

FORMERLY UTILIZED SITES REMEDIAL ACTION PROGRAM

ELIMINATION REPORT

FOR

WINCHESTER ENGINEERING AND ANALYTICAL CENTER
(NORTHEASTERN RADIOLOGICAL HEALTH LABORATORY)
WINCHESTER, MASSACHUSETTS

Department of Energy
Office of Nuclear Energy
Office of Remedial Action and Waste Technology
Division of Facility and Site Decommissioning Projects

CONTENTS

	<u>Page</u>
INTRODUCTION	1
BACKGROUND	2
Site Function	2
Site Description	2
Radiological History and Status	3
ELIMINATION ANALYSIS	5
REFERENCES	5

ELIMINATION REPORT
WINCHESTER ENGINEERING AND ANALYTICAL CENTER
(NORTHEASTERN RADIOLOGICAL HEALTH LABORATORY)
WINCHESTER, MASSACHUSETTS

INTRODUCTION

The Department of Energy (DOE), Office of Nuclear Energy, Office of Terminal Waste Disposal and Remedial Action, Division of Remedial Action Projects (and/or predecessor agencies, offices and divisions,) has reviewed the past activities of the Atomic Energy Commission (AEC) at the Winchester Engineering and Analytical Center, Winchester, Massachusetts, and has completed a preliminary radiological survey at the site. DOE has determined that the facilities used by AEC have been adequately decontaminated within current radiological guidelines and standards and are also being operated under Nuclear Regulatory Commission licenses. Therefore, the facilities used by AEC require no remedial action and will not be included in the Formerly Utilized Sites Remedial Action Program.

This report presents information supporting the determination that the radiological conditions at the Winchester Engineering and Analytical Center facilities used for AEC work are in compliance with current DOE radiological guidelines and standards¹ and provides assurance that use of these areas will not result in any measurable radiological hazard to site occupants or the general public because of previous AEC-related activities.

¹U.S. Department of Energy Guidelines for Residual Radioactivity at Formerly Utilized Sites Remedial Action Program and Remote Surplus Facilities Management Program Sites (Rev. 1, July 1985).

This elimination report will be archived by DOE through the Assistant Secretary for Management and Administration. A copy of this package will be available for public review between 8:00 a.m. and 4:00 p.m., Monday through Friday (except Federal holidays), at the DOE Public Document Room located in Room 1E-190 of the Forrestal Building, 1000 Independence Avenue, S.W., Washington, D.C.

BACKGROUND

Site Function

The Winchester Engineering and Analytical Center, built in 1952 under sponsorship of AEC, was used to continue development of methods for extraction of uranium and thorium from ore and to prepare metal grade uranium tetrafluoride. Massachusetts Institute of Technology (MIT) began the work in 1946 at Cambridge, Massachusetts, and continued the work after it was transferred later that year to Watertown Arsenal, Watertown, Massachusetts. American Cyanamid Company succeeded MIT in operating the project at Watertown Arsenal from 1951 until October 1952, when it was transferred to the Winchester facility. In 1954, National Lead Company, Inc., took over operations under AEC contract AT(49-6)-924. Beginning in 1959, facility use shifted to laboratory testing of environmental analysis methods pertaining to uranium waste. In 1961, the work was discontinued, and the facility was transferred to the Department of Health, Education and Welfare (HEW) for use as a low-level environmental radiation surveillance laboratory and for analysis of radiopharmaceuticals.

Site Description

The Winchester Engineering and Analytical Center, as the facility is now known, was built in 1952 with an AEC appropriation and was transferred to HEW (now known as the Department of Health and Human

Services (HHS)) in 1961. It is currently operated by the Food and Drug Administration (FDA), Public Health Service, of HHS.

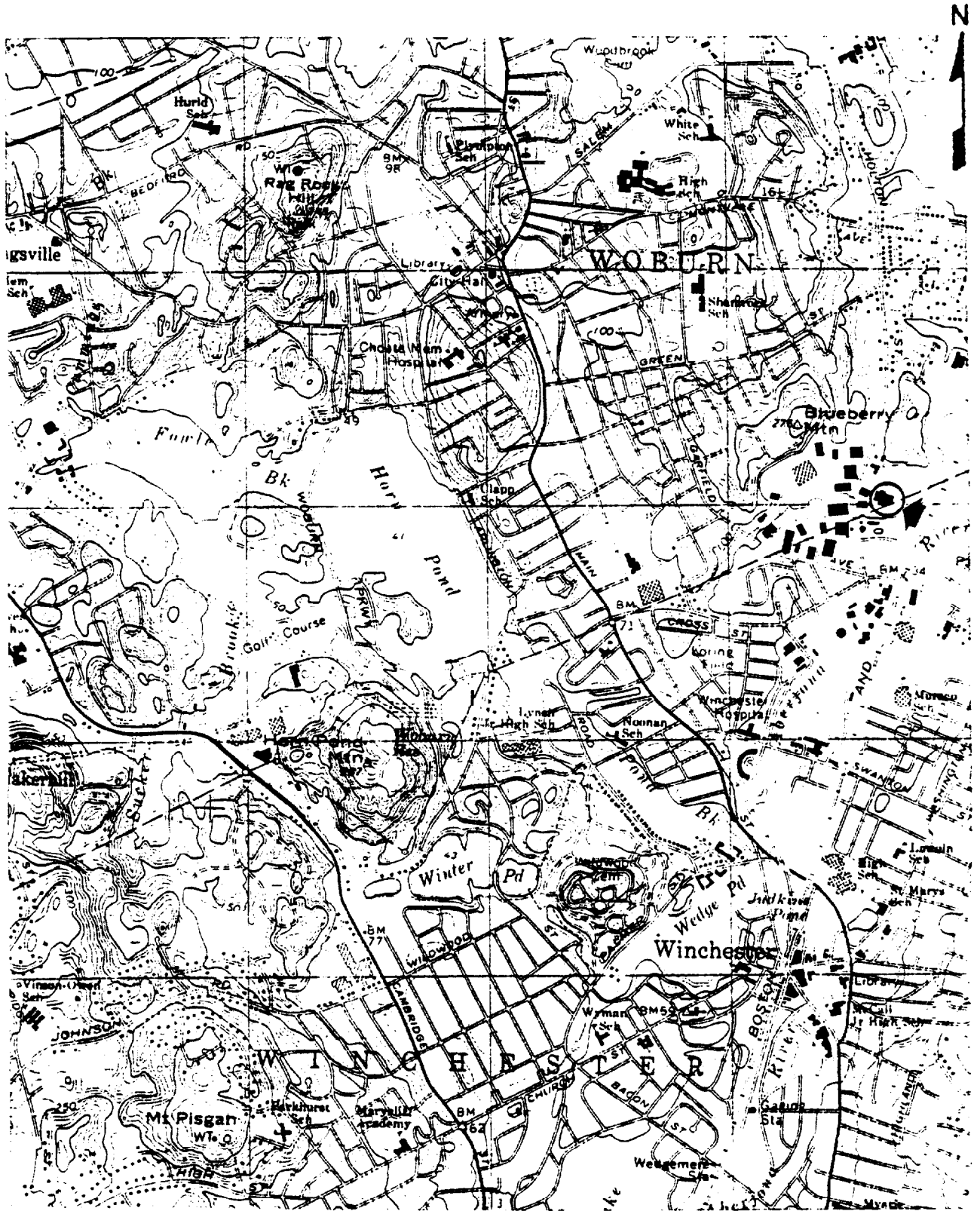
The site property, approximately 5.8 acres, is located at 109 Holton Street in Winchester, Massachusetts (see attached figure). Original facilities included a one-story masonry building used for administration and laboratory space, a solvent storage building, and a corrugated metal building for pilot-scale projects. These are unchanged except for some renovation to facilitate the low-level radiation studies. Two metal frame warehouses were added to the property to accommodate HEW's programs.

Radiological History and Status

During the contract period, a few wheelbarrow loads of pitchblende residues were buried at the rear of the laboratory building and covered with soil and grass. Subsequently, a metal frame warehouse was built at this location. Cleanup operations were conducted in 1960, and AEC removed most of the equipment from the site in 1961. During the 1960 cleanup, about 14 cubic yards of low-grade uranium-bearing ore were trucked to the landfill in Woburn, Massachusetts, for disposal.

When the Winchester site was transferred to HEW in 1961, a survey was conducted by the HEW Winchester Bureau of Radiological Health. All areas were decontaminated, and radioactive materials were disposed of through a commercial carrier.

At the request of the Energy Research and Development Administration, Oak Ridge National Laboratory (ORNL) conducted a preliminary radiological survey of the site on January 25, 1977. ORNL concluded that no personnel safety problems or limitations for current operation existed and that further radiation surveys were not warranted.



Location of the Winchester Engineering and Analytical Center in Winchester, Massachusetts

In October 1979, the Woburn Landfill was surveyed by ORNL and the Massachusetts Department of Public Health. No radiation above background was detected.

ELIMINATION ANALYSIS

The Winchester facility is currently operating under Nuclear Regulatory Commission (NRC) licenses 20-08361-01 and SNM-688. Surveys are routinely conducted to ensure compliance with NRC regulations. Because the site was adequately decontaminated and is operating under a license, DOE has eliminated it from consideration for inclusion in the Formerly Utilized Sites Remedial Action Program.

REFERENCES

- Bolin, P.C. (Winchester Engineering and Analytical Center) to A. Wallo (The Aerospace Corporation), Letter of November 16, 1979.
- Thornton, W.T. (Oak Ridge Operations Office) to R.H. Kennedy (ERDA Headquarters), "ERDA Resurvey Program: Winchester Engineering and Analytical Center, Winchester, Massachusetts," March 23, 1977.
- Oak Ridge National Laboratory, "Preliminary Survey of Winchester Engineering and Analytical Center, Winchester, Massachusetts", March 1980.



DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE
PUBLIC HEALTH SERVICE
FOOD AND DRUG ADMINISTRATION

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WINCHESTER ENGINEERING AND
ANALYTICAL CENTER
109 HOLTON STREET
WINCHESTER, MASSACHUSETTS 01890
TELEPHONE: 617-729-5700

November 16, 1979

Andrew Wallo III
Environmental Controls and
Analysis Directorate
Eastern Technical Division
The Aerospace Corporation
20030 Century Boulevard
Germantown, Maryland 20767

Dear Mr. Wallo:

I have asked Mr. Ed Bernat, a long-time employee at this building site, to respond to your questionnaire item by item. His response is itemized to correspond to the questions on the Contents of Site Summaries.

Sincerely,

Paul C. Bolin
Paul C. Bolin
Director, WEAC

Enclosure

1. This facility is owned and operated by the Department of Health, Education and Welfare, Public Health Service, Food and Drug Administration, Winchester Engineering & Analytical Center, 109 Holton Street, Winchester, Mass. 01890.
2. The development work for uranium from ores was begun by Massachusetts Institute of Technology at Cambridge, Massachusetts, in about 1946. American Cyanamid Company took over the project in 1951. At that time the project was in operation at the Watertown Arsenal, Watertown, Massachusetts. The move to the Winchester facility was made in October, 1952. A contract was made with the National Lead Company in 1954 to continue the operation.
 - a) The site was used to develop methods of extracting uranium from ore containing uranium. In 1959 the facility changed over to strictly laboratory testing -- methods development of environmental analysis related to uranium waste.
 - b) The dates of operation for this type of work were from 1952 to 1961.
 - c) The site was operated by American Cyanamid Company from the time of erection for the Atomic Energy Commission in 1952 to 1954. National Lead continued the operation from 1954 to 1961.
 - d) The contract number used by National Lead Company was (USAEC-Contract No. AT(49-6)-924). The contractors were Massachusetts Institute of Technology, American Cyanamid Co. and National Lead Co.
3. A parcel of land containing 5.8 acres of land located in Winchester and Woburn, Massachusetts, was purchased for the operation.
 - a) The physical layout of the site consisted of a single floor masonry building used for administrative and laboratory space, a solvent storage building and a corrugated metal building for pilot plant projects.
 - b) The site is intact and is being used by HEW/PHS/FDA/Winchester Engineering and Analytical Center.
 - c) The site is about the same except for some renovations which were made to facilitate work in low-level radiation studies in the environment. Further modifications have been made to accommodate various programs for EDRO that include the erection of two metal framed warehouses

- d) No effect on any off-site locations.
4. The facility, built in 1952 with an Atomic Energy Commission (AEC) appropriation, was transferred to the Dept. of HEW in 1961 and is still operated by HEW.
5. a) It is assumed that prior to October, 1961 surveys were conducted on-site to assure compliance with then applicable AEC Standards for contamination and exposure limits during the work of upgrading uranium ores. In October, 1961 HEW/PHS took over the lab from AEC and contamination surveys were performed in all those rooms where uranium ores and other materials were used. All areas were decontaminated, including two hoods and benches and all radioactive materials were disposed of through off-site commercial carriers. It was necessary to assure that most all removable contamination was eliminated because the laboratory became a low-level environmental radiation surveillance laboratory in 1962. Surveys have been conducted since under License 20-08361-01, to assure compliance for contamination and exposure limits.

b) During a cleanup operation at this facility in 1960, approximately fifty drums of low-grade uranium bearing ore was emptied into a truck for disposal at the Woburn dump.

This area is to be surveyed for radiation by DOE at the request of City officials according to the local newspaper.

In 1961 most all the equipment in the building was moved out by the Atomic Energy Commission. About eighty per cent of the laboratory benches and hood remained in the building at the time of transfer to HEW.

c) The laboratory at present operates under the same NRC License 20-08361-01 by the FDA and does environmental radiation surveillance and analysis of radiopharmaceuticals. Surveys are conducted constantly to assure compliance with NRC 10CFR20 regulations.

d) Materials shipped off-site to the Woburn dump or buried on laboratory property do not present any radiological health problems. Most of this material was natural radioactive materials from the ore upgrading process and should not constitute any health hazard since the amount disposed of, although unknown, was of minor volume.

e) As stated previously, all portions of the laboratory were cleaned in 1961 to allow this to become low-level environmental radiation surveillance laboratory. This was confirmed by an ERDA site visit on January 25, 1977. Since it still has an NRC license, no formal procedures have been taken to certify the site for release to the public.

6. The facility remains as an FDA field center and is being utilized to carry out the objectives of FDA. The programs include radio-pharmaceutical, pharmaceutical, microwave research, electronic product and x-ray and medical device testing, plus the radiological environmental monitoring of food products.

March 23, 1977

Assistant Director for Health Protection, DSSC-HQ
ATTN: R. H. Kennedy, DSSC-HQ

ERDA RESURVEY PROGRAM: WINCHESTER ENGINEERING AND ANALYTICAL CENTER,
WINCHESTER, MASSACHUSETTS

On January 25, 1977, Messrs. H. W. Dickson and M. T. Ryan of ORNL and I visited the subject facility to determine what action, if any, is needed by ERDA to assure that former AEC contract operations at this site have not resulted in levels of residual radioactivity which are either unsafe or unknown to present occupants.

The operational history of this site involves three AEC contractors spanning a period of about fifteen years beginning in the late 1940's. Developmental work in the concentration of uranium from ores was started at MIT in Cambridge, Massachusetts, in about 1946 and ~~in the next year~~ moved to the Winchester facility. In 1949, American Cyanamid took over the work at the site. Then, in the early 1950's, a contract was made with National Lead Company which continued developmental work in the preparation of ~~U-metal~~ *metal-grade UF₄* until about 1960.

At present, the facility, located at 109 Holton Street, Winchester, Massachusetts, is engaged in low-level radioanalytical work under the Food and Drug Administration, Executive Director of Regional Operations. A comprehensive radiation safety program is conducted by the health physicist, Mr. Neil A. Gaeta. Radioactive materials are currently handled under the provisions of USNRC licenses 20-08361-01 for byproduct materials and SNM-638 for special nuclear materials. The Lab has done low-level radium-in-food analysis and is currently operating an in vivo whole body counter. Both of these operations require low background radioactivity levels to achieve the sensitivities required. Radiation monitoring of the facility by Mr. Gaeta has revealed no significant building contamination which could have resulted from previous AEC contract work.

Prior to takeover of the facility by DHEW in 1961, a radiological survey of the facility by Mr. Caleb Kincaid, Bureau of Radiological Health, was made. Contact with Mr. Kincaid indicated the only radioactivity found at that time was limited to certain lab hoods. No record of that survey is available. According to Mr. Gaeta, those hoods have been removed. Our cursory survey for both alpha and beta-gamma radiation revealed nothing of significance.

OFFICE →	HP Br.	Safety Div.	P10			
SURNAME →	Thornton/ndw		RTU			
DATE →	3/23/77	3/23/77	3-23-77			

Assistant Director for
Health Protection

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March 23, 1977

It was indicated by WEAC staff familiar with AEC operation that a small deposit of residues from pitchblende ore pilot plant scale operations exists at the rear of the laboratory building. The size of the deposit is "a few wheelbarrow loads." It is covered with soil and grass and is the site of an EPA regional air monitoring station. According to Mr. Gasta any significant radon emanating from the area would have been detected had it existed. No such elevated levels have been observed.

Conclusion: It is concluded that residual contamination from AEC work is not of significance either in terms of the safety of building occupants or of the sensitivity requirements of radioanalytical operations currently conducted at the site. It is also apparent that the present staff is aware of the building history and that USNRC and FDA procedures would require thorough decontamination due to present as well as past operations prior to unrestricted release of the site.

Recommendation: It is recommended that no formal survey of the site be done and that the site be dropped from the resurvey program.

Upon HQ concurrence, the enclosed letter will be sent to WEAC so informing them.

15/

William T. Thornton
Health Protection Branch
Safety and Environmental Control Division

OSH:WTF

Enclosures
Draft Letter

cc: J. W. Range, PIO
W. H. Travis, S&EC

OFFICE	HP Br.	Safety Div.	PIO			
SURNAME	Thornton/ndw	T	JTS			
DATE	3/23/77	3/23/77	3-23-77			

PRELIMINARY SURVEY OF
WINCHESTER ENGINEERING AND ANALYTICAL CENTER
Winchester, Massachusetts

Work performed
by the
Health and Safety Research Division
Oak Ridge National Laboratory
Oak Ridge, Tennessee 37830

March 1980

OAK RIDGE NATIONAL LABORATORY
operated by
UNION CARBIDE CORPORATION
for the
DEPARTMENT OF ENERGY
as part of the
Formerly Utilized Sites--
Remedial Action Program

THE FORMER WINCHESTER ENGINEERING AND ANALYTICAL CENTER Winchester, Massachusetts

At the request of the Department of Energy (DOE, then ERDA), a preliminary survey was performed at the former Winchester Engineering and Analytical Center, Winchester, Massachusetts (see Fig. 1), on January 25, 1977, to assess the radiological status of this facility utilized under MED/AEC contract during the period about 1946 through 1960. John Taylor, Director of the Center, provided historical information about the site. Additionally, Neil Gaeta, the health physicist at the Center, was helpful in providing radiological information related to past and present operations. Contract work at this facility was the result of developmental work in the concentration of uranium from ores, begun at MIT in Cambridge, Massachusetts, about 1946. The American Cyanamid Company took over the work at the site in 1949. In the early 1950s, a contract was made with the National Lead Company which continued development work in the preparation of metal grade UF_4 until about 1960. In 1961, the Public Health Service of Department of Health, Education and Welfare (DHEW) took over operation of the facility. The facility then became the Northeastern Radiological Health Laboratory.

Present Use of Facilities

Presently, the facility is engaged in low-level radioanalytical work under the Food and Drug Administration, Executive Director of Regional Operations. Radioactive materials are currently handled under the provisions of Nuclear Regulatory Commission Licenses 20-08361-01 for by-product materials and SNM-688 for special nuclear materials. The Lab has done low-level radium-in-food analysis and is currently operating an in-vivo whole-body counter.

Prior to the takeover of this facility by DHEW, during the contract period, a small deposit of residues from pitchblende ("a few wheelbarrow loads") was placed at the rear of the laboratory building and covered with soil and grass. Currently, this location is the site of an Environmental Protection Agency regional air-monitoring station.

In 1961, prior to takeover of the facility, a radiological survey was conducted by Caleb Kincaid from the Bureau of Radiological Health.¹ Discussions with Kincaid revealed that the only radioactivity found at that time was limited to certain lab hoods. No record of that survey was available.

A comprehensive radiation safety program is currently conducted by Neil Gaeta. He indicated that no problems exist that affect low background requirements of present activities resulting from former contract work or from the pitchblende residues located at the rear of the laboratory. Additionally, he stated that the hoods referred to by Kincaid have been removed.

Results of Preliminary Survey

The preliminary survey was conducted by M. T. Ryan and H. W. Dickson of the Oak Ridge National Laboratory and W. T. Thornton of the Department of Energy-Oak Ridge Operations Office (then ERDA). The survey consisted of direct measurements of beta-gamma dose rate at 1 cm from surfaces and direct alpha measurements made at contact with surfaces using a portable alpha scintillation survey meter.

The following maximum values were observed during the survey. Open-window Geiger-Mueller (G-M) survey meter (beta-gamma dose rate) was 0.2 mrad/hr at 1 cm from the surface; closed-window G-M survey meter (gamma exposure rate) was 0.05 mR/hr at 1 cm from the surface; alpha radiation at contact to the surface was 500 dpm/100 cm².

It was concluded that no present or potential radiation-related health hazard exists due to past MED/AEC operations inside buildings at this facility, and that no further DOE survey is required inside buildings at the Northeast Radiological Laboratory (the former Winchester Engineering and Analytical Center) in Winchester, Massachusetts. In the event that future plans at this facility involve the area where a minor quantity of pitchblende residues are believed to exist, some additional measurements in that area may be required.

References

1. Letter, "ERDA Resurvey Program," W. T. Thornton, Department of Energy-Oak Ridge Operations to R. H. Kennedy, Department of Energy Headquarters (DSSC), March 23, 1977.



Fig. 1. The location of the former Winchester Engineering and Analytical Center in Winchester, Massachusetts.

*Location indicated by C. Bolin in comment on the report. Entered by E.A. Vierzba, The Aerospace Corporation

E.A. Vierzba