



Disaster-Resistant University Hazard Mitigation Plan
Section 2 Executive Summary

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On October 30, 2000, the President signed into law the Disaster Mitigation Act of 2000, also known as DMA2K. Among its other features, DMA2K established a requirement that in order to remain eligible for Federal disaster assistance and grant funds, local and State governments must develop and adopt hazard mitigation plans. On February 26, 2002, the Federal Emergency Management Agency published an Interim Final Rule (IFR) that set forth the guidance and regulations under which such plans are supposed to be developed. The IFR provides detailed descriptions of both the planning process that States and localities are required to observe, and the contents of the plan that emerges. This Plan responds to those requirements.

Hazard mitigation is often defined as actions taken to reduce the effects of natural hazards on a place and its population. The University of Maryland decided to develop this Hazard Mitigation Plan because of increasing awareness that natural hazards, especially flood and wind, have the potential to affect people, physical assets, and operations on the campus.

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2.1 Organization of the Plan

The University of Maryland Hazard Mitigation Plan is organized to parallel the structure provided in the Interim Final Rule [IFR]. The Plan has nine sections.

Section 1	Table of Contents
Section 2	Executive Summary
Section 3	Background
Section 4	Approval and Adoption
Section 5	Planning Process
Section 6	Hazard Identification, Profiling and Ranking
Section 7	Risk Assessment
Section 8	Mitigation Strategy
Section 9	Plan Monitoring and Maintenance



Disaster-Resistant University Hazard Mitigation Plan
Section 2 Executive Summary

Appendices

There are references to the IFR throughout the Plan. Where possible these provide specific section and subsection notations to aid the review process. The Plan also includes references to the FEMA crosswalk document, which is used in reviewing mitigation plans.

2.2 Background

The purpose of a mitigation plan is to rationalize the process of determining appropriate hazard mitigation actions. The document includes a detailed characterization of natural hazards in central Maryland and the area around the UM College Park campus; a risk assessment that describes potential losses to physical assets, people and operations; a set of goals, objectives, strategies and actions that will guide UM's mitigation activities, and a detailed plan for implementing and monitoring the Plan. This Plan focuses on two hazards with the highest potential for damaging UM facilities, people and operations. These hazards are floods and high winds (the latter includes hurricanes, tropical storms and tornadoes). Both the risk assessment section and goals sections reflect this emphasis, which was the result of careful consideration and a numerical ranking process carried out by the Hazard Mitigation Team.

2.3 Hazards and Risks

Hazards

Sections 6 and 7 of this Plan include detailed description of the process that was used to assess and prioritize UM's risks from natural hazards, and quantitative risk assessments for the campus as a whole, as well as more detailed assessments for critical facilities. Ten hazards were initially identified and profiled by the Mitigation Core Team (MCT). These are:

1. Floods
2. High winds (including those related to hurricanes, tropical storms and tornadoes)
3. Lightning
4. Earthquakes
5. Winter storms
6. Wildfires
7. Hail
8. Extreme temperatures
9. Drought
10. Sinkholes and land subsidence

For each of these hazards, the profiles in Section 6 include discussions about:

- Description
- Geographical Extent
- Severity
- Impact on Life and Property
- Occurrence (probability)



Disaster-Resistant University Hazard Mitigation Plan
Section 2 Executive Summary

After these initial 10 hazards were profiled, the MCT used a ranking system with five criteria to reduce the range of hazards to those with the most potential to impact the College Park campus. The ranking and criteria are also discussed in detail in Section 6. The criteria included: (1) History, (2) Potential for mitigation, (3) Presence of susceptible areas (vulnerability), (4) Data availability, (5) Federal disaster declarations and local emergency declarations. The criteria are described briefly below.

1. **History.** High rating indicates that the hazard has affected the jurisdiction often in the past, and that the hazard has occurred often and/or with widespread or severe consequences.
2. **Potential for mitigation.** High rating indicates that there are ways to address the hazard, and that the methods are technically feasible and have the potential to be cost-effective (i.e., mitigation measures are available at a reasonable cost, and damages to property, lives and/or community functions would be reduced or eliminated.)
3. **Presence of susceptible areas.** High rating indicates that the College Park campus has numerous facilities, operations or populations that may be subjected to damage from the hazard.
4. **Data availability.** High rating indicates that sufficient quality data is available to permit an accurate and comprehensive risk assessment.
5. **Federal disaster declarations and local emergency declarations.** High rating indicates that Prince George’s County has received numerous disaster declarations for the particular hazard.

The Mitigation Core Team scored each of the hazards in each of the five categories, using a 1 to 3 scale, with 3 being the highest rank. This scoring process provided a clear stratification of the hazards. The MCT determined that Floods and Wind (including Hurricanes, Tropical Storms, and Tornadoes), would be the focus of additional risk assessment and vulnerability studies, while the other hazards would be profiled but not subjected to rigorous risk assessment. The profiles are in Section 6 and the risk assessments for floods, wind and lightning are in Section 7.

**Table 2-1
University of Maryland Initial Hazard Ranking**

Hazard	History	Mitigation	Vulnerability	Data	Disaster	Total
Floods	3	3	3	3	3	15
High Winds	3	3	3	2	3	14
Lightning	3	2	2	2	1	10
Earthquakes	1	2	3	2	1	9
Winter Storms	2	1	2	2	2	9
Wildfires	1	1	2	2	1	7
Hail	1	1	1	1	1	5
Extreme Temperatures	2	1	1	2	2	8
Drought	1	1	1	2	2	7
Sinkholes/Subsidence	1	1	1	1	1	5

Risks

A risk calculation is a FEMA requirement. Risk is a numerical indication of potential future damages. Although the range of events from lightning to sinkholes all have some potential to affect UM, floods and high winds are clearly the most significant hazards, based on the ranking criteria, and on experience. These two hazards were selected for much more detailed assessments and estimations of future damages.



Disaster-Resistant University Hazard Mitigation Plan
Section 2 Executive Summary

Section 7 includes details about calculation methodologies and results of the risk assessment, which are summarized in Tables 2-2 through 2-5.

**Table 2-2
Flood Risk for University of Maryland Assets**

Asset Category	Risk	Basis of Calculation
Campus wide (general)	\$57,497	Insurance records, annualized
Campus wide (general)	\$821,632	Insurance records, 100-year cumulative (discounted)
A.V. Williams/north campus (annual)	\$152,812	FEMA LD software, annualized
A.V. Williams/north campus	\$2,180,509	FEMA LD software, 100-year cumulative (discounted)
South Mall	\$20,000	FEMA LD software, annualized
South Mall	\$285,384	FEMA LD software, 100-year cumulative (discounted)

**Table 2-3
Estimated Hurricane Wind Risk to all UM College Park Facilities**

Data Parameter	Value
Estimated cumulative hurricane wind risk to structures	\$5,636,860
Estimated annual hurricane wind risk to structures	\$395,035
Estimated cumulative hurricane wind risk to contents	\$3,193,678
Estimated annual hurricane wind risk to contents	\$223,815
Estimated cumulative loss of public services	\$912,292
Estimated annual loss of public services	\$63,934
Estimated total cumulative hurricane wind risk (100-year horizon)	\$9,742,831
Estimated hurricane wind risk, annualized	\$682,785

**Table 2-4
Estimated Tornado Wind Risk to all UM College Park Facilities**

Data Parameter	Value
Estimated annual tornado wind risk (<i>injuries</i>)	\$70,359
Estimated cumulative tornado wind risk (<i>injuries</i>)	\$1,004,017
Estimated annual tornado wind risk (<i>fatalities</i>)	\$374,268
Estimated cumulative tornado wind risk (<i>fatalities</i>)	\$5,340,809
Estimated annual tornado risk (injuries and fatalities)	\$444,627
Estimated cumulative tornado risk (injuries and fatalities)	\$6,344,826



Disaster-Resistant University Hazard Mitigation Plan
Section 2 Executive Summary

**Table 2-5
Risk Summary for UM Campus**

Hazard	Annual Risk	100-year Risk
Flood (campus-wide)	\$57,497	\$821,632
Tornado (campus-wide)	\$444,627	\$6,344,826
Hurricane Wind (campus-wide)	\$682,785	\$9,742,831
Flood; (A.V. Williams)	\$152,812	\$2,180,509
Flood; (South Mall)	\$20,000	\$285,384
Tornado; Pocomoke/SOC	\$358	\$5,110
Hurricane Wind; Pocomoke/SOC	\$3,446	\$49,175

2.4 Critical Facilities on the Campus

In addition to the overall campus risk assessment, the mitigation planning team conducted site assessments for 32 of the most critical facilities on the campus, to identify more specific natural hazard vulnerabilities, and potential mitigation alternatives. The results of these site assessments can be found in Appendix D. Section 7 includes a calculation of future wind losses to these facilities from hurricanes, tropical storms and tornadoes. Because most of the campus is well outside the floodplain, flood risk assessments are limited to a general calculation campus-wide (see above), and to two at-risk/critical sites, the A.V. Williams building on the northeast side of the campus, and the area known as the South Mall.

2.5 Summary of Goals, Objectives and Strategies

Section 8 of this Plan describes UM's priorities for mitigation actions. The section divides the actions by priority, and describes the funding required, sources of funding, the level of support, and the timing of the action.

High Priority Actions

- Retrofit Electrical Feed to Security Operations Center in Pocomoke Building
- Retrofit Windows or Install Shutters for Security Operations Center in Pocomoke Building
- North Campus drainage infrastructure upgrades
- Local Flood Mitigation Projects on South Mall
- Risk assessment and mitigation options study for Security Operations Center

Second Priority Actions

- Construct or Harden Shelter Facilities in High-Occupancy Areas
- Study Wind Vulnerabilities in High-Occupancy and Critical Facilities
- Critical Facility Wind Retrofits
- Detailed Assessment of Lightning Vulnerabilities Campus-Wide
- Selective Retrofits/Upgrades to Reduce Lightning Vulnerabilities
- Fully Integrate Hazard Mitigation into the UM Capital Improvement and Master Plans
- Initiate a Mitigation Outreach/Education Effort on the Campus



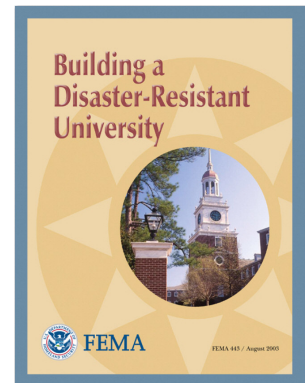
Disaster-Resistant University Hazard Mitigation Plan Section 2 Executive Summary

The section includes information about the parties responsible for implementing the actions, and about potential sources of funding for mitigation activities. There are also two subsections outlining UM's mitigation objectives and strategies.

2.6 The Planning Process

Section 5 provides details about the process that was used to develop this Plan. The process closely followed the guidance in FEMA publication 443 *Building a Disaster-Resistant University*. This publication closely reflects the "386" series of planning guidance, which recommend a four-stage process for developing mitigation plans.

- Step 1 Organize resources**
- Step 2 Assess risks**
- Step 3 Develop a mitigation plan**
- Step 4 Implement the plan and monitor progress**



Step 1 included identification of a Mitigation Core Team (MCT) responsible for most aspects of Plan development; and a stakeholder group, comprised of individuals from UM and surrounding jurisdictions, who were informed of the planning decisions and provided interim versions of the Plan for review and comment. The University of Maryland Board of Regents is the approving authority for the Plan.

Step 2, the risk assessment, was completed by the MCT for the overall UM College Park campus, then for 32 critical facilities on campus. Additionally, this plan includes even more detailed risk assessments and preliminary analyses of potential mitigation projects at five key facilities on the campus. The risk assessment is included as Section 7 of the Plan.

Step 3, development of the Mitigation Plan is described in Section 5 (Planning Process). The section includes details about who was involved, the processes that were used, and the products that were developed.

Step 4, implementing the Plan, is described in Section 8 (Mitigation Strategy), which includes details about who is responsible for implementation of specific strategies and actions; and in Section 9, the Plan Monitoring and Maintenance section, which describes long-term implementation through periodic updates and reviews.

2.7 Approval and Adoption Processes

The University of Maryland Board of Regents was responsible for approving and adopting this Hazard Mitigation Plan. The Board reviewed and approved the Plan at its **DATE** meeting. Appendix K includes minutes of that meeting.

2.8 Implementation Process

The implementation process is described as part of the specific actions in the Mitigation Strategy section.



Disaster-Resistant University Hazard Mitigation Plan
Section 2 Executive Summary

2.9 Monitoring and Updating Processes

Section 9 (Plan Monitoring and Maintenance) describes the schedule and procedures for ensuring that the Plan stays current. The section identifies when the Plan must be updated, and who is responsible for monitoring the Plan and ensuring that the update procedures are implemented. This section provides a combination of cyclical dates (oriented toward FEMA requirements) and triggering events that will initiate amendments and updates to the Plan.