WESLEYAN UNIVERSITY

Dept. of Environmental Health & Safety
233 William Street Highrise
Middletown. CT 06459

MSB
P-7

28April05

06-00493-10

03020108

To: Thomas Thompson
NRC Licensing division
Mail Control # 136061

From: WS Nelligan

Re; Requested Comments for Materials License Renewal

Mr. Thompson:

Please find attached our response to statements found in NUREG-1556, Vol 7, followed by maps of our facility, for a total of 12 pages. (13 including this cover page)

If you have questions please feel free to call me at (860)685-2771 or Donald Albert at (860)685-2729, I look forward to your response.

Regards,

William S. Nelligan
Associate Director
Environmental Health & Safety

136061

NMSS/RGN1 MATERIALS-002

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UNIVERSITY

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233 William Street Highrise
Middletown, CT 06459

Item 1: 8.5.1 Radioactive Material to be Possessed

Element & Mass Number	Chemical and/or Physical Form	Maximum Amount	Proposed Use
Hydrogen 3	Bound/Non-Volatile	500 millicuries	ADP/ATP/ASE study. Thymadine injection into finches to follow brain development.
Carbon 14	Any	12 millicuries	Methylated marker
Phosphorous 32	Any	30 millicuries	DNA/protein labeling
Phosphorous 33	Any	30 millicuries	DNA/protein labeling
Sulfur 35	Any	30 millicuries	Nucleotide labeling. DNA/Protein labeling
Calcium 45	Any	1 millicurie	Research and development as defined in 10CFR30.4
Iron 59	Any	5 millicuries	Research and development as defined in 10CFR30.4
Iodine 125	Bound/Non-Volatile	5 millicuries	Protein labeling, biochemical study

Understanding:

Radioactive material possessed under the terms of one or more license exemption or under the terms of one or more general license will not impact the quantity limits specified above, are not included when calculating the sum of the ratios to meet the requirements of 10CFR30.35(d), 10CFR40.36(b), or 10CFR70.25(d), and will not be included in the required semi-annual inventory of licensed material. Examples of such exemptions and general licenses are listed below.

10CFR30.14	Exempt Concentrations
10CFR30.18	Exempt Quantities
10CFR31	General Domestic Licenses for Byproduct Material
10CFR40.13	Unimportant Quantities of Source Material
10CFR40.22	Small Quantities of Source Material
10CFR70.19	General License for Calibration or Reference Sources

Possession of naturally occurring radioactive material (NORM) and accelerator-produced radioactive material (NARM) is not regulated by NRC.

Item 2: 8.6 Purpose For Which Licensed Material Will Be Used:

Licensed material will be used for research and development as defined in 10CFR30.4 and as described in the above table. This research and development will include small animal studies.

Item 3: 8.7.1 Radiation Safety Officer

The proposed new radiation safety officer will be William S. Nelligan, Associate Director of Environmental Health and Safety. His resume was submitted to the NRC in the original application for renewal dated Nov 2004.

Item 4: 8.7.2 Authorized Users

Licensed material will be used by or under the supervision of, the following Principle Investigators: (résumé's were previously submitted to the NRC)

1. Philip Bolton
2. Laura Grabel
3. Manju M. Hingorani
4. Anthony Infante
5. John Kirn
6. Donald A. Oliver
7. Rex Pratt
8. Irina Russu
9. Anne Baranger
10. Michael A. McAlear
11. Michael Weir
12. Scott Holmes
13. Jason Wolfe

***Please remove the following names from the license:**

1. William Firshein (retired)
2. Janice Naegele (no longer doing research with radionuclides)

Item 5: 8.8 Training for Individuals Working in or Frequenting Restricted Areas

Technical/Research Staff Training:

During initial training, each trainee will be provided with sufficient information about radiation, radioactivity, use of protective equipment and radiological work practices so that the staff member can work in a safe manner, keep both their exposure and their co-workers' doses ALARA. Training will be accomplished before any individual is permitted unescorted access to the restricted area.

The initial training program for all technical staff will have a minimum duration of four hours, and will cover worker rights and responsibilities as well as all of the topics listed below:

1. Principles and practices of radiation protection
2. Radioactivity measurements
3. Monitoring techniques for radiation and contamination
4. The use of radiation and contamination monitoring instruments
5. Mathematics
6. Calculations basic to the use and measurement of radioactivity

7. Biological effects of ionizing radiation
8. Principles of the installation and removal of source holders or detector cells
9. Worker Rights and Responsibilities (10CFR19)
10. All the information provided in 10CFR19.12
11. Wesleyan's byproduct material license and procedures
12. Applicable and appropriate portions of 10CFR20, 30, 40 and 71
13. Open Forum-Questions and Answers

During the initial training the trainee will be required to demonstrate to the RSO or designee the ability to properly perform a self-frisk.
After initial training each trainee will be required to pass a written examination covering the topics contained in the training program. Minimum passing grade is 80%

Retraining will be performed annually. Retraining will be of at least one hour duration and will cover some portions of the material covered during initial training, plus items such as review of incidents, laboratory and calibration procedures and viewing of the Wesleyan Radiation Safety video and the Howard Hughes Safety video.

Ancillary Staff Training

Each individual in these job categories who will have unescorted access to the restricted area will be provided with sufficient information about radiation and radioactivity so that they can perform assigned ancillary duties in a safe manner.

Training will be accomplished before any individual is permitted unescorted access to the restricted area.

The training program for all administrative/secretarial/janitorial staff will have a minimum duration of 30 minutes, and cover all of the topics listed below:

1. Radiation and Radioactivity
    a. Where they come from
    b. Types of Radiation
2. Recognition of the radiation warning symbol
3. Biological Effects of Radiation
4. Requirements of the license and the federal regulations regarding control of radioactive materials and exposure to ionizing radiation
5. Specific duties inside the restricted area
    a. How to recognize incoming samples
    b. Where to put incoming samples
    c. Clear instructions about what to do and what not to do
6. What to do in case of a perceived emergency with regard to material or equipment inside the restricted area
7. Worker rights and responsibilities, including all the information provided in 10CFR19.12 with emphasis on NRC Form 3 and its application
8. Applicable and appropriate portions of 10CFR20, 30, 40 and 71

Each trainee will be required to pass a written examination covering the topics contained in the training program. Minimum passing grade is 80%.

Retraining will be performed annually; the duration of retraining will be approximately 15 minutes.

Training and retraining will be accomplished by the RSO, a Principle Investigator or a similarly qualified individual appointed by the RSO. Training documents will be maintained by the RSO.

Item 6: 8.9 Facilities and Equipment

Licensed material will be used and stored at Wesleyan University, Hall-Atwater Laboratories and Shanklin Laboratory, Lawn Avenue, Middletown, Connecticut. Floor plans of the specific rooms utilized, including the waste storage area, are contained in Appendix A of this document.

Item 7: Radiation Monitoring Instruments

Survey Meters

We will use instruments that meet the radiation monitoring instrument specifications published in Appendix M to NUREG-1556, Vol 7, "Program-Specific Guidance About Academic, Research and Development and Other Licenses of Limited Scope", dated December 1999. Additionally, we will implement the model survey meter calibration program published in Appendix M to NUREG-1556, Vol. 7. "Program-Specific Guidance About Academic, Research and Development and Other Licenses of Limited Scope", dated December 1999.

These instruments will be utilized to perform radiation and contamination surveys at Wesleyan University and will be calibrated every 12 months, plus or minus one month. They will also be calibrated after any servicing of the instrument (other than a simple battery change or replacement of a detector cord with a cord of the same length). Calibrations will be performed by RSA Laboratories (license #06-30007-01) or by another company licensed to perform such services.

The types and minimum numbers of survey meters that will be available at any one time are listed in the table below. We reserve the right to upgrade our survey instruments as necessary.

Type	Minimum # Available	Radiation Detected	Sensitivity Range	Use
Portable thin-window G-M pancake-type & end window type survey meters	10	Beta-Gamma	0-600 kcpm	Survey and monitoring, gross testing of samples
Portable G-M side-wall detector with exposure-rate meter	1	Gamma	0.01-200 mR/h	Survey and monitoring, gross testing of samples

Analytical Equipment

The Liquid Scintillation Analyzer listed in the table below will be used to perform quantitative analysis on routine wipe tests. This instrument meets the radiation monitoring instrument specifications published in Appendix M to NUREG – 1556 Vol. 7 "Program-Specific Guidance About Academic, Research and Development and Other Licenses of Limited Scope", dated December 1999.

This Liquid Scintillation Analyzer listed below will be calibrated in place annually by a trained factory representative. We reserve the right to upgrade our survey instruments as necessary.

The Portable Scintillation Counter listed below will be utilized to perform radiation and contamination surveys of I125 at Wesleyan University and will be calibrated every 12 months, plus or minus One month. They will also be calibrated after any servicing of the instrument (other than a simple battery change or replacement of a detector cord with a cord of the same length). Calibrations will be performed by RSA Laboratories (license #06-30007-01) or by another company licensed to perform such services.

Type	# Available	Radiation Detected	Sensitivity	Use
Liquid Scintillation Analyzer	1	Beta	10^{-8} uCi	Analytical measurements
Portable Scintillation counter	1	Gamma	12.6% efficiency I125 on neck for thyroid phantom	Gamma detection

Item 8: 8.10.3 Material Receipt and Accountability

Wesleyan will maintain records of receipt, transfer and disposal of licensed material. The RSO or a trained PI approves all orders for licensed material. A written procedure for safely opening packages of licensed material is in place; records of receipt, transfer and disposal of licensed material are maintained. A physical inventory of licensed material will be conducted every six months plus or minus 1 month. Licensed material will be stored and controlled in accordance with 10CFR20 Subpart I – Storage and Control of Licensed Material.

Item 9: 8.10.4 Occupational Dose

We have done a prospective evaluation and determined that unmonitored individuals are not likely to receive, in one year, a radiation dose in excess of 10% of the allowable limits in 10CFR20, or we will monitor individuals in accordance with the criteria in the section entitled 'Radiation Safety Program-Occupational Dose' in NUREG1556, Vol 7, "Consolidated Guidance about Materials Licenses: Program-Specific Guidance about Academic, Research and Development and Other Licenses of Limited Scope" dated December 1999.

Item 10: 8.10.6 Safe Use of Radionuclides and Emergency Procedures

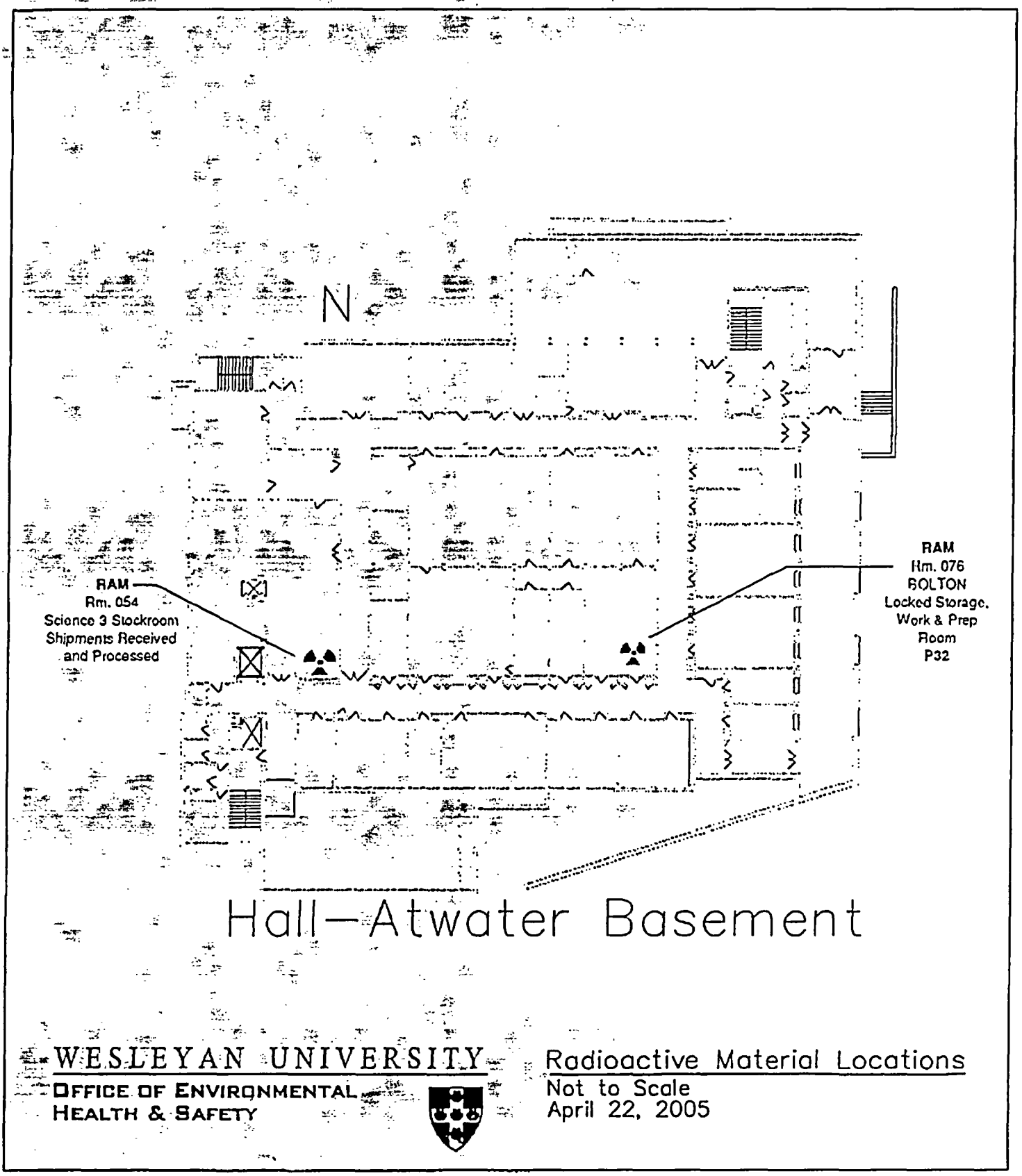
Procedures for safe use, including security of materials and emergencies have been developed, and are contained in the Wesleyan University "Radiation Safety Plan for the Sciences", which is currently being revised. Wesleyan University understands that these procedures may be revised only if 1) the changes are reviewed and approved by the licensee management and the RSO in writing; 2) the licensee staff is provided training in the revised procedures prior to implementation; 3) the changes are in compliance with the NRC regulations and the license; and 4) the changes do not degrade the effectiveness of the program.

Item 11: 8.10.7 Surveys

We will survey our facility and maintain contamination levels in accordance with the survey frequencies and contamination levels published in Appendix Q to NUREG-1556, Vol 7, "Consolidated Guidance about Materials Licenses: Program-Specific Guidance about Academic, Research and Development and Other Licenses of Limited Scope" dated December 1999.

Item 12: 8.11 Waste Management

We will use the model waste procedures published in Appendix T to NUREG-1556, Vol 7, "Consolidated Guidance about Materials Licenses: Program-Specific Guidance about Academic, Research and Development and Other Licenses of Limited Scope" dated December 1999.



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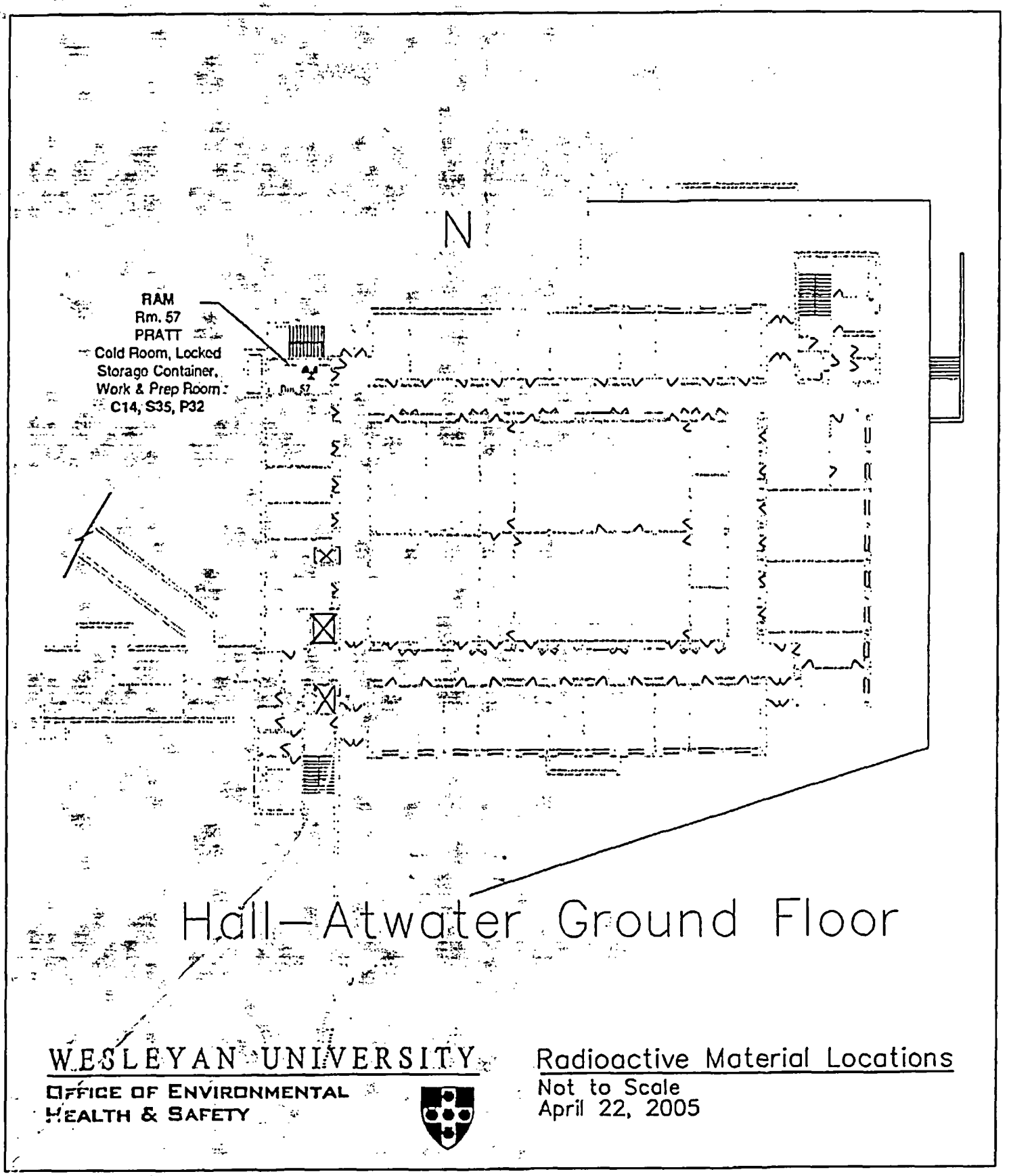
Radioactive Material Locations
Not to Scale
April 22, 2005



Hall–Atwater Ground Floor

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Radioactive Material Locations
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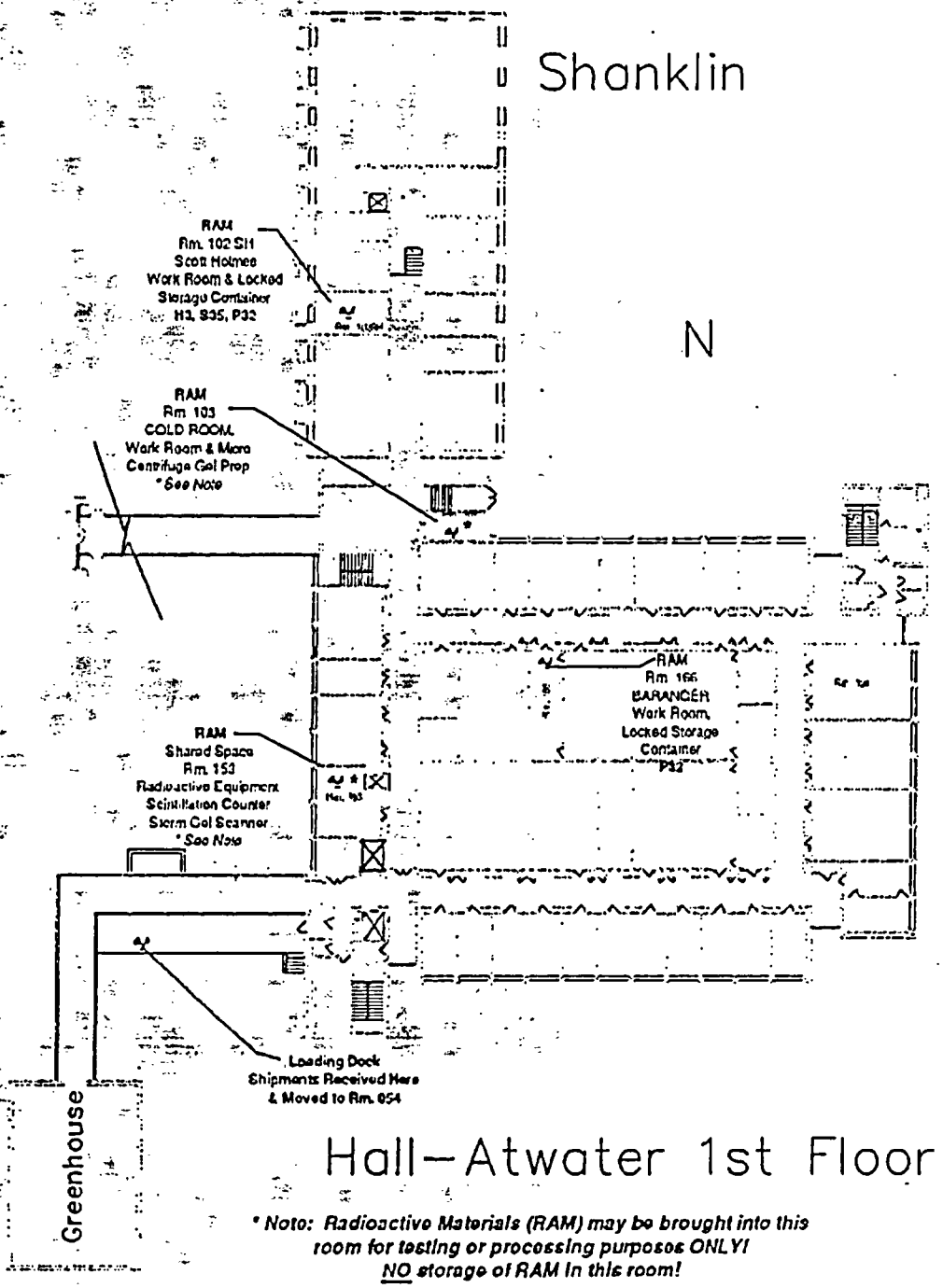
April 22, 2005



Hall–Atwater 1st Floor

** Note: Radioactive Materials (RAM) may be brought into this room for testing or processing purposes ONLY! NO storage of RAM in this room!*

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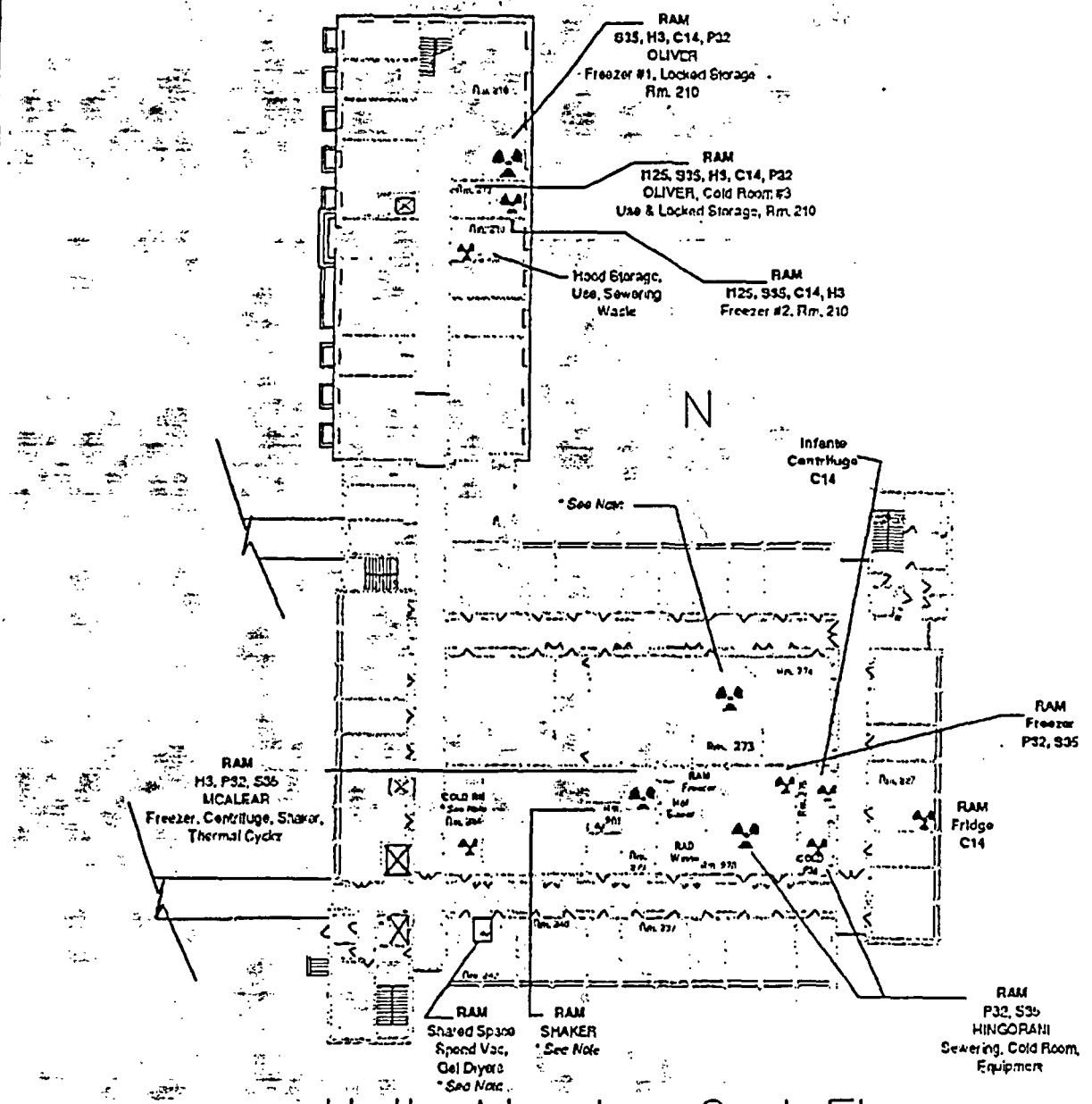
Radioactive Material Locations

Not to Scale
April 22, 2005



Hall–Atwater 2nd Floor

Note: Radioactive Materials (RAM) may be brought into this room for testing or processing purposes ONLY!
NO storage of RAM in this room!

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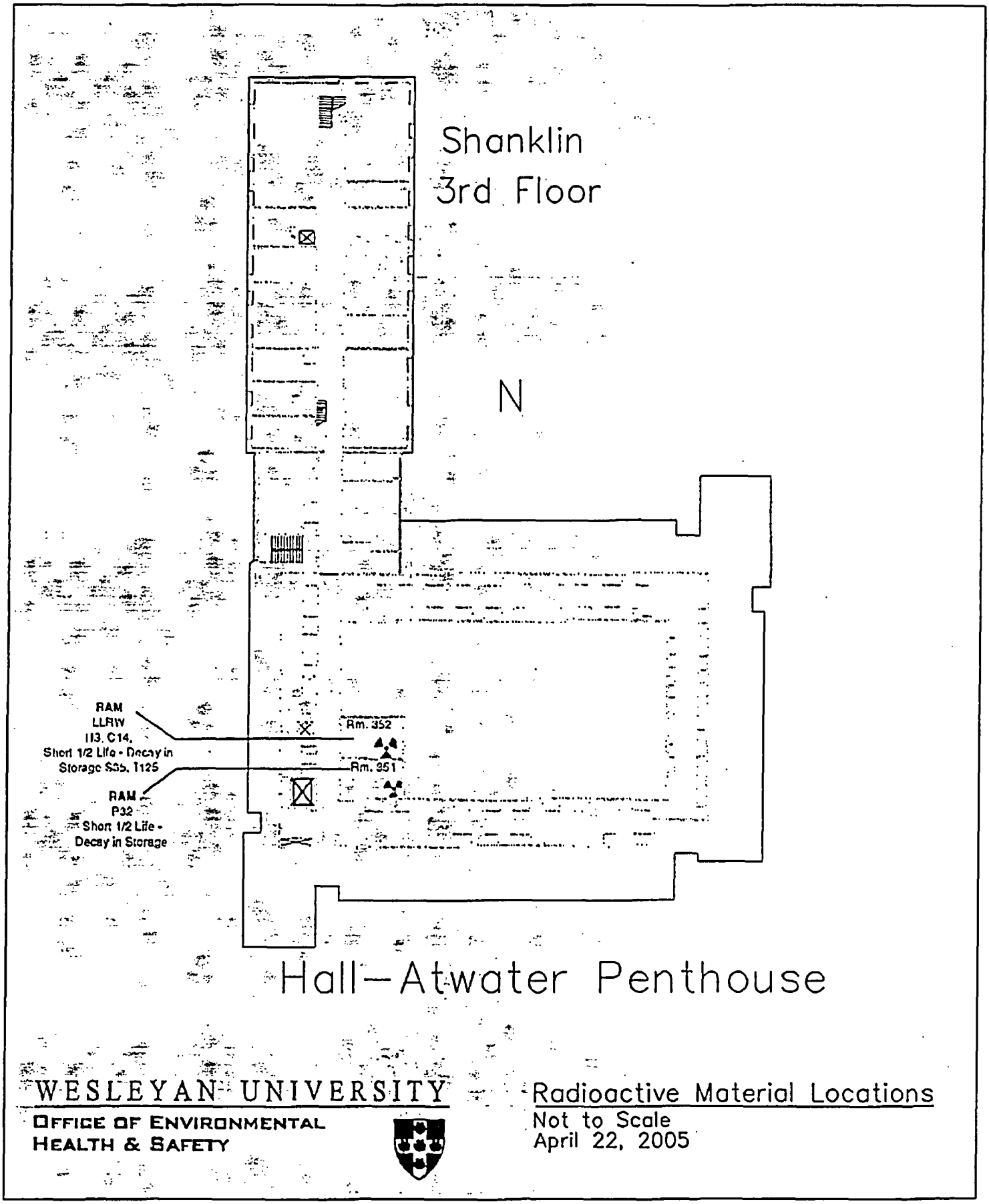
Radioactive Material Locations

Not to Scale
April 22, 2005



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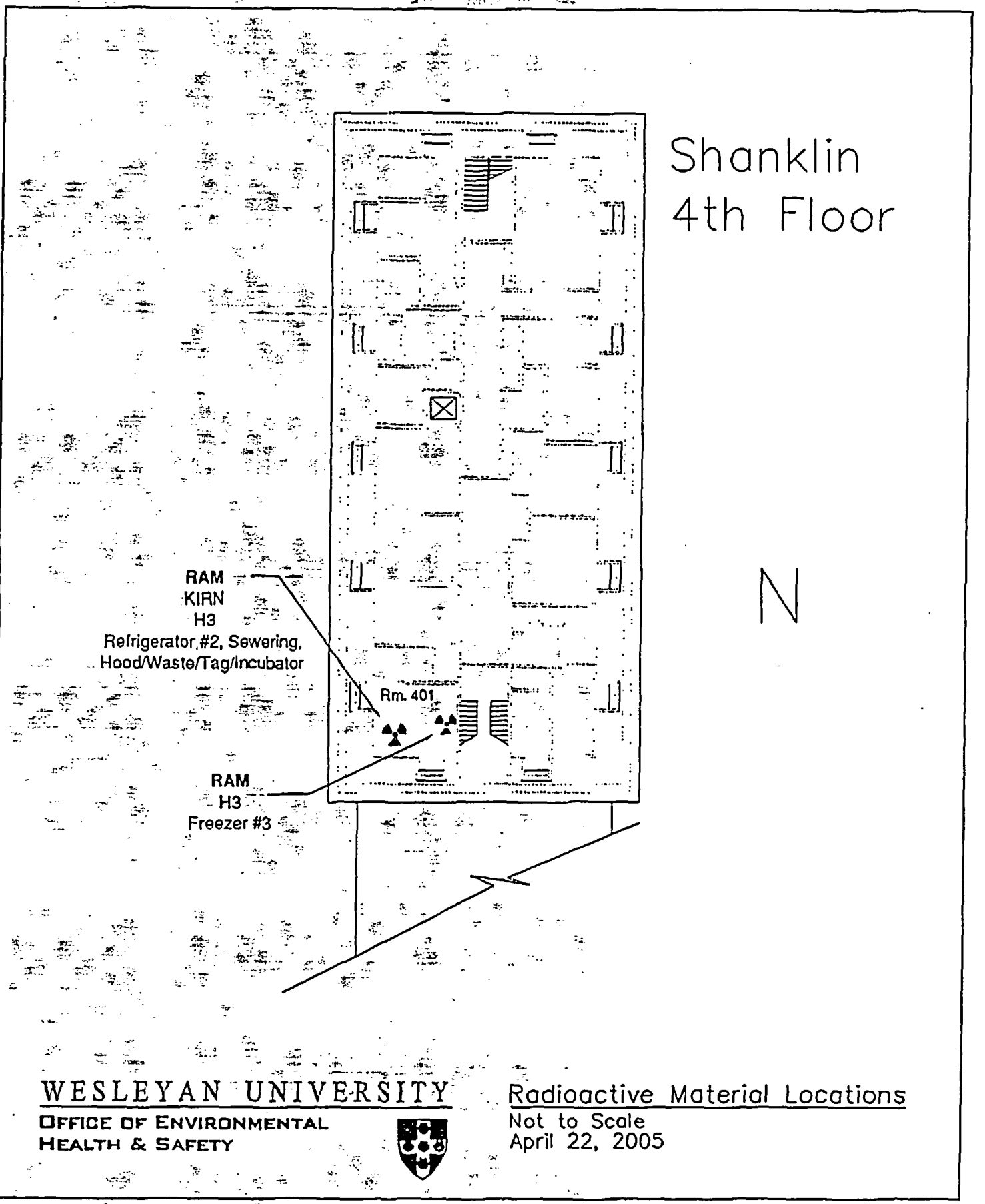
Radioactive Material Locations

Not to Scale

April 22, 2005



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Radioactive Material Locations

Not to Scale

April 22, 2005