M-685

Formerly Utilized Sites Remedial Action Program (FUSRAP)

ADMINISTRATIVE RECORD

for the Maywood Site, New Jersey

US Army Corps of Engineers®

095301

United States Government

Department of Energy

Oak Ridge Operations

memorandum

DATE: October 6, 1992

REPLY TO ATTN OF: EW-93

SUBJECT: MAYWOOD, NEW JERSEY AD HOC SURVEY INFORMATION FOR DESIGNATION DETERMINATION

TO: James W. Wagoner II, Director, Division of Off-Site Programs, Office of Eastern Area Programs, Office of Environmental Restoration EM-421, DOE-GTN

Attached are the ad hoc walkover gamma survey results from property surveys requested by the Maywood, New Jersey Public Health Department, and Mr. John Tamburro, a Maywood resident and member of the Public Health Department. Sixteen properties were surveyed as a result of this request. Of these, two of the sixteen surveyed indicate thorium-232 contamination in surface soils in excess of the DOE guideline of 5 pCi/g. Both properties are located on West Central Avenue, and are separated from the Maywood Interim Storage Site (MISS) by the New York, Western, and Susquehanna (NYWS) railroad property. These properties are 130 and 146 West Central Avenue.

In addition, both properties were surveyed by Oak Ridge National Laboratory (ORNL) in 1987 and 1988. ORNL survey reports attribute elevated gamma radiation levels to the coal ash content of the soil, "shine" from the interim storage pile at the MISS, and the grassy area near Building 76 where the thorium processing building was formerly located. The storage pile is located in close proximity to the rear of the property at 146 West Central, and the same is true for the grassy area in relation to the rear of the property at 130 West Central. In addition, the NYWS railroad property separating these properties from the MISS is known to be radioactively contaminated. The ORNL report for 146 West Central Avenue does state that when remediation of the railroad property is performed it may be necessary to remove soils from the property at 146 West Central where elevated measurements were detected during the ORNL survey.

Attachment 1 is a complete list of addresses for properties surveyed with the owner's name for use in updating the database for Maywood vicinity properties which Roy F. Weston, Inc. prepares.

Attachment 2 is a table which presents radionuclide concentrations in soil samples collected on the two properties where contamination exceeded the DOE guideline. This data is provided for use in determining whether these two properties should be designated for inclusion in FUSRAP.

Attachment 3 is a list of additional ad hoc surveys that have recently been performed in Maywood at the request of the respective property owner. These properties should also be added to the Weston vicinity property database for Maywood.

If you have any questions or need further information, please call me.

Susan M. Cange, Site Manager
Former Sites Restoration Division

Attachments

ATTACHMENT 1

MAYWOOD AD HOC PROPERTY SURVEYS

PROPERTY OWNER	ADDRESS/LOCATION
[redacted]	43 Beech Street, Maywood
[redacted]	76 W. Central Avenue, Maywood
[redacted]	102 W. Central Avenue, Maywood
[redacted]	110 W. Central Avenue, Maywood
[redacted]	116 W. Central Avenue, Maywood
[redacted]	122 W. Central Avenue, Maywood
[redacted]	130 W. Central Avenue, Maywood
[redacted]	142 W. Central Avenue, Maywood
[redacted]	146 W. Central Avenue, Maywood
[redacted]	275 Eccleston Place, Maywood
[redacted]	278 Eccleston Place, Maywood
[redacted]	123 Maywood Avenue, Maywood
[redacted]	200 Maywood Avenue, Maywood
[redacted]	59 Orchard Place, Maywood
[redacted]	95 Orchard Place, Maywood
[redacted]	113 Stone Street, Maywood

ATTACHMENT 2

MAYWOOD SITE VICINITY PROPERTIES
AD HOC RADIOLOGICAL SURVEYS

ADDRESS	NO. SOIL SAMPLES	U-238	Ra-226	Th-232
		(concentrations in pCi/g)		
130 W. Central Ave.	3	5.4 ± 4.5	3 ± 0.2	5 ± 1.5
		3.9 ± 3.6	3.2 ± 0.2	47 ± 2.7
		5.5 ± 2.5	4.2 ± 0.5	6.2 ± 1.4
146 W. Central Ave.	1	13.6 ± 12.4	<1.5	13.9 ± 6.3

ATTACHMENT 3

MAYWOOD SITE VICINITY PROPERTIES
AD HOC SURVEYS - TO BE ADDED TO ROY F. WESTON, INC. DATABASE

PROPERTY OWNER	ADDRESS/LOCATION
[redacted]	81 Becker Avenue, Rochelle
[redacted]	3 Maple Lane, Maywood
[redacted]	601 Edel Avenue, Maywood

095301

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

October 5, 1992

[redacted]
95 Orchard Place
Maywood, New Jersey 07607

Dear [redacted]

RESULTS OF THE WALKOVER GAMMA RADIATION SURVEY FOR THE RESIDENTIAL PROPERTY AT 95 ORCHARD PLACE, MAYWOOD, NEW JERSEY

The purpose of this letter is to inform you of the results of the walkover gamma radiation survey performed on your property at 95 Orchard Place in Maywood, New Jersey on February 12, 1992.

Surveys are performed on properties in the Maywood area in the following manner:

1. A health physics technician walks over the property with a gamma radiation detection instrument calibrated to detect any gamma radiation level that exceeds naturally occurring background in the area. *[For the Maywood area, this naturally occurring background level is approximately 7,500 counts per minute (cpm) for the type instrument used to survey your property.]* If the radiation levels recorded on the property do not exceed twice background (15,000 cpm) no further action is necessary.

2. If initial walkover survey results do indicate radiation levels in excess of twice background, another instrument is used in order to more precisely locate the areas and extent of surface gamma radiation.

3. If the second instrument readings confirm radioactive contamination is present, then a soil sample is taken, and radiological analysis is performed on the soil in order to determine the concentrations of radioactive materials present in the soils.

This survey protocol was followed at your property. The gamma radiation measurements recorded at your property were within the range of naturally occurring background and ranged from 6,000 to 13,000 cpm over the entire property. These measurements indicate that there is no radioactive contamination present on your property in excess of U. S. Department of Energy (DOE) guidelines established for the Formerly Utilized Sites Remedial Action Program (FUSRAP). Therefore, since gamma radiation measurements did not exceed twice background, no additional investigation is necessary.

Enclosed you will find additional information concerning naturally occurring background radiation that may help answer any questions you may have. If you need additional information, please feel free to call me and leave a message on our toll free number, 1-800-253-9759.

Sincerely,

Susan M. Cange

Susan M. Cange, Site Manager
Former Sites Restoration Division

Enclosure

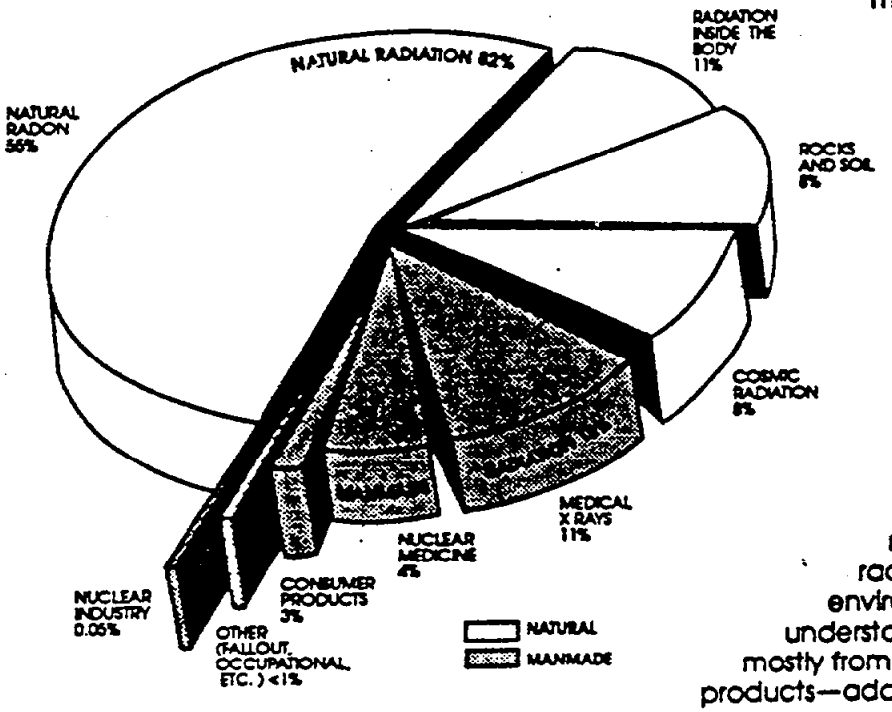
095301

Radiation in the Environment

Radiation is a natural part of our environment. When our planet was formed, radiation was present—and radiation surrounds it still. Natural radiation showers down from the distant reaches of the cosmos and continuously radiates from the rocks, soil, and water on the Earth itself.

During the last century, mankind has discovered radiation, how to use it, and how to control it. As a result, some manmade radiation has been added to the natural amounts present in our environment.

Sources of Radiation



Many materials—both natural and manmade—that we come into contact with in our everyday lives are radioactive. These materials are composed of atoms that release energetic particles or waves as they change into more stable forms. These particles and waves are referred to as *radiation*, and their emission as *radioactivity*.

As the chart on the left shows, most environmental radiation (82%) is from natural sources. By far the largest source is radon, an odorless, colorless gas given off by natural radium in the Earth's crust. While radon has always been present in the environment, its significance is better understood today. Manmade radiation—mostly from medical uses and consumer products—adds about eighteen percent to our total exposure.

TYPES OF IONIZING RADIATION

Radiation that has enough energy to disturb the electrical balance in the atoms of substances it passes through is called *ionizing radiation*. There are three basic forms of ionizing radiation.

Alpha

Alpha particles are the largest and slowest moving type of radiation. They are easily stopped by a sheet of paper or the skin. Alpha particles can move through the air only a few inches before being stopped by air molecules. However, alpha radiation is dangerous to sensitive tissue inside the body.

Beta

Beta particles are much smaller and faster moving than alpha particles. Beta particles pass through paper and can travel in the air for about 10 feet. However, they can be stopped by thin shielding such as a sheet of aluminum foil.

Gamma

Gamma radiation is a type of electromagnetic wave that travels at the speed of light. It takes a thick shield of steel, lead, or concrete to stop gamma rays. X rays and cosmic rays are similar to gamma radiation. X rays are produced by manmade devices; cosmic rays reach Earth from outer space.

Units of Measure

Radiation can be measured in a variety of ways. Typically, units of measure show either 1) the total amount of radioactivity present in a substance, or 2) the level of radiation being given off.

The radioactivity of a substance is measured in terms of the number of transformations (changes into more stable forms) per unit of time. The *curie* is the standard unit for this measurement and is based on the amount of radioactivity contained in 1 gram of radium. Numerically, 1 curie is equal to 37 billion transformations per second. The amounts of radioactivity that people normally work with are in the millicurie (one-thousandth of a curie) or microcurie (one-millionth of a curie) range. Levels of radioactivity in the environment are in the picocurie, or pCi (one-trillionth of a curie) range.

Levels of radiation are measured in various units. The level of gamma radiation in the air is measured by the *roentgen*. This is a relatively large unit, so measurements are often calculated in milliroentgens. Radiation absorbed by humans is measured in either *rad* or *rem*. The rem is the most descriptive because it measures the ability of the specific type of radiation to do damage to biological tissue. Again, typical measurements will often be in the millirem (mrem), or one-thousandth of a rem, range. In the international scientific community, absorbed dose and biological exposure are expressed in *grays* and *seiverts*. 1 gray (Gy) equals 100 rad. 1 seivert (Sv) equals 100 rem. On the average, Americans receive about 360 mrem of radiation a year. Most of this (97%) is from natural radiation and medical exposure. Specific examples of common sources of radiation are shown in the chart below.

RADIATION IN THE ENVIRONMENT

Because the radioactivity of individual samples varies, the numbers given here are approximate or represent an average. They are shown to provide a perspective for concentrations and levels of radioactivity rather than dose.

mrem = millirem
pCi = picocurie

Cosmic Radiation

Cosmic radiation is high-energy gamma radiation that originates in outer space and filters through our atmosphere.

Sea Level ..... 26 mrem/year
(increases about 1/2 mrem for each additional 100 feet in elevation)
Atlanta, Georgia (1,050 feet) ..... 31 mrem/year
Denver, Colorado (5,300 feet) ..... 50 mrem/year
Minneapolis, Minnesota (815 feet) ..... 30 mrem/year
Salt Lake City, Utah (4,400 feet) ..... 46 mrem/year

Terrestrial Radiation

Terrestrial sources are naturally radioactive elements in the soil and water such as uranium, radium, and thorium. Average levels of these elements are 1 pCi/gram of soil.

United States (average) ..... 26 mrem/year
Denver, Colorado ..... 63 mrem/year
Nile Delta, Egypt ..... 350 mrem/year
Paris, France ..... 350 mrem/year
Coast of Kerala, India ..... 400 mrem/year
McAipe, Brazil ..... 2,558 mrem/year
Pocos De Caldas, Brazil ..... 7,000 mrem/year

Buildings

Many building materials, especially granite, contain naturally radioactive elements.

U.S. Capitol Building ..... 85 mrem/year
Base of Statue of Liberty ..... 325 mrem/year
Grand Central Station ..... 525 mrem/year
The Vatican ..... 800 mrem/year

Radon

Radon levels in buildings vary, depending on geographic location, from 0.1 to 200 pCi/liter.

Average Indoor Radon Level ..... 1.5 pCi/liter
Occupational Working Limit ..... 100.0 pCi/liter

Food

Food contributes an average of 20 mrem/year, mostly from potassium-40, carbon-14, hydrogen-3, radium-226, and thorium-232.

Beer ..... 390 pCi/liter
Tap Water ..... 20 pCi/liter
Milk ..... 1,400 pCi/liter
Salad Oil ..... 4,900 pCi/liter
Whiskey ..... 1,200 pCi/liter
Brazil Nuts ..... 14 pCi/g
Bananas ..... 3 pCi/g
Flour ..... 0.14 pCi/g
Peanuts & Peanut Butter ..... 0.12 pCi/g
Tea ..... 0.40 pCi/g

Medical Treatment

The exposures from medical diagnosis vary widely according to the required procedure, the equipment and film used for x rays, and the skill of the operator.

Chest X Ray ..... 10 mrem
Dental X Ray, Each ..... 100 mrem

Consumer Goods

Cigarettes-two packs/day (polonium-210) ..... 8,000 mrem/year
Color Television ..... <1 mrem/year
Gas Lantern Mantle (thorium-232) ..... 2 mrem/year
Highway Construction ..... 4 mrem/year
Airplane Travel at 39,000 feet (cosmic) ..... 0.5 mrem/hour
Natural Gas Heating and Cooking (radon-222) ..... 2 mrem/year
Phosphate Fertilizers ..... 4 mrem/year

Natural Radioactivity in Florida Phosphate Fertilizers (in pCi/gram)

	Normal Superphosphate	Concentrated Superphosphate	Gypsum
Ra-226	21.3	21.0	33.0
U-238	20.1	58.0	6.0
Th-230	18.9	48.0	13.0
Th-232	0.6	1.3	0.3

Porcelain Dentures (uranium) ..... 1,500 mrem/year
Radioluminescent Clock (promethium-147) ..... <1 mrem/year
Smoke Detector (americium-241) ..... 0.01 mrem/year

International Nuclear Weapons Test Fallout from pre-1980 atmospheric tests

(average for a U.S. citizen) ..... 1 mrem/year

References

Effect of Ionizing Radiation on Human Health, The. Arthur C. Upton. New York University Medical Center. Atomic Industrial Forum, 1984.
Effects on Populations of Exposure to Low Levels of Ionizing Radiation: 1980. Committee on the Biological Effects of Ionizing Radiation. National Academy Press, 1984.
Ionizing Radiation Exposure of the Population of the United States. Report Number 93. National Council on Radiation Protection and Measurements. 1987.
Radiation Exposure of the U.S. Population from Consumer Products and Miscellaneous Sources. Report Number 95. National Council on Radiation Protection and Measurements. 1987.
Radiation in Medicine and Industry. A.P. Jacobson and G.P. Salisbury. 1980.

PERSPECTIVE: How Big is a Picocurie?

The *curie* is a standard measure for the intensity of radioactivity contained in a sample of radioactive material. It was named after French scientists Marie and Pierre Curie for their landmark research into the nature of radioactivity.

The basis for the curie is the radioactivity of one gram of radium. Radium decays at a rate of about 2.2 trillion disintegrations ($2.2X10^{12}$) per minute. A *picocurie* is one trillionth of a curie. Thus, a picocurie represents 2.2 disintegrations per minute.

To put the relative size of one *trillionth* into perspective, consider that if the Earth were reduced to one trillionth of its diameter, the "pico earth" would be smaller in diameter than a speck of dust. In fact, it would be six times smaller than the thickness of a human hair.

The difference between the curie and the picocurie is so vast that other metric units are used between them. These are as follows:

Millicurie = $\frac{1}{1,000}$ **(one thousandth) of a curie**

Microcurie = $\frac{1}{1,000,000}$ **(one millionth) of a curie**

Nanocurie = $\frac{1}{1,000,000,000}$ **(one billionth) of a curie**

Picocurie = $\frac{1}{1,000,000,000,000}$ **(one trillionth) of a curie**

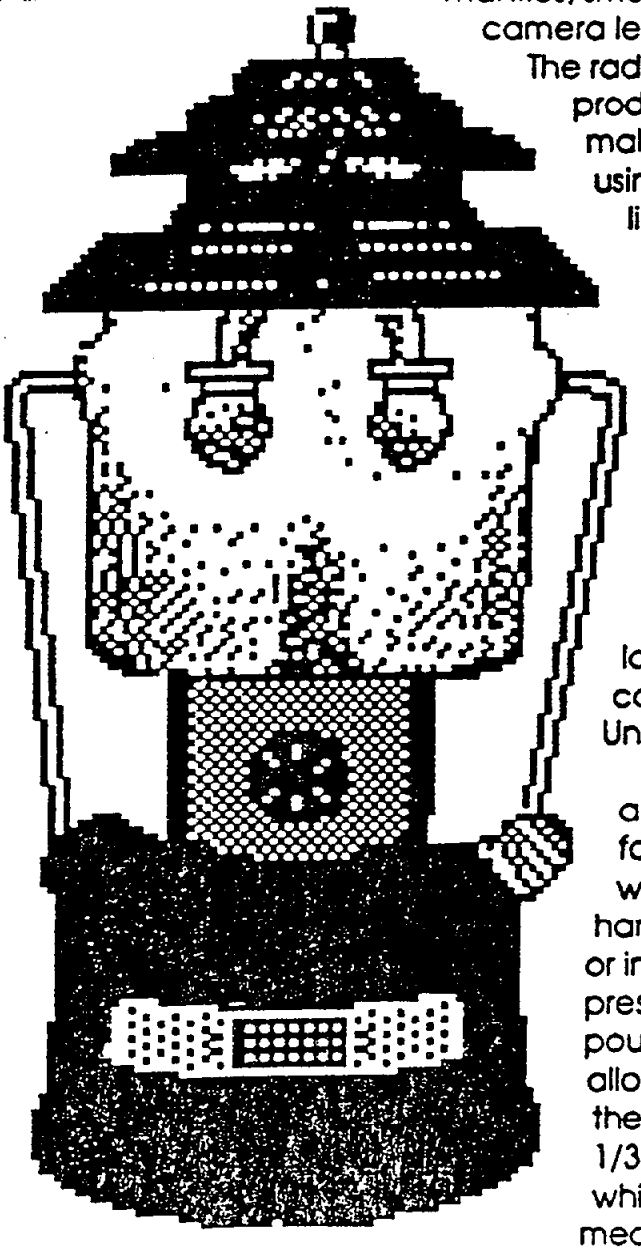
The following chart shows the relative differences between the units and gives analogies in dollars. It also gives examples of where these various amounts of radioactivity could typically be found. The number of disintegrations per minute has been rounded off for the chart.

UNIT OF RADIOACTIVITY	SYMBOL	DISINTEGRATIONS PER MINUTE	DOLLAR ANALOGY	EXAMPLES OF RADIOACTIVE MATERIALS
1 Curie	Ci	$2x10^{12}$ or 2 Trillion	2 Times the Annual Federal Budget	Nuclear Medicine Generator
1 Millicurie	mCi	$2x10^{9}$ or 2 Billion	Cost of a New Interstate Highway from Atlanta to San Francisco	Amount Used for a Brain or Liver Scan
1 Microcurie	µCi	$2x10^{6}$ or 2 Million	All-Star Baseball Player's Salary	Amount Used in Thyroid Tests
1 Nanocurie	nCi	$2x10^{3}$ or 2 Thousand	Annual Home Energy Costs	Consumer Products
1 Picocurie	pCi	2	Cost of a Hamburger and Coke	Background Environmental Levels

PERSPECTIVE: Radioactivity in Gas Lantern Mantles

Around the House

Many household products contain a small amount of radioactivity. Examples include gas lantern mantles, smoke detectors, dentures, camera lenses, and anti-static brushes. The radioactivity is added to the products either specifically to make them work, or as a result of using compounds of elements like thorium and uranium in producing them. The amount of radiation the products gives off is not considered significant. But with today's sensitive equipment, it can be detected.



Lanterns: In a New Light

About 20 million gas lantern mantles are used by campers each year in the United States.

Under today's standards, the amount of natural radioactivity found in a lantern mantle would require precautions in handling it at many Government or industry sites. The radioactivity present would contaminate 15 pounds of dirt to above allowable levels. This is because the average mantle contains 1/3 of a gram of thorium oxide, which has a specific activity (a measure of radioactivity) of approximately 100,000 picocuries per gram. The approximately 35,000 picocuries of radioactivity in the mantle would, if thrown onto the ground, be considered low-level radioactive contamination.

0953n

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

October 5, 1992

[redacted]
59 Orchard Place
Maywood, New Jersey 07607

Dear [redacted]

RESULTS OF THE WALKOVER GAMMA RADIATION SURVEY FOR THE RESIDENTIAL PROPERTY AT 59 ORCHARD PLACE, MAYWOOD, NEW JERSEY

The purpose of this letter is to inform you of the results of the walkover gamma radiation survey performed on your property at 59 Orchard Place in Maywood, New Jersey on February 12, 1992.

Surveys are performed on properties in the Maywood area in the following manner:

1. A health physics technician walks over the property with a gamma radiation detection instrument calibrated to detect any gamma radiation level that exceeds naturally occurring background in the area. *[For the Maywood area, this naturally occurring background level is approximately 7,500 counts per minute (cpm) for the type instrument used to survey your property.]* If the radiation levels recorded on the property do not exceed twice background (15,000 cpm) no further action is necessary.

2. If initial walkover survey results do indicate radiation levels in excess of twice background, another instrument is used in order to more precisely locate the areas and extent of surface gamma radiation.

3. If the second instrument readings confirm radioactive contamination is present, then a soil sample is taken, and radiological analysis is performed on the soil in order to determine the concentrations of radioactive materials present in the soils.

This survey protocol was followed at your property. The gamma radiation measurements recorded at your property were within the range of naturally occurring background and ranged from 6,000 to 14,000 cpm over the entire property. These measurements indicate that there is no radioactive contamination present on your property in excess of U. S. Department of Energy (DOE) guidelines established for the Formerly Utilized Sites Remedial Action Program (FUSRAP). Therefore, since gamma radiation measurements did not exceed twice background, no additional investigation is necessary.

Enclosed you will find additional information concerning naturally occurring background radiation that may help answer any questions you may have. If you need additional information, please feel free to call me and leave a message on our toll free number, 1-800-253-9759.

Sincerely,

Susan M. Cange

Susan M. Cange, Site Manager
Former Sites Restoration Division

Enclosure

095301

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

October 5, 1992

[redacted]
200 Maywood Avenue
Maywood, New Jersey 07607

Dear [redacted]

RESULTS OF THE WALKOVER GAMMA RADIATION SURVEY FOR THE RESIDENTIAL PROPERTY AT 200 MAYWOOD AVENUE, MAYWOOD, NEW JERSEY

The purpose of this letter is to inform you of the results of the walkover gamma radiation survey performed on your property at 200 Maywood Avenue in Maywood, New Jersey on February 12, 1992.

Surveys are performed on properties in the Maywood area in the following manner:

1. A health physics technician walks over the property with a gamma radiation detection instrument calibrated to detect any gamma radiation level that exceeds naturally occurring background in the area. *[For the Maywood area, this naturally occurring background level is approximately 7,500 counts per minute (cpm) for the type instrument used to survey your property.]* If the radiation levels recorded on the property do not exceed twice background (15,000 cpm) no further action is necessary.

2. If initial walkover survey results do indicate radiation levels in excess of twice background, another instrument is used in order to more precisely locate the areas and extent of surface gamma radiation.

3. If the second instrument readings confirm radioactive contamination is present, then a soil sample is taken, and radiological analysis is performed on the soil in order to determine the concentrations of radioactive materials present in the soils.

This survey protocol was followed at your property. The gamma radiation measurements recorded at your property were within the range of naturally occurring background and ranged from 7,000 to 11,000 cpm over the entire property. These measurements indicate that there is no radioactive contamination present on your property in excess of U. S. Department of Energy (DOE) guidelines established for the Formerly Utilized Sites Remedial Action Program (FUSRAP). Therefore, since gamma radiation measurements did not exceed twice background, no additional investigation is necessary.

Enclosed you will find additional information concerning naturally occurring background radiation that may help answer any questions you may have. If you need additional information, please feel free to call me and leave a message on our toll free number, 1-800-253-9759.

Sincerely,

Ann M. Cange

Susan M. Cange, Site Manager
Former Sites Restoration Division

Enclosure

095301

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

October 5, 1992

[redacted]
278 Eccleston Place
Maywood, New Jersey 07607

Dear [redacted]

RESULTS OF THE WALKOVER GAMMA RADIATION SURVEY FOR THE RESIDENTIAL PROPERTY AT 278 ECCLESTON PLACE, MAYWOOD, NEW JERSEY

The purpose of this letter is to inform you of the results of the walkover gamma radiation survey performed on your property at 278 Eccleston Place in Maywood, New Jersey on February 11, 1992.

Surveys are performed on properties in the Maywood area in the following manner:

1. A health physics technician walks over the property with a gamma radiation detection instrument calibrated to detect any gamma radiation level that exceeds naturally occurring background in the area. *[For the Maywood area, this naturally occurring background level is approximately 7,500 counts per minute (cpm) for the type instrument used to survey your property.]* If the radiation levels recorded on the property do not exceed twice background (15,000 cpm) no further action is necessary.

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3. If the second instrument readings confirm radioactive contamination is present, then a soil sample is taken, and radiological analysis is performed on the soil in order to determine the concentrations of radioactive materials present in the soils.

This survey protocol was followed at your property. The gamma radiation measurements recorded at your property were within the range of naturally occurring background and ranged from 7,000 to 12,000 cpm over the entire property. These measurements indicate that there is no radioactive contamination present on your property in excess of U. S. Department of Energy (DOE) guidelines established for the Formerly Utilized Sites Remedial Action Program (FUSRAP). Therefore, since gamma radiation measurements did not exceed twice background, no additional investigation is necessary.

Enclosed you will find additional information concerning naturally occurring background radiation that may help answer any questions you may have. If you need additional information, please feel free to call me and leave a message on our toll free number, 1-800-253-9759.

Sincerely,

Susan M. Cange

Susan M. Cange, Site Manager
Former Sites Restoration Division

Enclosure

095301

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

October 5, 1992

[redacted]
123 Maywood Avenue
Maywood, New Jersey 07607

Dear [redacted]

RESULTS OF THE WALKOVER GAMMA RADIATION SURVEY FOR THE RESIDENTIAL PROPERTY AT 123 MAYWOOD AVENUE, MAYWOOD, NEW JERSEY

The purpose of this letter is to inform you of the results of the walkover gamma radiation survey performed on your property at 123 Maywood Avenue in Maywood, New Jersey on February 12, 1992.

Surveys are performed on properties in the Maywood area in the following manner:

1. A health physics technician walks over the property with a gamma radiation detection instrument calibrated to detect any gamma radiation level that exceeds naturally occurring background in the area. *[For the Maywood area, this naturally occurring background level is approximately 7,500 counts per minute (cpm) for the type instrument used to survey your property.]* If the radiation levels recorded on the property do not exceed twice background (15,000 cpm) no further action is necessary.

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This survey protocol was followed at your property. The gamma radiation measurements recorded at your property were within the range of naturally occurring background and ranged from 6,000 to 12,000 cpm over the entire property. These measurements indicate that there is no radioactive contamination present on your property in excess of U. S. Department of Energy (DOE) guidelines established for the Formerly Utilized Sites Remedial Action Program (FUSRAP). Therefore, since gamma radiation measurements did not exceed twice background, no additional investigation is necessary.

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Sincerely,

Susan M. Cange

Susan M. Cange, Site Manager
Former Sites Restoration Division

Enclosure

0953n

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

October 5, 1992

[redacted]
275 Eccleston Place
Maywood, New Jersey 07607

Dear [redacted]

RESULTS OF THE WALKOVER GAMMA RADIATION SURVEY FOR THE RESIDENTIAL PROPERTY AT 275 ECCLESTON PLACE, MAYWOOD, NEW JERSEY

The purpose of this letter is to inform you of the results of the walkover gamma radiation survey performed on your property at 275 Eccleston Place in Maywood, New Jersey on February 11, 1992.

Surveys are performed on properties in the Maywood area in the following manner:

1. A health physics technician walks over the property with a gamma radiation detection instrument calibrated to detect any gamma radiation level that exceeds naturally occurring background in the area. *[For the Maywood area, this naturally occurring background level is approximately 7,500 counts per minute (cpm) for the type instrument used to survey your property.]* If the radiation levels recorded on the property do not exceed twice background (15,000 cpm) no further action is necessary.

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[redacted]

October 5, 1992

This survey protocol was followed at your property. The gamma radiation measurements recorded at your property were within the range of naturally occurring background and ranged from 7,000 to 12,000 cpm over the entire property. These measurements indicate that there is no radioactive contamination present on your property in excess of U. S. Department of Energy (DOE) guidelines established for the Formerly Utilized Sites Remedial Action Program (FUSRAP). Therefore, since gamma radiation measurements did not exceed twice background, no additional investigation is necessary.

Enclosed you will find additional information concerning naturally occurring background radiation that may help answer any questions you may have. If you need additional information, please feel free to call me and leave a message on our toll free number, 1-800-253-9759.

Sincerely,

Susan M. Cange

Susan M. Cange, Site Manager
Former Sites Restoration Division

Enclosure

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

October 5, 1992

[redacted]
113 Stone Street
Maywood, New Jersey 07607

Dear [redacted]

RESULTS OF THE WALKOVER GAMMA RADIATION SURVEY FOR THE RESIDENTIAL PROPERTY AT 113 STONE STREET, MAYWOOD, NEW JERSEY

The purpose of this letter is to inform you of the results of the walkover gamma radiation survey performed on your property at 113 Stone Street in Maywood, New Jersey on February 19, 1992.

Surveys are performed on properties in the Maywood area in the following manner:

1. A health physics technician walks over the property with a gamma radiation detection instrument calibrated to detect any gamma radiation level that exceeds naturally occurring background in the area. *[For the Maywood area, this naturally occurring background level is approximately 7,500 counts per minute (cpm) for the type instrument used to survey your property.]* If the radiation levels recorded on the property do not exceed twice background (15,000 cpm) no further action is necessary.

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3. If the second instrument readings confirm radioactive contamination is present, then a soil sample is taken, and radiological analysis is performed on the soil in order to determine the concentrations of radioactive materials present in the soils.

[redacted]

October 5, 1992

This survey protocol was followed at your property. The gamma radiation measurements recorded at your property were within the range of naturally occurring background and ranged from 6,000 to 9,000 cpm over the entire property. These measurements indicate that there is no radioactive contamination present on your property in excess of U. S. Department of Energy (DOE) guidelines established for the Formerly Utilized Sites Remedial Action Program (FUSRAP). Therefore, since gamma radiation measurements did not exceed twice background, no additional investigation is necessary.

Enclosed you will find additional information concerning naturally occurring background radiation that may help answer any questions you may have. If you need additional information, please feel free to call me and leave a message on our toll free number, 1-800-253-9759.

Sincerely,

Susan M. Cange

Susan M. Cange, Site Manager
Former Sites Restoration Division

Enclosure

0953n

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

October 5, 1992

[redacted]
43 Beech Street
Maywood, New Jersey 07607

Dear [redacted]

RESULTS OF THE WALKOVER GAMMA RADIATION SURVEY FOR THE RESIDENTIAL PROPERTY AT 43 BEECH STREET, MAYWOOD, NEW JERSEY

The purpose of this letter is to inform you of the results of the walkover gamma radiation survey performed on your property at 43 Beech Street in Maywood, New Jersey on February 11, 1992.

Surveys are performed on properties in the Maywood area in the following manner:

1. A health physics technician walks over the property with a gamma radiation detection instrument calibrated to detect any gamma radiation level that exceeds naturally occurring background in the area. *[For the Maywood area, this naturally occurring background level is approximately 7,500 counts per minute (cpm) for the type instrument used to survey your property.]* If the radiation levels recorded on the property do not exceed twice background (15,000 cpm) no further action is necessary.

2. If initial walkover survey results do indicate radiation levels in excess of twice background, another instrument is used in order to more precisely locate the areas and extent of surface gamma radiation.

3. If the second instrument readings confirm radioactive contamination is present, then a soil sample is taken and sent to a laboratory for radiological analysis to determine the concentrations of radioactive materials present in the soils.

The gamma radiation measurements recorded at your property were within the range of naturally occurring background. Specifically, the count rates ranged from 6,000 to 12,000 cpm over the entire property. These measurements indicate that there is no radioactive contamination present on your property in excess of U. S. Department of Energy (DOE) guidelines established for the Formerly Utilized Sites Remedial Action Program (FUSRAP).

As part of the survey performed on your property, gamma radiation exposure rate measurements were also taken at several locations in order to determine if an exposure to radiation in excess of the DOE guidance level [100 millirem per year (mrem/yr) above background] would be exceeded. The exposure rates on your property ranged from 7 to 10 microroentgens per hour (μR/h). The average background gamma radiation exposure rate for the Maywood area has been determined to be approximately 9 μR/h. This is the amount of gamma radiation that a person is exposed to from naturally occurring sources such as cosmic radiation or granite rock. Consistent with the radiation measurements described above, there is no indication of radioactive contamination on your property and your exposure to gamma radiation is within the expected range of natural background.

Enclosed you will find additional information concerning naturally occurring background radiation that may help answer any questions you may have. If you need additional information, please feel free to call me and leave a message on our toll free number, 1-800-253-9759.

Sincerely,

Susan M. Cange

Susan M. Cange, Site Manager
Former Sites Restoration Division

Enclosure

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

October 5, 1992

[redacted]
102 West Central Avenue
Maywood, New Jersey 07607

Dear [redacted]:

RESULTS OF THE WALKOVER GAMMA RADIATION SURVEY FOR THE RESIDENTIAL PROPERTY AT 102 WEST CENTRAL AVENUE, MAYWOOD, NEW JERSEY

The purpose of this letter is to inform you of the results of the walkover gamma radiation survey performed on your property at 102 West Central Avenue in Maywood, New Jersey on February 20, 1992.

Surveys are performed on properties in the Maywood area in the following manner:

1. A health physics technician walks over the property with a gamma radiation detection instrument calibrated to detect any gamma radiation level that exceeds naturally occurring background in the area. *[For the Maywood area, this naturally occurring background level is approximately 7,500 counts per minute (cpm) for the type instrument used to survey your property.]* If the radiation levels recorded on the property do not exceed twice background (15,000 cpm) no further action is necessary.

2. If initial walkover survey results do indicate radiation levels in excess of twice background, another instrument is used in order to more precisely locate the areas and extent of surface gamma radiation.

3. If the second instrument readings confirm radioactive contamination is present, then a soil sample is taken and sent to a laboratory for radiological analysis to determine the concentrations of radioactive materials present in the soils.

The gamma radiation measurements recorded at your property were within the range of naturally occurring background. Specifically, the initial count rates ranged from 10,000 to 28,000 cpm over the entire property. Measurements with the second instrument did not exceed twice background for that instrument so no soil samples were collected. These measurements indicate that there is no radioactive contamination present on your property in excess of U. S. Department of Energy (DOE) guidelines established for the Formerly Utilized Sites Remedial Action Program (FUSRAP).

As part of the survey performed on your property, gamma radiation exposure rate measurements were also taken at several locations in order to determine if an exposure to radiation in excess of the DOE guidance level [100 millirem per year (mrem/yr) above background] would be exceeded. The exposure rates on your property ranged from 10 to 16 microroentgens per hour (μR/h). The average background gamma radiation exposure rate for the Maywood area has been determined to be approximately 9 μR/h. This is the amount of gamma radiation that a person is exposed to from naturally occurring sources such as cosmic radiation or granite rock. Consistent with the radiation measurements described above, there is no indication of radioactive contamination on your property and your exposure to gamma radiation is within the expected range of natural background.

Enclosed you will find additional information concerning naturally occurring background radiation that may help answer any questions you may have. If you need additional information, please feel free to call me and leave a message on our toll free number, 1-800-253-9759.

Sincerely,

Susan M. Cange

Susan M. Cange, Site Manager
Former Sites Restoration Division

Enclosure

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

October 5, 1992

[redacted]
76 West Central Avenue
Maywood, New Jersey 07607

Dear [redacted]

RESULTS OF THE WALKOVER GAMMA RADIATION SURVEY FOR THE RESIDENTIAL PROPERTY AT 76 WEST CENTRAL AVENUE, MAYWOOD, NEW JERSEY

The purpose of this letter is to inform you of the results of the walkover gamma radiation survey performed on your property at 76 West Central Avenue in Maywood, New Jersey on February 18, 1992.

Surveys are performed on properties in the Maywood area in the following manner:

1. A health physics technician walks over the property with a gamma radiation detection instrument calibrated to detect any gamma radiation level that exceeds naturally occurring background in the area. *[For the Maywood area, this naturally occurring background level is approximately 7,500 counts per minute (cpm) for the type instrument used to survey your property.]* If the radiation levels recorded on the property do not exceed twice background (15,000 cpm) no further action is necessary.

2. If initial walkover survey results do indicate radiation levels in excess of twice background, another instrument is used in order to more precisely locate the areas and extent of surface gamma radiation.

3. If the second instrument readings confirm radioactive contamination is present, then a soil sample is taken and sent to a laboratory for radiological analysis to determine the concentrations of radioactive materials present in the soils.

The gamma radiation measurements recorded at your property were within the range of naturally occurring background. Specifically, the count rates ranged from 7,000 to 14,000 cpm over the entire property. These measurements indicate that there is no radioactive contamination present on your property in excess of U. S. Department of Energy (DOE) guidelines established for the Formerly Utilized Sites Remedial Action Program (FUSRAP).

As part of the survey performed on your property, gamma radiation exposure rate measurements were also taken at several locations in order to determine if an exposure to radiation in excess of the DOE guidance level [100 millirem per year (mrem/yr) above background] would be exceeded. The exposure rates on your property ranged from 7 to 10.5 microroentgens per hour (μR/h). The average background gamma radiation exposure rate for the Maywood area has been determined to be approximately 9 μR/h. This is the amount of gamma radiation that a person is exposed to from naturally occurring sources such as cosmic radiation or granite rock. Consistent with the radiation measurements described above, there is no indication of radioactive contamination on your property and your exposure to gamma radiation is within the expected range of natural background.

Enclosed you will find additional information concerning naturally occurring background radiation that may help answer any questions you may have. If you need additional information, please feel free to call me and leave a message on our toll free number, 1-800-253-9759.

Sincerely,

Susan M. Cange

Susan M. Cange, Site Manager
Former Sites Restoration Division

Enclosure

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

095301

October 5, 1992

[redacted]
3 Maple Lane
Maywood, New Jersey 07607

Dear [redacted]

RESULTS OF THE WALKOVER GAMMA RADIATION SURVEY FOR THE RESIDENTIAL PROPERTY AT 3 MAPLE LANE, MAYWOOD, NEW JERSEY

The purpose of this letter is to inform you of the results of the walkover gamma radiation survey performed on your property at 3 Maple Lane in Maywood, New Jersey on May 13, 1992.

Surveys are performed on properties in the Maywood area in the following manner:

1. A health physics technician walks over the property with a gamma radiation detection instrument calibrated to detect any gamma radiation level that exceeds naturally occurring background in the area. *[For the Maywood area, this naturally occurring background level is approximately 7,500 counts per minute (cpm) for the type instrument used to survey your property.]* If the radiation levels recorded on the property do not exceed twice background (15,000 cpm) no further action is necessary.

2. If initial walkover survey results do indicate radiation levels in excess of twice background, another instrument is used in order to more precisely locate the areas and extent of surface gamma radiation.

3. If the second instrument readings confirm radioactive contamination is present, then a soil sample is taken and sent to a laboratory for radiological analysis to determine the concentrations of radioactive materials present in the soils.

The gamma radiation measurements recorded at your property were within the range of naturally occurring background. Specifically, the count rates ranged from 5,000 to 12,000 cpm over the entire property. These measurements indicate that there is no radioactive contamination present on your property in excess of U. S. Department of Energy (DOE) guidelines established for the Formerly Utilized Sites Remedial Action Program (FUSRAP).

As part of this survey two soil samples were collected from the front yard in the corner of the property opposite the driveway. Laboratory analysis indicated concentrations of thorium-232, the primary contaminant resulting from past operations at the former Maywood Chemical Works (MCW) were 1.3 picocuries per gram (pCi/g) in both samples collected. These concentrations approximate background levels in soil, and are less than the Department of Energy's (DOE) soil cleanup guideline of 5 pCi/g for surface soils. Analytical results for the soil samples collected on your property do not indicate the presence of radioactive contamination which exceeds the DOE cleanup guidelines.

Enclosed you will find additional information concerning naturally occurring background radiation that may help answer any questions you may have. If you need additional information, please feel free to call me and leave a message on our toll free number, 1-800-253-9759.

Sincerely,

Susan M. Cange

Susan M. Cange, Site Manager
Former Sites Restoration Division

Enclosure

095301

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

October 5, 1992

[redacted]
122 West Central Avenue
Maywood, New Jersey 07607

Dear [redacted]

RESULTS OF THE RADIOLOGICAL SURVEY FOR THE RESIDENTIAL PROPERTY AT 122 WEST CENTRAL AVENUE, MAYWOOD, NEW JERSEY

The purpose of this letter is to inform you of the results of the walkover gamma radiation survey performed on your property at 122 West Central Avenue in Maywood, New Jersey on February 13, 1992.

Surveys are performed on properties in the Maywood area in the following manner:

1. A health physics technician walks over the property with a gamma radiation detection instrument calibrated to detect any gamma radiation level that exceeds naturally occurring background in the area. *[For the Maywood area, this naturally occurring background level is approximately 7,500 counts per minute (cpm) for the type instrument used to survey your property.]* If the radiation levels recorded on the property do not exceed twice background (15,000 cpm) no further action is necessary.

2. If initial walkover survey results do indicate radiation levels in excess of twice background, another instrument is used in order to more precisely locate the areas and extent of surface gamma radiation.

3. If the second instrument readings confirm radioactive contamination is present, then a soil sample is then taken and sent to a laboratory for radiological analysis to determine the concentrations of radioactive materials present in the soils.

Because instrument readings indicated gamma radiation levels greater than twice background in the rear of the backyard, adjacent to the railroad property, two soil sample was collected from that area. Laboratory analysis indicated concentrations of thorium-232, the primary contaminant resulting from past operations at the former Maywood Chemical Works (MCW) were 3.2 and 4.1 picocuries per gram (pCi/g). These concentrations approximate background levels in soil, and are less than the Department of Energy's (DOE) soil cleanup guideline of 5 pCi/g for surface soils. Analytical results for the soil samples collected on your property do not indicate the presence of radioactive contamination which exceeds the DOE cleanup guidelines.

As part of the survey performed on your property, gamma radiation exposure rate measurements were also taken at three locations in order to determine if an exposure in excess of the DOE guidance level [100 millirem per year (mrem/yr) above background] would be exceeded. The exposure rates observed, including natural background, ranged from 9 to 22 microroentgens per hour (μR/h). The annual average background gamma radiation exposure rate, for the Maywood area, has been determined to be approximately 9 μR/h.

The DOE limit for annual radiation dose of 100 mrem/yr (excluding radon exposure) received by a member of the general public, is approximately equal to 11 μR/h above background, assuming a person is exposed to the contamination 24 hours per day, 365 days per year. Calculated annual exposures at 2 m (8 ft) and 5 m (15 ft) above ground at the property boundary in the northeast corner of your backyard, would reach but not exceed this limit, although to my knowledge no reasonable scenarios exist for a person to reside at this location 24 hours a day for an entire year. The maximum observed exposure rate adjacent to the rear of your home, assuming a more reasonable yet conservative scenario (spending 24 hours per day, 365 days per year at the back of the house), would result in an annual exposure of 26 mrem/yr above background, approximately one-fourth of the DOE exposure limit for the general public.

Enclosed you will find additional information concerning naturally occurring background radiation that may help answer any questions you may have. If you need additional information, please feel free to call me and leave a message on our toll free number, 1-800-253-9759.

Sincerely,

Susan M. Cange

Susan M. Cange, Site Manager
Former Sites Restoration Division

Enclosure

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

0953

October 5, 1992

[redacted]
116 West Central Avenue
Maywood, New Jersey 07607

Dear [redacted]:

RESULTS OF THE RADIOLOGICAL SURVEY FOR THE RESIDENTIAL PROPERTY AT 116 WEST CENTRAL AVENUE, MAYWOOD, NEW JERSEY

The purpose of this letter is to inform you of the results of the walkover gamma radiation survey performed on your property at 116 West Central Avenue in Maywood, New Jersey on February 18, 1992.

Surveys are performed on properties in the Maywood area in the following manner:

1. A health physics technician walks over the property with a gamma radiation detection instrument calibrated to detect any gamma radiation level that exceeds naturally occurring background in the area. *[For the Maywood area, this naturally occurring background level is approximately 7,500 counts per minute (cpm) for the type instrument used to survey your property.]* If the radiation levels recorded on the property do not exceed twice background (15,000 cpm) no further action is necessary.

2. If initial walkover survey results do indicate radiation levels in excess of twice background, another instrument is used in order to more precisely locate the areas and extent of surface gamma radiation.

3. If the second instrument readings confirm radioactive contamination is present, then a soil sample is then taken and sent to a laboratory for radiological analysis to determine the concentrations of radioactive materials present in the soils.

[redacted] 2 October 5, 1992

Because instrument readings indicated gamma radiation levels greater than twice background in the rear of the backyard, adjacent to the railroad property, a soil sample was collected from that area. Laboratory analysis indicated the concentration of thorium-232, the primary contaminant resulting from past operations at the former Maywood Chemical Works (MCW) was 3.8 picocuries per gram (pCi/g). This concentration approximate background levels in soil, and are less than the Department of Energy's (DOE) soil cleanup guideline of 5 pCi/g for surface soils. Analytical results for the soil sample collected on your property do not indicate the presence of radioactive contamination which exceeds the DOE cleanup guidelines.

As part of the survey performed on your property, gamma radiation exposure rate measurements were also taken at three locations in order to determine if an exposure in excess of the DOE guidance level [100 millirem per year (mrem/yr) above background] would be exceeded. The exposure rates observed, including natural background, ranged from 9 to 22 microroentgens per hour (μR/h). The annual average background gamma radiation exposure rate, for the Maywood area, has been determined to be approximately 9 μR/h.

The DOE limit for annual radiation dose of 100 mrem/yr (excluding radon exposure) received by a member of the general public, is approximately equal to 11 μR/h above background, assuming a person is exposed to the contamination 24 hours per day, 365 days per year. Calculated annual exposures at 2 m (8 ft) and 5 m (15 ft) above ground at the property boundary in the northeast corner of your backyard, would reach but not exceed this limit, although to my knowledge no reasonable scenarios exist for a person to reside at this location 24 hours a day for an entire year. The maximum observed exposure rate adjacent to the rear of your home, assuming a more reasonable yet conservative scenario (spending 24 hours per day, 365 days per year at the back of the house), would result in an annual exposure of 18 mrem/yr above background, approximately one-fifth of the DOE exposure limit for the general public.

Enclosed you will find additional information concerning naturally occurring background radiation that may help answer any questions you may have. If you need additional information, please feel free to call me and leave a message on our toll free number, 1-800-253-9759.

Sincerely,

Susan M. Cange

Susan M. Cange, Site Manager
Former Sites Restoration Division

Enclosure

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

October 5, 1992

[redacted]
110 West Central Avenue
Maywood, New Jersey 07607

Dear [redacted]

RESULTS OF THE RADIOLOGICAL SURVEY FOR THE RESIDENTIAL PROPERTY AT 110 WEST CENTRAL AVENUE, MAYWOOD, NEW JERSEY

The purpose of this letter is to inform you of the results of the walkover gamma radiation survey performed on your property at 110 West Central Avenue in Maywood, New Jersey on February 12, 1992.

Surveys are performed on properties in the Maywood area in the following manner:

1. A health physics technician walks over the property with a gamma radiation detection instrument calibrated to detect any gamma radiation level that exceeds naturally occurring background in the area. *[For the Maywood area, this naturally occurring background level is approximately 7,500 counts per minute (cpm) for the type instrument used to survey your property.]* If the radiation levels recorded on the property do not exceed twice background (15,000 cpm) no further action is necessary.

2. If initial walkover survey results do indicate radiation levels in excess of twice background, another instrument is used in order to more precisely locate the areas and extent of surface gamma radiation.

3. If the second instrument readings confirm radioactive contamination is present, then a soil sample is then taken and sent to a laboratory for radiological analysis to determine the concentrations of radioactive materials present in the soils.

Because instrument readings indicated gamma radiation levels greater than twice background in the rear of the backyard, adjacent to the railroad property, two soil samples were collected from that area. Laboratory analysis indicated concentrations of thorium-232, the primary contaminant resulting from past operations at the former Maywood Chemical Works (MCW) were 2.8 and 3.1 picocuries per gram (pCi/g). These concentrations approximate background levels in soil, and are less than the Department of Energy's (DOE) soil cleanup guideline of 5 pCi/g for surface soils. Analytical results for the soil samples collected on your property do not indicate the presence of radioactive contamination which exceeds the DOE cleanup guidelines.

As part of the survey performed on your property, gamma radiation exposure rate measurements were also taken at three locations in order to determine if an exposure in excess of the DOE guidance level [100 millirem per year (mrem/yr) above background] would be exceeded. The exposure rates observed, including natural background, ranged from 9 to 20 microroentgens per hour (μR/h). The annual average background gamma radiation exposure rate, for the Maywood area, has been determined to be approximately 9 μR/h.

The DOE limit for annual radiation dose of 100 mrem/yr (excluding radon exposure) received by a member of the general public, is approximately equal to 11 μR/h above background, assuming a person is exposed to the contamination 24 hours per day, 365 days per year. Calculated annual exposures at 2 m (8 ft) and 5 m (15 ft) above ground at the property boundary in the northeast corner of your backyard, would reach but not exceed this limit, although to my knowledge no reasonable scenarios exist for a person to reside at this location 24 hours a day for an entire year. The maximum observed exposure rate adjacent to the rear of your home, assuming a more reasonable yet conservative scenario (spending 24 hours per day, 365 days per year at the back of the house), would result in an annual exposure of 19 mrem/yr above background, approximately one-fifth of the DOE exposure limit for the general public.

Enclosed you will find additional information concerning naturally occurring background radiation that may help answer any questions you may have. If you need additional information, please feel free to call me and leave a message on our toll free number, 1-800-253-9759.

Sincerely,

Susan M. Cange

Susan M. Cange, Site Manager
Former Sites Restoration Division

Enclosure

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

October 5, 1992

[redacted]
142 West Central Avenue
Maywood, New Jersey 07607

Dear [redacted]

RESULTS OF THE RADIOLOGICAL SURVEY FOR THE RESIDENTIAL PROPERTY AT 142 WEST CENTRAL AVENUE, MAYWOOD, NEW JERSEY

The purpose of this letter is to inform you of the results of the walkover gamma radiation survey performed on your property at 142 West Central Avenue in Maywood, New Jersey on February 21, 1992.

Surveys are performed on properties in the Maywood area in the following manner:

1. A health physics technician walks over the property with a gamma radiation detection instrument calibrated to detect any gamma radiation level that exceeds naturally occurring background in the area. *[For the Maywood area, this naturally occurring background level is approximately 7,500 counts per minute (cpm) for the type instrument used to survey your property.]* If the radiation levels recorded on the property do not exceed twice background (15,000 cpm) no further action is necessary.

2. If initial walkover survey results do indicate radiation levels in excess of twice background, another instrument is used in order to more precisely locate the areas and extent of surface gamma radiation.

3. If the second instrument readings confirm radioactive contamination is present, then a soil sample is then taken and sent to a laboratory for radiological analysis to determine the concentrations of radioactive materials present in the soils.

Because instrument readings indicated gamma radiation levels greater than twice background in the rear of the backyard, adjacent to the railroad property, a soil sample was collected from that area. Laboratory analysis indicated the concentration of thorium-232, the primary contaminant resulting from past operations at the former Maywood Chemical Works (MCW) was 1.1 picocuries per gram (pCi/g). This concentration approximate background levels in soil, and are less than the Department of Energy's (DOE) soil cleanup guideline of 5 pCi/g for surface soils. Analytical results for the soil sample collected on your property do not indicate the presence of radioactive contamination which exceeds the DOE cleanup guidelines.

As part of the survey performed on your property, gamma radiation exposure rate measurements were also taken at three locations in order to determine if an exposure in excess of the DOE guidance level [100 millirem per year (mrem/yr) above background] would be exceeded. The exposure rates observed, including natural background, ranged from 9 to 17 microroentgens per hour (μR/h). The annual average background gamma radiation exposure rate, for the Maywood area, has been determined to be approximately 9 μR/h.

The DOE limit for annual radiation dose of 100 mrem/yr (excluding radon exposure) received by a member of the general public, is approximately equal to 11 μR/h above background, assuming a person is exposed to the contamination 24 hours per day, 365 days per year. Calculated annual exposures at 2 m (8 ft) and 5 m (15 ft) above ground at the property boundary in the northeast corner of your backyard, would reach but not exceed this limit, although to my knowledge no reasonable scenarios exist for a person to reside at this location 24 hours a day for an entire year. The maximum observed exposure rate adjacent to the rear of your home, assuming a more reasonable yet conservative scenario (spending 24 hours per day, 365 days per year at the back of the house), would result in an annual exposure of 18 mrem/yr above background, approximately one-fifth of the DOE exposure limit for the general public.

Enclosed you will find additional information concerning naturally occurring background radiation that may help answer any questions you may have. If you need additional information, please feel free to call me and leave a message on our toll free number, 1-800-253-9759.

Sincerely,

Susan M. Cange

Susan M. Cange, Site Manager
Former Sites Restoration Division

Enclosure

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

October 5, 1992

[redacted]
146 West Central Avenue
Maywood, New Jersey 07607

Dear [redacted]

RESULTS OF THE RADIOLOGICAL SURVEY FOR THE RESIDENTIAL PROPERTY AT 146 WEST CENTRAL AVENUE, MAYWOOD, NEW JERSEY

The purpose of this letter is to provide you with summary results from a radiological survey performed on your property located at 146 West Central Avenue in Maywood, New Jersey.

Surveys are performed on properties in the Maywood area in the following manner:

1. A health physics technician walks over the property with a gamma radiation detection instrument calibrated to detect any gamma radiation level that exceeds naturally occurring background in the area. *[For the Maywood area, this naturally occurring background level is approximately 7,500 counts per minute (cpm) for the type instrument used to survey your property.]* If the radiation levels recorded on the property do not exceed twice background (15,000 cpm) no further action is necessary.

2. If initial walkover survey results do indicate radiation levels in excess of twice background, another instrument is used in order to more precisely locate the areas and extent of surface gamma radiation.

3. If the second instrument readings confirm radioactive contamination is present, then a soil sample is taken, and radiological analysis is performed on the soil in order to determine the concentrations of radioactive materials present in the soils.

The Department of Energy (DOE) implemented this survey at your request in order to determine if radioactive contamination from the former Maywood Chemical Works (MCW) is present on your property. The measured concentration of thorium-232, the primary contaminant from past operations at MCW, in the soil sample obtained from your property (see Figure 1) was 13 picocuries per gram (pCi/g). The sample location is shown Figure 1. The DOE cleanup criteria for residual thorium-232 contamination is 5 pCi/g, above background, for surface soils down to a depth of six inches and 15 pCi/g for subsurface soils. The background concentration for thorium-232 in soil has been determined to be approximately 1 pCi/g in the Maywood area. Analytical results for the soil sample collected on your property indicate the presence of radioactive contamination which meets or exceeds the DOE cleanup criteria for surface soils.

Although the concentration of thorium in soil exceeds DOE guidelines, this contamination does not pose a near-term health threat. Current cleanup guidelines for residual radioactivity in soils are set low enough to ensure that an individual could reside in a house built upon affected property, grow their own food on the property, raise and consume livestock on the property, and withdraw drinking water from a well placed into the contaminated soils and still not receive an exposure to radiation distinguishable from exposure to naturally occurring sources of environmental radiation. Since your property is not being used as a source of food materials, the contamination present poses virtually no hazard unless large volumes (>500 grams) of contaminated soil are either directly ingested or inhaled. I would like to point out, however, that significant soil disturbance or relocation of contaminated soils to another property with different land use could present an environmental and/or health hazard, and complicate the cleanup effort by spreading contamination.

Gamma radiation exposure rate measurements were also taken at three locations on your property (see Figure 2) in order to determine if an exposure in excess of DOE's guidance level [100 millirem per year (mrem/yr) above background] would be exceeded. At each location exposure rates were measured at heights of 1 m (3 ft), 2 m (8 ft), and 5 m (15 ft). Gamma radiation exposure rates ranged from 7 to 18 microroentgens per hour (μR/h) while the annual average background gamma radiation exposure rate for the Maywood area is approximately 9 μR/h. The highest exposure rate measured on your property, 18 μR/h (9 μR/h above background), was at the rear of the backyard adjacent to the railroad track at a height of 5 m (15 ft). Although this exposure rate would equate to a total exposure at this location of 79 mrem/yr if you remained there 24 hours per day for an entire year, a more reasonable yet conservative scenario, would result in a total exposure of only 18 mrem, approximately one-fifth of the DOE guideline for exposure members of the general public.

Data from this survey will be used to evaluate cleanup alternatives for the soils on your property, the nearby railroad property, and the Maywood Interim Storage Site (MISS) as part of a comprehensive environmental review process. Current schedules call for selection of a cleanup alternative by January 1994.

095301

FIGURE 1

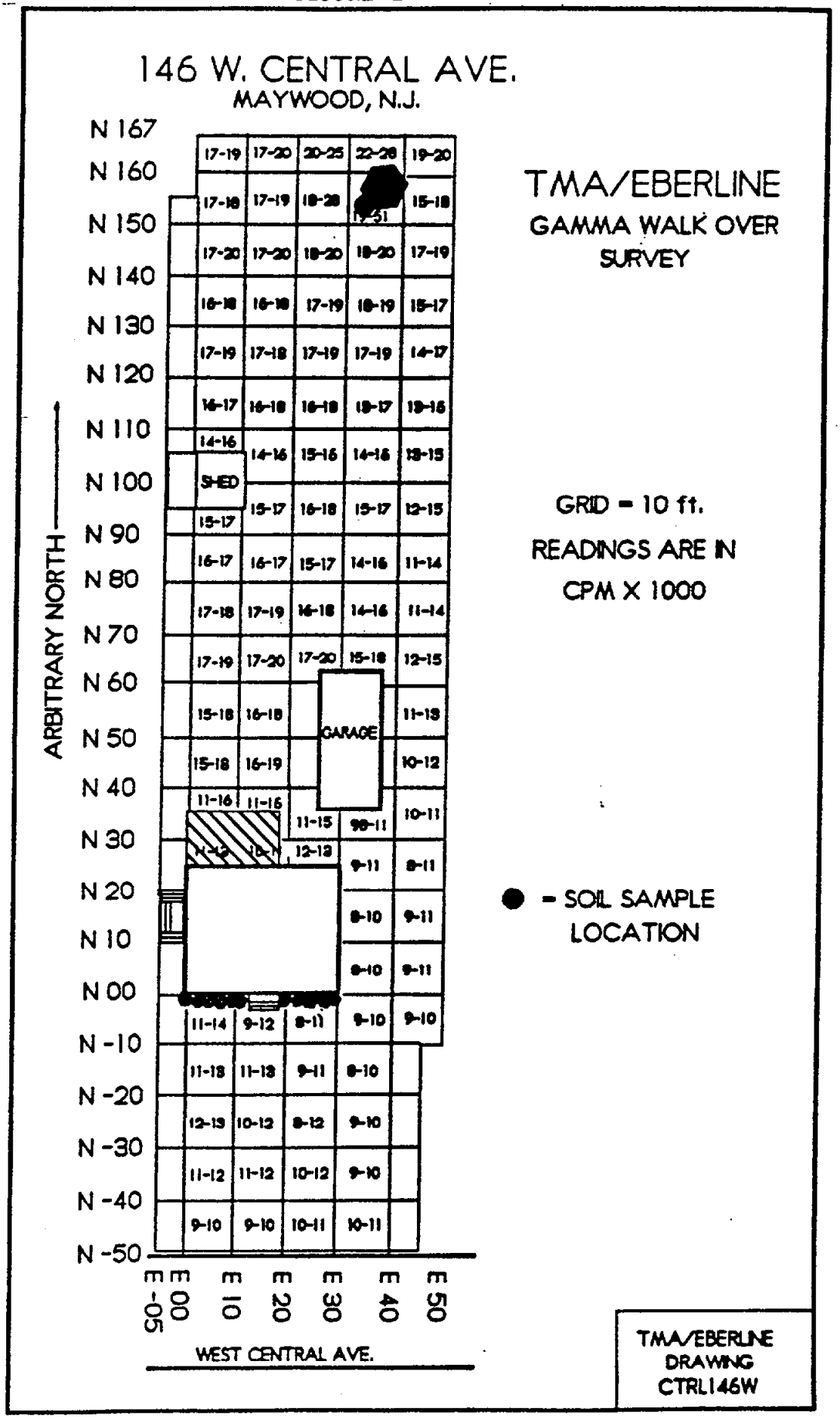
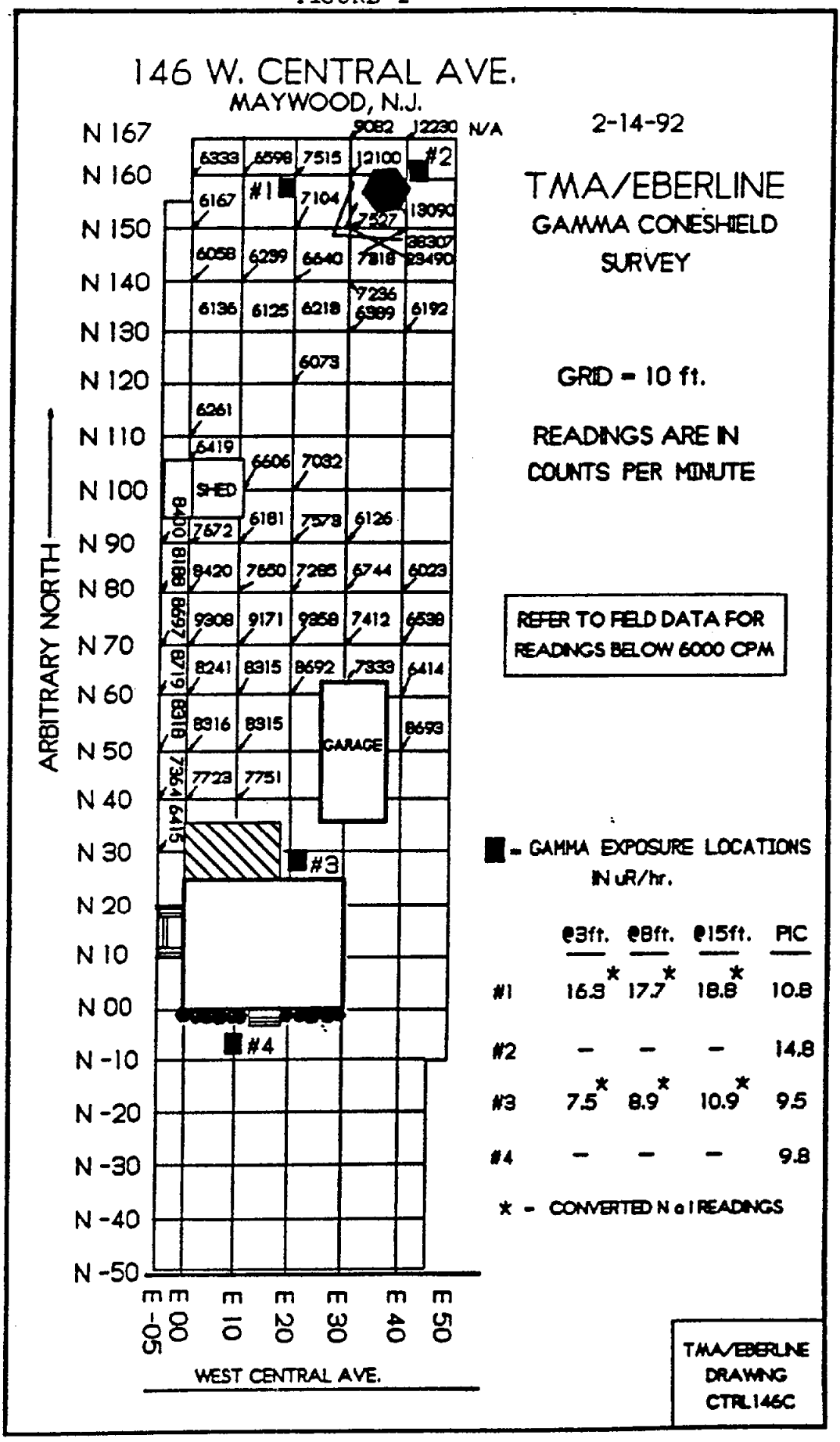


FIGURE 2


146 W. CENTRAL AVE.
MAYWOOD, N.J.
2-14-92
TMA/EBERLINE
GAMMA CONESHIELD
SURVEY
GRID = 10 ft.
READINGS ARE IN
COUNTS PER MINUTE
REFER TO FIELD DATA FOR
READINGS BELOW 6000 CPM
ARBITRARY NORTH
N 167
N 160
N 150
N 140
N 130
N 120
N 110
N 100
N 90
N 80
N 70
N 60
N 50
N 40
N 30
N 20
N 10
N 00
N -10
N -20
N -30
N -40
N -50
E -05
E 00
E 10
E 20
E 30
E 40
E 50
WEST CENTRAL AVE.
SHED
GARAGE
#1
#2
#3
#4
9082
12230
N/A
6333
6598
7515
12100
6167
7104
7527
13090
6058
6299
6640
7818
6136
6125
6218
7236
6389
6192
6073
6261
6419
6606
7032
8400
7672
6181
7578
6126
8188
8420
7650
7265
6744
6023
2698
9308
9171
9359
7412
6538
8719
8241
8315
8692
7333
6414
8818
8916
8915
8693
7364
7723
7751
6415
■ - GAMMA EXPOSURE LOCATIONS
IN uR/hr.
@3ft. @8ft. @15ft. PIC
#1 16.3* 17.7* 18.8* 10.8
#2 - - - 14.8
#3 7.5* 8.9* 10.9* 9.5
#4 - - - 9.8
* - CONVERTED N o I READINGS
TMA/EBERLINE
DRAWING
CTRL146C

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

October 5, 1992

[redacted]
130 West Central Avenue
Maywood, New Jersey 07607

Dear [redacted]

RESULTS OF THE RADIOLOGICAL SURVEY FOR THE RESIDENTIAL PROPERTY AT 130 WEST CENTRAL AVENUE, MAYWOOD, NEW JERSEY

The purpose of this letter is to provide you with summary results from a radiological survey performed on your property located at 130 West Central Avenue in Maywood, New Jersey.

Surveys are performed on properties in the Maywood area in the following manner:

1. A health physics technician walks over the property with a gamma radiation detection instrument calibrated to detect any gamma radiation level that exceeds naturally occurring background in the area. *[For the Maywood area, this naturally occurring background level is approximately 7,500 counts per minute (cpm) for the type instrument used to survey your property.]* If the radiation levels recorded on the property do not exceed twice background (15,000 cpm) no further action is necessary.

2. If initial walkover survey results do indicate radiation levels in excess of twice background, another instrument is used in order to more precisely locate the areas and extent of surface gamma radiation.

3. If the second instrument readings confirm radioactive contamination is present, then a soil sample is taken, and radiological analysis is performed on the soil in order to determine the concentrations of radioactive materials present in the soils.

The Department of Energy (DOE) implemented this survey at your request in order to determine if radioactive contamination from the former Maywood Chemical Works (MCW) is present on your property. The measured concentrations of thorium-232, the primary contaminant from past operations at MCW, in soils obtained from your property (see Figure 1) ranged from 5 to 47 picocuries per gram (pCi/g) in the three soil samples collected. The sample locations are shown Figure 1. The DOE cleanup criteria for residual thorium-232 contamination is 5 pCi/g, above background, for surface soils down to a depth of six inches and 15 pCi/g for subsurface soils. The background concentration for thorium-232 in soil has been determined to be approximately 1 pCi/g in the Maywood area. Analytical results for the soil samples collected on your property indicate the presence of radioactive contamination which meets or exceeds the DOE cleanup criteria for surface soils.

Although the concentrations of thorium in soil exceed DOE guidelines, this contamination does not pose a near-term health threat. Current cleanup guidelines for residual radioactivity in soils are set low enough to ensure that an individual could reside in a house built upon affected property, grow their own food on the property, raise and consume livestock on the property, and withdraw drinking water from a well placed into the contaminated soils and still not receive an exposure to radiation distinguishable from exposure to naturally occurring sources of environmental radiation. Since your property is not being used as a source of food materials, the contamination present poses virtually no hazard unless large volumes (>500 grams) of contaminated soil are either directly ingested or inhaled. I would like to point out, however, that significant soil disturbance or relocation of contaminated soils to another property with different land use could present an environmental and/or health hazard, and complicate the cleanup effort by spreading contamination.

Gamma radiation exposure rate measurements were also taken at three locations on your property (see Figure 2) in order to determine if an exposure in excess of DOE's guidance level [100 millirem per year (mrem/yr) above background] would be exceeded. At each location exposure rates were measured at heights of 1 m (3 ft), 2 m (8 ft), and 5 m (15 ft). Gamma radiation exposure rates ranged from 9 to 22 microroentgens per hour (μR/h) while the annual average background gamma radiation exposure rate for the Maywood area is approximately 9 μR/h. The highest exposure rate measured on your property, 22 μR/h (13 μR/h above background), was at the rear of the backyard adjacent to the railroad track at heights of 2 and 5 m (8 and 15 ft). Although this exposure rate would equate to a total exposure at this location of 113 mrem/yr if you remained there 24 hours per day for an entire year, a more reasonable yet conservative scenario, would result in a total exposure of only 35 mrem, approximately one-third of the DOE guideline for exposure members of the general public.

Data from this survey will be used to evaluate cleanup alternatives for the soils on your property, the nearby railroad property, and the Maywood Interim Storage Site (MISS) as part of a comprehensive environmental review process. Current schedules call for selection of a cleanup alternative by January 1994.

FIGURE 1

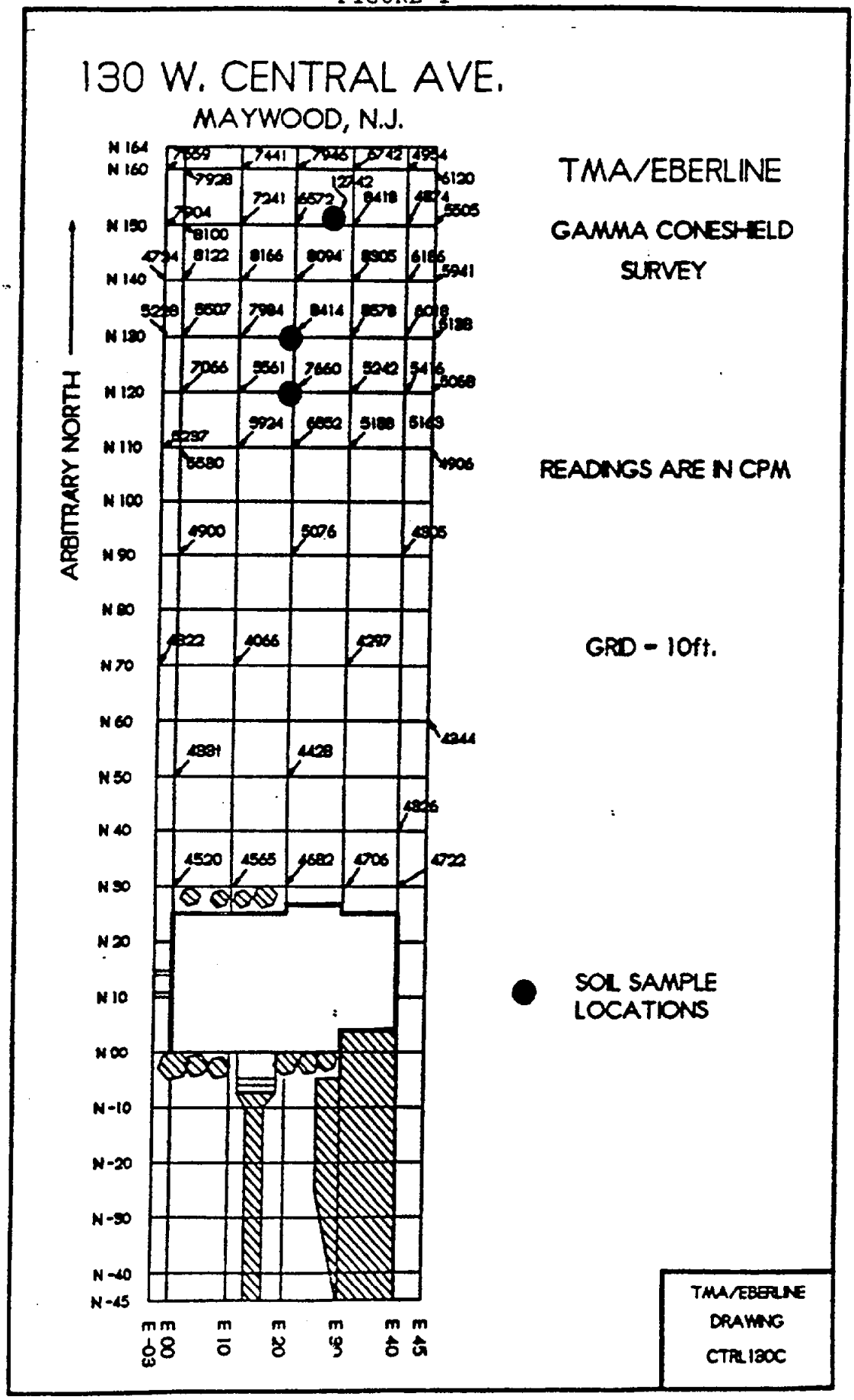
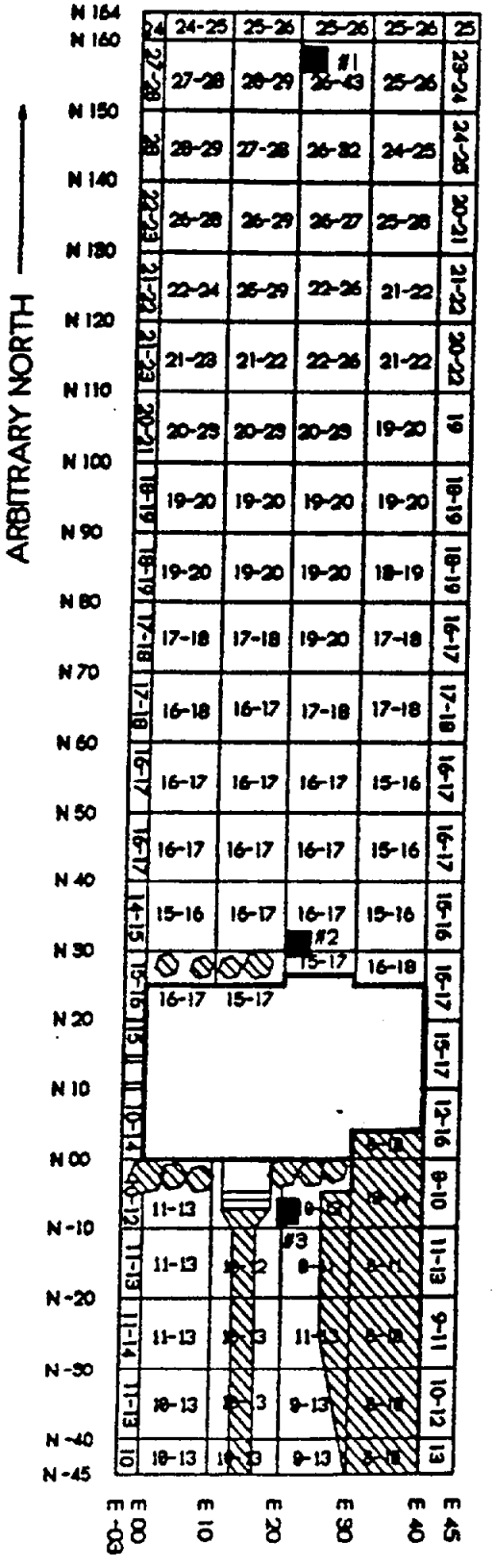

130 W. CENTRAL AVE.
MAYWOOD, N.J.
ARBITRARY NORTH
N 164
N 160
N 150
N 140
N 130
N 120
N 110
N 100
N 90
N 80
N 70
N 60
N 50
N 40
N 30
N 20
N 10
N 00
N -10
N -20
N -30
N -40
N -45
7659 7441 7946 6742 4954
7928 12742 6120
7241 6572 8418 4874
7904 8100 5505
4734 8122 8166 8094 8905 6186 5941
5238 8607 7984 8414 8578 6018 5128
7066 8561 7660 5242 5416 5068
5297 9924 6852 5188 5169
6580 4906
4900 5076 4805
4822 4066 4297
4944
4881 4428
4826
4520 4565 4682 4706 4722
TMA/EBERLINE
GAMMA CONESHIELD
SURVEY
READINGS ARE IN CPM
GRID = 10ft.
SOIL SAMPLE
LOCATIONS
TMA/EBERLINE
DRAWING
CTRL130C

FIGURE 2

130 W. CENTRAL AVE.

MAYWOOD, N.J.



TMA/EBERLINE

GAMMA WALK OVER SURVEY

READINGS ARE IN CPM X 1000

GRID = 10ft.

SPA-3 #0099
CONV. = 1274 CPM/uR/hr.

■ GAMMA EXPOSURE LOCATIONS IN uR/hr.

	@3ft.	@6ft.	@15ft.
#1 -	21.9	22.5	22.9
#2 -	12.2	12.4	12.9
#3 -	9.0	9.4	9.8

TMA/EBERLINE
DRAWING
CTRL190W