

SECTION THREE CAPABILITY ASSESSMENT

This section presents the results of the Capabilities Assessment conducted for the United States Virgin Islands. It contains an identification and evaluation of policies, programs, and capabilities of USVI territorial agencies that directly or indirectly support hazard mitigation. It also identifies funding opportunities to directly support hazard mitigation.

This section includes the following nine subsections:

- 3.1 The IFR Requirements for Capability Assessments
- 3.2 Policies, Programs and Capabilities
- 3.3 Policies
- 3.4 Programs, Rules and Regulations
- 3.5 Administrative Capabilities to Implement Hazard Mitigation
- 3.6 Grants Administration
- 3.7 Funding
- 3.8 USVI Departments, Agencies and Authorities
- 3.9 Summary and Recommendations

3.1 THE IFR REQUIREMENT FOR CAPABILITY ASSESSMENTS

The Interim Final Rule (IFR) includes two specific requirements for conducting capability assessments as part of Standard State Hazard Mitigation Plans:

- **State Capability Assessment per Requirement §201.4(c)(3)(ii):** “[*The State mitigation strategy shall include a) discussion of the State’s pre-and post-disaster hazard management policies, programs, and capabilities to mitigate the hazards in the area, including: an evaluation of State laws, regulations, policies, and programs related to hazard mitigation as well as to development in hazard-prone areas [and] a discussion of State funding capabilities for hazard mitigation projects*”
- **Local Capability Assessment per Requirement §201.4(c)(3)(ii):** “[*The State mitigation strategy shall include] a general description and analysis of the effectiveness of local mitigation policies, programs, and capabilities...*”

The Disaster Mitigation Act of 2000 (DMA 2000) requires that the territories of the United States, including the US Virgin Islands, meet the IFR requirements for States. However, the US Virgin Islands differs from the 50 States in one important way. Although the islands of St. Croix, St. John and St. Thomas could be considered as distinct “communities” in many regards, there are no incorporated units of local government. Since there are no incorporated counties, municipalities or subunits below the Territorial government that can promulgate or enforce “local” policies, programs or regulations, the requirement for a “Local Capability Assessment” does not apply and is not addressed in this Plan.

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3.2 USVI POLICIES, PROGRAMS AND CAPABILITIES

An important purpose of this assessment is to identify the capabilities that need to be strengthened to assure successful implementation of programs, and the rules and regulations intended to support the hazard mitigation related policies of the US Virgin Islands.

The remaining portions of this subsection of the Plan address:

- Policies
- Programs, Rules and Regulations
- Administrative Capability to Implement Hazard Mitigation
- Funding and Grants Administration
- US Virgin Islands Agencies, Departments and Authorities

3.2.1 KEY WORD DEFINITIONS

The IFR does not provide definitions for key words in its requirements, i.e., "*policies, programs and capabilities*". For the purposes of this assessment, the following definitions will be used:

- *Policies* – are statements included in the Territory's plans or enabling legislation that express the vision or intent of the USVI government. In the specific context of this plan, policies are identified that already do or feasibly can support hazard mitigation in the US Virgin Islands.
- *Programs* – are related, coordinated activities by one or more agency that have a distinct focus or purpose. Often, programs are developed as a direct response to policies and are enabled by the corresponding legislation or executive order. In the context of this assessment, relevant programs are often directly linked to rules and regulations.
- *Capabilities* – as used in this document, describe the past performance and future potential of agencies to carry out programs. As a simple example, if you want to build a house (the "program"), you need to assess your capability to do so. You should look at the materials and tools you have or need to buy; the skills you have or can hire (carpenters, electricians, plumbers, etc.); and whether the money you have saved for the project will be enough.
- Under this definition and for this particular planning exercise, capabilities refer to the strength and weaknesses of rules and regulations ("tools and materials"), the adequacy of human resources to carry out administrative procedures and enforcement activities (the "skills" to implement the program) and the funds available to maintain operations and provide capital improvements (the "project budget").

3.3 POLICIES

The US Virgin Islands has a number of relevant plans and legislation that lay out specific goals, objectives and policy statements that already do or potentially could support pre- and post-disaster hazard mitigation.

These plans provide a solid base for the maintenance, development and pursuit of coordinated programs that can reduce the risk of damage and loss from natural disasters in the US Virgin Islands. They are listed below:

Land Use and Environmental Planning documents

- *Coastal Land and Water Use Plan* (see "Coastal Zone Management" under Section 2.3.1)
- *St. Croix East End Marine Park Management Plan*, VI Nature Conservancy and UVI for DPNR, Division of Coastal Zone Management (2002)
- A comprehensive set of development regulations is currently under consideration by the VI Islands Legislature entitled, *Comprehensive Land and Water Use Plan* (see Section 2.3.4 – Proposed Programs)

All Hazard or Hazard Specific Mitigation Plans:

- Natural Hazard Mitigation Plan for the US Virgin Islands, David Brower, Esq. and Timothy Beatley, Ph.D., for VITEMA (1988)
- *Mitigating the Impacts of Natural Hazards in the US Virgin Islands*, Island Resources Foundation, for VITEMA (1995)
- *Mitigating the Impacts of Natural Hazards in the US Virgin Islands*, Island Resources Foundation, for OMB (1999)
- *Virgin Islands Flood Hazard Mitigation Plan*, Island Resources Foundation for VITEMA, funded by FEMA FMA grant (2000)
- Phase 4 Report, *Earthquake Hazards Reduction Plan*, Geoscience Associates, for VITEMA, funded by FEMA grant EMA-K-86-0055 (1987)

Emergency Management Plans:

- *USVI Territorial Recovery Operations, Part II, Territorial Disaster Recovery Assistance Handbook on Federal Programs*, VITEMA (1992)
- *Disaster Management Guide for the US Virgin Islands*. FEMA Region II CAO (2004)

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- Hurricane Evacuation Study for the US Virgin Islands, Technical Summary, US Army Corps of Engineers for VITEMA (1994)
- WAPA Emergency Operations Plan, WAPA (2003)

The Comprehensive Land and Water Use Plan

The *Comprehensive Land and Water Use Plan (CLWUP)*, under development at the time this Plan was drafted, adheres to goals and objectives laid out in the "*Guidelines for the Development of a Long-Range Comprehensive Plan for the United States Virgin Islands*" adopted by Executive Order No. 333-1991 on May 17, 1991. *CLWUP* includes goal and objectives that may be interpreted to support hazard mitigation.

Goal: *Achieve a quality living environment through a well-planned mix of compatible land and water uses, while preserving the integrity of the natural environment.*

- *Objective 1* *Establish a system for the effective management and utilization of land resources.*
- *Objective 2* *Preserve and conserve land resources for economic, social and community uses.*
- *Objective 3* *Achieve a pattern and intensity of development which best utilizes land resources.*
- *Objective 4* *Achieve, through preservation, conservation and redevelopment practices, an enhancement of the positive qualities and character of established communities in the US Virgin Islands.*

Most of these statements can be interpreted to support hazard mitigation. In the case of the first objective, "*effective management and utilization of land resources*" can be interpreted to include provisions for avoiding future losses due to natural disasters as the most effective way to manage and utilize land. Likewise, in the third objective, the "best" utilization of land arguably should include reducing the threat of loss of life and property damage by guiding development in areas that avoid known hazardous conditions. Finally, in the fourth objective, preserving the "*qualities and character of established communities*" can be broadly interpreted to include provisions to protect existing development that is important to the visual and social character of the US Virgin Islands as well as natural resource features that play important roles in reducing the impacts of certain kinds of hazards.

However, in each case, it is necessary to interpret hazard mitigation considerations from the text. That means the next person could decide that these considerations are not necessarily included. The *CLWUP* will be more effective in terms of promoting a sustainable, viable community if more explicit references to hazard mitigation are included. For example, Section 248 (d) of the Draft *CLWUP* includes the following text under the topic heading of "Sustainability Impacts":

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“An explanation of how the proposed development will or will not provide sustainable benefits will enable the Government of the Virgin Islands to exercise its responsibility to present and future beneficiaries, including:

- (A) the extent to which either or both the beneficial and adverse impacts of proposed development fall disproportionately on either the current residents of the Virgin Islands or the future residents of the Virgin Islands; and*
- (B) the extent to which the impacts of the proposed development are reversible or irreversible.”*

This text could easily be amended to define “adverse” and “irreversible” impacts to include development practices that increase vulnerability for present and future residents to known natural hazards like flooding, storm surge and tsunamis.

Another example would be to add provisions within the CLWUP to institutionalize hazard mitigation more directly into the process by which the Territory plans, designs and implements its own public projects. Establishing an inter-departmental “Hazard Assessment Working Group” would help ensure that hazard mitigation concerns are addressed in the siting, design and engineering of all future public sector investment and construction projects.

One clear positive result of strengthening mitigation policies in this manner in the CLWUP and all similar comprehensive planning documents will be to raise the profile of hazard mitigation in the US Virgin Islands. The more these practices become ingrained into the day-to-day business of the Territory and its citizens, the more the risk from natural disasters will diminish.

Other plans include policy-related statements that are more focused on specific hazard mitigation issues. For example, the *US Virgin Islands Flood Mitigation Plan* includes these three overarching goals and related objectives:

Goal One: Reduce loss of life and personal injury from flooding.

Goal Two: Reduce economic damages and social dislocation from flooding.

- Objective 2.1: Reduce damages to existing development from flooding.
- Objective 2.2: Reduce damages to future development from flooding.
- Objective 2.3: Reduce damages to present and future development financed by public funds.
- Objective 2.4: Reduce public expense for response and recovery services following flood events.
- Objective 2.5: Preserve, enhance and restore features of the natural environment.
- Objective 2.6: Comply with the National Flood Insurance Program.

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Goal Three: *Integrate effective flood hazard mitigation activities and controls with Government land use and natural resource management programs on all islands.*

- *Objective 3.1 Incorporate flood hazard standards in all relevant government regulations, including defining the Tier 1 Coastal Zone area to include the Special Flood Hazard Areas.*
- *Objective 3.2 Train government institutions and staff in flood hazard mitigation standards.*
- *Objective 3.3 Provide flood hazard information to all property owners.*

These goals and objectives or “policy statements” clearly support both pre- and post-disaster hazard mitigation activities for flooding, one of the key hazards for the US Virgin Islands.

As shown above, it is relatively easy to interpret statements of this type to be supportive of hazard mitigation activities in the US Virgin Islands. Also, taken as a whole, these statements do not include any inherent contradictions. A statement such as the second objective under the discussion related to the CLWUP which states: *“preserve and conserve land resources for economic, social and community uses”* could be interpreted in isolation as supporting development of land as the highest priority. However, the objective when correctly viewed as part of a related series of statements, incorporates wise and effective utilization of these same land resources.

As such, the foundations of these plans provide a solid base for the maintenance, development and pursuit of coordinated programs that can reduce the risk of damage and loss from natural disasters in the US Virgin Islands. The extent to which the Territory has been successful in building on this base is discussed in the following subsections. After the descriptions of these programs, Section 3.0 – Summary and Recommendations relates each plan’s “policies”, as well as the related programs, rules and regulations to the elements of the IFR requirements.

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3.4 PROGRAMS, RULES AND REGULATIONS

This subsection describes relevant programs, rules and regulations of the US Virgin Islands. The discussion is organized by four main headings:

- Pre-disaster hazard mitigation;
- Post-disaster hazard mitigation;
- Other related programs; and
- Proposed programs.

3.4.1 PRE-DISASTER HAZARD MITIGATION

Programs, rules and regulations that are focused primarily or substantially on pre-disaster hazard mitigation in the US Virgin Islands include:

- Floodplain Management;
- Coastal Zone Management; and
- Land Development Regulations (e.g., zoning; subdivision regulations; building codes).

Floodplain Management

Current pre-disaster floodplain management efforts in the US Virgin Islands are pursued through four interrelated programs:

- National Floodplain Insurance Program;
- USVI Flood Map Modernization Program;
- US Virgin Islands Flood Hazard Mitigation Plan; and
- Flood Damage Prevention Rules.

National Floodplain Insurance Program

Through the National Floodplain Insurance Program (NFIP), FEMA provides Federal insurance for structures and their contents located in participating communities. The NFIP was enacted by the Federal government in 1968 to help reduce flood damage by regulating new development in flood prone areas and to provide flood insurance to the general public at reasonable rates to cover damages to buildings and their contents caused by flooding.

In order to participate and qualify their residents for flood insurance, communities must adopt minimum regulations governing floodplain development. For example, participating communities much prohibit new development in designated floodways that raises flood levels. In addition, the lowest floor of all new buildings in Special Flood Hazard Areas must be elevated to or above the height of the base flood elevation or "100-year flood". A third significant requirement is that subdivisions must be designed to minimize exposure to flood hazards. Added standards are imposed on communities where the flood hazard is compounded by coastal wave action or "V" zones as described in Section 4.2 – Hazard Identification and Profiles.

The US Virgin Islands has been a member of the NFIP since 1980. The Territory adopted NFIP-compliant floodplain management provisions in 1993. See discussion under "Flood Damage Prevention Rules" below for a description and evaluation of the rules and regulations enacted by the USVI that help satisfy the statutory requirements associated with their NFIP participation. The program is administered by DPNR, Division of Permits. The Director of Permits is the designated NFIP Coordinator for the US Virgin Islands.

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Evaluation / Assessment:

The NFIP was an important impetus for the enactment of the USVI Flood Damage Prevention Rules. In addition, the program has provided loss coverage for a significant number of properties. It is important to note that of the 2,000 policies that are currently in force, 170 cover “repetitive loss properties”, properties that are currently insured for which two or more NFIP losses (occurring more than ten days apart) of at least \$1000 damage each have been paid within any 10-year period since 1978 (FMA, 2000). Prioritizing mitigation activities to reduce the number of repetitive loss properties (through acquisition, elevation, etc.) is consistent with current national priorities for mitigation funding and just makes good sense.

Also, in evaluating the impact of the current floodplain management program in the US Virgin Islands, two other issues are important to examine:

- Policies in force – As of July 2000, according to Flood Hazard Mitigation Plan, there were 2,000 policies with insurance coverage totaling \$220,004,000 in the USVI. The Plan also reported that the results of reviewing aerial photographs of the islands indicated that as much as 10 percent of the Territorial housing units are located in the Special Flood Hazard Area. Given that there are at least 44,500 housing units in the islands based on the CIPA inventory of assessments, 10 percent would yield approximately 4,450 units within the SFHA. If that is the case, NFIP policies cover about one half of the total eligible properties. When you realize that this calculation does not include commercial properties and that a higher proportion of them are probably located in or near the SFHA, then the resulting coverage rate is most likely even less.
- Insurance claims -- Data compiled for the 2004 Map Modernization Business Plan indicate that, as of March 2004, there were over 2,400 policies in force and over 2,500 insurance claims filed in the USVI, resulting in an average 1.05 claims per policy. Looking at the relationship of the number of policies versus claims is overly simplistic as approximately 450 of the NFIP claims are repetitive losses covering approximately 180 structures (averaging 2.5 claims per repetitive loss). However one evaluates insurance claim data for the USVI, it is readily apparent that greater attention to incorporating hazard mitigation into the development review and long-ranging planning functions within the USVI government can pay great dividends in reducing future flood-related disaster damages.

Finally, there is no clear data to support a definite conclusion but there are concerns that the implementation of NFIP in the USVI has led to residential and commercial construction in areas that would not otherwise have been developed due to the availability of insurance coverage. Care should be taken to make sure that well intentioned programs like the NFIP are focused on providing coverage for properties that are already at risk, not to support the development of new sources of risk and loss for the community.

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USVI Flood Map Modernization Program

NFIP issues Flood Insurance Rate Maps (FIRMs) which delineate the Special Flood Hazard Areas (SFHA) as either A-zones (riverine flooding) or V-zones (coastal flood hazard areas). However, in many cases, the maps are out-of-date or contain inaccuracies. The initial FIRMs for the US Virgin Islands were issued in August 1980. The most recent updates of portions of the mapping were published in July 20, 1998.

FIRM's have served a useful purpose for establishing insurance rates, but for planning and site specific decision making it has proven critical to have more up-to-date and accurate maps to reflect existing flood risk conditions. This is particularly needed for detailed riverine flood studies that can provide more accurate information on flood depths (update A zones with 1000 year Base Flood Elevations, known as BFEs). The 2000 Flood Hazard Mitigation Plan provided a detailed analysis that document extensive coastal and riverine flood damages outside of the regulatory SFHA boundaries.

Another document that provides supporting evidence regarding the accuracy of current FIRM maps is the *St. Croix USVI Post-Disaster Flood Hazard Verification*, conducted by FEMA following Hurricane Lenny (FEMA 1999). FEMA worked with Dewberry & Davis, LLC and island officials to assemble and review all studies and data dealing with storm surge and wave effects, resulting from Hurricane Lenny in 1999. The report presents high-water mark information, flood frequency determinations, and flood hazard data update needs for coastal areas in St. Croix that were severely impacted by Hurricane Lenny. The summary of the analysis recommends that the entire coastal floodplain area of St. Croix be identified as having immediate coastal analysis restudy needs, especially along the western coastline and around the town of Frederiksted.

In the past several years, FEMA has dedicated approximately \$500 million to update and improve FIRMs throughout the United States through the Multi-Hazard Flood Map Modernization Program. FEMA identified four objectives in this effort:

- Establish and maintain a premier data collection and delivery System;
- Achieve effective program management;
- Build and maintain mutually beneficial partnerships; and
- Expand and better inform the user community.

In March 2004, the US Virgin Islands proposed a five-year strategy for modernizing FEMA FIRMs and Flood Insurance Studies (FISs) as follows:

"Updating the coastal analyses and mapping for St. Croix, St. John, and St. Thomas is the most immediate mapping need in USVI. The coastal areas are where the majority of damage occurs and updated flood hazard data in these areas can then be used to better guide development and to mitigate existing risks.

Because of the steep terrain on all three islands, there is also a need to update riverine studies in USVI. Many of the riverine flood hazards are currently shown on the FIRM as approximate floodplains, which do not provide enough detail to properly mitigate risk and provide sound floodplain management. To better manage development in these areas, USVI requests that all the riverine flood hazards be studied in detail.

To better equip USVI for flood hazard mitigation and management, all data developed should be delivered as a GIS-enabled product. Digital GIS flood hazard mapping data is essential and highly

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needed for best utilization for floodplain management and USVI fully supports FEMA's goals of distributing Digital Flood Insurance Rate Maps (DFIRMs) as GIS data online for the population of USVI."

As part of their "Business Plan for Map Modernization", the US Virgin Islands proposed to take on increased responsibility for project management, data sharing and outreach within St. Croix, St. John and St. Thomas as a Cooperating Technical Partner (CTP). The DPNR was proposed as the lead agency. Full funding for the five year implementation strategy was estimated at \$3,433,500 of which \$2,510,500 was requested from FEMA with the remaining amount to be contributed as a cooperative effort by various US Virgin Island agencies.

Evaluation / Assessment:

The flood restudy of the coastal hazard areas in St. Croix is currently underway and expected to be finalized within one year.

The USVI Map Modernization Business Plan was submitted to FEMA CAO, who forwarded the proposal on to FEMA Region III. The Region has, in turn, submitted the proposal without changes to FEMA Headquarters. Successful implementation of the five-year program will hinge upon adequate fiscal year appropriations from Congress. Support within Congress appears strong and the program is expected to move forward, although it may not be at the funding level necessary to complete all elements within the proposed five-year timeframe.

Flood Hazard Mitigation Plan

In July 2000, the US Virgin Islands Territorial Emergency Management Agency (VITEMA) completed the *US Virgin Islands Flood Hazard Mitigation Plan* which was subsequently adopted in 2003. This plan was developed to preserve the eligibility of the US Virgin Islands for project grants from FEMA's Flood Mitigation Assistance (FMA) Program. The plan identifies DPNR as the principal responsible party for implementation of the plan.

The plan is based on goals and objectives that were detailed earlier in Section 2.2. The plan also outlines an extensive series of recommended mitigation measures that include:

- traditional property protection (e.g., elevation of floodprone structures, floodproofing, etc.);
- structural mitigation measures (e.g., retention basins, levees or flood walls, etc.) for specific areas of concern;
- updating US Virgin Islands FIRMs; a precursor to the Map Modernization report mentioned above that followed a few years later; and
- recommendations to improve emergency response and recovery actions (see more detailed discussion of this part of the plan under Section 2.3.2 – Post-Disaster Hazard Mitigation).

Evaluation / Assessment

The plan also included recommendations in two important areas:

- Regulation and Permitting - recognizing that existing rules and regulations governing flood hazard mitigation are of little value without adequate enforcement, the *Flood Hazard Mitigation Plan* identified six different recommendations under this heading including:
 1. Adequately staff, train and equip regulatory agencies charged with issuing permits;

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2. Provide training and education for government officials, developers and residents;
 3. Add flood hazard mitigation criteria to Coastal Zone Management (CZM) permitting (see discussion below regarding the CZM Program);
 4. Designate the SFHAs as an Area of Particular Concern (see CZM);
 5. Strengthen implementation and enforcement aspects of zoning and subdivision regulations (see discussion below under Land Development Regulations); and
 6. Ensure strict enforcement of the US Virgin Islands Building Code (see Land Development Regulations).
- Watershed Management Approach – recognizing that *"the success of the Flood Hazard Mitigation Plan relies on its implementation"* and building on an established principal strategy for controlling pollutant discharges in the US Virgin Islands under the §6217 Coastal Non-Point Pollution Control Program (see discussion below under Section 2.3.3 – Other Related Programs), the plan highlighted the benefits of implementation based on hydrologic units (watersheds or drainage basins). This approach would also be consistent with related efforts under the Unified Watershed Assessment and Restoration Priorities Program (see Section 2.3.3) and could increase the effectiveness and efficiency of all three programs.

Floodplain Damage Prevention

As noted above, the Territory adopted NFIP-compliant floodplain management provisions under Rules and Regulations on Flood Damage Prevention, Title 3. Executive Chapter 22, Department of Planning and Natural Resources, Subchapter 401(b)(15), VIRR on July 8, 1993. The Rules and Regulations apply only to the areas defined on the most recent FIRMs as the Special Flood Hazard Areas. In these areas, a permit is required for any type of development procedure or change to the floodplain including excavation, dredging, filling, drilling, modification to existing structures and construction of new structures. The Rules and Regulations reference the appropriate provisions of Section 44 of the Code of Federal Rules (CFR 44) as General Standards but add a number of general and specific standards.

The Commissioner of the DPNR is appointed to administer and implement the provisions of these regulations and may request the assistance of other departments and agencies to provide technical assistance. Administration of the rules and regulations includes a number of responsibilities which can be grouped according to the following categories:

- Permit application and plan reviews – to determine whether development can occur in proposed locations and if so, if the proposed development complies with the regulations and any established criteria,
- Field verifications and determinations – for flood elevations and to resolve ambiguities or disagreements regarding the locations of flood zone boundaries or determination of BFEs, and
- Monitoring compliance with approved permits and plans.

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Evaluation / Assessment

Aspects of these standards that should be considered for revision or refinement in the context of this Plan are as follows:

- The basis for determining whether or not the Rules and Regulations are applicable to any particular permit application is based on information in the FIRMs, i.e., *"is the proposed activity in or out of the SFHA?"*. It has been indicated above that there are inherent inaccuracies in the FIRMs so it stands to reason that planning and site development decisions based on this information may be similarly flawed (see Discussion of Map Modernization Program above). Under the best of conditions, all of the USVI FIRMs will not be completely revised for another 4 to 5 years. During that period, review of proposed development in areas where the FIRMs are especially suspect should be performed with a very conservative interpretation of the SFHA.
- Residential and non-residential construction in the Special Flood Hazard Areas must be built so that the lowest floor (including basements) is set at the base flood elevation [401(b)(15)(b)(1-2)]. Requiring additional freeboard (as little as one (1) foot above the base flood elevation) would significantly reduce the potential for damages from common storms without significantly increasing construction costs.
- In Coastal High Hazard SFHAs (i.e., V-zones), buildings may be constructed such that the lowest supporting horizontal members are located at the BFE [401(b)(15)(b)(5)(B)]. As noted in the preceding item, reductions in losses can be realized by increasing the "freeboard" requirements of this part of the Rules and Regulations.
- Demonstrations that flood elevations will not be increased by fill within the SFHA or encroachments on streams or guts without established base flood elevations or floodways are required but no specific procedures or evaluation criteria for these determinations are provided [401(b)(15)(c)].
- Subdivision provisions contain vague language such as "minimize flood damage" and "reduce exposure to flood hazards" but do not require (or even suggest) actual avoidance of construction in these areas other than excluding the floodway from subdivisions. The regulations could require avoidance with a provision where developers can attempt to demonstrate (with appropriate procedures and evaluation criteria) that avoidance is not reasonable or feasible [401(b)(15)(d)]. This would put the "burden" on the developers, not on the DPNR reviewers.
- Subdivision provisions do not require that each lot include an area outside of the SFHA with adequate area to site buildings per zoning designation. As in the previous item, this could be a requirement with a provision for developers to demonstrate (with appropriate procedures and evaluation criteria) that such provisions are not reasonable or feasible [401(b)(15)(d)].

In addition, relative to the Territorial Hazard Mitigation Plan, one of the key responsibilities of the DPNR is to review and evaluate development permit applications, including making a determination as to whether or not development will take place in a flood prone area. Procedures for preparing permit applications for development in the floodplain are well defined in the regulations. In fact, most of the document is concerned with how to make development that is "destined" to occur in the flood hazard areas as flood proof or resistant as possible. Unfortunately,

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for the most part, the Flood Damage Prevention Rules and Regulations do not provide a strong basis for excluding development from high risk areas within the floodplain altogether. Therefore, DPNR reviewers do not have the necessary tools in place to either exclude development or provide limitations that could substantially reduce exposure to known hazard conditions.

Coastal Zone Management

The Federal Coastal Zone Management Act of 1972 included requirements for the States and Territories of the United States to develop a coastal zone management program. The US Virgin Islands Coastal Zone Management Act of 1978 became effective in 1979. The resulting US Virgin Islands Coastal Zone Management Program was prepared by the US Virgin Islands Planning Office (which has since been reorganized as DPNR) and submitted by the Governor to the US Department of Commerce.

The Program, as articulated in Title 12 VIRR, Chapter 21, §901-14, is based on a fundamental desire to preserve a significant environmental resource that benefits the economy and quality of life for the Territory's residents. Included with the Program's "findings and goals" (§903) are statements that directly relate to hazard mitigation including:

- *"there has been uncontrolled and uncoordinated development of the shorelines..."* [Title 12 VIRR, Chapter 21, §903 (a)(6)]; and
- *"improper development of the coastal zone and its resources has resulted in ... erosion, sediment deposition, increased flooding, gut and drainage fillings..."* [Title 12 VIRR, Chapter 21, §903 (a)(6)]

In addition, §906 identifies a wide range of policies "applicable to the first tier of the coastal zone" that specifically reference hazard mitigation issues including development policy:

- *"to the extent feasible, discourage further growth and development in flood-prone areas and assure that development in these areas is so designed as to minimize risks to life and property,"* [Title 12 VIRR, Chapter 21 §906 (a)(9)],

and environmental policy:

- *"to ... assure that activities in or adjacent to [complexes of marine resource systems ... including reefs, marine meadows, salt ponds, mangroves and other natural systems] are designed and carried out so as to minimize adverse effects on ... storm buffering capabilities,"* [Title 12 VIRR, Chapter 21, §906 (b)(2)].

The DPNR is the central territorial agency for administration of the Coastal Zone Management program in the US Virgin Islands. Other principal entities include the Governor, Legislature, the Department of Public Works and the Board of Land Use Appeals. The Coastal Zone Management Act created a Coastal Zone Management Commission within DPNR. A Division of Coastal Zone Management was also created within DPNR to assist the Commission and the Commissioner in administration and enforcement of the Act. There are three committees within the Commission, one for each major island. Each committee has authority over the administration of the Program within its "jurisdiction" including:

- issuance of Coastal Zone Management (CZM) permits;
- compliance with requirements related to Areas of Particular Concern (APC); and
- compliance with requirements related to Coastal Barrier Resource System (CBRS).

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Coastal Zone Management Permits

The Coastal Land and Water Use Plan was approved and implemented as part of Title 12 VIRR, Chapter 21, §910. The Plan provides comprehensive guidelines for development of Tier 1 of the Coastal Zone.

Tier 1 is defined as the area extending from the outer limit of the territorial sea (including offshore islands) to distances inland as indicated on a set of maps. The Tier 1 area does not necessarily correspond to consistent physiographic characteristics or other regulatory boundaries such as the SFHAs, DPNR regulatory buffers (to wetlands, guts, and salt ponds). Tier 2 includes all other interior portions of the three major islands.

CZM permits are only required for development proposed in Tier 1. The appropriate committee of the Coastal Zone Management Commission or the Commissioner must find that *"the development as finally proposed incorporates to the maximum extent feasible mitigation measures to substantially lessen or eliminate any and all adverse environmental impacts of the development; otherwise the permit application shall be denied."* [Title 12 VIRR, Chapter 21, §910 (a)(2)]. It is also worth noting an important exclusion from the requirements for a CZM permit for existing structures as *"no coastal zone permit shall be required pursuant to this chapter for activities related to the repair or maintenance of an object or facility located in the coastal zone, where such activities shall not result in an addition to, or enlargement, or expansion of such object or facility."* [Title 12 VIRR, Chapter 21§903 (b)(1)]

In addition, the Coastal Zone Management Act made provisions for two different levels of permits; major and minor which are administered with slight differences for land and water based projects. Major permits incorporate the requirements of the zoning use permit, the earth change permit, shoreline alteration and submerged lands permit (see discussion of Land Development Requirements below). In addition, Environmental Assessment Reports (EARs) are required for major and minor water projects and for all major land projects in Tier 1. The EARs include requirements for submittal of information regarding:

- Climate and weather conditions including potential impacts resulting from wind, wave and flooding;
- Landforms, geology and soils;
- Drainage, flooding and erosion control;
- Oceanography;
- Marine resources;
- Terrestrial resources;
- Wetlands;
- Rare and endangered species; and
- Air quality.

As detailed in Title 12 VIRR, Chapter 21, §910 (c), major permits are required for all development except:

- *"a development which is to be conducted completely or substantially seaward of the line of mean high tide"* but meeting definitions of permissible activities established by the appropriate committee of the Commission (e.g., navigation buoys, moorings for vessels, etc.);
- construction of one or two single-family residences;
- construction of a duplex;

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- improvements to an existing structure below an established cost threshold (currently set at \$94,000);
- the development of one or more structures valued in their entirety below a threshold (currently set at \$136,000);
- any other development, except the extraction of minerals, valued below a threshold (\$120,000); and
- the extraction of minerals valued below the current threshold (\$31,000).

In addition, a major permit is not required for subdivisions. For all these activities excluded from the major permit, a minor permit is required but the requirements for submittal and approval are correspondingly weaker. In particular, as noted above, EAR's are not required for minor permits. However, there is a provision in Title 12 VIRR, Chapter 21, §910 (c)(2)(E), that "*if the Commissioner, upon reviewing any minor permit application ..., determines that the proposed activity is likely to have significant adverse environmental consequences he shall, upon giving notice to the applicant, forward such application to the appropriate Committee of the Commission for review as a major coastal zone permit.*"

Evaluation / Assessment

The CZM permit can be an important part of the process of protecting coastal resources and reducing the impacts of natural hazards on people and property. However, there are inherent weaknesses in the systems that need to be addressed to provide consistent and meaningful hazard mitigation results, including:

- CZM permit requirements should be extended to all the land area of all the islands. The relative small size of the islands, the essential connection between the coastal resources and the watersheds that lie above them and the magnitude of the natural hazards that the islands are subjected to, all make a strong argument that all development activity should be reviewed at the same level of scrutiny. The CZM permit system, if consistently and aggressively administered, can provide the appropriate information regarding potential impacts of proposed development on the built and natural elements of the islands and in turn, the impacts of natural hazards on the proposed development.
- In addition, excluding subdivision from review as a major permit activity (in essence, bypassing the requirements for EARs) substantially weakens the system. By not requiring an environmental assessment and an accounting of the impacts of natural hazards on the proposed development, the potential for inappropriate development in the floodplain is greatly increased. By the time permit applications come along for construction of improvements to deeded lots, they only cover pieces of the overall land development project and may not in and of themselves be deniable.
- It is important to reiterate that the focus of the EAR's is the impact of the proposed development on the site and adjacent features with only passing emphasis placed on the potential impact of the site and its conditions on the proposed development. To be most effective, the existing EAR requirements need to be revised to include specific references (and threshold criteria of benefits and costs) to assessing vulnerability and estimating potential losses to property from natural hazards as well as the cost of emergency response and recovery operations attributable to the proposed development.

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Note: In the revisions to the 1991 draft CLWUP currently before the VI legislature, DPNR makes this recommendation to extend the Tier 1 island-wide, effectively eliminating the distinction between Tier 1 and Tier development review procedures. The political reality, however, is that this proposal may not make it successfully through to enactment. A recommendation made by the Consultant Project Team, in a memorandum to the DPNR Commissioner on integrating hazard mitigation perspective in the CLWUP, may be more politically viable. The CIPA recommendation proposes extending the Tier 1 boundary to include all SHFAs and all DPNR natural feature buffer requirements for wetlands, salt ponds and natural guts. These areas are already regulated natural features and their inclusion in the Tier 1 boundaries would afford them greater protection throughout the islands.

A mechanism already exists for initiating the changes to the process identified in this plan. Title 12 VIRR, Chapter 21, §912 (b) identifies a requirement for "continued planning" which states: "[t]o ensure that the provisions of this Chapter are regularly reviewed and the recommendations for revisions of, or amendments to, the Virgin Islands Coastal Zone Management Program will be ... developed, ...and to provide for continued territorial coastal planning and management, the Virgin Islands Planning Office [now DPNR] shall undertake on a continuing basis such activity and research as is necessary to maintain a continued involvement in the coastal zone management process...". In essence, DPNR has the ability to make recommendations for amendments that could accommodate the recommended changes in the requirements and process (see Section 2.3.4 – Proposed Programs).

Areas of Particular Concern

The Coastal Zone Management Act defined Areas of Particular Concern (APC) and established criteria for selection in 15 CFR Part 923. The process is supposed to include the development of a management plan for each designated area. In part, the management plans are intended to make provisions for acceptable levels of future land development that in turn can be used to revise the zoning designations in these areas. As a result, a formidable tool is available through the APC management plans to set direction for development in these areas in advance of permit applications – i.e., taking a proactive versus reactive approach to land use and hazard mitigation. To date, eighteen areas have been designated as APC's in the US Virgin Islands. Draft management plans have been developed for three areas.

Evaluation / Assessment

While there is legislation in place for review of development activities in the APCs (see discussion of the CWLUP below), the process will still depend on having approved management plans in place. Only a few management plans, such as the *St. Croix East End Marine Park Management Plan* approved in 2002, have been implemented. Continued efforts should be made over the next five years to develop, approve, and implement APC management plans for the US Virgin Islands, particular for one or more high priority APCs on St. Thomas.

Coastal Barrier Resource System

The Coastal Barrier Resources Act (16 U.S.C. 3509) (CBRA) was enacted in 1982 and established the Coastal Barrier Resources System (CBRS). The Act states that in the resulting designated areas along the Atlantic and Gulf of Mexico coastlines, "*most federal expenditures are no longer available to promote economic growth or development*". 35 different coastal areas in the US Virgin Islands, covering a total of 130 miles of the coastline and hundreds of acres of sensitive landscapes, are included in the designations.

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Protection of significant areas of the coastal system have been realized although development activity in some of the watersheds have contributed to (and will continue to do so if unchecked) degradation of the resources.

Evaluation / Assessment

Protection only extends to the actual coastal barrier resource in question and not to the watershed that can adversely affect the resource. This could be addressed through more aggressive implementation of a watershed approach to land use planning, and both the quality and quantity aspects of stormwater and floodplain management.

Land Development Regulations

Land development regulations play an essential role in an integrated coordinated program of hazard mitigation. By controlling where and how development occurs, major problems can be lessened or avoided. Also, as properties are redeveloped or rebuilt, strong regulations can ensure that the replacement or repaired structures are better able to resist damage from future events.

In the US Virgin Islands, there are three main elements to the land development regulations including:

- Zoning;
- Subdivision Regulations; and
- Building Codes.

Zoning

US Virgin Islands zoning law is based on VIC Title 29, Chapter 3, Subchapter 1. The code divides all the islands into various land and water based districts as tabulated below:

Table 3.1 Zoning Designations

Zoning Category	Percent of Total Area
St Croix	
Low Density Residential	54
Agricultural	25
Medium Density Residential	7
Industrial	5
Waterfront - Pleasure	2
Business / Commercial	1
Public and Other	6
St. John	
Low Density Residential	42
Medium Density Residential	3
Industrial	<1
Waterfront - Pleasure	2.5
Public (National Park) and Other	52
St Thomas	
Low Density Residential	70
Agricultural	<5
Industrial	<5
Waterfront - Pleasure	4
Public and Other	15

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Evaluation / Assessment

By prohibiting or substantially limiting development and redevelopment in hazard prone areas, zoning can be an effective means to eliminate or reduce the risk of loss of life and property damage. This is most relevant to hazards that have defined geographic extents such as flooding. Comparing the results of the hazard profiling and risk assessment from this study with the existing zoning map would help identify areas where potential development may be in harm's way. This could lead to revisions in the map that provide a better match between the suitability of the land for development and the type and intensity of use proposed.

Creating and implementing a revised zoning map that includes substantial reductions in development capacities in hazard prone areas will have immediate results in limiting future losses. Zoning can also be used to reduce density in existing developed areas. By downzoning (i.e., reducing allowable development densities and intensities), non-conforming uses will be established. Like the current system, these uses will persist until such time as the property owners request permits for substantial changes to the property or the property is substantially damaged (i.e., at a level greater than 50 percent of its value). In these cases, provisions can take effect that reduces hazard vulnerability and / or the property cannot be redeveloped.

The intent of an opportunity and constraint analysis that compares permissible land use densities and degree of hazard vulnerability is to channel future development into areas of low hazard risk. It should be considered as a no growth or "anti-development" initiative which could become a volatile political issue.

One technique that could be implemented more simply in terms of the mapping and documentation (but not necessarily in the political arena) is an overlay zone that does not change the existing type of use but can provide for long term reductions in the overall density of use in the overlay district. For example, new development and redevelopment could be prohibited in the Coastal High Hazard Area (V-zones) except for maritime uses that would be built to meet the highest standards for hazard resistant structures (see discussion regarding Building Codes below).

Subdivision Regulations

The main issues related to the subdivision regulations in the US Virgin Islands (as contained in Title 29, Chapter 3, Subchapter 231 of the VIC) are as follows:

- Minor division of land (i.e., development proposals with less than 4 lots) is not considered a subdivision under the VIC and is reviewed by the Chief Surveyor, working under the Lt. Governor's Office. While there are some requirements addresses flood prevention, there are no clearly enforceable complimentary stormwater management provisions for these minor subdivisions. However, in the aggregate, all development on a relatively small and closed system like the US Virgin Islands will have some level of impact on stormwater runoff and therefore can detrimentally influence the effectiveness of programs intended to reduce non-point source pollution and prevent flooding.
- Subdivisions with 4 lots and greater are reviewed by a representative of the DPNR, Division of Comprehensive and Coastal Zone Planning (CCZP). However, for subdivisions in Tier 1, the applicant only needs to address the requirements for a minor CZM permit. The problems with this approach have been discussed previously under the CZM Program section. With no set review criteria, no substantial storm water management regulations,

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and no formal process for bringing in environmental expertise from other relevant DPNR divisions, it is difficult to influence the way development is planned and implemented in the US Virgin Islands to reduce exposure and risk.

- Basic engineering practices related to land development need to be better incorporated into the subdivision regulations. For example, under the current regulations, it is possible to build roads in the Special Flood Hazard Area with elevations up to two (2') feet below the regulatory flood elevation. In practice, what this can and does result in is the road becomes a conveyance for stormwater, promoting unsafe conditions and promoting damage to the roadway that must be repaired by the Territory after major storm events.
- DPNR can take greater advantage of innovative subdivision design and siting techniques than currently allowed under the existing subdivision regulations or proposed (CLWUP) by requiring or providing better incentives for cluster development, open space preservation, density-bonuses, setbacks, overlay zoning techniques (described earlier), and special considerations for developments in coastal high hazard areas (for more information on these innovative techniques the interested reader is referred to the FEMA/APA Planning Advisory Service Report # 473 entitled, Subdivision Design in Flood Hazard Areas, 1997).

Building Codes

An effectively administered and enforced building code can literally save lives. The US Virgin Island currently uses the Universal Building Code (UBC). However, USVI is in the process of adopting the International Building Code (IBC). The former is no longer being supported by UBC Council who have joined with other code organizations (BOCA, Southern Building Code et al) in establishing the International Code Council and they in turn have produced the IBC. The IBC includes a number of specific references to hazard mitigation and it is supported by FEMA.

3.4.2 POST-DISASTER HAZARD MITIGATION

Programs, rules and regulations that are focused primarily or substantially on post-disaster hazard mitigation in the US Virgin Islands include:

Emergency Management Council

The Emergency Management Council was established by Executive Order Number 304-1987 under the US Virgin Islands Code (Title 23, Chapter 12, Section 1126a). The order established the Council which sets the basic framework for the Territory's participation in the Federal Disaster Assistance Program.

Flood Hazard Mitigation Plan

The Flood Hazard Mitigation Plan (completed in 2000 and adopted in 2003) was discussed previously as part of the pre-disaster hazard mitigation programs in the US Virgin Islands. The Plan also includes a number of recommendations that are intended to improve the post-disaster hazard mitigation related capabilities in the Territory including improved flood forecasting / disaster warning systems, disaster preparedness and post-flood recovery activities.

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3.4.3 OTHER RELATED PROGRAMS

Programs, rules and regulations that have provisions or aspects that could support hazard mitigation in the US Virgin Islands include:

Unified Watershed Assessment and Restoration Priorities Program

The DPNR, in cooperation with the US Department of Agriculture and its Natural Resources Conservation Service has developed the Unified Watershed Assessment Report pursuant to the Territory's Clean Water Action Plan. An important element of the Action Plan is to undertake a cooperative process for restoring and protecting water quality on a watershed basis. DPNR identified problem watersheds that were not meeting or were in danger of not meeting clean water or other natural resource goals. The assessments were prepared using existing information and were a collaborative effort between local government, federal land management agencies, conservation districts and land conservation departments, non-governmental and private organizations and other stakeholders.

The watershed approach and the collaborative model for public and private partnerships would be conducive to much of the work that needs to be done to implement a comprehensive hazard mitigation strategy. There may be much value in expanding the role of this public/private partnership to include flood hazard reduction along with water quality protection.

Environmental Programs

In a similar manner, various efforts of the Territory, including:

- Non-Point Pollution Control Program;
- Sediment Reduction Program; and
- Protection of Endangered Species,

All have aspects that can and should be coordinated with an overall effort to promote hazard mitigation. As more and more elements of the Territory's planning efforts become integrated, the result will be increased effectiveness and efficiency of the programs as well as increased sustainability for the Territory.

3.4.4 PROPOSED PROGRAMS

Comprehensive Land and Water Use Plan

As identified in Section 2.2, DPNR has been working at the request of the US Virgin Islands Legislature to prepare a Comprehensive Water and Land Use Plan (CWLUP). As mentioned previously, the VITEMA consultant has made a number of comments for consideration in the ongoing revisions of the plan prior to enactment of the development regulations that reflect the concerns of VITEMA and the Hazard Mitigation Committees. These recommendations, if incorporated into the ongoing revisions, will increase the hazard mitigation "perspective" in the final document. Section 2.2 included a couple of examples of policy level recommendations from VITEMA. The recommendations also included a number of specific amendments that will strengthen the hazard mitigation aspects of the Plan:

- Eliminate the distinction between Tier 1 and Tier 2 development reviews and if that proves politically difficult, at least extend the Tier 1 designation to a boundary that has a clear

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- relationship to the resources and the hazards (e.g., the Coastal High Hazard Area, other SFHAs, wetlands, other sensitive natural features and associated buffers);
- Improve subdivision regulatory practices including requiring major permit application (with associated EAR) for subdivisions;
 - Adopt stormwater quantity management regulations to compliment existing water quality considerations to assure that future development does not exacerbate flooding in downstream areas;
 - Upgrade the EAR requirements to include specific assessments of the risk and the costs and benefits for new development relative to natural hazards; and
 - Provide for adequate staffing, training and enforcement activities for planning and permitting activities of the agencies and organizations charged with aspects of hazard mitigation in the development process.

A copy of the comments provided to the DPNR Commissioner regarding issues and specific recommended amendments to the Draft CWLUP is included in Appendix F.

3.5 ADMINISTRATIVE CAPABILITIES TO IMPLEMENT HAZARD MITIGATION

VITEMA's Plan Contractor, conducted a series of one-on-one, group or telephone interviews with mid-level representatives of key USVI agencies with lead or supporting roles in implementing hazard mitigation. One purpose of the interviews was to gain an appreciation of past and ongoing hazard mitigation initiatives. Secondly, in looking towards the future, what strengths and weaknesses can be identified in administrative procedures, staff availability, training, and resources to effectively implement the actions recommended in this Plan? The interviews also enabled the consultant team and agency representatives to jointly discuss opportunities to encourage hazard mitigation in the agency's day-to-day and long-term planning activities.

3.5.1 PAST HAZARD MITIGATION EFFORTS

The USVI government, working through the GAR's Office in OMB, has had a successful track record in implementing hazard mitigation projects. Appendix G provides an HMGP Project Status Report for hazard mitigation projects funded following the major presidential declarations caused by Hurricanes Marilyn, Bertha, Georges and Lenny. The tables provide information on past HMGP projects, Federal and Territorial cost share, and close-out information. Excluding withdrawn projects, 14 projects have been completed and all are closed out. The mitigation projects ranged from: the design and installation of a number of underground electric feeder lines, code-compliant residential roof replacement; DPNR training; school, airport, and hospital seismic and/or high wind retrofits. The USVI cost share of these projects amounted to approximately \$6.1 million and the Federal share was approximately \$59.4 million, under a 90% Federal and 10% Territorial cost share agreement.

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3.5.2 CAPABILITY ASSESSMENT INTERVIEWS

Given the critical role played by DPNR in regulating development and undertaking comprehensive land use planning, the majority of interviews involved representatives from a number of DPNR divisions in St. Thomas and in St. Croix. The following list identifies the name, title and affiliation of USVI officials interviewed during the capability assessment:

Department of Planning and Natural Resources:

- Michael Spellen, DPNR STT, Environmental Planner, Division of Coastal Zone Planning
- Laurence Joshua, DPNR STT, Director, Division of Community Development Block Grant Program
- Brent Blyden, DPNR STT, Director, Division of Permits
- Lorin Lewis, DPNR STT, Project Analyst, Division of Permits
- Douglas Hodge, DPNR STT, Division of Permits
- Majorie Emanuel, DPNR STX, Director, Division of Comprehensive and Coastal Zone Planning
- Syed Syedal, DPNR STX, Environmental Engineer, Division of Environmental Protection
- Susan Higgins, DPNR STT, Director, Division of Comprehensive and Coastal Zone Planning
- Randolph Boschulte, DPNR STT, Project Analyst, Division of Comprehensive and Coastal Zone Planning
- Chris Doute, DPNR STT, Systems Analyst II, Division of Libraries, Archives, and Museums
- Barbara Kojis, DPNR STT, Director, Division of Fish and Wildlife
- Alexis Doward, DPNR STX, Inspector, Division of Permits

Other Agency Representatives Interviewed:

- Francisco Nada, DPW STT, District Engineer
- Othniel Vanterpool, DPW STT, Project Coordinator
- May Cornwall, WAPA STX, Director of Water and Energy Grants
- Chester Paul, Chief Surveyor, Lt. Governor's Office
- Cain Magras, SHMO STT, Office of Management and Budget
- Roy Watlington, Professor, Eastern Caribbean Center, UVI
- Leonard Gumbs, Structural Engineer, FEMA CAO
- Iris Delgado, NFIP Coordinator, FEMA CAO

Outcomes

The general observations that have come out of the capability assessment interviews fall into three broad categories: (1) funding (described in Section 2.5); (2) adequate staffing; and, (3) staff training. The issue of having an adequate annual operating budget to implement specific mitigation actions or programs was raised by many of the departmental representatives interviewed. For example, DPW acknowledges that they have not been able to adequately monitor the existing stormwater management system, due to inadequate annual budgets for maintenance.

The need for adequate staffing to conduct building permit inspections, NFIP compliance and to administer mitigation grants was raised during the interview process as an issue that impedes hazard mitigation in the USVI. There is a substantial turnover for various types of inspectors in

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DPNR, and, therefore training related to the NFIP program, floodplain management, and disaster-resistant construction practices should be considered as an ongoing training need within VITEMA, OMB and DPNR.

3.6 GRANTS ADMINISTRATION

The FEMA mitigation grants (HMGP, FMA and Pre-Disaster Mitigation) are administered by different agencies in the USVI. The Office of Management and Budget (OMB) manages the HMGP, while VITEMA manages the FMA and PDM grant programs.

DMA 2000 provides incentives for states and territories that meet a higher standard of mitigation planning requirements. States that meet the more stringent requirements may be acknowledged by FEMA as having achieved “Enhanced Plan Status”. States that take the initiative to more fully integrate hazard mitigation into both the day-to-day operations and long-range planning functions of state government may receive an additional 5 percent of HMGP funding for mitigation projects.

The GAR’s Office has shown over the past few years that it can successfully design, implement and close out HMGP projects. Recently, all HMGP projects from FEMA-1067-DR-VI (Hurricane Marilyn) to FEMA-1309-DR-VI (Hurricane Lenny) have been successfully closed out by the GAR’s Office. However, a series of improvements over the next three years (DMA-compliant State Plans must be updated on a three-year planning cycle) will be necessary for the USVI to achieve Enhanced Plan Status.

Recommendations that will lead to more efficient management and use of FEMA grant funds include:

- OMB needs to improve its program management by providing additional technical assistance to applicants to ensure HMGP applications provide sufficient information for review of project eligibility, benefit cost, and NEPA requirements,
- OMB should ensure that all approved projects are proceeding toward completion through regular monthly communications with applicants,
- Improved communication between OMB and VITEMA is needed to coordinate HMGP, FMA and PDM grant management programs so that the most cost-effective grant applications are submitted to FEMA,
- OMB needs to provide better monitoring of projects, including the submittal of progress and financial reports.
- VITEMA will have additional and more technical staffing needs in order to provide technical assistance to OMB, DPNR, and DPW to implement the broad range of mitigation actions proposed in this Plan,
- In this time of fiscal constraints, the USVI should pursue greater interdepartmental coordination such as utilizing some of the environmental and natural resource expertise within DPNR to assist in addressing NEPA compliance requirements for FEMA mitigation grants,
- OMB and VITEMA should jointly develop a database system to effectively track the expenditure of grant funds, track progress, prepare financial reports, and facilitate project closeout,

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- OMB needs to improve the technical ability to oversee construction projects by adding staff or detailing staff from other departments that have a technical background in engineering or construction management.

Many of these grant management recommendations are included in the Mitigation Strategy which outlines Goals, Objectives and Actions for the USVI, described in Section 5.

3.7 FUNDING

Part of the purpose of this Plan is to identify projects and activities that will reduce exposure and loss. Projects and activities require adequate funding for implementation. The following are some of the Federal programs that are available both pre- and post-disaster that can be put to this purpose:

3.7.1 PRE-DISASTER FUNDING

Sources that are available to the Territory prior to disasters include two programs administered by FEMA;

- Pre-Disaster Mitigation Competitive Grant Program (PDM-C) – a nationally competitive program of grants for planning and projects that was initiated in 2003. Funding in FY 03 was \$150 million and the successful applications covered a wide range of activities. It is essential that proposed applications clearly demonstrate their cost effectiveness. The completion and adoption of this Plan will allow the Territory to compete for these funds.
- Flood Mitigation Assistance Program (FMA) – a program which focuses funding on implementing protective measures that reduce the long term risk of flood damage. As with the PDM-C program, grants can be made for planning and cost-effective projects (e.g., elevation, acquisition, relocation, etc.).

3.7.2 POST-DISASTER FUNDING

Sources of post-disaster funding include two additional FEMA programs:

- Hazard Mitigation Grant Program (HMGP) – established by Section 404 of the Stafford Act and amended by DMA 2000, the objectives of HMGP are to avoid future losses; implement state and local mitigation strategies; implement mitigation measures during the recovery period; and provide funding for previously identified mitigation measures that benefit the disaster area. It is easy to see how the recommendations of this Plan will position the Territory for funding under this program. It is also clear why the approval of the Territorial Hazard Mitigation Plan is a condition for continued HMGP eligibility for the USVI after the deadline of May 1, 2005; and
- Public Assistance (PA) – established by Section 406 and also modified by DMA 2000, this is the source of aid to help communities save lives and property in the immediate aftermath of a disaster. However, to the extent the Plan identifies feasible projects, there may be opportunities that present themselves during initial recovery operations that can be funded under PA and serve to reduce future losses, and one administered by the Department of Housing and Urban Development:
- Community Development Block Grant Program (CDBG) – which has as a primary objective of developing viable urban communities by providing housing and suitable living

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environments and by expanding economic opportunities. Disaster related assistance is one area in which community-development type activities may be eligible under the CDBG program and one administered by the Small Business Administration (SBA) Mitigation Loan Program

- SBA provides low interest loans to small businesses for the mitigation of natural hazards. This is not a grant program, per se, and the USVI has no part in the program except to make its availability known to potential applicants.

3.7.3 GOVERNMENT OF THE VIRGIN ISLANDS FUNDING

The financial position of the USVI government in 2004, like many States throughout the Continental US, poses significant financial challenges in addressing a shortfall of revenues against its expenditures. This unfortunate position can be expected to continue over the three year planning horizon for this Plan.

Over the past 10 years, the Government of the Virgin Islands has experienced substantial fluctuations in revenues and expenditures, resulting in deficits, from time to time, in year-end fund balances (WAPA 2003). The Combined Statement of Revenue, Expenditures and Changes in Fund Balances for the General Fund for the Fiscal Year ended September 30, 2000 indicated an accumulated deficit of approximately \$32.6 million. At the end of Fiscal Year 2001, the Government showed an excess of revenue over expenditures of \$104.3 million, however, after adjusting for the previous fiscal year's deficit, the USVI government ended Fiscal Year 2001 with a surplus of \$71.7 million. Following a surplus in Fiscal Year 2001, the impact of the events of September 11, 2001 on tourism, together with increased government operating costs, have resulted in an significant shortfall in revenues in Fiscal Year 2002. The Government has continued to experience financial challenges in Fiscal Year 2003, compounded by litigation over commercial taxation which has affected property tax collections, resulting in a projected deficit of \$56.8 million (WAPA 2003).

Despite these substantial fluctuations over the past decade, the Government of the Virgin Islands has been committed to implementing hazard mitigation projects. Over four recent presidential declarations, the USVI has contributed over \$6.1 million towards 14 HMGP projects and has contributed a wide range of in-kind services through departmental staff and operating budget contributions. The precarious financial position portends that, in all likelihood, the USVI government would face a difficult challenge in implementing mitigation actions with Territorial cost share requirements of greater than 10 percent (many FEMA grant programs are 75% Federal / 25% State or Local; USACE programs for structural flood control projects are often set at 50% Federal / 50% State or Local).

Under these present and anticipated near term financial conditions for the Government of the Virgin Islands, adequate operating budgets to implement hazard mitigation actions will be severely constrained. In the case of retrofitting critical facilities or undertaking structural mitigation projects, the financial reality over the next three years, implies a heavy reliance on Federal funding sources. However, many of the programmatic mitigation actions (Territory-wide) recommended in this Plan, can be implemented at low cost to the USVI government. .

Many of the refinements to development regulations and improved administrative procedures proposed can be implemented through existing or augmented annual departmental operating

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budgets. The degree to which the Government of the Virgin Islands can implement the programmatic mitigation actions will be greatly enhanced if a Mitigation Implementation Fund of \$400,000 is established by the VI legislature and carried forward over the next three annual operating budget cycles. Continued and stable appropriations over the next three years would provide Commissioners of the following key departments with the assurance necessary to hire additional qualified staff, develop outreach programs, acquire technical assistance or other necessary resources. The proposed distribution of the Mitigation Implementation Fund MIF to the key departments charged with implementing specific mitigation actions follows:

- **Department of Planning and Natural Resources (DPNR).** Proposed allocation of 40 percent of the MIF fund to the DPNR annual operating budget, specifically targeted to implementing hazard mitigation (\$160,000),
- **Office of Management and Budget (OMB GAR's Office).** Proposed allocation of 20 percent of the MIF fund (\$80,000),
- **Virgin Islands Territorial Emergency Management Agency (VITEMA).** Proposed allocation of 20 percent of the MIF fund (\$80,000).
- **Department of Public Works (DPW).** Proposed allocation of 20 percent of the MIF fund (\$80,000).

Other Funding Sources

Given the current and anticipated financial position of the US Virgin Islands, departments charged with implementing “soft or hard” mitigation actions will need to be creative and innovative in seeking adequate funding. Some innovative approaches that have proved fruitful elsewhere include:

- Encouraging the active participation of the private sector, pursuing non-profit funding opportunities (such as private foundations),
- Seeking other Federal grants not related to comprehensive emergency management (CDBG, Economic Development Administration, USDA rural development grants, etc.),
- Strengthening partnerships with UVI, the Chamber of Commerce, voluntary relief and other civic organizations, and
- Continued outreach to construction, tourism and insurance sectors of the economy.

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3.8 USVI DEPARTMENTS, AGENCIES AND AUTHORITIES

In the 1990's, as part of a study entitled "Mitigating the Impact of Natural Hazards in the US Virgin Islands" (IRF, 1995), the major agencies and utilities of the USVI responded to a questionnaire regarding their perceived role in hazard planning and mitigation activities. The following matrix shows the results:

Table 3.2: Primary and Secondary Mitigation Responsibilities of Agencies in the US Virgin Islands

	VITEMA	DPNR	DPW	Fire Service	Police	Tourism	OMB	P&P	Port Authority	WAPA
Planning / Management Issues										
Acquisition		S					S	P		
Location of Public Buildings		S								
Warning Systems	P			P	P					
Flood / Hazard Insurance		P								
Disaster Loans and Grants						S	S			
Education / Public Information	P	S				S		S		
Demarcation of Hazard Areas	S	P		S						
Building / Health Code Revisions			P							
Inspection Programs		P	P	S						
Floodplain Easements		P	P					P		
Floodplain Regulation		P								
Hazard Risk Assessment	S			S				P		
Development Restrictions		P								
Hazard Disclosure Regulation		S		P				S		
Zoning Regulations		P								
Wetland Regulations		P								
Acquisition of Development Rights		P					S	P		
Areas of Particular Concern		P								
Open Space Planning		P								
Relocation			P							
Special Fees and Taxes		S					S	S		
Hazard Monitoring	P	S	P	P				S	P	P
Flood Proofing			P					P		
Preparedness Planning	P	S	P	P		S	S			P
Structural Issues										
Flood Proofing, Gut Maintenance										
Preparedness Planning	P	P								
Stormwater Systems			P							
Modify Structures			P					P		P
Breakwaters, Bulkheads, etc.		S						S	P	
Shore Protection Measures		S						S	S	
On-Site Detention / Dams		S	P					S		
Channel Modifications / Culverts		S	P					S		

Legend

P = Perceived primary responsibility

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S = Perceived secondary responsibility

As a result, it is evident that several departments, agencies and authorities in the USVI have existing and potential roles in the implementation of the Territorial Hazard Mitigation Plan although it may not always be clear which agency is responsible for taking the lead role.

These include the following:

USVI Departments and Agencies

- Territorial Emergency Management Agency (VITEMA)
- Department of Planning and Natural Resources (DPNR), including the Divisions of Permits (DOP) and Subdivisions; Coastal Zone Management; Environmental Protection; and Fish and Wildlife.
- Department of Agriculture
- Department of Education
- Department of Public Works
- Office of Management and Budget

USVI Committees

- Hazard Mitigation Committees
- Coastal Zone Management Commission Committees
- Non-Point Source Pollution Steering Committee
- Flood Hazard Working Group (recommended in the FMA plan)

University of Virgin Islands Departments

- UVI Cooperative Extension Service
- UVI Center for Marine and Environmental Studies
- Virgin Islands Conservation Data Center of the Eastern Caribbean Center of the U of the VI
- Water Resources Research Institute

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3.9 SUMMARY AND RECOMMENDATIONS

This section points the way to specific recommendations to be included in the mitigation strategy: The first table relates Territorial plans / programs / regulations to the relevant IFR requirements and assesses effectiveness in supporting hazard mitigation. The second table provides a summary of important “gaps” in the Territory’s capabilities and recommendations to address the gaps.

3.9.1 REGULATORY COMPLIANCE WITH DMA 2000

Section 1.0 identified the basic requirements of the IFR for Capability Assessments. Key components of those requirements ask to what extent the Territory’s policies, programs and capabilities support:

- Pre-disaster hazard mitigation;
- Post-disaster hazard mitigation; and
- Regulation of development in hazard-prone areas?

Table 3.3: Regulatory Compliance with DMA 2000

Description	Pre-Disaster Hazard Mitigation	Post-Disaster Hazard Mitigation	Regulation Development
General Plans and Policies			
Coastal Zone Management Plan	1	1	1
Comprehensive Land and Water Use Plan (Proposed)	1	1	1
Pre-Disaster Hazard Mitigation Plans, Rules and Regulations			
National Floodplain Insurance Program	1	0	1
Multi-Hazard Flood Map Modernization Program	1	0	1
US Virgin Islands Flood Mitigation Plan	1	1	1
Flood Damage Prevention Rules	1	0	1
Coastal Zone Management Permitting	1	0	1
Areas of Particular Concern	1	0	1
Coastal Barrier Protection System	1	1	1
Zoning	1	0	1
Subdivision Regulations	1	0	1
Building Codes	1	1	0
Post-Disaster Hazard Mitigation Plans, Rules and Regulations			
Emergency Management Council	1	2	0
US Virgin Islands Flood Mitigation Plan	1	1	1
Hazard Mitigation Grant Administrative Plan	0	1	0
Emergency Operations Plan	0	1	0
Hurricane Evacuation Plan(s)	1	0	0
Other Related Programs			
Unified Watershed Assessment and Restoration Priorities Program	1	1	1
Non-Point Pollution Control Program	1	1	1
Sediment Reduction Program	1	1	1
Protection of Endangered Species	1	1	1

SECTION THREE CAPABILITY ASSESSMENT

Legend

- 0 = No potential relationship
- 1 = Potential exists to support activity but is not fully realized
- 2 = Supports activity to full potential of the plan, program or policy

Table 3 illustrates the basic situation in terms of the US Virgin Islands' capabilities to address hazard mitigation. Many of the requisite tools are already either in place or taking shape but the full potential to support hazard mitigation is not yet evident.

Table 4 summarizes the recommendations (organized according to the major categories) that can help continue the process of making hazard mitigation more integrated into the day-to-day operations and long-range planning efforts of the USVI government.

Table 3.4. Recommendations

Description	Recommendations for Addressing Issues Identified in Capability Assessment
General Plans and Policies , including: <ul style="list-style-type: none"> ▪ Coastal Zone Management Plan ▪ Comprehensive Land and Water Use Plan (Proposed) 	<ul style="list-style-type: none"> ✓ Incorporate hazard mitigation directly into existing and proposed general purpose plans in the USVI to increase the "profile" of hazard mitigation and ensure incorporation of hazard mitigation in the resulting and related rules and regulations ✓ Institutionalize hazard mitigation into Territorial public investments
Pre-Disaster Hazard Mitigation Plans, Rules and Regulations , including: <ul style="list-style-type: none"> ▪ National Floodplain Insurance Program ▪ Multi-Hazard Flood Map Modernization Program ▪ US Virgin Islands Flood Mitigation Plan ▪ Flood Damage Prevention Rules ▪ Coastal Zone Management Permitting ▪ Areas of Particular Concern ▪ Coastal Barrier Protection System ▪ Zoning ▪ Subdivision Regulations ▪ Building Codes 	<ul style="list-style-type: none"> ✓ Decrease numbers of repetitive loss properties ✓ Increase participation in the NFIP ✓ Follow through on map modernization efforts ✓ Avoid development in hazard prone areas ✓ Increase freeboard requirements for development that is approved in flood prone areas ✓ Require buildable areas in lots outside of Special Flood Hazard Areas ✓ Extend CZM permit requirements to all the islands ✓ Require major permit application procedures for subdivision (island wide), i.e., remove Tier 1 and Tier 2 distinctions to the extent possible ✓ If tiered system remains, revise Tier 1 boundaries to include regulated natural features such as floodplains, wetlands, saltponds, mean high tide, and associated buffers. ✓ Increase hazard assessment aspects of EAR process ✓ Continue APC management planning ✓ Assess development suitability in terms of hazard vulnerability as a first step in revising zoning designations to better reflect risk and exposure ✓ Add stormwater quantity management to the requirements for subdivision reviews ✓ Complete transition to the IBC building code ✓ Strengthen planning and enforcement capabilities through increased staffing and training
Post-Disaster Hazard Mitigation Plans, Rules and	<ul style="list-style-type: none"> ✓ Improved management of federal grants

SECTION THREE CAPABILITY ASSESSMENT

Description	Recommendations for Addressing Issues Identified in Capability Assessment
<p>Regulations, including</p> <ul style="list-style-type: none"> ▪ Emergency Management Council ▪ US Virgin Islands Flood Mitigation Plan ▪ Hazard Mitigation Grant Administrative Plan ▪ Emergency Operations Plan ▪ Hurricane Evacuation Plan(s) 	<ul style="list-style-type: none"> ✓ Increase funding for matching federal grants ✓ Integrate hazard mitigation and sustainability considerations into post-disaster recovery process
<p>Other Related Programs, including:</p> <ul style="list-style-type: none"> ▪ Unified Watershed Assessment & Restoration Priorities ▪ Non-Point Pollution Control Program ▪ Sediment Reduction Program ▪ Protection of Endangered Species 	<ul style="list-style-type: none"> ✓ Extend watershed approach from related programs to hazard mitigation and development review process.

The capability assessment evaluated both the “written word” on mitigation (i.e. the adopted or proposed legislation, regulations, plans and policies in the USVI) and the administrative capabilities of USVI agencies, departments and authorities. In summary, many of the necessary policies, regulations and programs are already in place. Likewise, the Government of the Virgin Islands can draw upon the existing expertise in a number of key departments charged with implementing many of the mitigations recommended in this Plan. By augmenting existing resources with a limited infusion to their operating budgets, the USVI can make great strides over the next three years in creating a more sustainable future for the Territory.