Flood News for Michigan Floodplain Managers

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Special Edition – Dam Safety News (EAPs Part II)

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Exercising Emergency Action Plans for Dams (Part II)

By Paul Wessel, P.E., Dam Safety Program

In part I of this series, we discussed the importance of preparing, updating, and exercising the Emergency Action Plan (EAP) for a dam. In Part II we discuss the various types of EAP exercises.

There are five types of exercises in an EAP exercise program. It is not a requirement that every exercise program include all five exercises. However, it is advisable to build an exercise program upon competencies developed from simpler exercises to achieve greater success with the more complex exercises. This means that emergency exercises should be developed and conducted in an ascending order of complexity. It is important that sufficient time be provided between each exercise to learn and improve from the experiences of the previous exercise before conducting a more complex exercise. The five exercise types, listed from simplest to most complex, are described below.

a. Orientation Seminar - This exercise is a seminar that involves bringing together those with a role or interest in an EAP, i.e., dam owner and state and local emergency management agencies, to discuss the EAP and initial plans for an annual drill or more in-depth comprehensive exercise. The seminar does not involve an actual exercise of the EAP. Instead, it is a meeting that enables each participant to become familiar with the EAP and the roles, responsibilities, and procedures of those involved. An orientation seminar can also be used to discuss and describe technical matters with involved, non-technical personnel.

b. Drill - A drill is the lowest level exercise that involves an actual exercise. It tests, develops, or maintains skills in a single emergency response procedure. An example of a drill is an in-house exercise performed to verify the validity of telephone numbers and other means of communication, along with the dam owner's response. A drill is considered a necessary part of ongoing training.

c. Tabletop Exercise - The tabletop exercise is a higher level exercise than the drill. The tabletop exercise involves a meeting of the dam owner and the state and local emergency management officials in a conference room environment. The format is usually informal with minimum stress involved. The exercise begins with the description of a simulated event and proceeds with discussions by the participants to evaluate the EAP and response procedures and to resolve concerns regarding coordination and responsibilities.

d. Functional Exercise - The functional exercise is the highest level exercise that does not involve the full activation of the dam owner and state and local emergency management agency field personnel and facilities or test evacuation of residents downstream of the dam. It involves the various levels of the dam owner and state and local emergency management personnel that would be involved in an actual emergency. The functional exercise takes place in a stress-induced environment with time constraints and involves the simulation of a dam failure and other specified events. The participants "act out" their actual roles. The exercise is designed to evaluate both the internal capabilities and responses of the dam owner and the workability of the information in the EAP used by the emergency management officials to carry out their responsibilities. The functional exercise also is designed to evaluate the coordination activities between the dam owner and emergency management personnel.

e. Full Scale Exercise - The full scale exercise is the most complex level of exercise. It evaluates the operational capability of all facets of the emergency management system (both dam owner and state and local emergency management agencies) interactively in a stressful environment with

the actual mobilization of personnel and resources. It includes field movement and deployment to demonstrate coordination and response capability. The participants actively "play out" their roles in a dynamic environment that provides the highest degree of realism possible for the simulated event. Actual evacuation of critical residents may be exercised if previously announced to the public.

A comprehensive EAP exercise simulates a dam failure and involves the active interaction and participation of the dam owner with state and local emergency management personnel in a stressful environment with time constraints. Functional and full scale exercises are considered comprehensive exercises. The basic difference between these two exercise types is that a full scale exercise involves actual field movement and mobilization, whereas field activity is simulated in a functional exercise. A comprehensive exercise provides the necessary verification, training, and practice to improve the EAP and the operational readiness and coordination efforts of all parties responsible for responding to emergencies at a dam, such as failure, misoperation, and sabotage.

For most dam owners, the orientation seminar, drill, tabletop exercise, and functional exercise should receive the most emphasis in their EAP exercise programs. It is recommended that dam owners conduct a functional exercise at least once every 5 years. Tabletop exercises are usually conducted on a more frequent basis.

Full scale exercises should be considered as optional emergency exercise activities and should be conducted primarily when there is a specific need to evaluate actual field movement and deployment. When a full scale exercise is conducted, safety becomes a major concern because of the extensive field activity. If a dam owner has the capability to conduct a full scale exercise, a commitment should be made to schedule and conduct the entire series of exercises listed above before conducting any full scale exercise. This will also require that at least one functional exercise be conducted before conducting a full scale exercise.

Functional and full scale exercises can be coordinated with other scheduled exercises to share emergency management agency resources and reduce costs.

The primary objectives of a comprehensive exercise are to:

1. Reveal the strengths and weaknesses of the EAP, including specified internal actions, external notification procedures, and adequacy of other information, such as inundation maps.

2. Reveal deficiencies in resources and information available to the dam owner and the state and local agencies.

3. Improve coordination efforts between the dam owner and the state and local agencies. Close coordination and cooperation among all responsible parties is vital for a successful response to an actual emergency.

4. Clarify the roles and responsibilities of the dam owner and the state and local emergency management officials.

5. Improve individual performance of the people who respond to the dam failure or other emergency conditions.

6. Gain public recognition of the EAP.

Testing of monitoring, sensing, and warning equipment at remote/unattended dams should be included in emergency exercise activities.

Emergency exercises and equipment tests should be evaluated orally and in writing, and the EAP should be revised and corrected as necessary. Immediately following an exercise or actual emergency, an evaluation of the EAP should be conducted with all involved parties. The evaluation should focus on the procedures and other information in the EAP, not on the performance of the individuals who carried out the established procedures. It should address both the procedures that worked well and the procedures that did not work so well. The responses from all participants involved in the

exercise should be considered. The exercise evaluation should discuss and evaluate the events before, during, and following the exercise or actual emergency; actions taken by each participant; the time required to become aware of an emergency and to implement the EAP; and the improvements practicable for future emergencies.

The purpose of the evaluation is to identify strengths and deficiencies in the EAP, such as outdated telephone numbers on the notification chart, inundation maps with inaccurate information, and problems with procedures, priorities, assigned responsibilities, materials, equipment, and staff levels. After the evaluation has been completed, the EAP should be revised, as appropriate, and the revisions disseminated to all involved parties.

Paul Wessel, P.E.
Dam Safety Program
Michigan Department of Environmental Quality

FEMA Announces Federal Flood Insurance Now Available in Powell Township

Washington, D.C. – The Township of Powell, Marquette County, has joined over 20,000 communities nationwide that are allowed to purchase federally backed flood insurance. This follows the community's adoption and enforcement of ordinances to reduce flood losses and acceptance by the National Flood Insurance Program (NFIP).

The Township of Powell is now a participant in the NFIP effective on May 4, 2006. Residents of the Township will be able to purchase flood insurance up to the limits under the Regular Phase of the program. However, there is a 30-day waiting period before flood insurance coverage goes into effect. For single-family dwellings, the building coverage limit is $250,000, and the contents coverage limit is $100,000. Renters can also protect their belongings by purchasing contents coverage. For commercial properties, the building and contents coverage limits are both $500,000.

Lenders must require borrowers whose properties are located in a designated flood hazard area to purchase flood insurance as a condition of receiving a federally backed mortgage loan in accordance with the Federal Disaster Protection Act of 1973.

The NFIP is implemented through the Federal Emergency Management Agency. There are over 4 million flood insurance policies.

eLOMA: Electronic Letters of Map Amendment
What is eLOMA?

by the FEMA Map Modernization Team

The Federal Emergency Management Agency (FEMA), in association with the National Service Provider (NSP), designed a new interactive online determination tool for MT-1 requests called eLOMA. eLOMA is a web-based application within the Mapping Information Platform (MIP) that provides licensed land surveyors and professional engineers (Licensed Professionals) with a system to submit simple Letter of Map Amendment (LOMA) requests to FEMA. This tool is designed to make a determination based on the information submitted by the Licensed Professional and allow them to generate a determination from FEMA in minutes.

The initial release of eLOMA will enable Licensed Professionals to make requests for existing single residential structures or properties, provided no fill has been placed to raise the elevations of the

structure or property. Approximately half of the LOMAs processed annually (about 10,000 cases) meet the requirements of eLOMA.

WHAT ARE THE ADVANTAGES OF eLOMA?

eLOMA was designed to facilitate the LOMA process. Historically, because of manual processing, obtaining a LOMA took up to 60 days, provided all required documentation was on file. Through the use of eLOMA, Licensed Professionals could receive a determination in the time that it takes to enter the required information online.

HOW DOES eLOMA DIFFER FROM TRADITIONAL LOMA PROCESS?

A LOMA is a letter from FEMA stating that an existing structure or parcel of land that has not been elevated by the placement of fill is not expected to be inundated by the 1 percent annual chance flood (the base flood). To receive an eLOMA, Licensed Professionals must register on the MIP to establish an account. Once registered, they will be able to enter property-specific information that they have certified as accurate, as well as data taken from the FEMA Flood Insurance Rate Maps (FIRMs) and Flood Insurance Study (FIS) Reports. Licensed Professionals should refer to FIS Reports, because the Base Flood Elevations (BFEs) are not always found on the FIRMs; the BFE data in the FIS Text is generally more accurate. The eLOMA online service will then make a determination based on the submitted information, and Licensed Professionals will be able to print a copy once the request is processed.

An eLOMA document will serve the same functions as a standard LOMA. The only difference between the two is that the online determination is made automatically with standard checks instead of the lengthier manual review. In addition, eLOMA does not replace the standard LOMA procedure. The eLOMA determination tool is an optional process applicable to only the most basic LOMA requests. Currently, there is no charge to receive a LOMA, and eLOMAs also will be available to Licensed Professionals at no cost.

HOW DOES eLOMA CREATE DETERMINATIONS THROUGH THE MIP?

A surveyor or engineer must set up an account through the MIP using individual license certification information. Once the Licensed Professional is registered on the MIP, he or she can log into eLOMA. Once logged in, he or she will be given the option to create a new application or resume a previously saved application. The Licensed Professional will be asked to submit certified elevations. eLOMA will make a comparison of the submitted BFE with the submitted Lowest Adjacent Grade (LAG) or Low Lot Elevation (LLE) and provide an instant determination for the Licensed Professional if the application has not been selected for FEMA audit. For quality purposes, eLOMA will ensure that all required information has been entered.

If the application is selected for FEMA audit, the Licensed Professional will receive instructions for submitting their application materials. If the application is approved, the Licensed Professional will receive notification that they can log in and print the determination. If the application is rejected, the LOMA will be completed by FEMA using the standard, manual MT-1 process, and the Licensed Professional will be audited again after his or her next submittal. After a successful audit, the Licensed Professional will be able to generate eLOMA determinations online. All users are subject to random audits.

eLOMA AVAILABILITY

eLOMA processing and user registration is currently scheduled to be available through the MIP June 12th, 2006.

WHAT IS THE FUTURE OF eLOMA?

FEMA will be closely monitoring the progress of eLOMA to consider expanding its capabilities to include:

- Offering broader application requests
- Expanding use of eLOMA to include additional users
- Adjusting audit frequency as needed

GENERAL INQUIRIES, TECHNICAL ISSUES, AND FEEDBACK

This is an exciting step for Flood Map Modernization, and we look forward to your feedback. Please send feedback to MIPHelp@mapmodteam.com, and include the phrase "eLOMA Feedback" in the subject line.

For general inquiries, please contact the FEMA Map Assistance Center:
Phone: 1-877-FEMA MAP, option 1
Hours of Operation: Monday – Friday, 8 a.m. – 6:30 p.m. EST

To report a technical problem, please contact the MIP Help Desk:
Phone: 1-877-FEMA MAP, option 2
Hours of Operation: Monday – Friday, 8:00 a.m. – 5:00 p.m. EST
E-mail: MIPHelp@mapmodteam.com

Two More Counties Complete for New FEMA Flood Maps

Oakland and Macomb County communities received their letters of final determination from FEMA recently. These letters are formal notices that the past two years of map modernization efforts by the communities and state and federal agencies is complete, and new final digital flood insurance rate maps (DFIRMs) go into effect September 29, 2006.

Between now and September 29, 2006, the Oakland and Macomb County communities need to adopt a new ordinance/resolution as required by FEMA. The Michigan Department of Environmental Quality (MDEQ), with assistance from the Attorney General's office, prepared model ordinance and resolution documents for communities. Berrien County communities were the first to use these model documents, and they proved to be very helpful and simple to use. The communities efficiently complied with FEMA's map adoption requirements. The MDEQ has mailed the model documents to the Oakland and Macomb County communities. Assistance through the map adoption process is available by contacting Mr. Les Thomas, NFIP Coordinator, at thomasl@michigan.gov or 517-335-3448. The model documents are also available on the MDEQ website of www.michigan.gov/deq under Water, then Water Management, then Floodplain Management/National Flood Insurance, then **NFIP Map Modernization Map Adoption.**

Lessons Learned from the Berrien County Map Adoption Process

Point #1: Get started early with the ordinance adoption process. Waiting is not going to make the process easier. Those communities that waited too long found the community suspended from the NFIP, and federal mortgages were not available to its citizens until the process was complete.

Point #2: Have MDEQ review **"draft"** map adoption documents and avoid having to re-adopt due to document errors.

Point #3: Make life easy for the community leaders and use the model documents prepared by the MDEQ and the Attorney General's office.

Point #4: Make sure the map adoption ordinance correctly references the final county-wide flood insurance study by title and its effective date.

Point #5: Make sure the map adoption ordinance correctly references the effective date of the new maps and the map panel numbers covering the entire community jurisdiction. The FEMA letter of final determination that each community will receive lists the map panel numbers; however, they may not be completely accurate. Thus, the MDEQ **review of draft documents** will function as the final "quality control" point for this part of the adoption process.

Point #6: If a community's jurisdiction lies within two counties, there will be two separate county-wide flood insurance studies possibly done at two different times. The community must go through two map adoption processes; one for each study. When a community goes through the first adoption process to identify the new maps for that portion of the community, it will also need to identify the old/current map panels for that part of the community in the second county that has not been studied yet.

I'm sure that as we progress with each county-wide flood insurance study there will be more "learning opportunities", and we will share them with others.

Mid-Course Adjustment Leads to Changes in Map Mod

By FEMA's Map Mod Team

The course of Flood Map Modernization (Map Mod) is being adjusted to better meet the needs of map users by focusing more closely on communities at greatest flood risk. This program adjustment has resulted from a FEMA mid-course review of the Map Mod initiative. As a result of this adjustment, FEMA will provide additional engineering data and will increase the number of miles of delineation that are compliant with the floodplain boundary standard to the communities most at risk for flooding. FEMA conducted the mid-course evaluation two years into Map Mod, taking into account experience to date, input from Congress and federal agencies, stakeholder feedback, adoption of the Floodplain Boundary Standard (which addresses the difference between the ground elevation and the flood elevation of a given area), and requests for engineering updates submitted by states in their annual state business plans.

This course adjustment constitutes a change from the original primary focus of Map Mod, which called for producing digital flood maps for 100 percent of the nation within a five-year period. The original plan for Map Mod called for converting all flood maps from paper to digital format, updating roughly 20 percent of map panels with new flood risk information, and adding 13,700 completely new digital map panels to cover communities that previously were not mapped.

FEMA remains committed to the original vision, but the immediate goal of providing digital maps for the entire country will be delayed in favor of focusing on the areas of highest risk.

FEMA estimates that three quarters of all mapped stream and coastal miles will meet the new standard. Under original Map Mod plans, just 57 percent of coastal and stream miles and only 32 percent of the population would have met the Floodplain Boundary Standard.

The mid-course adjustment will also make additional funds available for engineering analysis. Because the revised focus will free funds for engineering studies, it also will increase the percentage of mapped streams and coastal miles with new, updated, or validated engineering analyses, as well as the percentage of population covered by maps with new or revised engineering information.

As a result of the adjustment, 92 percent of the nation's population will be covered by digital maps. An estimated 65 percent of the nation's continental land mass will be covered by digital maps by the end of Map Mod, rather than the 100 percent originally sought. Much of the land that will not be mapped, however, is more sparsely populated.

To accomplish this, FEMA is changing the way it prioritizes funding beginning in 2006; analyzing flood risk at the census block group level rather than at the county level. Census block groups are the smallest geographic units for which the U.S. Census Bureau develops data and will allow FEMA to focus more specifically on the areas that are more populated and do not meet the Floodplain Boundary Standard.

The mid-course adjustment recognizes that the necessary quantity of new flood data and mapping far exceeds the scope originally envisioned. FEMA believes that delaying completion of digital mapping and increasing the amount of money available for engineering analysis will best meet the needs of the nation.

Early Announcement
MSFA 2007 20th Annual Conference

The Michigan Stormwater-Floodplain Association's 20th annual conference is scheduled for **February 20-23, 2007** at the Amway Grand Hotel Conference Center in Grand Rapids, Michigan.

The 2007 conference committee already has plans started and tentative program presentations identified. 2006 conference evaluations have been very helpful in initial planning for subject areas at the 2007 conference. Subject areas tentatively scheduled for the 2007 conference include:

CFM refresher and exam
Vendor exhibits
Flood Map Interpretation and BFE Calculation
Basement/Crawl Space Construction in Floodplains
Community Rating System
Floodplain Management 101 for Local Officials
MDOT Drainage Manual
What is Lidar?
Rain Gardens
What Floodplain Managers Should Know About Flood Insurance
Local Emergency Management Role in Floodplain Management
Benefits of a Local Hazard Mitigation Plan
Kent County Experience with Map Mod
Legislative Report

Association members and newsletter readers are welcome to contact any of the MSFA officers or board members with any suggestions, ideas, and assistance that will help make the 20th annual conference the best. Officer and board member contact information is available at the Association website of http://mifloods.org/contacts/

Excellent Affordable Training Available to Communities At the National Emergency Training Center (NETC)

(Information and descriptions obtained from the website of the Department of Homeland Security and the Federal Emergency Management Agency U.S. Fire Administration http://www.training.fema.gov/)

The National Emergency Training Center (NETC) is a 107-acre campus shared by the United States Fire Administration (USFA), the National Fire Academy (NFA), the **Emergency Management Institute (EMI**), the Field Personnel Operations Division, and the Satellite Procurement Office. All of these components are part of FEMA, one of the four directorates in DHS. The NETC is located in Emmitsburg, Maryland, and is 12 miles south of Gettysburg, Pennsylvania, 75 miles north of Washington, DC, and 50 miles northwest of Baltimore, Maryland.

The EMI component of the NETC serves as the national focal point for the development and delivery of emergency management training to enhance the capabilities of federal, state, local, and tribal government officials, volunteer organizations, and the public and private sectors to minimize the impact of disasters on the American public.

EMI curricula are structured to meet the needs of this diverse audience with an emphasis on how the various elements work together in emergencies to save lives and protect property. Instruction focuses on the four phases of emergency management: mitigation, preparedness, response, and recovery.
EMI develops courses and administers resident and non-resident training programs in areas such as natural hazards (earthquakes, hurricanes, floods, dam safety), technological hazards (hazardous materials, terrorism, radiological incidents, chemical stockpile emergency preparedness), professional development, leadership, instructional methodology, exercise design and evaluation, information technology, public information, integrated emergency management, and train-the-trainers.

EMI will use a National Enrollment System of two terms with a prescribed application period for each term. **After each application period:**

- NETC staff will review the applications and notify applicants regarding their status, as noted above.
- EMI will post any remaining vacancies on the EMI web site, and interested personnel may continue to apply. EMI will fill vacancies on a first-come, first-served basis. (Note: for IEMC vacancies by position, consult the IEMC Web site.)

There are no tuition fees for EMI on-campus or off-site courses. All instruction, course materials, and housing (for most participants) are provided at no cost. Participants from other countries, other federal agencies, and most participants from private industry or contractors to state, local, or tribal governments, must pay their own transportation and lodging fees. All participants are responsible for the cost of cafeteria meals provided and for personal incidental expenses.

Stipend reimbursement is limited to three trips for each participant per fiscal year. You must purchase a 21-day pre-purchased, nonrefundable ticket for round-trip transportation by common carrier (economy, coach class, or less). First class and business class airline tickets will not be reimbursed. If you are notified in enough time to purchase the 21-day ticket and do not do so, your reimbursement will be limited to the state ceiling as established by NETC. If you choose to drive, you will be reimbursed the current Privately Owned Vehicle (POV) federal mileage allowance or the state ceiling, whichever is less.

Reimbursement will be made by direct deposit to your personal account (please provide a copy of a check). You are responsible for reimbursing your organization. If you have questions about your eligibility to receive a stipend, please call (301) 447-1035.

For complete EMI course descriptions, go to http://www.training.fema.gov/emicourses/

To take an EMI course, applicants must meet the selection criteria and prerequisites specified for each course. Participants may not take the same course more than once.

Enrollment in EMI courses is generally limited to U.S. residents; however, each year a limited number of international participants are accommodated in EMI courses.

The EMI course enrollment form is the General Admissions Application Form (FEMA Form 75-5, which expires February 28, 2007). The only FEMA Form 75-5 that will be accepted is the one with the expiration date of February 28, 2007.

Applications must be coordinated, reviewed, and approved by:

- The head of the applicant's sponsoring organization,
- The emergency management office of the applicant's state, and
- The NETC Admissions Office.

All blanks on the application form must be completed, or it will be returned. A copy of the form is included at the back of the EMI catalog, and it may be duplicated. Additional forms can be downloaded from the EMI web site or obtained from state and local emergency management offices, FEMA regional offices, or the NETC Office of Admissions. Completed applications must be submitted to the State of Michigan Emergency Management Office, which operates within the Department of Michigan State Police.

The address for the Michigan State Emergency Management Office is:

Training Officer
Michigan State Police
Emergency Management Division
4000 Collins Road
PO Box 30636
Lansing, Michigan 48909-8136

Floodplain management and dam safety staff of the Michigan Department of Environmental Quality, Land and Water Management Division, have attended several training courses at EMI, and they have proven to be excellent courses in an excellent learning environment. It is strongly recommended that communities consider taking advantage of the EMI training opportunity.

June 11-16, 2006
National Association of State Floodplain Managers Conference (ASFPM) "Bigger and Better"

To experience a week of the southwest U.S., high temperature and low humidity was only one benefit of the 30th annual ASFPM conference held in Albuquerque, New Mexico. With over 1,200 registrants from all over the country from federal, state, and local governments and private business, there was a lot of networking going on among floodplain managers. Participants shared their hometown experiences on what works and what can work better to manage floodplain development to minimize risks to persons and properties.

The week-long program provided 23 different workshops by professionals from a wide range of floodplain related fields, including program management, engineering, technical, GIS, and flood control structures and methods. For demonstrations of real life floodplain and stormwater management projects and activities, 11 technical field tours were available to participate in. In support of the vast networking opportunity created by having flood managers from all over the country at one location, several special information and meeting sessions and guest tour options were available.

Another large segment of the conference was the floodplain-related industry exhibition. A wide assortment of exhibits were provided by a multitude of specialists involved in the many specialty subject areas related to floodplain, stormwater, and hazards management.

If you have not attended an ASFPM annual conference, you can be assured that it does represent an excellent professional development environment that can benefit your future efforts in floodplain management at the community level. The conference will help a floodplain manager stay current on flood control structure design and methods, mapping technology, flood study engineering methods and software, and changes to federal regulations, programs, and funding sources. If your community or business training budget is a main issue for not attending, now is the time to begin promoting its benefit to your community for budget approval allowing you to attend next year's conference. It will be held in Norfolk, Virginia, on June 3-8, 2007. By checking the ASFPM website www.floods.org, you can stay current on next year's program, hotel availability, and conference costs as they are developed and finalized.

Funny, It Doesn't LOOK Like a Floodplain!

David Schein, FEMA

To many stakeholders, the NFIP's floodplain determination process is somewhat of a mystery. Many people think they know what a floodplain is, and perhaps even what one looks like, and they often wonder how floodplains are delineated on the NFIP's Flood Insurance Rate Maps (FIRMs). It is a good question.

To answer it, we first have to understand that nature and statutory or regulatory requirements don't always fit together neatly. Ideally, they should, but in the case of flood hazard delineations, we have to know a little bit about both hydrologic and hydraulic engineering methods, and fluvial geomorphology. Don't get scared. I said "a little bit."

Mother Nature's Work

Nature designs floodplains to carry excess water, water that overflows the natural conveyance system, such as rivers, streams, creeks, and ditches (and ponds and lakes as well). These floodplains usually are easy for the lay observer to identify in the field. They look different than their surrounding geography. They are generally flat, to be sure, and more or less follow the natural stream bank or shoreline. There may be a scarp (escarpment) or natural dropoff from the slightly higher land adjacent to the floodplain, and these features are often called benches or beaches.

The vegetation in a floodplain is usually different, too. Certain trees like to get their feet wet from time to time, like cottonwoods and willows, so the geomorphic floodplain is typically inhabited by these water-tolerant species. Oaks, on the other hand, will almost never naturally occupy soils that experience periodic inundation. The soils are derived from sediment deposited by floods, and they are typically very uniform, highly compacted, and clayey. These are characteristics of the geomorphic floodplain, a visible and describable physical feature.

Floodplains are FIRMly Planted on Paper

The floodplains that are designated on FIRMs as Special Flood Hazard Areas (SFHAs) may or may not look like the scene described above. Very often, they are not noticeably different from the surrounding geography. This is because the SFHA is a statistically probability notion, per our regulations. A line on a FIRM separating what is "in" the floodplain from what is "out" of the floodplain does not always correspond to a recognizable ground feature or vegetation zone. It really just serves as an approximate dividing line between areas that have different statistical probabilities of being flooded.

As people who have lived through floods know – floods are not always statistically oriented.

Thus, the dividing line on a FIRM between the SFHA and the rest of the world is established by a group of engineers getting together and modeling the watershed's runoff characteristics and determining how friction losses at encroachments (such as bridges, dams, culverts, fill, and buildings) affect the water surface elevation of the 1 percent annual chance flood event (sometimes erroneously called the "100-year" flood.) The line marking the floodplain on the FIRM is established with the best available (and affordable) topographic information.

That said, the important thing to keep in mind is that water doesn't have to stop when it reaches ANY line on a map! Even the observable geomorphic floodplain limit may not confine large floods – an excellent reason for residential and commercial property owners in low- to moderate-risk flood zones to purchase the NFIP's very affordable Preferred Risk Policy. To put it another way, there are nature's floodplains, and FEMA engineers' floodplains. Someone's got to make the call, so when dealing with the NFIP, the engineers have to be the ones. But, an educated prediction is not a guarantee. When you are gambling with Mother Nature, it is better to be safe than sorry.

Do You Have a False Sense of Security?

How many times have you heard, "Is my home in the floodplain?" And, how many times have you heard a "no" response? This may be the most common question asked by citizens during the public meetings held for the map modernization efforts by FEMA and states across the country. The more appropriate response to the question would be, "It could be; let's see what flood risk level your structure is located in. Your flood risk level will depend on the flood event. For example, the 1 percent chance annual flood defines the 100-year floodplain and the .2 percent annual chance flood defines the 500-year Floodplain. A structure in the 100-year floodplain has a greater risk of being flooded than it would if it were in the 500-year floodplain."

FEMA's flood maps are in reality maps of various flooding risk levels identified by flood zones. Given the right event and a big enough source of water, many land areas could be at risk of being flooded – one might recall Biblical events or the more recent 2005 and 2006 flood events around the nation.

Landscape extremes, such as the Kalahari Desert or the continental divide, can obviously eliminate many land areas from concerns about flooding. However, in the past and with today's governmental stewardship and actions in emergency and all hazards management on behalf of our citizens across the country, it makes good sense to consider possible flooding impacts to all lands, especially areas subject to development pressures. Such recognition provides a basis for the application of reasonable development regulations to ensure our citizens and structures are reasonably safe from flooding; thus, the NFIP and FEMA flood maps.

The NFIP generally considers any structure to have an element of risk when it comes to flooding. The NFIP categorizes flooding risk on all lands into high and moderate or low risk flood zones on the FEMA special flood hazard maps. For mandated flood insurance, the NFIP uses the high risk flood zones (the A and V Zones) as the level of risk that statutorily requires the purchase of flood insurance to mitigate property losses on mortgaged structures. Other flood zones such as B, C, D, and X are considered to be moderate to low areas of flooding risks. Structures in these areas are not required to be covered by flood insurance under the NFIP. However, that does not mean one is completely safe from flood events. NFIP statistics clearly demonstrate that 25 percent of the NFIP claims have been for damages to structures not located in high risk flood zones, but located in the moderate to low risk flood areas.

Any given FEMA flood map may not necessarily identify all possible high risk flood areas for the

geographical areas represented by the map. Administrative and budgetary decisions during map production may only result in certain areas to be studied thoroughly enough to identify specific or approximate high risk flood areas. Land areas with water bodies that have not been studied will inherently have floodplains and associated levels of flood risk. This relationship should be taken into account by the property owner even though the FEMA flood map may not identify their structure to be within an identified flood zone.

So, do not let yourself believe that just because your structure is not identified on FEMA flood maps as being located in the high risk flood zone that you are safe and secure from ever experiencing the tragic effects and damages of a flood event. The important question you are wise to ask is, "What is the risk of my structure being flooded, and what risk level am I willing to accept before I choose to purchase flood insurance protection?"

A key point to consider when one asks this question is that the cost of flood insurance protection is less the further away one is from the high risk flood zone. So, it may become a very affordable and economically wise choice to purchase flood insurance even when you are not in a high risk flood zone and not required by the NFIP to do so. Such a wise choice is fully supported by additional statistics which show that during the term of a typical 30-year mortgage a structure has a 26 percent chance of being flooded by the 1 percent chance flood, compared to a 5 percent chance of experiencing fire damage.

So, will your structure be flooded? The answer does not depend on whether your structure is in or out of the floodplain but does depend on the size of the flood event and the flood risk level that you are willing to live in and accept the consequences of if a larger flood event should occur. The bottom line to remember is, the closer one is to a source of flooding, the greater will be your level of risk. The farther away, the lesser will be the risk level.

Ways to Flood Protect Your House and Property

Basement flood protection can involve a variety of changes to your house and property: changes that can vary in complexity and cost. You may be able to make some types of changes yourself. Complicated or large scale changes or those that affect the structure of your house or its electrical wiring and plumbing should be carried out only by a professional contractor licensed to work in your state, county, or city. Below are some examples of flood protection.

- **Install Sewer Backflow Values.** In some flood prone areas, flooding can cause sewage from sanitary sewer lines to back up into houses through drainpipes. Sewage backup not only causes damage, but also creates health hazards. Backflow valves have a variety of designs ranging from simple to complex. This is something that only a licensed plumber or contractor should do.

- **Raise or Flood Proof Heating, Ventilating, and Air Conditioning Equipment**. In flood prone houses, a good way to protect HVAC equipment is to elevate it above the areas that flood. Another method is to leave the equipment where it is and build a concrete or masonry block flood wall around it.

- **Anchor Fuel Tanks.** Unanchored fuel tanks can be easily moved by floodwaters. One way to anchor a tank is to attach it to a large concrete slab whose weight is great enough to resist the force of floodwaters. Elevate tanks to a minimum of at least one foot above the base flood elevation (BFE). Floating and/or damaged tanks pose serious threats not only to you, your family,

and your home, but also to public safety and the environment.

- **Raise Electrical System Components.** Any electrical system component, including service panels (fuse and circuit boxes), meters, switches, and outlets, are easily damaged by floodwaters. All components of the electrical system, including the wiring, should be raised at least one foot above the base flood elevation (BFE).

- **Raise Washers and Dryers.** Washers and dryers can easily be damaged in a flood. In order to prevent this from happening, utilities can be placed on cinder blocks one foot above the base flood elevation (BFE).

- **Add a sump pump in your basement.** Sump pumps can help keep groundwater from entering your home's interior.

- **Cut drywall so that it is one-half to one inch off the floor**. This is especially important in basements. Concrete floors commonly absorb ground moisture – especially in winter months. That moisture can wick up the wallboard if it's touching the floor, allowing mold to grow out of sight within the walls. (You can hide the gap with wood or rubberized floor trim.)

- **Don't forget to buy flood insurance.** Flood insurance provides year-round financial protection and improves your ability to quickly recover when severe storms strike and cause unexpected flooding. Call your local insurance agent or 1-800-720-1090 to reach National Flood Insurance Program specialists.

Flood Insurance Facts

Is flood damage covered by my homeowners insurance?

Flood damage is excluded in nearly all homeowners and renters insurance policies but, if desired, can be purchased as a separate policy.

Where do I get flood insurance?

Any licensed property/casualty insurance agent can sell a flood insurance policy. If you experience trouble in locating an agent, contact the National Flood Insurance Progam's (NFIP) agent referral program at 1-888-CALL FLOOD.

Is there a waiting period before my flood insurance policy becomes effective?

There is a 30-day waiting period before a new or modified flood insurance policy becomes effective.

Are all flood insurance policies the same?

Flood insurance coverage can be purchased for homes and businesses. Separate coverage must be purchased for the building and its contents.

Do I need to live in a floodplain to get flood insurance?

You do not need to live in a floodplain to purchase flood insurance. Coverage is available to any building located in a community that has qualified for the National Flood Insurance Program. For a listing of Michigan communities participating in the NFIP, visit http://www.fema.gov/national-flood-insurance-program/national-flood-insurance-program-community-status-book

Is water backup in basements covered by a flood insurance policy?

Coverage for water backup in basements (drains/sewers) is excluded from the flood insurance policy.

Can I get coverage for water backup in basements?

Although basement water backup is excluded under most homeowners' insurance policies, coverage can be obtained by purchasing an endorsement. Most insurance companies offer sewer and drain backup as optional coverage. Coverage and limits vary by insurance company, so check with your agent/company about specifics. Some insurers include full coverage for sump pump failure, while others specify items that are covered.

Are there steps I can take to minimize losses from water backup in basements?

- Never store perishables or valuables in basements that you can't afford to lose or replace.
- Do not store any item near basement drains.
- Check storm drain lines to make sure they're clear of debris, roots, etc.
- Grade the property around your home to drain water away from it.
- Install gutters and make sure downspouts are extended away from the foundation in order to carry water away from the basement walls.
- Use shelving or store items several inches above the potential water level in order to prevent loss.
- If you have water seepage following storms, take corrective measures to alleviate problems in the future.

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Flood News for Michigan Floodplain Managers

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