

OUTLYING PARCELS LAND USE PLANS  
TECHNICAL REPORT

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APPENDIX A  
Horace Williams Airport Study  
(FAA Airport Design Criteria Review)

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April 3, 1995

Mr. Michael Fendrick  
Parsons Brinckerhoff Quade & Douglas  
4000 West Chase Boulevard, Suite 250  
Raleigh, NC 27606

Subject: FAA Airport Design Criteria Review  
Horace Williams Airport  
Chapel Hill, North Carolina

Dear Mr. Fendrick:

The Horace Williams Airport is owned by the University of North Carolina (UNC) and serves the general aviation needs of the University, The Area Health Education Center (AHEC) medical air operations, and provides for limited public use. The University has limited the number of aircraft which can be based at Horace Williams to fifty (50) planes with no intention to increase the number of home-based aircraft. Of the fifty (50) airplanes based at the airport, forty-two (42) are single engine, eight (8) are conventional twin engine, and no turbo prop planes are based at the airport; primarily because no A-1 jet fuel is available on site. Eventually A-1 jet fuel will need to be stored on-site as the trend toward turbo prop planes increases. No jet aircraft are or will be allowed to use Horace Williams, nor will commercial air carriers, such as a commuter airlines, be allowed. No touch-and-go flights (i.e., practice landings and take-offs) and no balloons or helicopters are allowed.

The largest planes using the airport are conventional twin engine and twin engine turbo prop planes. The airport has a single paved Runway 9/27 which is 4,005 feet by 75 feet. As shown on Exhibit 1 both the Runway 9 approach and the Runway 27 approach have published non-precision instrument approaches.

The airport design review of Horace Williams Airport includes the following three elements:

- FAA Airport Design Standards
- FAR Part 77 Airspace Obstruction Standards
- Summary

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1. FAA Airport Design Standards

As shown on Exhibit 2, the Airport is classified as a Category B (aircraft approach speed less than 91 knots), Group II (aircraft wing span less than 79 feet).

The minimum distance that an object is recommended to be from a B-II airport is 250 feet from the runway centerline and 300 feet from the end of the runway. For practical planning purposes, a building restriction line located 750 feet from the runway centerline is recommended so as to allow for the development of parallel taxiways and aircraft aprons.

The critical part of FAA airport design criteria is the Runway Protection Zone (RPZ). As shown on Exhibit 3 the RPZ for a B-II runway with a non-precision approach is a trapezoid measuring 1,700 feet by 500 feet by 700 feet. If possible, this RPZ should be kept free of all obstructions.

2. FAR Part 77 Airspace Obstruction Standards

As shown on Exhibit 4, Federal Aviation Regulation (FAR) Part 77 includes five imaginary surfaces that are designed to provide standards for the control of airspace obstructions surrounding airports.

As a part of FAR Part 77 (see Exhibit 5), there are standards for the vertical clearance of objects to runway approach surfaces for highways, railroads and waterways:

- 17 feet for an Interstate highway
- 15 feet for other public roadways
- 10 feet for a private road
- 23 feet for a railroad
- highest mobile object using a waterway

3. Summary

As shown on Exhibit 6, the analysis of available data indicates that there are no major obstructions to the two non-precision approaches to Runway 9/27.

In addition, Runway 9/27 complies with FAA B-II airport design criteria.

\* \* \* \* \*

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If you have questions concerning the airport design standards review of Horace Williams Airport, or require a more detailed analysis of a specific design standard, please call.

Sincerely,

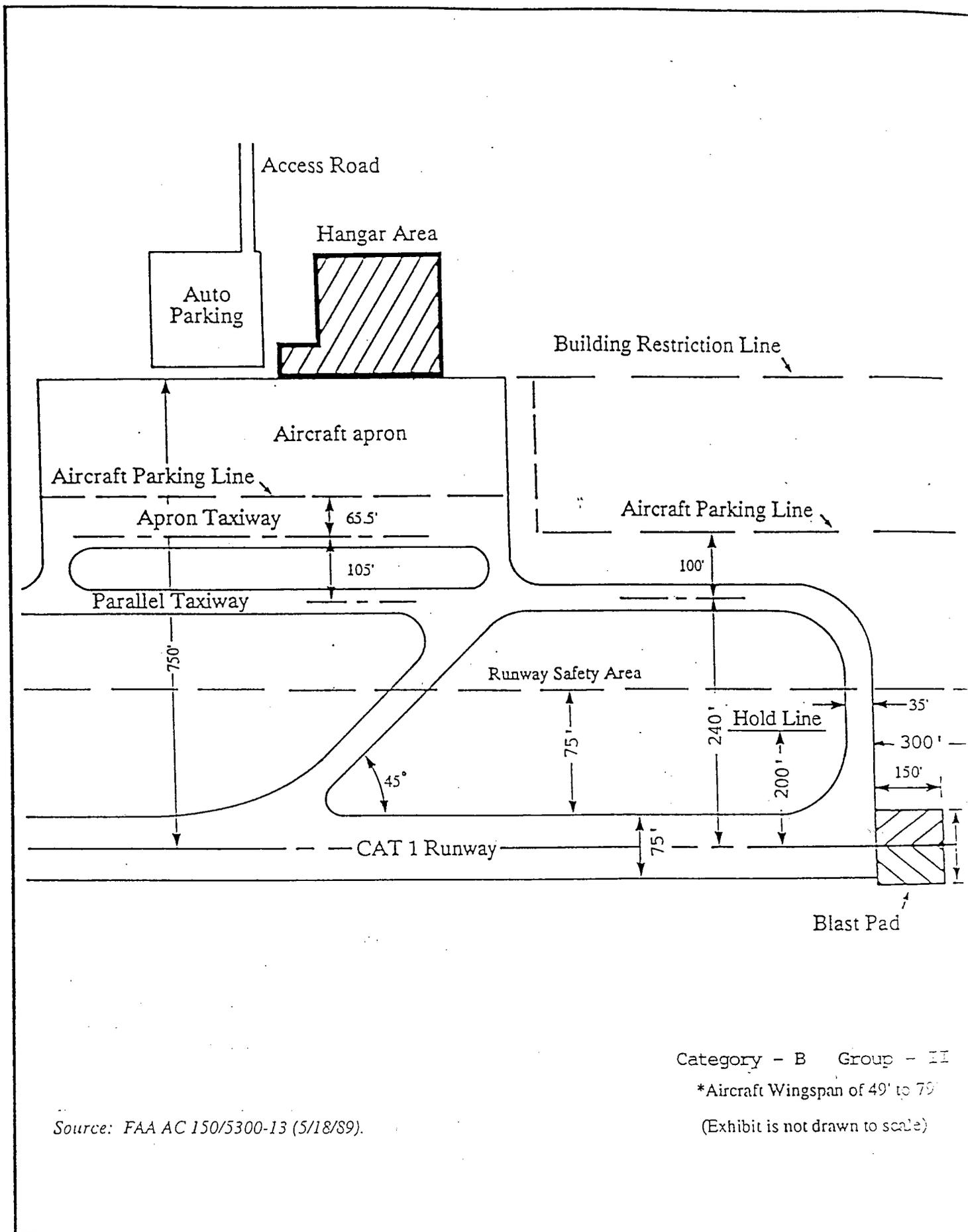
AvPlan  
A Parsons Brinckerhoff Company



C. Edward Cecil  
Project Manager

CEC/drb  
HWA-01.LE



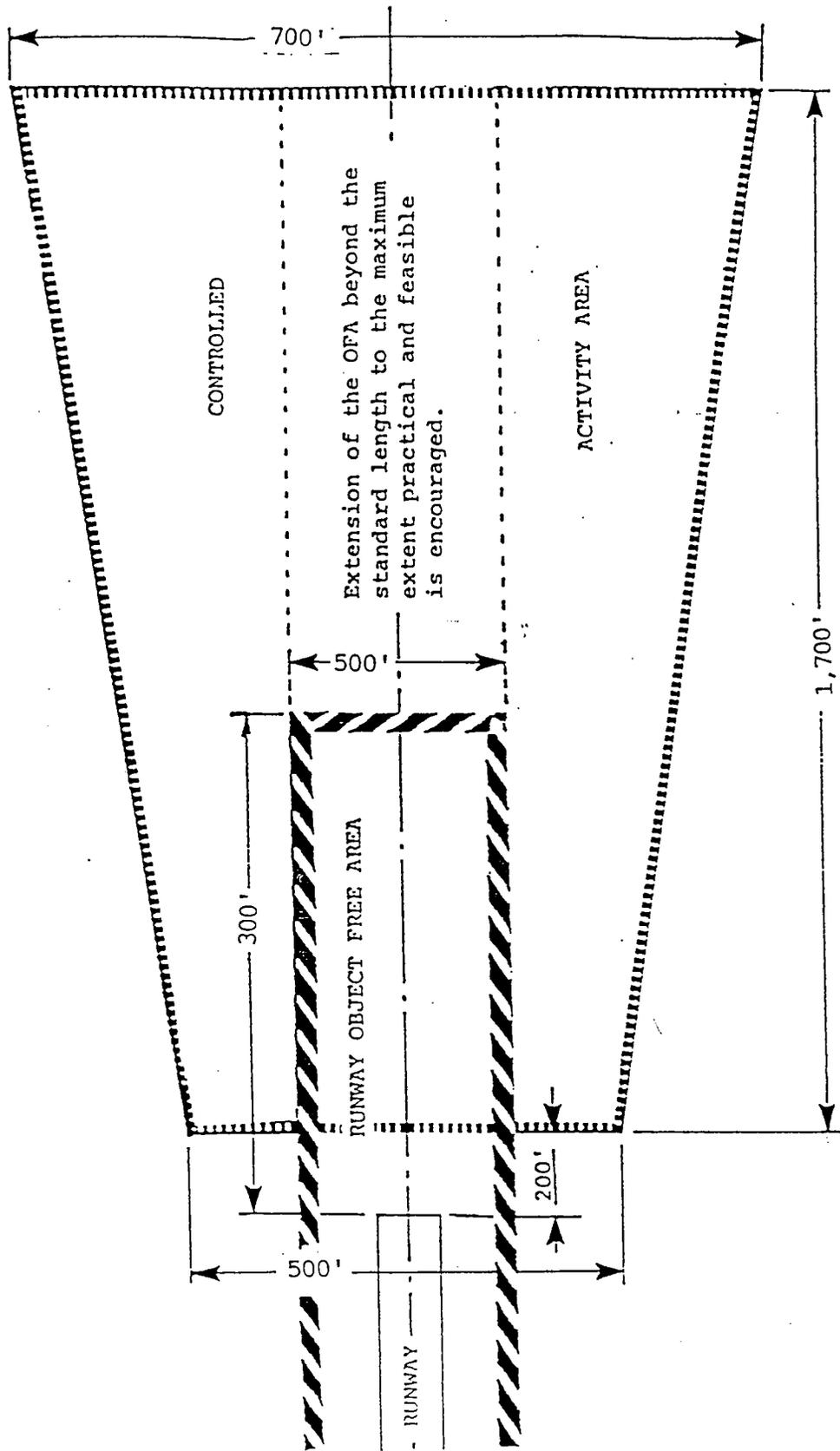


Source: FAA AC 150/5300-13 (5/18/89).

Category - B Group - II

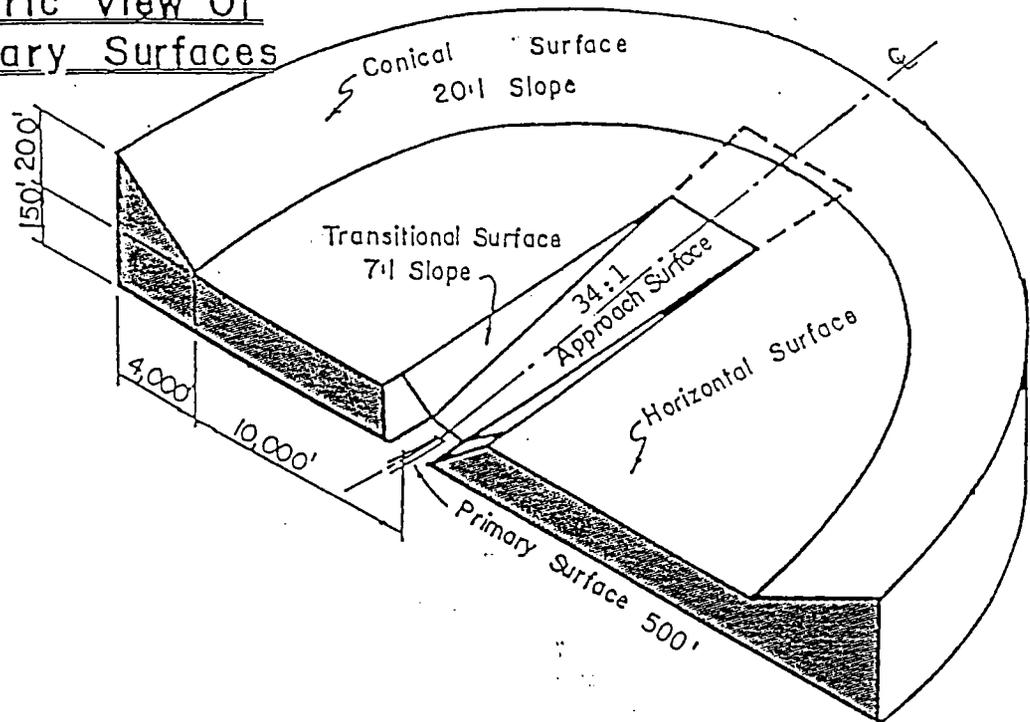
\*Aircraft Wingspan of 49' to 79'

(Exhibit is not drawn to scale)



Category - B Group - II  
Figure 2-2. Non-Precision RPZ shown

## Isometric View Of Imaginary Surfaces



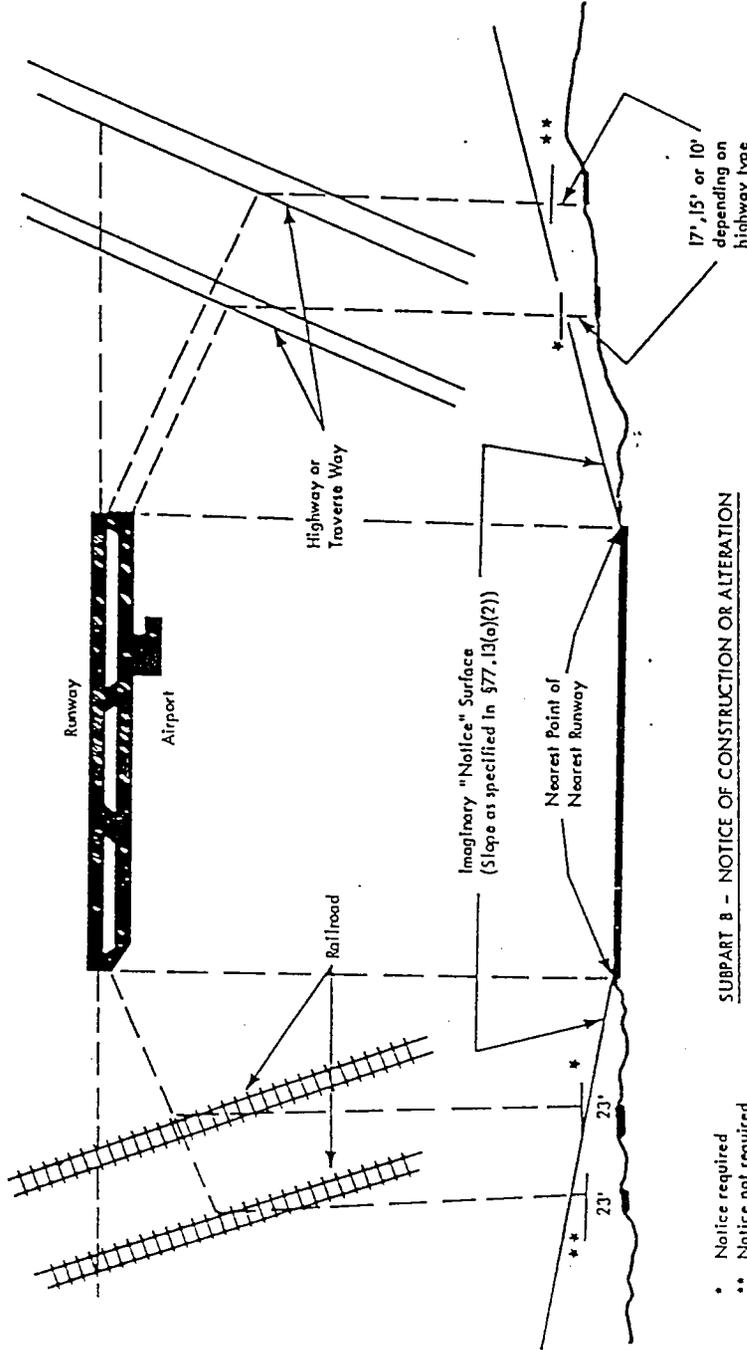
### FAR Part 77

In order to determine whether an object is an obstruction to air navigation, several imaginary surfaces are established with relation to the airport and to each runway. The size of the imaginary surfaces depends on the category of each runway (e.g., utility) and on the type of approach planned for that runway (e.g., visual, nonprecision instrument, precision instrument).

The principal imaginary surfaces are described as follows:

1. Primary surface. A surface longitudinally centered on a runway is called a *primary surface*. When the runway is paved, the primary surface extends 200 ft beyond each end of the runway.
2. Horizontal surface. A *horizontal surface* is a horizontal plane 150 ft above the established airport elevation, the perimeter of which is constructed by swinging arcs of specified radii from the center of each end of the primary surface of each runway and connecting the adjacent arcs of lines tangent to those arcs.
3. Conical surface. A surface extending outward and upward from the periphery of the horizontal surface at a slope of 20 to 1 for a horizontal distance of 4000 ft is known as a *conical surface*.
4. Approach surface. A surface longitudinally centered on the extended runway centerline and extending outward and upward from each end of the primary surface is called an *approach surface*. It is applied to each end of a runway based on the type of available or planned approach.
5. Transitional surfaces. These surfaces extend outward and upward at right angles to the runway centerline plus the runway centerline extended at a slope of 7 to 1 from the sides of the primary surface and from the sides of the approach surfaces.

§ 77.13(a)(3) - NOTICE REQUIREMENT RELATED TO TRAVERSE WAYS



SUBPART B - NOTICE OF CONSTRUCTION OR ALTERATION

- \* Notice required
- \*\* Notice not required

§ 77.13(a)(3) - Notice is required for any proposed construction or alteration of any highway, railroad, or other traverse way for mobile objects if of greater height than the standards of § 77.13(a)(1) or (2) after their height has been adjusted upward by one of the following:

- 17 feet for an Interstate highway that is part of the National System of Military and Interstate Highways,
- 15 feet for any other public roadway
- 10 feet or the height of the highest mobile object that would normally traverse the road, whichever is greater, for a private road,
- 23 feet for a railroad
- For a waterway or any other traverse way, an amount equal to the height of the highest mobile object that would normally use it.

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APPENDIX B  
Environmental Concerns Information Summary



THE UNIVERSITY OF NC  
AT  
CHAPEL HILL

Post-It™ brand fax transmittal memo 7671 # of pages 5

To: <i>Karl Sproull</i>	From: <i>T. Hobbs</i>
Co. <i>JR</i>	Co.
Dept.	Phone #
Fax # <i>919 662 0779</i>	Fax #

University  
Health and Safety Office  
(919) 962-5507  
FAX (919) 962-0227

MEMORANDUM

The University of North Carolina at Chapel Hill  
212 Finley Golf Course Rd.  
Chapel Hill, North Carolina 27514

To: Interested Parties

From: Dr. Richard Miller, Environmental Affairs Manager *RLM*

Date: September 11, 1995

Subject: List of Known Waste Material Sites and Environmentally Sensitive Operations at Horace Williams and Mason Farm Properties

This memorandum provides a summary of information concerning the above referenced topic.

Seven sites involved with various waste materials and two sites involved with petroleum fuel products are located on either the Horace Williams or Mason Farm Properties. The following matrix displays the location and status of these nine sites:

A. Active  
(currently in use)

B. Decommissioned  
(closed and available for  
unrestricted use)

C. Inactive  
(no longer in use)

	A. Active (currently in use)	B. Decommissioned (closed and available for unrestricted use)	C. Inactive (no longer in use)
Horace Williams	1. Hazardous Materials Facility	1. Radioactive Material Burial Site	1. Chapel Hill Inactive Municipal Landfill
	2. Horace Williams Airport Fuel Farm		2. Airport Road Waste Disposal Area
	3. University Service Station and Garage		3. Old Sanitary Landfill
Mason Farm	4. Chydaru		4. Mason Farm Low Level Radioactive Waste Disposal Site

A summary of the status of each of these nine sites, including past and present activities, how regulated, and monitoring programs, follows.

A. Active Sites

1. Hazardous Materials Facility

The Hazardous Materials Facility (HMF), a two building complex totaling 4,400 sq. ft. located south of Estes Drive adjacent to the "P" parking lot, has been in operation since 1983. In 1990, EPA issued the final permit pursuant to the Resource Conservation and Recovery Act (RCRA) to the University for the operation of a hazardous waste treatment, storage and disposal facility. Hazardous and radioactive wastes generated by the University and UNC Hospitals are picked up on campus, and transferred to HMF for storage, treatment and/or processing for off site disposal. HMF is operated by the University Health & Safety Office and is subject to the regulatory authority of EPA, NC Department of Environment, Health and Natural Resources, and the US Department of Transportation.

The HMF incorporates several safety features as a part of the EPA approved permit. These features include an automatic fire and smoke detection-alarm system, floors designed for tertiary containment, and a sprinkler overflow containment area. The facility is inspected at least annually by the Hazardous Waste Section of the North Carolina Department of Environment, Health and Natural Resources and the EPA-Region IV. Currently, HMF is in compliance with applicable regulations.

2. Horace Williams Airport Fuel Farm

The University has dispensed aviation fuel at the Horace Williams Airport since the 1970's. The aviation fuel farm was replaced during the 1994-95 fiscal year. The original fuel farm, consisting of two tanks with related piping and pumps, was removed in July 1994. Minimal gasoline contamination was found in soil around the fill pipes and beneath one dispenser. All contaminated soil (about 40 cubic yards) was removed and disposed of in accordance with state and federal regulations before the new fuel farm was installed. The new fuel farm, also consisting of two tanks (10,000 and 12,000 gallons) with related piping and pumps, features spill detection and prevention systems, including a spill alarm, spill shut-off, internal collection and monitoring systems, all of which meet or exceed current design regulations. The University Health and Safety Office and the Chapel Hill Fire Department were involved in various aspects of design, installation, and start-up of the new fuel farm as well as personnel safety training. The Chapel Hill Fire Department granted final approval for full use on May 30, 1995.

### 3. University Service Station and Garage

The University Service Station is located off Airport Drive, behind the Giles Horney Building. The service station has functioned as a gasoline station and garage for University and State vehicles since its construction in 1962. A new 10,000 gallon underground storage tank (UST) and dispensing system, including advanced spill detection, alarm, and monitoring features, and a new small waste oil UST will be installed in late 1995.

An existing 3,000 gallon gasoline UST and small waste oil UST have passed all tightness tests conducted by a firm certified to perform these tests. The existing 10,000 gallon gasoline UST, which had passed the tightness test in previous years, failed the most recent annual tank tightness test on December 7, 1994. The University reported this information to the State, and the tank was immediately emptied and taken out of service. Soil sampling around the 10,000 gallon tank indicates that a small amount of gasoline leaked. The University through consultant assistance is conducting a comprehensive site assessment in accordance with state regulations in order to complete any needed remediation.

### 4. Chydaru

This site located off the Finley Golf Course Road Extension has been operating since 1975. It originally was used to hold radioactive wastes for off site disposal and was later used to store short-lived radionuclides for decay. The State of North Carolina granted the University interim status in 1987 to operate the site as a hazardous waste treatment, storage and disposal (TSD) facility because one type of waste previously sent to Chydaru contained both hazardous and radioactive components. The University closed the site as a TSD facility and transferred these operations to the Hazardous Materials Facility (site 1, above) when an addition to the Hazardous Materials Facility was completed in 1991. The University completed the required state and federal closure procedures for the Chydaru TSD operations as of March 17, 1993.

Today, this site is used exclusively as a radioactive storage -for- decay facility. There is no radioactive or hazardous waste buried at this site. The University transfers short-lived radioactive wastes from their points of generation on campus to Chydaru for storage until the wastes are no longer radioactive. All campus facilities, including Chydaru, that receive, possess, use, handle or store radioactive materials and wastes are approved and regulated by the North Carolina Division of Radiation Protection and the UNC-CH Radiation Safety Committee. Radioactive materials are stored at Chydaru for a duration of ten half-lives or longer (a period ranging from 30 days to 4.5 years), before being repackaged as medical wastes (no longer considered radioactive) and shipped to an off-site medical waste incinerator. This facility is routinely inspected and monitored by the University Health and Safety Office and is inspected at least annually by the state regulatory agency.

*Implications for Radio decay?*

B. Decommissioned Site

1. (Former) Radioactive Material Burial Site

This site is located immediately north of the western end of the airport runway on the Horace Williams tract. The University previously used this site for disposal of University and Hospital generated radioactive wastes until 1963. In 1991, the University formally closed this site by removing all radioactive material. The North Carolina Division of Radiation Protection stated on July 12, 1991 that the site is "decommissioned and released for unrestricted use."

C. Inactive Sites

1. Chapel Hill Inactive Municipal Landfill

This site is generally bounded by Airport Road, Estes Drive Extension and Airport Drive. The landfill was operated by the Town of Chapel Hill during the mid-to late 1950's. Interviews with employees of the Town of Chapel Hill indicate that this landfill primarily contains sanitary wastes and brush from Hurricane Hazel.

This site is included in this listing of nine environmentally sensitive sites for the reason that the Hazardous Materials Facility, site A.1. discussed above, was built on a portion of the Chapel Hill Inactive Municipal Landfill. The EPA permit for the Hazardous Materials Facility (site A.1) requires, in addition to what is referenced in Paragraph A.1 above, that the University investigate the soil, air and groundwater conditions of this landfill in order to "...characterize potential releases of hazardous constituents from the inactive landfill... and evaluate the need for further action..." This study has been completed and the University submitted its final report on this investigation in May, 1995 to the EPA and the State. The study found that "[c]oncentrations of constituents detected in surface emissions, soil, surface-water, sediment and groundwater samples were less than applicable standards or conservative screening levels". The University recommended that a "...formal risk assessment should not be required and additional corrective action at the site is unnecessary. The University is awaiting a response to its report from the EPA and the State.

2. Airport Road Waste Disposal Area

This site is located within a fenced area of approximately 0.2 acres north of the Chapel Hill Transit Operations and Maintenance Complex and was used from 1973 to 1979 for the burial of chemical wastes. Studies have shown that the site has contaminated soil and groundwater. As a result of the State's most recent study of this site in 1993, the North Carolina Superfund Section, Inactive Sites Branch ranked the site 85th of 158 inactive hazardous waste sites in priority, with the site ranked one having the highest priority for study and potential clean-up. The low clean-up priority reflects the fact that drinking water for residents in the area is supplied by OWASA, thus limiting the potential for human exposure to contamination. The State recommended that the University fence the site to further reduce potential exposure and

conduct additional studies to determine the extent of contamination. In compliance with these recommendations, the University has regraded and fenced the site, posted warning signs, installed monitoring wells, and retained Geraghty & Miller, an environmental consulting firm, to assist the University in determining the nature and extent of contamination. Geraghty & Miller has just completed monitoring well installation and sample collection. A report on their work is expected in the fall.

### 3. Old Sanitary Landfill

This thirty-five (35) acre site is located generally north of the airport runway on the Horace Williams Property. Because the potential for human exposure to contamination is limited as a result of OWASA supplied drinking water, the North Carolina Superfund Section, Inactive Sites Branch ranked the site 89th of 158 inactive hazardous waste sites for study and potential clean-up priority. This landfill was previously operated by the Town Of Chapel Hill beginning sometime prior to 1966 and ending in 1972-73 when the current solid waste landfill serving Orange County opened on Eubanks Road. Little is known about this site, other than what is reported in the investigation by the Inactive Sites Branch. The University has not received any recommendations or direction from the State concerning additional study of this site.

### 4. Mason Farm Low Level Radioactive Waste Disposal Site

This fenced, one-third acre site is located at the end of the Finley Golf Course Road Extension and was used from 1963 to 1970, for the burial of low level radioactive wastes, including some small animal carcasses. The North Carolina Division of Radiation Protection regulates the site. The University Health and Safety Office monitors the groundwater at the site by collecting and analyzing water from three monitoring wells twice a year in accordance with procedures approved by the North Carolina Division of Radiation Protection and the UNC-CH Radiation Safety Committee. Monitoring results are maintained by the University's Health and Safety Office and the state regulatory agency. To date, monitoring results document that no detectable quantities of radioactive materials have been found outside the disposal site boundary.

Please feel free to contact me at (919) 962-5718 if you or others have any questions.

OUTLYING PARCELS LAND USE PLANS  
TECHNICAL REPORT

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APPENDIX C  
Faculty Committee Recommendations

09/07/199 14:33 FROM LNC PHYSICS :

Post-It™ brand fax transmittal memo 7671		# of pages > 2
To: Karl Steavenson	From: Ted Hoskiny	
Co. JJR	Co.	
Dept.	Phone #	
Fax # 313/662-0779	Fax #	

THE UNIVERSITY OF  
CHAPEL HILL

Department of  
Physics and Astronomy

## MEMORANDUM

The University of North Carolina at Chapel Hill  
CB# 3255, Phillips Hall  
Chapel Hill, N.C. 27599-3255  
(919) 962-2078 FAX: (919) 962-0480

To: Wayne Jones, Chair, Facilities Planning Committee  
From: Tom Clegg, Chair, Faculty Advisory Committee on Long-Range Land-Use  
Planning for Outlying Campus Lands *Tom*  
Subject: Overview of the Faculty Committee's Deliberations  
Date: September 7, 1995

After ten months of data gathering and wide deliberations with campus groups, the Faculty Advisory Committee developed at its last August 30 meeting both general and specific opinions about the nature of activities most appropriate for outlying campus lands. These are summarized below. Details supporting these opinions are contained in longer summaries of the Faculty Committee's meetings and deliberations distributed earlier. Ted Hoskins has asked that I prepare this written summary so he can transmit these ideas to our JJR consultants prior to their next campus visit.

### General Opinions -

Several views have surfaced frequently and seem, in fact, to encompass broad campus opinion about the whole current process of land-use planning for outlying parcels at Horace Williams and Mason Farm:

- *Preserve the central campus* - Overriding campus opinion urges that the traditional central campus be preserved to the greatest extent possible for core instructional, clinical, and training activities, and for research closely tied to these. Programs not tightly related to these would then be favored for location on outlying lands. Traditional green spaces and building arrangements on the north campus should also be preserved, and new ones should of similar nature be created on central campus and on outlying lands whenever possible.
- *Favor "Up" over "Out"*. - Is it better to expand the University "outward" onto remote parcels or should it grow "upward" on the central campus? A large contingent of campus faculty, on considering how in the future to preserve the overall quality of what our Chapel Hill campus does best, votes for "up" over "out". This opinion is not based solely on faculty resistance to change. Rather, it arises from sincere conviction that much of what provides the basis for real quality of our present academic and research programs depends critically on the mutual proximity of many key, central campus programs. This creates an environment for numerous, frequent, and efficient personal interactions: between students and faculty, between basic researchers and practicing clinicians, and between Health and Academic Affairs personnel. Campus need for this only grows as interdisciplinary training and research enterprises are fostered. Any decision to move a significant part of the University's core training or research activities to an outlying parcel must weigh heavily the inevitable loss which will ensue from diminished personal encounters among important affected parties.
- *"Decant" programs carefully*. - Activities which need a central campus presence must be separated from those which will not suffer from being located at an outlying site. Both types exist, and locations for many at the extremes can be chosen with confidence. But, there is an interim class of activities for which the advantages and disadvantages of remote siting must be weighed extremely carefully. In such individual cases, cautious decision making is strongly recommended.

## UNIVERSITY OF NORTH CAROLINA

• *Build generic buildings* - Viewed from the perspective of decades, campus programs and their space needs will surely change. It is then essential that new campus construction, both on the central campus and on the outlying lands, be flexible and easy to retrofit for future needs. Specialized construction for individual programs, then, should only occur after serious consideration is given to designs which might later accommodate in any new space to be created.

• *Provide effective transportation systems* - Growth on outlying University lands will require substantial growth in campus and town transportation systems. Minimizing the need for frequent trips of University personnel between the central campus and outlying lands must be a serious concern for those selecting University programs to be sited remotely.

• *Provide effective communication links* - Communications technology is changing rapidly. Campus investment must insure that effective communications links are installed which minimize the intellectual separation of personnel located physically on the outlying lands, from the core activities of the central campus.

### Specific Opinions -

The Faculty Committee can now also recommend with some confidence that certain activities seem more appropriate for either the Mason Farm or the Horace Williams tract:

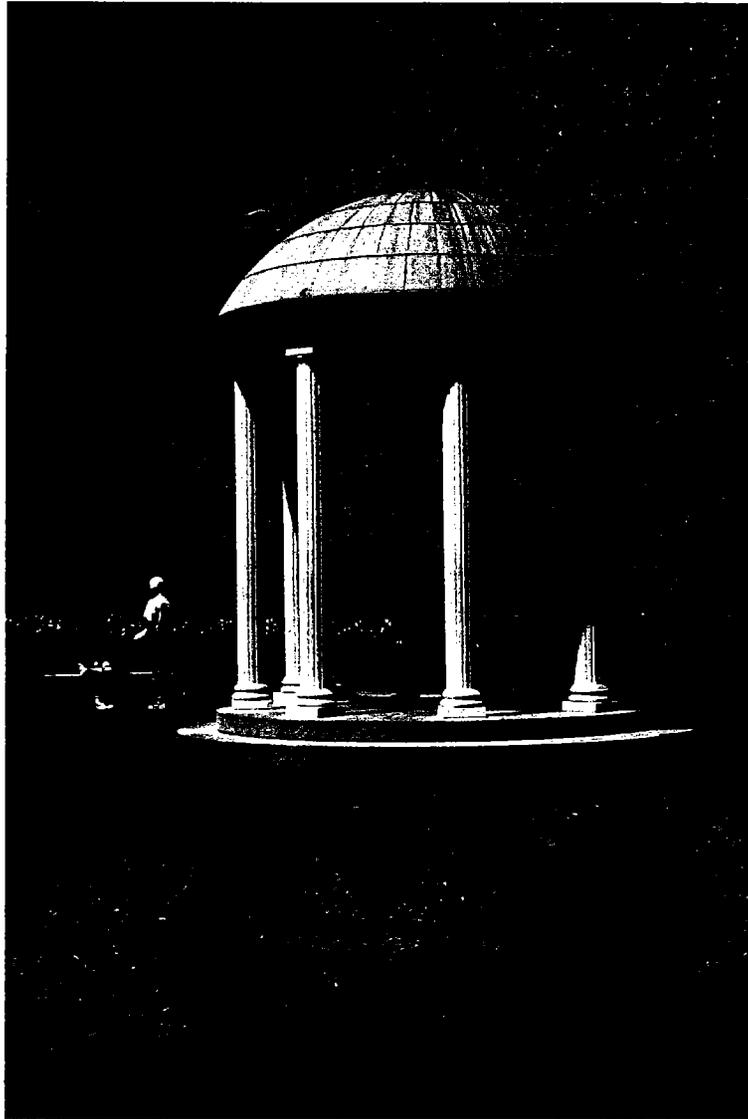
#### *Activities to be preferred for the Mason Farm Tract*

- Research, outreach, and training functions closely linked to the Botanical Garden and the Biological Reserve.
- Finley Golf Course and athletic playing fields.
- Continuing education, center, and institute activities closely linked to the Friday Center.
- Affordable housing for short-term visitors to many units on campus, with an eye to needs of programs using the Friday Center.
- Public performance space, specifically a possible new large auditorium associated with the Friday Center which could serve both for performances and for large conference groups.

#### *Activities to be preferred for the Horace Williams Tract*

- Expanded physical plant, support, and infrastructure activities.
- Space for "back room" administrative offices, and data processing, storage, and record keeping activities.
- Space for research activities which are not tightly coupled to activities on the central campus.
- Married student housing.

OUTLYING PARCELS LAND USE PLANS  
TECHNICAL REPORT



THE UNIVERSITY OF NORTH CAROLINA  
*at* CHAPEL HILL

prepared by  
JJR INCORPORATED  
PARSONS BRINCKERHOFF