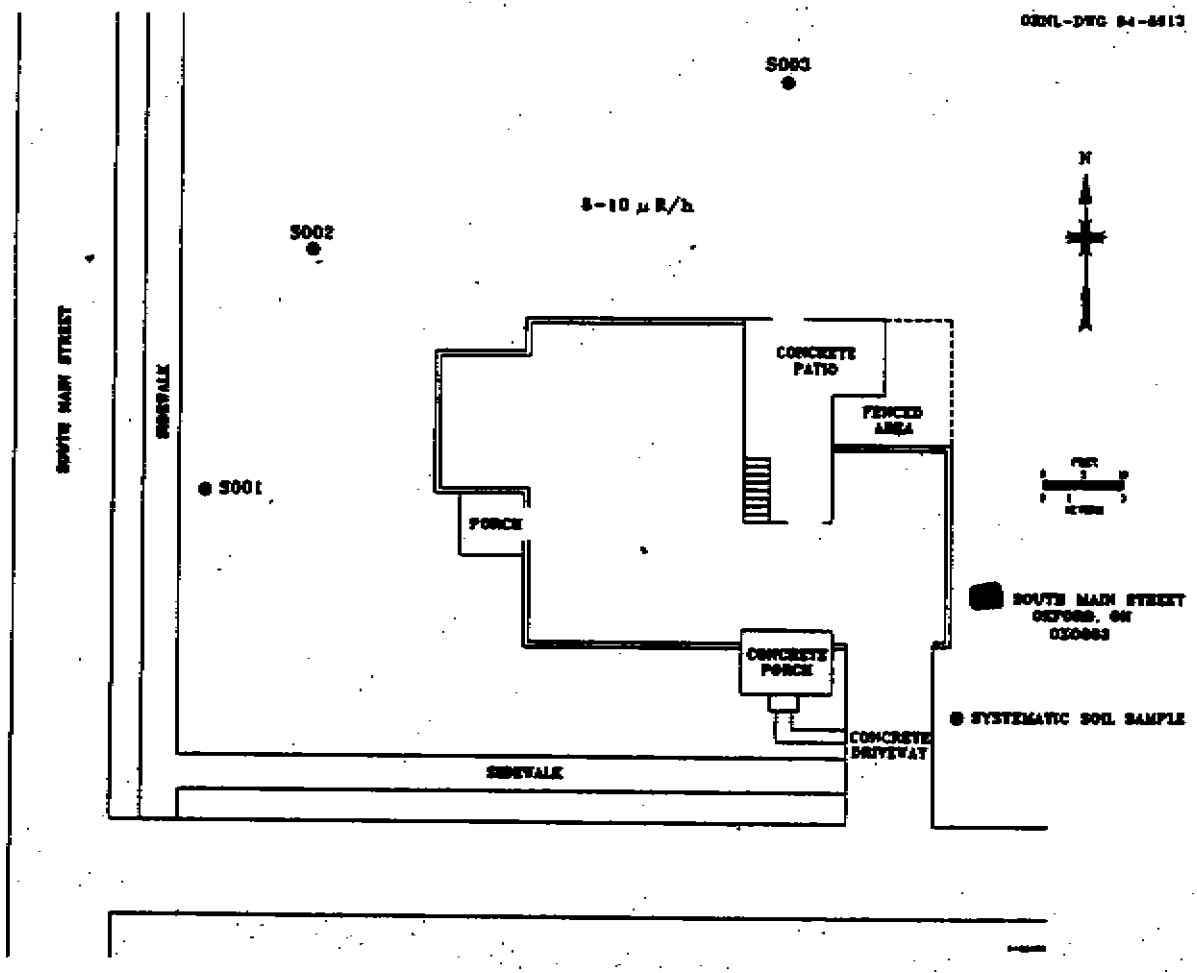

Fig. 1. Diagram of the property at [redacted] S. Main Street showing range of gamma exposure rates and locations of soil samples.

Table 1. Background radiation and ranges of radionuclide concentrations for Ohio

Type of radiation measurement or sample	Radiation level or radionuclide concentration
Average external gamma exposure rate at 1 m above the ground surface (μR/h)[a]	5
Range of external gamma exposure rates at 1 m above the ground surface (μR/h)[a]	3–11
Concentration range for radionuclides in surface soil (pCi/g)[b]	
^{226}Ra	0.8–2.5 ± 0.2
232Th	0.8–1.5 ± 0.2
^{238}U	0.8–2.2 ± 0.1

[a]Results of three measurements.

[b]Indicated counting error is at the 95% confidence level (± 2σ).

Source: T. E. Myrick, B. A. Berven, and F. F. Haywood, *State Background Radiation Levels: Results of Measurements Taken During 1975–1979*, ORNL/TM-7343, Martin Marietta Energy Systems, Inc., Oak Ridge Natl. Lab., November 1981.

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Table 2. Concentrations of radionuclides in soil samples collected outdoors at [redacted] South Main Street, Oxford, Ohio.

Sample ID[a]	Depth (cm)	Radionuclide concentration (pCi/g)[b]		
		^{238}U	^{226}Ra	^{232}Th
S1A	0-15	2.1 ± 0.64	1.2 ± 0.11	1.1 ± 0.16
S1B	15-30	2.0 ± 1.0	1.0 ± 0.07	0.86 ± 0.11
S2A	0-15	1.6 ± 0.70	1.1 ± 0.12	0.74 ± 0.17
S2B	15-30	1.3 ± 0.8	1.3 ± 0.09	0.99 ± 0.14
S3A	0-15	2.2 ± 1.0	1.2 ± 0.13	0.77 ± 0.09
S3B	15-30	1.5 ± 0.35	1.3 ± 0.12	1.1 ± 0.20

[a]Locations are shown on Fig. 1.

[b]Indicated counting error is at the 95% confidence level (± 2σ).

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114131

Department of Energy
Washington, DC 20585

OCT 1 1993

[redacted]
[redacted] South Main Street
Oxford, Ohio 45056

Dear [redacted]

With your consent, the U.S. Department of Energy (DOE) requested that Oak Ridge National Laboratory (ORNL) perform a radiological survey of your home. I have received the enclosed letter report from ORNL with some results of the survey.

During the course of the survey, normal background radiation levels were found, and no elevated levels were identified. Several soil samples were collected and are being analyzed. The results of the analysis and a formal survey report will be furnished to you when they are available.

I appreciate very much your interest in DOE. If you have any questions, please call me at 301-903-8149.

Sincerely,

W. Alexander Williams, PhD
Designation and Certification Manager
Division of Off-Site Programs
Office of Eastern Area Programs
Office of Environmental Restoration

Enclosure

cc:
D. Adler, OR
M. Murray, ORNL

~~107726~~
114131

OAK RIDGE NATIONAL LABORATORY
OPERATED BY MARTIN MARIETTA ENERGY SYSTEMS, INC.

POST OFFICE BOX 2008
OAK RIDGE, TENNESSEE 37831

1993 AUG 25 PM 2:01

August 20, 1993

Dr. W. A. Williams
Department of Energy
Trevion II Building
EM-421
Washington, D. C. 20585-0002

Dear Dr. Williams:

Radiological Survey of a Property in the Vicinity of the Former Alba Craft Facility, Oxford, Ohio

At the request of the property owner and with Department of Energy's (DOE) concurrence, a team from the Oak Ridge National Laboratory (ORNL) conducted a radiological survey of the property at [redacted] South Main Street, Oxford, Ohio. The survey consisted of a walk-over scan using NaI detectors and collecting soil samples. The walk-over scan was completed on August 3, 1993, and did not detect any measurable radiation above normal background levels. Two soil samples were collected at each of three locations and are yet to be analyzed. The property owner was informed of the results of the walk-over survey that same day. A formal report documenting the survey results will be issued after the analysis of the soil samples.

Please call me (615-574-5838) if you have any questions concerning this survey.

Sincerely,

Michael Murray

Michael M. Murray
Measurement Applications
and Development Group

MEM:ec

c: D. G. Adler (DOE-ORO)
W. D. Cottrell
R. D. Foley

~~112677~~
114131

OAK RIDGE NATIONAL LABORATORY
MANAGED BY MARTIN MARIETTA ENERGY SYSTEMS, INC.
FOR THE U.S. DEPARTMENT OF ENERGY

POST OFFICE BOX 2008
OAK RIDGE, TENNESSEE 37831

1994 JAN 24 AM 11: 35

January 21, 1994

Dr. W. A. Williams
Department of Energy
Trevion II Building
EM-421
Washington, D.C. 20585-0002

Dear Dr. Williams:

Radiological Survey Results for [redacted] South Main Street, Oxford, Ohio (OXO004)

Please find attached the subject report. D. G. Adler, DOE-OR, is also being provided with this information. Please contact me (615/574-5838) if we may be of further assistance.

Sincerely,

Michael E. Murray

Michael E. Murray
Measurement Applications and Development

MEM:sh

cc: D. G. Adler, DOE-OR (2)
W. D. Cottrell
R. D. Foley
K. R. Kleinhans

~~112677~~
114131

Results of the Radiological Survey at [redacted] South Main Street and [redacted] West Rose Avenue, Oxford, Ohio

At the request of the property owner and with the Department of Energy's (DOE) concurrence, a radiological survey was conducted in August, 1993, of the property at [redacted] South Main Street and [redacted] West Rose Avenue, Oxford, Ohio, by members of the Measurement Applications and Development Group (MAD) of Oak Ridge National Laboratory (ORNL). The survey was conducted under the auspices of DOE's Formerly Utilized Sites Remedial Action Program (FUSRAP) to ensure that residual radioactive materials exceeding current DOE guidelines had not been redistributed from the facility to the private property.* Two separate houses (Building A on Main Street and Building B on Rose Avenue) are situated on the corner lot (Figs. 1 and 2). The survey was limited to the outdoor areas of the property, and consisted of a walkover gamma scan using NaI detectors, and the collection of soil samples.

Gamma exposure rates ranged from 7 to 10 μR/h at 602 South Main Street and 7 to 11 μR/h at 9 West Rose Avenue as shown on Figs. 1 and 2. All radiation levels measured on the property are within the range of typical background gamma exposure rates found in the general Ohio area (3–11 μR/h, Table 1).

Twelve systematic soil samples† were collected irrespective of gamma exposure rates from six locations as shown on Figs. 1 and 2. One surface sample (having the suffix "A") was taken at each location from the top 15 cm of soil. A subsurface sample (having the suffix "B") was removed from beneath each surface sample at a depth of 15-30 cm. Four biased soil samples‡ were taken at two locations. One surface sample (0-15 cm) and one subsurface sample (15–30 cm) were collected at each location. The samples were analyzed to determine concentrations of the radionuclides ^{226}Ra, ^{232}Th, and ^{238}U.

As detailed in Table 2, systematic soil samples contained concentrations of ^{238}U ranging from 1.5 to 4.4 pCi/g. Concentrations of ^{226}Ra ranged from 1.1 to 1.5 pCi/g, and ^{232}Th was found at concentrations of 0.75 to 1.4 pCi/g. All values are comparable to typical background concentrations (Table 1) and well below values of 30 pCi/g of ^{238}U used at other FUSRAP sites.**

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*M. E. Murray, K. S. Brown, and R. A. Mathis, *Results of the Radiological Survey at the Former Alba Craft Laboratory Site Properties, Oxford, Ohio (OHO001)*, ORNL/RASA-92/14, Martin Marietta Energy Systems, Inc., Oak Ridge Natl. Lab., March 1987.

†Systematic samples are taken at selected locations irrespective of radiation levels.

‡Biased samples are collected at locations shown to have elevated radiation levels.

**R. E. Rodriguez et al., *Results of the Radiological survey at the Town of Tonawanda Landfill, Tonawanda, New York (TNY001)*, Rev. 2, ORNL/RASA-92/12, Martin Marietta Energy Systems, In., Oak Ridge Natl. Lab., March 1987.

Concentrations of ^{238}U in the biased samples (3.4 to 25 pCi/g) were slightly elevated above typical values for the Ohio area (Table 1), but below the 30 pCi/g of ^{238}U used at other FUSRAP sites. Values found for ^{226}Ra and ^{232}Th ranged, respectively, from 1.3 to 2.5 pCi/g and 1.1 to 2.3 pCi/g, concentrations comparable to those typically measured in the general Ohio area (Table 1.)

The results of the radiological survey at [redacted] South Main Street and [redacted] West Rose Avenue, Oxford, Ohio, demonstrate that the property has radioactive residuals that may have originated from Atomic Energy Commission (AEC)-related activities previously conducted during the 1950s at the nearby former Alba Craft Laboratory. However, the radioactive residuals are present in concentrations less than the expected guidelines and appear to be limited to a small area near the northwest corner of the property.

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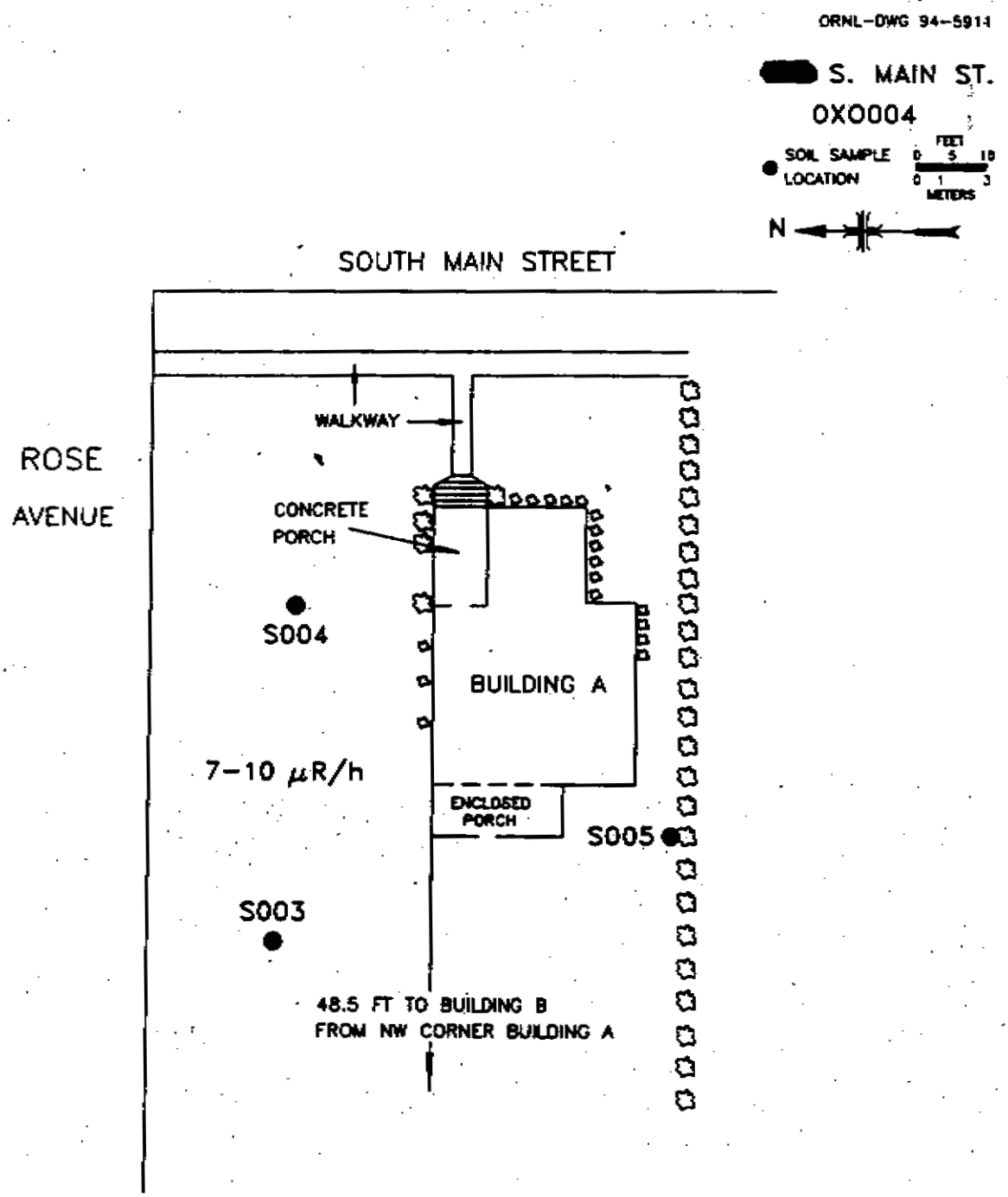

Fig. 1. Diagram of the property at [redacted] S. Main Street showing range of gamma exposure rates and locations of soil samples.

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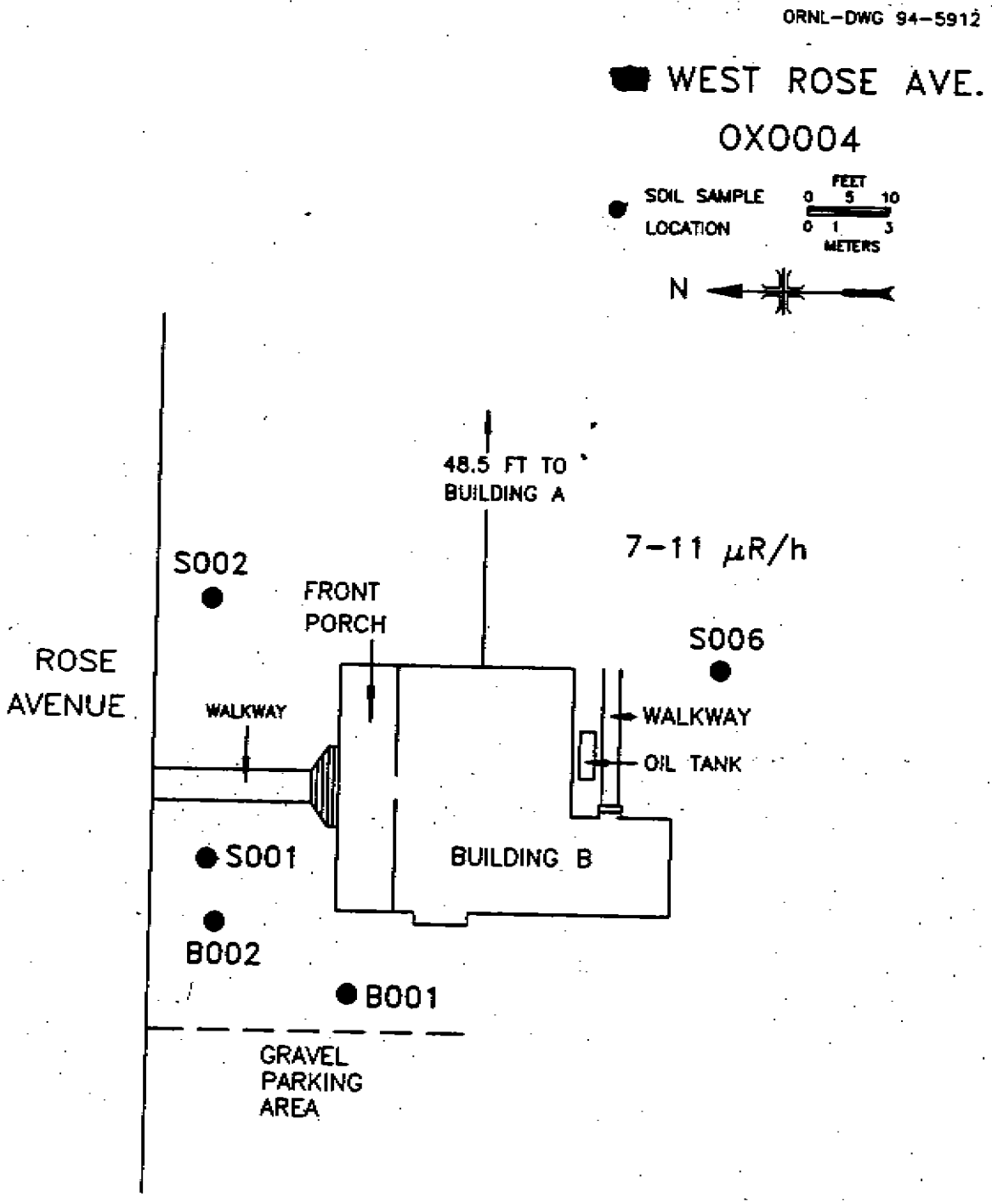

Fig. 2. Diagram of the property at W. Rose Avenue showing range of gamma exposure rates and locations of soil samples.

Table 1. Background radiation levels and radionuclide concentrations for the general Oxford, Ohio, area

Type of radiation measurement or sample	Radiation level or radionuclide concentration
Average external gamma exposure rate at 1 m above the ground surface (μR/h)[a]	5
Range of external gamma exposure rates at 1 m above the ground surface (μR/h)[a]	3–11
Concentration range for radionuclides in surface soil (pCi/g)[b]	
^{226}Ra	0.8–2.5 ± 0.2
232Th	0.8–1.5 ± 0.2
^{238}U	0.8–2.2 ± 0.1

[a]Results of three measurements.
[b]Indicated counting error is at the 95% confidence level (± 2σ).

Source: T. E. Myrick, B. A. Berven, and F. F. Haywood, *State Background Radiation Levels: Results of Measurements Taken During 1975–1979*, ORNL/TM-7343, Martin Marietta Energy Systems, Inc., Oak Ridge Natl. Lab., November 1981.

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Table 2. Concentrations of radionuclides in soil samples collected outdoors at [redacted] West Main Street and [redacted] West Rose Avenue, Oxford, Ohio

Sample ID [a]	Depth (cm)	Radionuclide concentration (pCi/g) [b]		
		^{238}U	^{226}Ra	^{232}Th
		Systematic samples [c]		
S1A	0-15	4.4 ± 1.5	1.2 ± 0.12	1.3 ± 0.20
S1B	15-30	2.4 ± 0.36	1.5 ± 0.09	1.4 ± 0.16
S2A	0-15	2.8 ± 0.40	1.3 ± 0.09	1.0 ± 0.16
S2B	15-30	2.6 ± 1.0	1.2 ± 0.11	1.2 ± 0.18
S3A	0-15	1.7 ± 0.5	1.3 ± 0.13	1.1 ± 0.15
S3B	15-30	3.2 ± 1.0	1.4 ± 0.13	1.2 ± 0.20
S4A	0-15	1.6 ± 0.7	1.1 ± 0.11	0.75 ± 0.16
S4B	15-30	1.8 ± 0.50	1.2 ± 0.10	0.80 ± 0.16
S5A	0-15	2.0 ± 0.5	1.1 ± 0.10	0.85 ± 0.13
S5B	15-30	1.5 ± 0.70	1.1 ± 0.10	1.0 ± 0.17
S6A	0-15	1.5 ± 0.34	1.3 ± 0.10	1.1 ± 0.16
S6B	15-30	1.9 ± 0.43	1.3 ± 0.11	1.2 ± 0.19
		Biased samples [d]		
B1A	0-15	25 ± 5	1.3 ± 0.13	1.1 ± 0.21
B1B	15-30	23 ± 5	1.4 ± 0.10	1.1 ± 0.16
B2A	0-15	5.2 ± 0.45	2.0 ± 0.14	1.7 ± 0.24
B2B	0-30	3.4 ± 1.0	2.5 ± 0.12	2.3 ± 0.21

[a] Locations are shown on Figs. 1 and 2.

[b] Indicated counting error is at the 95% confidence level (± 2σ).

[c] Systematic samples are taken at selected locations irrespective of radiation levels.

[d] Biased samples are collected at locations shown to have elevated radiation levels.

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114131

Department of Energy
Washington, DC 20585

SEP 1 1993

[redacted]
Oxford, Ohio 45056

Dear [redacted]:

With your consent, the U.S. Department of Energy (DOE) requested that Oak Ridge National Laboratory (ORNL) perform a radiological survey of your property. I have received the enclosed letter report from ORNL with some results of the survey.

During the course of the survey, normal background radiation levels were found, with two exceptions. Upon inspection, the two areas appeared to contain ashes, which tend to have higher than average levels of naturally occurring radionuclides. These and other soil samples are being analyzed. The results of the analysis and a formal survey report will be furnished to you when they are available.

I appreciate very much your interest in DOE. If you have any questions, please call me at 301-903-8149.

Sincerely,

W. Alexander Williams, PhD
Designation and Certification Manager
Division of Off-Site Programs
Office of Eastern Area Programs
Office of Environmental Restoration

Enclosure

cc:
D. Adler, OR
M. Murray, ORNL

~~107723~~
114131

OAK RIDGE NATIONAL LABORATORY
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POST OFFICE BOX 2008
OAK RIDGE, TENNESSEE 37831

1993 AUG 25 PM 2:01

August 20, 1993

Dr. W. A. Williams
Department of Energy
Trevion II Building
EM-421
Washington, D. C. 20585-0002

Dear Dr. Williams:

Radiological Survey of a Property in the Vicinity of the Former Alba Craft Facility, Oxford, Ohio

At the request of the property owner and with the Department of Energy's (DOE) concurrence, a team from the Oak Ridge National Laboratory (ORNL) conducted a radiological survey of the property at [redacted] South Main Street and [redacted] West Rose Avenue, Oxford, Ohio. This property is a corner lot with two separate houses, hence, the two different addresses. The survey consisted of a walk-over scan using NaI detectors and collecting soil samples. The walk-over scan was completed on August 3, 1993. Two locations with measurable radiation above normal background levels were found. Two soil samples were collected at each of the two locations and are yet to be analyzed. However, while collecting the samples, ashes (which tend to have elevated levels of naturally occurring nuclides) were encountered which most likely account for the slight elevation of gamma radiation above natural background. Both of the sample locations were in the northwest corner of the property. Twelve additional samples were collected at six locations on the property. The property owner does not live on the property and has not been informed of the results of the survey. The tenant living at 602 South Main Street was briefed on the survey results. A formal report documenting the survey results will be issued after the analysis of the soil samples is complete.

Please call me (615-574-5838) if you have questions concerning this survey.

Sincerely,

Michael E. Murray

Michael E. Murray
Measurement Applications
and Development Group

MEM:ec

c: D. G. Adler (DOE-ORO)
W. D. Cottrell
R. D. Foley

114131

OAK RIDGE NATIONAL LABORATORY
MANAGED BY MARTIN MARIETTA ENERGY SYSTEMS, INC.
FOR THE U.S. DEPARTMENT OF ENERGY

POST OFFICE BOX 2008
OAK RIDGE, TENNESSEE 37831

1994 JAN 24 AM 11: 35

January 21, 1994

Dr. W. A. Williams
Department of Energy
Trevion II Building
EM-421
Washington, D.C. 20585-0002

Dear Dr. Williams:

Radiological Survey Results for [redacted] South Main Street, Oxford, Ohio (OXO005)

Please find attached the subject report. D. G. Adler, DOE-OR, is also being provided with this information. Please contact me (615/574-5838) if we may be of further assistance.

Sincerely,

Michael E. Murray

Michael E. Murray
Measurement Applications and Development

MEM:sh

cc: D. G. Adler, DOE-OR (2)
W. D. Cottrell
R. D. Foley
K. R. Kleinhans

~~#3~~ 114131

Results of the Radiological Survey at [redacted] South Main Street, Oxford, Ohio

At the request of the property owner and with the Department of Energy's (DOE) concurrence, a radiological survey was conducted in August, 1993, of the property at [redacted] South Main Street, Oxford, Ohio, by members of the Measurement Applications and Development Group (MAD) of Oak Ridge National Laboratory (ORNL). The survey was conducted to ensure that residual radioactive materials exceeding current DOE guidelines had not been redistributed from the facility to the private property. The survey was limited to the outdoor areas of the property, and consisted of a walkover gamma scan using NaI detectors, and the collection of soil samples.

Gamma exposure rates ranged from 7 to 10 μR/h as shown on Fig. 1. No radiation levels were measured on the property that exceed typical background gamma exposure rates found in the general Ohio area (3–11 μR/h, Table 1).

Four soil samples were collected irrespective of gamma exposure rates from two locations as shown on Fig. 1. One surface sample was taken at each location from the top 15 cm of soil. A subsurface sample was removed from beneath each surface sample at a depth of 15-30 cm. The samples were analyzed to determine concentrations of the radionuclides ^{226}Ra, ^{232}Th, and ^{238}U.

As detailed in Table 2, soil samples contained concentrations of ^{238}U ranging from 1.3 to 2.2 pCi/g. Concentrations of ^{226}Ra were 1.2 and 1.4 pCi/g, and ^{232}Th was found at concentrations of 0.94 to 1.1 pCi/g. All values are comparable to typical background concentrations (Table 1).

The results of the radiological survey at [redacted] South Main Street, Oxford, Ohio, do not indicate the presence of any radioactive residuals that may have originated from Atomic Energy Commission (AEC)-related activities previously conducted during the 1950s at the nearby former Alba Craft Laboratory.

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*M. E. Murray, K. S. Brown, and R. A. Mathis, *Results of the Radiological Survey at the Former Alba Craft Laboratory Site Properties, Oxford, Ohio (OXO001)*, ORNL/RASA-92/14, Martin Marietta Energy Systems, Inc., Oak Ridge Natl. Lab., March 1993.

114131

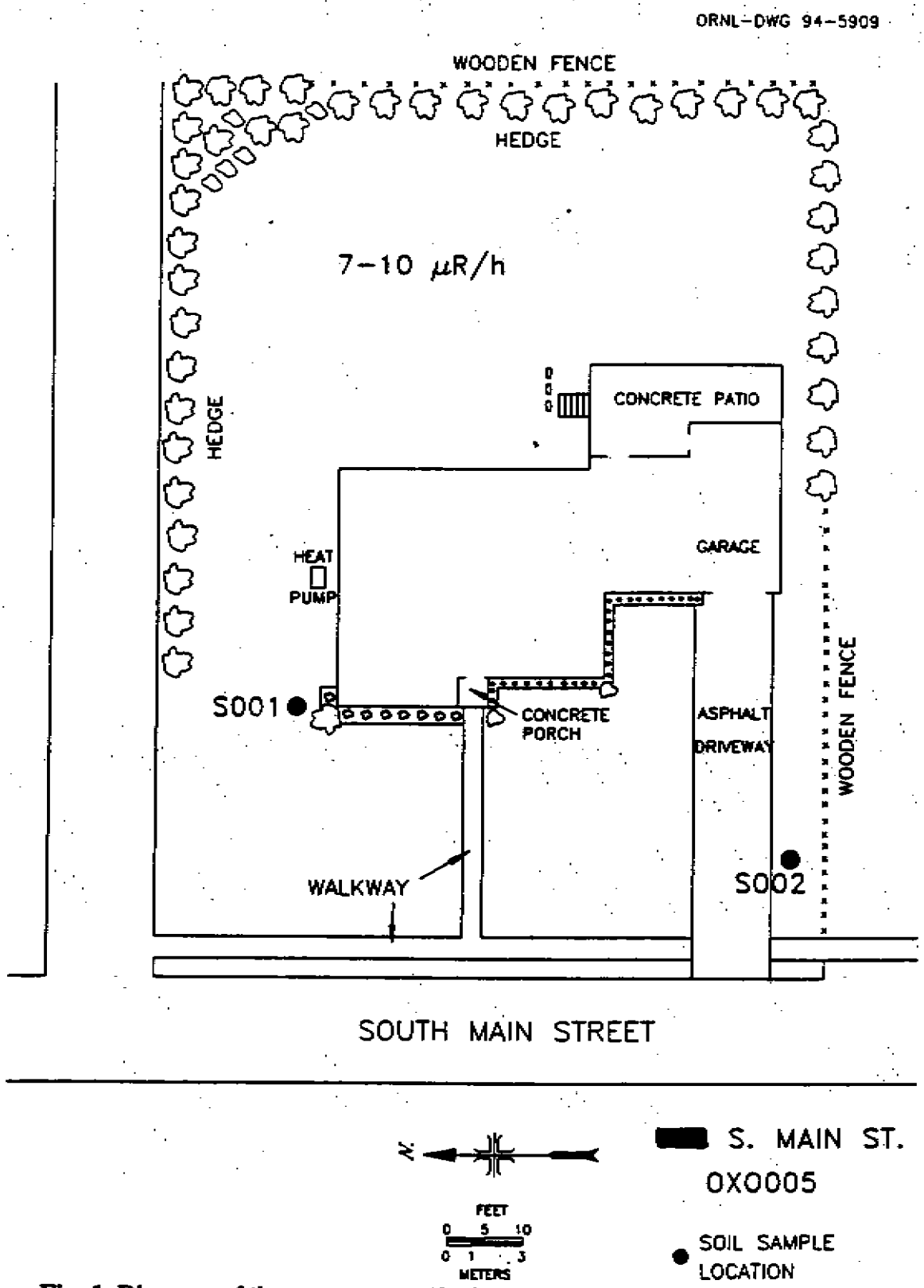

Fig. 1. Diagram of the property at [redacted] S. Main Street showing range of gamma exposure rates and locations of soil samples.

Table 1. Background radiation and ranges of radionuclide concentrations for Ohio

Type of radiation measurement or sample	Radiation level or radionuclide concentration
Average external gamma exposure rate at 1 m above the ground surface (μR/h)[a]	5
Range of external gamma exposure rates at 1 m above the ground surface (μR/h)[a]	3–11
Concentration range for radionuclides in surface soil (pCi/g)[b]	
^{226}Ra	0.8–2.5 ± 0.2
232Th	0.8–1.5 ± 0.2
^{238}U	0.8–2.2 ± 0.1

[a]Results of three measurements.

[b]Indicated counting error is at the 95% confidence level (± 2σ).

Source: T. E. Myrick, B. A. Berven, and F. F. Haywood, *State Background Radiation Levels: Results of Measurements Taken During 1975–1979*, ORNL/TM-7343, Martin Marietta Energy Systems, Inc., Oak Ridge Natl. Lab., November 1981.

114131

Table 2. Concentrations of radionuclides in soil samples collected outdoors at [redacted] South Main Street, Oxford, Ohio

Sample ID[a]	Depth (cm)	Radionuclide concentration (pCi/g)[b]		
		^{238}U	^{226}Ra	^{232}Th
S1A	0-15	1.4 ± 0.35	1.4 ± 0.11	1.0 ± 0.15
S1B	15-30	1.3 ± 0.62	1.2 ± 0.11	1.1 ± 0.18
S2A	0-15	2.2 ± 0.41	1.2 ± 0.08	0.94 ± 0.14
S2B	15-30	2.0 ± 0.68	1.4 ± 0.10	0.97 ± 0.14

[a]Locations are shown on Fig. 1.

[b]Indicated counting error is at the 95% confidence level (± 2σ).

~~108159~~ 114131

Department of Energy
Washington, DC 20585

1993 SEP -3 PM 1:50

SEP 1 1993

[redacted]
[redacted] South Main Street
Oxford, Ohio 45056

Dear [redacted]

With your consent, the U.S. Department of Energy (DOE) requested that Oak Ridge National Laboratory (ORNL) perform a radiological survey of your home. I have received the enclosed letter report from ORNL with some results of the survey.

During the course of the survey, normal background radiation levels were found, and no elevated levels were identified. Several soil samples were collected and are being analyzed. The results of the analysis and a formal survey report will be furnished to you when they are available.

I appreciate very much your interest in DOE. If you have any questions, please call me at 301-903-8149.

Sincerely,

W. Alexander Williams, PhD
Designation and Certification Manager
Division of Off-Site Programs
Office of Eastern Area Programs
Office of Environmental Restoration

Enclosure

cc:
D. Adler, OR
M. Murray, ORNL

114181

OAK RIDGE NATIONAL LABORATORY
OPERATED BY MARTIN MARIETTA ENERGY SYSTEMS, INC.

POST OFFICE BOX 2008
OAK RIDGE, TENNESSEE 37831

1993 AUG 25 PM 2:02

August 20, 1993

Dr. W. A. Williams
Department of Energy
Trevion II Building
EM-421
Washington, D. C. 20585-0002

Dear Dr. Williams:

Radiological Survey of a Property in the Vicinity of the Former Alba Craft Facility, Oxford, Ohio

At the request of the property owner and with the Department of Energy's (DOE) concurrence, a team from the Oak Ridge National Laboratory (ORNL) conducted a radiological survey of the property at [redacted] South Main Street, Oxford, Ohio. The survey consisted of a walk-over scan using NaI detectors and collecting soil samples. The walk-over scan was completed on August 4, 1993 and did not detect any measurable radiation above normal background levels. Two soil samples were collected at each of two locations and are yet to be analyzed. The property owner was not available during the survey and therefore not informed of the results of the walk-over survey. A formal report documenting the survey results will be issued after the analysis of the soil samples.

Please call me (615-574-5838) if you have questions concerning this survey.

Sincerely,

Michael E. Murray
Measurement Applications
and Development Group

MEM:ec

c: D. G. Adler (DOE-ORO)
W. D. Cottrell
R. F. Foley

114131

OAK RIDGE NATIONAL LABORATORY
MANAGED BY MARTIN MARIETTA ENERGY SYSTEMS, INC.
FOR THE U.S. DEPARTMENT OF ENERGY

POST OFFICE BOX 2008
OAK RIDGE, TENNESSEE 37831

1994 JAN 24 AM 11: 35

January 21, 1994

Dr. W. A. Williams
Department of Energy
Trevion II Building
EM-421
Washington, D.C. 20585-0002

Dear Dr. Williams:

Radiological Survey Results for [redacted] South Main Street, Oxford, Ohio (OXO006)

Please find attached the subject report. D. G. Adler, DOE-OR, is also being provided with this information. Please contact me (615/574-5838) if we may be of further assistance.

Sincerely,

Michael E. Murray

Michael E. Murray
Measurement Applications and Development

MEM:sh

cc: D. G. Adler, DOE-OR (2)
W. D. Cottrell
R. D. Foley
K. R. Kleinhans

114131

Results of the Radiological Survey at [redacted] South Main Street, Oxford, Ohio

At the request of the property owner and with the Department of Energy's (DOE) concurrence, a radiological survey was conducted in August, 1993, of the property at [redacted] South Main Street, Oxford, Ohio, by members of the Measurement Applications and Development Group (MAD) of Oak Ridge National Laboratory (ORNL). The survey was conducted to ensure that residual radioactive materials exceeding current DOE guidelines had not been redistributed from the facility to the private property. The survey was limited to the outdoor areas of the property, and consisted of a walkover gamma scan using NaI detectors, and the collection of soil samples.

Gamma exposure rates ranged from 7 to 10 μR/h as shown on Fig. 1. No radiation levels were measured on the property that exceed typical background gamma exposure rates found in the general Ohio area (3–11 μR/h, Table 1).

Four soil samples were collected irrespective of gamma exposure rates from two locations as shown on Fig. 1. One surface sample was taken at each location from the top 15 cm of soil. A subsurface sample was removed from beneath each surface sample at a depth of 15-30 cm. The samples were analyzed to determine concentrations of the radionuclides ^{226}Ra, ^{232}Th, and ^{238}U.

As detailed in Table 2, soil samples contained concentrations of ^{238}U ranging from <1.4 to 1.7 pCi/g. Concentrations of ^{226}Ra ranged from 1.1 to 1.3 pCi/g, and ^{232}Th was found at concentrations of 0.86 to 1.1 pCi/g. All values are comparable to typical background concentrations (Table 1).

The results of the radiological survey at [redacted] South Main Street, Oxford, Ohio, do not indicate the presence of any radioactive residuals that may have originated from Atomic Energy Commission (AEC)-related activities previously conducted during the 1950s at the nearby former Alba Craft Laboratory.

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*M. E. Murray, K. S. Brown, and R. A. Mathis, *Results of the Radiological Survey at the Former Alba Craft Laboratory Site Properties, Oxford, Ohio (OX0001)*, ORNL/RASA-92/14, Martin Marietta Energy Systems, Inc., Oak Ridge Natl. Lab., March 1993.

ORNL-DWG 94-5910

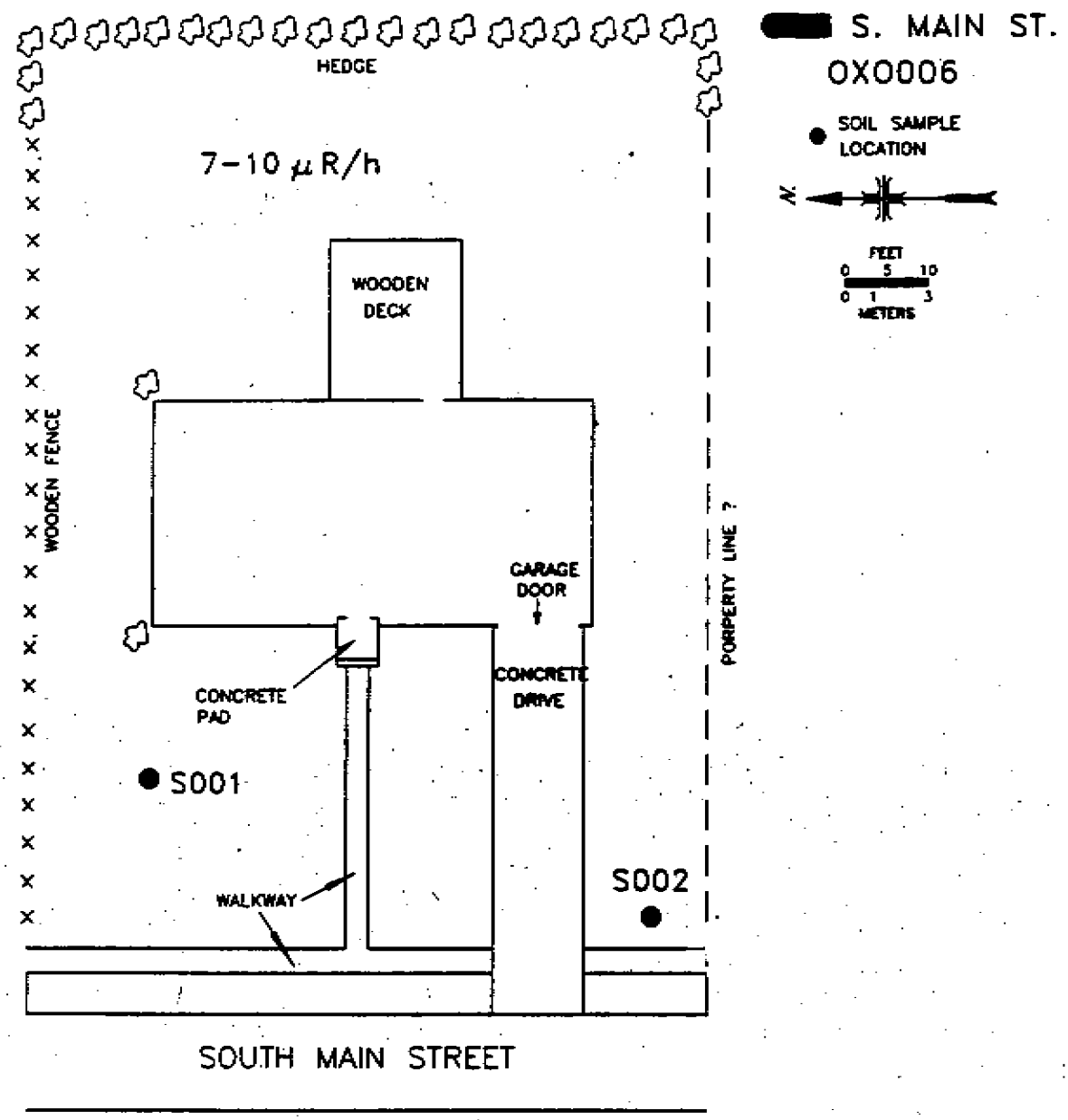

Fig. 1. Diagram of the property at [redacted] S. Main Street showing range of gamma exposure rates and locations of soil samples.

Table 1. Background radiation and ranges of radionuclide concentrations for Ohio

Type of radiation measurement or sample	Radiation level or radionuclide concentration
Average external gamma exposure rate at 1 m above the ground surface (μR/h)[a]	5
Range of external gamma exposure rates at 1 m above the ground surface (μR/h)[a]	3–11
Concentration range for radionuclides in surface soil (pCi/g)[b]	
^{226}Ra	0.8–2.5 ± 0.2
^{232}Th	0.8–1.5 ± 0.2
^{238}U	0.8–2.2 ± 0.1

[a]Results of three measurements.

[b]Indicated counting error is at the 95% confidence level (± 2σ).

Source: T. E. Myrick, B. A. Berven, and F. F. Haywood, *State Background Radiation Levels: Results of Measurements Taken During 1975–1979*, ORNL/TM-7343, Martin Marietta Energy Systems, Inc., Oak Ridge Natl. Lab., November 1981.

114131

Table 2. Concentrations of radionuclides in systematic soil samples collected outdoors at [redacted] South Main Street, Oxford, Ohio

Sample ID [a]	Depth (cm)	Radionuclide concentration (pCi/g) [b]		
		^{238}U	^{226}Ra	^{232}Th
S1A	0-15	<1.4	1.3 ± 0.11	1.1 ± 0.17
S1B	15-30	1.7 ± 0.40	1.3 ± 0.11	0.94 ± 0.18
S2A	0-15	1.5 ± 0.70	1.2 ± 0.09	0.86 ± 0.13
S2B	15-30	1.3 ± 0.50	1.1 ± 0.08	0.86 ± 0.13

[a] Locations are shown on Fig. 1.

[b] Indicated counting error is at the 95% confidence level (± 2σ).

108159
114131

Department of Energy
Washington, DC 20585

SEP 1 1993

[redacted]

Dear [redacted]:

With your consent, the U.S. Department of Energy (DOE) requested that Oak Ridge National Laboratory (ORNL) perform a radiological survey of your home. I have received the enclosed letter report from ORNL with some results of the survey.

During the course of the survey, normal background radiation levels were found, and no elevated levels were identified. Several soil samples were collected and are being analyzed. The results of the analysis and a formal survey report will be furnished to you when they are available.

I appreciate very much your interest in DOE. If you have any questions, please call me at 301-903-8149.

Sincerely,

W. Alexander Williams, PhD
Designation and Certification Manager
Division of Off-Site Programs
Office of Eastern Area Programs
Office of Environmental Restoration

Enclosure

cc:
D. Adler, OR
M. Murray, ORNL

~~107724~~
114131

OAK RIDGE NATIONAL LABORATORY
OPERATED BY MARTIN MARIETTA ENERGY SYSTEMS, INC.

POST OFFICE BOX 2008
OAK RIDGE, TENNESSEE 37831

1993 AUG 25 PM 2:02

August 23, 1993

Dr. W. A. Williams
Department of Energy
Trevion II Building
EM-421
Washington, D. C. 20585-0002

Dear Dr. Williams:

Radiological Survey of a Property in the Vicinity of the Former Alba Craft Facility, Oxford, Ohio

At the request of the property owner and with the Department of Energy's (DOE) concurrence, a team from the Oak Ridge National Laboratory (ORNL) conducted a radiological survey of the property at [redacted] South Main Street, Oxford, Ohio. The survey consisted of a walk-over scan using NaI detectors and collecting soil samples. The walk-over scan was completed on August 4, 1993, and did not detect any measurable radiation above normal background levels. Two soil samples were collected at each of two locations and are yet to be analyzed. The property owner was not available during the survey and therefore not informed of the results of the walk-over survey. A formal report documenting the survey results will be issued after the analysis of the soil samples..

Please call me (615-574-5838) if you have any questions concerning this survey.

Sincerely,

Michael E. Murray

Michael E. Murray
Measurement Applications
and Development Group

MEM:ec

c: D. G. Adler (DOE-ORO)
W. D. Cottrell
R. D. Foley

114131

OAK RIDGE NATIONAL LABORATORY
MANAGED BY MARTIN MARIETTA ENERGY SYSTEMS, INC.
FOR THE U.S. DEPARTMENT OF ENERGY

POST OFFICE BOX 2008
OAK RIDGE, TENNESSEE 37831

1994 JAN 24 AM 11:35

January 21, 1994

Dr. W. A. Williams
Department of Energy
Trevion II Building
EM-421
Washington, D.C. 20585-0002

Dear Dr. Williams:

Radiological Survey Results for [redacted] South Main Street, Oxford, Ohio (OXO007)

Please find attached the subject report. D. G. Adler, DOE-OR, is also being provided with this information. Please contact me (615/574-5838) if we may be of further assistance.

Sincerely,

Michael E. Murray

Michael E. Murray
Measurement Applications and Development

MEM:sh

cc: D. G. Adler, DOE-OR (2)
W. D. Cottrell
R. D. Foley
K. R. Kleinhans

/14131

Results of the Radiological Survey at [redacted] South Main Street, Oxford, Ohio

At the request of the property owner and with the Department of Energy's (DOE) concurrence, a radiological survey was conducted in October, 1993, of the property at 516 South Main Street, Oxford, Ohio, by members of the Measurement Applications and Development Group (MAD) of Oak Ridge National Laboratory (ORNL). The survey was conducted to ensure that residual radioactive materials exceeding current DOE guidelines had not been redistributed from the facility to the private property.* The survey was limited to the outdoor areas of the property, and consisted of a walkover gamma scan using NaI detectors, and the collection of soil samples.

Gamma exposure rates ranged from 5 to 10 μR/h as shown on Fig. 1. No radiation levels were measured on the property that exceed typical background gamma exposure rates found in the general Ohio area (3–11 μR/h, Table 1).

One soil sample was collected irrespective of gamma exposure rates from each of three separate locations as shown on Fig. 1. Each surface sample was taken from the top 15 cm of soil. The samples were analyzed to determine concentrations of the radionuclides ^{226}Ra, ^{232}Th, and ^{238}U.

As detailed in Table 2, soil samples contained concentrations of ^{238}U ranging from 1.3 to 1.9 pCi/g. The concentration of ^{226}Ra was 1.0 pCi/g in each sample, and ^{232}Th was found at concentrations of 0.98 to 1.1 pCi/g. All values are comparable to typical background concentrations (Table 1).

The results of the radiological survey at [redacted] South Main Street, Oxford, Ohio, do not indicate the presence of any radioactive residuals that may have originated from Atomic Energy Commission (AEC)-related activities previously conducted during the 1950s at the nearby former Alba Craft Laboratory.

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*M. E. Murray, K. S. Brown, and R. A. Mathis, *Results of the Radiological Survey at the Former Alba Craft Laboratory Site Properties, Oxford, Ohio (OXO001)*, ORNL/RASA-92/14, Martin Marietta Energy Systems, Inc., Oak Ridge Natl. Lab., March 1993.

114131

ORNL-DWG 94-5914

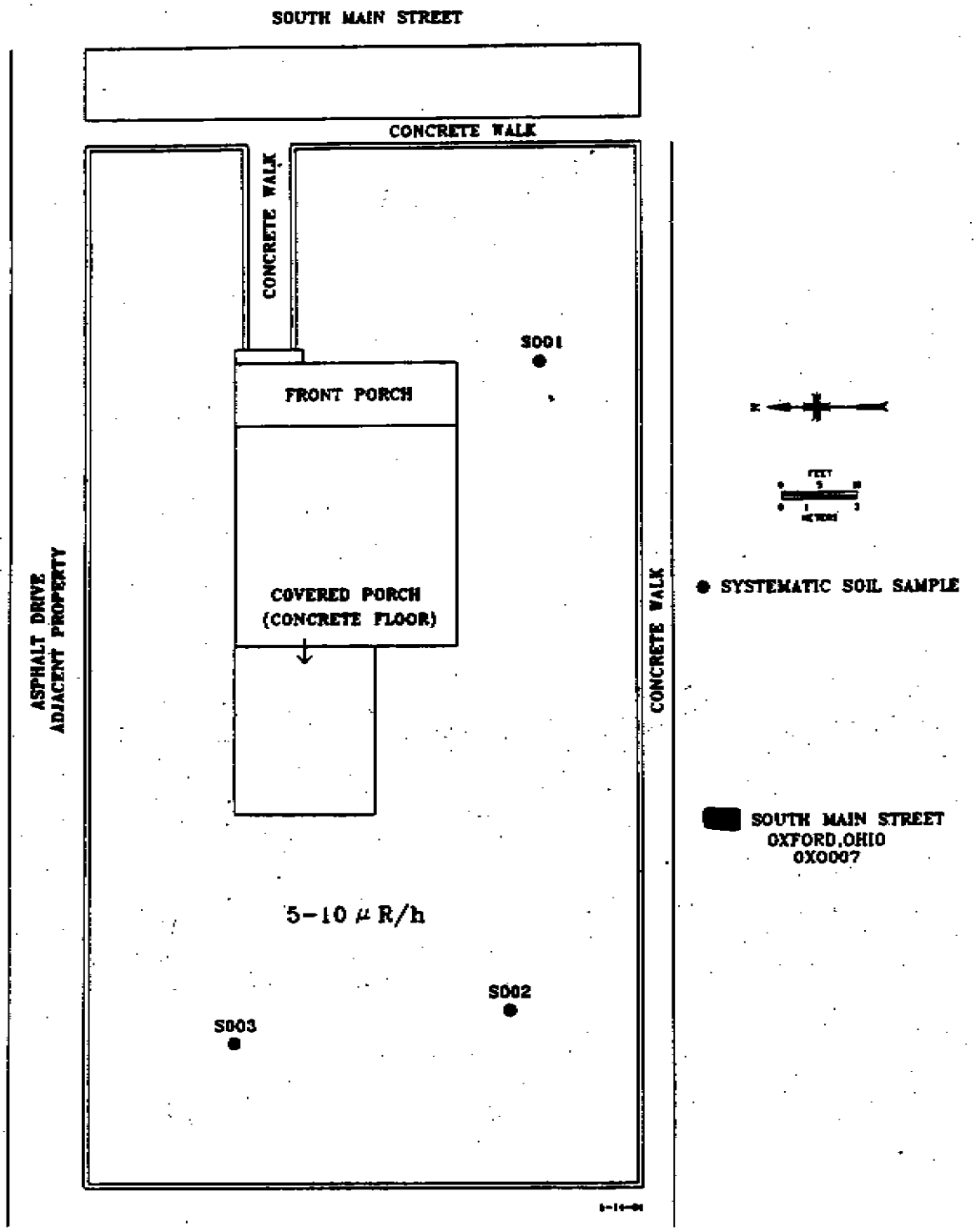

Fig. 1. Diagram of the property at [redacted] S. Main Street showing range of gamma exposure rates and locations of soil samples.

Table 1. Background radiation and ranges of radionuclide concentrations for Ohio

Type of radiation measurement or sample	Radiation level or radionuclide concentration
Average external gamma exposure rate at 1 m above the ground surface (μR/h)[a]	5
Range of external gamma exposure rates at 1 m above the ground surface (μR/h)[a]	3–11
Concentration range for radionuclides in surface soil (pCi/g)[b]	
^{226}Ra	0.8–2.5 ± 0.2
232Th	0.8–1.5 ± 0.2
^{238}U	0.8–2.2 ± 0.1

[a]Results of three measurements.

[b]Indicated counting error is at the 95% confidence level (± 2σ).

Source: T. E. Myrick, B. A. Berven, and F. F. Haywood, *State Background Radiation Levels: Results of Measurements Taken During 1975–1979*, ORNL/TM-7343, Martin Marietta Energy Systems, Inc., Oak Ridge Natl. Lab., November 1981.

114121

Table 2. Concentrations of radionuclides in systematic soil samples collected outdoors at [redacted] South Main Street, Oxford, Ohio

Sample ID[a]	Depth (cm)	Radionuclide concentration (pCi/g)[b]		
		^{238}U	^{226}Ra	^{232}Th
S1	0-15	1.9 ± 0.46	1.0 ± 0.09	0.98 ± 0.13
S2	0-15	1.5 ± 0.69	1.0 ± 0.09	1.1 ± 0.16
S3	0-15	1.3 ± 0.3	1.0 ± 0.11	1.1 ± 0.21

[a]Locations are shown on Fig. 1.

[b]Indicated counting error is at the 95% confidence level (± 2σ).

114131

Department of Energy
Washington, DC 20585

NOV 2 - 1990

[redacted]
Oxford, Ohio 45056

Dear [redacted]

At your request, the U.S. Department of Energy (DOE) authorized Oak Ridge National Laboratory (ORNL) to perform a radiological survey of your property at [redacted] South Main Street in Oxford, Ohio. I have received the enclosed letter report from ORNL, and I am forwarding it to you for your information and use.

During the course of the survey, normal background levels of radiation were found, and no elevated levels were identified. Several soil samples were collected and are now being analyzed. The results of the analysis and a letter report of the results will be provided to you when they are available.

I appreciate very much your interest in DOE. If you have any questions, please call me at 301-903-8149.

Sincerely,

W. Alexander Williams

W. Alexander Williams, PhD
Designation and Certification Manager
Division of Off-Site Programs
Office of Eastern Area Programs
Office of Environmental Restoration

Enclosure

cc:
D. Adler, OR
M. Murray, ORNL

~~111026~~
114131

OAK RIDGE NATIONAL LABORATORY
MANAGED BY MARTIN MARIETTA ENERGY SYSTEMS, INC.
FOR THE U.S. DEPARTMENT OF ENERGY

POST OFFICE BOX 2008
OAK RIDGE, TENNESSEE 37831

November 19, 1993

Dr. W. A. Williams
Department of Energy
Trevion II Building
EM-421
Washington, D. C. 20585-0002

Dear Dr. Williams:

Radiological Survey of a Property (OXO007) in the Vicinity of the Former Alba Craft Facility, Oxford, Ohio

At the request of the property owner and with DOE concurrence, a team from the Oak Ridge National Laboratory (ORNL) conducted a radiological survey of the property at [redacted] South Main Street, Oxford, Ohio. The survey consisted of a walk-over scan using NaI detectors and collecting soil samples. The walk-over scan was completed on October 17, 1993, and did not detect any measurable radiation above normal background levels. Two soil samples were collected at each of three locations and are yet to be analyzed. The property owner was not available during the survey and therefore not informed of the results of the walk-over survey; however, the current residents were informed of the results. A letter report documenting the survey results will be issued after the analysis of the soil samples.

Please call me (615/574-5838) if you have any questions concerning this survey.

Sincerely,

Michael E. Murray
Measurement Applications
and Development Group

MEM

c: W. D. Cottrell
R. D. Foley
D. G. Adler, (DOE-ORO)

114131

OAK RIDGE NATIONAL LABORATORY
MANAGED BY MARTIN MARIETTA ENERGY SYSTEMS, INC.
FOR THE U.S. DEPARTMENT OF ENERGY

1994 JAN 24 AM 11:35

POST OFFICE BOX 2008
OAK RIDGE, TENNESSEE 37831

January 21, 1994

Dr. W. A. Williams
Department of Energy
Trevion II Building
EM-421
Washington, D.C. 20585-0002

Dear Dr. Williams:

Radiological Survey Results for [redacted] South Main Street, Oxford, Ohio (OXO008)

Please find attached the subject report. D. G. Adler, DOE-OR, is also being provided with this information. Please contact me (615/574-5838) if we may be of further assistance.

Sincerely,

Michael E. Murray

Michael E. Murray
Measurement Applications and Development

MEM:sh

cc: D. G. Adler, DOE-OR (2)
W. D. Cottrell
R. D. Foley
K. R. Kleinhans

114131

Results of the Radiological Survey at [redacted] South Main Street, Oxford, Ohio

At the request of the property owner and with the Department of Energy's (DOE) concurrence, a radiological survey was conducted in October, 1993, of the property at 613 South Main Street, Oxford, Ohio, by members of the Measurement Applications and Development Group (MAD) of Oak Ridge National Laboratory (ORNL). The survey was conducted to ensure that residual radioactive materials exceeding current DOE guidelines had not been redistributed from the facility to the private property.* The survey was limited to the outdoor areas of the property, and consisted of a walkover gamma scan using NaI detectors, and the collection of soil samples.

Gamma exposure rates ranged from 5 to 10 μR/h. Radiation levels measured on the property are comparable to typical background gamma exposure rates found in the general Ohio area (3–11 μR/h, Table 1).

One soil sample was collected irrespective of gamma exposure rates from each of three separate locations. Each surface sample was taken from the top 15 cm of soil. The samples were analyzed to determine concentrations of the radionuclides ^{226}Ra, ^{232}Th, and ^{238}U.

As detailed in Table 2, soil samples contained concentrations of ^{238}U ranging from 1.7 to 1.9 pCi/g. Concentrations of ^{226}Ra were 0.85 to 1.1 pCi/g, and ^{232}Th was found at concentrations ranging from 0.75 to 1.2 pCi/g. All values are comparable to typical background concentrations (Table 1).

The results of the radiological survey at [redacted] South Main Street, Oxford, Ohio, do not indicate the presence of any radioactive residuals that may have originated from Atomic Energy Commission (AEC)-related activities previously conducted during the 1950s at the nearby former Alba Craft Laboratory.

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*M. E. Murray, K. S. Brown, and R. A. Mathis, *Results of the Radiological Survey at the Former Alba Craft Laboratory Site Properties, Oxford, Ohio (OXO001)*, ORNL/RASA-92/14, Martin Marietta Energy Systems, Inc., Oak Ridge Natl. Lab., March 1993.

114131

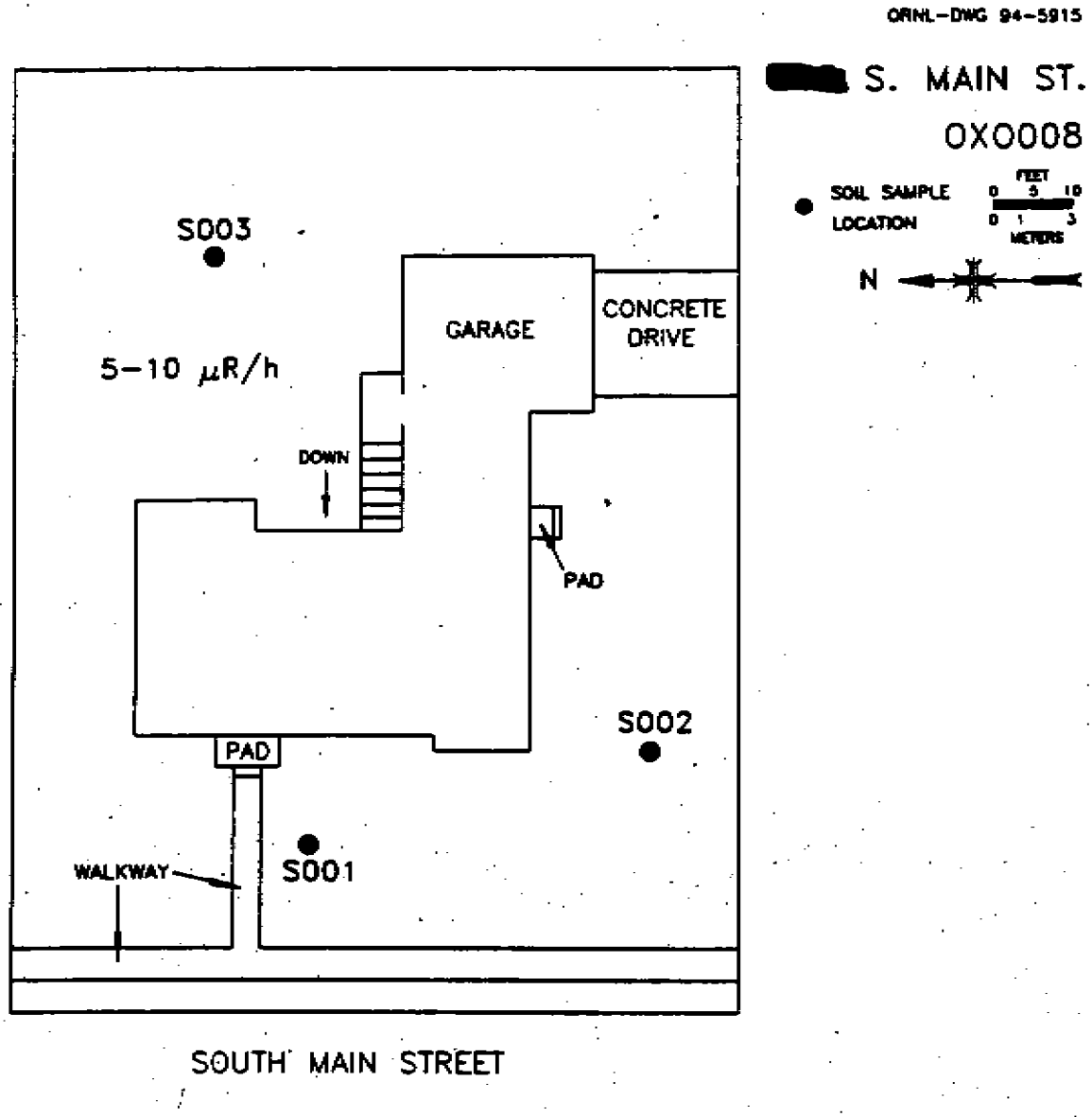

Fig. 1. Diagram of the property at [redacted] S. Main Street showing range of gamma exposure rates and locations of soil samples.

Table 1. Background radiation and ranges of radionuclide concentrations for Ohio

Type of radiation measurement or sample	Radiation level or radionuclide concentration
Average external gamma exposure rate at 1 m above the ground surface (μR/h)[a]	5
Range of external gamma exposure rates at 1 m above the ground surface (μR/h)[a]	3–11
Concentration range for radionuclides in surface soil (pCi/g)[b]	
^{226}Ra	0.8–2.5 ± 0.2
232Th	0.8–1.5 ± 0.2
^{238}U	0.8–2.2 ± 0.1

[a]Results of three measurements.

[b]Indicated counting error is at the 95% confidence level (± 2σ).

Source: T. E. Myrick, B. A. Berven, and F. F. Haywood, *State Background Radiation Levels: Results of Measurements Taken During 1975–1979*, ORNL/TM-7343, Martin Marietta Energy Systems, Inc., Oak Ridge Natl. Lab., November 1981.

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Table 2. Concentrations of radionuclides in soil samples collected outdoors at [redacted] South Main Street, Oxford, Ohio

Sample ID[a]	Depth (cm)	Radionuclide concentration (pCi/g)[b]		
		^{238}U	^{226}Ra	^{232}Th
S1	0-15	1.8 ± 0.40	0.85 ± 0.07	0.75 ± 0.11
S2	0-15	1.9 ± 0.63	1.1 ± 0.10	1.2 ± 0.20
S3	0-15	1.7 ± 0.37	1.1 ± 0.10	1.0 ± 0.16

[a]Locations are shown on Fig. 1.
[b]Indicated counting error is at the 95% confidence level (± 2σ).

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Department of Energy
Washington, DC 20585

NOV 24 1993

[redacted]
[redacted] South Main Street
Oxford, Ohio 45056

Dear [redacted]:

At your request, the U.S. Department of Energy (DOE) authorized Oak Ridge National Laboratory (ORNL) to perform a radiological survey of your property at [redacted] South Main Street in Oxford, Ohio. I have received the enclosed letter report from ORNL, and I am forwarding it to you for your information and use.

During the course of the survey, normal background levels of radiation were found, and no elevated levels were identified. Several soil samples were collected and are now being analyzed. The results of the analysis and a letter report of the results will be provided to you when they are available.

I appreciate very much your interest in DOE. If you have any questions, please call me at 301-903-8149.

Sincerely,

W. Alexander Williams, PhD
Designation and Certification Manager
Division of Off-Site Programs
Office of Eastern Area Programs
Office of Environmental Restoration

Enclosure

cc:
D. Adler, OR
M. Murray, ORNL

~~111026~~
114131

OAK RIDGE NATIONAL LABORATORY
MANAGED BY MARTIN MARIETTA ENERGY SYSTEMS, INC.
FOR THE U.S. DEPARTMENT OF ENERGY

POST OFFICE BOX 2008
OAK RIDGE, TENNESSEE 37831

November 19, 1993

Dr. W. A. Williams
Department of Energy
Trevion II Building
EM-421
Washington, D. C. 20585-0002

Dear Dr. Williams:

Radiological Survey of a Property (OXO008) in the Vicinity of the Former Alba Craft Facility, Oxford, Ohio

At the request of the property owner and with DOE concurrence, at team from the Oak Ridge National Laboratory (ORNL) conducted a radiological survey of the property at [redacted] South Main Street, Oxford, Ohio. The survey consisted of a walk-over scan using NaI detectors and collecting soil samples. The walk-over scan was completed on October 16, 1993, and did not detect any measurable radiation above normal background levels. On October 17, two soil samples were collected at each of three locations and are yet to be analyzed. The property owner was informed of the results of the walk-over survey. A letter report documenting the survey results will be issued after the analysis of the soil samples.

Please call me (615/574-5838) if you have any questions concerning this survey.

Sincerely,

Michael E. Murray

Michael E. Murray
Measurement Applications
and Development Group

MEM

c: W. D. Cottrell
R. D. Foley
D. G. Adler, (DOE-ORO)

~~103136~~ 114131

Department of Energy
Field Office, Oak Ridge
P.O. Box 2001
Oak Ridge, Tennessee 37831—8723

April 20, 1993

Mr. Jeff Schroer
[redacted]
c/o Oxford Real Estate
33 West Walnut Street
Oxford, Ohio 45056

Dear Mr. Schroer:

OXFORD SITE - TRANSMITTAL OF SURVEY REPORT

As requested, I'm transmitting a copy of the recently completed survey report for the Oxford Site. As you know, this site has been designated for cleanup by the Department of Energy's (DOE) Formerly Utilized Sites Remedial Action Program.

During the 1950's, this site was utilized for various machining activities being conducted in support of the federal government's early atomic energy and defense programs. As a result of these activities, the site now contains residual uranium contamination in excess of very conservative government cleanup guidelines. Most of this contamination is present as traces of uranium present on structural surfaces within the building located on site. Small isolated spots of contaminated soil have also been located outside of the building in areas immediately adjacent to the building.

I want to stress that while detectable levels of contamination are present in and immediately around the on site building, the presence of this contamination does not pose a significant health threat either to building occupants or to residents living on abutting properties. This conclusion is based on direct measurements of air quality and radiation levels within the areas occupied by site workers, both of which indicate that potential worker exposures are essentially at naturally occurring background levels.

As practical matter, the only significant potential for exposure at the site would be dependent upon physical disturbance of contaminated items followed by either ingestion or inhalation of significant quantities of contaminated material. As a precautionary measure, the building owner has been asked to coordinate with DOE prior to engaging in such activities.

Ultimately, the Oxford Site will be decontaminated and released for unrestricted use at no cost to the property owner. Until this effort is completed, I will be available to respond to any questions you may have concerning this matter.

114131
~~103138~~

If there is anything I can do to be of assistance, please feel free to contact me at (615) 576-9634.

Sincerely,

David G. Adler, Site Manager
Former Sites Restoration Division

Enclosure

~~103136~~ 114131

Department of Energy
Field Office, Oak Ridge
P.O. Box 2001
Oak Ridge, Tennessee 37831—8723

April 20, 1993

[redacted]
Oxford, Ohio 45056

Dear [redacted]:

OXFORD SITE - TRANSMITTAL OF SURVEY REPORT

As requested, I'm transmitting a copy of the recently completed survey report for the Oxford Site. As you know, this site has been designated for cleanup by the Department of Energy's (DOE) Formerly Utilized Sites Remedial Action Program.

During the 1950's, this site was utilized for various machining activities being conducted in support of the federal government's early atomic energy and defense programs. As a result of these activities, the site now contains residual uranium contamination in excess of very conservative government cleanup guidelines. Most of this contamination is present as traces of uranium present on structural surfaces within the building located on site. Small isolated spots of contaminated soil have also been located outside of the building in areas immediately adjacent to the building.

I want to stress that while detectable levels of contamination are present in and immediately around the on site building, the presence of this contamination does not pose a significant health threat either to building occupants or to residents living on abutting properties. This conclusion is based on direct measurements of air quality and radiation levels within the areas occupied by site workers, both of which indicate that potential worker exposures are essentially at naturally occurring background levels.

As practical matter, the only significant potential for exposure at the site would be dependent upon physical disturbance of contaminated items followed by either ingestion or inhalation of significant quantities of contaminated material. As a precautionary measure, the building owner has been asked to coordinate with DOE prior to engaging in such activities.

Ultimately, the Oxford Site will be decontaminated and released for unrestricted use at no cost to the property owner. Until this effort is completed, I will be available to respond to any questions you may have concerning this matter.

114131
~~103136~~

If there is anything I can do to be of assistance, please feel free to contact me at (615) 576-9634.

Sincerely,

David G. Adler, Site Manager
Former Sites Restoration Division

Enclosure

1-14-13.1

Department of Energy
Field Office, Oak Ridge
P.O. Box 2001
Oak Ridge, Tennessee 37831—8723

March 30, 1993

[redacted]
Oxford, Ohio 45046

Dear Mr. Wespiser and Mr. Shuette:

OXFORD SITE - RESULTS FROM ENVIRONMENTAL SURVEYS

Enclosed please find a copy of the Oak Ridge National Laboratory report summarizing results from environmental surveys recently conducted on your property. As you may know, this survey primarily focused on radiological conditions at the Oxford Site at 10-14 West Rose Avenue, Oxford, Ohio. Abutting properties were also surveyed.

Results of this survey indicate that residual uranium contamination exists in and around the building in quantities exceeding current DOE guidelines. This contamination poses little health hazard if left undisturbed, and would only present a hazard if significant volumes of contaminated material were either ingested or inhaled. However, because contamination does exceed current cleanup guidelines in isolated areas, the site has been designated for cleanup under the Department of Energy's Formerly Utilized Sites Remedial Action Program (FUSRAP). Ultimately, the site will be restored to conditions suitable for unrestricted use at no cost to property owners.

If you have any questions on this matter please feel free to contact me at (615)-576-9634

Sincerely,

David G. Adler, Site Manager
Former Sites Restoration Division

Enclosure

114131

OAK RIDGE NATIONAL LABORATORY
MANAGED BY MARTIN MARIETTA ENERGY SYSTEMS, INC.
FOR THE U.S. DEPARTMENT OF ENERGY

POST OFFICE BOX 2008
OAK RIDGE, TENNESSEE 37831

January 31, 1994

Dr. W. A. Williams
Department of Energy
Trevion II Building
EM-421
Washington, D.C. 20585-0002

Dear Dr. Williams:

Radiological Survey Results for [redacted] Linden Drive, Oxford, Ohio (OXO010)

Please find attached the subject report. D. G. Adler, DOE-OR, is also being provided with this information. Please contact me (615/574-5838) if we may be of further assistance.

Sincerely,

Michael E. Murray

Michael E. Murray
Measurement Applications and Development

MEM:sh

cc: D. G. Adler, DOE-OR (2)
W. D. Cottrell
R. D. Foley
K. R. Kleinhans

Results of the Radiological Survey at [redacted] Linden Drive, Oxford, Ohio

At the request of the property owner and with the Department of Energy's (DOE) concurrence, a radiological survey was conducted in October, 1993, of the property at [redacted] Linden Drive, Oxford, Ohio, by members of the Measurement Applications and Development Group (MAD) of Oak Ridge National Laboratory (ORNL). The survey was conducted to ensure that residual radioactive materials exceeding current DOE guidelines had not been redistributed from the facility to the private property.* The survey was limited to the outdoor areas of the property, and consisted of a walkover gamma scan using NaI detectors, and the collection of soil samples. At the owner's request, only the front yard was surveyed.

Gamma exposure rates ranged from 5 to 10 μR/h as shown on Fig. 1. Radiation levels measured on the property are comparable to typical background gamma exposure rates found in the general Ohio area (3–11 μR/h, Table 1).

One soil sample was collected irrespective of gamma exposure rates from each of two separate locations (Fig. 1). Each surface sample was taken from the top 15 cm of soil. The samples were analyzed to determine concentrations of the radionuclides ^{226}Ra, ^{232}Th, and ^{238}U.

As detailed in Table 2, soil samples contained concentrations of ^{238}U of 2.2 and 1.8 pCi/g. Concentrations of ^{226}Ra were 1.0 and 1.5 pCi/g, and ^{232}Th was found at concentrations of 0.94 and 1.2 pCi/g. All values are comparable to typical background concentrations (Table 1).

The results of the radiological survey at [redacted] Linden Drive, Oxford, Ohio, do not indicate the presence of any radioactive residuals that may have originated from Atomic Energy Commission (AEC)-related activities previously conducted during the 1950s at the nearby former Alba Craft Laboratory.

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*M. T. Murray, K. S. Brown, and R. A. Mathis, *Results of the Radiological Survey at the Former Alba Craft Laboratory Site Properties, Oxford, Ohio (OXO001)*, ORNL/RASA-92/14, Martin Marietta Energy Systems, Inc., Oak Ridge Natl. Lab., March 1993.

114131

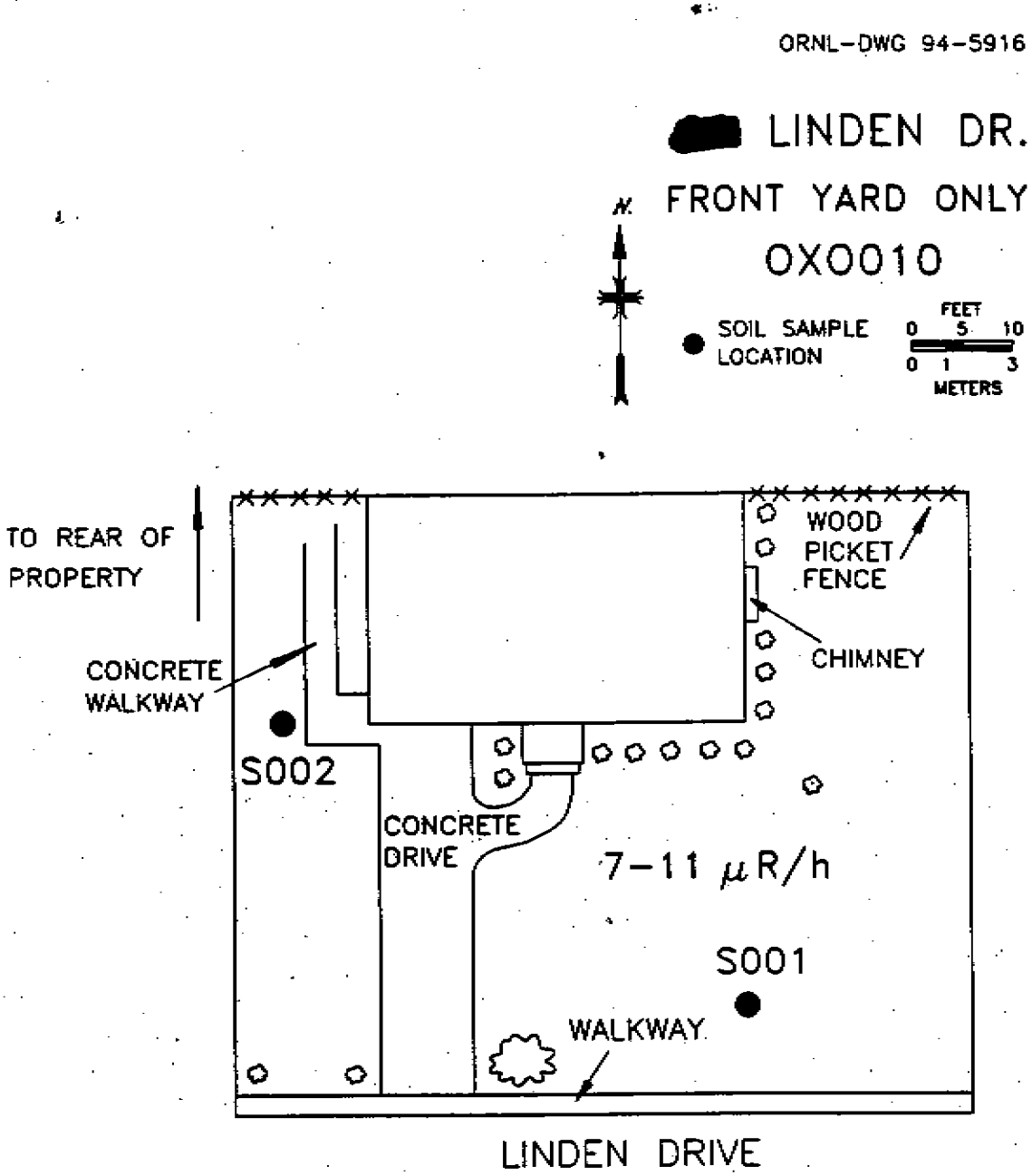

Fig. 1. Diagram of the property at [redacted] Linden Drive showing range of gamma exposure rates and locations of soil samples.

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Table 1. Background radiation levels and radionuclide concentrations for the general Oxford, Ohio, area

Type of radiation measurement or sample	Radiation level or radionuclide concentration
Average external gamma exposure rate at 1 m above the ground surface (μR/h)[a]	5
Range of external gamma exposure rates at 1 m above the ground surface (μR/h)[a]	3–11
Concentration range for radionuclides in surface soil (pCi/g)[b]	
^{226}Ra	0.8–2.5 ± 0.2
232Th	0.8–1.5 ± 0.2
^{238}U	0.8–2.2 ± 0.1

[a]Results of three measurements.
[b]Indicated counting error is at the 95% confidence level (± 2σ).

Source: T. E. Myrick, B. A. Berven, and F. F. Haywood, *State Background Radiation Levels: Results of Measurements Taken During 1975–1979*, ORNL/TM-7343, Martin Marietta Energy Systems, Inc., Oak Ridge Natl. Lab., November 1981.

114131

Table 2. Concentrations of radionuclides in soil samples collected outdoors at [redacted] Linden Drive, Oxford, Ohio

Sample ID [a]	Depth (cm)	Radionuclide concentration (pCi/g) [b]		
		^{238}U	^{226}Ra	^{232}Th
S1	0-15	2.2 ± 0.63	1.0 ± 0.08	0.94 ± 0.14
S2	0-15	1.8 ± 0.42	1.5 ± 0.10	1.2 ± 0.16

[a] Locations are shown on Fig. 1.

[b] Indicated counting error is at the 95% confidence level (± 2σ).

~~111108~~
114131

Department of Energy
Washington, DC 20585

NOV 24 199

[redacted]
[redacted] Linden Drive
Oxford, Ohio 45056

Dear [redacted]:

At your request, the U.S. Department of Energy (DOE) authorized Oak Ridge National Laboratory (ORNL) to perform a radiological survey of your property at [redacted] Linden Drive in Oxford, Ohio. I have received the enclosed letter report from ORNL, and I am forwarding it to you for your information and use.

During the course of the survey, normal background levels of radiation were found, and no elevated levels were identified. Several soil samples were collected and are now being analyzed. The results of the analysis and a letter report of the results will be provided to you when they are available.

I appreciate very much your interest in DOE. If you have any questions, please call me at 301-903-8149.

Sincerely,

W. Alexander Williams, PhD
Designation and Certification Manager
Division of Off-Site Programs
Office of Eastern Area Programs
Office of Environmental Restoration

Enclosure

cc:
D. Adler, OR
M. Murray, ORNL

~~111026~~ 114131

OAK RIDGE NATIONAL LABORATORY
MANAGED BY MARTIN MARIETTA ENERGY SYSTEMS, INC.
FOR THE U.S. DEPARTMENT OF ENERGY

POST OFFICE BOX 2008
OAK RIDGE, TENNESSEE 37831

November 19, 1993

Dr. W. A. Williams
Department of Energy
Trevion II Building
EM-421
Washington, D. C. 20585-0002

Dear Dr. Williams:

Radiological Survey of a Property (OXO010) in the Vicinity of the Former Alba Craft Facility, Oxford, Ohio

At the request of the property owner and with DOE concurrence, at team from the Oak Ridge National Laboratory (ORNL) conducted a radiological survey of the property at [redacted] Linden Drive, Oxford, Ohio. The owner requested only the front yard be surveyed. The survey consisted of a walk-over scan using NaI detectors and collecting soil samples. The walk-over scan was completed on October 17, 1993, and did not detect any measurable radiation above normal background levels. Two soil samples were collected at each of two locations and are yet to be analyzed. The property owner was informed of the results of the walk-over survey. A letter report documenting the survey results will be issued after the analysis of the soil samples.

Please call me (615/574-5838) if you have any questions concerning this survey.

Sincerely,

ME Murray

M. E. Murray
Measurement Applications
and Development Group

MEM:ec

c: R. D. Foley
W. D. Cottrell
D. G. Adler, (DOE-ORO)

114131

OAK RIDGE NATIONAL LABORATORY
MANAGED BY MARTIN MARIETTA ENERGY SYSTEMS, INC.
FOR THE U.S. DEPARTMENT OF ENERGY

POST OFFICE BOX 2008
OAK RIDGE, TENNESSEE 37831

February 2, 1994

Dr. W. A. Williams
Department of Energy
Trevion II Building
EM-421
Washington, D.C. 20585-0002

Dear Dr. Williams:

Radiological Survey Results for [redacted] Linden Drive, Oxford, Ohio (OXO011)

Please find attached the subject report. D. G. Adler, DOE-OR, is also being provided with this information. Please contact me (615/574-5838) if we may be of further assistance.

Sincerely,

Michael E. Murray

Michael E. Murray
Measurement Applications and Development

MEM:sh

cc: D. G. Adler, DOE-OR (2)
W. D. Cottrell
R. D. Foley
K. R. Kleinhans

114131

Results of the Radiological Survey at [redacted] Linden Drive, Oxford, Ohio

At the request of the property owner and with the Department of Energy's (DOE) concurrence, a radiological survey was conducted in October, 1993, of the property at [redacted] Linden Drive, Oxford, Ohio, by members of the Measurement Applications and Development Group (MAD) of Oak Ridge National Laboratory (ORNL). The survey was conducted to ensure that residual radioactive materials exceeding current DOE guidelines had not been redistributed from the facility to the private property.* The survey was limited to the outdoor areas of the property, and consisted of a walkover gamma scan using NaI detectors, and the collection of soil samples.

Gamma exposure rates ranged from 6 to 9 μR/h as shown on Fig. 1. Radiation levels measured on the property are comparable to typical background gamma exposure rates found in Ohio (3–11 μR/h, Table 1).

One soil sample was collected irrespective of gamma exposure rates from each of three separate locations (Fig. 1). Each surface sample was taken from the top 15 cm of soil. The samples were analyzed to determine concentrations of the radionuclides ^{226}Ra, ^{232}Th, and ^{238}U.

As detailed in Table 2, soil samples contained concentrations of ^{238}U ranging from 0.74 to 1.3 pCi/g. Concentrations of ^{226}Ra were 1.2 to 1.3 pCi/g, and ^{232}Th was found at concentrations ranging from 0.97 to 1.0 pCi/g. All values are comparable to typical background concentrations (Table 1).

The results of the radiological survey at [redacted] Linden Drive, Oxford, Ohio, do not indicate the presence of any radioactive residuals that may have originated from Atomic Energy Commission (AEC)-related activities previously conducted during the 1950s at the nearby former Alba Craft Laboratory.

---

*M. E. Murray, K. S. Brown, and R. A. Mathis, *Results of the Radiological Survey at the Former Alba Craft Laboratory Site Properties, Oxford, Ohio (OX0001)*, ORNL/RASA-92/14, Martin Marietta Energy Systems, Inc., Oak Ridge Natl. Lab., March 1993.

114131

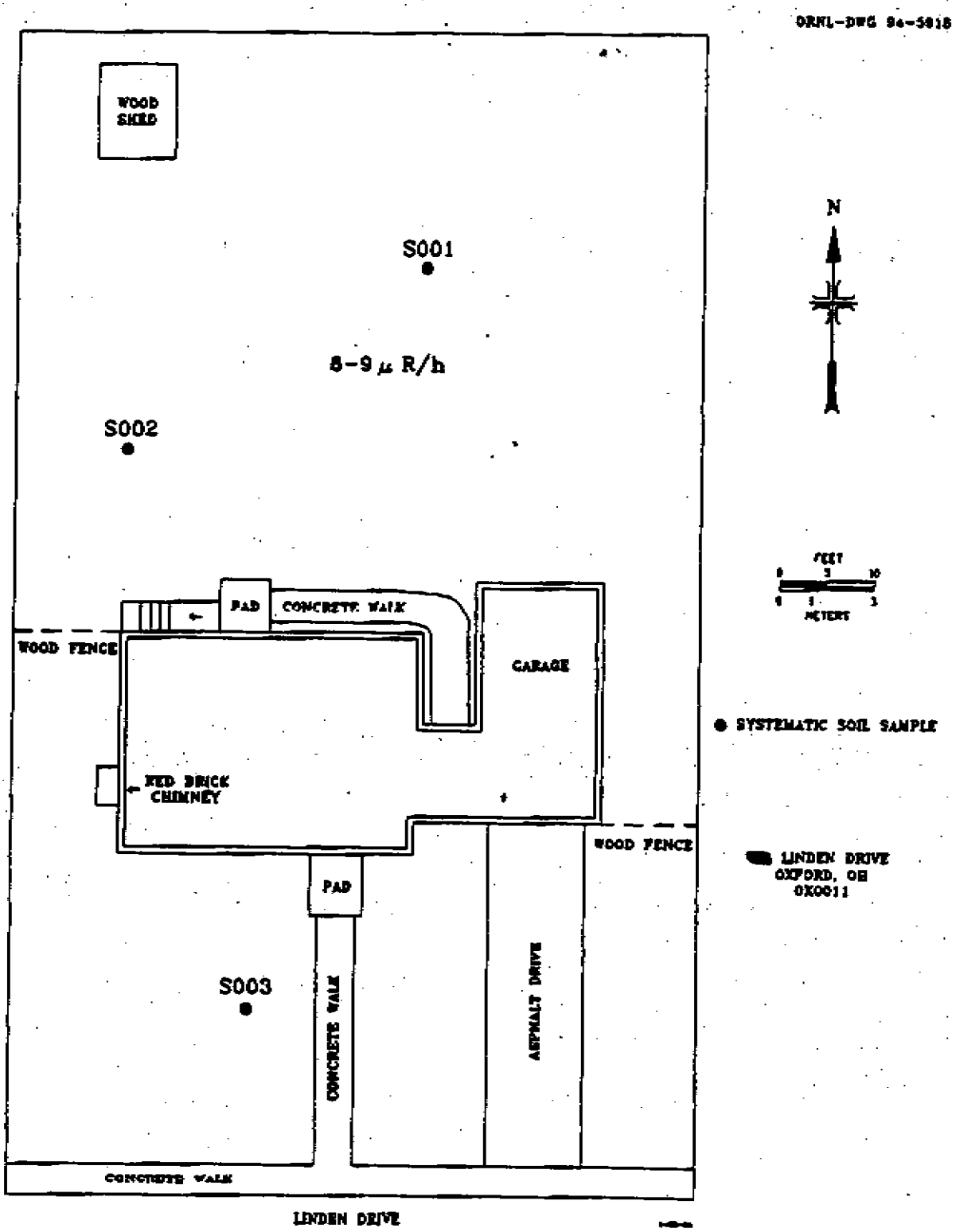

Fig. 1. Diagram of the property at [redacted] showing range of gamma exposure rates and locations of soil samples.

114131

Table 1. Background radiation and ranges of radionuclide concentrations for Ohio

Type of radiation measurement or sample	Radiation level or radionuclide concentration
Average external gamma exposure rate at 1 m above the ground surface (μR/h)[a]	5
Range of external gamma exposure rates at 1 m above the ground surface (μR/h)[a]	3–11
Concentration range for radionuclides in surface soil (pCi/g)[b]	
^{226}Ra	0.8–2.5 ± 0.2
^{232}Th	0.8–1.5 ± 0.2
^{238}U	0.8–2.2 ± 0.1

[a]Results of three measurements.
[b]Indicated counting error is at the 95% confidence level (± 2σ).

Source: T. E. Myrick, B. A. Berven, and F. F. Haywood, *State Background Radiation Levels: Results of Measurements Taken During 1975–1979*, ORNL/TM-7343, Martin Marietta Energy Systems, Inc., Oak Ridge Natl. Lab., November 1981.

114131

Table 2. Concentrations of radionuclides in soil samples collected outdoors at [redacted], Oxford, Ohio

Sample ID[a]	Depth (cm)	Radionuclide concentration (pCi/g)[b]		
		^{238}U	^{226}Ra	^{232}Th
S1	0-15	0.74 ± 0.49	1.3 ± 0.11	1.0 ± 0.14
S2	0-15	0.84 ± 0.52	1.2 ± 0.08	0.97 ± 0.11
S3	0-15	1.3 ± 0.55	1.3 ± 0.11	0.99 ± 0.20

[a]Locations are shown on Fig. 1.
[b]Indicated counting error is at the 95% confidence level (± 2σ).

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Department of Energy
Washington, DC 20585

[illegible]

[redacted]
[redacted] Linden Drive
Oxford, Ohio 45056

Dear [redacted]:

At your request, the U.S. Department of Energy (DOE) authorized Oak Ridge National Laboratory (ORNL) to perform a radiological survey of your property at [redacted] Linden Drive in Oxford, Ohio. I have received the enclosed letter report from ORNL, and I am forwarding it to you for your information and use.

During the course of the survey, normal background levels of radiation were found, and no elevated levels were identified. Several soil samples were collected and are now being analyzed. The results of the analysis and a letter report of the results will be provided to you when they are available.

I appreciate very much your interest in DOE. If you have any questions, please call me at 301-903-8149.

Sincerely,

W. Alexander Williams, PhD
Designation and Certification Manager
Division of Off-Site Programs
Office of Eastern Area Programs
Office of Environmental Restoration

Enclosure

cc:
D. Adler, OR
M. Murray, ORNL

~~111026~~
114131

OAK RIDGE NATIONAL LABORATORY
MANAGED BY MARTIN MARIETTA ENERGY SYSTEMS, INC.
FOR THE U.S. DEPARTMENT OF ENERGY

POST OFFICE BOX 2008
OAK RIDGE, TENNESSEE 37831

November 19, 1993

Dr. W. A. Williams
Department of Energy
Trevion II Building
EM-421
Washington, D. C. 20585-0002

Dear Dr. Williams:

Radiological Survey of a Property (OXO011) in the Vicinity of the Former Alba Craft Facility, Oxford, Ohio

At the request of the property owner and with DOE concurrence, at team from the Oak Ridge National Laboratory (ORNL) conducted a radiological survey of the property at [redacted] Linden Drive, Oxford, Ohio. The survey consisted of a walk-over scan using NaI detectors and collecting soil samples. The walk-over scan was completed on October 17, 1993, and did not detect any measurable radiation above normal background levels. Two soil samples were collected at each of three locations and are yet to be analyzed. The property owner was informed of the results of the walk-over survey. A letter report documenting the survey results will be issued after the analysis of the soil samples.

Please call me (615/574-5838) if you have any questions concerning this survey.

Sincerely,

Michael E. Murray

Michael E. Murray
Measurement Applications
and Development Group

MEM

c: W. D. Cottrell
R. D. Foley
D. G. Adler, (DOE-ORO)

(5-89)
FO (07-90)

United States Government

114131

Department of Energy

memorandum

DATE: FEB 16 1994

1994 FEB 23 AM 9:14

REPLY TO ATTN OF: EM-421 (W. A. Williams, 903-8149)

SUBJECT: Oxford Municipal Landfill and Adjacent Areas

TO: L. Price, OR

Some investigational studies of the Oxford Municipal Landfill and the adjacent areas have been conducted by Oak Ridge National Laboratory (ORNL) to determine whether this area should be included in the planned remedial action in Oxford. Based on these investigations and the available data, these areas should not be included in the planned remedial action, and the property is hereby eliminated from further consideration under the Formerly Utilized Sites Remedial Action Program (FUSRAP). A letter report from ORNL addresses various investigations and measurements at the landfill and is attached for your information.

Potential Sources of Uranium in the Landfill:

There are four possible sources of uranium reaching the landfill from the former Alba Craft Laboratory: (1) trash or refuse from the site during the operations in the 1950s; (2) roofing material, when (and if) the facility was re-roofed after operations; (3) soil and debris during construction activities during the summer of 1992; and (4) soil removed during the installation of a fire hydrant during July of 1992.

During the operational period, every effort was made to account for uranium to the fraction of a pound. Cuttings, floor sweepings, and other wastes were returned to the Atomic Energy Commission for recycling of uranium. Discrepancies in the uranium inventory led to security investigations to determine the source of the losses. As a result, it is very unlikely that significant quantities of uranium were shipped to the landfill (or elsewhere) from the former Alba Craft Laboratory.

It is also postulated that contaminated roof material from the site may have been disposed in the landfill. Although the roof may have been replaced, there is no evidence of airborne uranium near the site, and the uranium concentrations near the site are not consistent with aerial dispersion. Therefore, it is very unlikely that significant quantities of uranium would have been shipped to the landfill in roofing material.

During the summer of 1992 (contrary to Department of Energy (DOE) recommendations), some construction activities were conducted at the site. The excavated concrete and some of the debris were allegedly taken to the landfill. A tank and some soil were allegedly excavated and relocated elsewhere. The tank has been located and has background radiation levels. One piece of the excavated concrete was located at the former Alba Craft Laboratory site and had radiation levels in excess of the applicable guidelines. An effort to identify the location of similar materials was unsuccessful. Although some of the excavated materials were contaminated

and are alleged to have been placed in the landfill, their location is not known and cannot be readily determined. However, based on the observed concentrations in other outside and undisturbed areas at the site, it is unlikely that significant quantities of uranium were involved.

In July of 1992, a fire hydrant was installed near the site. Although there is some residual uranium in the general direction of the water line, it is very doubtful that any of excavated soil was contaminated. Although levels as high as 730 picoCuries per gram were identified 10 to 15 feet away from the excavation, the soil surface on either side of the excavation were scanned and did not show any elevated radiation levels. It is also likely that most of the excavated soil was used to backfill the water line excavation, and, as a result, little material (contaminated or otherwise) would likely have been taken to the landfill. Thus, it can be concluded that there is little likelihood for significant quantities of uranium being contained in any material which might have reached the landfill from this source.

Survey Issues:

It is very difficult, as a practical matter, to locate trace concentrations of uranium buried in a landfill. Uranium emits very low levels of gamma radiation, and these levels cannot be detected on the surface unless the concentration is over 30 picoCuries per gram of U-238. For buried uranium, the detection level is even higher because of the shielding of the overlying soil. Thus, even a very detailed walkover survey of the landfill would not locate uranium except in excess of the levels given above. The average soil contamination levels at the Alba Craft Laboratory site is well below these levels.

Regulatory Issues:

The appropriate regulatory limits for use and transfer of uranium without a nuclear materials license, as established by the U.S. Nuclear Regulatory Commission, is 15 pounds at any one time, and no more than 150 pounds per year (See 10 CFR 40.22(a)).

The appropriate reportable quantity (RQ) for uranium, as established by the U.S. Environmental Protection Agency under the National Contingency Plan, is 100 pounds as uranyl nitrate (See 40 CFR 302.2). A higher RQ has also been established based on radioactivity (See 40 CFR 302.4, Appendix B). However, the higher limit is superseded by the lower one (See footnote "&" to Appendix B of 40 CFR 302.4).

The specific activity of uranium-238 is 330,000 picoCuries per gram. Thus one pound of uranium would have 150 million picoCuries (330,000 picoCuries per gram times 454 grams per pound). The license limit of 15 pounds is equivalent to 2.2 billion picoCuries, and the RQ is equivalent to 15 billion picoCuries.

The highest concentration of uranium in the soil at the Alba Craft Laboratory site is 3,300 picoCuries per gram. The highest level measured

inside the building was 100,000 picoCuries per gram, in a very small sample removed from an expansion joint in the floor. This value, however, is not typical of the site. Based on the existing site data, it is very unlikely that any materials shipped from the site exceeded the applicable regulatory limits. Thus, further action is not necessary as a regulatory matter.

Risk Issues:

It is important to examine the potential pathways for exposure to uranium which may be present in the landfill. These include direct exposure to gamma radiation, inhalation of contaminated dust, and possible contamination of ground water by the leaching of uranium.

As discussed above, uranium emits only low levels of gamma radiation. The gamma radiation from uranium is detectable only when the uranium concentration is well in excess of background levels, and the levels were not detected during the walkover of the landfill.

For inhalation of contaminated dust, it is unlikely that there will be any exposure unless the contamination is directly on the surface and the wind blows the contaminated dust into the air. For materials buried in a landfill, this resuspension into air is quite unlikely.

There is an insufficient inventory of uranium at the site (or the landfill, for that matter) to cause significant ground-water pollution. The level of risk is governed by the total inventory of uranium. The proposed drinking water regulations for uranium are 30 picoCuries per liter, total uranium. If the household water usage is assumed to be 200 liters per day, the amount of uranium required to contaminate a household water supply up to the proposed limit is 3,000 picoCuries of uranium-238 per day. The inventory required to pollute a community water supply is extraordinarily large and well in excess of the inventory at the Alba Craft Laboratory site or elsewhere in Oxford.

Several dose calculations were performed using the RESidual RADioactivity code for 10 cubic meters of soil and a natural uranium in soil with 50 picoCuries per gram of uranium-238, 50 picoCuries per gram of uranium-234, and 2.3 picoCuries per gram of uranium-235. With no cover, the maximum exposure is less than six millirem per year from inhalation of contaminated dust. With a one-meter cover on the soil and no erosion, the maximum dose occurs after one thousand years and is less than five millirem per year; the predominant pathway is use of an on-site well for drinking water. Thus, even with an assumed inventory of uranium of over a billion picoCuries in the landfill, a conservative estimation of dose poses no significant risk.

It is also of value to compare possible disposal of uranium in the landfill with naturally occurring uranium sources. Uranium concentrations in rock commonly range from 0 to 10 picoCuries of uranium-238 per gram. Phosphate rock is even more elevated, and since phosphate rock is used in fertilizer production, the level of uranium in fertilizer chemicals is

also elevated. The uranium-238 concentrations in phosphate fertilizer chemicals have been measured in the range of 20-30 picoCuries per gram. These levels are higher than the average concentration of uranium in soil near the site.

Summary:

Based on the above considerations, there is no significant risk from whatever uranium may be present in the landfill. Based on the above considerations, further investigation is not necessary and the site is eliminated from further consideration.

James W. Wagoner II
Director
Division of Off-Site Programs
Office of Eastern Area Programs
Office of Environmental Restoration

Attachment

cc:
M. Murray, ORNL
D. Adler, OR

~~112675~~
114131

OAK RIDGE NATIONAL LABORATORY
MANAGED BY MARTIN MARIETTA ENERGY SYSTEMS, INC.
FOR THE U.S. DEPARTMENT OF ENERGY

POST OFFICE BOX 2008
OAK RIDGE, TENNESSEE 37831

1994 JAN 24 AM 9:01

January 20, 1994

Dr. W. A. Williams
Department of Energy
Trevion II Building
EM-421
Washington, D.C. 20585-0002

Dear Dr. Williams:

Summary of Work and Information Concerning the Municipal Landfill in Oxford, Ohio

At the request of the City of Oxford and with your concurrence, the Measurement Applications and Development Group of the Oak Ridge National Laboratory (ORNL) conducted limited investigations into the possibility of uranium residuals in the Oxford Municipal landfill resulting from the work at the former Alba Craft facility. This letter is to inform you of the following: (1) the possible means by which uranium may have been transported from the Alba Craft facility to the landfill; (2) the work that has been conducted by ORNL; and (3) recommendations for closure of this issue.

The most likely mechanisms for uranium transport to the landfill are: (1) floor sweepings and very slightly contaminated industrial waste from the facility during its operation; (2) the original roof material which was replaced after the facility ceased uranium operations; (3) demolition debris removed from the facility during the summer of 1992; and (4) slightly contaminated soil removed during the installation of a fire hydrant also during the summer of 1992.

The industrial waste from the Alba Craft facility during the years of uranium operations likely contained trace quantities of uranium; however, a uranium inventory report by the Atomic Energy Commission conducted in September of 1955 stated "It is our opinion that the quantitative control exercised by the Alba Craft Laboratory, Inc., over SS [Source and Special] materials entrusted to it is adequate, conforms to AEC regulations, and is appropriate for their dollar value..." which should indicate the quantity of uranium disposed in the landfill is minimal.

Sometime (possibly late 1970s) after the uranium operations had long ceased, the roof of the Alba Craft building was replaced. In our original survey report (ORNL/RASA-92/14), we verified the existence of slightly contaminated spots along the masonry part of the roof structure. Also, we examined the only roof vent, which was not in operation and was disassembled, and found no contamination. Aerial deposition on the removed roof material would not be expected to be significant because the soil analyses in the surrounding properties did not show concentrations of uranium consistent with aerial deposition. Therefore, the disposed roof material (possibly in the landfill) could only have minimal contamination.

During the summer of 1992, renovations at the Alba Craft facility caused the removal of concrete debris (maybe as much as 2000 ft^2 by 4 inches thick) and an unknown amount of base material and soil from the site to the landfill. Pieces of concrete debris remaining at the site were examined, and contaminated spots were found on the underside exceeding the DOE guidelines. The contractor who transported the debris to the landfill was contacted as to the amount of material and where he dumped it at the landfill. Arrangements were made to meet him at the landfill on December 16, 1993, to look for the Alba Craft debris. Once at the landfill, the area where he remembered dumping the debris had significantly changed, and we were unable to find or

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distinguish any of the Alba Craft debris. Radiation survey instruments were used to check concrete debris resembling the material he remembered hauling; however, most of the debris checked looked more like old sidewalks. The contractor also removed a buried fuel oil tank which was surveyed for residual contamination, and no contamination was found indicating the soil had very little (if any) residual uranium.

Also during the summer of 1992, the City of Oxford installed a fire hydrant on West Rose Avenue on the north side of the street slightly west of the Alba Craft building. The maximum uranium concentration anywhere near the water line installation was found to be 730 pCi/g with more typical values between 1 to 90 pCi/g. The upper edge of the trench was surveyed during the July 1992 survey, and only background radiation was detected. Probably very little soil/gravel was actually hauled to the landfill since most of it was returned to the pipeline ditch as fill material. The location of any of this material in the landfill is not known.

On each of our visits to the landfill, portable radiation survey instruments were used to assess the areas we walked over. While not intending to be thorough surveys, elevated radiation areas were not found during the visits. A pressurized ion chamber was used to accurately measure the gamma exposure rate at two locations--groundwater monitoring TB-1 and grid point N553,000 E1,367,100. Both measured values were between 8 and 9 μR/h, typical of normal background radiation for the area. On December 17, 1993, a water sample was collected from monitoring well TB-1 with the assistance of the Oxford City services personnel. At the time, the groundwater level was approximately 15 feet below the ground surface. The analysis of the groundwater found 7.02 * 10^{-5} pCi/ml ^{238}U or 2.6 * 10^{-3} Bq/l.

Because the Talawanda High School football field may rest over a section of the old landfill, a walkover scan was conducted, and measurements were made with a pressurized ion chamber. With the exception of one small area, radiation levels were typical background radiation. The one area slightly above background was at the south end of the running track and appeared to be cinders commonly used for track surfaces. The laboratory analysis gave ^{226}Ra, ^{232}Th, and ^{238}U concentrations of 4.0, 3.5, and 3.2 pCi/g, respectively. These values are typical concentrations of nuclides in cinders and ashes.

Considering that the material removed from the Alba Craft site was subsurface, any amount of uranium present should be quite limited, and considering that the debris' current location is not exactly known, a typical radiological survey most likely would not be able to detect any residual material. Please call R. D. Foley or me if there are any questions or comments regarding ORNL's work in the Oxford area.

Sincerely,

Michael E. Murray

Michael E. Murray
Measurement Applications and Development

MEM:sh

cc: D. G. Adler, DOE-OR
R. D. Foley

~~111100~~ 7/4/31

Department of Energy
Washington, DC 20585

NOV 24 1993

Mr. James C. Collard
City Manager, City of Oxford
Municipal Building
101 East High Street
Oxford, Ohio 45056-1887

Dear Mr. Collard:

At your request, the U.S. Department of Energy (DOE) authorized Oak Ridge National Laboratory (ORNL) to perform a very brief radiological survey of the Talawanda High School football field and the adjacent municipal landfill. I have received the enclosed letter report from ORNL, and I am forwarding it to you for your information and use.

During the course of the survey, normal background levels of radiation were found, and no elevated levels were identified excepting one area near the southend of the football field. This area exhibited elevated gamma radiation levels in some cinders; an initial qualitative analysis of the cinders indicates that the source of the radiation is naturally occurring radioactive elements in the cinders. A more detailed analysis is in progress. The results of the analysis and a letter report of the results will be provided to you when they are available.

I appreciate very much your interest in DOE. If you have any questions, please call me at 301-903-8149.

Sincerely,

W. Alexander Williams, PhD
Designation and Certification Manager
Division of Off-Site Programs
Office of Eastern Area Programs
Office of Environmental Restoration

Enclosure

cc:
D. Adler, OR
M. Murray, ORNL

~~H1026~~
114131

OAK RIDGE NATIONAL LABORATORY
MANAGED BY MARTIN MARIETTA ENERGY SYSTEMS, INC.
FOR THE U.S. DEPARTMENT OF ENERGY

POST OFFICE BOX 2008
OAK RIDGE, TENNESSEE 37831

November 19, 1993

Dr. W. A. Williams
Department of Energy
Trevion II Building
EM-421
Washington, D. C. 20585-0002

Dear Dr. Williams:

Radiological Survey of a Property (OXO012) in the Vicinity of the Former Alba Craft Facility, Oxford, Ohio

At the request of the City of Oxford and with DOE concurrence, at team from the Oak Ridge National Laboratory (ORNL) conducted a very brief radiological survey of the Talawanda High School football and the municipal landfill, Oxford, Ohio. The survey consisted of a walk-over scan using NaI detectors and time integrated pressurized ion chamber (PIC) measurements at the football field and PIC measurements only at the landfill. The walk-over scan was completed on October 17, 1993, and did not detect any measurable radiation above normal background levels except for a very small area at the south end of the football field where a cinder-like material was found. The soil surface exposure rate in that particular area was about 40% above normal background radiation but was due to the concentration of naturally occurring radioactive materials in cinders, which was verified by gamma spectroscopy. One sample was collected and will be subjected to additional analyses. A letter report documenting the survey results will be issued (only if requested) after the analysis of the soil samples.

Please call me (615/574-5838) if you have any questions concerning this survey.

Sincerely,

Michael E. Murray
Measurement Applications
and Development Group

MEM

c: W. D. Cottrell
R. D. Foley
D. G. Adler, (DOE-ORO)

114131

OAK RIDGE NATIONAL LABORATORY
MANAGED BY MARTIN MARIETTA ENERGY SYSTEMS, INC.
FOR THE U.S. DEPARTMENT OF ENERGY

POST OFFICE BOX 2008
OAK RIDGE, TENNESSEE 37831

January 31, 1994

Dr. W. A. Williams
Department of Energy
Trevion II Building
EM-421
Washington, D.C. 20585-0002

Dear Dr. Williams:

Radiological Survey Results for Stewart Elementary School, Oxford, Ohio (OXO009)

Please find attached the subject report. D. G. Adler, DOE-OR, is also being provided with this information. Please contact me (615/574-5838) if we may be of further assistance.

Sincerely,

Michael E. Murray
Measurement Applications and Development

MEM:sh

cc: D. G. Adler, DOE-OR (2)
W. D. Cottrell
R. D. Foley
K. R. Kleinhans

114131

Results of the Radiological Survey at Stewart Elementary School, Oxford, Ohio

At the request of the City of Oxford, Ohio, and with the Department of Energy's (DOE) concurrence, a radiological survey was conducted in October, 1993, of the Stewart Elementary School property, Oxford, Ohio, by members of the Measurement Applications and Development Group (MAD) of Oak Ridge National Laboratory (ORNL). The survey was conducted to ensure that residual radioactive materials exceeding current DOE guidelines had not been redistributed from the facility to the private property.* The survey was limited to the outdoor areas of the property, and consisted of a walkover gamma scan using NaI detectors, and the collection of soil samples.

Gamma exposure rates on the property generally ranged from 5 to 12 μR/h as shown on Fig. 1. These values are comparable to typical background gamma exposure rates found in the general Ohio area (3–11 μR/h, Table 1). Measured gamma exposure rates were 18 to 20 μR/h on contact with the brick building. These slightly elevated levels are frequently found in association with materials such as brick or concrete that inherently contain small, but concentrated amounts of naturally radioactive materials.

One surface soil sample was collected from each of 15 separate locations (samples S1A through S15A) from the top 15 cm of soil irrespective of gamma exposure rates. Locations of these samples are shown on Fig. 1. A subsurface soil sample was collected from each of 7 of those locations from beneath the surface sample at a depth of 15 to 30 cm (S1B through S7B). The samples were analyzed to determine concentrations of the radionuclides ^{226}Ra, ^{232}Th, and ^{238}U.

As detailed in Table 2, soil samples contained concentrations of ^{238}U ranging from 1.2 to 1.0 pCi/g. Concentrations of ^{226}Ra were 0.73 to 1.4 pCi/g, and ^{232}Th was found at concentrations ranging from 0.46 to 1.3 pCi/g. All values are comparable to typical background concentrations shown in Table 1.

The results of the radiological survey at Stewart Elementary School, Oxford, Ohio, do not indicate the presence of any radioactive residuals that may have originated from Atomic Energy Commission (AEC)-related activities previously conducted during the 1950s at the nearby former Alba Craft Laboratory.

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*M. E. Murray, K. S. Brown, and R. A. Mathis, *Results of the Radiological Survey at the Former Alba Craft Laboratory Site Properties, Oxford, Ohio (OXO001)*, ORNL/RASA-92/14, Martin Marietta Energy Systems, Inc., Oak Ridge Natl. Lab., March 1993.

114131

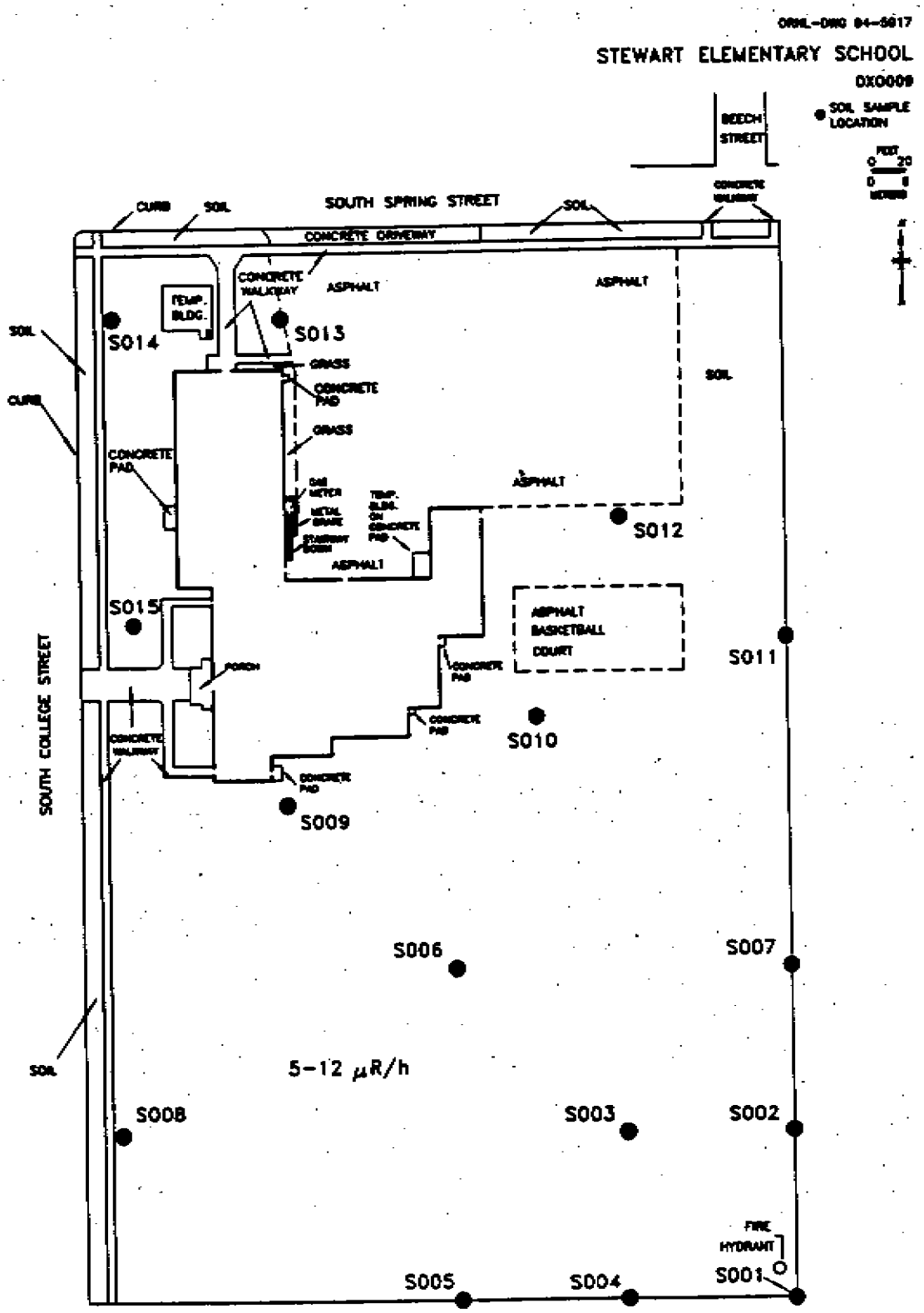

Fig. 1. Diagram of the property at Stewart Elementary School showing range of gamma exposure rates and locations of soil samples.

Table 1. Background radiation levels and radionuclide concentrations for the general Oxford, Ohio, area

Type of radiation measurement or sample	Radiation level or radionuclide concentration
Average external gamma exposure rate at 1 m above the ground surface (μR/h)[a]	5
Range of external gamma exposure rates at 1 m above the ground surface (μR/h)[a]	3–11
Concentration range for radionuclides in surface soil (pCi/g)[b]	
^{226}Ra	0.8–2.5 ± 0.2
232Th	0.8–1.5 ± 0.2
^{238}U	0.8–2.2 ± 0.1

[a]Results of three measurements.
[b]Indicated counting error is at the 95% confidence level (± 2σ).

Source: T. E. Myrick, B. A. Berven, and F. F. Haywood, *State Background Radiation Levels: Results of Measurements Taken During 1975–1979*, ORNL/TM-7343, Martin Marietta Energy Systems, Inc., Oak Ridge Natl. Lab., November 1981.

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Table 2. Concentrations of radionuclides in soil samples collected outdoors at Stewart Elementary School, Oxford, Ohio

Sample ID [a]	Depth (cm)	Radionuclide concentration (pCi/g) [b]		
		^{238}U	^{226}Ra	^{232}Th
S1A	0-15	1.5 ± 0.40	0.73 ± 0.10	0.80 ± 0.15
S1B	15-30	1.6 ± 0.5	0.76 ± 0.07	0.66 ± 0.11
S2A	0-15	1.5 ± 0.59	1.2 ± 0.09	0.84 ± 0.13
S2B	15-30	1.7 ± 0.65	1.1 ± 0.90	0.90 ± 0.13
S3A	0-15	1.4 ± 0.7	1.0 ± 0.11	0.88 ± 0.17
S3B	15-30	1.4 ± 0.45	1.1 ± 0.07	0.89 ± 0.14
S4A	0-15	1.7 ± 0.48	0.93 ± 0.10	0.78 ± 0.17
S4B	15-30	1.7 ± 0.53	1.1 ± 0.11	0.88 ± 0.15
S5A	0-15	1.6 ± 0.40	1.1 ± 0.11	0.88 ± 0.16
S5B	15-30	1.8 ± 0.5	0.93 ± 0.08	0.77 ± 0.13
S6A	0-15	1.7 ± 0.57	1.1 ± 0.09	0.86 ± 0.15
S6B	15-30	1.4 ± 0.39	1.1 ± 0.11	0.92 ± 0.15
S7A	0-15	1.4 ± 0.4	0.94 ± 0.10	0.79 ± 0.17
S7B	15-30	1.0 ± 0.57	0.96 ± 0.08	0.77 ± 0.13
S8	0-15	2.0 ± 0.50	1.2 ± 0.09	1.3 ± 0.13
S9	0-15	1.4 ± 0.37	1.1 ± 0.10	0.79 ± 0.15
S10	0-15	1.8 ± 0.47	1.2 ± 0.11	1.0 ± 0.18
S11	0-15	1.7 ± 0.50	0.74 ± 0.04	0.46 ± 0.13
S12	0-15	1.3 ± 0.29	0.77 ± 0.06	0.60 ± 0.10
S13	0-15	1.8 ± 0.31	1.2 ± 0.11	0.96 ± 0.16
S14	0-15	1.8 ± 0.67	1.3 ± 0.12	1.2 ± 0.17
S15	0-15	1.2 ± 0.61	1.4 ± 0.12	1.3 ± 0.16

[a]Locations are shown on Fig. 1.

[b]Indicated counting error is at the 95% confidence level (± 2σ).

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Department of Energy
Washington, DC 20585

NOV 24 1993 93 NOV 29 PM 1:33

Ms. Rhonda Bohannon, Principal
Stewart Elementary School
315 South College Street
Oxford, Ohio 45056

Dear Ms. Bohannon:

At your request and with the consent of the Talawanda School District, the U.S. Department of Energy (DOE) authorized Oak Ridge National Laboratory (ORNL) to perform a radiological survey of Stewart Elementary School. I have received the enclosed letter report from ORNL, and I am forwarding it to you for your information and use.

During the course of the survey, normal background levels of radiation were found, and no elevated levels were identified. A number of soil samples were collected and are now being analyzed. The results of the analysis and a letter report of the results will be provided to you when they are available.

I appreciate very much your interest in DOE. If you have any questions, please call me at 301-903-8149.

Sincerely,

W. Alexander Williams, PhD
Designation and Certification Manager
Division of Off-Site Programs
Office of Eastern Area Programs
Office of Environmental Restoration

Enclosure

cc:
D. Adler, OR
M. Murray, ORNL

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OAK RIDGE NATIONAL LABORATORY
MANAGED BY MARTIN MARIETTA ENERGY SYSTEMS, INC.
FOR THE U.S. DEPARTMENT OF ENERGY

POST OFFICE BOX 2008
OAK RIDGE, TENNESSEE 37831

November 19, 1993

Dr. W. A. Williams
Department of Energy
Trevion II Building
EM-421
Washington, D. C. 20585-0002

Dear Dr. Williams:

Radiological Survey of a Property (OXO009) in the Vicinity of the Former Alba Craft Facility, Oxford, Ohio

At the request of the City of Oxford and school principal and with DOE concurrence, at team from the Oak Ridge National Laboratory (ORNL) conducted a radiological survey of the outside grounds at the Stewart Elementary School, Oxford, Ohio. The survey consisted of a walk-over scan using NaI detectors, pressurized ion chamber measurements, and collecting soil samples. The walk-over scan was began on October 15, and was completed on October 16, 1993, and did not detect any measurable radiation above normal background levels. During these same two days, two soil samples were collected at each of 15 locations and are yet to be analyzed. The average exposure rate was 9 μR/h with the maximum measurement being 10 μR/h, which is typical background radiation. Direct measurements for surface radiation was conducted at some of the school entrances with only normal background found. The school principal was informed of the results of the survey on October 18. A letter report documenting the survey results will be issued after the analysis of the soil samples.

Please call me (615/574-5838) if you have any questions concerning this survey.

Sincerely,

Michael E. Murray

Michael E. Murray
Measurement Applications
and Development Group

MEM

c: W. D. Cottrell
R. D. Foley
D. G. Adler, (DOE-ORO)

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Department of Energy
Washington, DC 20585

1993 SEP -9 PM 1:51

AUG 31 1993

Ms. Rhonda Bohanian
Principal
Stewart Elementary School
315 South College Street
Oxford, Ohio 45056

Dear Ms. Bohanian:

I enjoyed speaking with you by telephone on August 24, 1993. As we discussed, the U.S. Department of Energy (DOE) will request that Oak Ridge National Laboratory perform the survey of Stewart Elementary School at a mutually agreeable time later this year. The survey will include a gamma radiation scan of the school grounds and measurements inside the school near the entrances.

There is no known connection between the school and the Alba Craft Laboratory. Further, the radiological survey report (copy enclosed) for the Alba Craft Laboratory doesn't show evidence of uranium deposition by erosion of soil or airborne releases. With the exception of a sample from a drain line, all of the uranium at the Alba site is inside the building or within 10 meters of it. (Figure 2 on page 10 of the survey report shows the location of samples; Table 3, beginning on page 22 of the report, gives the analytical results for the samples.) Although uranium has been identified at one residence in Oxford, it appears that the uranium was carried there by a former worker at the Alba facility. In summary, it appears doubtful that there is any uranium at the school.

One minor item that needs to be completed prior to the survey is the completion of the certification portion of the access agreement. I will hold both copies of the signed access agreement, and I am returning the certification page of each access agreement. If you or some other appropriate school official would sign the certification portion of the agreement and return it to me, I will attach the pages to the copies of the agreement. In anticipation of completing the access agreement, I have asked Oak Ridge National Laboratory to begin planning the survey of the school.

We also discussed the potential for the Oak Ridge National Laboratory staff to provide instruction, demonstrations, or other assistance to the school. If this would be helpful, please let me know and we can jointly make appropriate plans.

Please call me at 301-903-8149 if I may be of further assistance.

Sincerely,

W. Alexander Williams

W. Alexander Williams, PhD
Designation and Certification Manager
Division of Off-Site Programs
Office of Eastern Area Programs
Office of Environmental Restoration

3 Enclosures

cc:
D. Adler, OR
M. Murray, ORNL

114131

OAK RIDGE NATIONAL LABORATORY
MANAGED BY MARTIN MARIETTA ENERGY SYSTEMS, INC.
FOR THE U. S. DEPARTMENT OF ENERGY

POST OFFICE BOX 2008
OAK RIDGE, TENNESSEE 37831

January 25, 1994

Dr. W. A. Williams
Department of Energy
Trevion II Building
EM-421
Washington, D. C. 20585

Dear Dr. Williams:

Trip Report: Radiological Survey of Gaskill Hall, Miami University, Oxford, Ohio (OXO015), January 6, 1994

Beginning on January 6 and continuing through January 7, a radiological survey was conducted in three rooms and two offices in the referenced facility. This letter provides results of this survey.

Survey methods included gamma radiation measurements using NaI detectors (typical background of 2500 to 3500 counts per minute); beta/gamma measurements with GM "pancake" probes (typical background is less than 60 cpm); alpha measurements with ZnS "beer mug" detectors, and exposure measurements with a pressurized ion chamber (PIC).

Room 251, the Process Control Laboratory, is considered to be the room allegedly used by Eugene Albaugh, therefore it was the most thoroughly surveyed. All accessible floors, window sills and block walls and other selected upper facing surfaces were surveyed. Five smear samples from the floor were taken to determine if there was any transferrable contamination. Two PIC measurements were also taken in this room. No contamination was detected, but a radium dial oil gauge was found in a cabinet while surveying the floor, the Miami University Radiation Safety Officer was notified of this gauge.

Room 221, the Paper Science Laboratory, was considered to have less of a potential for having any uranium work conducted in it. Selected areas of the floors, walls, window sills and overhead upper facing surfaces were surveyed. Four smear samples were taken to determine if there was any transferrable contamination. Two PIC measurements were also taken in this room. No contamination was detected.

Room 101, the Woodshop, was surveyed because equipment from room 251 was thought to have been stored there. Selected areas of the floors, walls, and window sills were surveyed. Six smear samples from the floor were taken to determine if there was any transferrable contamination. Two PIC measurements were also taken in this room. No contamination was detected.

At the request of one of the building occupants, Dr. Peterson, two additional offices were surveyed due to the belief that these offices were occupied by graduate students working in Gaskill Hall at the time of the alleged uranium work. These offices are currently occupied by Dr. Springer and Dr. Herbet. Selected areas of the floors were

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surveyed. No contamination was detected.

The NaI measurements were all less than 7000 cpm (~15 μR/hr).

The beta/gamma measurements were less than 115 cpm, the highest readings were located in the corners of the block walls, where high readings would be expected due to the geometry from more than one plane irradiating the detectors.

The PIC measurements indicated that the average indoor exposure rate to be less than 10 μR/hr.

The smears have been analyzed and found to be less than 21 dpm/100 cm^2 beta and less than 7 dpm/100 cm^2 alpha, well below the limits of 1,000 dpm/100 cm^2 for transferrable uranium contamination.

If there are any questions concerning this survey, please contact Kyle Kleinhans (615) 574-1777 or Michael Murray (615) 574-5838.

Sincerely,

Kyle R. Kleinhans
Measurement Applications
and Development Group

cc: D. G. Adler, DOE-OR (2)
W. D. Cottrell
R. D. Foley
M. E. Murray

DOE F 1325.8
(8-89)
FG (07-90)

United States Government

Department of Energy

memorandum

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DATE: FEB 16 1994

1994 FEB 23 AM 9:14

REPLY TO ATTN OF: EM-421 (W. A. Williams, 903-8149)

SUBJECT: Oxford Church of God

TO: L. Price, OR

Some investigational study of the Oxford Church of God property has been conducted by Oak Ridge National Laboratory (ORNL) to determine whether this area should be included in the planned remedial action in Oxford. Based on this investigation, the Church should not be included in the planned remedial action, and the property is hereby eliminated from further consideration under the Formerly Utilized Sites Remedial Action Program (FUSRAP). A letter report from ORNL addresses the investigation of the Church and is attached for your information.

Potential Sources of Uranium at the Church:

During the summer of 1992 (contrary to Department of Energy recommendations), some construction activities were conducted at the Alba Craft Laboratory site. The excavated concrete and some of the debris were allegedly taken to the municipal landfill. A tank was allegedly excavated and relocated elsewhere. The tank has been located and has background radiation levels. Soil from the site was allegedly taken to the Oxford Church of God property at 5450 College Corner Pike. Although some of the excavated soil may have been contaminated and may have been placed at the Church, their location is believed to be 20 feet below grade. However, based on the observed concentrations in other outside and undisturbed areas at the site, it is unlikely that significant quantities of uranium were involved.

Survey Issues:

It is very difficult, as a practical matter, to locate trace concentrations of uranium that are buried. Uranium emits very low levels of gamma radiation, and these levels cannot be detected on the surface unless the concentration is over 30 picoCuries per gram of U-238. For buried uranium, the detection level is even higher because of the shielding of the overlying soil. Thus, even a very detailed walkover survey of the Church would not locate buried uranium, except in excess of the levels given above. The average soil contamination levels at the Alba Craft Laboratory site is well below these levels.

Regulatory Issues:

The appropriate regulatory limits for use and transfer of uranium without a nuclear materials license, as established by the U.S. Nuclear Regulatory Commission, is 15 pounds at any one time, and no more than 150 pounds per year (See 10 CFR 40.22(a)).

The appropriate reportable quantity (RQ) for uranium, as established by the U.S. Environmental Protection Agency under the National Contingency Plan, is 100 pounds as uranyl nitrate (See 40 CFR 302.2). A higher RQ has also been established based on radioactivity (See 40 CFR 302.4, Appendix B). However, the higher limit is superseded by the lower one (See footnote "&" to Appendix B of 40 CFR 302.4).

The specific activity of uranium-238 is 330,000 picoCuries per gram. Thus one pound of uranium would have 150 million picoCuries (330,000 picoCuries per gram times 454 grams per pound). The license limit of 15 pounds is equivalent to 2.2 billion picoCuries, and the RQ is equivalent to 15 billion picoCuries.

The highest concentration of uranium in the soil at the Alba Craft Laboratory site is 3300 picoCuries per gram. The highest level measured inside the building was 100,000 picoCuries per gram in a very small sample removed from an expansion joint in the floor. This value, however, is not typical of the site. Based on the existing site data, it is very unlikely that any excavated soil shipped from the site exceeded the applicable regulatory limits. Thus, further action is not necessary as a regulatory matter.

Risk Issues:

It is important to examine the potential pathways for exposure to uranium which may be present at the Church. These include direct exposure to gamma radiation, inhalation of contaminated dust, and possible contamination of groundwater by the leaching of uranium.

As discussed above, uranium emits only low levels of gamma radiation. The gamma radiation from uranium is detectable only when the uranium concentration is well in excess of background levels. The burial of any uranium contaminated soil under 20 feet of fill is not detectable and should not give any gamma radiation exposure above background.

For inhalation of contaminated dust, it is unlikely that there will be any exposure unless the contamination is directly on the surface and the wind blows the contaminated dust into the air. For materials buried under 20 feet of cover, this resuspension into air is quite unlikely.

There is an insufficient inventory of uranium at the site (or the Church, for that matter) to cause significant ground-water pollution. The level of risk is governed by the total inventory of uranium. The proposed drinking water regulations for uranium are 30 picoCuries per liter, total uranium. If the household water usage is assumed to be 200 liters per day, the amount of uranium required to contaminate a household water supply up to the proposed limit is 3,000 picoCuries of uranium-238 per day. The inventory required to pollute a community water supply is extraordinarily large and well in excess of the inventory at the Alba Craft Laboratory site or elsewhere in Oxford.

Several dose calculations were performed using the RESidual RADioactivity code for 10 cubic meters of soil and a natural uranium in soil with 50 picoCuries per gram of uranium-238, 50 picoCuries per gram of uranium-234, and 2.3 picoCuries per gram of uranium-235. With no cover, the maximum exposure is less than six millirem per year from inhalation of contaminated dust. With a one-meter cover on the soil and no erosion, the maximum dose occurs after one thousand years and is less than five millirem per year; the predominant pathway is use of an on-site well for drinking water. Thus, even with an assumed inventory of uranium of over a billion picoCuries at the Church, a conservative estimation of dose poses no significant risk.

It is also of value to compare possible disposal of uranium at the Church with naturally occurring uranium sources. Uranium concentrations in rock commonly range from 0 to 10 picoCuries of uranium-238 per gram. Phosphate rock is even more elevated, and since phosphate rock is used in fertilizer production, the level of uranium in fertilizer chemicals is also elevated. The uranium-238 concentrations in phosphate fertilizer chemicals have been measured in the range of 20-30 picoCuries per gram. These levels are higher than the average concentration of uranium in soil near the site.

Summary:

Based on the above considerations, there is no significant risk from whatever uranium may be present at the Church. Based on the above considerations, further investigation is not necessary and the site is eliminated from further consideration.

James W. Wagoner II
Director
Division of Off-Site Programs
Office of Eastern Area Programs
Office of Environmental Restoration

Attachment

cc:
M. Murray, ORNL
D. Adler, OR

114131

OAK RIDGE NATIONAL LABORATORY
MANAGED BY MARTIN MARIETTA ENERGY SYSTEMS, INC.
FOR THE U.S. DEPARTMENT OF ENERGY

POST OFFICE BOX 2008
OAK RIDGE, TENNESSEE 37831

January 20, 1994

Dr. W. A. Williams
Department of Energy
Trevion II Building
EM-421
Washington, D.C. 20585

Dear Dr. Williams:

Summary of Site Visit and Information Concerning the Oxford Church of God in Oxford, Ohio

At the request of the Department of Energy (DOE) Headquarters and Oak Ridge Field Office, the Measurement Applications and Development Group of the Oak Ridge National Laboratory followed up on the possibility of soil and debris being hauled to the Oxford Church of God located at 5450 College Corner Pike (U.S. Highway 27).

During the summer of 1992, renovations at the Alba Craft facility caused the removal of concrete debris (maybe as much as 2000 ft^2 by 4 inches thick) and an unknown amount of base material and soil from the site to the Oxford municipal landfill and the church. Pieces of concrete debris remaining at the site were examined, and contaminated spots were found on the underside exceeding the DOE guidelines. The contractor who transported the debris to the church was contacted as to the amount of material and where he dumped it at the church. Arrangements were made to meet him in Oxford on December 16, 1993, to show us where the debris was hauled. Once at the church, the area where he dumped the debris had significantly changed due to additional fill material being brought in to level an area of the church's property. The contractor estimated the material (~15 cubic yards) from the Alba Craft site is now 20 feet below grade. The likelihood of finding the material is very low and finding possible residual uranium even less. The church officials have not been contacted by us. Also excavated from the Alba Craft site was a fuel oil tank which was retained by the same contractor. The contractor estimated the tank was buried by at least two feet. The tank was checked for contamination and none was found.

Considering the material removed from the Alba Craft site was subsurface, any amount of uranium present should be quite limited (if any) and considering that the debris' current location is not exactly known, a typical radiological survey most likely would not be able to detect any residual material.

Please call R. D. Foley or me if there are any questions or comments regarding ORNL's work in the Oxford area.

Sincerely,

Michael E Murray

Michael E. Murray
Measurement Applications and Development

MEM:sh

cc: D. G. Adler, DOE-OR
R. D. Foley