

APPENDIX E

Wayne County Discovery Report

Discovery Report

Great Lakes Coastal Flood Study

Lake St. Clair

Wayne County, Michigan Individual Report

Report Number 01

February 2013



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Federal Emergency Management Agency Region V
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Date Submitted: February 2013

Project Area Community List

This list includes all communities within the Project Area covered by this report for the Great Lakes Coastal Study under consideration for new Federal Emergency Management Agency (FEMA) Risk Mapping, Assessment, and Planning (Risk MAP) products and datasets, which may include Flood Insurance Studies (FISs) and Flood Insurance Rate Maps (FIRMs). Not all communities will receive new/updated FEMA Risk MAP products and datasets or FISs and FIRMs.

Wayne County

Detroit, City of

Grosse Pointe Farms, City of

Grosse Pointe Park, City of

Grosse Pointe Shores, Village of

Grosse Pointe Woods, City of

Grosse Pointe, City of

Harper Woods, City of

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Attachments

- Attachment A. Coastal Data Request Form Compilation
- Attachment B. Wayne County Pre-Meeting Correspondence
- Attachment C. Draft Discovery Map
- Attachment D. Proposed Transects
- Attachment E. Wayne County Discovery Meeting Documents
- Attachment F. Hazard Mitigation Grant Program Projects

Acronyms and Abbreviations

| | |
|----------|---|
| AAL | Average Annualized Loss |
| CAV | Community Assistance Visit |
| CBRS | Coastal Barrier Resources System |
| CID | Community Identification Number |
| CIS | Community Information System |
| CMAG | Coastal Management Assistance Grant |
| C-MAN | Coastal Marine Automated Network |
| CNMS | Coordinated Needs Management Strategy |
| CO-OPS | Center for Operational Oceanographic Products and Services |
| CRS | Community Rating System |
| DFO | Department of Fisheries and Oceans |
| FEMA | Federal Emergency Management Agency |
| FIPS | Federal Information Processing Standards |
| FIRM | Flood Insurance Rate Map |
| FIS | Flood Insurance Study |
| GLCRG | Great Lakes Coastal Restoration Grant |
| Hazus-MH | Multi-Hazard Risk Assessment and Loss Estimation Software Program |
| HWM | High Water Mark |
| HUC8 | Hydrologic Unit Code 8 |
| LOMA | Letter of Map Amendment |
| LOMC | Letter of Map Change |
| LOMR | Letter of Map Revision |
| LOMR-F | Letter of Map Revision based on Fill |
| MLI | Midterm Levee Inventory |
| NDBC | National Data Buoy Center |
| NFIP | National Flood Insurance Program |
| NGDC | National Geophysical Data Center |
| NID | National Inventory of Dams |
| NOAA | National Oceanic and Atmospheric Administration |
| NWS | National Weather Service |
| Risk MAP | Risk Mapping, Assessment, and Planning |
| SFHA | Special Flood Hazard Area |
| USACE | U.S. Army Corps of Engineers |
| USGS | U.S. Geological Survey |

I. Discovery Overview

The Federal Emergency Management Agency (FEMA) Risk Mapping, Assessment, and Planning, or Risk MAP, program, helps communities identify, assess, and reduce their flood risk. Through Risk MAP, FEMA provides information to enhance local mitigation plans, improve community outreach, and increase local resilience to floods.

During the Discovery phase of Risk MAP project development, FEMA:

- Gathers information about local flood risk and flood hazards
- Reviews mitigation plans to understand local mitigation capabilities, hazard risk assessments, and current or future mitigation activities
- Supports communities within the coastal area to develop a vision for the future
- Collects information from communities about their flooding history, development plans, daily operations, and stormwater and floodplain management activities
- Uses all information gathered to determine which areas require mapping, risk assessment, or mitigation planning assistance through a Risk MAP project
- Develops Discovery Map and Report that summarize and display the Discovery findings



The Discovery process involves coordination with Great Lakes stakeholders, data collection and analysis, community interviews, a Discovery Meeting with stakeholders affected by the study, and development of recommendations based on an analysis of data and information gathered throughout the process.

i. Great Lakes Coastal Flood Study

FEMA has initiated a coastal analysis and mapping study that may result in updated Flood Insurance Rate Maps (FIRMs) for coastal counties along the Great Lakes. The new coastal flood hazard analyses will utilize updated 1-percent-annual-chance (100-year) flood elevations obtained from a comprehensive storm surge study being developed by the U.S. Army Corps of Engineers (USACE).

The Great Lakes Coastal Flood Study (GLCFS) will incorporate modern analysis of historic storm and high water events and provide for updated flood risk information serving United States communities having shoreline along the Great Lakes. The storm surge study is one of the most extensive coastal storm surge analyses to date, encompassing coastal floodplains in the eight States with coastlines on the Great Lakes.



An updated coastal flood study is needed to obtain a better estimate of coastal flood hazards on the Great Lakes. The current, effective FIRMs are outdated primarily due to the age of data and the coastal methodologies used in producing them. Major changes in National Flood Insurance Program (NFIP) policies and methodologies have been implemented since the effective date of many flood insurance studies in the area, creating the need for an update that will reflect a more detailed and complete hazard determination.

The GLCFS includes a system-wide solution that provides a comprehensive analysis of storm and high water events within the Great Lakes Basin. This program is funded through the FEMA Risk MAP program. FEMA, USACE, Association of State Floodplain Managers (ASFPM), State partners, and FEMA contractors will collaborate in updating the coastal methodology and flood maps, and create new flood risk products. FEMA manages the NFIP, which is the cornerstone of the national strategy for preparing communities for flood-related disasters.

ii. Purpose of Great Lakes Discovery

The Great Lakes Discovery process included data collection, information exchange between all governmental levels of stakeholders, spatial data presentation, cooperative discussion with stakeholders to better understand the Great Lakes area, and a collaborative approach on the project planning. The process allowed FEMA to continue to vet the Great Lakes coastal study methodologies with a large stakeholder group, to discuss local priorities and data, to discuss mitigation strategies and coastal issues, and to move towards a project that will successfully identify the risks associated with Great Lakes flooding.

This Discovery Report discusses the communities potentially affected by coastal flooding in Wayne County, Michigan. This Discovery process helped FEMA to better identify the types of datasets or products that will be useful at the local level, especially as it relates to identifying new mitigation strategies and actions, and for use in local planning efforts. Products that may be available to communities as a result of the Great Lakes flood study include updated FIRMs and FISs, coastal flood risk products, calibrated models for storm surge and wave analysis on each of the lakes, and accurate depictions of water level and

wave response on each lake occurring during hundreds of actual events. The type of product a community receives is dependent not only on the coastal flood study analysis results, but also on the type of datasets, local and national, that are available.

The following section describes the coastal flood risk products that a community may receive as part of a Risk MAP flood study, as well as some products that are under development for the Great Lakes study areas.

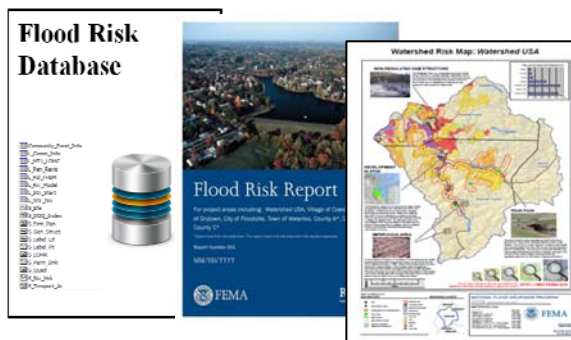
iii. Coastal Flood Risk Products

As part of a Risk MAP project, FEMA will seek to provide State and community officials with three flood risk products to help them gain a better understanding of flood risk and its potential impact on communities and individuals. These products will also enable communities to move forward with informed mitigation actions to reduce identified risk. Delivery of the products discussed below will depend on available data, results of coastal analysis, local partnerships, and fiscal year funding.

The three products are:

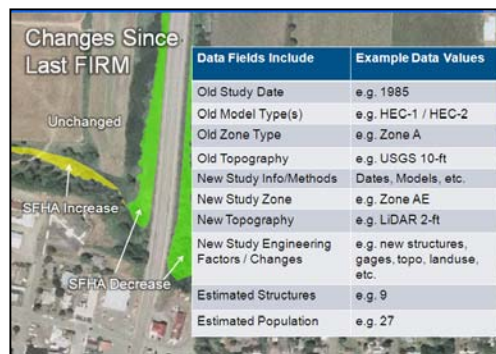
- Flood Risk Database
- Flood Risk Report
- Flood Risk Map

These products will summarize information captured in flood risk datasets that may be generated during a Risk MAP, or flood risk, study. The flood risk datasets could include regular and enhanced products. Standard flood risk datasets, also termed products, are listed below:

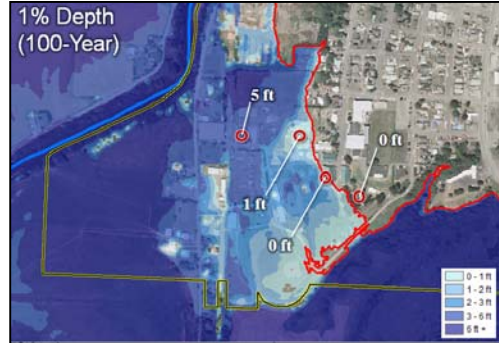


- **Changes Since Last FIRM (CSLF)**

- The CSLFs serve the following purposes: Identifies areas and types of flood zone change:
 - Compares current effective (previous) with proposed (new) flood hazard mapping
 - Categorizes and quantifies flood zone changes
- Provide study/reach level rationale for changes including:
 - Methodology and assumptions
 - Changes of model inputs or parameters (also known as Contributing Engineering Factors)



- **Flood Depth and Analysis Grids (1-percent-annual-chance event only)**
 - Flood Depth and Analysis Grids (DAGs) will be created for the 1-percent-annual-chance event of the coastal engineering studies performed and as appropriate for the data. Wave runup areas may not be applicable.
 - Created using the regulatory mapping and associated zone breaks as input



- **Flood Risk Assessment (Hazus-MH)**
 - Hazus-MH combines science, engineering and mathematical modeling with GIS technology to estimate losses of life and property—and shows those losses on a map
 - HAZUS-MH estimates impacts to the physical, social, and economic vitality of a community from earthquakes, hurricane, winds, and floods
 - Coastal flood risk assessments will be similar to riverine, but will use coastal depth grids as input for refined analysis.
 - Hazus-MH analysis and data can support adoption of high regulatory standards for structures in high loss areas
 - Hazus-MH results can help to provide justification to find mitigation projects to protect citizens and properties from losses during future coastal flood events



For more information about Hazus and data inputs, visit <http://www.fema.gov/plan/prevent/hazus/index.shtm> or enter keywords "fema hazus" into an internet search engine.



In addition, FEMA is looking into the possibility of developing some unique Great Lakes coastal flood risk products that utilize datasets that have recently been collected or will be collected as part of the GLCFS:

- Storm Response Erosion Data: Dataset is expected to contain the results from erosion analysis in response to the 1-percent-annual chance flood event
- Shoreline Feature Data: Dataset was developed by the USACE and contains primary and secondary land use tables, as well as coastline type, materials, and vegetation. The current dataset contains data at one-mile spacing. The dataset does not include field-based reconnaissance or sediment/subsurface soil collection.

The delivery of these standard flood risk products and the Great Lakes coastal flood risk datasets will be dependent on the location of the Risk MAP study and coastal analysis, data availability, fiscal year funding, and partnerships with local communities. Therefore, all communities may not receive flood risk products.

II. Stakeholder Communication and Coordination

Communication and coordination with Federal, State and local stakeholders is key to the success of the GLCFS. A large emphasis has been placed on identifying stakeholders early and often and working with those stakeholders continually throughout the study process, from Discovery all the way through flood map and flood risk product development. Through outreach, the goal is to increase understanding of the new coastal study methodologies and the tools and processes that will be available for risk-based community planning, and to increase flood hazard awareness within the Great Lakes coastal region.

i. Lake St. Clair Discovery Stakeholder Coordination

Meetings, emails, telephone calls, and letters are essential to communicate effectively throughout the life of this Lake St. Clair Coastal Flood Study project, which has begun with this Discovery process.

To kick-off this Discovery process, FEMA formed a group of core stakeholders, which included representatives from FEMA Region V, STARR (mapping partner to FEMA), USACE, NOAA, ASFPM, the State NFIP Coordinator, the State Hazard Mitigation Officer (SHMO), and State Engineers. The core stakeholders reviewed the Discovery plan, objectives, and key outcomes for Lake St. Clair Discovery with FEMA, provided suggestions for outreach and communication, and raised any concerns as it related to Lake St. Clair and the coastal flood study process. Following this kick-off process, outreach, communication, and coordination with local stakeholders was initiated.

Discovery Meeting invitations were sent to local community and county stakeholders within the Wayne County portions of the Lake St. Clair Coastal Flood Study project. In addition, an email invitation was sent to a larger list of stakeholders including, but not limited to, the core stakeholders, other federal agencies, universities, watershed groups, Great Lakes associations, technical stakeholders, and emergency management agencies. Representatives from the local governments, including cities, townships, and villages, were considered fundamental stakeholders in this process because they have been elected or appointed to represent the interests of the residents of this project area.

The Discovery Meeting invitations also included a Coastal Data Request Form (Attachment A). Communities were asked to provide information on data that they had available at the local level that may be of use during the flood study update and during the development of the coastal flood risk products discussed earlier in this report. The Coastal Data Request Form included data requests for:

- Base Map Data
- Coastal Data
- Historic Flood Data
- Risk Assessment
- Flood Mitigation Information

- Community Plans and Projects
- Other comments/concerns based on local knowledge

In addition to the hard copy letter invitations, and in order to improve the communication and data sharing leading up to the Discovery Meeting, FEMA offered local communities an opportunity to attend pre-Discovery Meeting conference call, referred to as an “Information Exchange Session”. The conference call information was included in the Discovery Invitation letters mailed to local community officials, and an email reminder was sent out as well. The session’s intent was to begin the process of learning about local data availability and what the critical issues are for the Great Lakes communities.

The core stakeholder documents, “Information Exchange Session” documents, stakeholder contact list, and Discovery Meeting invitations can be found in Attachment B, Wayne County Pre-Meeting Correspondence.

III. Wayne County Discovery Meeting

The Discovery Meeting for Wayne County was held on August 21, 2012 in Grosse Pointe Park, Michigan. Communities affected by coastal flooding in Wayne County were invited to the Discovery Meeting. The purpose of this meeting was to facilitate discussion about study needs, mitigation project needs, desired compliance support, and local flood risk awareness efforts.



The objectives of the Discovery Meeting included:

- Continuation and expansion upon stakeholder engagement
- Discussion of data inputs from Federal, state and local stakeholders
- Identification of local coastal flood hazard needs and areas of concern
- Identification of flood risk products and datasets that best advance coastal mitigation action
- NFIP regulatory updates
- Discovery schedule and deliverables

The Discovery Meeting presentation included the following information:

- An overview of the Great Lakes Coastal Flood Study and schedule
- Review of the Discovery process and outcomes
- Discussion of coastal mapping and flood risk topics to be aware of
- Discussion of how the study may affect the communities, including compliance requirements
- Review of hazard mitigation opportunities and grant funding

- Encouragement and facilitation discussion regarding coastal study needs, mitigation project needs, desired compliance support, and local flood risk awareness efforts

A draft Discovery Map for Wayne County (Attachment C) was displayed and utilized during the meeting to encourage the discussion regarding areas of coastal flood risk concern and areas of hazard mitigation interest. The draft Discovery Map shown at the meeting included geospatial and tabular data that had been collected prior to the meeting:

Geospatial Data:

- Average Annualized Loss (AAL) data
- Coastal Barrier Resources System (CBRS)¹
- Coordinated Needs Management Strategy (CNMS)² Data- riverine only
- Proposed Transects
- Effective Special Flood Hazard Areas (SFHAs)
- Jurisdictional Boundaries
- Letters of Map Change (LOMCs)
- Levees
- Shoreline
- Streams
- USGS Gages
- Watershed Boundaries

Tabular Data:

- Declared Disasters
- Flood Insurance Data
- Potential Mitigation Actions (from local Hazard Mitigation Plans)
- Summary of Shoreline Data (Type and Coverage)

Participants at the Discovery Meeting were asked to cooperatively identify Areas of Concern and Areas of Mitigation Interest (AoMIs) within the Wayne County Lake St. Clair study area using the Discovery Map and through general discussion during the meeting.

In addition to the draft Discovery Map, figures showing the location of initially proposed transects around Wayne County were available for review and comment. Stakeholders were encouraged to review the proposed transects and provide comments related to the location of the transects. The proposed transect maps that were available at the Discovery

¹ CBRS consists of the undeveloped coastal barriers and other areas located on the coasts of the United States that are identified and generally depicted on a series of maps. CBRS areas are ineligible for most new Federal expenditures and financial assistance.

² CNMS is FEMA’s strategy for coordinating the management of mapping needs using modern geospatial technologies and current policies, requirements, and procedures. CNMS makes information related to mapping needs readily accessible and more usable. CNMS is only for riverine studies at this time. It is expected coastal needs will be captured in this system in the future.

Meeting for Wayne County can be found in Attachment D. A sample map is shown below as Figure 1.



Figure 1: Sample Proposed Transect Figure

All comments that were provided during the Wayne County Discovery Meeting on the draft Discovery Map and transect figures have been compiled into geospatial layers and associated tables. The layers, titled “Stakeholder General Comments” and “Stakeholder Transect Comments”, can be found on the Final Discovery Map in Appendix F of the basin-wide Lake St. Clair Discovery Report (Federal Emergency Management Agency, 2012). Each comment collected for Wayne County is captured in the table below, along with a map identification number (if one exists) that correlates to its location on the Final Discovery Map. In Table 1 and on the Final Discovery Map, the identification of a comment (ID) categorized as a “Stakeholder General Comment” is represented by using first three letters of the county name followed by a unique number (i.e. WAY- 1, WAY – 2). The identification of a comment (ID) categorized as a “Stakeholder Transect Comment” is represented by using the first three letters of the county name, followed by “TR”, followed by a unique number (i.e. WAY-TR-1, WAY-TR-2).

Table 1. Stakeholder General Comments and Transect Comments

| ID | County | Location of Comment | FIPS | CID | Comment |
|----------|--------|---------------------------------------|---------------------|--------|--|
| WAY-4 | Wayne | City of Detroit | 26163 | 260222 | Water Works Park - Critical Facility; Transect suggested at Water Works Park along Detroit River |
| WAY-TR-4 | Wayne | Belle Isle, City of Detroit | 26163 | 260222 | Transect suggested for the eastern tip of Belle Isle |
| N/A | All | Macomb, St. Clair, and Wayne Counties | 26099, 26147, 26163 | N/A | Requested the effective transects be used for Lake St Clair |

FIPS = Federal Information Processing Standards

CID = Community Identification Number

Discovery meeting minutes, sign in sheets, PowerPoint presentation, marked up draft Discovery Maps, and correspondence documentation have been included in Attachment E, Wayne County Discovery Meeting Documents.

IV. Summary of Data Analysis

During this Discovery portion of the Lake St. Clair Coastal Flood Study project, a collection of tabular and spatial data was conducted for all the coastal communities from Federal and State sources, as well as information collected through phone conversation, the information exchange session conference call, the Discovery Meeting, and the Discovery Coastal Data Request Forms sent to each coastal community. This section lists the types of data and their sources that were collected for the Wayne County study area, including information collected during and after the Discovery Meeting. The data analysis that follows Table 2 is divided into two sections: one section listing the data that can be used for Risk MAP product development and the other section listing the information that helped the study team to form a better understanding of the Wayne County Lake St. Clair Project Area prior to moving forward with the coastal flood study.

Table 2. Data Collected for Wayne County

| Data Types | Deliverable/Product | Source | Date of Data Collection | Level |
|------------------------------------|---------------------|--|-------------------------|------------|
| Average Annualized Loss Data (AAL) | Discovery Map | Federal Emergency Management Agency (FEMA) | June 2012 | Nationwide |
| Bathymetry and Topography | Discovery Report | USACE | 2012 | Lakewide |
| Census Blocks | Discovery Map | U.S. Census Bureau | June 2012 | Countywide |
| Coastal Data Request Form | Discovery Report | Community and County Stakeholders | July 2012 | Countywide |

Table 2. Data Collected for Wayne County

| Data Types | Deliverable/Product | Source | Date of Data Collection | Level |
|--|--------------------------------|---|-------------------------|------------|
| Contacts | Discovery Report | Local Community Websites, State/FEMA updates | June 2012 | Countywide |
| Community Assistance Visits (CAVs) | Discovery Report | FEMA Community Information System (CIS) | July 2012 | Countywide |
| Community Rating System (CRS) | Discovery Report | FEMA's "Community Rating System Communities and Their Classes" | July 2012 | Nationwide |
| Comprehensive Plans | Discovery Report | Local Community Websites | July 2012 | Countywide |
| Coastal Barrier Resources System (CBRS) | Discovery Map | U.S. Fish and Wildlife Service | July 2012 | Nationwide |
| Coastal Structures | Discovery Map/Tabular Data | U.S. Army Corps of Engineers (USACE) | August 2012 | Nationwide |
| Coordinated Needs Management Strategy (CNMS) | Discovery Map | FEMA | July 2012 | Countywide |
| Critically Erosion Beach Areas | None Identified | None Identified | N/A | Countywide |
| Critical Facilities | Discovery Report | Local Mitigation Plan | July 2012 | Countywide |
| Dams | Discovery Report | USACE, National Inventory of Dams, Flood Insurance Rate Map (FIRM) Database | July 2012 | Countywide |
| Declared Disasters | Discovery Report | FEMA's "Disaster Declarations Summary" | June 2012 | Nationwide |
| Demographics, Industry | Discovery Report | U.S. Census Bureau, Local Mitigation Plans | June 2012 | Countywide |
| Effective Floodplains | Discovery Map | FEMA Map Service Center and Mapping Information Platform | June 2012 | Countywide |
| Flood Insurance Policies | Discovery Report | FEMA CIS | July 2012 | Nationwide |
| Hazard Mitigation Plans and Status | Discovery Report | Local Mitigation Plans | July 2012 | Countywide |
| Hazard Mitigation Assistance Program Grants Received | Discovery Report | FEMA's "Hazard Mitigation Program Summary" Community Input | June 2012 | Nationwide |
| Hazard Mitigation Projects | Discovery Report | Local Mitigation Plans | July 2012 | Countywide |
| High Water Marks | Discovery Report, Tabular Data | Effective Flood Insurance Study (FIS) | August 2012 | Countywide |

Table 2. Data Collected for Wayne County

| Data Types | Deliverable/Product | Source | Date of Data Collection | Level |
|-------------------------------|---------------------|--|-------------------------|------------|
| Historical Flooding | Discovery Report | Effective Flood Insurance Study (FIS), Local Mitigation Plans | July 2012 | Countywide |
| Historical Storm Events | Discovery Report | Effective FIS, Local Mitigation Plans | July 2012 | Countywide |
| Individual/Public Assistance | Discovery Report | FEMA's "Public Assistance Subgrantee Summary" | June 2012 | Nationwide |
| Local Data | Discovery Report | Coastal Data Request Form completed by communities | August 2012 | Countywide |
| Letters of Map Change (LOMCs) | Discovery Map | FEMA's Mapping Information Platform | July 2012 | Countywide |
| Meteorological Gages | Discovery Map | National Oceanic and Atmospheric Administration (NOAA) Great Lakes Environmental Research Laboratory | July 2012 | Regionwide |
| Oblique Imagery | Discovery Report | USACE | 2012 | Lakewide |
| Ordinance Status | Discovery Report | Local Community Websites | July 2012 | Countywide |
| Repetitive Loss | Discovery Report | FEMA CIS | July 2012 | Countywide |
| Shoreline Classification | Discovery Map | USACE | July 2012 | Regionwide |
| Stream Gages | Discovery Map | USGS | July 2012 | Countywide |
| Water Level Gages | Discovery Map | NOAA Department of Fisheries and Oceans | July 2012 | Regionwide |
| Wave Gages | Discovery Map | NOAA | July 2012 | Regionwide |

i. Data that can be used for future Coastal Flood Risk Products

During the Discovery process, the project team created a database of available flood hazard and flood risk assessment data. This database not only provides an inventory of available data, but helps identify gaps in the flood hazard data. State, county, and government geographic information system (GIS) websites can provide some of the pertinent data, but local knowledge of flooding and mitigation projects is critical to help accurately determine flood risks and mapping needs. Therefore, local and regional data were also used where available.

I.IV.i.1 Average Annualized Loss (AAL) Data

The Average Annualized Loss (AAL) data provide a general understanding of the dollar losses associated with a certain frequency of flood events within a county and are used to get a relative comparison of flood risk. They are determined by FEMA’s Multi-Hazard Risk Assessment and Loss Estimation Program, otherwise known as Hazus-MH.

Hazus, a free risk assessment software application from FEMA, is the most widely used flood risk assessment tool available. Hazus can run different scenario floods (riverine and coastal) to determine how much damage might occur as a result. Hazus can also be used by community officials to evaluate flood damage that can occur based on new/proposed mitigation projects or future development patterns and practices, and it can run specialized risk assessments, such as what happens when a dam or levee fails.

Hazus-MH includes national datasets that can be supplemented with local data. If local detailed data are available, users may consider using this data to perform more refined Hazus analyses. Hazus-MH is flexible and allows users to update Hazus-MH with local data or use a combination of both local and national. Augmenting the Hazus-MH provided data with local data can improve the accuracy and resolution of analysis results. Additional information about the Hazus-MH process and tool can be found at <http://www.fema.gov/protecting-our-communities/hazus>.

The Hazus-MH analysis used in this report is based on approximate flood boundaries and national datasets. The calculation is based on flood elevation estimates using the 10-meter Digital Elevation Model (DEM) on streams with drainage areas of at least 10 square miles.

The results are shown in Table 3. Information can also be obtained from the report titled FEMA *Hazus AAL Usability Analysis*, dated April 13, 2011 (Federal Emergency Management Agency, 2011). AAL data summarized at the census block level are shown on the draft Discovery Map (Attachment C).

Table 3. Hazus AAL Data for Wayne County

| FIPS Code | County | Total (in thousands of \$) | Building (in thousands of \$) | Content (in thousands of \$) |
|-----------|--------|-------------------------------|----------------------------------|---------------------------------|
| 26163 | Wayne | 2,277,584 | 1,181,963 | 1,054,336 |

Source: FEMA

FIPS = Federal Information Processing Standards

I.IV.i.2 Coastal Recession

Coastal erosion is the recession of land and the removal of beach or dune sediments. It affects all of the beaches and coasts in the world, including those of Lake St. Clair. Important factors in coastal erosion are the types of rock or soil being eroded, the presence or absence of beaches or human-made structures, and how the shore is oriented with

respect to prevailing winds and waves, water levels, climatology, and groundwater and surface drainage.

In Michigan, areas prone to erosion along the shoreline, including Lake St. Clair, are subject to special setback requirements established by the Michigan Department of Environmental Quality (MDEQ). From the MDEQ's website, high risk erosion areas are those shorelands of the Great Lakes and connecting waters where recession of the zone of active erosion has been occurring at a long-term average rate of one foot or more per year. The erosion can be caused from one or several factors, including high water levels, storms, wind, ground water seepage, surface water runoff, and frost. The high risk erosion area regulations require setback distances to protect new structures from erosion for a period of 30 to 60 years, depending on the size, number of living units, and type of construction. Approximately 300 miles of shoreline are classified as high risk erosion area in Michigan. Updates of the recession rate studies, which form the basis of the setbacks, are periodically conducted to reflect changing water levels and shore protection efforts.

For the Lake St. Clair study area, high risk erosion area maps were provided by MDEQ as part of this Discovery process for the Township of Fort Gratiot (part of Lake Huron study) and the City of Port Huron (St. Clair County). The maps depict the high risk erosion areas and show the number, in feet, of the 30-year projected recession distance and 50-year projected recession distance. No high-risk erosion areas were identified along Wayne County shoreline.

Additional information can be found at the MDEQs High Risk Erosion Areas website at http://www.michigan.gov/deq/0,1607,7-135-3313_3677_3700-10860--,00.html.

If users of this Discovery Report have any additional erosion or recession data or photographs that you would like to submit, please contact FEMA Region V Mitigation Division.

I.IV.i.3 Federal Land

Federal lands data were obtained from the National Atlas at <http://nationalatlas.gov/mld/fedlanp.html>. This data is also available from the National Discovery Data Repository located on FEMA's Mapping Information Platform (MIP) at <https://hazards.fema.gov>. The map layer shows those lands owned or administered by the Federal Government, including the Bureau of Land Management, the Bureau of Reclamation, the U.S. Department of Agriculture Forest Service, the Department of Defense, the U.S. Fish and Wildlife Service, the National Park Service, and other agencies. Only areas of 640 acres or more are included.

In the Wayne County project area, no federal lands were identified along the Lake St. Clair Shoreline.

I.IV.i.4 Jurisdictional Boundaries

Wayne County jurisdictional boundaries were obtained from the February 2, 2012 effective FIRM database. The source of that data is the “Michigan Geographic Framework” dataset available through Michigan CGI (Center for Geographic Information) at <http://www.mcgi.state.mi.us/mgdl/>.

I.IV.i.5 Local Data

As part of this Discovery process, communities were asked to fill out a Coastal Data Request Form and provide information on data that they had available at the local level that may be useful during the coastal flood study analysis. The Coastal Data Request Form (Attachment A) included data requests for base map data, coastal data, historic flood data, risk assessment information, mitigation information, and community plans and projects.

In summary, the Cities of Grosse Pointe Woods and Harper Woods provided completed data request forms back to FEMA as of the date of this report. The Southeast Michigan Council of Governments (SEMCOG) also noted they maintain a large set of digital data for the area, including LiDAR, contours, and 2010 building footprints.

On a state-level, Michigan CGI Geographic Data Library Catalog at <http://www.mcgi.state.mi.us/mgdl/> serves as the state’s repository of digital geographic information. Michigan State University Map Library at <http://www2.lib.msu.edu/branches/map/index.jsp> provides coverage of state boundary data, historical county boundary data, elevation data, and environmental data.

Table 4 compiles all the information collected for Wayne County from the Coastal Data Request Forms completed by stakeholders:

I.IV.i.6 Publicly Owned Land

The Michigan CGI Geographic Data Library Catalog at <http://www.mcgi.state.mi.us/mgdl/> currently contains over 60 unique statewide datasets including the state’s base map, aerial imagery, geology, hydrography, land ownership, topography, and much more. Publicly owned lands (national, state, and local parks, forests, etc.) were found in “DNR Land and Mineral Ownership” dataset available through Michigan CGI.

While this dataset indicated there are various parcels scattered throughout the county with DNR mineral and/or land ownership, no publicly-owned lands of a large land mass were found along the shoreline of Wayne County within the study area.

I.IV.i.7 Shoreline Information

A shoreline feature dataset was generated by USACE Detroit District (U.S. Army Corps of Engineers, 2012) using 2012 oblique photographs (see “Topography, Bathymetry, and Oblique Imagery” subsection in this report). The dataset captures shoreline types, land uses, coverage, and vegetation types along the entire Great Lakes shoreline, including Lake St. Clair. The dataset includes identification of “artificial” shoreline, which may be indicative of local coastal flood protection structures. This dataset does not identify the level of protection of any coastal structures, and it does not validate whether or not a coastal structure exists. The current dataset contains data at one-mile spacing. The dataset does not include field-based reconnaissance or sediment/subsurface soil collection. The dataset can be downloaded from <http://www.greatlakescoast.org/> under the “Technical Resources” section.

From this dataset, the approximate shoreline along Wayne County that is covered by this Great Lakes Coastal Flood Study totals 9.4 miles. The shoreline classification information for Wayne County is summarized in Tables 5 through 8, including shoreline types, land uses, coverage, and vegetation types, respectively.

Table 5. Summary of Shoreline Types

| County | Total Shoreline (mile) | Artificial Shoreline (mile) | Boulders, Bedrock (mile) | Cohesive Clays and Silts (mile) | Sand (mile) | Shingles, Pebbles, Cobbles (Mile) |
|-------------------------------|------------------------|-----------------------------|--------------------------|---------------------------------|-------------|-----------------------------------|
| Wayne County (Lake St. Clair) | 9.4 | 9.3 | 0.1 | -- | -- | -- |

Source: USACE 2012, Lake St. Clair Shoreline Classification

Table 6. Summary of Shoreline by Land Use

| County | Total Shoreline (mile) | Commercial/Industrial (mile) | Farm Land (mile) | Forested (mile) | High Density Residential (mile) | Low Density Residential (mile) | Moderate Density Residential (mile) | Park Land (mile) |
|-------------------------------|------------------------|------------------------------|------------------|-----------------|---------------------------------|--------------------------------|-------------------------------------|------------------|
| Wayne County (Lake St. Clair) | 9.4 | -- | -- | -- | 8.7 | -- | 0.6 | 0.1 |

Source: USACE 2012, Lake St. Clair Shoreline Classification

Table 7. Summary of Shoreline Coverage

| County | Total Shoreline (mile) | Bluff 2'-10' (mile) | Coastal Wetland | Dune 2'-10' (mile) | Flat Coast (mile) | High Bluff 10'+ (mile) | High Dune 10'+ (mile) |
|-------------------------------|------------------------|---------------------|-----------------|--------------------|-------------------|------------------------|-----------------------|
| Wayne County (Lake St. Clair) | 9.4 | -- | -- | -- | 9.4 | -- | -- |

Source: USACE 2012, Lake St. Clair Shoreline Classification

Table 8. Summary of Shoreline Vegetation Types

| County | Total Shoreline (mile) | High Density Shrubs/Trees (mile) | Low Density Shrubs/Trees (mile) | Manicured Lawn (mile) | Moderate Density Shrubs/Trees (mile) | None (mile) | Unmaintained Non-Woody Vegetation (mile) |
|-------------------------------|------------------------|----------------------------------|---------------------------------|-----------------------|--------------------------------------|-------------|--|
| Wayne County (Lake St. Clair) | 9.4 | -- | -- | 9.3 | 0.1 | -- | -- |

Source: USACE 2012, Lake St. Clair Shoreline Classification

I.IV.i.8 Stream Lines/Hydrograph

Stream lines and water areas for Wayne County were acquired from the February 2, 2012 effective FIRM database for Wayne County. The source of that data is the National Hydrography Dataset (NHD) available through USGS at <http://nhd.usgs.gov>. The NHD is a digital vector dataset used by GIS. It contains features such as lakes, ponds, streams, rivers, canals, dams and stream gages. The datasets are designed to be used in general mapping and in the analysis of surface-water systems.

I.IV.i.9 Topography, Bathymetry, and Oblique Imagery

New Data Collected for Great Lakes Coastal Flood Study:

As part of the GLCFS, Light Detection and Ranging (LiDAR) was collected to develop topographic and bathymetric data along the Lake St. Clair shoreline. Topography is the configuration of natural and man-made features of a surface area and their relative position and elevations. Bathymetry is the underwater equivalent to topography.

LiDAR is an optical remote sensing technology that can measure the distance to, or other properties of, a target by illuminating the target with light, often using pulses from a laser. A narrow laser beam can be used to map physical features with very high resolution. Downward-looking LIDAR instruments fitted to aircraft and satellites are used for surveying and mapping. LiDAR can be used to create DTM (Digital Terrain Models) and DEM (Digital Elevation Models), which is a digital model or 3-dimensional representation of the terrain's surface.

The LIDAR data for this study was collected within a 1500 meter buffer (500 meters inland and 1000 meters seaward of the land/water interface). Where water clarity permitted, data was collected to cover all federal navigation projects. Flight lines were

flown along the channel alignment to ensure the best possible coverage of inlets and structures.

For quality control purposes, one cross line was used every 25 miles along shore or more frequently to ensure 90% of all planned lines within the area were crossed by a cross line. In areas of the coast where natural or artificial barriers prevent aircraft operations, the cross line(s) were collected at the nearest possible location to the required interval, but no closer than five (5) miles to an adjacent planned cross line. Overlapping lines and datasets were compared to each other and to cross lines and the differences calculated.

At the time this report was generated, the quality control process was not yet completed on the LiDAR dataset. However, as part of that process, the vertical difference between the LiDAR and ground truth data will be calculated. Ground truth refers to a process in which a pixel on a satellite image is compared to what is there in reality. This is especially important in order to relate LiDAR data to real features and materials on the ground. The collection of ground truth data enables calibration of the LiDAR data, and aids in the interpretation and analysis of what is being sensed. Using this process, all systematic errors will be identified and eliminated and remaining errors should have a normal distribution. Differences between a DEM created from the LiDAR data representing bare ground and the ground truth data will be unbiased and within +/-15 cm (RMSE³) in flat terrain and within +/-30 cm (RMSE) in hilly terrain. Horizontal positions will be accurate to +/- 1.5m (RMSE). Data will be processed to 2ft contours.

The processing of the bathymetric data for this study will be performed based on the strongest return of each LiDAR pulse, assuming this depth represents the bottom. Data will be processed to produce bottom reflectance data from the LiDAR data.

As of the date of this report, the LiDAR data is expected to become available in the spring of 2013 for this study area. There is a delay in the schedule to collect new bathymetric data; therefore, existing bathymetric data may be used for the transect-based coastal flood hazard analysis. Existing high-resolution bathymetric and topographic data is currently available at <http://csc.noaa.gov>.

As part of the GLCFS, USACE collected oblique imagery for the entire Great Lakes coastline in 2012. Oblique imagery is captured at an angle, as compared to an overhead view provided by orthophotos, and allows users a 3-dimensional view of landscape, buildings, and other features. This dataset may be useful to communities during emergency response, planning, and identification of shoreline types and obstructions; and management of assets, critical facilities, and public properties along the Lake St. Clair shoreline. The oblique imagery is current available via a web-based browser at <http://greatlakes.usace.army.mil/>.

³ Root-mean-square-error is a measure of the differences between values predicted by a model or an estimator and the values actually observed.

Other Data Available:

The NOAA Coastal Services Center, Digital Coast, hosts a variety of digital coastal data, including bathymetric and topographic data, and is located at <http://www.csc.noaa.gov/digitalcoast>.

A compilation of State and local-level topographic and bathymetric data available in Wayne County is listed below:

- SEMCOG Aerial Imagery Collection:

<http://www.semcog.org/Aerials.aspx>

SEMCOG was awarded an ARRA (American Recovery and Reinvestment Act) grant to acquire LiDAR data at 1.5-meter average post spacing for the Livingston, Macomb, Monroe, and St. Clair Counties in Spring 2010. The base resolution for the seven county region is one-foot pixel resolution. In addition, 2009 LiDAR was captured for Washtenaw and Wayne Counties.

LiDAR Acquisition information is listed by county at

http://www.semcog.org/uploadedFiles/Data_and_Maps/Aerials/2010productcontacts.pdf

- Michigan Department of Technology, Management & Budget (DTMB):

<http://www.mcgi.state.mi.us/mgdl/?action=thm>

DTMB lists various data including Digital Elevation Models (DEMs), Digital Raster Graphics (DRGs), Great Lakes Bathymetric Contours, Great Lakes Bathymetry, and Topo Quad Boundaries.

I.IV.i.10 Transportation

The Bing Map service has been used as a basemap layer on the Discovery Map, and includes a transportation layer. For more information on Bing Map services and how they can be used in GIS, please visit <http://www.arcgis.com/home> and search for “Bing Maps”.

In addition, transportation data was obtained from the Wayne County February 2, 2012 effective FIRM database. The source of that data is the “Michigan Geographic Framework” dataset available through Michigan CGI (Center for Geographic Information) at <http://www.mcgi.state.mi.us/mgdl/>.

I.IV.i.11 Watershed Boundaries

U.S. Geological Survey (USGS) Hydrologic Unit Code 8 (HUC8) watershed boundaries were obtained from the National Atlas 2011 “Raw Data Download” (<http://nationalatlas.gov/atlasftp.html>).

Wayne County contains portions of five HUC-8 watersheds: Lake St. Clair (04090002), Clinton (04090003), Detroit (04090004), Huron (04090005), and Ottawa-Stony (04100001).

ii. Other Data and Information

Wayne County is located in the southeastern portion of the lower peninsula of Michigan and encompasses the City of Detroit. It is bordered on the north by Oakland and Macomb Counties; on the east by Lake St. Clair, the Detroit River, and Lake Erie; on the south by Monroe County; and on the west by Washtenaw County.

The 2010 census population of Wayne County was reported to be 1,820,584, a decrease from the 2000 population of 2,061,162 (U.S. Census Bureau, 2010).

As is the case for most of Michigan, the climate of Wayne County is affected by the moderating influence of the Great Lakes. The heat storage capacity of the lakes tends to delay seasonal changes and lessen climatic extremes. Lake breezes can lower daily maximum temperatures by as much as 15 °F relative to the areas not under their influence. The large urban industrial area of the county also affects the climate by creating an urban "heat island". The difference in minimum temperatures between urban and rural areas can exceed 10 °F under extreme conditions (U.S. Department of Agriculture, Soil Conservation Service, November 1977).

On average, the warmest month is July, with an average maximum temperature varying only slightly: 83.4 °F at Detroit Metro, 84.5 degrees F at Detroit City, 85.7 °F at Dearborn, and 83.3 °F at Grosse Point Farms. The lowest average daily minimum temperature occurs in January and ranges from 17.8 °F at Detroit Metro and 16.1 °F at Dearborn in the west to 19.8 °F at Detroit City and 18.8 °F at Grosse Point Farms in the east. The average total annual precipitation is approximately 33 inches, with a majority of this occurring in the summer months. Average annual snowfall varies from about 28 inches in the eastern portion of the county to 43.5 inches in the western portion of the county (Midwestern Climate Center, 1961-2000).

Wayne County is drained by the tributaries of four major river systems. River Rouge drains over one-third of the county, including most of the northern half, and empties into the Detroit River. A small portion of northeastern Wayne County is drained by the Clinton River watershed. Several small tributaries in this area drain directly into Lake St. Clair and the Detroit River. A small portion of the southern half of the county is drained by the Huron River before, which empties into Lake Erie. The remaining portion of the southern half is drained by several tributaries to the Detroit River and Lake Erie. The largest of these tributaries is Ecorse Creek.

A layer of glacial drift ranging in thickness from a few feet to as much as 330 feet overlies the bedrock in Wayne County. These deposits cover all of the Detroit area except for a

small outcrop of bedrock in the southeastern part. The glacial deposits are thinnest near the mouth of the Detroit River and, in general, thicken gradually toward the west and more rapidly toward the northwest. Most of the county lays on an old, relatively flat glacial lake plain. A series of sand and gravel ridges, some as high as 25 to 30 feet, rest on the clay plain. These hills and ridges formed as beaches, terraces, and river deltas during the closing part of the glacial epoch. The northwest corner of the county is part of the down slope of the Irish Hills area, a glacial end moraine located to the west and northwest of the county which rises to a relative height of 500 to 600 feet above the level of the Detroit River and Lake Erie at the eastern boundary (U.S. Department of Agriculture, Soil Conservation Service, November 1977).

I.IV.ii.1 Coastal Barrier Resources Systems

Coastal barriers are unique land forms that protect distinct aquatic habitats and serve as the mainland's first line of defense against damage from coastal storms and erosion. The Coastal Barrier Resources System (CBRS) defines a coastal barrier as a landform composed of unconsolidated shifting sand or other sedimentary material that is generally long and narrow and entirely or almost entirely surrounded by water. They are sufficiently above normal tides so that they usually have dunes and terrestrial vegetation. The CBRS boundaries were downloaded from U.S. Fish and Wildlife Service http://www.fws.gov/CBRA/Maps/Data_Disclaimer_Shapefiles.html and are dated June 15, 2010.

There are no designated units of the coastal barriers along the Lake St. Clair shoreline, including this Wayne County study area.

I.IV.ii.2 Coastal Flood Protection Measures

Coastal structures along Lake St. Clair will be reviewed in more detail during the engineering analysis portion of the Lake Clair study and were not analyzed as part of this Discovery process. A summary of information collected regarding existing coastal structures and flood protection measures is described below.

Much of the shoreline along Lake St. Clair does have steel, concrete, and wood seawalls and breakwaters to protect from flooding and erosion. However, most of these protective works have been inadequate and easily topped by flood waters. During 1972 and 1973, the USACE took emergency measures with Operation Foresight. This program was a cooperative effort between Federal, State, and local governments. With the help of the USACE, most of the shore and canal properties were protected by dikes of sandbags and cribbing under cooperation of residents and volunteers. In Wayne County, these protection measures consisted of earthen dikes and sand or rock filled cribs in Charter Township of Brownstown and the Cities of Detroit, Ecorse, Gibraltar, Grosse Ile, Grosse Point, and Grosse Point Park (U.S. Army Corps of Engineers, 1974)

The design for Operation Foresight was for a temporary measure and the dikes and other structures have since been partially removed by home owners. The protection measures were constructed to meet immediate flood threats and were never considered to be

permanent. Earth-filled dikes may provide protection from wave action and spray, however, when they are breached or overtopped, they tend to entrap water behind the wall and do not permit drainage back into the Lake (U.S. Army Corps of Engineers, 1974).

In 1985, as part of the USACE Advance Measures initiative, additional clay dikes and sand filled cribs were constructed in the Charter Township of Brownstown (Wayne County). In response to flooding in 1985 and 1986, the City of Detroit (Wayne County) made substantial modifications to sheet piling in the vicinity of Fox Creek in the late 1980s. Numerous residential, commercial, and industrial areas along the shore have employed flood protection measures such as the filling of lower areas or the installation of sheet piling for bank stabilization and shore protection (U.S. Army Corps of Engineers, 1974).

USACE maintains a large infrastructure of over 900 coastal structures in the United States. These coastal structures protect harbors and shore-based infrastructure, provide beach and shoreline stability control, provide flood protection to varying degrees, and protect coastal communities, roadways and bridges, etc. These maintained coastal structures include seawalls, bulkheads, revetments, dikes and levees, breakwaters, groins, sills/perched beaches, and jetties and piers.

Coastal structure data for Wayne County along Lake St. Clair was extracted from the Enterprise Coastal Inventory Database from the Engineer Research and Development Center (ERDC) through USACE. Table 9 lists the coastal structures found along Wayne County shoreline that are maintained by USACE.

Table 9. USACE Coastal Inventory Database

| USACE Office | Coastal Structure Name | State | Completion Date | Type | Length (m) | Length (ft) |
|--------------|--------------------------|-------|-----------------|-------------|------------|-------------|
| Detroit | Clinton River Breakwater | MI | 1966 | Laid Stone | 4263.7 | 1400 |
| Detroit | Clinton River Earth-Fill | MI | 1966 | Rock Rubble | 1127.8 | 3700 |

USACE has recently performed condition assessments to obtain average overall condition of each structure. The Clinton River structures have been given a “B” rating, which indicates low risk of failure.

FEMA’s Midterm Levee Inventory (MLI) project compiled a database of structures that were designed to provide at least the minimum level of protection from the base flood level (1- percent-annual-chance flood). For this Discovery process, the November 2011 MLI Status Report published by FEMA was reviewed. The MLI Levee database shows a levee segment along the Lake St. Claire shoreline in Gross Pointe Park. The February 2, 2012 effective FIRM for Wayne County depict this levee as providing protection from the 1- percent-annual-chance flood event per a Provisionally Accredited Levee (PAL) agreement. As of the date of this report, the PAL agreement has expired and thus the area designated as PAL behind the levee system, and mapped as a Zone X (shaded), is currently under

review regarding the extent to which the levee provides protection from the 1-percent-annual-chance flood. Additional information on PALs can be found by visiting <http://www.fema.gov/library/viewRecord.do?id=1987> . The regulatory requirements of the NFIP that apply to the evaluation and mapping of levee systems and levee-impacted areas are cited at Title 44, Chapter 1, Section 65.10 of the Code of Federal Regulations. Interested parties may access Section 65.10 of the NFIP regulations through the FEMA website at <http://www.fema.gov/library/viewRecord.do?id=2741> .

I.IV.ii.3 Community Assisted Visits

Statewide Community Assistance Visits (CAVs) are part of the evaluation and review process used by FEMA and local officials to ensure that each community adequately enforces local floodplain management regulations to remain in compliance with NFIP requirements. Generally, a CAV consists of a tour of the floodplain, an inspection of community permit files, and meetings with local appointed and elected officials. During a CAV, observations and investigations focus on identifying issues in various areas, such as the community’s floodplain management regulations (ordinance), community administration and enforcement procedures, engineering or other issues within the FIRMs, other problems in the community’s floodplain management, and problems with the biennial report data. Any administrative problems or potential violations identified during a CAV are documented in the CAV findings report. The community is notified and given the opportunity to correct those administrative procedures and remedy the violations to the maximum extent possible within established deadlines.

The summary of CAV visits were extracted from FEMA’s Community Information System (CIS) at <https://portal.fema.gov> in July 2012. Table 10 shows the most recent CAV date by community in this project area.

Table 10. Summary of Community Assisted Visits

| Community | CID | CAV Date |
|----------------------------------|--------|-----------|
| Detroit, City of | 260222 | 7/19/1999 |
| Grosse Pointe Farms, City of | 260229 | -- |
| Grosse Pointe Park, City of | 260230 | -- |
| Grosse Pointe Shores, Village of | 260250 | -- |
| Grosse Pointe Woods, City of* | 260231 | N/A |
| Grosse Pointe, City of | 260228 | -- |
| Harper Woods, City of* | 260214 | N/A |

CAV = Community Assisted Visit

*No Special Flood Hazard Areas Identified

I.IV.ii.4 Community Rating System

The Community Rating System (CRS) is a voluntary incentive program to provide flood Insurance premium discounts to NFIP-participating communities that take extra measures to manage floodplains above the minimum requirements. A point system is used to

determine a CRS rating. The more measures a community takes to minimize or eliminate exposure to floods, the more CRS points are awarded and the higher the discount on flood insurance premiums. The list of CRS communities is available on FEMA's Website site at <http://www.fema.gov/library/viewRecord.do?id=3629>, which was accessed in July 2012.

No communities along the Lake St. Clair shoreline in Wayne County currently participate in the CRS program.

I.IV.ii.5 Comprehensive Plans

A comprehensive plan is a land use document providing framework and policy direction for land use decisions. Comprehensive plans usually include chapters detailing policy direction affecting land use, transportation, housing capital facilities, utilities, coastal and rural areas. Comprehensive plans identify where and how growth needs will be met.

The City of Grosse Pointe Woods noted in their coastal data request form that they have a master plan in place. This can be found at http://www.ci.grosse-pointe-woods.mi.us/Docs/Publications/Master_Plan/GPWMasterPlan.pdf. The plan discusses the community profile, background studies, future land use plans, and implementation.

No additional comprehensive plans were identified or provided during this Discovery process for the individual communities along the Lake St. Clair shoreline in Wayne County.

I.IV.ii.6 Coordinated Needs Management Strategy (CNMS) and NFIP Mapping Needs

During FEMA's Flood Map Modernization program from 2003 to 2008, FEMA adhered to Procedure Memorandum No. 56 which states that, "Section 575 of the National Flood Insurance Program Reform Act of 1994 mandates that at least once every five years FEMA assess the need to review and update all floodplain areas and flood risk zones identified, delineated, or established under Section 1360 of the National Flood Insurance Act, as amended." This requirement was fulfilled through the Mapping Needs Assessment process. Other mechanisms such as the Mapping Needs Update Support System (MNUSS) and scoping reports were used to capture information describing conditions on the FIRMs and the potential for a map update.

FEMA's Coordinated Needs Management Strategy (CNMS) was initiated through FEMA's Risk MAP program in 2009 to update the way FEMA organizes, stores, and analyzes flood hazard mapping needs information for communities. CNMS defines an approach and structure for the identification and management of flood hazard mapping needs that provides support to data-driven planning and the flood map update investment process in a geospatial environment. The goal is to identify areas where existing flood maps are not up to FEMA's mapping standards. More information about the CNMS can be found at <http://www.fema.gov/library/viewRecord.do?id=4628>.

There are three classifications within the CNMS: “Valid,” “Unverified,” and “Unknown.” New and updated studies (those with new hydrologic and hydraulic models) performed during FEMA’s Map Modernization program were automatically determined to be “Valid” and the remaining studies went through a 17-element validation process with 7 critical and 10 secondary elements. Validation elements apply physical, climatological, and environmental factors to stream studies to determine validity. A stream study has to pass all of the critical elements and at least seven secondary elements to be classified as “Valid.” The remaining streams are classified as “Unverified” or “Unknown”. Studies for which flood hazard data are identified as having critical or significant secondary change characteristics are classified as “Unverified.” Streams with a status of “Unknown” are those that have a study underway, will be evaluated in the future, or do not have sufficient information to determine whether they are “Valid” or “Unverified” (Federal Emergency Management Agency, 2010).

Table 11 below summarizes the draft results of the validation analysis obtained from CNMS in June 2012. CNMS only captures riverine studies at this time.

Table 11. CNMS Status for Wayne County

| County | FIPS | Unknown (stream miles) | Unverified (stream miles) | Valid (stream miles) | Total (stream miles) |
|--------|-------|------------------------|---------------------------|----------------------|----------------------|
| Wayne | 26099 | 6 | 85 | 282 | 373 |

I.IV.ii.7 Critical Facilities

Critical facilities are the facilities that can impact the delivery of vital services, cause greater damages to other sectors of a community, or put special populations at risk. Hospitals, roads, schools, and shelters are all examples of critical facilities that play a central role in disaster response and recovery. Understanding which facilities are exposed, and the degree of that exposure, can help reduce or eliminate service interruptions and costly redevelopment. Incorporating this information into development planning helps communities get back on their feet faster. In Wayne County, 2-percent of critical facilities and 2-percent of road miles (or 229 miles) are within a floodplain (National Oceanic & Atmospheric Administration, 2009).

Location of critical facilities within a county or community can be viewed from the NOAA Coastal Services Center, Critical Facilities Flood Exposure Tool at <http://www.csc.noaa.gov/criticalfacilities/>

The assessment of the flood risk posed to critical facilities is an important aspect of a hazard mitigation plan. Information on critical features can be found in the Wayne County Hazard Mitigation Plan, but were not compiled as part of this report.

I.IV.ii.8 Critically Eroded Beaches and Beach Nourishment/Dune Replacement Projects

According to the Critical Dune Area Maps maintained by MDEQ at http://www.michigan.gov/deq/0,4561,7-135-3311_4114_4236-70207--,00.html (accessed July 2012), there are no critical dune areas along Lake St. Clair.

Critically eroded beaches and beach nourishment/dune replacement projects were not identified in Wayne County during this Discovery process.

I.IV.ii.9 Dams

The National Inventory of Dams (NID) is a congressionally authorized database that documents dams in the United States and its territories. The current NID, published in 2010, includes information on 84,000 dams that are more than 25 feet high, hold more than 50 acre-feet of water, or are considered a significant hazard if they fail. The NID is maintained and published by the USACE, in cooperation with the Association of State Dam Safety Officials, the States and territories, and Federal dam-regulating agencies. The database contains information about the dams' locations, sizes, purposes, types, last inspections, regulatory facts, and other technical data. The information contained in the NID is updated approximately every 2 years. The NID is available at the USACE Website <https://nid.usace.army.mil/>.

The NID shows there are 11 dams in Wayne County. There are eight (8) dams that have been identified as high and significant hazard dams in Wayne County. Seven of them have high hazard classification, which indicates loss of human life is likely if the dam fails. The Maybury Fish Pond Dam is a significant hazard classification, which indicates possible loss of human life and likely significant property or environmental destruction. Table 12 lists the high and significant hazard dams. No dams were identified near the Lake St. Clair shoreline area.

Table 12. High and Significant Hazard Dams

| Name | Hazard | Height (ft) |
|-----------------------|-------------|-------------|
| Nankin Mill Dam | High | 17 |
| Newburgh Dam | High | 29 |
| Phoenix Dam | High | 24 |
| Wilcox Dam | High | 27 |
| Waterford Dam | High | 22 |
| Flat Rock Dam | High | 16.5 |
| French Landing Dam | High | 35 |
| Maybury Fish Pond Dam | Significant | 18.5 |

I.IV.ii.10 Declared Disasters

The FEMA Disaster Declarations Summary is a summarized dataset describing all federally declared disasters. This information begins with the first disaster declaration in 1953 and features all three disaster declaration types: major disaster, emergency, and fire management assistance. The dataset includes declared recovery programs and geographic areas (County data not available before 1964; fire management records are considered partial because of the historical nature of the dataset).

The list of FEMA’s disaster declarations is available at <http://www.fema.gov/data-feeds> and also by county through <https://explore.data.gov/Other/FEMA-Disaster-Declarations-Summary/uihf-be6u>. Table 13 lists the major disaster declarations that have been declared in all of Wayne County.

Table 13. Declared Disasters in Wayne County

| Declared County/Area | Disaster Number | Declaration Date | Incident Type | Description |
|----------------------|-----------------|------------------|-----------------|--|
| Wayne (County) | 363 | 12/1/1972 | Flood | Severe storms & flooding |
| Wayne (County) | 371 | 4/12/1973 | Flood | Severe storms & flooding |
| Wayne (County) | 495 | 3/19/1976 | Severe Storm(s) | Severe storms, tornadoes, icing & flooding |
| Wayne (County) | 631 | 9/8/1980 | Flood | Severe storms & flooding |
| Wayne (County) | 1181 | 7/11/1997 | Severe Storm(s) | Severe storms, tornadoes, and flooding |
| Wayne (County) | 1237 | 8/5/1998 | Severe Storm(s) | Severe storms and high winds |
| Wayne (County) | 1346 | 10/17/2000 | Severe Storm(s) | Severe storms and flooding |
| Wayne (County) | 1527 | 6/30/2004 | Severe Storm(s) | Severe storms, tornadoes, and flooding |
| Wayne (County) | 3057 | 1/27/1978 | Snow | Blizzards & snowstorms |
| Wayne (County) | 3137 | 1/27/1999 | Snow | Mi - severe weather 1/2 /99 |
| Wayne (County) | 3189 | 9/23/2003 | Other | Power outage |
| Wayne (County) | 3225 | 9/7/2005 | Hurricane | Hurricane katrina evacuation* |

*Refers to the federal disaster aid that was made available to Michigan to supplement its efforts to assist evacuees from areas struck by Hurricane Katrina.

I.IV.ii.11 Flood Insurance Policies

A community’s agreement to adopt and enforce floodplain management ordinances, particularly with respect to new construction, is an important element in making flood insurance available to home and business owners. For this Discovery process, data on flood insurance policies were also gathered.

Table 14 summarizes the number of insurance policies, their premiums, the total coverage, the number of claims, and dollar amounts of paid losses in the coastal communities of

Wayne County. The data were based on Community Summary Reports that were extracted from FEMA’s CIS website (<https://portal.fema.gov/>) in July 2012.

Table 14. Summary of Flood Insurance Policies and Claims

| Community | CID | Number of Policies | Total Premium | Total Coverage | Number of claims since 1978 | Dollar(\$) paid for claims since 1978 |
|----------------------------------|--------|--------------------|---------------|----------------|-----------------------------|---------------------------------------|
| Detroit, City of | 260222 | 530 | \$ 156,111 | \$ 91,778,200 | 190 | \$ 328,557 |
| Grosse Pointe Farms, City of | 260229 | 10 | \$ 9,993 | \$ 2,485,000 | 1 | \$ 0 |
| Grosse Pointe Park, City of | 260230 | 11 | \$ 6,579 | \$ 3,103,200 | 33 | \$ 42,612 |
| Grosse Pointe Shores, Village of | 260250 | 5 | \$ 16,705 | \$ 2,300,000 | 4 | \$ 5,122 |
| Grosse Pointe Woods, City of | 260231 | 4 | \$ 1,319 | \$ 938,000 | 4 | \$ 1,229 |
| Grosse Pointe, City of | 260228 | 4 | \$ 3,266 | \$ 1,300,000 | 7 | \$ 6,303 |
| Harper Woods, City of* | 260214 | N/A | N/A | N/A | N/A | N/A |

*community currently not participating in the NFIP
CID = Community Identification

I.IV.ii.12 Gage Data

The NOAA Coastal Services Center, Digital Coast, hosts a variety of digital coastal data, including gage data, and is located at <http://www.csc.noaa.gov/digitalcoast> .

Meteorological Stations

The National Data Buoy Center (NDBC) is a part of the NOAA National Weather Service (NWS). NDBC designs, develops, operates, and maintains a network of data collecting buoys and coastal stations. NDBC provides hourly observations from a network of about 90 buoys and 60 Coastal Marine Automated Network (C-MAN) stations to help meet these needs. All stations measure wind speed, direction, and gust; atmospheric pressure; and air temperature. Water level is measured at selected stations. The historical and current data are available at the NDBC website <http://www.ndbc.noaa.gov/>. No meteorological stations were found from NDBC for Wayne County.

In addition, the Great Lakes Environmental Research Laboratory is a part of NOAA focused on the Great Lakes. It maintains multiple datasets, including a collection of meteorological data for both the United States and Canada. The datasets can be found online at <http://www.glerl.noaa.gov> .

Stream Gages

The USGS National Water Information System Web Interface <http://waterdata.usgs.gov/nwis> (accessed July 2012) provides real-time data for any given

stream gage location. Table 15 shows the gage identification numbers and locations for the gages in all of Wayne County. All USGS stream gage locations are shown on the Discovery Map.

Table 15. Stream Gage Stations for Wayne County

| Gage ID | Begin Date | End Date | Gage Location |
|----------|------------|------------|---|
| 04165700 | 1976/10/01 | 1977/09/30 | Detroit River at Detroit, MI |
| 04166470 | 1997/10/01 | 2000/09/30 | Upper River Rouge at Detroit, MI |
| 04166500 | 1930/10/01 | 2000/09/30 | River Rouge at Detroit, MI |
| 04167000 | 1930/10/01 | 2000/09/30 | Middle River Rouge near Garden City, MI |
| 04167150 | 1997/10/01 | 2000/09/30 | Middle River Rouge at Dearborn Heights, MI |
| 04168000 | 1947/06/01 | 2000/09/30 | Lower River Rouge at Inkster, MI |
| 04168400 | 1997/10/01 | 2000/09/30 | Lower River Rouge at Dearborn, MI |
| 04168500 | 1930/10/01 | 1933/09/30 | Lower R Rouge at S Brady Rd at Dearborn, MI |
| 04174950 | 1986/04/01 | 1997/09/30 | Willow Run near Rawsonville, MI |

Water Level Station

NOAA’s Center for Operational Oceanographic Products and Services (CO-OPS) maintains several water level stations along Lake St. Clair. CO-OPS’ primary motivation is the collection and dissemination of high quality and accurate measurements of lake level for scientific studies.

Great Lakes water levels constitute one of the longest high quality hydrometeorological data sets in North America with reference gage records beginning about 1860 with sporadic records back to the early 1800's.

Table 16 lists the water level stations along Lake St. Clair. Windmill Point is located in Wayne County.

Table 16. Water Level Stations

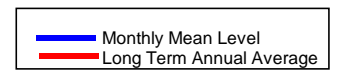
| Station Number | Station | Latitude | Longitude | Hourly Records | 6-minute Records |
|----------------|----------------------|-------------|-------------|-----------------|------------------|
| 9014070 | Algonac, MI | 42° 37.2' N | 82° 31.6' W | 1/1975 – 1/2010 | 1/1996 – 2010 |
| 9034052 | St. Clair Shores, MI | 42° 28.3' N | 82° 52.3' W | 1/1975 – 1/2010 | 1/1996 – 2010 |
| 9044036 | Fort Wayne, MI | 42° 17.9' N | 83° 50.5' W | 1/1975 – 1/2010 | 1/1996 – 2010 |
| 9044049 | Windmill Point, MI | 42° 21.4' N | 82° 55.8' W | 1/1975 – 1/2010 | 1/1999 – 2010 |

The station information and water level data are available at NOAA CO-OPS Website: http://tidesandcurrents.noaa.gov/station_retrieve.shtml?type=Great Lakes Water Level Data&state=St.+Clair+River&id1=841.

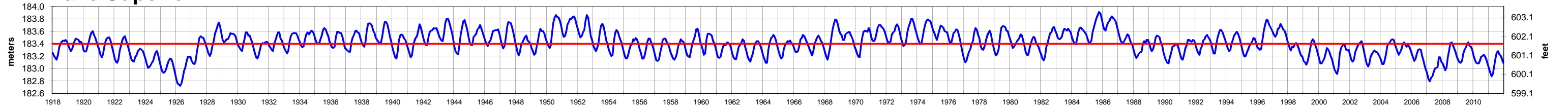
The monthly high and low water level data from the year 1918 to 2011 at Lake St. Clair are available at the USACE website:
<http://www.lre.usace.army.mil/greatlakes/hh/greatlakeswaterlevels/>. Figure 2 (on the next page) is USACE's graphic that shows Historic Great Lakes Water Levels from 1918 to 2011 (U.S. Army Corps of Engineers, 2012).



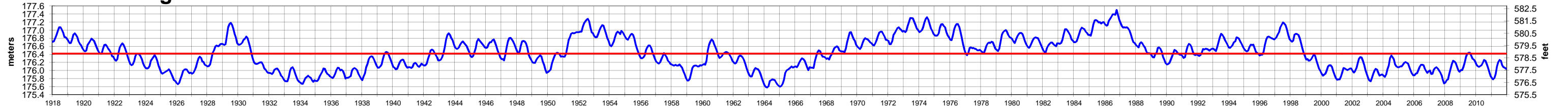
Great Lakes Water Levels (1918-2011)



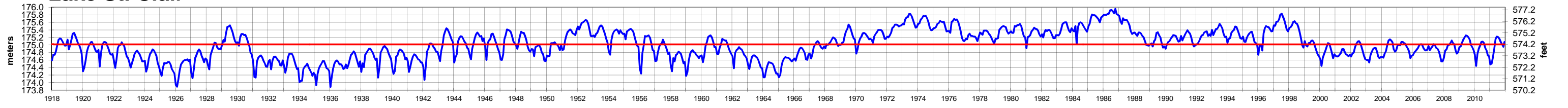
Lake Superior



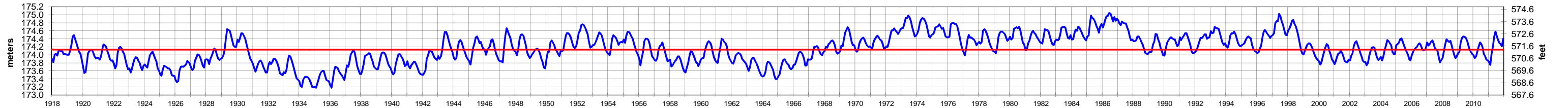
Lake Michigan-Huron



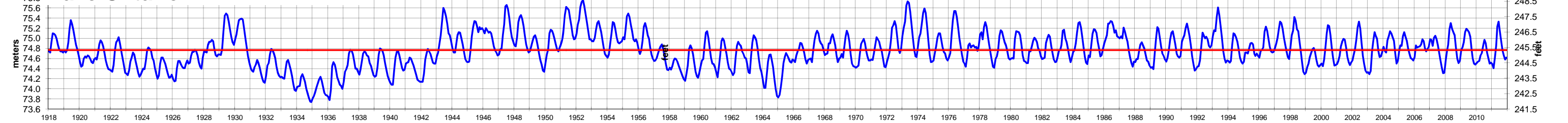
Lake St. Clair



Lake Erie



Lake Ontario



The monthly average levels are based on a network of water level gages located around the lakes.

Elevations are referenced to the International Great Lakes Datum (1985).

The Great Lakes Water Levels Report provides daily mean water levels of Lake St. Clair for the past three months. The data are available at the USACE website: <http://www.lre.usace.army.mil/greatlakes/hh/greatlakeswaterlevels/currentconditions/greatlakeswaterlevels/>.

Wave Gage/Buoy Stations

The NDBC is a part of the NOAA National Weather Service (NWS). NDBC designs, develops, operates, and maintains a network of data collecting buoys and coastal stations. NDBC provides hourly observations from a network of about 90 buoys and 60 C-MAN stations to help meet these needs. In addition to standard meteorological observation, all buoy stations, and some C MAN stations, measure sea surface temperature and wave height and period. Conductivity and water current are measured at selected stations. The historical and current data are available at NDBC website <http://www.ndbc.noaa.gov/> .

No stations were found within the Wayne County study area.

I.IV.ii.13 Hazard Mitigation Plans

Hazard mitigation plans are prepared to assist communities to reduce their risk to natural hazard events. The plans are used to develop strategies for risk reduction and to serve as a guide for all mitigation activities in the given county or community.

A local hazard mitigation plan is a long-term strategic/guidance document used by an entity to reduce future risk to life, property, and the economy in a community. A hazard mitigation plan has the following elements:

- A public participation process for bringing together diverse stakeholders in the jurisdiction(s) to provide an array of input into the plan
- A risk assessment to identify the hazards, determine the people and property subject to those hazards, and estimate vulnerability
- A mitigation strategy that contains goals, objectives, and an action plan to implement priority mitigation actions that reduce risk
- A maintenance process to ensure the plan is reviewed and updated
- An adoption requirement to ensure the support from participating jurisdictions

Local mitigation plans are required to be updated every 5 years to maintain eligibility for FEMA Hazard Mitigation Assistance (HMA) grant programs. The status of current hazard mitigation plans is shown in the Table 17. The data was obtained from FEMA’s Plan Approval Status Report based on Regional reports for the end of June 2012 (Federal Emergency Management Agency, May 2012).

Table 17. Hazard Mitigation Plan Status

| Jurisdiction | Approval date | Expiration date |
|-----------------|---------------|-----------------|
| Wayne County | 6/22/2007 | 6/22/2012 |
| City of Detroit | 3/22/2007 | 3/22/2012 |

During the Discovery process, stakeholders noted that the hazard mitigation plan for the City of Detroit had recently expired and the City had obtained planning grant funding for plan updates. The update process is currently underway. Wayne County hazard mitigation plan also recently expired and the status of updating that plan is unknown as of the date of this report.

I.IV.ii.14 Hazard Mitigation Grant Program

After a major disaster declaration, the Hazard Mitigation Grant Program (HMGP) provides grants to states and local governments to implement long-term hazard mitigation measures. The purpose of the HMGP is to reduce the loss of life and property due to natural disasters and to enable mitigation measures to be implemented during the immediate recovery from a disaster.

A variety of hazard mitigation projects have been submitted to FEMA's HMGP. A list of projects that have been closed, approved, withdrawn, or denied in Wayne County is included in Attachment F. A summary of HMGP projects can also be downloaded from <https://explore.data.gov/catalog/raw>.

I.IV.ii.15 Historical Flooding & High Water Marks

The information below has been compiled from FEMA's effective *Flood Insurance Study, Wayne County, Michigan*, dated 2012.

For the portion of Wayne County that borders the Detroit River, Lake Erie, and Lake St. Clair, a combination of high lake and river levels along with easterly winds produces conditions favorable for flooding. Historically, the most damaging floods have occurred as a result of this combination. Severe flooding occurred along this shoreline in 1954, 1973, 1985, and 1986 (U.S. Army Corps of Engineers, 1989; U.S. Army Corps of Engineers, 1974). Storms on March 31, 1985, and April 4 and 6, 1985, along with high easterly and northeasterly winds, drove the already high waters of Lake Erie and Lake St. Clair on shore, inundating several communities along the shoreline. This included portions of the Charter Township of Brownstown; the Cities of Ecorse, Gibraltar, Grosse Pointe, and Grosse Pointe Park; the Township of Grosse Ile; and the extreme northeastern portion of the City of Detroit (Federal Emergency Management Agency, 2012).

Some of the worst recorded flooding damage occurred in 1985 when water flowed through gaps in dikes that had been built by the USACE under Operation Foresight in 1973 and 1974. In many locations, these dikes had been lowered or removed by individual residents in the late 1970s to facilitate access to Lake Erie. The storms on March 31, 1985, and April 4 and 6, 1985, collectively caused about \$2 million in damages in Wayne County, with approximately 1,300 homes reporting flood damages (U.S. Army Corps of Engineers, 1989)

No high water mark data was found within Wayne County for Lake St. Clair. If local stakeholders have available high water mark data or historic photographs, they are encouraged to submit them to FEMA Region V Mitigation Division.

I.IV.ii.16 Land Use

Although large parts of Wayne County are industrial and urban, much of the western half of the county is still undeveloped. The City of Detroit is one of the largest industrial centers in the Midwest and is the headquarters for the U.S. auto industry. The predominate land use in Wayne County is residential, which accounts for approximately 45 percent of the land area. Commercial/industrial land use accounts for approximately 17 percent (Southeast Michigan Council of Governments, 2011).

I.IV.ii.17 Letters of Map Change

A Letter of Map Change (LOMC) is a letter that reflects an official revision to an effective NFIP map. LOMCs are issued in place of the physical revision and republication of the effective FIRM. LOMCs include completed cases of Letters of Map Amendment (LOMAs) and Letters of Map Revision (LOMRs), including LOMRs based on fill (LOMR-Fs), and conditional LOMRs. The lists of LOMC cases were obtained from the FEMA Mapping Information Platform Website (<https://hazards.fema.gov/femaportal/wps/portal>) in June 2012.

Table 18 lists the number of LOMCs in the County. No Conditional LOMAs or Conditional LOMR-Fs were included. The LOMCs are shown on the Discovery Map. Clusters of LOMCs indicate a need for updated maps.

Table 18. Summary of LOMC cases in Wayne County project area

| County | Number of Letters of Map Amendments | Number of Letters of Map Revisions – Based on Fill | Number of Letters of Map Revisions – Floodway Removal | Number of Letters of Map Revisions |
|--------|-------------------------------------|--|---|------------------------------------|
| Wayne | 752 | 71 | 48 | 0 |

I.IV.ii.18 Locally Identified Mitigation Actions

Table 19 lists the flood-related mitigation action that was extracted from the Wayne County Hazard Mitigation Plan, which expired on June 22, 2012 (ASTI Environmental, 2006).

Table 19. Hazard Mitigation Action

| Name of Plan | County | Plan Expiration Date | Hazard Mitigation Action |
|---|--------------|----------------------|---|
| Wayne County Hazard Mitigation Plan; March 2006 | Wayne County | 6/22/2012 | Improve flood plan management by planning acceptable uses for these areas, involving drain commissioners, hydrologic studies, etc. in analyses and decisions. |

I.IV.ii.19 Ordinances

Local regulations regarding development within known flood hazard areas can range from ordinances with minimum NFIP requirements to strong, pro-active ordinances that not only regulate and protect new and improved development in existing Special Flood Hazard Areas (SFHAs), but also seek to mitigate the growth of SFHAs caused by increased runoff from developed areas and the degradation of natural flood control areas, such as wetlands and forests.

Title 44 of the Code of Federal Regulations Sections 60.3(a)–(e) describes the NFIP floodplain ordinance levels and provides the minimum requirements for community participation in the NFIP. The proper ordinance level for each community is determined by the type of flooding that is present within the community. Ordinance levels are shown in the table below:

| <u>Ordinance Level</u> | <u>Description</u> |
|------------------------|--|
| A | Floodplains have not been identified |
| B | Floodplains with no base flood elevations (BFEs) |
| C | Floodplains with BFEs or coastal flooding with no high-hazard areas (Zone V) |
| D | Floodplains with BFEs and floodways |
| E | Coastal high-hazard areas identified, but no floodways |
| D & E | Both floodways and coastal high-hazard areas |

Ordinance information for Wayne County communities within the project area is shown in Table 20.

Table 20. Program Status and Ordinance Level

| Community | CID | FIRM Date | Program Status | Ordinance Level |
|----------------------------------|--------|-----------|-------------------|-----------------|
| Detroit, City of | 260222 | 2/2/2012 | Participating | D |
| Grosse Pointe Farms, City of | 260229 | 2/2/2012 | Participating | D |
| Grosse Pointe Park, City of | 260230 | 2/2/2012 | Participating | D |
| Grosse Pointe Shores, Village of | 260250 | 2/2/2012 | Participating | D |
| Grosse Pointe Woods, City of* | 260231 | 2/2/2012 | Participating | N/A |
| Grosse Pointe, City of | 260228 | 2/2/2012 | Participating | C |
| Harper Woods, City of* | 260214 | 2/2/2012 | Not Participating | N/A |

*NSFHA – No Special Flood Hazard Areas identified

I.IV.ii.20 Proposed Draft Transects

Transects are profiles along which coastal flooding analysis is performed. Transects are used to transform offshore conditions to the shoreline and are used to define coastal flood risks inland of the shoreline. They are placed to define representative profiles for a shoreline reach. The transect layout for coastal hazards analysis and subsequent floodplain

delineation is determined by physical factors such as changes in topography, bathymetry, shoreline orientation, and land cover data, in addition to societal factors such as variations in development and density. The base maps listed earlier in this section (i.e. LiDAR, bathymetry) were reviewed, or will be reviewed once available, to determine revisions to the draft placement for hazard modeling transects along the Lake St. Clair shoreline.

The original proposed draft transect layout is shown on the draft Discovery Map for Wayne County (Attachment C) and includes an identification number per transect. Note that these identification numbers will change as the draft transects are revised in the future.

Stakeholders were provided with the proposed transect shapefiles (GIS digital data) upon request, and the proposed draft transects (Attachment D) were also reviewed during the Discovery Meeting. Input from local officials was requested regarding the placement and the number of transects. Table 21 is a compilation of the comments received regarding the proposed draft transects along Lake St. Clair in Wayne County. Please refer to the draft Discovery Map (Attachment C) or to the Proposed Transect figures (Attachment D) to view the transects that were proposed at the time of the Discovery Meeting. Attachment E contains the marked up draft Discovery Map with comments from stakeholders who attended the Discovery Meeting.

Table 21. Transect Comments

| Transect Number (on draft Discovery Map) | Stakeholder Comment |
|---|--|
| N/A – Suggested new transect – see Attachment E | Water Works Park - Critical Facility; Transect suggested at Water Works Park along Detroit River |
| N/A – Suggested new transect – see Attachment E | Transect suggested for the eastern tip of Belle Isle |

Based on the comments captured throughout the Discovery process and during the Discovery Meeting, proposed draft transects have been revised to incorporate placement comments. The revised proposed transects can be seen on the Final Discovery Maps located in Appendix F of the basin-wide Lake St. Clair Discovery Report (Federal Emergency Management Agency, 2012). These transects are subject to change based on the future coastal analysis and should not be considered final at this time.

I.IV.ii.21 Pre-Disaster Mitigation (PDM) Program

The Pre-Disaster Mitigation (PDM) program is a nation-wide competitive grant program that was created to assist State and local governments, including Indian Tribe governments, with the funding to implement cost-effective hazard mitigation activities prior to disasters. The intent of this program is to reduce overall risk to people and property, while also minimizing the cost of disaster recovery.

Grants awarded during past fiscal years can be downloaded from the Pre-Disaster Mitigation Archives at <http://www.fema.gov/pre-disaster-mitigation-grant-program/pre-disaster-mitigation-archives>

I.IV.ii.22 Public Assistance (PA) Grant Program

The mission of FEMA’s Public Assistance (PA) Grant Program is to provide assistance to State, Tribal and local governments, and certain types of Private Nonprofit organizations so that communities can quickly respond to and recover from declared disasters or emergencies.

Through the PA Program, FEMA provides supplemental Federal disaster grant assistance for debris removal, emergency protective measures, and the repair, replacement, or restoration of disaster-damaged, publicly owned facilities and the facilities of certain Private Non-Profit (PNP) organizations. The PA Program also encourages protection of these damaged facilities from future events by providing assistance for hazard mitigation measures during the recovery process.

Detailed project descriptions for completed PA projects can be downloaded from <https://explore.data.gov/catalog/raw> .

I.IV.ii.23 Regulatory Mapping

The effective mapping for coastal communities within Wayne County is listed in Table 22 by community.

Table 22. Effective Mapping Status

| Community | CID | FIRM Date | Program Status |
|----------------------------------|--------|-----------|-------------------|
| Detroit, City of | 260222 | 2/2/2012 | Participating |
| Grosse Pointe Farms, City of | 260229 | 2/2/2012 | Participating |
| Grosse Pointe Park, City of | 260230 | 2/2/2012 | Participating |
| Grosse Pointe Shores, Village of | 260250 | 2/2/2012 | Participating |
| Grosse Pointe Woods, City of* | 260231 | 2/2/2012 | Participating |
| Grosse Pointe, City of | 260228 | 2/2/2012 | Participating |
| Harper Woods, City of* | 260214 | 2/2/2012 | Not Participating |

CID = community identification

*NSFHA – No Special Flood Hazard Areas identified

The Cities of Grosse Pointe Woods and Harper Woods do not have any Special Flood Hazard Areas (SFHAs) identified.

The February 2, 2012 effective countywide mapping included historical detailed studies performed along various riverine flooding sources, as well as restudies and new detailed studies along flooding sources. In addition, several streams were studied by approximate analysis.

Effective FIRMs and FISs, which includes additional information about the studies performed, can be downloaded from FEMA’s Map Service Center (MSC) at <https://msc.fema.gov> .

I.IV.ii.24 Repetitive Loss Properties

A Repetitive Loss (RL) property is any insurable building for which two or more claims of more than \$1,000 were paid by the NFIP within any rolling ten-year period, since 1978. A RL property may or may not be currently insured by the NFIP. There are currently over 122,000 repetitive loss properties nationwide.

Structures that flood frequently strain the National Flood Insurance Fund. In fact, the RL properties are the biggest draw on the Fund. FEMA has paid almost \$3.5 billion dollars in claims for RL properties. RL properties not only increase the NFIPs annual losses and the need for borrowing funds from Congress, they drain funds needed to prepare for catastrophic events. Community leaders and residents are also concerned with the RL problem because residents' lives are disrupted and may be threatened by the continual flooding.

Over the years, there have been a number of efforts aimed at addressing repetitive losses. Depending on individual circumstances, appropriate mitigation measures commonly include elevating buildings above the level of the base flood, demolishing buildings, and removing buildings from the SFHA as part of a flood control project. Sometimes, mitigation takes the form of a local drainage-improvement project that meets NFIP standards and removes a property or properties from RL or Repetitive Loss Target Group (RLTG) status.

The Repetitive Flood Claims (RFC) grant program was authorized by the Bunning-Bereuter-Blumenauer Flood Insurance Reform Act of 2004 (P.L. 108-264), which amended the National Flood Insurance Act (NFIA) of 1968 (42 U.S.C. 4001, et al). Up to \$10 million is available annually for FEMA to provide RFC funds to assist states and communities reduce flood damages to insured properties that have had one or more claims to the NFIP. Additional information on this program and other related programs is available at <http://www.fema.gov/hazard-mitigation-assistance>.

Repetitive losses were filed in several communities in Wayne County project area, as shown in Table 23.

Table 23. Repetitive Losses

| Community | CID | Number of Repetitive Loss Structures | Total Repetitive Loss Payment |
|----------------------------------|--------|--------------------------------------|-------------------------------|
| Detroit, City of | 260222 | 2 | \$ 15,098 |
| Grosse Pointe Farms, City of | 260229 | 0 | \$ 0 |
| Grosse Pointe Park, City of | 260230 | 1 | \$ 22,517 |
| Grosse Pointe Shores, Village of | 260250 | 0 | \$ 0 |
| Grosse Pointe Woods, City of | 260231 | 0 | \$ 0 |
| Grosse Pointe, City of | 260228 | 0 | \$ 0 |
| Harper Woods, City of* | 260214 | 0 | \$ 0 |

CID = community identification

*Not participating in the NFIP

Source: FEMA's CIS "Community Disaster Detail – Flood Insurance" report

I.IV.ii.25 Socio-Economic Analysis

In Wayne County, the economy is predominately service/sales oriented, accounting for approximately 65 percent of the jobs in the county, while approximately 20 percent of the jobs are in manufacturing.

In 2009, lake-related businesses provided 1.6 percent of the total jobs in Wayne County. This accounted for just under 11,000 jobs, \$255 million in wages, and \$448 million in goods & services. This represents a 21 percent decrease in lake jobs since 2005 (National Oceanic & Atmospheric Administration, 2009).

The more homes and people located in a floodplain, the greater the potential for harm from flooding. Impacts are likely to be even greater when additional risk factors (age, income, capabilities) are involved, since people at greatest flood risk may have difficulty evacuating or taking action to reduce potential damage. In Wayne County, approximately 4 percent of the population is inside a FEMA floodplain (National Oceanic & Atmospheric Administration, 2009).

I.IV.ii.26 State-level Datasets, Programs, and Information

The information in this section was compiled by the project team throughout this Discovery process based on research of the project area and discussions with local and regional stakeholders.

Michigan Coastal Zone Enhancement Program Assessment and Strategy (2011-2016):

Every five years, the Coastal Zone Management Act encourages states and territories to conduct self-evaluations of their coastal management programs to assess significant changes in the state's coastal resources and management practices, identify critical needs, and prioritize areas for enhancement under the Coastal Zone Enhancement Program. More information on this program can be found at <http://coastalmanagement.noaa.gov/enhanc.html>. The Coastal Zone Enhancement Program Assessment and Strategy can be downloaded at <http://coastalmanagement.noaa.gov/mystate/docs/mi3092011.pdf>.

The Michigan Coastal Management Program website, located at www.mi.gov/coastalmanagement provides information on the Program including information on its permitting, coastal planning, and technical assistance programs. Michigan's Coastal Management Program was developed under the federal Coastal Zone Management Act and approved in 1978. Since then, the Program has assisted organizations in protecting and enhancing their coastal areas, funded studies related to coastal management, and helped to increase recreational opportunities in Michigan's Great Lakes coastal area.

Coastal Zone Boundary maps can be downloaded at

http://www.michigan.gov/deq/0,4561,7-135-3313_3677_3696-90802--,00.html

A list of previously awarded coastal management grants can be found here:

http://www.michigan.gov/deq/0,4561,7-135-3313_3677_3696-171451--,00.html

Integrated Coastal Management Tool

<http://www.glc.org/habitat/lsc/icm/>

The Integrated Coastal Management Tool is a software program designed to assess or estimate coastal habitat change and thereby promote more informed coastal resource management decision-making. Existing data sets for coastal Lake St. Clair are available with the tool, which can be used to:

- Inventory habitats
- Assess land and water habitat conditions
- Identify and rank potential restoration and conservation sites
- Analyze “what if” scenarios for proposed changes in land use or land cover
- Create maps, reports, and data tables

The tool uses existing GIS data layers such as land cover, streams, invasive species, threatened or endangered species, shoreline hardening and others to calculate habitat statistics.

The Integrated Coastal Management Tool was designed with the local planner, the coastal conservation group, and the coastal manager in mind. Altering the scenarios is easy, which allows the user to quickly compare how different management decisions or actions will affect coastal habitat.

SEMCOG - Restoring and Protecting Lake St. Clair

<http://www.semco.org/lakestclair.aspx>

SEMCOG facilitates the Lake St. Clair/St. Clair River Protection and Restoration Partnership. The Partnership contains representatives of 36 organizations including local, state, regional and federal government agencies, non-governmental organizations, business, universities and associations. The goal of the partnership is to implement the management plan resulting in protection and restoration of the river and lake.

Great Lakes Coastal Restoration Grants

The Great Lakes received \$475 million for restoration efforts in 2010, as part of the Great Lakes Restoration Initiative, or GLRI. Michigan Sea Grant was awarded more than \$1.5 million to help restore particular areas in the region and is leading two projects while assisting on five others. The projects focus on endangered fish, invasive species, beach contamination, water pollution and sound boating and marina operations.

Additional information can be found at Michigan Sea Grant website

<http://www.miseagrant.umich.edu/explore/restoration/>.

V. Risk MAP Projects and Needs

This section provides information about the planned next steps for the Lake St. Clair coastal flood study, including information about the upcoming coastal study, potential for mitigation technical assistance within the project area, possible changes in compliance as a result of the coastal flood study, future communications, and how unmet needs will be addressed.

i. Future Coastal Study

Information and data collected as part of the Lake St. Clair Discovery effort and provided in this report will be utilized in the upcoming GLCFS for Lake St. Clair.

A summary of the GLCFS project, as well as project updates, can be found at <http://www.greatlakescoast.org/> under the “Great Lakes Coastal Analysis & Mapping” section.

The following work is expected to be performed for Lake St. Clair as part of the GLCFS, pending congressional funding. The scope of work described in this section is therefore subject to change and may not be performed within all Lake St. Clair communities.

All engineering and mapping analysis performed as part of this study will follow guidance provided within FEMA’s Draft *Guidelines and Specifications for Coastal Studies Along the Great Lakes*, issued on May 8, 2012 (Federal Emergency Management Agency, 2012). The upcoming study is expected to include the following tasks: creation of bathymetric and topographic data, base map acquisition, coastal flood hazard analysis, and risk assessment product development. A summary is provided below and additional detail may be found in FEMA’s basin-wide Lake St. Clair Discovery Report (Federal Emergency Management Agency, 2012).

Engineering & Mapping:

Coastal flood hazard analyses for the coastal communities of the United States located along the Lake St. Clair shoreline will be performed. This analysis will include the creation of bathymetric and topographic map data inventory, base map acquisition, and coastal flood hazard analysis.

Draft coastal flood maps (or workmaps) will be produced for the study area. The workmaps will include the 1-percent- and 0.2-percent-annual chance flood hazard areas, Coastal High Hazard (VE Zone) and Coastal A Zone (AE Zone), Base Flood Elevations (BFEs), and Limit of Moderate Wave Action (LiMWA) boundary. The LiMWA boundary identifies the 1.5-foot wave height line and alerts property owners that although their property is in a Zone AE area, it may also be affected by waves 1.5 feet or higher. Communities will be provided with an opportunity to review the workmaps after the coastal analysis is complete and prior to FIRM production.

National Flood Insurance Program Integration:

Regulatory FIRM files may be updated through the FEMA’s Physical Map Revision (PMR) process using the results from the work performed in the Engineering and Mapping task described above.

The final production and distribution of updated FIRMs will be dependent on the results of the coastal analysis, discussions with the communities, and congressional funding. Therefore, it cannot be identified at this time the exact communities that will receive updated FIRMs that may require adoption. The risk assessment products and their distribution, discussed below, are also dependant on the results of the coastal analysis and further community discussions and are subject to change.

Risk Assessment Products:

Depending on available data, results of coastal analysis, local needs identified, local partnerships, and fiscal year funding, the coastal flood risk products such as Flood Risk Map, Flood Risk Report, Changes Since Last FIRM (CSLF), Flood Depth and Analysis Grids, and Hazus-MH analyses may be generated for identified coastal communities in Wayne County. Optional Flood Risk Assessment products such as coastal wave height grids, erosion risk determination, and wave hazard severity area datasets have not yet been funded. Table 24 summarizes the products projected for the coastal communities.

Table 24. Potential Flood Risk Products

| County | State | Flood Risk Map and Flood Risk Report? | Changes Since Last FIRM? | Flood Depth and Analysis Grids? | Hazus-MH? | Optional Flood Risk Assessment Products? |
|--------|-------|---------------------------------------|--------------------------|---------------------------------|-----------|--|
| Wayne | MI | ✓ | ✓ | ✓ | ✓ | Not yet funded |

ii. **Potential Mitigation Assistance**

As part of a Risk MAP project, Mitigation Planning Technical Assistance (MPTA) may available to help communities plan for and reduce risks by providing communities with specialized assistance. MPTA includes risk assessment, mitigation planning, and traditional hazard identification (flood mapping) activities. Technical assistance through MTPA can be performed at any time during the hazard mitigation planning process.

Determining which communities receive MPTA is dependent on identification of a need, the willingness of a community to partner with FEMA, local resources and data availability, and federal funding availability. Unfortunately, not every community will be able to receive MPTA as part of a Risk MAP project. Forming a partnership between FEMA and a local community is an essential part of initiating a MPTA project. Assistance will be prioritized after all data and information is collected and assessed by FEMA in coordination with the local communities to determine where MPTA resources would be

beneficial. Communities should alert FEMA of any resources that are available at the local level, and of actions they are interested in implementing in partnership with FEMA. Technical assistance activities should be based on the needs of the community and assist with already established capabilities.

Some technical assistance activities could include (but are not limited to):

- Advising in the creation of initial Hazard Mitigation Plans
- Advising in the update of existing Hazard Mitigation Plans
- Training to improve a community's capabilities for reducing risk
- Assistance in incorporating flood risk datasets and products into potential and effective community legislation, guidance, regulations, procedures, etc.
- Assistance with the creation, acquisition and incorporation of GIS data into potential and effective maps, planning mechanisms, emergency management procedures, etc.
- Facilitating the identification of data gaps and interpret technical data to identify risk reduction deficiencies that should be corrected.

During this discovery process, it was noted by stakeholders that the City of Detroit received planning grant funding and are in the process of updating their hazard mitigation plan. It was also identified that Wayne County has an expired hazard mitigation plan and local officials are looking into options available to update the plans. It is recommended additional discussion occur with these stakeholders as this coastal flood study moves forward to see if MPTA would be an appropriate and beneficial option.

Continued discussion regarding FEMA partnership with local communities to assist in developing new mitigation actions and moving those actions forward will be essential as this coastal project moves forwards.

iii. Compliance

FEMA uses a number of tools to determine a community's compliance with the minimum regulations of the NFIP. Among them are Community Assisted Contacts (CACs), Community Assistance Visits (CAVs), the Letter of Map Change (LOMC) process, and Submit-for-Rates. These tools help assess a community's implementation of their flood damage reduction regulations and identify any floodplain management deficiencies and violations.

If administrative problems or potential violations are identified, the community will be notified and given the opportunity to correct those administrative procedures and remedy the violations to the maximum extent possible within established deadlines. FEMA or the state will work with the community to help them bring their program into compliance with NFIP requirements. In extreme cases where the community does not take action to bring itself into compliance, FEMA may initiate an enforcement action against the community.

After coastal analysis is completed for this study, communities may be faced with adopting new regulations related to coastal high hazard areas. An understanding of regulations associated with coastal areas will be important so that communities remain compliant. During this Discovery process, stakeholders were provided with information regarding NFIP requirements that are associated with coastal hazard zones, as well as information about new FEMA guidance related to moderate wave action.

These compliance topics, including coastal Special Flood Hazard Areas (SFHAs), building requirements in VE Zones, and Limit of Moderate Wave Action (LiMWA), are discussed in detail at <http://www.greatlakescoast.org> and in the basin-wide Lake St. Clair Discovery Report (Federal Emergency Management Agency, 2012).

iv. **Communication**

Throughout this Discovery process, community representatives and local stakeholders indicated the need to be kept informed about the results of Discovery, the upcoming coastal flood study, and opportunities for public input throughout the study process.

Throughout this study process, Federal, State, and local stakeholders will be kept informed via email, phone calls, letters, newsletters, and meetings as appropriate. A dedicated email account was created (GreatLakesFloodStudy@STARR-Team.com) to distribute project information, meeting reminders, and summaries.

Stakeholder involvement will continue to be important through the remainder of the project. The GLCFS website <http://www.greatlakescoast.org> is an excellent resource where stakeholders can obtain the most update-to-date information about the status of the Great Lakes flood study projects, data collection, upcoming meetings, new technical reports, the latest methodologies, factsheets, and additional information.

FEMA encourages stakeholders to remain involved throughout the study process and will seek to identify partnership opportunities during the study process.

v. **Unmet Needs**

The Wayne County Discovery process did not identify specific needs that would not be met during the coastal flood study. All stakeholder comments were addressed and will continue to be addressed throughout the coastal flood study.

During the Discovery Meeting and throughout the Discovery process, Lake St. Clair stakeholders did note general concerns with proceeding with a new coastal flood risk study. Many stakeholders were concerned about what to expect in terms of extent of new SFHA boundaries. FEMA acknowledged this concern throughout this Discovery process. During the upcoming engineering and mapping tasks, workmaps designed to give local

stakeholders an opportunity to review and comment on flood risk data and revised SFHAs will be distributed before the data is carried into NFIP FIRM maps.

In addition, comments related to the proposed draft transects were raised during the Discovery Meeting by State and county representatives. As a result, draft transects were revised to incorporate stakeholder comments. It should be noted that the transects proposed in this report remain subject to change pending further coastal analysis.

VI. Close

Federal, State, and local stakeholders were interested in the Discovery processes and in providing local data that may assist in the upcoming Lake St. Clair coastal flood study. Many stakeholders were interested in learning more about the new methodologies being used as part of the Great Lakes Coastal Flood Studies, and how their community would be specifically affected by the Lake St. Clair flood study. The information gathered in this Discovery process will provide invaluable information as the Lake St. Clair Coastal Flood Study proceeds.

VII. References

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VIII. Attachments

Discovery data and information, as well as this report and appendices, have been stored digitally on FEMA's Mapping Information Platform (MIP) Discovery Data Repository at J:\FEMA\DISCOVERY_DATA_REPOSITORY\R05_DATA\MICHIGAN_MI_26 and can be accessed by FEMA authorized users. The MIP can be accessed from <https://hazards.fema.gov/>. A username and password is required to access certain data within the MIP.

The final Discovery Report and appendices are also available for download from <http://www.greatlakescoast.org/>.

- Attachment A. Coastal Data Request Form Compilation
- Attachment B. Wayne County Pre-Meeting Correspondence
- Attachment C. Draft Discovery Map
- Attachment D. Proposed Transects
- Attachment E. Wayne County Discovery Meeting Documents
- Attachment F. Hazard Mitigation Grant Program Projects

ATTACHMENT A
COASTAL DATA REQUEST FORM



FEMA

Community Discovery Coastal Data Request Form

Thank you for taking the time to complete this questionnaire. We are interested in obtaining coastal-specific data for your community. It will provide important information to help FEMA understand coastal flood risk issues in your community and to work with you in increasing your community's resilience to coastal flooding through implementation of the Risk MAP program. In addition, this form can be used as a way to prepare for the upcoming Discovery Meeting, as the topics on this form will be discussed throughout the meeting.

Once you have completed the questionnaire, please return the form:

Via e-mail: GreatLakesFloodStudy@starr-team.com
By mail: Scott Banjavcic
CDM Smith/STARR
125 S. Wacker Drive, Suite 600
Chicago, IL 60606

Please provide as much information as possible. If you have any questions about the Discovery process or about completing this questionnaire, please contact:

Laura Keating, Laura.Keating@starr-team.com, 925-296-8048

| Contact Information | |
|----------------------------|---|
| Community/Organization | |
| Name: | |
| Title: | |
| Address: | |
| E-mail: | |
| Phone: | |
| Contact Preference | <input type="checkbox"/> Email <input type="checkbox"/> Phone <input type="checkbox"/> Mail |



FEMA

| Base Map Data | | <i>Please select available data type</i> | |
|--------------------------|---|---|---|
| <input type="checkbox"/> | Topography (e.g., LiDAR or contour data) | <input type="checkbox"/> <i>Hard copy</i> | <input type="checkbox"/> <i>Digital</i> |
| <input type="checkbox"/> | Property information (e.g., Building footprints, parcel data, tax assessor's data) | <input type="checkbox"/> <i>Hard copy</i> | <input type="checkbox"/> <i>Digital</i> |
| Coastal Data | | | |
| <input type="checkbox"/> | Coastal structures (e.g., seawalls, levees, jetties, groins, etc.) | <input type="checkbox"/> <i>Hard copy</i> | <input type="checkbox"/> <i>Digital</i> |
| <input type="checkbox"/> | Coastal features (i.e., dunes and bluffs) | <input type="checkbox"/> <i>Hard copy</i> | <input type="checkbox"/> <i>Digital</i> |
| <input type="checkbox"/> | Shoreline change data | <input type="checkbox"/> <i>Hard copy</i> | <input type="checkbox"/> <i>Digital</i> |
| <input type="checkbox"/> | Locations of beach nourishment or dune restoration projects | <input type="checkbox"/> <i>Hard copy</i> | <input type="checkbox"/> <i>Digital</i> |
| <input type="checkbox"/> | Areas of significant beach or dune erosion | <input type="checkbox"/> <i>Hard copy</i> | <input type="checkbox"/> <i>Digital</i> |
| <input type="checkbox"/> | Mean high water | <input type="checkbox"/> <i>Hard copy</i> | <input type="checkbox"/> <i>Digital</i> |
| <input type="checkbox"/> | Mean lake level | <input type="checkbox"/> <i>Hard copy</i> | <input type="checkbox"/> <i>Digital</i> |
| Other Data | | | |
| <input type="checkbox"/> | Hydraulic structures (e.g., bridges, culverts, levees, dams) with inspection status, if available | <input type="checkbox"/> <i>Hard copy</i> | <input type="checkbox"/> <i>Digital</i> |
| <input type="checkbox"/> | Elevated roads | <input type="checkbox"/> <i>Hard copy</i> | <input type="checkbox"/> <i>Digital</i> |
| <input type="checkbox"/> | Critical facilities | <input type="checkbox"/> <i>Hard copy</i> | <input type="checkbox"/> <i>Digital</i> |
| <input type="checkbox"/> | Other known hazards with geographical boundaries, i.e., landslide hazard areas, storm surge inundation zones, wildfire hazard areas, etc. | <input type="checkbox"/> <i>Hard copy</i> | <input type="checkbox"/> <i>Digital</i> |
| <input type="checkbox"/> | Other relevant data | <input type="checkbox"/> <i>Hard copy</i> | <input type="checkbox"/> <i>Digital</i> |



FEMA

Please provide the following information about the community:

| | | |
|---|---|---|
| Historical Flood Data | | |
| Are you aware of any coastal flooding issues not represented on effective FIRMs: | <input type="checkbox"/> yes <input type="checkbox"/> no | If yes, please explain and provide inundation areas of historic flooding events if available. |
| Risk Assessment | | |
| Does your community have HAZUS-based loss estimates from average annualized loss? | <input type="checkbox"/> yes <input type="checkbox"/> no | If yes, please describe: |
| Does your community have other risk assessment data? | <input type="checkbox"/> yes <input type="checkbox"/> no | If yes, please describe: |



FEMA

| <i>Flood Mitigation Information</i> | | |
|---|---|--|
| <p>Does your community have a hazard mitigation plan?</p> | <p><input type="checkbox"/> yes <input type="checkbox"/> no</p> | <p>If yes, what is the status of the hazard mitigation plan?</p> <p><input type="checkbox"/> being reviewed <input type="checkbox"/> it has been adopted <input type="checkbox"/> it is currently being updated <input type="checkbox"/> it is planned for updates</p> |
| <p>Does the plan reflect any coastal flood hazards?</p> | <p><input type="checkbox"/> yes <input type="checkbox"/> no</p> | <p>If yes, please explain:</p> |
| <p>Does the hazard mitigation plan indicate any data deficiencies for flood hazards that could be addressed through a flood study, especially near coastal zones?</p> | <p><input type="checkbox"/> yes <input type="checkbox"/> no</p> | <p>If yes, please explain:</p> |
| <p>Does your community have on-going mitigation projects, such as acquisition, elevation, flood control, soil stabilization, natural systems restoration, floodproofing, etc.</p> | <p><input type="checkbox"/> yes <input type="checkbox"/> no</p> | <p>If yes, please describe the projects and their locations:</p> |



FEMA

| | | |
|---|---|-------------------------|
| Any specific coastal mitigation projects? | <input type="checkbox"/> yes <input type="checkbox"/> no | If yes, please explain: |
| Does your community have experience with coastal flood disasters and flood disaster recovery? | <input type="checkbox"/> yes <input type="checkbox"/> no | If yes, please explain: |
| Does your community coordinate floodplain management programs with programs for the management and planning of open space? If possible, any coastal specific? | <input type="checkbox"/> yes <input type="checkbox"/> no | If yes, please explain: |



FEMA

| | | |
|---|---|---|
| <p>Have you had any prior proactive mitigation actions and planning efforts that resulted in reduced losses? If possible, any coastal specific?</p> | <p><input type="checkbox"/> yes <input type="checkbox"/> no</p> | <p>If yes, please describe:</p> |
| <p>Has your community applied and granted Individual Assistance/Public Assistance grants for declared disasters?</p> | <p><input type="checkbox"/> yes <input type="checkbox"/> no</p> | <p>If yes, please describe and provide the locations of these grants projects:</p> |
| <p>Has your community applied for FEMA Hazard Mitigation Grants program or other mitigation funds (USACE, NRCS, USGS, state Hazard Mitigation officer, etc.) in the past?</p> | <p><input type="checkbox"/> yes <input type="checkbox"/> no</p> | <p>If yes, please describe and provide the locations of on-going/planned/finished grants projects/structures:</p> |



FEMA

| | | |
|--|---|--|
| How would you rank the community's ability to implement mitigation actions and to communicate flood risk to citizens? | | <input type="checkbox"/> high <input type="checkbox"/> medium <input type="checkbox"/> low |
| <i>Community Plans and Projects</i> | | |
| Does your community have a comprehensive plan? | <input type="checkbox"/> yes <input type="checkbox"/> no | If you answered yes and you have a hazard mitigation plan, was your hazard mitigation plan coordinated with the comprehensive plan? <input type="checkbox"/> yes <input type="checkbox"/> no |
| Does your community's comprehensive plan have a special consideration for coastal areas? | <input type="checkbox"/> yes <input type="checkbox"/> no | If yes, please explain elements/regulations that affect coastal area development. |
| Does your community have a coastal zone management plan? | <input type="checkbox"/> yes <input type="checkbox"/> no | If yes, please provide a digital or hard copy of the plan. |
| Does your community have planning staff or a planning/zoning commission and other measures, such as ordinances, administrative plans, or other programs contributing to effective administration of floodplain zoning, building codes, open space preservation, and coastal zone management? | <input type="checkbox"/> yes <input type="checkbox"/> no | If yes, please explain this group's role in floodplain management and provide examples of the types of programs in place: |



FEMA

| | | |
|---|---|---------------------------------|
| <p>Does your community have areas of recent or planned development/re-development and areas of high growth or other natural land changes (e.g., wildfires or landslides):</p> | <input type="checkbox"/> yes <input type="checkbox"/> no | <p>If yes, please describe:</p> |
| <p>Are there any locations of other ongoing studies or projects and studied areas that have been modified since the effective map and require an updated study (e.g., highway improvement, seawall improvement, etc.)</p> | <input type="checkbox"/> yes <input type="checkbox"/> no | <p>If yes, please describe:</p> |
| <p>Any other comments/concerns based on local knowledge:</p> | | |

ATTACHMENT B
WAYNE COUNTY PRE-MEETING CORRESPONDENCE

Core Stakeholder Pre-Meeting Documents

Information Exchange Session Documents

CEO/FPA Mailing List

Hard Copy Discovery Meeting Invitations

Lake St. Clair Email Distribution List

Email Discovery Meeting Invitation

Keating, Laura

Subject: FEMA Invitation to Lake Michigan/Lake St. Clair Discovery Kickoff Meeting WebEx for Michigan Core Stakeholders

Location: NEW Phone: (877) 537-6647 Conference ID: 31578 and NEW WebEx

Start: Thu 6/21/2012 11:00 AM
End: Thu 6/21/2012 12:30 PM

Recurrence: (none)

Meeting Status: Meeting organizer

Organizer: Keating, Laura

Required Attendees: 'Alan Lulloff'; 'Byron Lane (MDEQ)'; 'Catrina Covino'; 'Eric Kuklewski'; 'Erin Maloney'; 'Ernie Sarkipato (MDEQ)'; 'Greg Mausolf (USACE)'; 'Heather Stirratt (NOAA)'; Hillier, Timothy; 'Holly Davis'; 'Jennifer Day (NOAA)'; 'Jerry Fulcher (MI CZM)'; 'Joel Pepper'; 'Julie Tochor'; Keating, Laura; 'Ken Hinterlong'; 'Les Thomas (MDEQ)'; 'Linda Burke (MDEQ)'; 'Maria Zingas (MDEQ)'; 'Mary Weidel (USACE)'; 'Matt Occhipinti (MDEQ)'; 'Matt Schnepf'; 'Michelle Hohn'; 'Mike Hanke'; 'Patrick Durack (MDEQ)'; Randhawa, Jaspreet; 'Richard Foody'; 'Sheila Meier (MDEQ)'; 'Stephen Aichele (USGS)'; 'Susan Conradson (MDEQ)'; 'Tom Smith'; 'Wayne Lasch'; breederl@msu.edu; 'Roberts, Stacey'; Denick, Roger (Roger.Denick@stantec.com); jread@glos.us

Optional Attendees: Luce, Janet K; Breederland, Mark; Tabar, Jeffrey R

Categories: Red Category

Good Afternoon,

In preparation for this call tomorrow at 1pm CT/2pm ET, please find attached the agenda, as well as a couple handouts that we will discuss during the call.



Michigan_Core_Stakeholders_preD...



LIMWA Fact Sheet.pdf



MAF-Form.pdf

Also, please note the updated WebEx and call-in number:

WebEx information:

Participant Join URL: <https://atkinglobalna.webex.com/atkinglobalna/j.php?J=652104155>

Meeting Number: 652 104 155

Meeting Password: This meeting does not require a password.

Audio Conference information:

Phone: (877) 537-6647

Conference ID: 31578

Thanks,
Laura Keating

Good Afternoon,

Please note the date change that was made to better accommodate schedules.

As you may know, the Federal Emergency Management Agency (FEMA), in cooperation with the U.S Army Corps of Engineers (USACE), the Association of State Floodplain Managers (ASFPM), and other partners, is conducting a comprehensive study of flood hazards for Lake Michigan coastal communities and along the United States shoreline in other areas of the Great Lakes system. Data from this study will eventually be used to revise Flood Insurance Rate Maps (FIRMs) for coastal communities throughout the region.

As part of the Great Lakes Coastal Flood Mapping and Outreach initiative, STARR (which stands for Strategic Alliance for Risk Reduction) has been contracted by FEMA to perform Discovery for all Lake Michigan coastal communities within Wisconsin, Illinois, Indiana, and Michigan. In addition, STARR will perform Discovery for St. Clair, Macomb and Wayne Counties along Lake St. Clair in Michigan. The Discovery process allows us to engage the communities and other local stakeholders to initiate risk discussions and increase visibility of flood risk information.

You have been identified as a Core Stakeholder for the Lake Michigan and Lake St. Clair Discovery Projects in the State of Michigan. FEMA and STARR would like to hold a one-hour Kickoff Meeting via WebEx/conference call to introduce you to the Discovery process, including identifying Discovery goals and objectives for the Lake Michigan and Lake St. Clair coastal communities in the State of Michigan. We will also review the Lake Michigan and Lake St. Clair Discovery Meeting Plan and discuss State-specific requirements.

You may have recently received a similar Discovery Kickoff Meeting invitation for another State. Although some of the information presented at the other WebEx meetings will be the same, we will be discussing items specific to those counties in Michigan and request that you attend this WebEx as well.

In the past few months, STARR may have already contacted you to participate in a Lake Michigan or Lake St. Clair Technical Workshops. Discovery is another part of the project, and we require your input and feedback to ensure study success. The community-based Discovery Meetings are held following Technical Workshops. Below are the tentative Lake Michigan and Lake St. Clair Discovery Meeting dates for the State of Michigan:

Lake Michigan:

| Counties | Venue | Address | Date, Time |
|---------------------|--|--|-----------------------------------|
| Vanburen Berrien | Berrien County Administrative Building | 701 Main Street St. Joseph, MI 49085 | Monday 09/10/2012 3:00 - 5:00 pm |
| Ottawa Allegan | Ottawa County Fillmore Street Complex Board Room | 12220 Fillmore Street, Rm 310 West Olive, MI 49460 | Tuesday 09/11/2012 3:30 - 5:30 pm |

| | | | |
|---|---|--|--|
| Oceana Muskegon | Louis A. McMurray Conference and Transportation Center | 2624 Sixth Street Muskegon Heights, MI 49444 | Wednesday 09/12/2012 9:00 - 11:00 am |
| Manistee Mason | Community Room | 400 S. Harrison Street Ludington, MI 49431 | Wednesday 09/12/2012 3:00 - 5:00 pm |
| Grand Traverse Benzie Leelanau | Training Room | 400 Boardman Avenue Traverse City, MI 49684 | Thursday 09/13/2012 1:00 - 3:00 pm |
| Antrim Charlevoix Emmet | Bellaire Community Hall | 202 North Bridge Street Bellaire, MI | Friday 09/14/2012 9:00 - 11:00 am |
| Mackinac | TBD | TBD | Tentatively planned - Monday 08/13/2012; 3:00 - 5:00 pm |
| Delta Schoolcraft Menominee | Bay de Noc Community College, Rooms 958 & 962, Escanaba, MI | 2001 N. Lincoln Road, Escanaba, MI 49829 | Tuesday 08/14/20012; 3:00 - 5:00 PM |

Lake St. Clair

| Counties | Venue | Address | Date, Time |
|-----------|--|--|---|
| St. Clair | TBD | TBD | Tentatively planned - 8/20/2012; 9:00 - 11:00 AM |
| Macomb | Macomb County Verkuilen Building - Tentative as of 3/27/2012 | 21885 Dunham Rd., Clinton Twp, MI 48036 | 8/20/2012; 3:00 - 5:00 PM |
| Wayne | TBD | TBD | Tentatively planned - 8/21/2012; 9:00 - 11:00 AM |

Please let me know if the proposed time on this meeting invitation (**1pm CDT/2pm EDT**) is acceptable. We are trying to determine the best time for everyone to participate in the Lake Michigan and Lake St. Clair Discovery Kickoff Meeting WebEx for the State of Michigan.

We look forward to discussing this project with you during the call. Please do not hesitate to contact me if you have any questions.

Sincerely,

Laura Keating, CFM
STARR

Laura.Keating@starr-team.com

Phone/fax: 925-296-8048

NEW WebEx information:

Participant Join URL: <https://atkinglobalna.webex.com/atkinglobalna/j.php?J=652104155>

Meeting Number: 652 104 155

Meeting Password: This meeting does not require a password.



| | |
|-----------------------|---|
| Project Name: | Lake Michigan/Lake St. Clair Discovery Project |
| Meeting: | Lake Michigan/Lake St. Clair Pre-Discovery Kickoff Meeting for Michigan Core Stakeholders |
| Date and Time: | Thursday, June 21, 2012 at 1pm CDT/2pm EDT |
| Place: | <p>Audio Conference information: Phone: (877) 537-6647 Conference ID: 31578</p> <p>Participant Join URL: https://atkinsglobalna.webex.com/atkinsglobalna/j.php?J=652104155 Meeting Number: 652 104 155 Meeting Password: This meeting does not require a password.</p> |
| Facilitator: | FEMA, STARR |

Core Stakeholder Pre-Discovery Kickoff Meeting Agenda

Great Lakes Coastal Flood Study Overview

- Objectives
- Status
- Schedule

Hazard Mitigation Resources, Strategies, and Actions

- Improving Mitigation Strategies
- Introduction to Mitigation Action Form

Discovery Process Overview

- Scope and Schedule
- Discovery Meeting Outcomes
- Introduction to Discovery-phase Data Collection Activities
- Final Discovery Products

Coastal Focus – Information to be Aware Of

- Coastal Flood Risk Datasets
- Transects
- Erosion and Erosion Control Revetments
- LiMWA
- Coastal Zone Mapping

Next Steps

- Community contact lists, draft transects, meeting minutes
- Stakeholder Input

Questions/Comments?



FEMA

Core Stakeholders Lake Michigan/Lake St. Clair Pre-Discovery Kickoff Meeting

State of Michigan

June 21, 2012



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Great Lakes Coastal Flood Study Discovery “Kick-off”



Core Stakeholders – Who’s here?

- State partners & stakeholders
 - MDEQ – State CTP
 - MDEQ – State NFIP Coordinator
 - MDHS – SHMO
 - MDEQ – Coastal Zone Management
- Risk MAP Project Team
 - FEMA / STARR
 - USACE
 - ASFPM
 - NOAA
- Other Core Stakeholders
 - Sea Grant – Michigan
 - Others?

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Great Lakes Coastal Flood Study Discovery “Kick-off”



Today’s Agenda

- Review Great Lakes study objectives and status
- Hazard Mitigation Resources, Strategies and Actions
 - Introduce Mitigation Action Form
- Discovery Process Overview
 - Scope and Schedule, Discovery Meeting Outcomes, Information Exchange Calls, and Pre-Discovery Meeting Data Collection.
- Coastal Focus
 - Coastal Flood Risk Datasets, Transects, Erosion, LiMWA, Coastal Zone Mapping
- Next steps
 - Identify issues for discovery meeting preparations
 - Identify issues/actions for Core Stakeholder follow-up

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Great Lakes Coastal Flood Study Program Overview



- Latest models, data, and technology
 - Includes basin-wide water surface grids and storm sampling, built from continuous record of 50 years of meteorological, water level, and ice field data (1960 - 2009).
 - Includes changes to run-up computational approach
 - Updated version of Appendix D.3 (FEMA Guidelines and Standards) will be introduced for comment in May 2012
- Deliver updated flood maps
- Equip Federal Agencies, eight States and hundreds of coastal communities with data and planning tools to facilitate actions to enhance resiliency of the Great Lakes ecosystem

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Great Lakes Coastal Flood Study Program Overview



Methodology Focus points from 2009 Stakeholder Meeting:

- Employ a response (or extremal) approach to run-up computation, not the old process of event-based computations, where wind set-up was treated as a separate computational component at shoreline.
- Consider new wave run-up processes through continuation of response-based modeling at shoreline, and transitions to better utilization of WHAFIS and ST-Wave methodologies.

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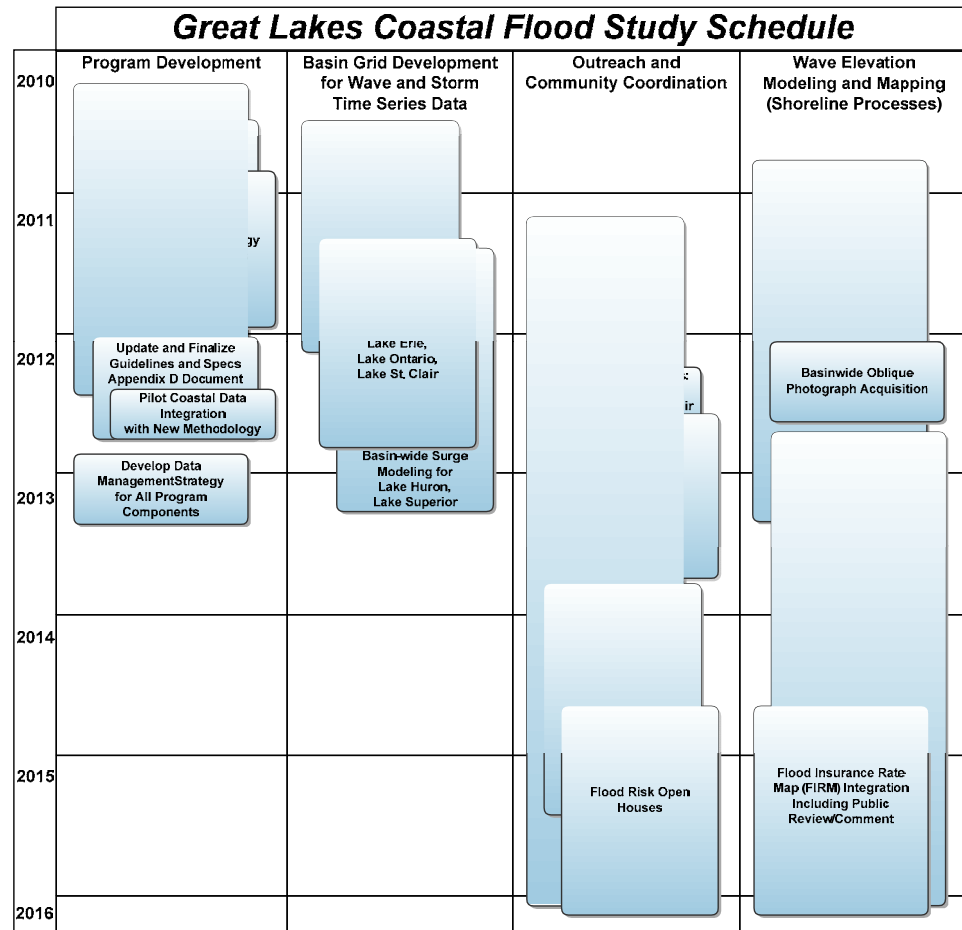
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Great Lakes Coastal Flood Study Program Status and Schedule



- FY11 task orders funded 2012 outreach actions along Lake Michigan, Lake St. Clair and Lake Erie
- FY12 contracting processes will fund major production along these same lakes - including wave height computations, draft inundation mapping and significant PMRs
- FY13 contracting will play catch-up on PMRs, and run new production Lakes Superior, Huron



Great Lakes Coastal Flood Study HM Resources, Strategies & Actions



Obtaining Mitigation Action Gains through the Great Lakes Study Program:

- Leverage conversations with local communities while working Discovery meetings and “Risk Data and Mitigation Workshops”
- Build a Mitigation Actions strategy through participation with Core Stakeholders
 - Involvement by State partners is critical --- funding can be considered under fy12 CTP Program Management
 - STARR will likely lead under fy12 Task Order
 - Conversations will start sometime in October, with strategy and small tool development to be complete by April 2013

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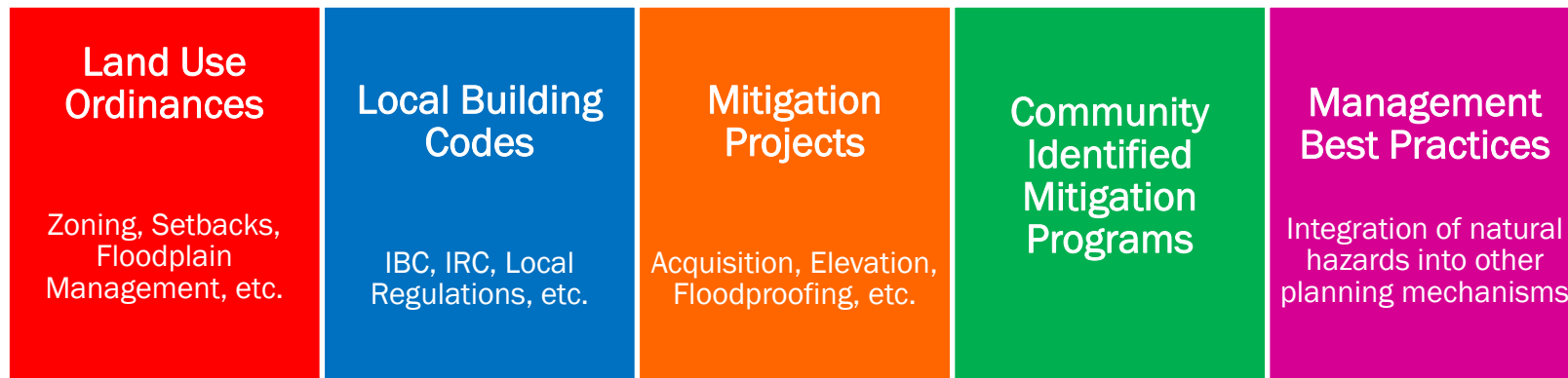
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Great Lakes Coastal Flood Study HM Resources, Strategies & Actions



- The right action (or mix of actions) will be based on recent community experiences and level of complexity in existing infrastructure
 - *Public Works*
 - *Building Standards*
 - *Community Planning and HM Plan Update / Integration processes*
 - *Communication Processes, GIS, etc.*
- Get the right people to the table: Integrated vs. Discipline-specific
- Document ideas and actions through the FEMA Action Tracking form



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Great Lakes Coastal Flood Study HM Resources, Strategies & Actions



MS/EM/HS P&H 106
March 2011
EMERGENCY MANAGEMENT AND
HOMELAND SECURITY DIVISION
Michigan Department of State Police



Michigan Hazard Mitigation Plan (Updated March 2011 edition)

Reducing hazard risks and vulnerabilities through
education, planning, physical improvements,
early warning, and coordination of programs and resources.



Prepared by:

Emergency Management and Homeland Security Division
Michigan Department of State Police

And

The Michigan Citizen-Community Emergency Response Coordinating Council

MASON COUNTY NATURAL HAZARD MITIGATION PLAN

JULY 2010



Prepared by:
Mason County

Division of Emergency Management

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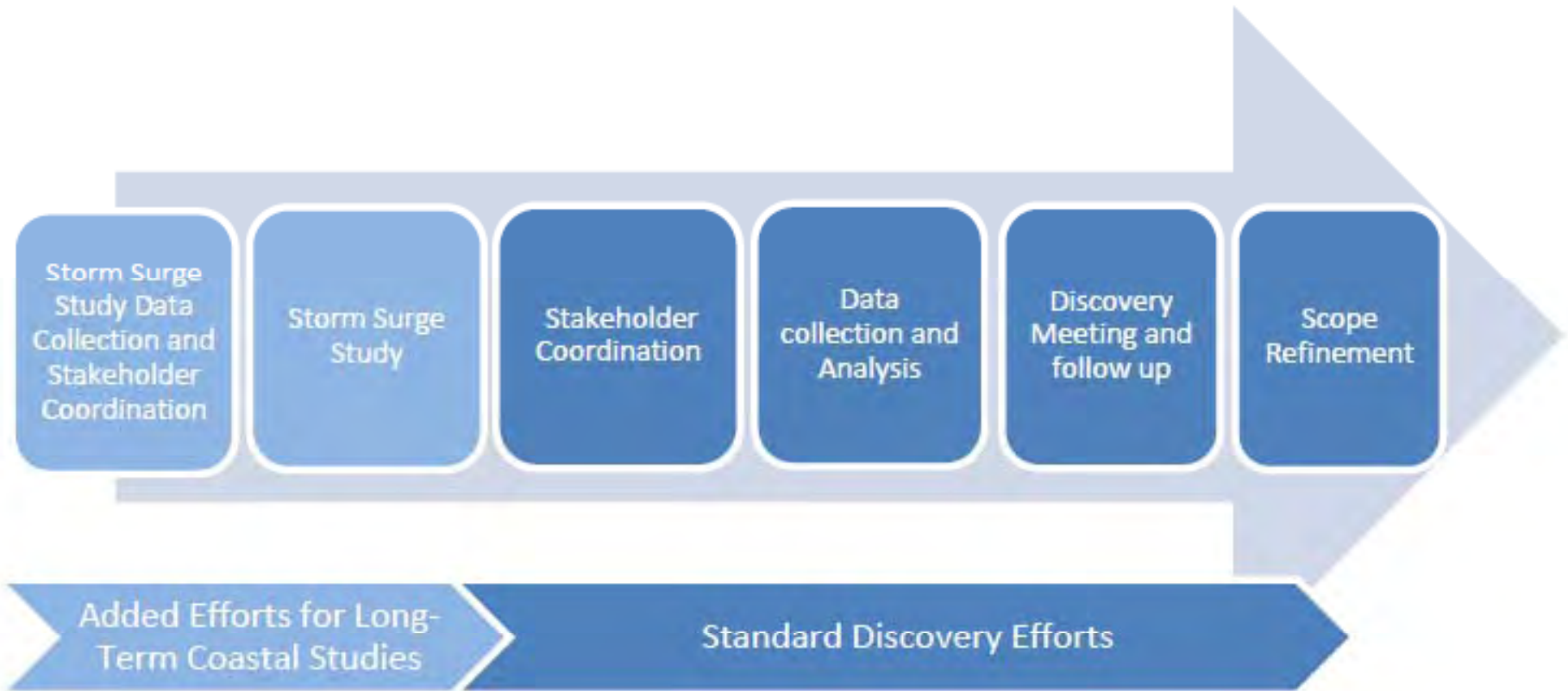


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Great Lakes Coastal Flood Study Discovery Process Overview



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Great Lakes Coastal Flood Study Lake Michigan Discovery



- 18 Michigan counties

- Menominee
- Delta
- Schoolcraft
- Mackinac
- Emmet
- Charlevoix
- Grand Traverse
- Antrim
- Leelanau
- Benzie
- Manistee
- Mason
- Oceana
- Muskegon
- Ottawa
- Allegan
- Van Buren
- Berrien

- 197 coastal communities



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Great Lakes Coastal Flood Study Lake St. Clair Discovery



- 3 Michigan counties
 - St. Clair
 - Macomb
 - Wayne
- 31 coastal communities



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Great Lakes Coastal Flood Study Lake Michigan/Lake St. Clair Discovery



Schedule of Activities

- Identify Draft Transect Locations – Completed
- Research available data – In Progress
- Information Exchange with Community Stakeholders – early July 2012
- Prepare draft Discovery Maps and Reports – July 2012
- Establish inventory of coastal structures based on oblique imagery – July/August 2012
- Facilitate Discovery Meetings – August/September 2012
- Final Discovery Report and Maps – December 2012
- Create library of digital data – December 2012



Great Lakes Coastal Flood Study Lake Michigan Discovery



Flood Risk Discovery and Initial Coordination - 8 Meetings Planned for Lake Michigan

Michigan

| Counties | Tentative Venue | Address | Date, Time |
|---------------------|--|---|--------------------------------------|
| Vanburen Berrien | Berrien County Administrative Building | 701 Main Street St. Joseph, MI 49085 | Monday 09/10/2012 2:00 - 5:00 pm |
| Ottawa Allegan | Ottawa County Fillmore Street Complex Board Room | 12220 Fillmore Street, Rm 310 West Olive, MI 49460 | Tuesday 09/11/2012 9:00 - 12:00 pm |
| Oceana Muskegon | Louis A. McMurray Conference and Transportation Center | 2624 Sixth Street Muskegon Heights, MI 49444 | Wednesday 09/12/2012 9:00 - 12:00 pm |
| Manistee Mason | Community Room | 400 S. Harrison Street Ludington, MI 49431 | Wednesday 09/12/2012 3:00 - 6:00 pm |

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Great Lakes Coastal Flood Study Lake Michigan Discovery cont'd...



Flood Risk Discovery and Initial Coordination - 8 Meetings Planned for Lake Michigan

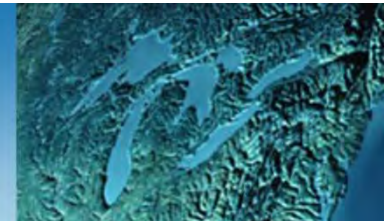
Michigan

| Counties | Tentative Venue | Address | Date, Time |
|--------------------------------------|--|--|--|
| Grand Traverse Benzie Leelanau | Training Room | 400 Boardman Avenue Traverse City, MI 49684 | Thursday 09/13/2012 1:00 - 4:00 pm |
| Antrim Charlevoix Emmet | Bellaire Community Hall | 202 North Bridge Street Bellaire, MI | Friday 09/14/2012 9:00 - 12:00 pm |
| Mackinac | TBD | TBD | Tentatively planned - Monday 08/13/2012; 3:00 - 5:00 pm |
| Delta Schoolcraft Menominee | Bay de Noc Community College Rooms 958 & 962 | 2001 N Lincoln Road Escanaba, MI 49829 | Tuesday 08/14/20012; 3:00 - 5:00 PM |

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Great Lakes Coastal Flood Study Lake St. Clair Discovery



Flood Risk Discovery and Initial Coordination - 3 Meetings Planned for Lake St. Clair

Michigan

| Counties | Tentative Venue | Address | Date, Time |
|-----------|--|---|---|
| St. Clair | TBD | TBD | Tentatively planned 8/20/2012; 9:00 - 11:00 AM |
| Macomb | Macomb County Verkuilen Building - Tentative as of 3/27/2012 | 21885 Dunham Rd., Clinton Twp, MI 48036 | 8/20/2012; 3:00 - 5:00 PM |
| Wayne | TBD | TBD | Tentatively planned 8/21/2012; 9:00 - 11:00 AM |

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Great Lakes Coastal Flood Study Discovery Outcomes



Outcome #1 - Encourage community participation

- Vet transect locations
- Identify reaches requiring special attention
- Document local data sources that will help improve study
- Identify local coastal management issues



Great Lakes Coastal Flood Study Discovery Outcomes



Outcome #2 - Explain study process and timelines

- High-level – Steps involved in study, and timeline
- Regulatory and non-regulatory products
- NFIP changes – Map revision objectives
- New concepts like LiMWA
- Where to find data and reports



Great Lakes Coastal Flood Study Discovery Outcomes



Outcome #3 - Introduce Mitigation Action Goals

- Distribute and discuss mitigation action form
- Develop Mitigation strategies and options
 - Land Use Ordinances
 - Local Building Codes
 - Management Best Practices
 - Traditional HM Projects
 - Community Planning and Programs
- Evaluate opportunities to build storm response erosion data to enhance local planning objectives and processes






Great Lakes Coastal Flood Study Lake Michigan/Lake St. Clair Discovery



Info Exchange Calls

- Discovery meeting Invitations sent out week of July 2 (5-6 weeks prior to meeting date)
- Calls start week of July 9 or 16
- Data Questionnaire to request:
 - *Basemap Data*
 - *Coastal Data*
 - *Other Data*
 - *Historical Flood Data*
 - *Risk Assessment*
 - *Flood Mitigation Information*
 - *Community Plans and Projects*

Community Discovery Data Questionnaire

Thank you for taking the time to complete this questionnaire. It helps FEMA understand flood risk issues in your community and your community's resilience to flooding through implementation.

Once you have completed the questionnaire, please return the form to:

Via e-mail: **STARR Contact's Email**
 Or by mail: **STARR Contact's Name**,
STARR Address,
City, State, Zip

Please provide as much information as possible. If you have an interest in or about completing this questionnaire, please contact: **Name of STARR Contact, email address.**

| Contact Information | |
|------------------------|---|
| Community Organization | |
| Name: | |
| Title: | |
| Address: | |
| E-mail: | |
| Phone: | |
| Contact Preference | <input type="checkbox"/> Email <input type="checkbox"/> Phone <input type="checkbox"/> None |

FEMA Region V
Lake Michigan Discovery
Community Discovery Data Questionnaire

FEMA Region V
Lake Michigan Discovery
Community Discovery Data Questionnaire

Page 2 of 7



Great Lakes Coastal Flood Study Lake Michigan/Lake St. Clair Discovery



Standard data inventory

- High-resolution digital topography
- Bathymetry Data – NOAA National Geophysical Data Center
- FIS reports
- Letters of Map Amendment and/or Letters of Map Revision
- Flood insurance policies and claim information
- CRS data
- Federal and State disaster information
- CAV information
- Repetitive loss data
- Census data
- Basemap data (roads, railroads, etc)

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Great Lakes Coastal Flood Study Lake Michigan/Lake St. Clair Discovery



Additional data to be collected

- FEMA-approved Hazard Mitigation Plans
- CBRS areas
- Building footprints/parcels
- Coastal data (structures, limit of PFD, shoreline change data, mean high water, mean sea level, tide gauge info, wind station data, wave buoy, areas of sig. beach/dune erosion)
- Data from other Federal/State agencies
 - Erosion rates



Great Lakes Coastal Flood Study Lake Michigan/Lake St. Clair Discovery



Flood Risk Discovery and Initial Coordination Draft Agenda

- Why are we here? (20 minutes)
 - Overview of study and explain role of discovery
- How is coastal flood risk being assessed for the Great Lakes? (30 minutes)
 - Review draft transects; coastal guidance updates; VE Zone Mapping and LIMWA; and coastal flood risk products
- How does this apply to my community? (20 min)
 - NFIP compliance and building codes; coastal planning and hazard mitigation opportunities; local coastal mitigation best practices; and hazard mitigation grant opportunities
- Interactive Session (40 minutes)
 - Utilization of coastal flood risk products for planning and mitigation; identification of existing local coastal data; view and discuss local coastal areas of concern using the discovery map; and discuss mitigation action opportunities and introduce the mitigation action form
- Wrap-up and Next Steps (10 minutes)
- Optional Interactive Stations (60 minutes following meeting)
 - Draft Transect Location Reviews and Discussion; Mitigation Resources, Strategies, and Actions

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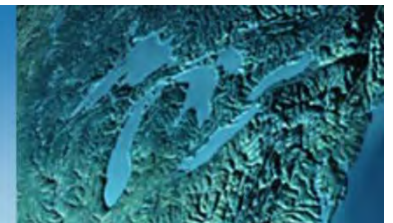
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Discovery Meeting Invitees

- Compiled list of community and county officials, including:
 - Chief Executive Officers (CEOs)
 - Floodplain Administrators (FPAs)
- For communities: only CEOs will receive official mailed invitation to Discovery Meetings (with a cc to FPA, State SHMO, State NFIP Coordinator)
- Compiled list of Other Federal Agencies (OFAs), State partners, and associations
- Need your help to reach out to others who should be invited to Discovery Meetings
 - Local Planners, Engineers, GIS Staff, and Building Officials
 - Emergency Management staff
 - Other State and Local resources



Great Lakes Coastal Flood Study Lake Michigan/Lake St. Clair Discovery



■ Final Discovery Reports

- Single, comprehensive report for all of Lake Michigan, with appendices for each county
- Single, comprehensive report for all of Lake St. Clair, with appendices for each county
- Includes pre-discovery data, meeting agenda, sign-in sheets, discussion topics, decisions made, etc.



■ Final Discovery Maps

- Including feedback from participants
- Visual representation of meeting outcomes

Discovery Report

Watershed Name, Watershed Number
County name(s)
Community name(s)
State(s)
Report Number 00

If community names do not fit on this front cover, please use the optional following page. If they do fit, then delete the following page.

Delete this text box when complete.

MMDD/YYYY



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Flood Risk Datasets

- Coastal Depth Grids and HAZUS
- Changes Since Last FIRM
- Erosion, Shoreline Features, and Lake Levels

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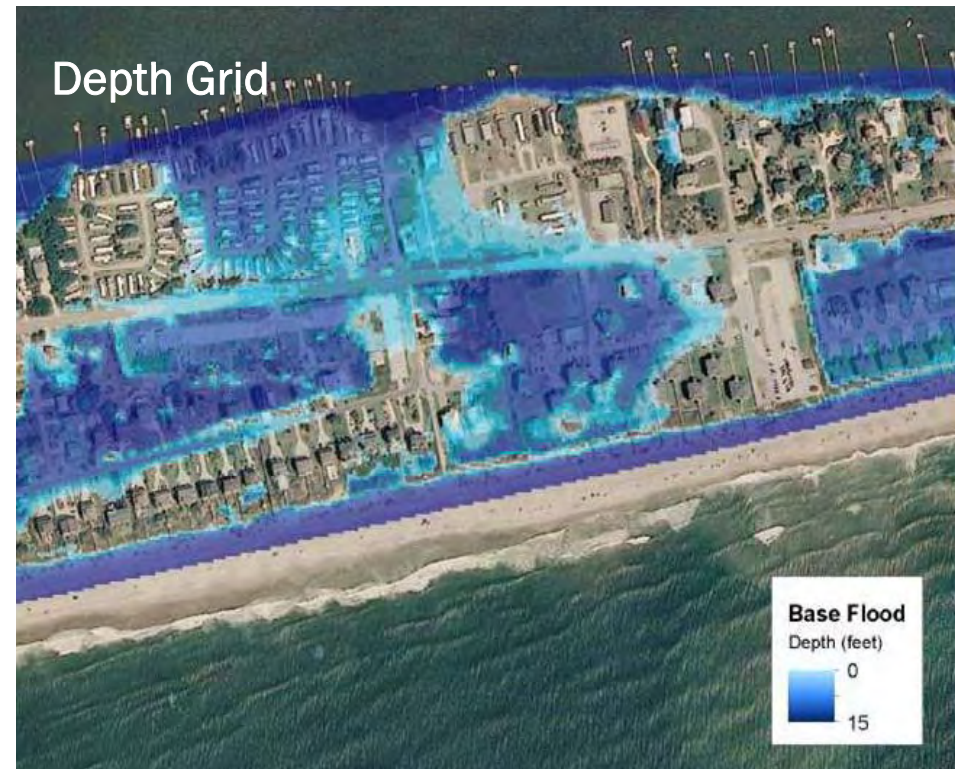
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Standard Flood Risk Products

- Coastal Depth Grids
- Flood Risk Assessment (HAZUS)

HAZUS[®]
EARTHQUAKE • WIND • FLOOD **MH**



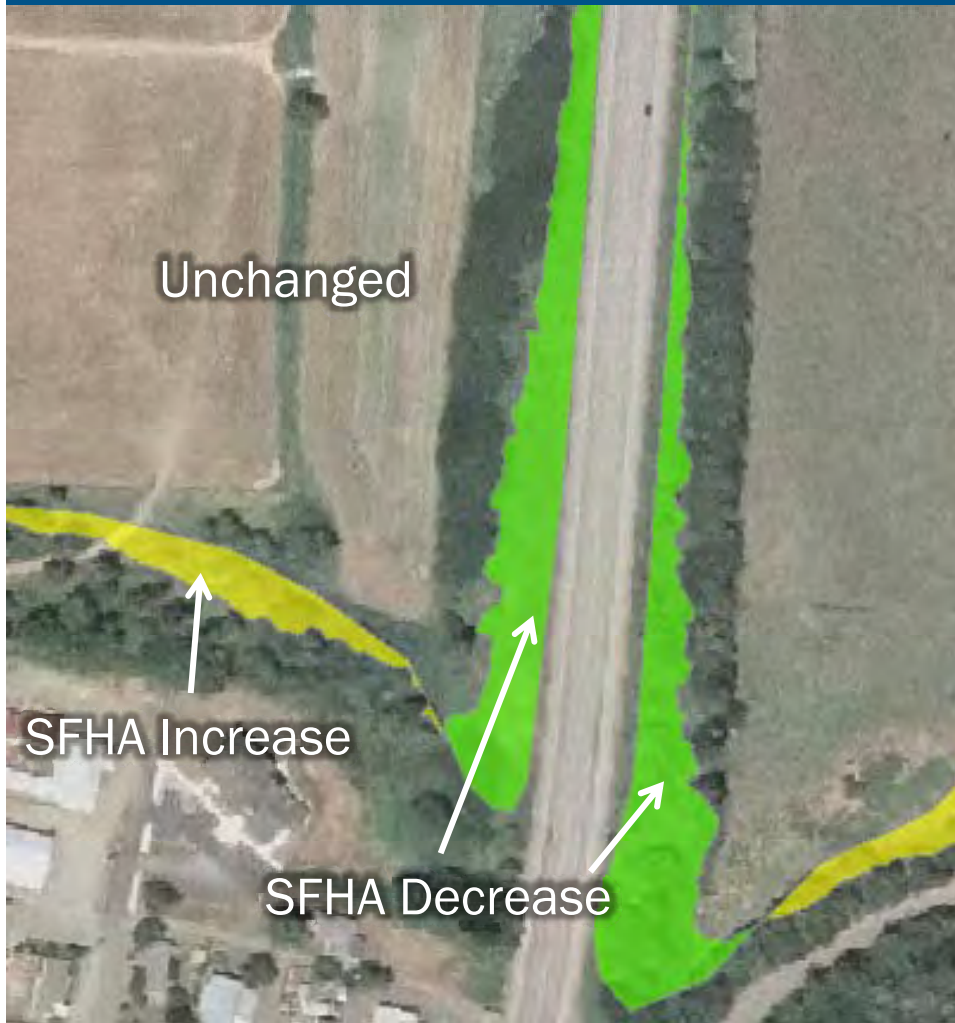
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Changes Since Last FIRM



| Data Fields Include | Example Data Values |
|---|---|
| Old Study Date | e.g. 1985 |
| Old Model Type(s) | e.g. HEC-1 / HEC-2 |
| Old Zone Type | e.g. Zone A |
| Old Topography | e.g. USGS 10-ft |
| New Study Info/Methods | Dates, Models, etc. |
| New Study Zone | e.g. Zone AE |
| New Topography | e.g. LiDAR 2-ft |
| New Study Engineering Factors / Changes | e.g. new structures, gages, topo, landuse, etc. |
| Estimated Structures | e.g. 9 |
| Estimated Population | e.g. 27 |

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Great Lakes Flood Risk Products



Erosion



Red Lantern Restaurant, Lake Michigan, IN

Lake Levels



Lake Michigan Shoreline
[Reference](#)

Shoreline Feature Dataset



Upper Peninsula Shoreline
[Reference](#)

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Shoreline Features Database

| Shoreline Material | Primary Land Use | Primary Coast Type | Primary Vegetation |
|--------------------|------------------------------|--------------------|-------------------------------|
| Sand | High Density Residential | High Dune, 10'+ | None |
| Cohesive | Moderate Density Residential | Dune, 2' - 10' | High Density Shrubs/Trees |
| Cobble | Low Density Residential | High Bluff, 10'+ | Moderate Density Shrubs/Trees |
| Diamicton* | Commercial/Industrial | Bluff, 2' - 10' | Low Density Shrubs/Trees |
| Shingle | Park Land | Coastal Wetland | Manicured Lawn |
| Bedrock | Farm Land | Flat Coast | Native Vegetation |
| Artificial | Forested | | |

- Contains primary and secondary Land Use tables – same for coast type and vegetation.
- Current project collects data at one-mile spacing, for scoping and cost
- Current project does not include field-based reconnaissance or sediment/subsurface soils collection

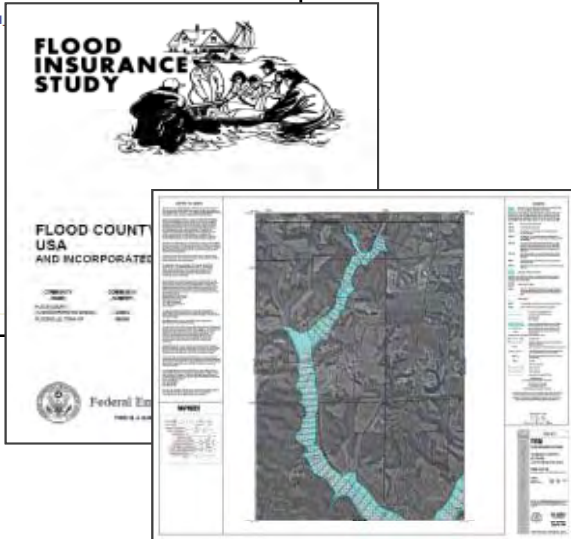


Program Product Comparisons

Traditional Regulatory Products

DFIRM Database

- Flood_Hazard_Data
- Political_Boundaries
- Public_Land_Survey_System
- TopoData
- Community_Panel
- L_Comm_Info
- L_MT1_LOMC
- L_Pan_Revis
- L_Pol_FHBM
- L_Riv_Model
- L_Stn_Start
- L_Wtr_Nm
- S_Bfe
- S_DOQ_Index
- S_Firm_Pan
- S_Gen_Struct
- S_Label_Id
- S_Label_Pt
- S_LOMR
- S_Perm_Bmk
- S_Quad
- S_Riv_Mrk
- S_Trnsport_Ar



FLOOD INSURANCE STUDY

FLOOD COUNT USA AND INCORPORATED

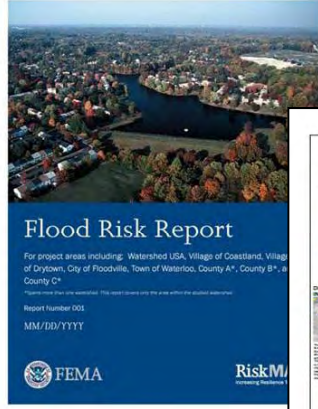
Federal Emergency Management Agency

Subject to statutory due-process requirements

Non-Regulatory Products

Flood Risk Database

- Community_Panel_Invls
- L_Comm_Info
- L_MT1_LOMC
- L_Pan_Revis
- L_Pol_FHBM
- L_Riv_Model
- L_Stn_Start
- L_Wtr_Nm
- S_Bfe
- S_DOQ_Index
- S_Firm_Pan
- S_Gen_Struct
- S_Label_Id
- S_Label_Pt
- S_LOMR
- S_Perm_Bmk
- S_Quad
- S_Riv_Mrk
- S_Trnsport_Ar

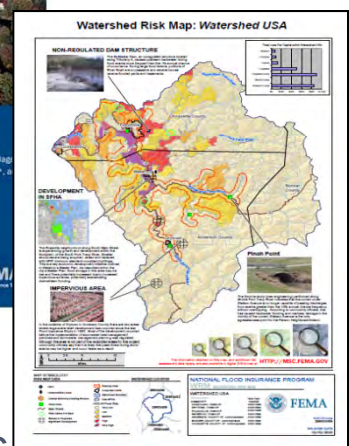


Flood Risk Report

For project areas including: Watershed USA, Village of Coastland, Village of Drytown, City of Floodville, Town of Waterloo, County A*, County B*, & County C*

Report Number 001
MM/DD/YYYY

FEMA RiskMAP



Watershed Risk Map: Watershed USA

NATIONAL FLOOD INSURANCE PROGRAM
FEMA

Not subject to statutory due-process requirements



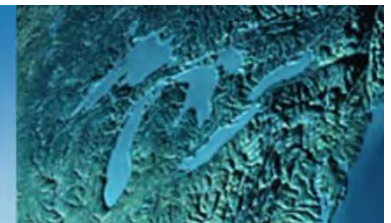
Coastal Flood Hazard Zones

■ Hazard Zones

- VE Zone – Areas expected to be affected by wave impact in 100-year event
 - Base Flood Elevation established
- AE Zone – Areas expected to be flooded by inundation in 100-year event
 - Base Flood Elevation established
- X Zone – Areas not expected to be flooded in 100-year event
 - Shaded X – Areas expected to be flooded in 500-year event
 - Base Flood Elevations not established
- LiMWA – Areas subject to wave heights of at least 1.5 feet
 - Non-Regulatory

■ Gutters

- Internal zone breaks where Base Flood Elevation changes
- VE/AE Gutter - Location where risk of damage due to wave action diminishes



How is LiMWA Defined?

- **Coastal Zone Wave Heights**
 - Zone VE includes wave heights equal to or greater than three feet
 - Zone AE includes wave heights less than three feet
- **LiMWA is the line mapped to delineate the inland extent of wave heights of at least 1.5 feet**
 - Wave heights as small as 1.5 feet can cause significant damage to structures
- **LiMWA alerts people that are not in the high wave hazard zone (VE Zone) that they may still be affected by wave action in the AE Zone**



Wave Action - Structural Risk

- US Army Corps of Engineers – 1973
 - Breaking wave height of 3 feet
 - “area subject to high velocity waters, including but not limited to hurricane wave wash”

- FEMA – 2000
 - Coastal Construction Manual
 - Additional post-storm damage assessments identified 1.5 wave also can knock a structure off a foundation



http://www.fema.gov/pdf/rebuild/mat/coastal_a_zones.pdf

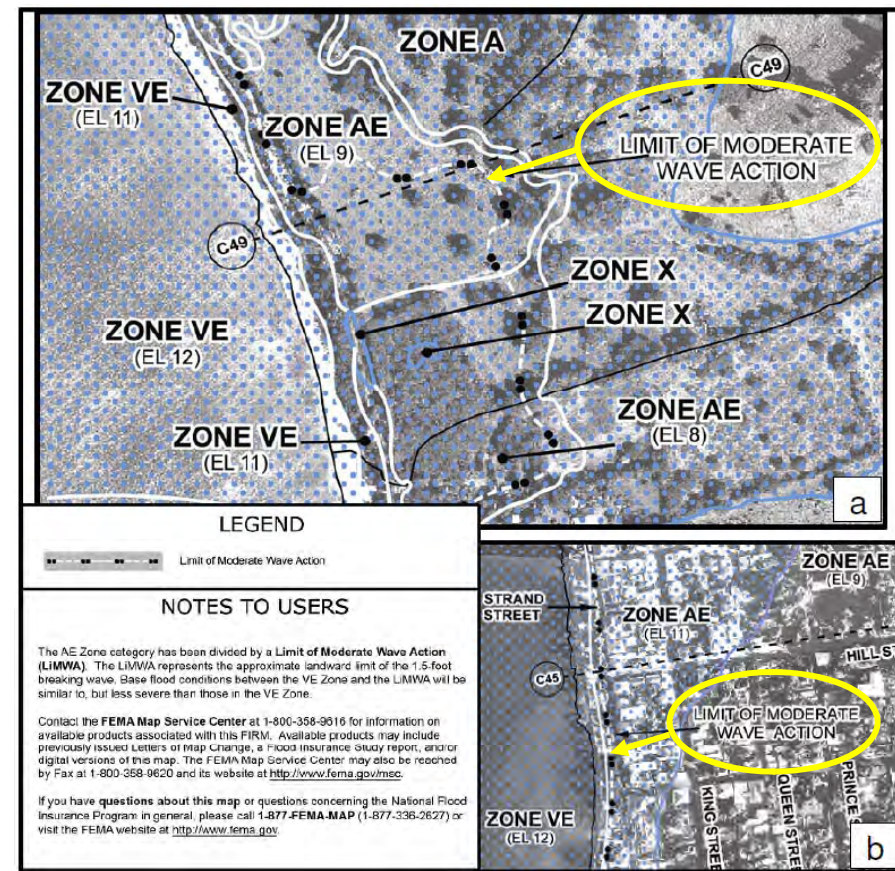
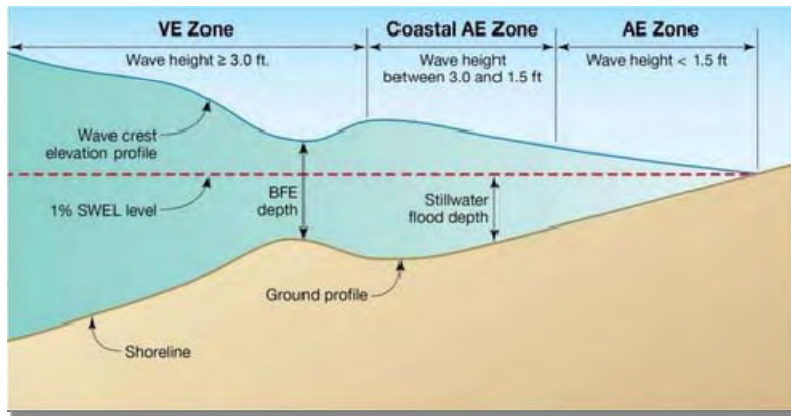


Limit of Moderate Wave Action (LiMWA)



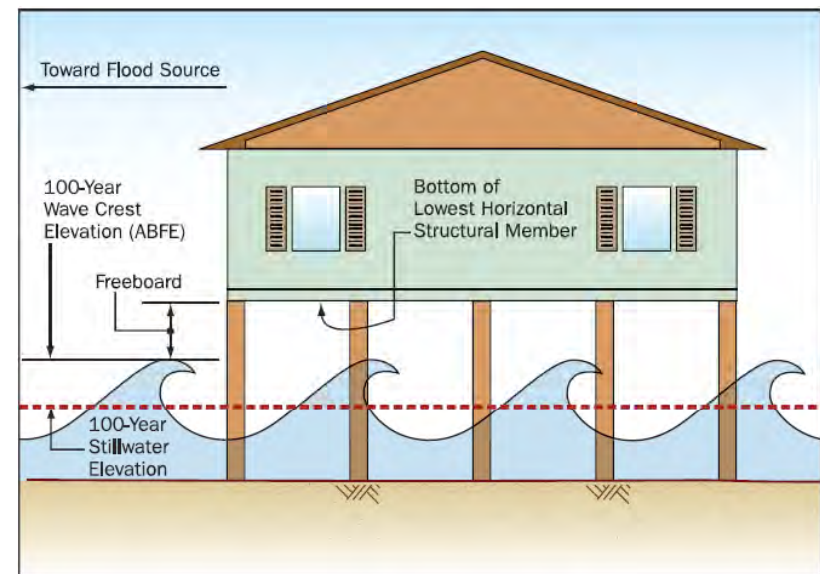
FEMA Procedure Memorandum No. 50, 2008

- Not a regulatory requirement
- No Federal Insurance requirements tied to LiMWA



Coastal Zones and NFIP Compliance

- Must meet minimum NFIP and community coastal requirements
- NFIP design and construction requirements are more stringent in V zones due to wave, debris, and erosion hazards in V zones
- Recommendations for exceeding the minimum NFIP requirements (Coastal A Zones)
 - Can obtain CRS credits for Coastal A Zone Requirements
- Resources Available



Transect



Transect Placement

- Transects are placed to define representative profiles for a shoreline reach.
- Transect spacing depends on upland development
 - Developed areas – As dense as 1000 ft
 - Rural areas – Spacing can be 1-2 miles
- Transects are:
 - Profiles along which flooding analysis is performed
 - Used to transform offshore conditions to the shoreline
 - Use to define flood impacts upland to a particular shoreline type



Draft Transect Layout – Lake Michigan, Michigan



- Transect Estimates - Michigan – 1,963 Miles

| State | County | Proposed Draft Transects |
|--------------|----------------|--------------------------|
| Michigan | Emmet | 41 |
| | Charlevoix | 30 |
| | Antrim | 20 |
| | Grand Traverse | 48 |
| | Leelanau | 68 |
| | Benzie | 10 |
| | Manistee | 15 |
| | Mason | 11 |
| | Oceana | 11 |
| | Muskegon | 15 |
| | Ottawa | 20 |
| | Allegan | 18 |
| | Van Buren | 11 |
| | Berrien | 38 |
| | Mackinac | 60 |
| | Schoolcraft | 40 |
| Delta | 120 | |
| Menominee | 25 | |
| Total | | 601 |



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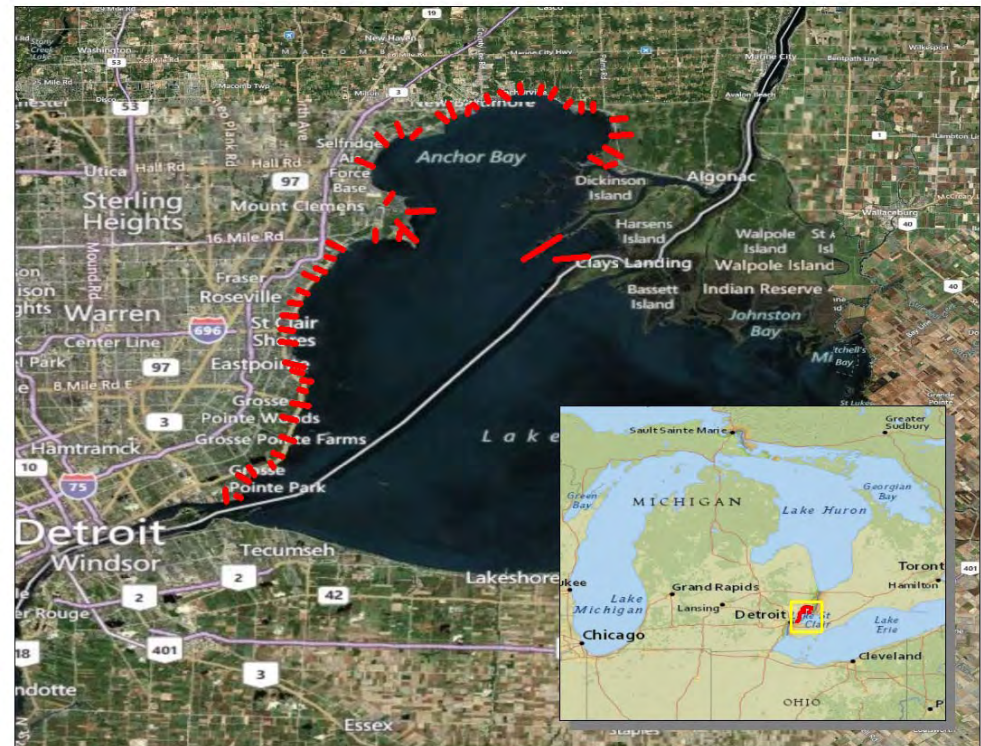


Draft Transect Layout – Lake St. Clair, Michigan



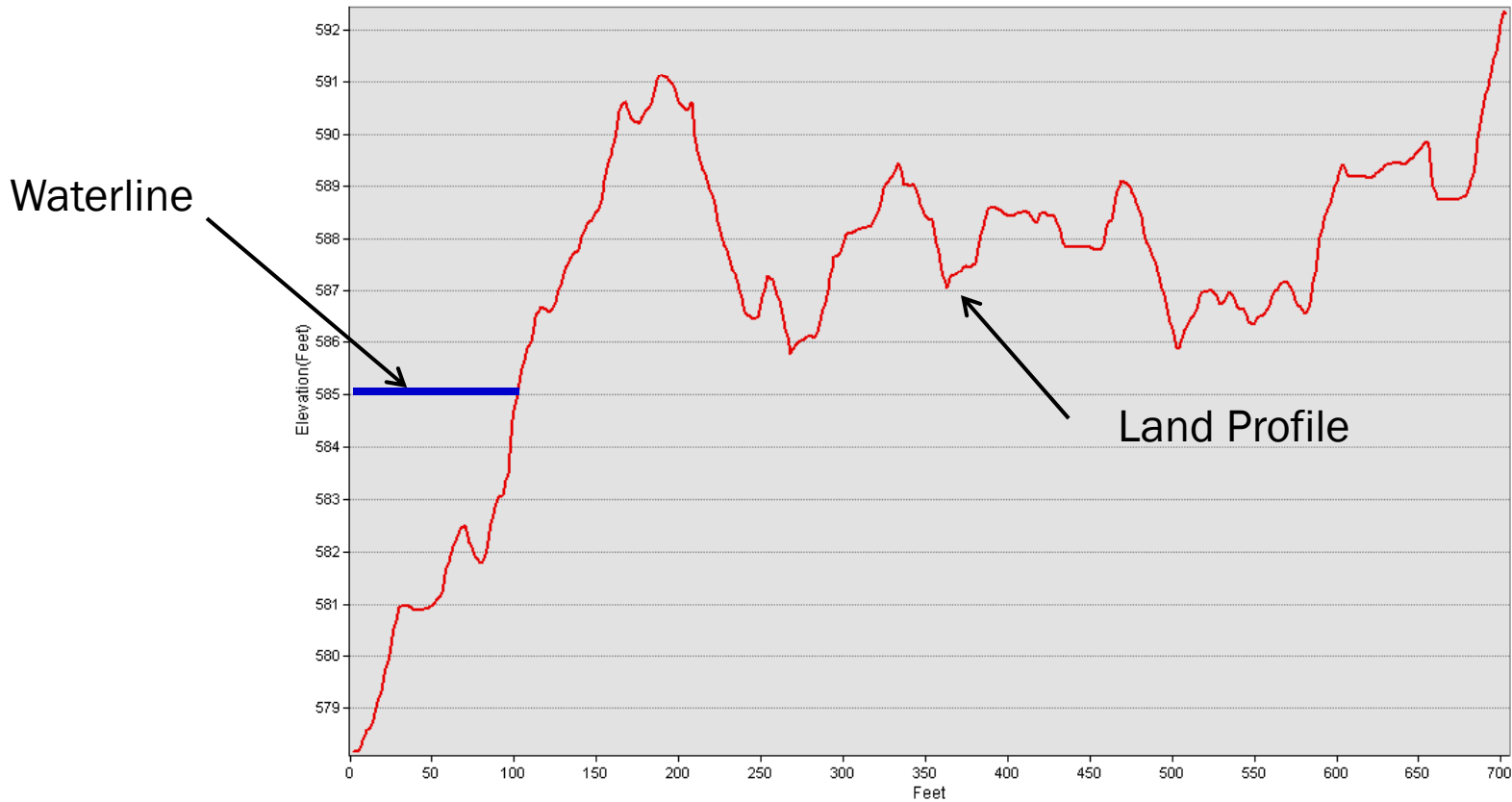
- Transect Estimates
 - Michigan – 89 Miles

| State | County | Proposed Draft Transects |
|--------------|-----------|--------------------------|
| Michigan | St. Clair | 15 |
| | Macomb | 25 |
| | Wayne | 10 |
| Total | | 50 |

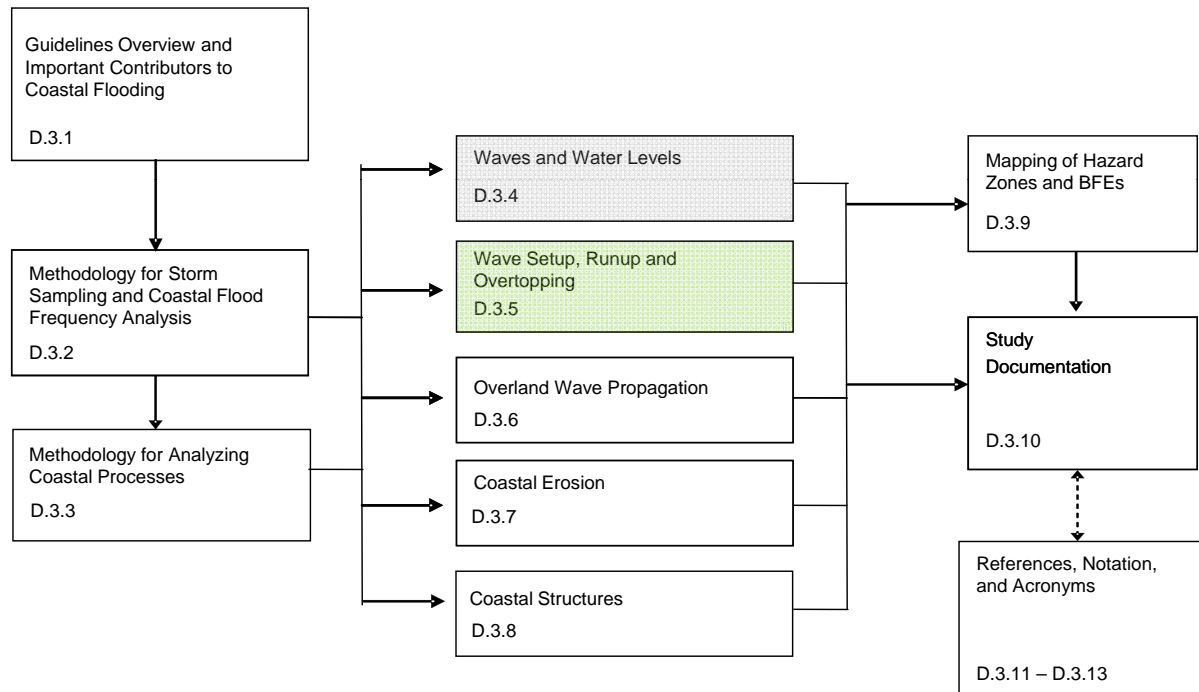
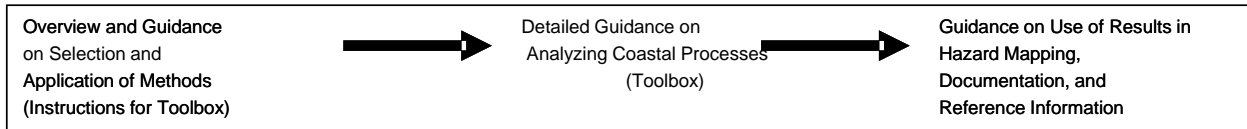


Profile from newest LiDAR

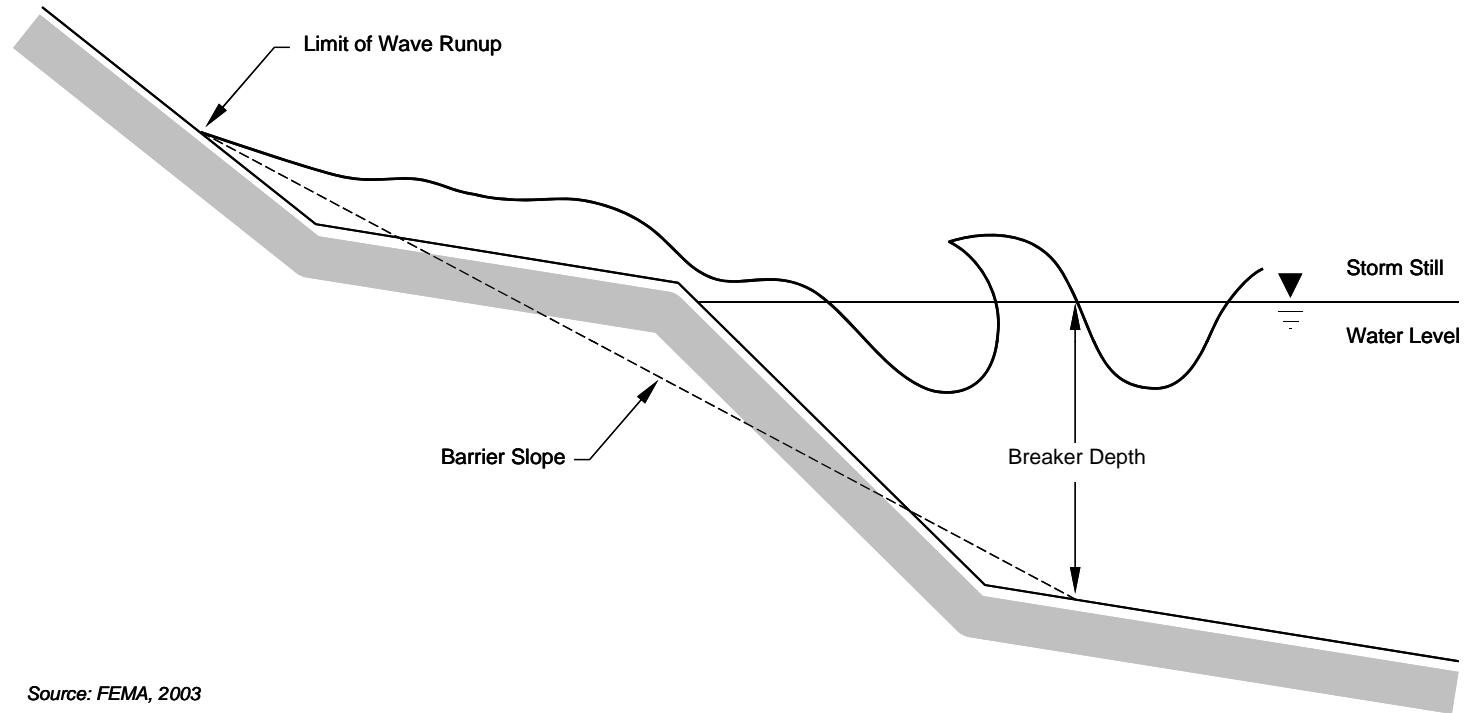
Transect Profile



Coastal Analysis and Updates to Guidance



Wave Runup



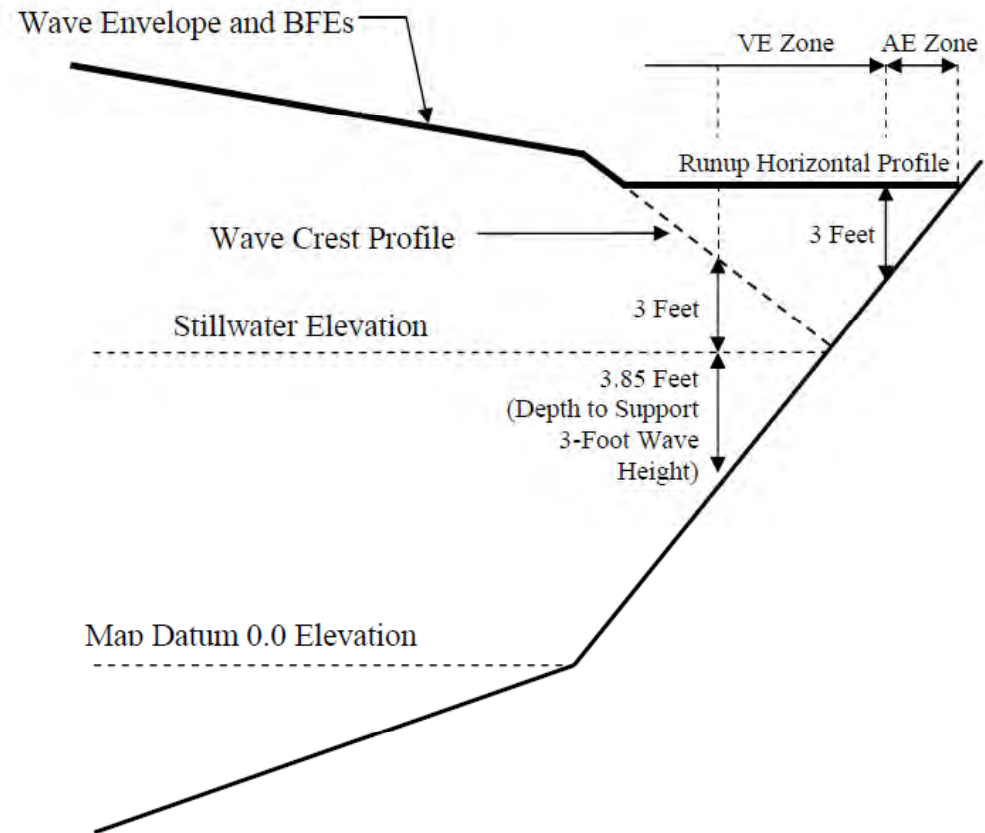
Source: FEMA, 2003

Figure D.3.5-5. Wave Runup Sketch



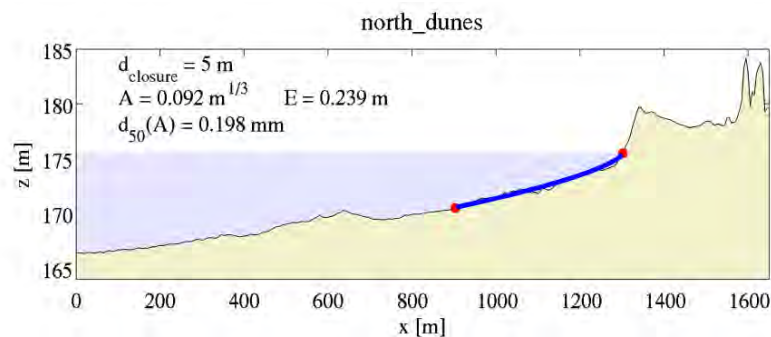
Wave Envelope

- **Overland Wave Propagation**
 - Wave crest is 3 feet above still water elevation
- **Runup**
 - Horizontal profile 3 feet above ground elevation



Erosion Assessment Methods

- 1-D surf zone dynamics model
 - CSHORE
 - SBEACH
 - COSMOS
- Requirements
 - Cross-shore profile
 - Sediment grain size



ERDC/CHL TR-12-X

Coastal and Hydraulics Laboratory



US Army Corps
of Engineers
Engineer Research and
Development Center

Lake Michigan: Prediction of Sand Beach and Dune Erosion for Flood Hazard Assessment

DRAFT April 2012

Bradley D. Johnson



Great Lakes Coastal Flood Study, 2012 Federal Inter-Agency Initiative

Approved for public release; distribution is unlimited.

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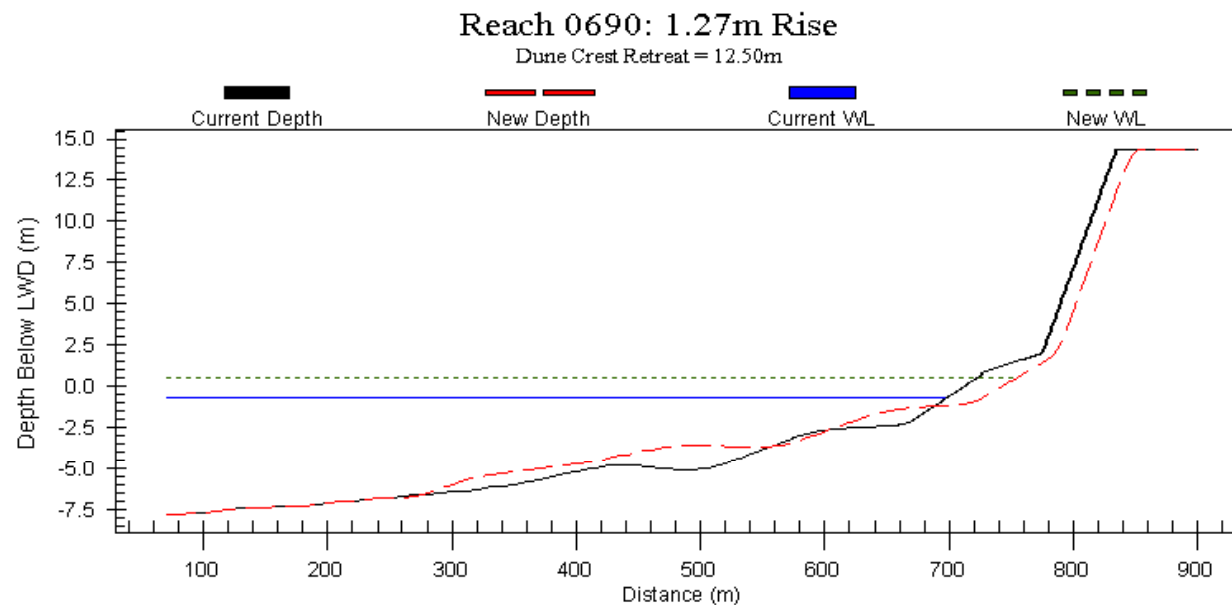
Great Lakes
Coastal Flood Study

greatlakescoast.org

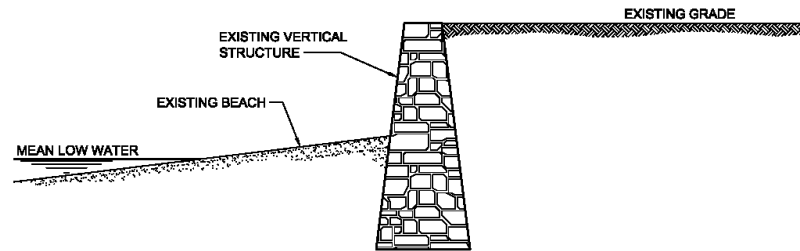


Profile Adjustment

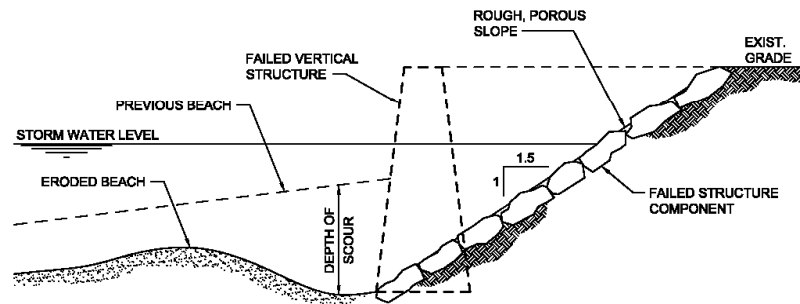
- In lieu of historical cross-shore profiles
- Necessary for response-based approach
- Utilize Bruun Rule for rising or falling lake levels



Vertical Structures



VERTICAL STRUCTURE GEOMETRY PRIOR TO FAILURE

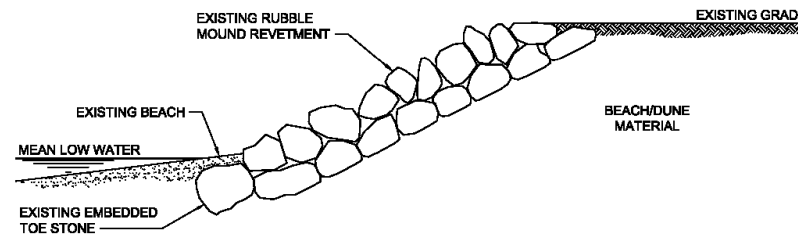


VERTICAL STRUCTURE FAILURE GEOMETRY

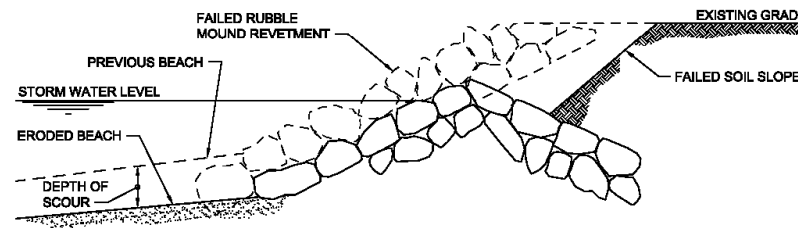
PARTIAL FAILURE OF VERTICAL COASTAL STRUCTURE



Sloped Structures



REVETMENT GEOMETRY PRIOR TO FAILURE

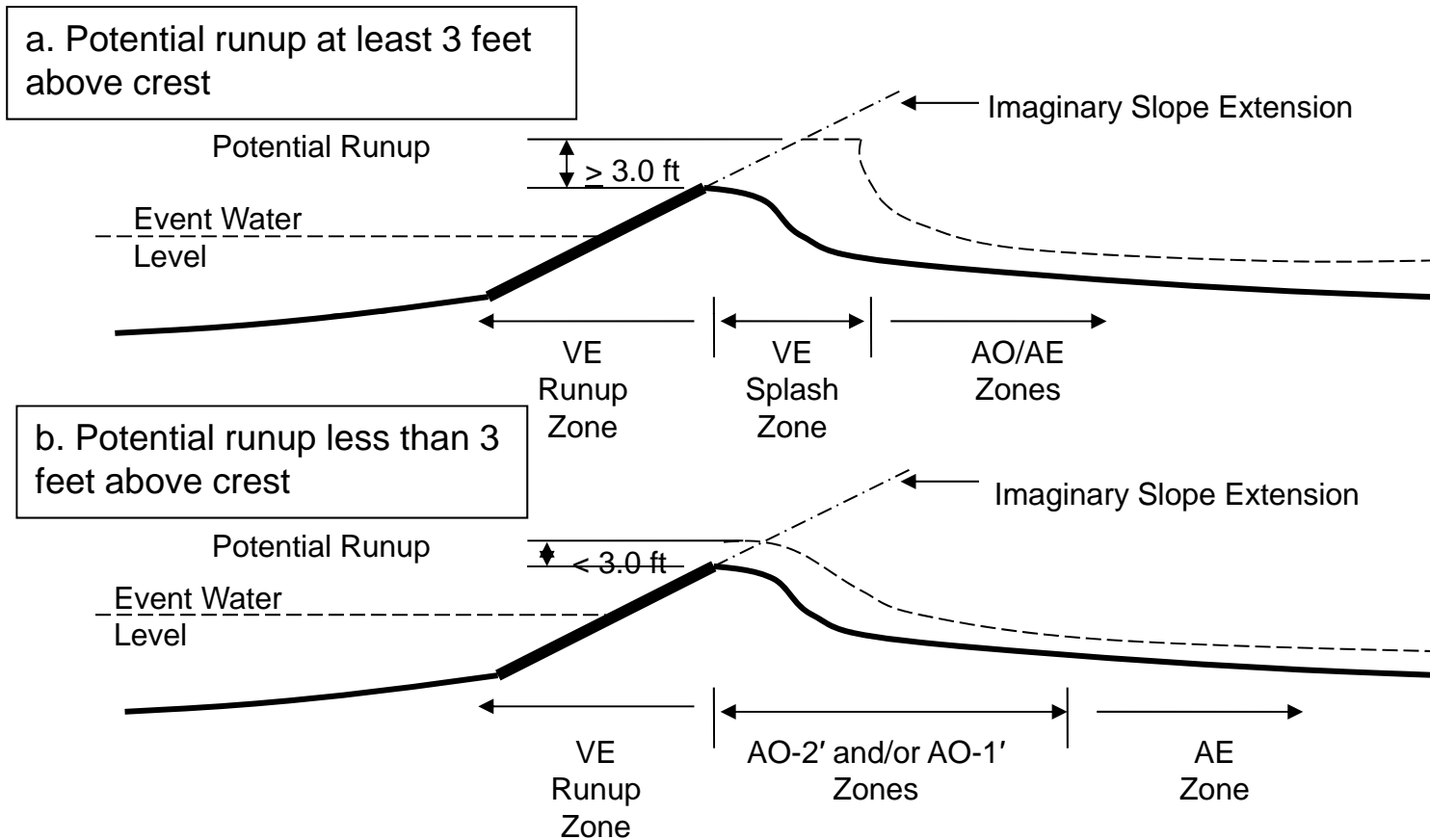


REVETMENT FAILURE GEOMETRY

PARTIAL FAILURE OF A SLOPING REVETMENT



Interpretation of Wave Runup Results

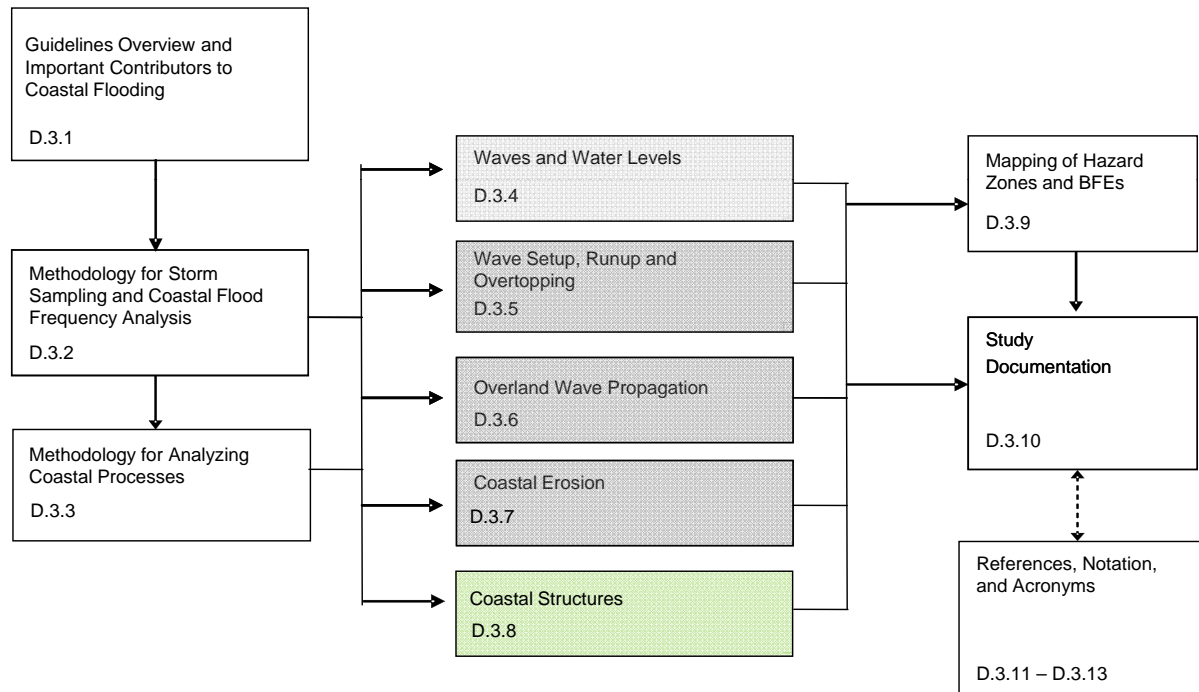
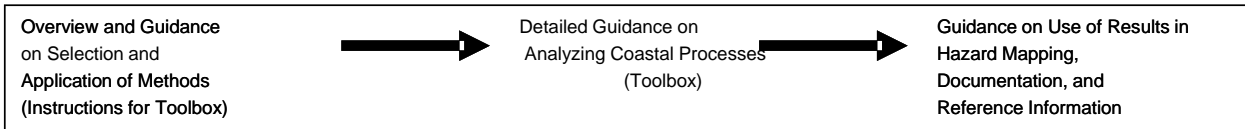


Transect Analysis to Mapping

- Flood zone extents are analyzed along representative shoreline transects
- Zones are drawn between transects by interpolation based on:
 - Topography
 - Upland Cover
 - Type
 - Density
 - Upland Development
 - Residential
 - Commercial
 - Open
 - Coastal Structures
 - Presence
 - Condition



Updates to Guidance



VE Zones in the Great Lakes

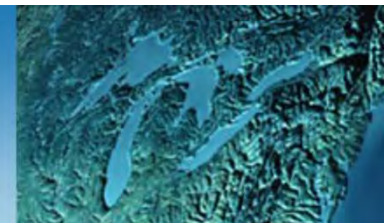
- From the revised Appendix D.3:
 - “VE zones may also be mapped where the engineering analysis indicates their presence“
 - “The typical study finding is a narrow VE zone, making its usefulness uncertain on maps at usual scales“
 - “Relatively small numbers of existing coastal buildings are likely to be affected by possible VE zone designations along some Great Lakes”
 - “Only with prior approval from the FEMA study representative should the VE zones be mapped”





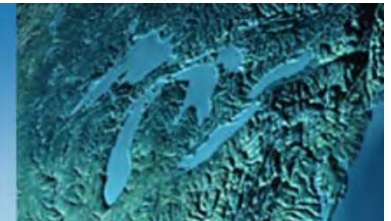
Lake Michigan Demonstration Projects

- Sites have been selected based on availability of historic data and assume a broad reflection of conditions throughout the lakes
- Lake Michigan demonstration data and associated reports will address two areas of ongoing evaluation:
 - Sensitivity of Erosion Prediction to Initial Beach Profile Conditions; and
 - Evaluation of Runup Computational Options (response- and event-based approaches) and an evaluation of CSHORE for predicting runup using mobile and fixed-bed assumptions.



Next Steps

- We will provide:
 - Draft Transect Layouts
 - Community Contact List
 - Summary of Today's Meeting
 - Document discussions and outcomes
 - Action items
- Work with you to:
 - Gather additional data, such as:
 - Locations of coastal structures, areas of recent or proposed development, and beach nourishment or dune restoration projects
 - Verify community contacts to attend Information Exchange/Discovery Meetings
 - Select agency representatives to attend Discovery Meetings



Contacts



FEMA:

Ken Hinterlong
ken.hinterlong@fema.dhs.gov

Erin Maloney
erin.maloney@fema.dhs.gov

Tom Smith
Thomas.Smith6@fema.dhs.gov

STARR:

Holly Davis (Lake Michigan)
Holly.Davis@starr-team.com

Laura Keating (UP Lake Michigan and
Lake St. Clair)
Laura.keating@starr-team.com

Stacey Roberts (Coastal)
Stacey.Roberts@starr-team.com

Jaspreet Randhawa
Jaspreet.Randhawa@starr-team.com

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Keating, Laura

From: Keating, Laura
Sent: Monday, July 30, 2012 3:12 PM
To: Keating, Laura; 'scheduling@detroitmi.gov'; 'scottr@detroitmi.gov'; 'tjkpc@aol.com'; 'Building@gpshoresmi.gov'; 'mayornovitke@comcast.net'; 'gtutag@gpwmi.us'; 'gppkd@aol.com'; 'tbrennan@grossepointefarms.org'; 'rficano@co.wayne.mi.us'; 'hsaab@co.wayne.mi.us'; 'Hinterlong, Ken'; Randhawa, Jaspreet; Davis, Holly A (Holly.Davis@atkinglobal.com); Roberts, Stacey
Subject: RE: FEMA's Great Lakes Coastal Flood Study: Discovery Information Exchange Session for Wayne County

Good Afternoon,

This is just a reminder of the Great Lakes Coastal Flood Study Information Exchange Session conference call scheduled for Lake St. Clair Wayne County communities tomorrow at 10am.

Date/Time: Tuesday, July 31, 2012; 10:00 - 11:00 am, ET
Link to WebEx: <http://e-meetings.verizonbusiness.com/nc/join.php>
Meeting Number: 445288484
Call in number: 1-866-398-2885
Participant Code: 197462

**please note, there is no passcode needed for the WebEx login - please leave it blank and click to continue.*

We look forward to speaking with you tomorrow!

Thanks,
Laura

Laura Keating, CFM
direct/fax: 925-296-8048
cell: 617-319-2472

-----Original Appointment-----

From: Keating, Laura
Sent: Wednesday, July 25, 2012 3:31 PM
To: scheduling@detroitmi.gov; scottr@detroitmi.gov; tjkpc@aol.com; Building@gpshoresmi.gov; mayornovitke@comcast.net; gtutag@gpwmi.us; gppkd@aol.com; tbrennan@grossepointefarms.org; rficano@co.wayne.mi.us; hsaab@co.wayne.mi.us; 'Hinterlong, Ken'; Randhawa, Jaspreet; Davis, Holly A (Holly.Davis@atkinglobal.com); Roberts, Stacey
Subject: FEMA's Great Lakes Coastal Flood Study: Discovery Information Exchange Session for Wayne County
When: Tuesday, July 31, 2012 7:00 AM-8:00 AM (GMT-08:00) Pacific Time (US & Canada).
Where: Call in number: 1-866-398-2885 Participant Code: 197462 and WebEx

Good Afternoon,

You are receiving this meeting invitation because you have been identified as a **Lake St. Clair** local community stakeholder. You should have recently received an invitation in the mail from the Federal Emergency Management Agency (FEMA), regarding the **Great Lakes Coastal Flood Study** effort, inviting you to attend a Discovery Meeting in August, as well as this information exchange session, scheduled for **Tuesday, July 31st at 10am ET**. More information about the **Great Lakes Coastal Flood Study** may be found at <http://www.greatlakescoast.org>.

While the WebEx and call-in information was provided in the letter, I wanted to also provide this information to you via email to serve as a reminder. Below is the call-in and WebEx information:

Date/Time: Tuesday, July 31, 2012; 10:00 - 11:00 am, ET
Link to WebEx: <http://e-meetings.verizonbusiness.com/nc/join.php>
Meeting Number: 445288484
Call in number: 1-866-398-2885
Participant Code: 197462

This informal session will begin the process of learning about your available local coastal data, hazard mitigation strategies, and what the critical flooding issues are in your community so that we can then work with you to determine how to best utilize that information during FEMA's Great Lakes study. A data request form is attached to help facilitate the discussion. We encourage open discussions throughout this meeting and will use the information to better cater our upcoming Discovery Meetings as well. Attendees of this conference call, as well as the Discovery Meetings, may include, but certainly are not limited to, community leaders, emergency managers, GIS specialists, engineers, outreach specialists, and local planners.

We look forward to speaking with you on Tuesday, and appreciate your participation in this process. If you have any questions, or are not able to attend this session but would like to learn more, please do not hesitate to contact me directly. My information can be found below.

<< File: LAKE ST CLAIR Discovery Coastal Data Request Form - 07-18-2012.docx >>

Thanks,
Laura

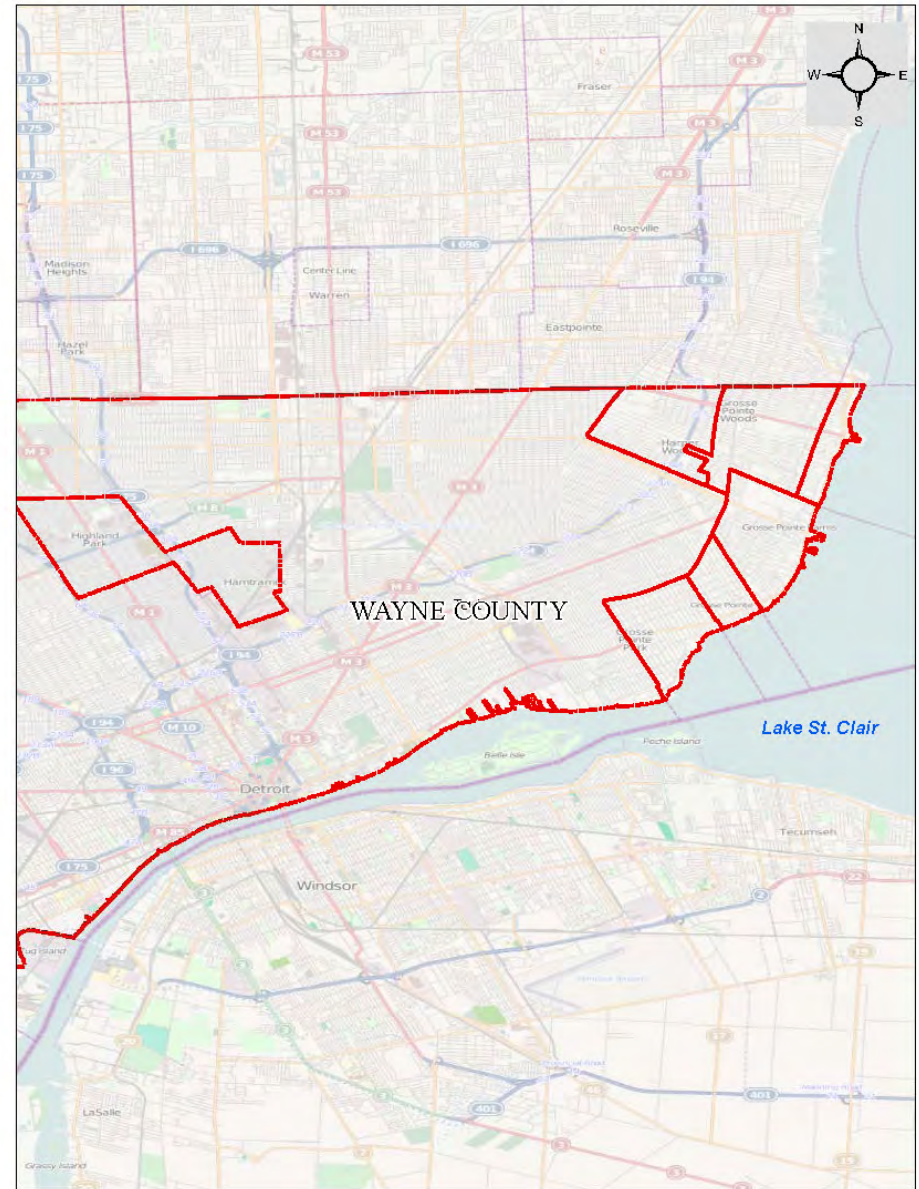
Laura Keating, CFM
STARR
direct/fax: 925-296-8048
cell: 617-319-2472



FEMA

Information Exchange Session for Lake St. Clair Discovery

Wayne County
July 31, 2012
10am - 11am



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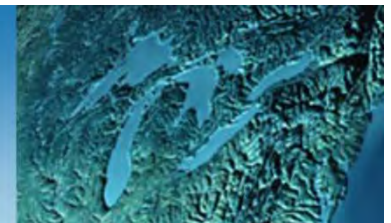
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Purpose of Information Exchange

- Introduction to Risk MAP
- Introduction to Great Lakes Flood Study and Discovery
- Learn more about your areas of concern, coastal flood risk, and coastal mitigation
- Bring the right people to the table early
- Identify data gaps



Risk MAP (Mapping, Assessment, and Planning) Vision



Goals

1. Address gaps in flood hazard data
2. Increase risk awareness to encourage risk reduction
3. Risk-based Mitigation Planning resulting in risk reduction actions
4. Enhanced digital platform to improve communication and sharing of risk data
5. Align programs and develop synergies



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Overview of Great Lakes Coastal Flood Study



- Latest models, data, and technology
- Deliver updated flood maps and flood risk datasets
- Equip Federal Agencies, eight States and hundreds of coastal communities with data and planning tools to facilitate actions to enhance resiliency of the Great Lakes ecosystem



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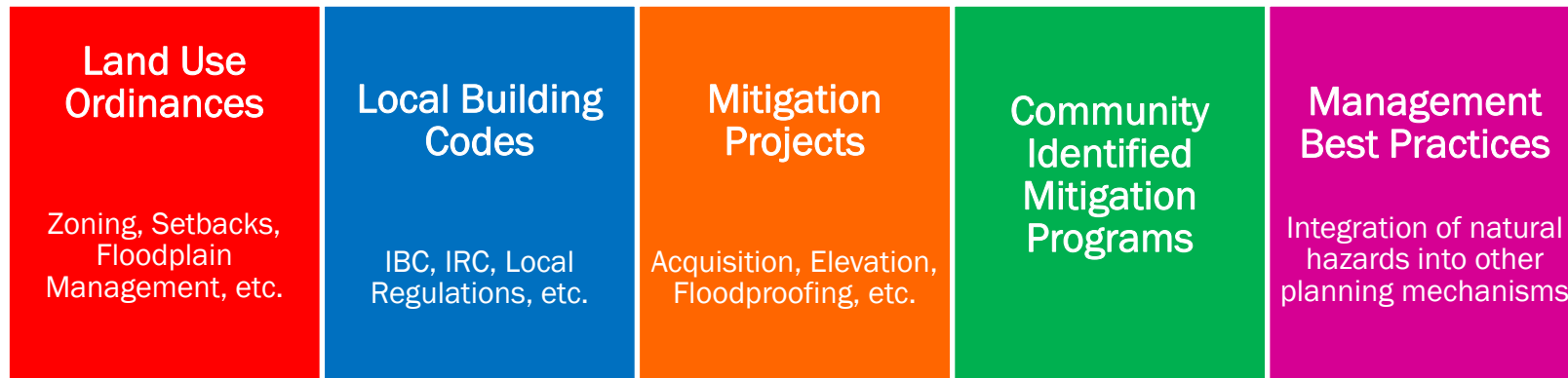
greatlakescoast.org



Hazard Mitigation Resources, Strategies & Actions



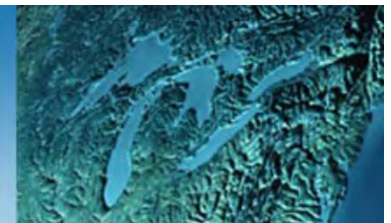
- Recent community hazard mitigation experiences?
 - *Public Works*
 - *Building Standards*
 - *Community Planning and Hazard Mitigation Plan Update*
 - *Communication Processes, GIS, etc.*
- New option to document ideas and actions through the FEMA Mitigation Action Form



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Products and Datasets: Regulatory and Non-regulatory



Traditional Regulatory Products

DFIRM Database

- Flood_Hazard_Data
- Political_Boundaries
- Public_Land_Survey_System
- TopoData
- Community_Panel
- L_Comm_Info
- L_MT1_LOMC
- L_Pan_Revis
- L_Pol_FHBM
- L_Riv_Model
- L_Stn_Start
- L_Wtr_Nm
- S_Bfe
- S_DOQ_Index
- S_Firm_Pan
- S_Gen_Struct
- S_Label_Ld
- S_Label_Pt
- S_LOMR
- S_Perm_Bmk
- S_Quad
- S_Riv_Mrk
- S_Trnsport_Ar

FLOOD INSURANCE STUDY

FLOOD COUNT USA AND INCORPORATED

Federal Emergency Management Agency

Subject to statutory due-process requirements

Non-Regulatory Products

Flood Risk Database

- Community_Panel_Invls
- L_Comm_Info
- L_MT1_LOMC
- L_Pan_Revis
- L_Pol_FHBM
- L_Riv_Model
- L_Stn_Start
- L_Wtr_Nm
- S_Bfe
- S_DOQ_Index
- S_Firm_Pan
- S_Gen_Struct
- S_Label_Ld
- S_Label_Pt
- S_LOMR
- S_Perm_Bmk
- S_Quad
- S_Riv_Mrk
- S_Trnsport_Ar

Flood Risk Report

For project areas including: Watershed USA, Village of Coastland, Village of Drytown, City of Floodville, Town of Waterloo, County A*, County B*, and County C*

Report Number 001
MM/DD/YYYY

FEMA RiskMAP

Watershed Risk Map: Watershed USA

NATIONAL FLOOD INSURANCE PROGRAM
FEMA

Not subject to statutory due-process requirements

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Products and Datasets: Coastal Products in Development



Erosion



Red Lantern Restaurant, Lake Michigan, IN

Lake Levels



Lake Michigan Shoreline
[Reference](#)

Shoreline Feature Dataset



Upper Peninsula Shoreline
[Reference](#)

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Risk MAP Overview: Shoreline Features Database



| Shoreline Material |
|--------------------|
| Sand |
| Cohesive |
| Cobble |
| Diamicton* |
| Shingle |
| Bedrock |
| Artificial |

| Primary Land Use |
|------------------------------|
| High Density Residential |
| Moderate Density Residential |
| Low Density Residential |
| Commercial/Industrial |
| Park Land |
| Farm Land |
| Forested |

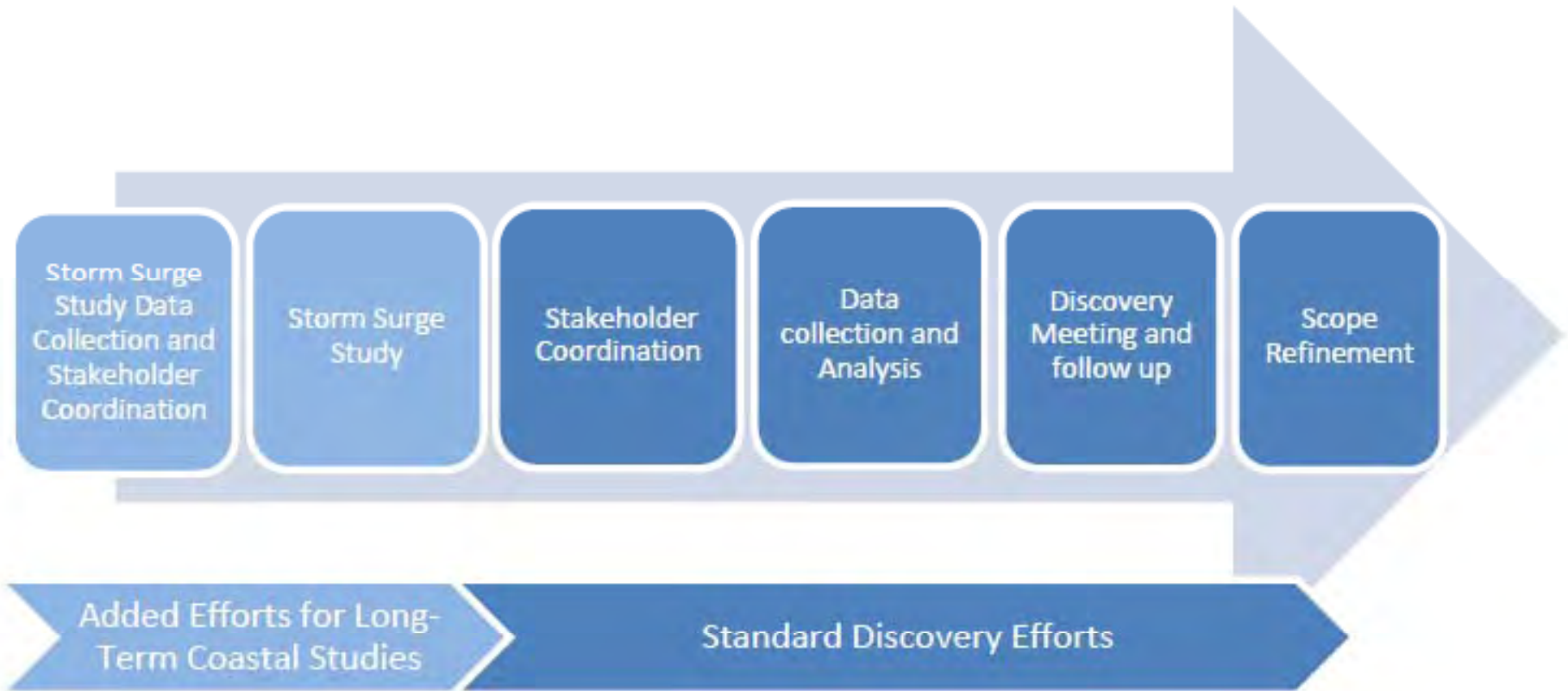
| Primary Coast Type |
|--------------------|
| High Dune, 10'+ |
| Dune, 2' - 10' |
| High Bluff, 10'+ |
| Bluff, 2' - 10' |
| Coastal Wetland |
| Flat Coast |

| Primary Vegetation |
|-------------------------------|
| None |
| High Density Shrubs/Trees |
| Moderate Density Shrubs/Trees |
| Low Density Shrubs/Trees |
| Manicured Lawn |
| Native Vegetation |

- Contains primary and secondary Land Use tables – same for coast type and vegetation.
- Current project collects data at one-mile spacing, for scoping and cost
- Current project does not include field-based reconnaissance or sediment/subsurface soils collection



Great Lakes Coastal Flood Study Discovery Process Overview



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Great Lakes Coastal Flood Study Discovery Meeting



| Discovery Meeting Venue | Discovery Meeting Address | Discovery Meeting Date, Time |
|---|--|--------------------------------|
| Grosse Pointe Public Library, Ewald Branch | 15175 E. Jefferson Avenue, Grosse Pointe Park, MI 48230 | Tuesday 8/21/2012; 2 – 4 pm |

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Draft Discovery Meeting Agenda

- Why are we here?
- Coastal mapping and flood risk topics to be aware of
- How does this apply to my community?
 - NFIP compliance, hazard mitigation opportunities, and grant funding
- Interactive Session
 - Utilization of Coastal Flood Risk Products for Planning and Mitigation, Identification of Existing Local Coastal Data, View and Discuss Local Coastal Areas of Concern Using the Discovery Map, Discuss Mitigation Action Opportunities and Introduce the Mitigation Action Form
- Wrap Up

Draft Transect Map Station: Talk to technical staff about draft transects and view draft transects in GIS

Mitigation Resources, Strategies, and Actions Station: Talk with FEMA and State staff about areas of concern and potential mitigation actions to help reduce risk. Fill out Mitigation Action Form.

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Great Lakes Coastal Flood Study Discovery Products



■ Final Discovery Report

- Single, comprehensive report for all of Lake Michigan, with appendices for each coastal community by county
- Includes pre-discovery data, meeting agenda, sign-in sheets, discussion topics, decisions made, etc.



■ Final Discovery Maps

- Including feedback from participants
- Visual representation of meeting outcomes

Discovery Report

*Watershed Name, Watershed Number
County names
Community names
State(s)
Report Number 00*

MMDD/YYYY



If community names do not fit on this front cover, please use the optional following page. If they do fit, then delete the following page.

Delete this text box when complete.

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Who Should Attend the Discovery Meeting?



- **Community Officials**
 - CEO and Floodplain Administrators (FPAs)
 - Planners, GIS Specialists, Engineers, Outreach Specialists, Emergency Managers, and Community Leaders
- **State Representatives**
 - State Hazard Mitigation Officer (SHMO), National Flood Insurance Program (NFIP) Coordinators, Cooperating Technical Partners (CTPs)
- **Other Federal Agencies (NOAA, USACE, USGS)**
- **Regional Planning Agencies**
- **Great Lakes Organizations**



Great Lakes Coastal Flood Study Discovery Study Area



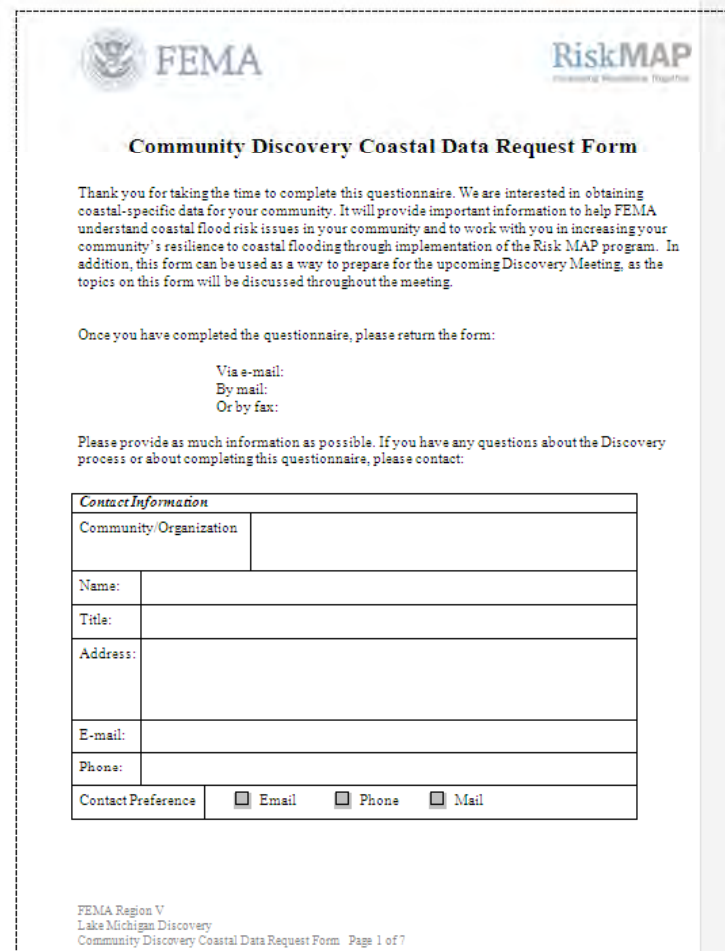
Lake St. Clair coastal communities in Wayne County:

- Wayne County
- Detroit
- Grosse Pointe Farms
- Grosse Pointe Park
- Grosse Pointe Shores
- Grosse Pointe Woods
- Grosse Pointe
- Harper Woods



Data Request Form Overview

- Contact Information
- Base Map Data
- Coastal Data
- Other Data
- Historic Flood Data
- Risk Assessment
- Flood Mitigation Information
- Community Plans and Projects
- Any Other Comments/ Concerns Based on Local Knowledge



FEMA **RiskMAP**
Increasing Resilience Together

Community Discovery Coastal Data Request Form

Thank you for taking the time to complete this questionnaire. We are interested in obtaining coastal-specific data for your community. It will provide important information to help FEMA understand coastal flood risk issues in your community and to work with you in increasing your community's resilience to coastal flooding through implementation of the Risk MAP program. In addition, this form can be used as a way to prepare for the upcoming Discovery Meeting, as the topics on this form will be discussed throughout the meeting.

Once you have completed the questionnaire, please return the form:

Via e-mail:
By mail:
Or by fax:

Please provide as much information as possible. If you have any questions about the Discovery process or about completing this questionnaire, please contact:

| Contact Information | |
|------------------------|---|
| Community/Organization | |
| Name: | |
| Title: | |
| Address: | |
| E-mail: | |
| Phone: | |
| Contact Preference | <input type="checkbox"/> Email <input type="checkbox"/> Phone <input type="checkbox"/> Mail |

FEMA Region V
Lake Michigan Discovery
Community Discovery Coastal Data Request Form Page 1 of 7



Review of Data Collected To Date

- Draft Transects
- Shoreline Classification Dataset
- Hazard Mitigation Plans
- Hazard Mitigation Grants Program (HMGP) projects
- Pre-Disaster Mitigation Program projects
- Declared Disasters
- Repetitive loss claims by community

| Disaster Type | Incident Begin Date | Incident End Date |
|--|---------------------|-------------------|
| SEVERE STORMS & FLOODING | 12/1/1972 | 12/1/1972 |
| SEVERE STORMS & FLOODING | 4/12/1973 | 4/12/1973 |
| SEVERE STORMS, HIGH WINDS & FLOODING | 4/26/1975 | 4/26/1975 |
| SEVERE STORMS, TORNADOES, ICING & FLOODING | 3/19/1976 | 3/19/1976 |
| SEVERE STORMS AND FLOODING | 6/21/1996 | 7/1/1996 |
| SEVERE STORMS, TORNADOES, AND FLOODING | 5/20/2004 | 6/8/2004 |
| BLIZZARDS & SNOWSTORMS | 1/27/1978 | 1/27/1978 |
| SNOW | 12/11/2000 | 12/31/2000 |
| POWER OUTAGE | 8/14/2003 | 8/17/2003 |



Next Steps and Opportunity to Get Involved



- Assessment of data and information provided
- Identification of best practices:
 - Do you have an example of a local coastal mitigation best practice?
- Discovery meeting involvement:
 - Are you be interested in participating in Discovery Meeting facilitation?

THANK YOU FOR YOUR PARTICIPATION!

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Who to Contact

- For more information: <http://www.greatlakescoast.org/>
- Send completed questionnaires to:
 - GreatLakesFloodStudy@starr-team.com
- FEMA Region V
 - Ken Hinterlong @ ken.hinterlong@fema.dhs.gov
 - Erin Maloney @ Erin.Maloney@fema.dhs.gov
- STARR
 - Laura Keating @ laura.keating@starr-team.com
 - Jaspreet Randhawa @ Jaspreet.Randhawa@starr-team.com



Questions?



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Community CEO/FPA List - Wayne County, MI - July 2012

| County/City/Township | First/ Last Name | Title | Address | Address | ZIP |
|-------------------------------|-------------------------|-----------------------------|----------------|---|------------|
| Detroit, City | Dave Bing | Mayor | City Hall | 2 Woodward Avenue, Suite 1126, Detroit, MI | 48226 |
| | Raymond Scott | General Manager (FPA) | City Hall | 2 Woodward Avenue, Suite 1126, Detroit, MI | 48226 |
| Grosse Pointe Shores, Village | Ted J. Kedzierski | Mayor | | 795 Lake Shore Road, Grosse Pointe Shores, MI | 48236 |
| | Tom Krolczyk | Building Manage (FPA) | | 795 Lake Shore Road, Grosse Pointe Shores, MI | 48236 |
| Grosse Pointe, City | Dale N. Scrace | Mayor | City Hall | 17147 Maumee Avenue, Grosse Pointe, MI | 48230 |
| | Paul Weitzel | Public Service Director | City Hall | 17147 Maumee Avenue, Grosse Pointe, MI | 48230 |
| Grosse Pointe Woods, City | Robert E. Novitke | Mayor | City Hall | 20025 Mack Plaza, Grosse Pointe Woods, MI | 48236 |
| | Gene Tutag | Building Official (FPA) | City Hall | 20025 Mack Plaza, Grosse Pointe Woods, MI | 48236 |
| Grosse Pointe Park, City | Palmer T. Heenan | Mayor | | 15115 East Jefferson Avenue, Grosse Pointe Park, MI | 48230 |
| | Dale Krajniak | City Manager (FPA) | | 15115 East Jefferson Avenue, Grosse Pointe Park, MI | 48230 |
| Grosse Pointe Farms, City | James C. Farquhar, Jr. | Mayor | | 90 Kerby Road, Grosse Pointe Farms, MI | 48236 |
| | Terry Brennan | Public Service Director | | 90 Kerby Road, Grosse Pointe Farms, MI | 48236 |
| Harper Woods | Kenneth Poynter | Mayor | | 19617 Harper Avenue, Harper Woods, MI | 48225 |
| | Leslie Frank | Acting City Clerk | | 19617 Harper Avenue, Harper Woods, MI | 48225 |
| Wayne, County | Robert Ficano | County Executive | | 500 Griswold Avenue, 31st Floor, Detroit, MI | 48226 |
| | Jerry Spryfza | Director of Public Services | | 400 Monroe, Suite 300, Detroit, MI | 48226 |



FEMA

July 19, 2012

The Honorable Dave Bing
Mayor, City of Detroit
City Hall
2 Woodward Avenue
Suite 1126
Detroit, Michigan 48226

Re: Invitation to Attend Community Meetings Regarding Lake St. Clair Coastal Flood Risk

Dear Mayor Bing:

The Federal Emergency Management Agency (FEMA) is conducting a comprehensive study of flood hazards for Lake St. Clair and the United States Great Lakes through FEMA's Risk Mapping, Assessment, and Planning (MAP) Program. Data from this study will eventually be used to convey coastal flood hazard risk through revised Flood Insurance Rate Maps (FIRMs), also known as regulatory products, and new risk planning and assessment products and datasets, also referred to as non-regulatory products and datasets. Please see enclosed Risk MAP Flood Risk Products Fact Sheet. More information about the Great Lakes Coastal Flood Study may be found at <http://www.greatlakescoast.org>.

The goal of Risk MAP is to support actions that make communities safer from flooding. The Risk MAP program wants to achieve continued improvement of flood hazard information for the National Flood Insurance Program (NFIP); to promote increased awareness and understanding of flood risk; to increase community engagement; and to identify and support actions that local stakeholders can take to reduce natural hazard risks. For additional information on the Risk MAP Program, please visit http://www.fema.gov/plan/prevent/fhm/rm_main.shtm.

The first phase of the Risk MAP process is Discovery. Through Discovery, input provided by communities will help FEMA to better understand local coastal flood risk data and needs, and characterize local conditions that contribute to coastal flood risk.

Your Discovery Meeting is scheduled to occur:

Date/Time: Tuesday, August 21, 2012; 2:00 - 4:00 pm ET
Location: Grosse Pointe Public Library, Ewald Branch
Address: 15175 East Jefferson Avenue
Grosse Pointe Park, Michigan 48230

Please save this date on your calendar. At the meeting, we will review the coastal flood risk data we have gathered to date and discuss your community's coastal floodplains, mitigation plan and projects, coastal flood risk concerns, and coastal floodplain management activities. This discussion will allow us to better identify your community's coastal flood hazard needs and subsequent Risk MAP regulatory and non-regulatory products and datasets that can be delivered during the Risk MAP project. We will also discuss how the coastal flood risks and needs are related to mapping, risk assessment, Hazard Mitigation planning, and grant programs available to eligible communities. To best facilitate this discussion, we would like to request your help in inviting community leaders, emergency managers, GIS specialists, engineers, outreach specialists, and local planners to the meeting. Please RSVP to FEMA's study contractor (STARR) Scott

Mayor Dave Bing
July 19, 2012
Page 2

Banjavcic at (312) 780-7755 or email to GreatLakesFloodStudy@starr-team.com no later than **August 6, 2012**. Please reference the Discovery Meeting date and time in your RSVP.

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The Information Exchange conference call is scheduled to occur:

Date/Time: Tuesday, July 31, 2012; 10:00 - 11:00 am ET
Link to WebEx: <http://e-meetings.verizonbusiness.com/nc/join.php>
Meeting Number: 445288484
Call in number: 1-866-398-2885
Participant Code: 197462

If you or another community representative is unable to attend the Information Exchange conference call, we ask that you fill out and return the enclosed data request form by **August 6, 2012**. This is the same data request form that will be discussed during the conference call. The completed form can be sent to:

Via e-mail: GreatLakesFloodStudy@starr-team.com
By mail: Scott Banjavcic
CDM Smith/STARR
125 S. Wacker Drive, Suite 600
Chicago, Illinois 60606

We look forward to working with you to reduce the risks associated with coastal flooding and increase your community's resiliency for the long term. To learn more about Discovery, please visit <http://www.fema.gov/library> and search keywords "Discovery brochure" or contact Ken Hinterlong, FEMA Region V Senior Engineer, at (312) 408-5529, or by email at ken.hinterlong@fema.dhs.gov. We look forward to discussing this with you during the Information Exchange call and/or seeing you at the upcoming Discovery Meeting.

Sincerely,



Christine Stack
Division Director
Mitigation Division, FEMA Region V

Enclosures: Risk MAP Flood Risk Products Fact Sheet
Community Discovery Coastal Data Request Form

cc: Raymond Scott, General Manager, City of Detroit
Linda Burke, Michigan Department of Environmental Quality
Les Thomas, Michigan Department of Environmental Quality
Byron Lane, Michigan Department of Environmental Quality



FEMA

July 19, 2012

The Honorable Ted J. Kedzierski
Mayor, Village of Grosse Pointe Shores
795 Lake Shore Road
Grosse Pointe Shores, Michigan 48236

Re: Invitation to Attend Community Meetings Regarding Lake St. Clair Coastal Flood Risk

Dear Mayor Kedzierski:

The Federal Emergency Management Agency (FEMA) is conducting a comprehensive study of flood hazards for Lake St. Clair and the United States Great Lakes through FEMA's Risk Mapping, Assessment, and Planning (MAP) Program. Data from this study will eventually be used to convey coastal flood hazard risk through revised Flood Insurance Rate Maps (FIRMs), also known as regulatory products, and new risk planning and assessment products and datasets, also referred to as non-regulatory products and datasets. Please see enclosed Risk MAP Flood Risk Products Fact Sheet. More information about the Great Lakes Coastal Flood Study may be found at <http://www.greatlakescoast.org>.

The goal of Risk MAP is to support actions that make communities safer from flooding. The Risk MAP program wants to achieve continued improvement of flood hazard information for the National Flood Insurance Program (NFIP); to promote increased awareness and understanding of flood risk; to increase community engagement; and to identify and support actions that local stakeholders can take to reduce natural hazard risks. For additional information on the Risk MAP Program, please visit http://www.fema.gov/plan/prevent/fhm/rm_main.shtm.

The first phase of the Risk MAP process is Discovery. Through Discovery, input provided by communities will help FEMA to better understand local coastal flood risk data and needs, and characterize local conditions that contribute to coastal flood risk.

Your Discovery Meeting is scheduled to occur:

Date/Time: Tuesday, August 21, 2012; 2:00 - 4:00 pm ET
Location: Grosse Pointe Public Library, Ewald Branch
Address: 15175 East Jefferson Avenue
Grosse Pointe Park, Michigan 48230

Please save this date on your calendar. At the meeting, we will review the coastal flood risk data we have gathered to date and discuss your community's coastal floodplains, mitigation plan and projects, coastal flood risk concerns, and coastal floodplain management activities. This discussion will allow us to better identify your community's coastal flood hazard needs and subsequent Risk MAP regulatory and non-regulatory products and datasets that can be delivered during the Risk MAP project. We will also discuss how the coastal flood risks and needs are related to mapping, risk assessment, Hazard Mitigation planning, and grant programs available to eligible communities. To best facilitate this discussion, we would like to request your help in inviting community leaders, emergency managers, GIS specialists, engineers, outreach specialists, and local planners to the meeting. Please RSVP to FEMA's study contractor (STARR) Scott Banjavcic at (312) 780-7755 or email to GreatLakesFloodStudy@starr-team.com no later than **August 6, 2012**. Please reference the Discovery Meeting date and time in your RSVP.

Mayor Ted J. Kedzierski
July 19, 2012
Page 2

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By mail: Scott Banjavcic
CDM Smith/STARR
125 S. Wacker Drive, Suite 600
Chicago, Illinois 60606

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Sincerely,



Christine Stack
Division Director
Mitigation Division, FEMA Region V

Enclosures: Risk MAP Flood Risk Products Fact Sheet
Community Discovery Coastal Data Request Form

cc: Tom Krolczyk, Building Manager, Village of Grosse Pointe Shores
Linda Burke, Michigan Department of Environmental Quality
Les Thomas, Michigan Department of Environmental Quality
Byron Lane, Michigan Department of Environmental Quality



FEMA

July 19, 2012

The Honorable Dale Scrace
Mayor, City of Grosse Pointe
City Hall
17147 Maumee Avenue
Grosse Pointe, Michigan 48230

Re: Invitation to Attend Community Meetings Regarding Lake St. Clair Coastal Flood Risk

Dear Mayor Scrace:

The Federal Emergency Management Agency (FEMA) is conducting a comprehensive study of flood hazards for Lake St. Clair and the United States Great Lakes through FEMA's Risk Mapping, Assessment, and Planning (MAP) Program. Data from this study will eventually be used to convey coastal flood hazard risk through revised Flood Insurance Rate Maps (FIRMs), also known as regulatory products, and new risk planning and assessment products and datasets, also referred to as non-regulatory products and datasets. Please see enclosed Risk MAP Flood Risk Products Fact Sheet. More information about the Great Lakes Coastal Flood Study may be found at <http://www.greatlakescoast.org>.

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Your Discovery Meeting is scheduled to occur:

Date/Time: Tuesday, August 21, 2012; 2:00 - 4:00 pm ET
Location: Grosse Pointe Public Library, Ewald Branch
Address: 15175 East Jefferson Avenue
Grosse Pointe Park, Michigan 48230

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Mayor Dale Scrace

July 19, 2012

Page 2

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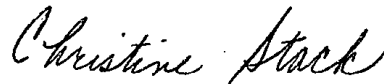
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By mail: Scott Banjavcic
CDM Smith/STARR
125 S. Wacker Drive, Suite 600
Chicago, Illinois 60606

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Sincerely,



Christine Stack
Division Director
Mitigation Division, FEMA Region V

Enclosures: Risk MAP Flood Risk Products Fact Sheet
Community Discovery Coastal Data Request Form

cc: Paul Weitzel, Public Service Director, City of Grosse Pointe
Linda Burke, Michigan Department of Environmental Quality
Les Thomas, Michigan Department of Environmental Quality
Byron Lane, Michigan Department of Environmental Quality



FEMA

July 19, 2012

The Honorable Robert Novitke
Mayor, City of Grosse Pointe Woods
City Hall
20025 Mack Plaza
Grosse Pointe Woods, Michigan 48236

Re: Invitation to Attend Community Meetings Regarding Lake St. Clair Coastal Flood Risk

Dear Mayor Novitke:

The Federal Emergency Management Agency (FEMA) is conducting a comprehensive study of flood hazards for Lake St. Clair and the United States Great Lakes through FEMA's Risk Mapping, Assessment, and Planning (MAP) Program. Data from this study will eventually be used to convey coastal flood hazard risk through revised Flood Insurance Rate Maps (FIRMs), also known as regulatory products, and new risk planning and assessment products and datasets, also referred to as non-regulatory products and datasets. Please see enclosed Risk MAP Flood Risk Products Fact Sheet. More information about the Great Lakes Coastal Flood Study may be found at <http://www.greatlakescoast.org>.

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Your Discovery Meeting is scheduled to occur:

Date/Time: Tuesday, August 21, 2012; 2:00 - 4:00 pm ET
Location: Grosse Pointe Public Library, Ewald Branch
Address: 15175 East Jefferson Avenue
Grosse Pointe Park, Michigan 48230

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Mayor Robert Novitke
July 19, 2012
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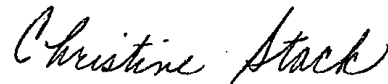
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Sincerely,



Christine Stack
Division Director
Mitigation Division, FEMA Region V

Enclosures: Risk MAP Flood Risk Products Fact Sheet
Community Discovery Coastal Data Request Form

cc: Gene Tutag, Building Official, City of Grosse Pointe Woods
Linda Burke, Michigan Department of Environmental Quality
Les Thomas, Michigan Department of Environmental Quality
Byron Lane, Michigan Department of Environmental Quality



FEMA

July 19, 2012

The Honorable Palmer Heenan
Mayor, City of Grosse Pointe Park
15115 East Jefferson Avenue
Grosse Pointe Park, Michigan 48230

Re: Invitation to Attend Community Meetings Regarding Lake St. Clair Coastal Flood Risk

Dear Mayor Heenan:

The Federal Emergency Management Agency (FEMA) is conducting a comprehensive study of flood hazards for Lake St. Clair and the United States Great Lakes through FEMA's Risk Mapping, Assessment, and Planning (MAP) Program. Data from this study will eventually be used to convey coastal flood hazard risk through revised Flood Insurance Rate Maps (FIRMs), also known as regulatory products, and new risk planning and assessment products and datasets, also referred to as non-regulatory products and datasets. Please see enclosed Risk MAP Flood Risk Products Fact Sheet. More information about the Great Lakes Coastal Flood Study may be found at <http://www.greatlakescoast.org>.

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Address: 15175 East Jefferson Avenue
Grosse Pointe Park, Michigan 48230

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Mayor Palmer Heenan
July 19, 2012
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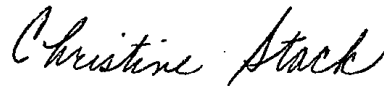
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Sincerely,



Christine Stack
Division Director
Mitigation Division, FEMA Region V

Enclosures: Risk MAP Flood Risk Products Fact Sheet
Community Discovery Coastal Data Request Form

cc: Dale Krajniak, City Manager, City of Grosse Pointe Park
Linda Burke, Michigan Department of Environmental Quality
Les Thomas, Michigan Department of Environmental Quality
Byron Lane, Michigan Department of Environmental Quality



FEMA

July 19, 2012

The Honorable James Farquhar, Jr.
Mayor, City of Grosse Pointe Farms
90 Kerby Road
Grosse Pointe Farms, Michigan 48236

Re: Invitation to Attend Community Meetings Regarding Lake St. Clair Coastal Flood Risk

Dear Mayor Farquhar, Jr.:

The Federal Emergency Management Agency (FEMA) is conducting a comprehensive study of flood hazards for Lake St. Clair and the United States Great Lakes through FEMA's Risk Mapping, Assessment, and Planning (MAP) Program. Data from this study will eventually be used to convey coastal flood hazard risk through revised Flood Insurance Rate Maps (FIRMs), also known as regulatory products, and new risk planning and assessment products and datasets, also referred to as non-regulatory products and datasets. Please see enclosed Risk MAP Flood Risk Products Fact Sheet. More information about the Great Lakes Coastal Flood Study may be found at <http://www.greatlakescoast.org>.

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Mayor James Farquhar, Jr.

July 19, 2012

Page 2

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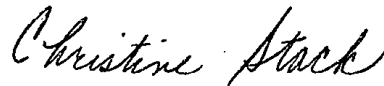
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Christine Stack
Division Director
Mitigation Division, FEMA Region V

Enclosures: Risk MAP Flood Risk Products Fact Sheet
Community Discovery Coastal Data Request Form

cc: Terry Brennan, Public Service Director, City of Grosse Pointe Farms
Linda Burke, Michigan Department of Environmental Quality
Les Thomas, Michigan Department of Environmental Quality
Byron Lane, Michigan Department of Environmental Quality



FEMA

July 19, 2012

The Honorable Kenneth Poynter
Mayor, City of Harper Woods
19617 Harper Avenue
Harper Woods, Michigan 48225

Re: Invitation to Attend Community Meetings Regarding Lake St. Clair Coastal Flood Risk

Dear Mayor Poynter:

The Federal Emergency Management Agency (FEMA) is conducting a comprehensive study of flood hazards for Lake St. Clair and the United States Great Lakes through FEMA's Risk Mapping, Assessment, and Planning (MAP) Program. Data from this study will eventually be used to convey coastal flood hazard risk through revised Flood Insurance Rate Maps (FIRMs), also known as regulatory products, and new risk planning and assessment products and datasets, also referred to as non-regulatory products and datasets. Please see enclosed Risk MAP Flood Risk Products Fact Sheet. More information about the Great Lakes Coastal Flood Study may be found at <http://www.greatlakescoast.org>.

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Mayor Kenneth Poynter

July 19, 2012

Page 2

So that we can better prepare for the upcoming Discovery Meeting, we are asking local communities to participate in an Information Exchange conference call and WebEx. This call will provide an overview of FEMA's Risk MAP program and the Discovery process, and will allow us to review with you our request for the exchange of coastal flood risk and hazard mitigation data, and to learn more about your community's coastal flood hazard risks and needs, in advance of the Discovery Meeting. The partnership and exchange of data between FEMA, the State, and your community is vital to the success of identifying flood risks and needs that may impact your citizens.

The Information Exchange conference call is scheduled to occur:

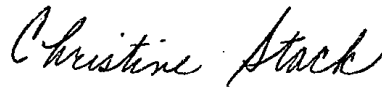
Date/Time: Tuesday, July 31, 2012; 10:00 - 11:00 am ET
Link to WebEx: <http://e-meetings.verizonbusiness.com/nc/join.php>
Meeting Number: 445288484
Call in number: 1-866-398-2885
Participant Code: 197462

If you or another community representative is unable to attend the Information Exchange conference call, we ask that you fill out and return the enclosed data request form by **August 6, 2012**. This is the same data request form that will be discussed during the conference call. The completed form can be sent to:

Via e-mail: GreatLakesFloodStudy@starr-team.com
By mail: Scott Banjavcic
CDM Smith/STARR
125 S. Wacker Drive, Suite 600
Chicago, Illinois 60606

We look forward to working with you to reduce the risks associated with coastal flooding and increase your community's resiliency for the long term. To learn more about Discovery, please visit <http://www.fema.gov/library> and search keywords "Discovery brochure" or contact Ken Hinterlong, FEMA Region V Senior Engineer, at (312) 408-5529, or by email at ken.hinterlong@fema.dhs.gov. We look forward to discussing this with you during the Information Exchange call and/or seeing you at the upcoming Discovery Meeting.

Sincerely,



Christine Stack
Division Director
Mitigation Division, FEMA Region V

Enclosures: Risk MAP Flood Risk Products Fact Sheet
Community Discovery Coastal Data Request Form

cc: Leslie Frank, Administrative Assistant, City Manager, City of Harper Woods
Linda Burke, Michigan Department of Environmental Quality
Les Thomas, Michigan Department of Environmental Quality
Byron Lane, Michigan Department of Environmental Quality



FEMA

July 19, 2012

Mr. Robert Ficano
County Executive, Wayne County
500 Griswold Avenue
31st Floor
Detroit, Michigan 48226

Re: Invitation to Attend Community Meetings Regarding Lake St. Clair Coastal Flood Risk

Dear Mr. Ficano:

The Federal Emergency Management Agency (FEMA) is conducting a comprehensive study of flood hazards for Lake St. Clair and the United States Great Lakes through FEMA's Risk Mapping, Assessment, and Planning (MAP) Program. Data from this study will eventually be used to convey coastal flood hazard risk through revised Flood Insurance Rate Maps (FIRMs), also known as regulatory products, and new risk planning and assessment products and datasets, also referred to as non-regulatory products and datasets. Please see enclosed Risk MAP Flood Risk Products Fact Sheet. More information about the Great Lakes Coastal Flood Study may be found at <http://www.greatlakescoast.org>.

The goal of Risk MAP is to support actions that make communities safer from flooding. The Risk MAP program wants to achieve continued improvement of flood hazard information for the National Flood Insurance Program (NFIP); to promote increased awareness and understanding of flood risk; to increase community engagement; and to identify and support actions that local stakeholders can take to reduce natural hazard risks. For additional information on the Risk MAP Program, please visit http://www.fema.gov/plan/prevent/fhm/rm_main.shtm.

The first phase of the Risk MAP process is Discovery. Through Discovery, input provided by communities will help FEMA to better understand local coastal flood risk data and needs, and characterize local conditions that contribute to coastal flood risk.

Your Discovery Meeting is scheduled to occur:

Date/Time: Tuesday, August 21, 2012; 2:00 - 4:00 pm ET
Location: Grosse Pointe Public Library, Ewald Branch
Address: 15175 East Jefferson Avenue
Grosse Pointe Park, Michigan 48230

Please save this date on your calendar. At the meeting, we will review the coastal flood risk data we have gathered to date and discuss your community's coastal floodplains, mitigation plan and projects, coastal flood risk concerns, and coastal floodplain management activities. This discussion will allow us to better identify your community's coastal flood hazard needs and subsequent Risk MAP regulatory and non-regulatory products and datasets that can be delivered during the Risk MAP project. We will also discuss how the coastal flood risks and needs are related to mapping, risk assessment, Hazard Mitigation planning, and grant programs available to eligible communities. To best facilitate this discussion, we would like to request your help in inviting community leaders, emergency managers, GIS specialists, engineers, outreach specialists, and local planners to the meeting. Please RSVP to FEMA's study contractor (STARR) Scott

Mr. Robert Ficano

July 19, 2012

Page 2

Banjavcic at (312) 780-7755 or email to GreatLakesFloodStudy@starr-team.com no later than **August 6, 2012**. Please reference the Discovery Meeting date and time in your RSVP.

So that we can better prepare for the upcoming Discovery Meeting, we are asking local communities to participate in an Information Exchange conference call and WebEx. This call will provide an overview of FEMA's Risk MAP program and the Discovery process, and will allow us to review with you our request for the exchange of coastal flood risk and hazard mitigation data, and to learn more about your community's coastal flood hazard risks and needs, in advance of the Discovery Meeting. The partnership and exchange of data between FEMA, the State, and your community is vital to the success of identifying flood risks and needs that may impact your citizens.

The Information Exchange conference call is scheduled to occur:

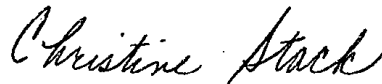
Date/Time: Tuesday, July 31, 2012; 10:00 - 11:00 am ET
Link to WebEx: <http://e-meetings.verizonbusiness.com/nc/join.php>
Meeting Number: 445288484
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Participant Code: 197462

If you or another community representative is unable to attend the Information Exchange conference call, we ask that you fill out and return the enclosed data request form by **August 6, 2012**. This is the same data request form that will be discussed during the conference call. The completed form can be sent to:

Via e-mail: GreatLakesFloodStudy@starr-team.com
By mail: Scott Banjavcic
CDM Smith/STARR
125 S. Wacker Drive, Suite 600
Chicago, Illinois 60606

We look forward to working with you to reduce the risks associated with coastal flooding and increase your community's resiliency for the long term. To learn more about Discovery, please visit <http://www.fema.gov/library> and search keywords "Discovery brochure" or contact Ken Hinterlong, FEMA Region V Senior Engineer, at (312) 408-5529, or by email at ken.hinterlong@fema.dhs.gov. We look forward to discussing this with you during the Information Exchange call and/or seeing you at the upcoming Discovery Meeting.

Sincerely,



Christine Stack
Division Director
Mitigation Division, FEMA Region V

Enclosures: Risk MAP Flood Risk Products Fact Sheet
Community Discovery Coastal Data Request Form

cc: Jerry Spryfza, Director of Public Services, Wayne County
Linda Burke, Michigan Department of Environmental Quality
Les Thomas, Michigan Department of Environmental Quality
Byron Lane, Michigan Department of Environmental Quality

Lake St. Clair Email Distribution List
July 2012

| Organization | Category | First Name | Last Name | Title | Email |
|---|----------------|------------|------------|---|---------------------------------|
| Alliance for the Great Lakes | Ecological | Jamie | Cross | | jcross@greatlakes.org |
| Alliance for the Great Lakes - MI Office | Ecological | Sam | Lovall | Southeast Michigan Outreach Coordinator | slovall@greatlakes.org |
| Anderson, Eckstein, Westrick, Inc. | Engineer | Jeffrey | Bednar | Senior Project Engineer | jbednar@aewinc.com |
| Anderson, Eckstein, Westrick, Inc. | Engineer | John | Chown | Senior Project Engineer | jchown@aewinc.com |
| Burtchville Township | Local Official | Mike | Appel | Township Supervisor | btwpsupervisor@comcast.net |
| Burtchville Township | Local Official | Bill | Boesch | Zoning Administrator (FPA) | N/A |
| Centers for Ocean Sciences Education Excellence (COSEE Great Lakes) | Ecological | Rosanne W. | Fortner | Director, COSEE Great Lakes | fortner.2@osu.edu |
| Centers for Ocean Sciences Education Excellence (COSEE Great Lakes) | University | Jim | Diana | Michigan Sea Grant | jimd@umich.edu |
| Centers for Ocean Sciences Education Excellence (COSEE Great Lakes) | University | Steve | Stewart | Michigan Sea Grant | stew@msu.edu |
| Central Michigan University | University | Elizabeth | Alm | | alm1ew@cmich.edu |
| Central Michigan University | University | Dave | Cuthrell | | cuthrelld@michigan.gov |
| Central Michigan University | University | Tracy | Galarowicz | | galar1t@cmich.edu |
| Central Michigan University | University | Tom | Gehring | | tom.gehring@cmich.edu |
| Central Michigan University | University | Mary | Montoye | | monto1mj@cmich.edu |
| Central Michigan University | University | Don | Uzarski | | uzars1dg@cmich.edu |
| Central Michigan University | University | David | Zanatta | | zanat1d@cmich.edu |
| CH2M Hill | Engineer | Frank | Dillon | | fdillon@ch2m.com |
| Chesterfield Township | Regional | Michael | Lovelock | Township Supervisor | mlovelock@chesterfieldtpw.org |
| Chesterfield Township | Regional | Shawn | Shortt | Building Administrator | sshortt@chesterfieldtpw.org |
| City of Algonac | Regional | Irene | Bird | Mayor | rpbird@yahoo.com |
| City of Algonac | Regional | William | Klaassen | Building Inspector | dmalear@algonac-mi.gov |
| City of Detroit | Mayor | Dave | Bing | Mayor | scheduling@detroitmi.gov |
| City of Detroit | Regional | Dave | Bing | Mayor | scheduling@detroitmi.gov |
| City of Detroit | Regional | Raymond | Scott | General Manager | scottr@detroitmi.gov |
| City of Escorse | Local Official | Jim | Hill | Building Inspector (FPA) | N/A |
| City of Escorse | Mayor | Darcel | Brown | Mayor | mayor@city-escorse.org |
| City of Gibraltar | Mayor | Jim | Gorris | Mayor | gorrisj@cityofgibraltar.net |
| City of Grosse Point Park, MI | Mayor | Palmer T. | Heenan | Mayor | mayor@grossepointepark.org |
| City of Grosse Pointe Farms | Regional | Terry | Brennan | Public Service Director | tbrennan@grossepointefarms.org |
| City of Grosse Pointe Park | Regional | Dale | Krajniak | City Manager | gppkd@aol.com |
| City of Grosse Pointe Woods | Regional | Robert | Novitke | Mayor | mayornovitke@comcast.net |
| City of Grosse Pointe Woods | Regional | Gene | Tutag | Building Official | gtutag@gpwmi.us |
| City of Harper Woods | Regional | Leslie | Frank | Administrative Assistant, City Manager | admin@harperwoodsmi.net |
| City of Harper Woods | Regional | Kenneth | Poynter | Mayor | hwmayor@harperwoodsmi.net |
| City of Marysville | Local Official | Jason | Hami | City Engineer (FPA) | jhami@cityofmarysvillmi.com |
| City of Marysville | Local Official | Tom | Konik | Fire Chief/Emergency Manager | tkosnik@cityofmarysvillemi.com |
| City of Marysville | Mayor | Gary | Orr | Mayor | gw_orr@comcast.net |
| City of Mount Clemens | Mayor | Barb | Dempsey | Mayor | bdempsey@cityofmountclemens.com |
| City of Mount Clemens | Regional | Brian | Tingley | Community Development Director | btingley@cityofmountclemens.com |
| City of New Baltimore | Mayor | Larry | Smith | Mayor | mayor@cityofnewbaltimore.org |
| City of New Baltimore | Regional | Greg | Nikkel | Building Inspector | gnikkel@cityofnewbaltimore.org |
| City of Port Huron | Local Official | Sara | Montoya | Civil Engineer II | montoyas@porthuron.org |
| City of Port Huron | Regional | Kimberly | Harmer | Planning and Community Development Director | harmerk@porthuron.org |
| City of Port Huron | Regional | Pauline | Repp | Mayor | reppp@porthuron.org |
| City of River Rouge | Local Official | Troy | Newman | Building Inspector (FPA) | N/A |
| City of River Rouge | Mayor | Michael | Aowdler | Mayor | N/A |
| City of Riverview | Local Official | Dave | Scurto | Community Development Director (FPA) | dscurto@cityofriverview.com |
| City of Riverview | Mayor | Tim | Durand | Mayor | N/A |
| City of Rockwood | Local Official | Charles | Earl | Building Inspector (FPA) | beldgdept@rockwoodmi.org |
| City of Rockwood | Mayor | Daniel | Guzzi | Mayor | mayorguzzi@rockwoodmi.org |
| City of St. Clair | Local Official | Mike | Booth | City Manager (FPA) | mbooth@cityofstclair.com |
| City of St. Clair | Local Official | Diane | Cunningham | Building Clerk (FPA) | dcunningham@cityofstclair.com |

Lake St. Clair Email Distribution List
July 2012

| Organization | Category | First Name | Last Name | Title | Email |
|--|------------------|----------------|---------------------|--|---------------------------------|
| City of St. Clair | Mayor | Bill | Cedar | Mayor | N/A |
| City of St. Clair Shores | Local Official | Bryan | Babcock | Director of Public Works/Water | babcockb@scsmi.net |
| City of St. Clair Shores | Local Official | Christopher | Rayes | Community Services Director | Chris@scsmi.net |
| City of St. Clair Shores | Regional | Christopher | Rayes | Director of Community Development | chris@scsmi.net |
| City of St. Clair Shores | Regional | Kip | Walby | Mayor | walby@scsmi.net |
| City of Trenton | Local Official | Virgil | Maiani | Building Inspector (FPA) | vmaiani@trenton-mi.com |
| City of Trenton | Mayor | Kyle | Stack | Mayor | kstack@trenton-mi.com |
| City of Wyandotte | Local Official | Mark | Kowalewski | City Engineer (FPA) | mkowalewski@wyan.org |
| City of Wyandotte | Mayor | Joseph | Peterson | Mayor | mayor@wyan.org |
| Clay Township | Regional | Thomas | Krueger | Supervisor | supervisor@claytownship.org |
| Clinton Charter Township | Regional | Robert | Cannon | Township Supervisor | r.cannon@clintontownship-mi.gov |
| Clinton River Watershed Council | Ecological | Tom | Quail | Clinton River Watershed Council | tom@crwc.org |
| Clinton River Watershed Council | Ecological | Anne | Vaara | Executive Director | contact@crwc.org |
| Cottrellville Township | Local Official | George | Kunnath | Zoning Administrator (FPA) | N/A |
| Cottrellville Township | Local Official | Tom | Raymond | Township Supervisor | N/A |
| Council of Great Lake Industries | Ecological | George | Kuper | | stradeco@aol.com |
| D.J. Case & Associates | Engineer | Phil | Seng | | phil@djcase.com |
| Davenport University | University | Chuck | McKeown | | mckeown@msu.edu |
| Department of Environmental Quality: Office of the Great Lakes | Ecological | Patty | Birkholz | Director | birkholz@michigan.gov |
| Department of Environmental Quality: Office of the Great Lakes | Ecological | Amy | Hicks | Executive Assistant (Patty) | hicksa@michigan.gov |
| DEQ - Office of Great Lakes | State/Reg Agency | Frank | Ruswick | Deputy Director | ruswickf@michigan.gov |
| DEQ: Office of Great Lakes | State/Reg Agency | Roger | Eberhardt | Senior Environmental Specialist | eberhardt@michigan.gov |
| DEQ: Office of the Great Lakes- Areas of Concern Program | State/Reg Agency | Rick | Hoblar | Chief | hoblar@michigan.gov |
| DEQ: Office of the Great Lakes- Coastal Management | State/Reg Agency | Alisa | Gonzales-Pennington | Coastal Management Coordinator - NW MI | gonzalesa@michigan.gov |
| DEQ: Office of the Great Lakes- Coastal Management | State/Reg Agency | Lynda | Krupansky | Coastal Management Coordinator - W and SE MI | krupansky@michigan.gov |
| Detroit Riverfront Conservancy | Ecological | Faye Alexander | Nelson | President & CEO | info@detroitriverfront.org |
| DLZ | Engineer | Natalie | Dingledine | | ndingledine@dlz.com |
| DLZ | Engineer | Steve | Metzer | | smetzer@dlz.com |
| DTE Energy | Engineer | M. | Gruelle | | gruellem@dteenergy.com |
| DTE Energy | Engineer | Dennis | Leonard | | leonardd@dteenergy.com |
| East China Township | Local Official | Jeff | Kern | Building Inspector (FPA) | N/A |
| East China Township | Local Official | John | Randolph | Township Supervisor | N/A |
| East Michigan Council of Governments | Regional | Sue | Fortune | | sfortune@emcog.org |
| East Michigan Council of Governments | Regional | Anamika | Laad | | alaad@emcog.org |
| Ecology and Environment | Ecological | Nick | Owens | | nowens@ene.com |
| ECT | Engineer | Annette | DeMaria | Engineer | ademaria@ect.com |
| Eldean Development Group | Engineer | Eldean | Shipyard | | wade@eldean.com |
| ENTRIX, Inc. | Engineer | John | Newsted | | jnewsted@entrix.com |
| Environmental Consulting & Technology, Inc. | Engineer | Roy | Schrameck | Senior Engineer | rschrameck@ectinc.com |
| Environmental Consulting & Technology, Inc. | Engineer | Sanjiv | Sinha | | ssinha@ectinc.com |
| EPA-GLNPO | Ecological | Pranas | Pranckevicius | | pranckevicius.pranas@epa.gov |
| Essex Region Conservation Authority | Engineer | Jeremy | Wychreschuk | Director of Watershed Engineering | Jwyschreschuk@erca.org |
| Ferris State University | University | Gary | Noble | | garynoble@ferris.edu |
| Fishbeck, Thompson, Carr & Huber, Inc. | Engineer | Fred | Cowles | | fecowles@fth.com |
| Fort Gratiot Township | Local Official | Jorja | Baldwin | Zoning Administrator (FPA) | jbaldwin@fortgratiotwp.org |
| Fort Gratiot Township | Local Official | Doug | Hannan | Township Supervisor | dhannan@fortgratiotwp.org |
| Georgia Pacific | Engineer | Garry | Griffith | | gtriffi@gapac.com |
| GLERL/NOAA | Fed Agency | Henry | Vanderploeg | | henry.vanderploeg@noaa.gov |
| Grand Valley State University | University | Bopi | Biddanda | | biddandb@gvsu.edu |
| Grand Valley State University | University | John | Koches | | kochej@gvsu.edu |
| Grand Valley State University | University | Richard | Rediske | | redisker@gvsu.edu |
| Great Lakes Commission | Ecological | Cassie | Bradley | | cbradley@glc.org |

Lake St. Clair Email Distribution List
July 2012

| Organization | Category | First Name | Last Name | Title | Email |
|---|------------------|-------------|-----------|---|-----------------------------------|
| Great Lakes Commission | Ecological | Heather | Braun | | hbraun@glc.org |
| Great Lakes Commission | Ecological | Thomas | Crane | | tcrane@glc.org |
| Great Lakes Commission | Ecological | Stuart | Eddy | | seddy@glc.org |
| Great Lakes Commission | Ecological | Tim | Eder | Executive Director | teder@glc.org |
| Great Lakes Commission | Ecological | Julie | Hinderer | | midaj@umich.edu |
| Great Lakes Commission | Ecological | John | Hummer | | jhummer@glc.org |
| Great Lakes Commission | Ecological | Erika | Jensen | | ejensen@glc.org |
| Great Lakes Commission | Ecological | David | Knight | | dknight@glc.org |
| Great Lakes Commission | Ecological | Rebecca | Pearson | | bpearson@glc.org |
| Great Lakes Commission | Ecological | Victoria | Pebbles | Program Director | vpebbles@glc.org |
| Great Lakes Environmental Research Laboratory - NOAA | Fed Agency | Craig | Stow | | craig.stow@noaa.gov |
| Great Lakes Fishery Commission | Ecological | Mike | Hansen | Commissioner | info@glfc.org |
| Great Lakes Fishery Commission | Ecological | Dr. Charles | Krueger | Science Director | info@glfc.org |
| Great Lakes Information Network | Ecological | Christine | Manninen | Webmaster, Project Manager | manninen@glc.org |
| Great Lakes Observing System | Ecological | Kelli | Paige | Program Coordinator | kpaige@glos.us |
| Great Lakes Observing System | State/Reg Agency | Kelli | Paige | Program Coordinator | kpaige@glos.us |
| Great Lakes Observing System/Michigan Sea Grant | University | Jennifer | Read | Executive Director (GLOS)/ Acting Director (MI Sea Grant) | jread@glos.us |
| Great Lakes Outdoors Foundation / Michigan United Conservation Clubs (MUCC) | Ecological | Dennis | Muchmore | Executive Director | N/A |
| Great Lakes Regional Center of National Wildlife Federation | Ecological | Melinda | Koslow | | koslowm@nwf.org |
| Grosse Ile Township | Local Official | Brian | Lofus | Township Supervisor | brianl@grosseile.com |
| Grosse Ile Township | Local Official | Lorrie | Zalewski | Community Development Manager (FPA) | lorriet@grosseile.com |
| Grosse Point Farms, MI | Mayor | James C. | Farquhar | Mayor | N/A |
| GVSU Annis Water Resources Institute | University | Janet | Vail | | vailj@gvsu.edu |
| Hands & Associates, Inc. | Engineer | Charles | Barker | | cbarker@hands-assoc.com |
| Harrison Township | Regional | Vijay | Parakh | Building Official | vparakh@harrison-township.org |
| Harrison Township | Regional | Kenneth | Verkest | Township Supervisor | kverkest@harrison-township.org |
| Harsens Island St. Clair Flats Association | Ecological | Charles | Miller | Environmental Affairs Committee | c.miller@hiscfa.org |
| Healing Our Waters - Great Lakes Coalition | Ecological | Chad | Lord | Policy Director | clord@npca.org |
| Healing Our Waters - Great Lakes Coalition | Ecological | Jordan | Lubetkin | Regional Communications Manager | lubetkin@nwf.org |
| Healing Our Waters - Great Lakes Coalition | Ecological | Jeff | Skelding | Campaign Director | skeldingj@nwf.org |
| International Association for Great Lakes Research (IAGLR) | Ecological | Robert | Letcher | President | president@iaglr.org |
| Ira Township | Regional | Brian | Bayly | Building Inspector | buildingdept@iratownship.org |
| Ira Township | Regional | Robert | McCoy | Township Supervisor | supervisor@iratownship.org |
| Lake Superior State University | University | Ken | Hemming | | khemming@lssu.edu |
| Lansing Emergency Management Office | State/Reg Agency | Ronda | Oberlin | | roberlin@lansingmi.gov |
| Limno-Tech, Inc. | Engineer | Greg | Peterson | | gpeterson@limno.com |
| Mackinac Island State Park Commission | State/Reg Agency | Diane | Dombroski | | dombroskid1@michigan.gov |
| Macomb County | Local Official | Mark | Hackel | County Executive | executive@macombgov.org |
| Macomb County | Local Official | Jeff | Schroeder | Director of GIS and Mapping (FPA) | jeff.schroeder@macombgov.org |
| Macomb County | Regional | Mark | Hackel | County Executive | executive@macombgov.org |
| Macomb County | Regional | Jeff | Schroeder | Director of GIS and Mapping | jeff.schroeder@macombgov.org |
| Macomb County Health Department | Local Official | Stacey | McFarlane | | stacey.mcfarlane@macombgov.org |
| Macomb County Office of Emergency Management | Local Official | Peter | Locke | Emergency Management Aide | peter.locke@macombgov.org |
| Macomb County Water Resources Advisory Council | Ecological | Gerard | Santoro | Program Manager | gerard.santoro@macombcountymi.gov |
| Marine City | Mayor | Charles | Browne | Mayor | cbrowne@marinecity-mi.org |
| Marine City | Regional | Brian | Bayly | Zoning Administrator | briamb@twp.stclair.mi.us |
| MDA - Environmental Stewardship Division | State/Reg Agency | Abby | Eaton | Environmental Resources Specialist | eatona@michigan.gov |
| MDA - Environmental Stewardship Division | State/Reg Agency | James | Johnson | | johnsonj2@michigan.gov |
| MDEQ | State/Reg Agency | Judy | Andersen | | andersenj1@michigan.gov |
| MDEQ | State/Reg Agency | Chris | Antieau | | antieauc@michigan.gov |
| MDEQ | State/Reg Agency | Jennifer | Bolt | | boljt@michigan.gov |
| MDEQ | State/Reg Agency | Robert | Day | | dayr1@michigan.gov |

Lake St. Clair Email Distribution List
July 2012

| Organization | Category | First Name | Last Name | Title | Email |
|---|------------------|-------------|------------|----------------------------------|--------------------------|
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| MDEQ | State/Reg Agency | Kim | Fish | | fishk@michigan.gov |
| MDEQ | State/Reg Agency | Andrew | Hartz | | hartza@michigan.gov |
| MDEQ | State/Reg Agency | Anne | Hokanson | | hokansona@michigan.gov |
| MDEQ | State/Reg Agency | Rhonda | Klann | | klannr@michigan.gov |
| MDEQ | State/Reg Agency | Cindy | Masterson | | mastersonc@michigan.gov |
| MDEQ | State/Reg Agency | Mike | Masterson | | mastersonm@michigan.gov |
| MDEQ | State/Reg Agency | JoAnne | Merrick | | merrickj@michigan.gov |
| MDEQ | State/Reg Agency | Roxanne | Merrick | | merrickr@michigan.gov |
| MDEQ | State/Reg Agency | James | Milne | | milnej@michigan.gov |
| MDEQ | State/Reg Agency | Douglas | Morse | | morsed@michigan.gov |
| MDEQ | State/Reg Agency | Colleen | O'Keefe | | okeefec@michigan.gov |
| MDEQ | State/Reg Agency | Ann | Person | | persona@michigan.gov |
| MDEQ | State/Reg Agency | Amy | Petersen | Surface Water Assessment Section | petersona1@michigan.gov |
| MDEQ | State/Reg Agency | Joseph | Rathbun | | rathbunj@michigan.gov |
| MDEQ | State/Reg Agency | Brian | Rudolph | | rudolphb1@michigan.gov |
| MDEQ | State/Reg Agency | Luis | Saldivia | | saldivial@michigan.gov |
| MDEQ | State/Reg Agency | Katherine | Tetzlaff | | tetzlaffk@michigan.gov |
| MDEQ | State/Reg Agency | Mary | Vanderlaan | | vanderlaanm@michigan.gov |
| MDEQ | State/Reg Agency | Robert | Zbiciak | | zbiciakr@michigan.gov |
| MDEQ | | Susan | Conradson | | CONRADSONS2@michigan.gov |
| MDEQ | | Michelle | Hohn | | hohnm@michigan.gov |
| MDEQ | | Sheila | Meiers | | MEIERS@michigan.gov |
| MDEQ | | Joelle | Pepper | | PepperJ@michigan.gov |
| MDEQ - Office of Geological Survey | State/Reg Agency | John | Esch | | eschj@michigan.gov |
| MDEQ - Remediation Division | State/Reg Agency | Susan | Erickson | | ericksons@michigan.gov |
| MDEQ - The Office of the Great Lakes | State/Reg Agency | Jim | Bredin | | bredinj@michigan.gov |
| MDEQ - The Office of the Great Lakes - Lake Program | State/Reg Agency | Matt | Preisser | | preisserm@michigan.gov |
| MDEQ - The Office of the Great Lakes - Lake Program | State/Reg Agency | John | Riley | | rileyj2@michigan.gov |
| MDEQ - The Office of the Great Lakes - Lake Program | State/Reg Agency | Michelle | Selzer | | selzerm@michigan.gov |
| MDEQ - Water Resources Division | State/Reg Agency | Shannon | Briggs | | briggs4@michigan.gov |
| MDEQ - Water Resources Division | State/Reg Agency | Linda | Burke | Environmental Engineer | burkel4@michigan.gov |
| MDEQ - Water Resources Division | State/Reg Agency | William | Creal | | crealw@michigan.gov |
| MDEQ - Water Resources Division | State/Reg Agency | Kip | Cronk | | cronkk@michigan.gov |
| MDEQ - Water Resources Division | State/Reg Agency | Tom | Graf | | graft@michigan.gov |
| MDEQ - Water Resources Division | State/Reg Agency | Penny | Holt | | holtp@michigan.gov |
| MDEQ - Water Resources Division | State/Reg Agency | Byron | Lane | | laneb@michigan.gov |
| MDEQ - Water Resources Division | State/Reg Agency | Bill | Larsen | | larsenb@michigan.gov |
| MDEQ - Water Resources Division | State/Reg Agency | Todd | Losee | | loseet@michigan.gov |
| MDEQ - Water Resources Division | State/Reg Agency | Amy | Lounds | | loundsa@michigan.gov |
| MDEQ-Marketing, Education & Technology Division | State/Reg Agency | Kevin | Fraily | | frailyk@michigan.gov |
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Lake St. Clair Email Distribution List
July 2012

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Lake St. Clair Email Distribution List
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**Great Lakes Coastal Flood Study
Lake St. Clair – State of Michigan - Email Discovery Invitation Language
FINAL – JULY 26, 2012**

Re: Invitation to Attend Community Meetings Regarding Lake St. Clair Coastal Flood Risk

Dear State of Michigan Lake St. Clair Coastal Flood Study Stakeholders:

The Federal Emergency Management Agency (FEMA) is conducting a comprehensive study of flood hazards for Lake St. Clair and the United States Great Lakes through FEMA's Risk Mapping, Assessment, and Planning (MAP) Program. Data from this study will eventually be used to convey coastal flood hazard risk through revised Flood Insurance Rate Maps (FIRMs), also known as regulatory products, and new risk planning and assessment products and datasets, also referred to as non-regulatory products and datasets. More information about the Great Lakes Coastal Flood Study may be found at

<http://www.greatlakescoast.org>.

The goal of Risk MAP is to support actions that make communities safer from flooding. The Risk MAP program wants to achieve continued improvement of flood hazard information for the National Flood Insurance Program (NFIP); to promote increased awareness and understanding of flood risk; to increase community engagement; and to identify and support actions that local stakeholders can take to reduce natural hazard risks. For additional information on the Risk MAP Program, please visit

http://www.fema.gov/plan/prevent/fhm/rm_main.shtm.

The first phase of the Risk MAP process is Discovery. Through Discovery, input provided by local stakeholders will help FEMA to better understand local coastal flood risk data and needs, and characterize local conditions that contribute to coastal flood risk.

We would like to invite you to attend one of the following Discovery Meetings being held in Michigan for Lake St. Clair. Although each Discovery Meeting will give the same overall message, each meeting will be catered to the coastal communities within the counties listed below:

| County | Discovery Meeting Venue | Discovery Meeting Address | Discovery Meeting Date, Time |
|-----------|--|--|---|
| St. Clair | Goodells County Park Community Center Meeting Room | 8345 County Park Drive, Goodells, MI 48027 | Monday 8/20/2012; 8:30 am - 10:30 am |
| Macomb | Robert A. VerKuilen Building | 21885 Dunham Road, Clinton Twp, MI 48036 | Monday 8/20/2012; 2:00 pm - 4:00 pm |
| Wayne | Grosse Pointe Public Library, Ewald Branch | 15175 E. Jefferson Avenue, Grosse Pointe Park, MI 48230 | Tuesday 8/21/2012; 2:00 pm – 4:00 pm |

Please save this date on your calendar. At the meetings, we will review the coastal flood risk data we have gathered to date and discuss local coastal floodplains, mitigation plan and projects, coastal flood risk concerns, and coastal floodplain management activities. This discussion will allow us to better identify local coastal flood hazard needs and subsequent Risk MAP regulatory and non-regulatory products and datasets that can be delivered during the Risk MAP project. We will also discuss how the coastal flood risks and needs are related to mapping, risk assessment, hazard mitigation planning, and grant programs

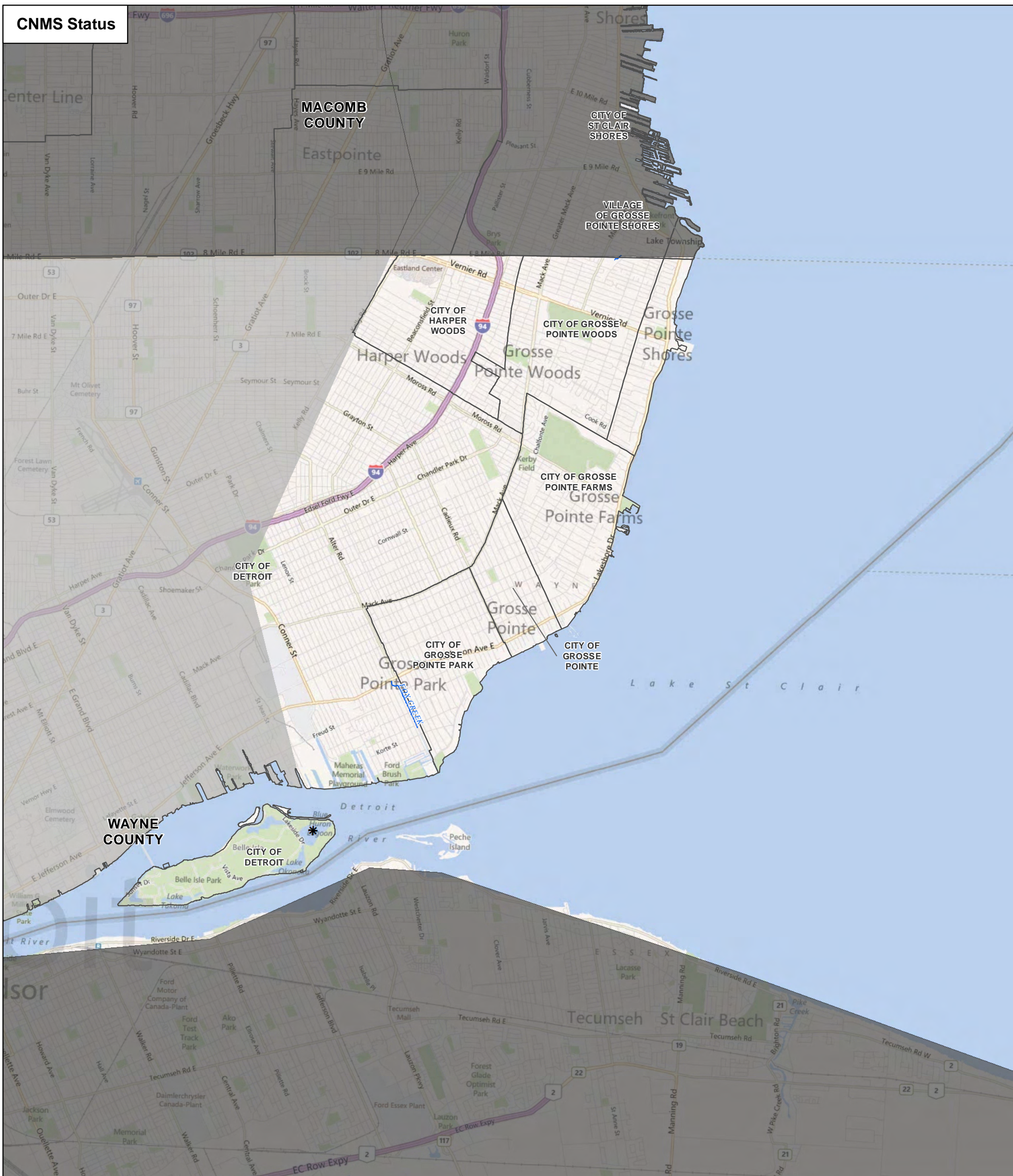
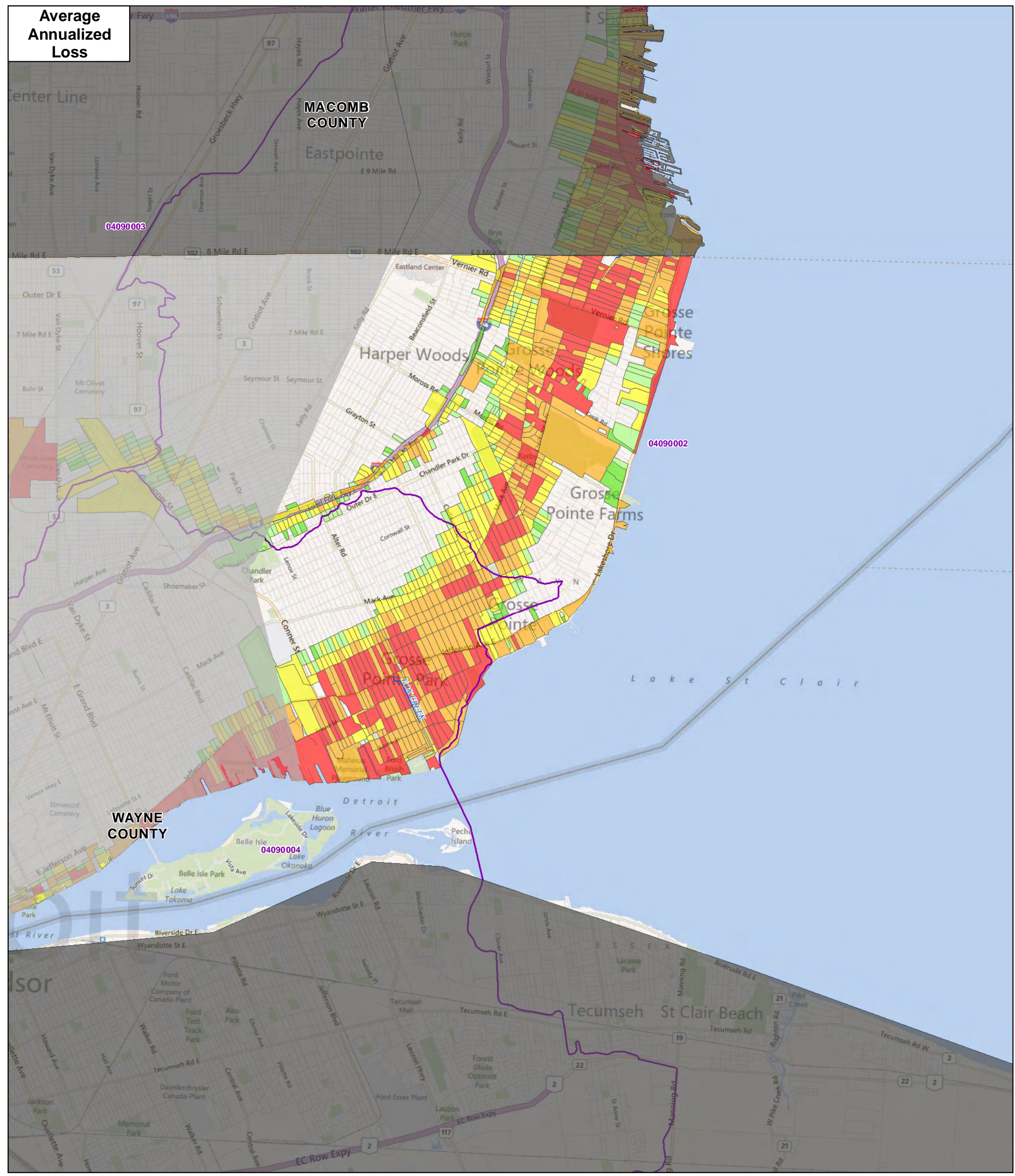
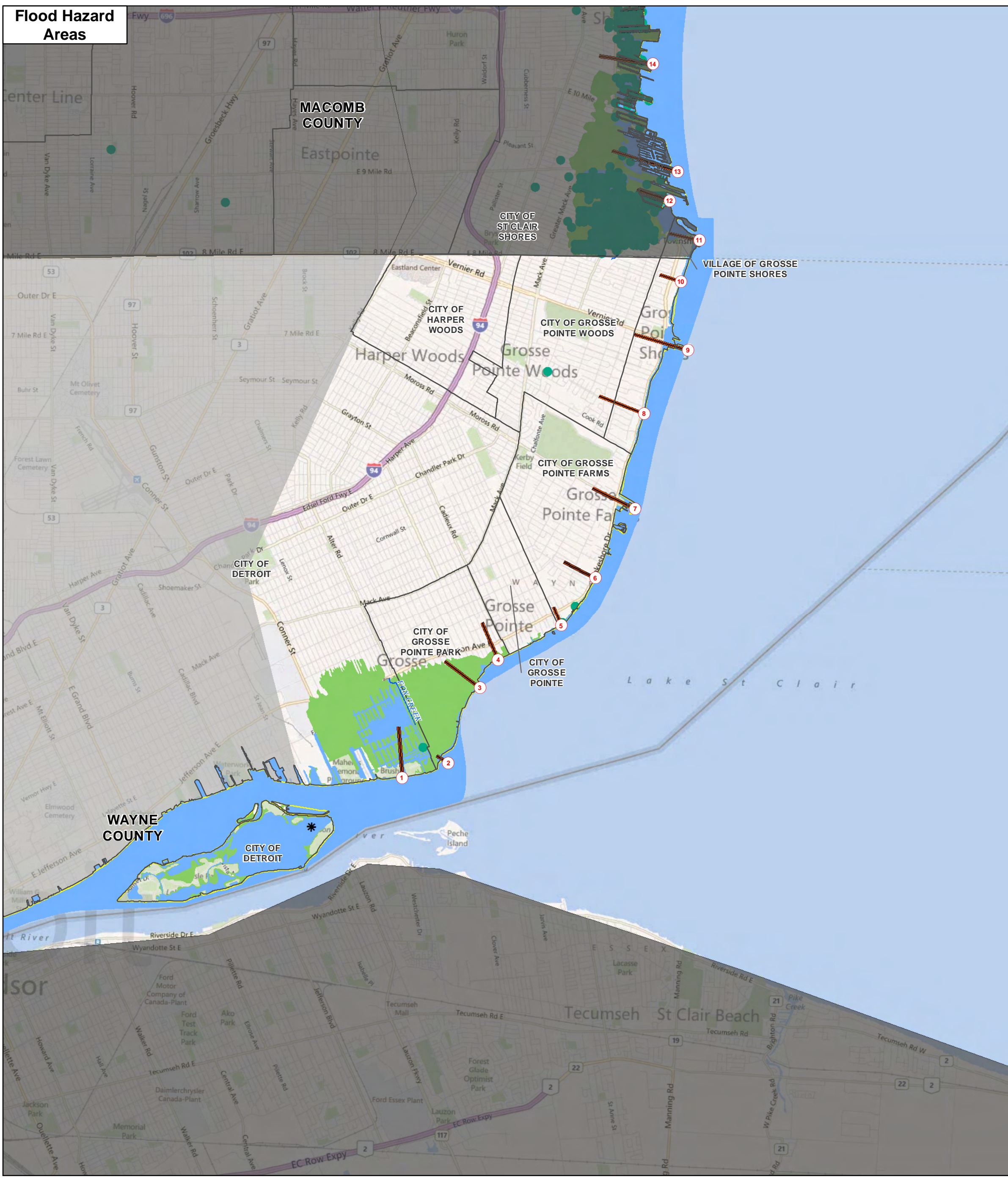
Great Lakes Coastal Flood Study
Lake St. Clair – State of Michigan - Email Discovery Invitation Language
FINAL – JULY 26, 2012

available to eligible communities. Please RSVP to FEMA's study contractor (STARR) Scott Banjavcic at (312) 780-7755 or email to GreatLakesFloodStudy@starr-team.com by **August 10, 2012**. Please reference the Discovery Meeting date and time in your RSVP.

A attached Community Coastal Data Request Form was recently mailed to local community officials, along with the Discovery Meeting invitation. This form is also available online at http://www.greatlakescoast.org/pubs/forms/GLCFS_Discovery_Coastal_Data_Request_Form.pdf. If you have data or information that you would like to provide to FEMA or discuss with us in advance of the Discovery Meetings, please contact Laura Keating of STARR at (925) 296-8048 or by email at GreatLakesFloodStudy@starr-team.com.

We look forward to working with you to reduce the risks associated with coastal flooding and increase resiliency for the long term. To learn more about Discovery, please visit <http://www.fema.gov/library> and search keywords "Discovery brochure" or contact Ken Hinterlong, FEMA Region V Senior Engineer, at (312) 408-5529, or by email at ken.hinterlong@fema.dhs.gov . We look forward to seeing you at the upcoming Discovery Meeting.

ATTACHMENT C
WAYNE COUNTY DRAFT DISCOVERY MAP



| Declared Disasters | | | | | | |
|--------------------|-------|----------------------|------------------|---------------|-----------------|--|
| Lake | State | Declared County/Area | Declaration Date | Disaster Type | Incident Type | Description |
| Lake St. Clair | MI | Wayne (County) | 12/1/1972 | DR | Flood | SEVERE STORMS & FLOODING |
| Lake St. Clair | MI | Wayne (County) | 4/12/1973 | DR | Flood | SEVERE STORMS & FLOODING |
| Lake St. Clair | MI | Wayne (County) | 3/19/1976 | DR | Severe Storm(s) | SEVERE STORMS, TORNADOES, ICING & FLOODING |
| Lake St. Clair | MI | Wayne (County) | 9/8/1980 | DR | Flood | SEVERE STORMS & FLOODING |
| Lake St. Clair | MI | Wayne (County) | 7/11/1997 | DR | Severe Storm(s) | SEVERE STORMS, TORNADOES, AND FLOODING |
| Lake St. Clair | MI | Wayne (County) | 8/5/1998 | DR | Severe Storm(s) | SEVERE STORMS AND HIGH WINDS |
| Lake St. Clair | MI | Wayne (County) | 10/17/2000 | DR | Severe Storm(s) | SEVERE STORMS AND FLOODING |
| Lake St. Clair | MI | Wayne (County) | 6/30/2004 | DR | Severe Storm(s) | SEVERE STORMS, TORNADOES, AND FLOODING |
| Lake St. Clair | MI | Wayne (County) | 1/27/1978 | EM | Snow | BLIZZARDS & SNOWSTORMS |
| Lake St. Clair | MI | Wayne (County) | 1/27/1999 | EM | Snow | MI - SEVERE WEATHER 1/2 /99 |
| Lake St. Clair | MI | Wayne (County) | 9/23/2003 | EM | Other | POWER OUTAGE |
| Lake St. Clair | MI | Wayne (County) | 9/7/2005 | EM | Hurricane | HURRICANE KATRINA EVACUATION |

| Summary of Shoreline Type | | | | | | |
|---------------------------|-----------------------------|--------------------------|---------------------------------|-------------|-----------------------------------|--------------|
| Total Shoreline (mile) | Artificial Shoreline (mile) | Boulders, Bedrock (mile) | Cohesive Clays and Silts (mile) | Sand (mile) | Shingles, Pebbles, Cobbles (Mile) | Other (mile) |
| 9.4 | 9.3 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 |

| Summary of Shoreline Type | | | | | | |
|---------------------------|-----------------------------|--------------------------|---------------------------------|-------------|-----------------------------------|--------------|
| Total Shoreline (mile) | Artificial Shoreline (mile) | Boulders, Bedrock (mile) | Cohesive Clays and Silts (mile) | Sand (mile) | Shingles, Pebbles, Cobbles (Mile) | Other (mile) |
| 22.1 | 16.1 | 6.0 | 0.0 | 0.0 | 0.0 | 0.0 |

| Summary of Shoreline Coverage | | | | | | | |
|-------------------------------|---------------------|-----------------|--------------------|-------------------|------------------------|-----------------------|--------------|
| Total Shoreline (mile) | Bluff 2'-10' (mile) | Coastal Wetland | Dune 2'-10' (mile) | Flat Coast (mile) | High Bluff 10'+ (mile) | High Dune 10'+ (mile) | Other (mile) |
| 9.4 | 0.0 | 0.0 | 0.0 | 9.4 | 0.0 | 0.0 | 0.0 |

| Summary of Shoreline Coverage | | | | | | | |
|-------------------------------|---------------------|-----------------|--------------------|-------------------|------------------------|-----------------------|--------------|
| Total Shoreline (mile) | Bluff 2'-10' (mile) | Coastal Wetland | Dune 2'-10' (mile) | Flat Coast (mile) | High Bluff 10'+ (mile) | High Dune 10'+ (mile) | Other (mile) |
| 22.1 | 0.0 | 0.0 | 0.0 | 22.1 | 0.0 | 0.0 | 0.0 |

MAP SYMBOLOLOGY

| | | | |
|--|---|--|---|
| <ul style="list-style-type: none"> Dams LOMCs USGS Gages Transsects Shoreline Streams Watersheds (HUC 8) Coastal Barrier Resource System | <ul style="list-style-type: none"> Coastal Discovery Area Surrounding Counties Municipal Boundaries <p>EFFECTIVE SFHA</p> <ul style="list-style-type: none"> A AE 0.2% PCT ANNUAL CHANCE FLOOD | <p>AAL DATA Total Average Annualized Losses per Census Block</p> <ul style="list-style-type: none"> Less than \$10,000 \$10,001 - \$100,000 \$100,001 - \$1,000,000 \$1,000,001 - \$5,000,000 Greater than \$5,000,000 | <p>Coordinated Needs Management Strategy (CNMS) Validation Status</p> <ul style="list-style-type: none"> Unverified Unknown Valid |
|--|---|--|---|

COASTAL STUDY LOCATOR

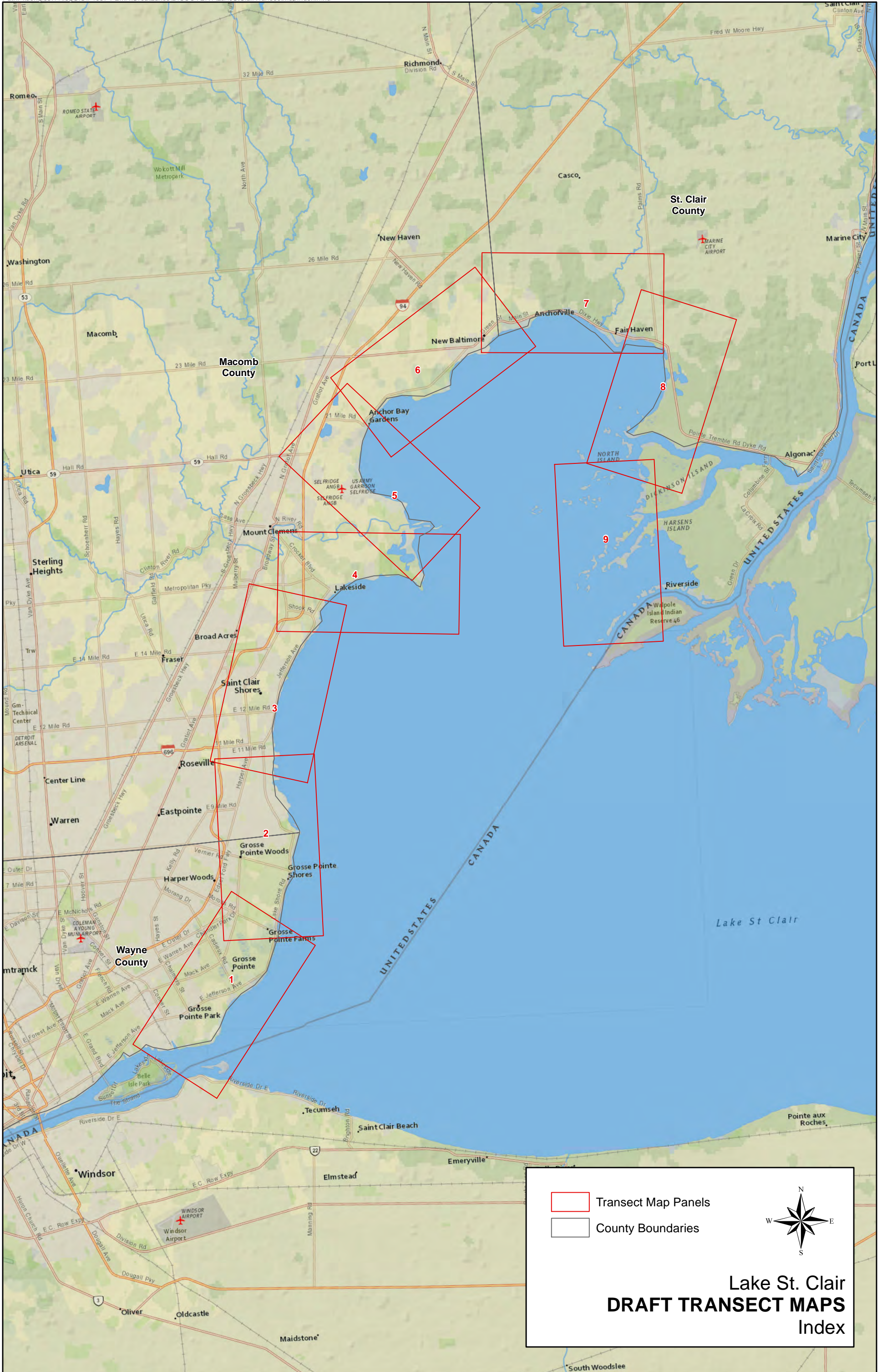


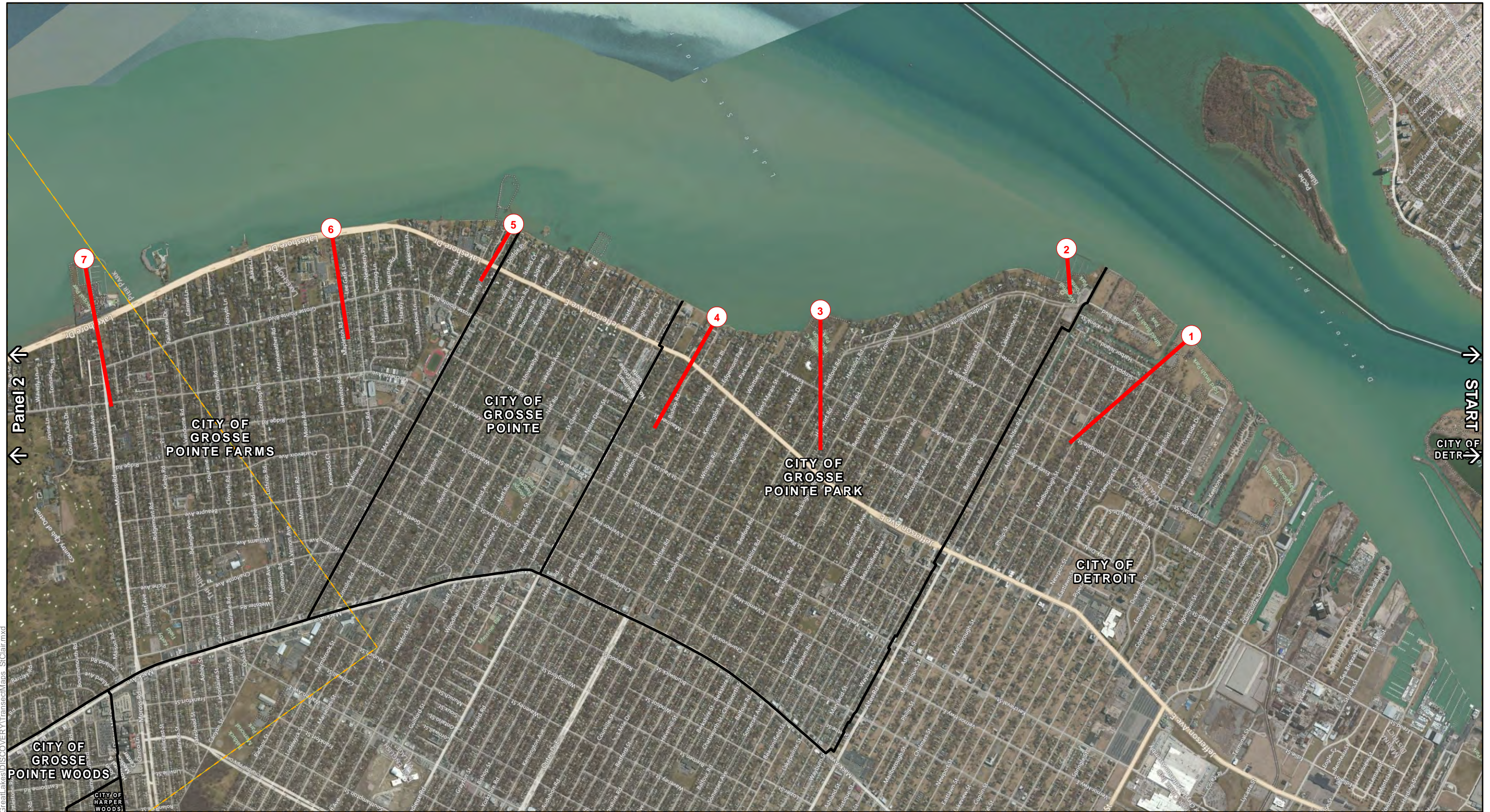
NATIONAL FLOOD INSURANCE PROGRAM
Discovery Map
LAKE ST. CLAIR COASTAL STUDY
WAYNE COUNTY, MICHIGAN COASTAL STUDY COMMUNITIES

Wayne County
 Detroit, City of
 Grosse Pointe Farms, City of
 Grosse Pointe Park, City of
 Grosse Pointe Woods, City of
 Grosse Pointe, City of
 Harper Woods, City of

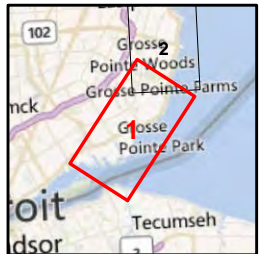
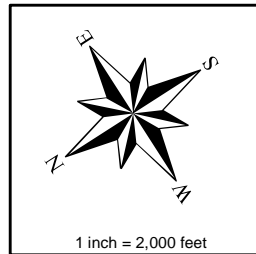
STARR **FEMA**




ATTACHMENT D
LAKE ST. CLAIR PROPOSED TRANSECTS





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-  Transects
-  Adjoining Panel Edge
-  Political Boundary

Basemap Source: Microsoft BING map service

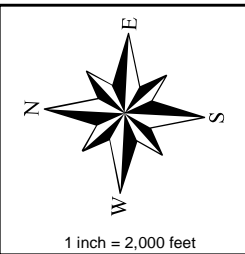
COUNTIES
WAYNE COUNTY

COMMUNITIES
CITY OF DETROIT
CITY OF GROSSE POINTE
CITY OF GROSSE POINTE FARMS
CITY OF GROSSE POINTE PARK
CITY OF GROSSE POINTE WOODS
CITY OF HARPER WOODS

Lake St. Clair
DRAFT TRANSECTS
Panel 1 of 9



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1 inch = 2,000 feet



- Transects
- Adjoining Panel Edge
- Political Boundary

Basemap Source: Microsoft BING map service

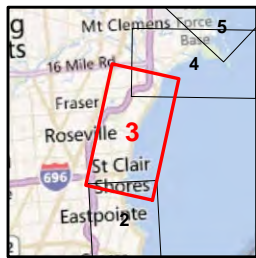
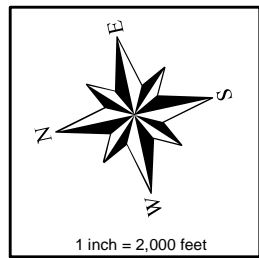
COUNTIES
WAYNE COUNTY
MACOMB COUNTY

COMMUNITIES
CITY OF GROSSE POINTE FARMS
CITY OF GROSSE POINTE WOODS
CITY OF HARPER WOODS
CITY OF ST CLAIR SHORES
VILLAGE OF GROSSE POINTE SHORES

Lake St. Clair
DRAFT TRANSECTS
Panel 2 of 9



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- Transects
- Adjoining Panel Edge
- Political Boundary

Basemap Source: Microsoft BING map service

COUNTIES
MACOMB COUNTY

COMMUNITIES
CHARTER TOWNSHIP OF CLINTON
CITY OF ROSEVILLE
CITY OF ST CLAIR SHORES
TOWNSHIP OF HARRISON

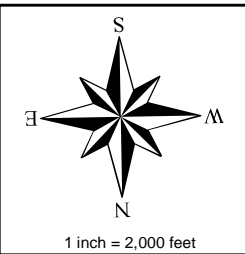
Lake St. Clair
DRAFT TRANSECTS
Panel 3 of 9



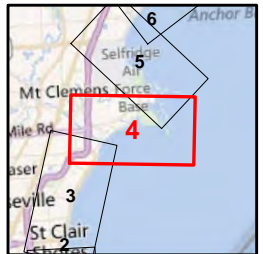
↑ Panel 5

Panel 3 ↓

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1 inch = 2,000 feet



- Transects
- Adjoining Panel Edge
- Political Boundary

Basemap Source: Microsoft BING map service

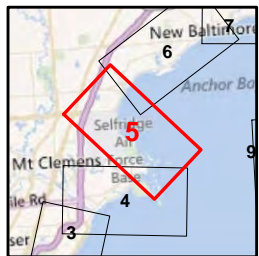
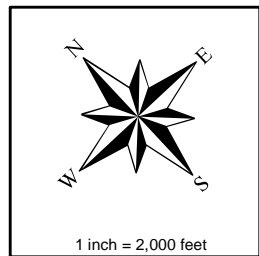
COUNTIES
MACOMB COUNTY

COMMUNITIES
CHARTER TOWNSHIP OF CLINTON
CITY OF MOUNT CLEMENS
TOWNSHIP OF HARRISON

Lake St. Clair
DRAFT TRANSECTS
Panel 4 of 9



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- Transects
- Adjoining Panel Edge
- Political Boundary

Basemap Source: Microsoft BING map service

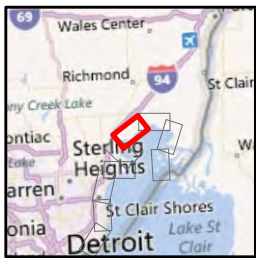
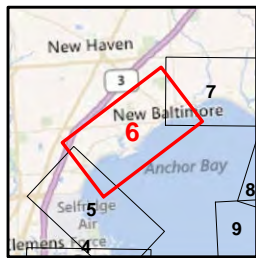
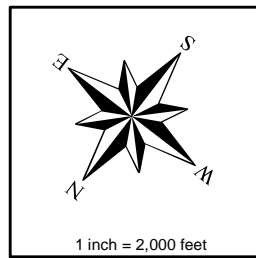
COUNTIES
MACOMB COUNTY

COMMUNITIES
CHARTER TOWNSHIP OF CLINTON
TOWNSHIP OF CHESTERFIELD
TOWNSHIP OF HARRISON
TOWNSHIP OF MACOMB

Lake St. Clair
DRAFT TRANSECTS
Panel 5 of 9



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- Transects
- Adjoining Panel Edge
- Political Boundary

Basemap Source: Microsoft BING map service

COUNTIES
 MACOMB COUNTY
 ST. CLAIR COUNTY

COMMUNITIES
 CITY OF NEW BALTIMORE
 TOWNSHIP OF CHESTERFIELD

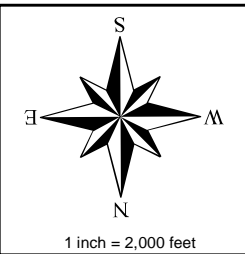
Lake St. Clair
DRAFT TRANSECTS
 Panel 6 of 9



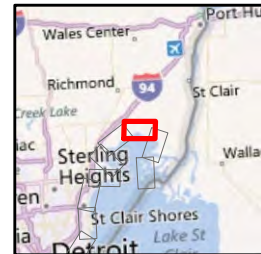
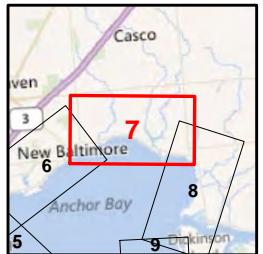
Panel 8




Panel 6

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1 inch = 2,000 feet



-  Transects
-  Adjoining Panel Edge
-  Political Boundary

Basemap Source: Microsoft BING map service

COUNTIES
MACOMB COUNTY
ST. CLAIR COUNTY

COMMUNITIES
CITY OF NEW BALTIMORE
TOWNSHIP OF CHESTERFIELD
TOWNSHIP OF IRA

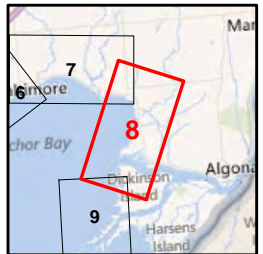
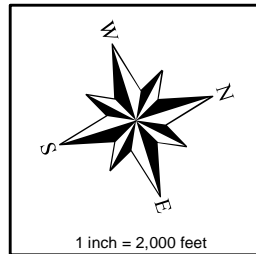
Lake St. Clair
DRAFT TRANSECTS
Panel 7 of 9



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↑ Panel 7 ↓

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- Transects
- Adjoining Panel Edge
- Political Boundary

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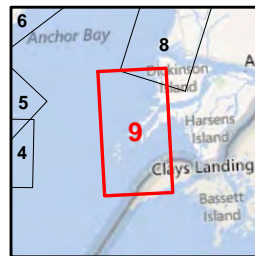
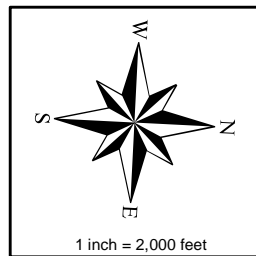
COUNTIES
ST. CLAIR COUNTY

COMMUNITIES
TOWNSHIP OF CLAY
TOWNSHIP OF COTTRELLVILLE
TOWNSHIP OF IRA

Lake St. Clair
DRAFT TRANSECTS
Panel 8 of 9



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- Transects
- Adjoining Panel Edge
- Political Boundary

Basemap Source: Microsoft BING map service

COUNTIES
ST. CLAIR COUNTY

COMMUNITIES
TOWNSHIP OF CLAY

Lake St. Clair
DRAFT TRANSECTS
Panel 9 of 9

ATTACHMENT E
WAYNE COUNTY DISCOVERY MEETING DOCUMENTS

Discovery Meeting Agenda

Discovery Meeting Sign-In Sheets

Discovery Meeting Minutes

Discovery Meeting Presentation



| | |
|-----------------------|---|
| Project Name: | FEMA Region V Discovery |
| Meeting: | WAYNE COUNTY Great Lakes Coastal Discovery Meeting |
| Date and Time: | TUESDAY, AUGUST 21, 2012; 2:00 – 4:00 PM ET |
| Place: | GROSSE POINTE PUBLIC LIBRARY |
| Facilitator: | ERIN MALONEY, FEMA BRIAN CAUFIELD, MATT REMBOLD, BRETT ADDAMS, STARR |

Discovery Meeting Agenda

1. Why are we here? (2:00 – 2:15 PM ET)

- Great Lakes Coastal Flood Study Overview and Schedule
- Discovery Process and Outcomes

2. Coastal mapping and flood risk topics to be aware of (2:15 – 2:40 PM ET)

3. How does this apply to my community? (2:40 – 2:50 PM ET)

4. Interactive Session A (2:50 – 3:15 PM ET)

- View and Discuss Local Coastal Areas of Concern Using the Discovery Map and Community Risk MAP Questionnaire

5. Hazard mitigation opportunities and grant funding (3:15 – 3:25 PM ET)

6. Interactive Session B (3:25 – 3: 50 PM ET)

- Discuss Mitigation Action Opportunities
- Introduce the Mitigation Action Form and Mitigation Action Tracker

7. Wrap Up (3:50 – 4:00 PM ET)

- Review of action items and next steps

Optional Interactive Stations (30 minutes - 1hr following meeting)

- *Draft Transect Map Station: Talk to technical staff about draft transects and view draft transects in GIS*
- *Mitigation Resources, Strategies, and Actions Station: Talk with FEMA and State staff about areas of concern and potential mitigation actions to help reduce risk. Fill out Mitigation Action Form.*

August 21, 2012 WAYNE COUNTY DISCOVERY MEETING SIGN-IN SHEET
Please verify contact information and initial meeting attendance.

| No. | Sign Intials | Affiliation | Title | Name First | Name Last | Street Address | Phone | Email Address |
|-----|--------------|---------------------------------------|---|------------------------|-------------------------------|---|------------------------------------|------------------------------|
| 1 | | City of Detroit | Deputy Director, Department of Buildings and Safety and Environment | Ray | Scott | | | |
| 2 | | City of Detroit | Environmental Specialist, Department of Buildings and Safety and Environment | Min | Yang | 2 Woodward Ave Rm 401 Detroit, MI 48226 | 313.471.5111 | yangm@detroitmi.gov |
| 3 | EM | FEMA Region V | Senior Engineer | Lee Erin | Traeger Maloney | 536 South Clark St., 6th Floor Chicago, IL 60605 | (312) 408- 5500 5435 | lee.traeger@fema.dhs.gov |
| 4 | DBE | STARR | Engineer | Brian | Caufield | 50 Hampshire Street Cambridge, MA 02139 | (617) 452-6000 | caufieldba@cdmsmith.com |
| 5 | | STARR | Engineer | Matt | Rembold | 125 South Wacker Drive Chicago, IL 60606 | (312) 346-5000 | remboldmd@cdmsmith.com |
| 6 | | STARR | GIS Specialist | Brett | Addams | 125 South Wacker Drive Chicago, IL 60606 | (312) 346-5000 | addamsbri@ cdmsmith.com |
| 7 | | | | Tom | HARTZ | 750 University Grass Point MI 48230 | | thartz@ comcast-net |
| 8 | | City of Detroit Homeland Sec. Mgr. | Emergency | Robert | Brown | 13331 Lyndon Detroit, MI 48227 | 313 596-1742 | Brownro@ detroitmi.gov |
| 9 | | City of Grass Point Woods | Bldg Dept | John | | 20025 Mich Plaza Drive GPW 48856 | | |
| 10 | ME DECO | | Engineer | Maire | Zinga | 27700 Donald Ct Warren, MI 48092 | 586 753 3872 | Zingasm@ Michigan. gov |



Meeting schedule: Tuesday, August 21, 2012 2:00 – 4:00 pm (ET)

Meeting Location: Grosse Pointe Public Library, Ewald Branch, Grosse Pointe Park, MI

Discovery Area: Coastal communities in Wayne County

Attendees: 9 people attended the Lake St. Clair Discovery Meeting. Please see attached sign-in sheet for a complete list of attendees.

FACILITATORS

FEMA

Erin Maloney, FEMA-Region V

Frank Shockey, FEMA-Region V

STARR Contractor

Brian Caufield, STARR

Matt Rembold, STARR

Brett Addams, STARR

Michigan DEQ

Maria Zingas, MDEQ

MEETING AGENDA:

1. **Why are we here? (15 minutes)**
 - Great Lakes Coastal Flood Study Overview and Schedule
 - Discovery Process and Outcomes
2. **Coastal mapping and flood risk topics to be aware of (25 minutes)**
3. **How does this apply to my community? (10 minutes)**
4. **Interactive Session A (25 minutes)**
 - View and Discuss Local Coastal Areas of Concern Using the Discovery Map and Community Risk MAP Questionnaire
5. **Hazard mitigation opportunities and grant funding (10 minutes)**
6. **Interactive Session B (25 minutes)**
 - Discuss Mitigation Action Opportunities
 - Introduce the Mitigation Action Form and Mitigation Action Tracker
7. **Wrap Up (10 minutes)**
 - Review of action items and next steps

Optional Interactive Stations (30 minutes - 1hr following meeting)

- *Draft Transect Map Station: Talk to technical staff about draft transects and view draft transects in GIS*
- *Mitigation Resources, Strategies, and Actions Station: Talk with FEMA and State staff about areas of concern and potential mitigation actions to help reduce risk. Fill out Mitigation Action Form.*



INTERACTIVE DISCUSSION:

- *Question:* Robert Brown, City of Detroit Homeland Security, Emergency Manager, asked if the increase or decrease in shipping traffic would be taken into consideration during the study. *Answer:* B. Caufield responded that only the storm surge produced from atmospheric conditions would be studied. He explained, however, that the model will calculate velocities, which could help Homeland Security plan for spills.
- *Question:* Are there examples of local mitigation actions available? *Answer:* FEMA / STARR are currently collecting local mitigation actions via the Mitigation Action Forms, as well as grant mitigation projects, and will be summarizing them in the upcoming Discovery Report. The process has just begun; therefore these local examples are not available yet. The State and County may have compiled examples of past mitigation projects.
- *Question:* Maria Zingas, Engineer for the Michigan Department of Environmental Quality, asked what the main reason was behind launching the new study as the County has recently received new maps. *Answer:* B. Caufield explained that it was a mandate from Congress to map all populated coastal shorelines. In addition, new coastal methodologies will be utilized for the study.

FEATURES NOTED ON MAPS:

- Transect suggested on the eastern tip of Belle Isle.
- Transect suggested at Water Works Park (may be too far into the Detroit River to be considered part of the coastal analysis, but potential for inclusion to be investigated further).

ACTIONS:

- Maria Zingas, MDEQ, may provide comments regarding the location of the draft transects at a later date.



FEMA

Lake St. Clair Discovery

Wayne County, MI

August 21, 2012
1400 to 1700

Grosse Pointe Public Library



RiskMAP
Increasing Resilience Together

*Great Lakes
Coastal Flood Study*

greatlakescoast.org



Introductions

Who's here?

- State Representatives
 - MDEQ
 - SHMO
- Risk MAP Project Team
 - FEMA
 - STARR
- Local Stakeholders
 - CEOs
 - Floodplain Administrators
 - Planners
 - Engineers
 - Emergency Managers
 - Community Leaders
 - Regional Planning Agencies
 - Coastal Organizations





Wayne County Study Status

- **City of Romulus**
 - Preliminary 7/20/2012
- **North Branch Ecorse**
 - On hold
- **Grosse Pointe Park**
 - On Hold





Discovery Meeting Agenda

- **Why are we here?**
 - Risk MAP Program, Great Lakes Study, and Discovery
- **Coastal mapping and flood risk topics**
- **How does this apply to my community?**
 - NFIP compliance, local impacts of coastal study, hazard mitigation, and grant funding
- **Interactive Sessions**
 - View and Discuss Local Coastal Areas of Concern Using the Discovery Map and Community Risk MAP Questionnaire
 - Discuss Mitigation Action Opportunities and Introduce the Mitigation Action Form/SHARPP
- **Wrap Up**
- **Optional Interactive Stations**

RiskMAP
Increasing Resilience Together

Great Lakes
Coastal Flood Study

greatlakescoast.org



Risk Mapping, Assessment and Planning Risk MAP



Through collaboration with State, Local, and Tribal entities, Risk MAP aims to deliver quality data that increases public awareness and leads to action that reduces risk to life and property



RiskMAP
Increasing Resilience Together

*Great Lakes
Coastal Flood Study*

greatlakescoast.org



Great Lakes Coastal Flood Study



U.S. Army Corps of Engineers, Detroit District

RiskMAP
Increasing Resilience Together

Great Lakes
Coastal Flood Study

greatlakescoast.org



Great Lakes Coastal Flood Study Overview



- Latest models, data, and technology
- Deliver updated flood maps and flood risk datasets
- Equip Federal Agencies, eight States and hundreds of coastal communities with data and planning tools to facilitate flood risk actions to enhance resiliency along the Great Lakes
- Partners Involved:
 - FEMA
 - USACE
 - ERDC
 - ASFPM
 - States
 - FEMA Contractors



RiskMAP
Increasing Resilience Together

Great Lakes Coastal Flood Study

greatlakescoast.org



Lake St. Clair Discovery

- 3 counties in Michigan
- 16 coastal communities
- 7 connecting channels communities

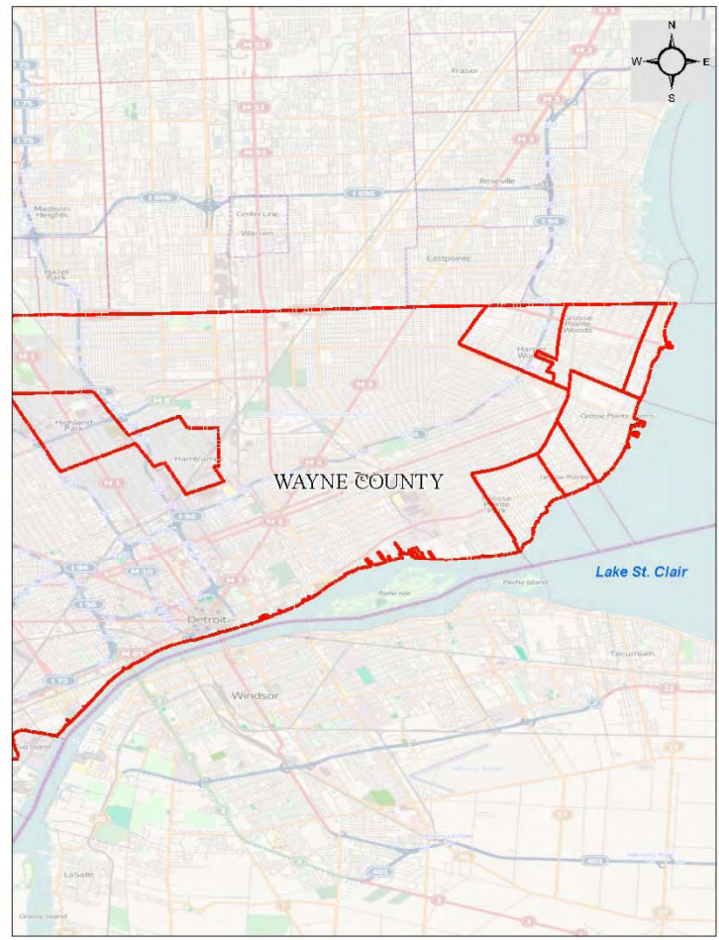


Great Lakes Coastal Flood Study Discovery Study Area



Lake St. Clair Communities:

- Wayne County
- Detroit
- Grosse Pointe Farms
- Grosse Pointe Park
- Grosse Pointe Shores
- Grosse Pointe Woods
- Grosse Pointe
- Harper Woods



RiskMAP
Increasing Resilience Together

Great Lakes Coastal Flood Study

greatlakescoast.org





Discovery Meeting Objectives

- Continue and expand upon stakeholder engagement
- Discuss data inputs from Federal, state and local
- Identify local coastal flood hazard needs and areas of concern
- Identify products and datasets that best advance coastal mitigation action
- NFIP regulatory updates
- Discovery schedule and deliverables

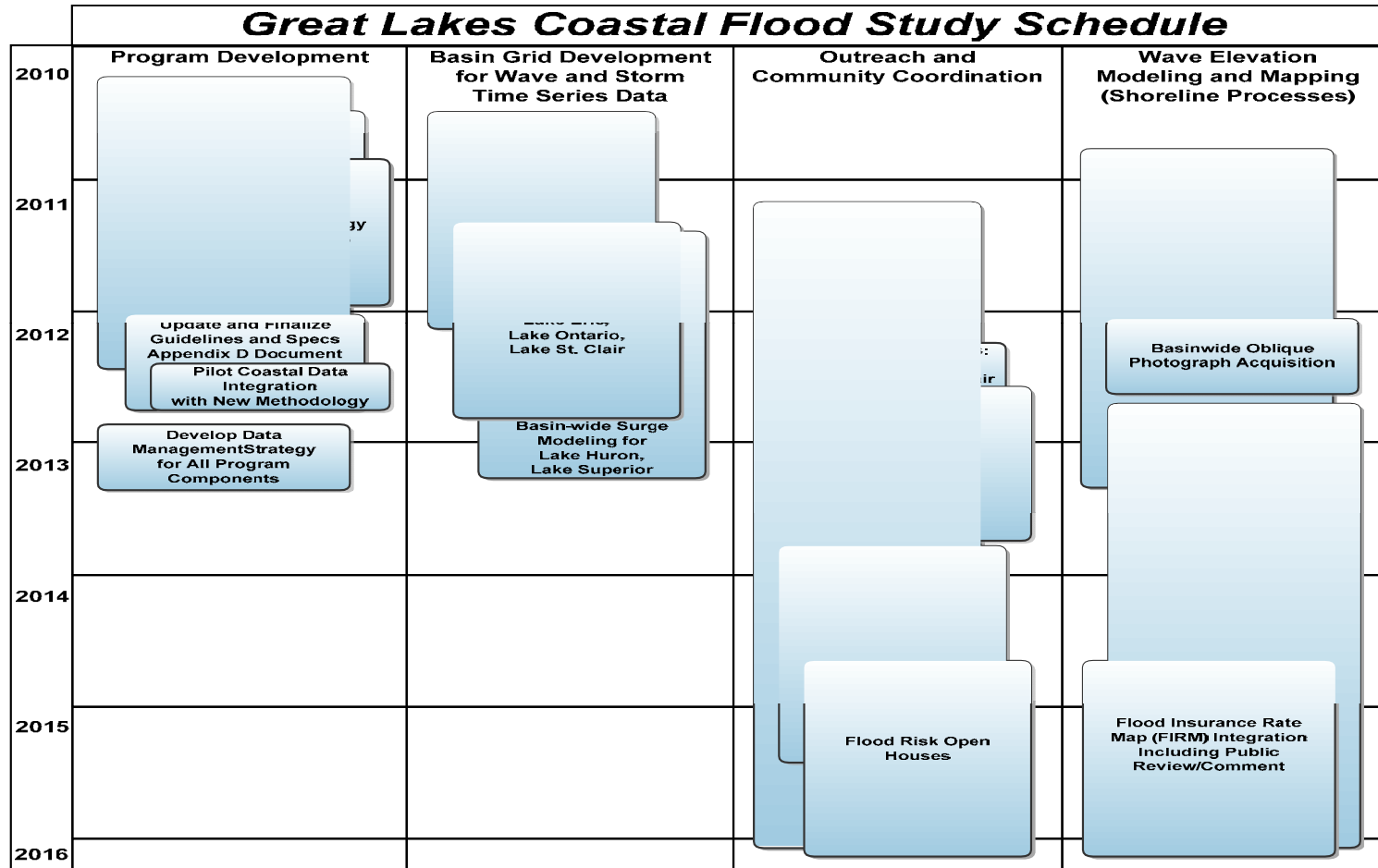
RiskMAP
Increasing Resilience Together

*Great Lakes
Coastal Flood Study*

greatlakescoast.org



Stakeholder Engagement

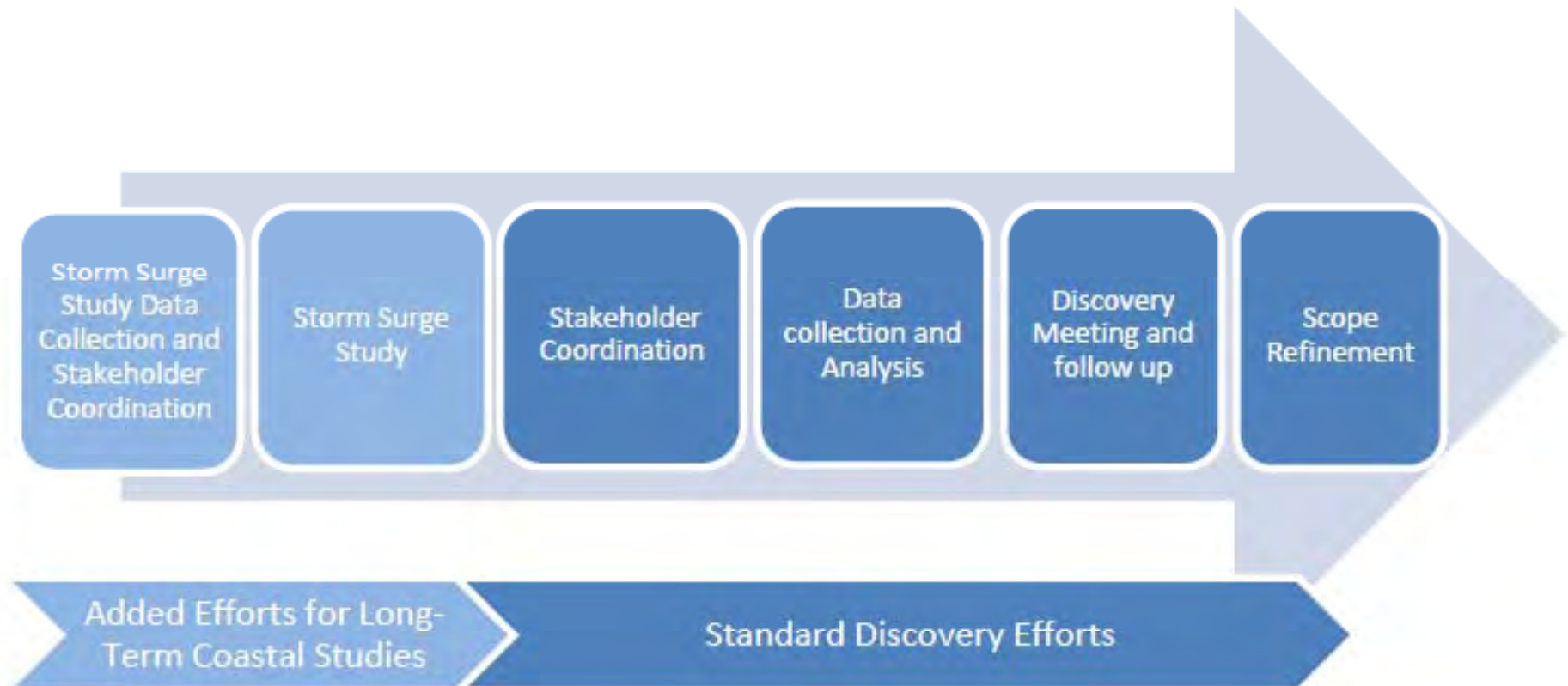


Data Inputs

- Updates to analysis and methodology guidance
- Proposed transect locations
- Topographic and Bathymetry data collected
- Bare Earth Imagery collected
- Identify reaches requiring special attention and data
- Document local data sources that will help improve study



Discovery Schedule Overview



Lake St. Clair Discovery

Schedule of Activities

- Identify Draft Transect Locations – Completed
- Research available data – Completed
- Information Exchange with Community Stakeholders – July 2012
- Prepare draft Discovery Maps and Reports – August 2012
- Establish inventory of coastal structures based on oblique imagery – October 2012
- Facilitate Discovery Meetings – August/September 2012
- Final Discovery Report and Maps – November 2012
- Create library of digital data – November 2012

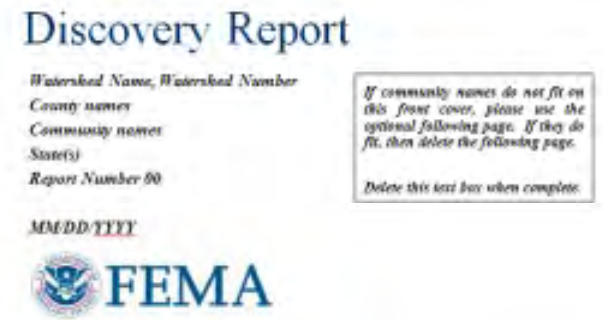


Great Lakes Coastal Flood Study Discovery Products



- **Final Discovery Report**
 - Single, comprehensive report for all of Lake St. Clair, with appendices for each Discovery meeting
 - Includes pre-discovery data, meeting agenda, sign-in sheets, discussion topics, decisions made, etc.

- **Final Discovery Maps**
 - Including feedback from participants
 - Visual representation of meeting outcomes
 - Delivered in digital format



Discovery Outcomes

- **Explain the Project**
 - Regulatory and non-regulatory products/datasets
 - Analysis, concepts, timelines
- **Encourage Community Participation**
 - Transect Locations
 - Areas of concern and need
 - Data to improve upon products and datasets
- **Introduce Mitigation Action**
 - Mitigation Action Form
 - Action Tracker
 - Mitigation strategies for coastal flood and erosion



Data Collection in progress

- New high quality USACE Topographic – Light Detection and Ranging (LiDAR) and Bathymetry Data
- Base data – boundaries, streams, census blocks, etc.
- Average Annualized Loss data
- Shoreline classification Dataset
- Dams
- Federal and State disaster information
- Repetitive loss data
- Hazard Mitigation plans
- Hazard Mitigation Grants Program (HMGP) projects
- Stream, wave, and water level gage locations
- Pre-Disaster Mitigation Program projects
- Draft Transects



Data Gaps

- Building footprints
- Critically eroded beach areas
- Coastal construction control line
- Critical Facilities (in GIS format)
- High water marks
- Areas of recent or planned development
- Areas of high growth
- Recent land changes due to development, erosion, etc.
- Known flooding issues not represented on effective FIRMs or listed in CNMS





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Coastal Mapping and Flood Risk Topics

- Draft Transects
- Coastal Guidance Updates
- VE Zone Mapping and LiMWA
- Coastal Flood Risk Products

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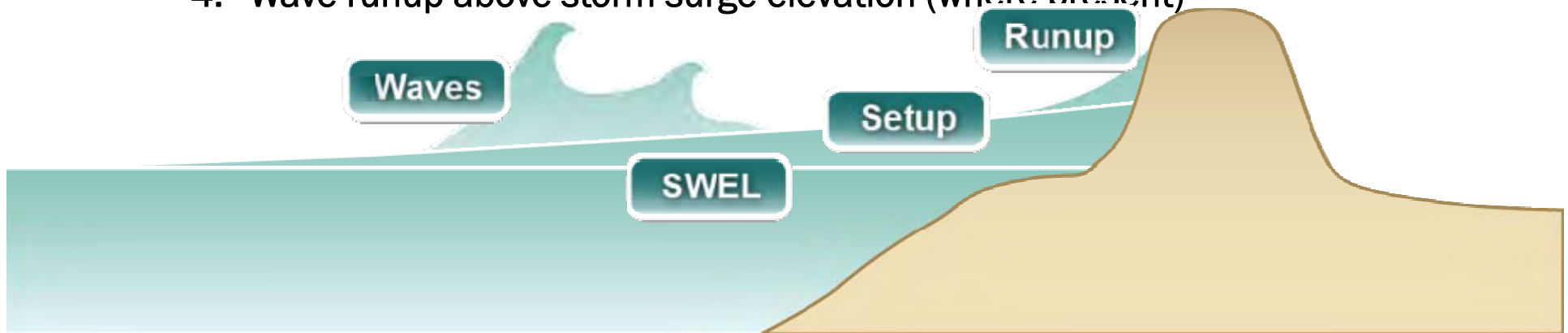


Basic Elements of a Coastal Hazard Analysis



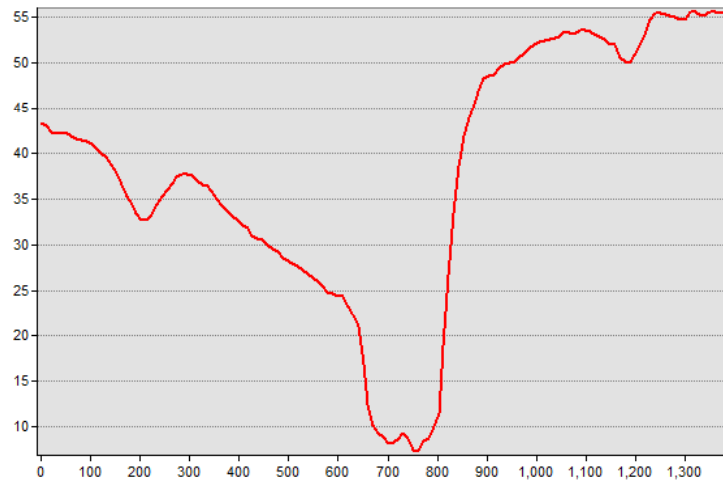
Base Flood Elevation on FIRM includes 4 components:

1. Storm surge stillwater elevation (SWEL) – determined from storm surge model
2. Amount of wave setup
3. Wave height above storm surge (stillwater) elevation
4. Wave runup above storm surge elevation (where present)

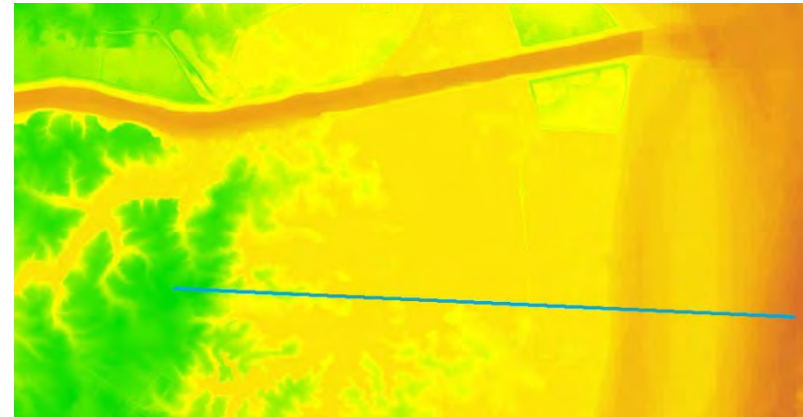
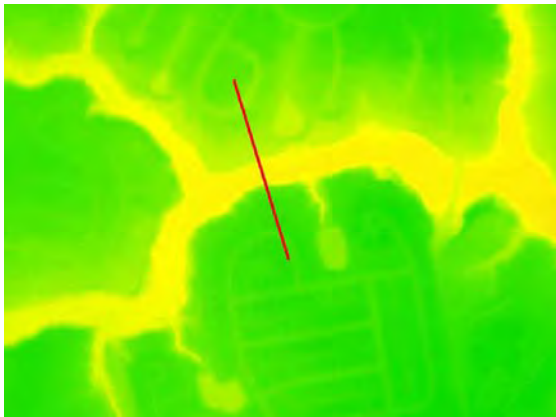
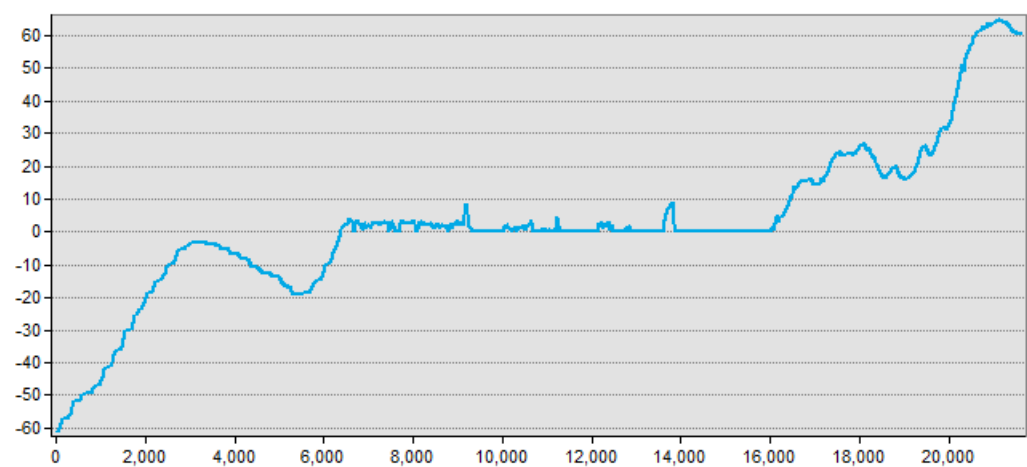


Riverine XS vs Coastal Transect

Riverine XS



Coastal Transect



Transect Placement

- Transects are placed to define representative profiles for a shoreline reach
- Transect spacing depends on upland development
 - Developed areas – As dense as 1,000 ft
 - Rural areas – Spacing can be 1-2 miles
- Transects are:
 - Profiles along which flooding analysis is performed
 - Used to transform offshore conditions to shoreline
 - Use to define coastal flood risks inland of shoreline



Draft Transect Layout Macomb County



- 10 transects
- 47 miles of shoreline



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Draft Transect Layout Macomb County



- 10 transects
- 47 miles of shoreline



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Coastal Flood Hazard Zones

■ Hazard Zones

- **Zone VE** – Areas expected to be affected by high velocity wave impact in 100-year event (wave heights or runup depth at or greater than 3 feet)
 - Base Flood Elevation established
- **Zone AE** – Areas expected to be flooded by inundation in 100-year event
 - Base Flood Elevation established (wave heights and runup depth less than 3 feet)
- **Zone X** – Areas not expected to be flooded in 100-year event
 - Shaded X – Areas expected to be flooded in 500-year event
 - Base Flood Elevations not established

■ Non-Regulatory

- **LiMWA** – Areas subject to wave heights of at least 1.5 feet

■ Gutters

- Internal zone breaks where Base Flood Elevation changes
- VE/AE Gutter - Location where risk of damage due to wave action diminishes



VE Zones in the Great Lakes

- From the revised Appendix D.3:
 - “VE zones may also be mapped where the engineering analysis indicates their presence“
 - “The typical study finding is a narrow VE zone, making its usefulness uncertain on maps at usual scales“
 - “Relatively small numbers of existing coastal buildings are likely to be affected by possible VE zone designations along some Great Lakes”
 - “Only with prior approval from the FEMA study representative should the VE zones be mapped”



How is LiMWA Defined?

- LiMWA is the line mapped to delineate the inland extent of wave heights of at least 1.5 feet
 - Wave heights as small as 1.5 feet can cause significant damage to structures
- LiMWA alerts people that are not in the high wave hazard zone (Zone VE) that they may still be affected by wave action in the Zone
- CRS benefit for communities requiring Zone VE construction standards in areas defined by LiMWA or areas subject to waves greater than 1.5 ft



Wave Action - Structural Risk

- US Army Corps of Engineers – 1973
 - Breaking wave height of 3 feet
 - “area subject to high velocity waters, including but not limited to hurricane wave wash”
- FEMA – 2000
 - Coastal Construction Manual
 - Additional post-storm damage assessments identified 1.5 wave also can knock a structure off a foundation



http://www.fema.gov/pdf/rebuild/mat/coastal_a_zones.pdf

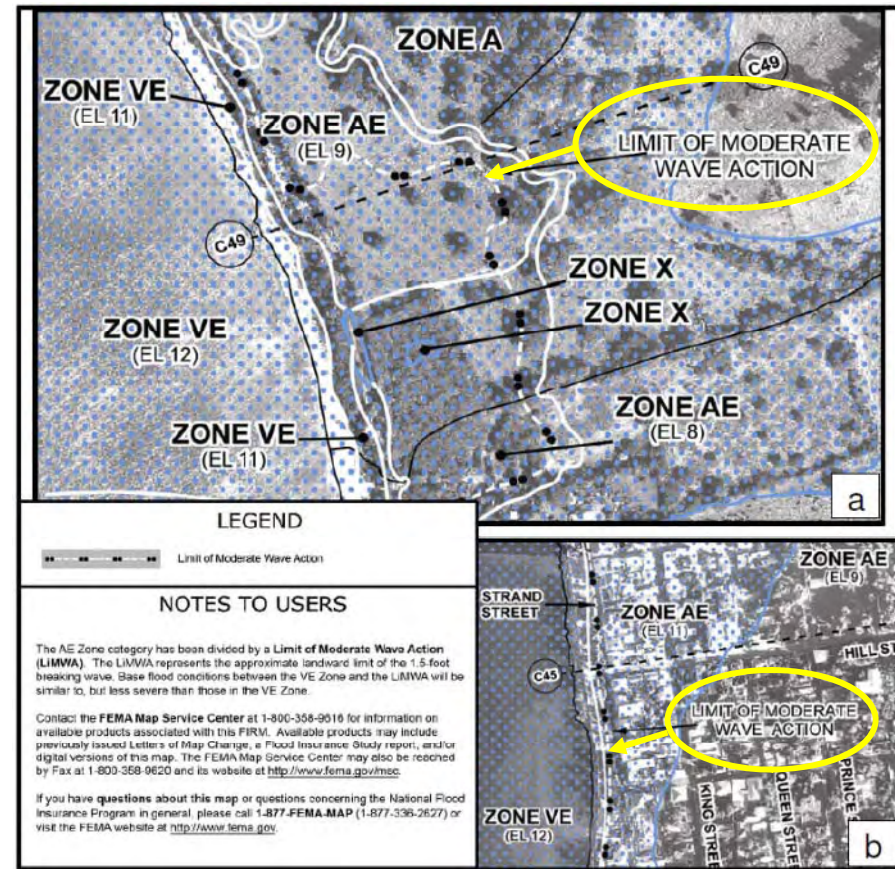
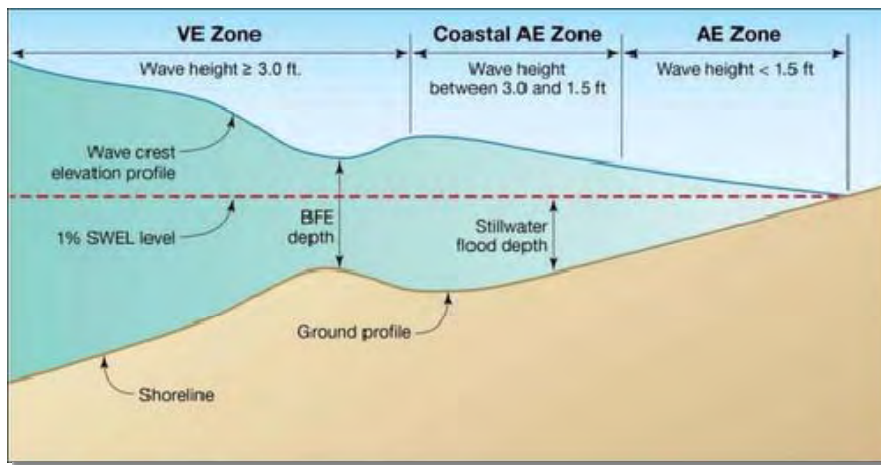


Limit of Moderate Wave Action (LiMWA)



FEMA Procedure Memorandum No. 50, 2008

- Not a regulatory requirement
- No Federal Insurance requirements tied to LiMWA



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Coastal Flood Risk Products

- Coastal Depth Grids and HAZUS
- Changes Since Last FIRM
- Coastal Non-Regulatory Products

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Standard Flood Risk Products

- Coastal Depth Grids
- Flood Risk Assessment (HAZUS)

HAZUS[®]
EARTHQUAKE • WIND • FLOOD **MH**



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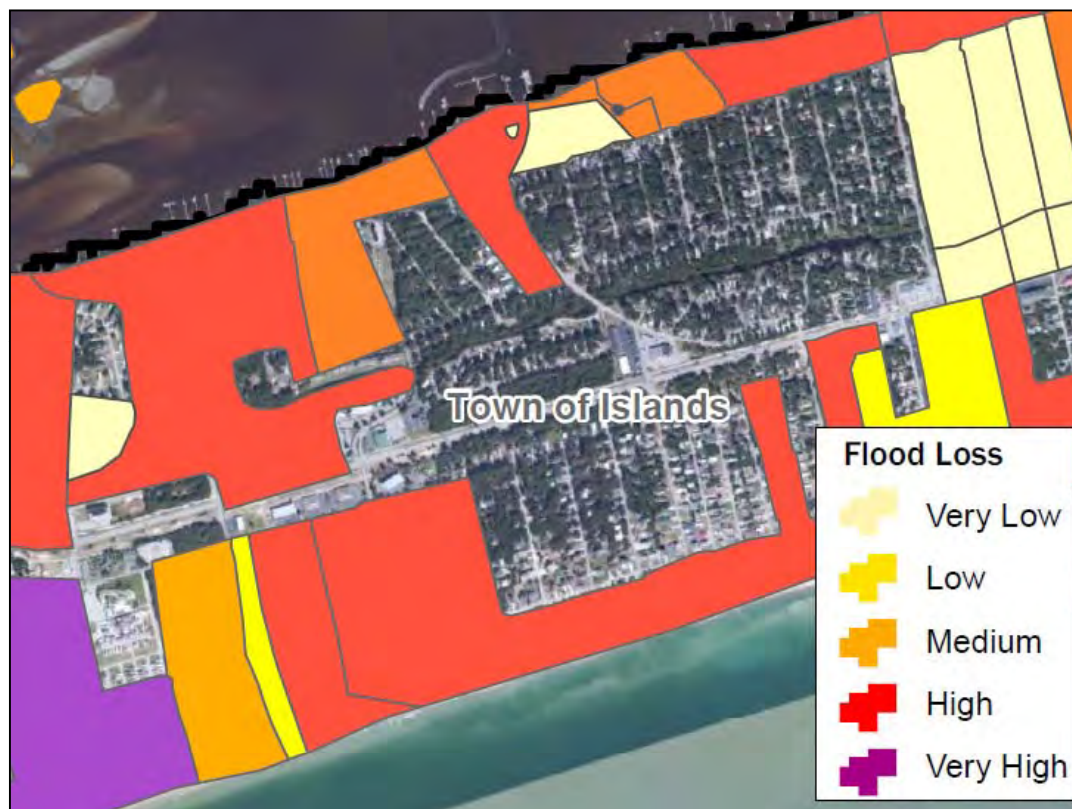
Coastal Depth Grid

- Should reflect total depth (i.e. stillwater and waves) – typically only produced for the 1% annual chance flood
- Created using the regulatory mapping and associated zone breaks as input

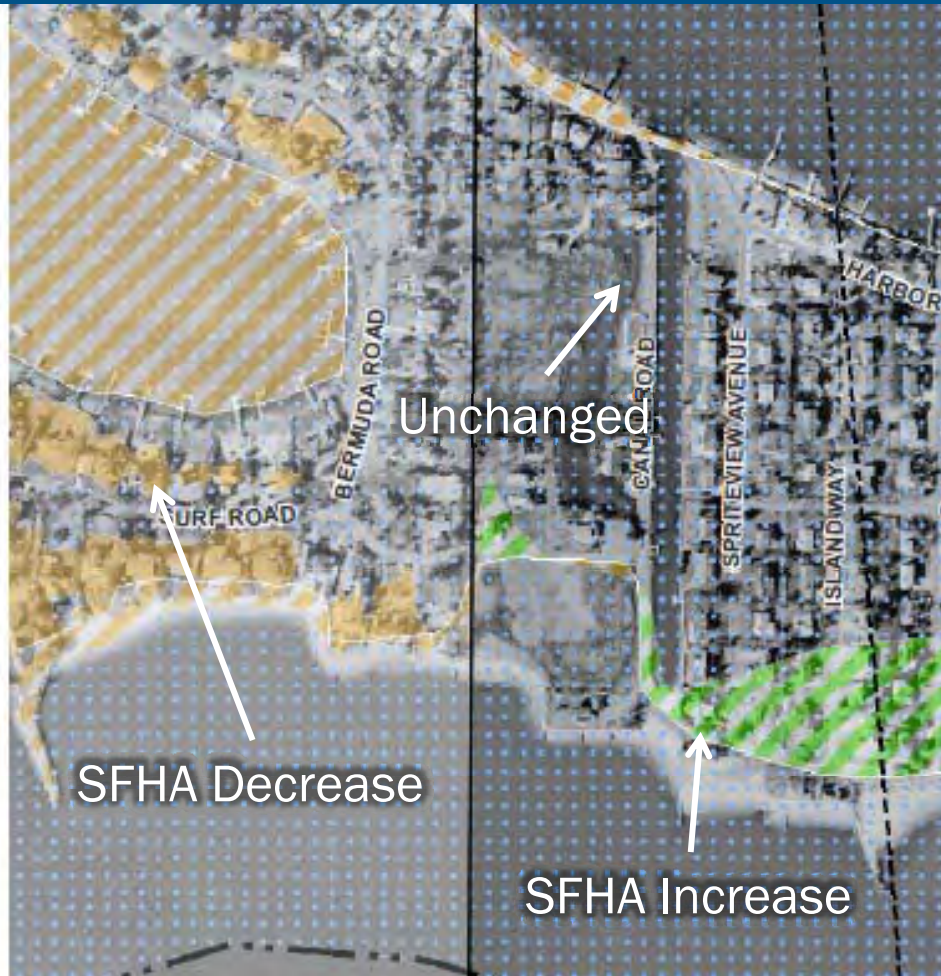


Coastal Flood Risk Assessments

- Similar to Flood Risk Assessments for riverine, but using the coastal depth grids as input for the refined analysis
- Hazus analysis and data can support adoption of higher regulatory standards for structures in high loss areas
- Provides justification to fund mitigation actions



Changes Since Last FIRM



| Data Fields Include | Example Data Values |
|---|---|
| Old Study Date | e.g. 1985 |
| Old Model Type(s) | e.g. HEC-1 / HEC-2 |
| Old Zone Type | e.g. Zone A |
| Old Topography | e.g. USGS 10-ft |
| New Study Info/Methods | Dates, Models, etc. |
| New Study Zone | e.g. Zone AE |
| New Topography | e.g. LiDAR 2-ft |
| New Study Engineering Factors / Changes | e.g. new structures, gages, topo, landuse, etc. |
| Estimated Structures | e.g. 9 |
| Estimated Population | e.g. 27 |

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Coastal Non-Regulatory Products in Development



Erosion



Red Lantern Restaurant, Lake Michigan, IN

Lake Levels



Lake Michigan Shoreline
[Reference](#)

Shoreline Feature Dataset



Upper Peninsula Shoreline
[Reference](#)

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Shoreline Features Database

| Shoreline Material | Primary Land Use | Primary Coast Type | Primary Vegetation |
|--------------------|------------------------------|--------------------|-------------------------------|
| Sand | High Density Residential | High Dune, 10'+ | None |
| Cohesive | Moderate Density Residential | Dune, 2' - 10' | High Density Shrubs/Trees |
| Cobble | Low Density Residential | High Bluff, 10'+ | Moderate Density Shrubs/Trees |
| Diamicton* | Commercial/Industrial | Bluff, 2' - 10' | Low Density Shrubs/Trees |
| Shingle | Park Land | Coastal Wetland | Manicured Lawn |
| Bedrock | Farm Land | Flat Coast | Native Vegetation |
| Artificial | Forested | | |

- Contains primary and secondary Land Use tables – same for coast type and vegetation
- Current project collects data at one-mile spacing, for scoping and cost
- Current project does not include field-based reconnaissance or sediment/subsurface soils collection



Coastal FRM

- Similar to riverine map
- Highlights area where datasets were produced
- Use of callout boxes
- Should drive the conversation towards mitigation

Flood Risk Map: Coastal USA



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MAP SYMBOLOGY

| Base Data | Flood Data | Flood Risk | Areas of Mitigation Interest |
|----------------------|--------------------------------|------------|--|
| Coastal Limits | Systems and Contents | Safety Low | Assessments (R) and Public Involvement (PI) Data |
| Major Roads | Recovery Area | Low | Significant Land Use Changes (within the past 5 years and looking forward 5 years) |
| Unprotected Boundary | Non-IP (P) | Medium | Areas of Significant Erosion or Coastal Erosion |
| State Boundary | Coastal Erosion Influence Area | High | Non-Lines Encroachments |
| | New Zone (V) | Very High | Other Flood Risk Areas |
| | | | Areas of Mitigation Success |
| | | | Other |

COASTAL STUDY LOCATOR

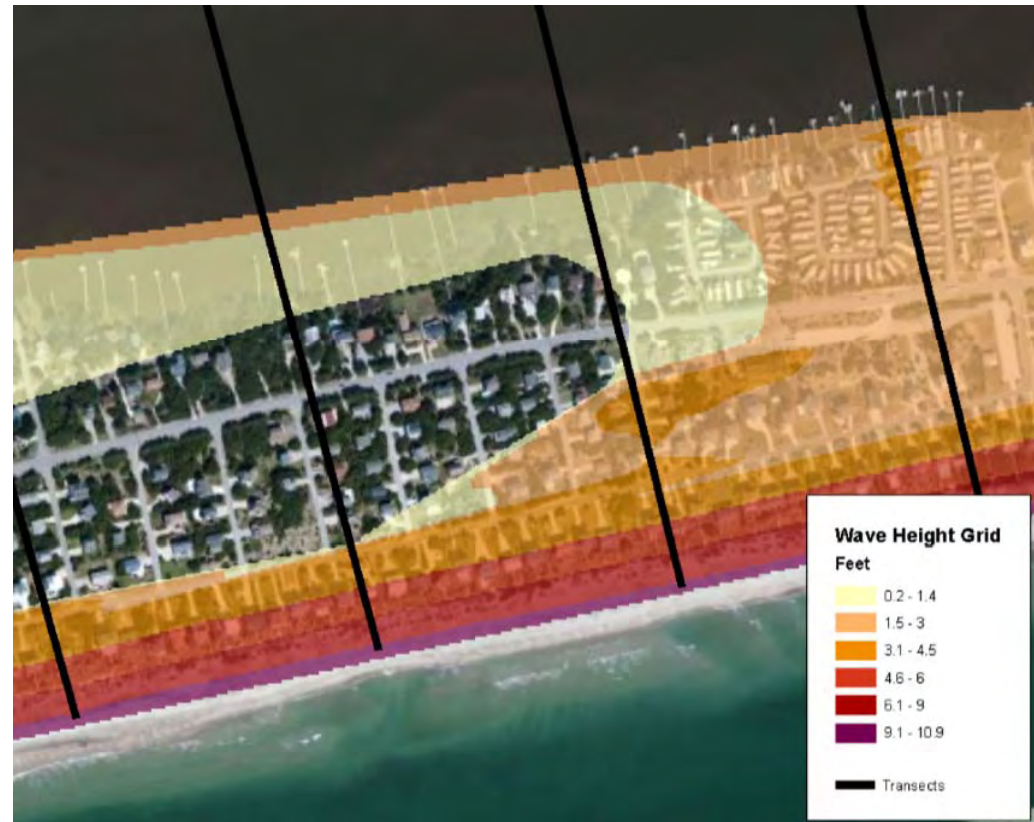


Risk Mapping, Assessment, and Planning (Risk MAP)
FRM Flood Risk MAP (COASTAL) COASTAL USA

HUG-8 (Date N/A)
RELEASE DATE 11/30/2011

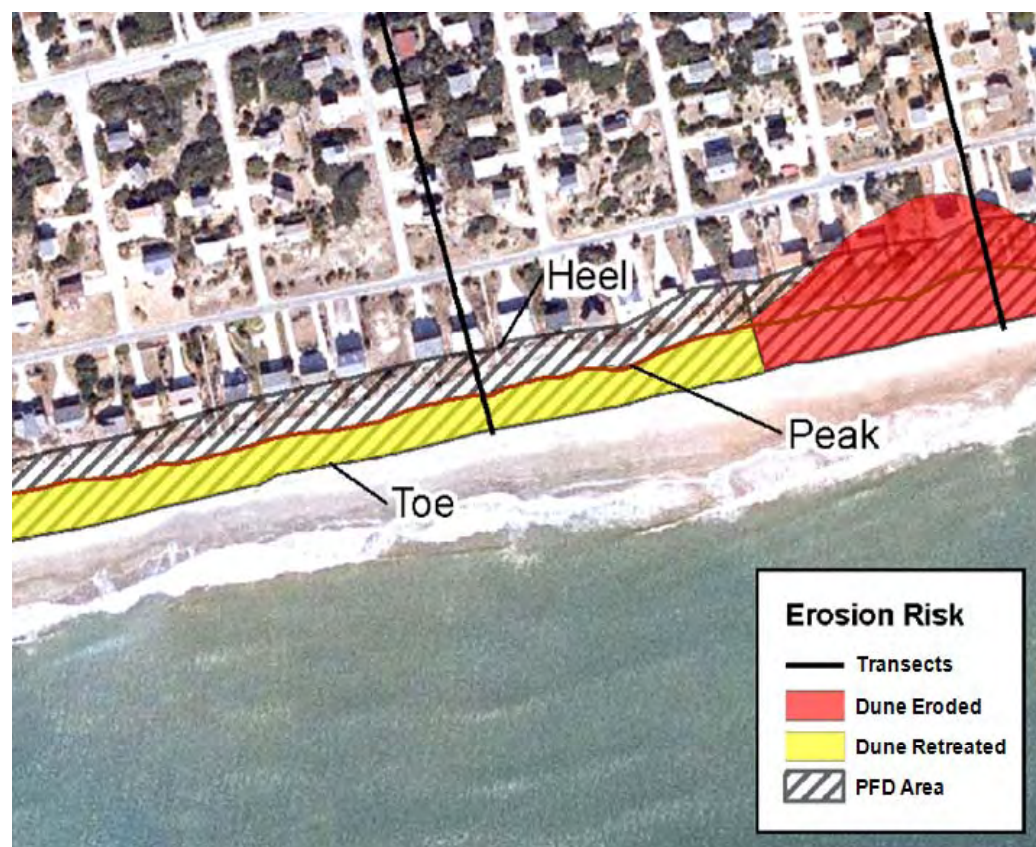
Coastal Wave Height Grid

- Dataset showing wave height information to greater detail than the Wave Hazard Severity Areas dataset by delivering within a raster dataset
- Represents the full wave height, not just the portion of the wave crest that lies above the stillwater elevation
- Wave damage to structures can be mitigated if they are properly elevated above predicted water levels and wave heights on engineered foundations



Erosion Risk Determination

- Polygons depicting the spatial extent of the regulatory Primary Frontal Dune (PFD), based on topography and/or shoreline survey data and augmented with aerial photos as needed
- Polygons can be further subdivided to show the spatial extent of the eroded ground as estimated from the erosion analysis conducted for the 1% annual chance flood



Coastal Updates to Flood Risk Report



- Explanations of coastal non-regulatory datasets and their use in risk communication and mitigation planning
- References to other publications and resources that provide information on coastal risks
- Captures and reports increases and decreases in Coastal High Hazard Areas (VE & V Zones) within the Changes Since Last FIRM tables in the FRR

| Area of Study | Total Area (mi ²) | Increase (mi ²) | Decrease (mi ²) | Net Change (mi ²) |
|----------------------------|-------------------------------|-----------------------------|-----------------------------|-------------------------------|
| Within SFHA | 23.8 | 1.6 | 0.4 | 1.2 |
| Within Floodway | 1.4 | 0.2 | 0.0 | 0.2 |
| Within CHHA (VE or V Zone) | 7.8 | 0.9 | 0.5 | 0.4 |

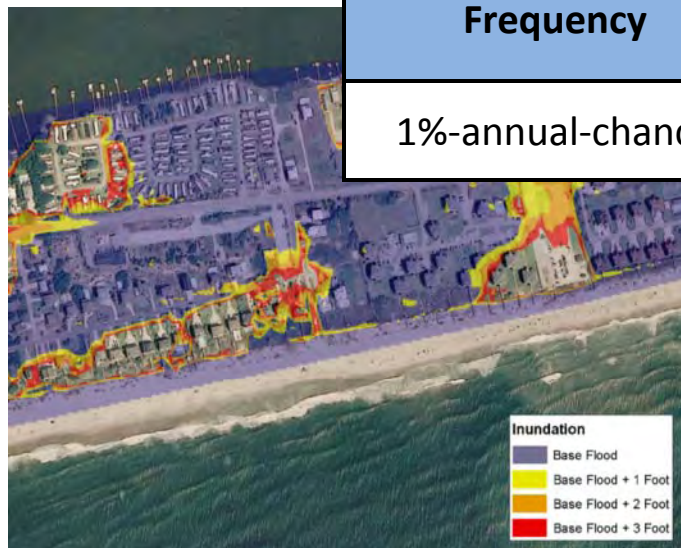


Coastal Updates to Flood Risk Report



- Captures and reports the additional areas that would be inundated, based on 1, 2, or 3 feet of increased inundation

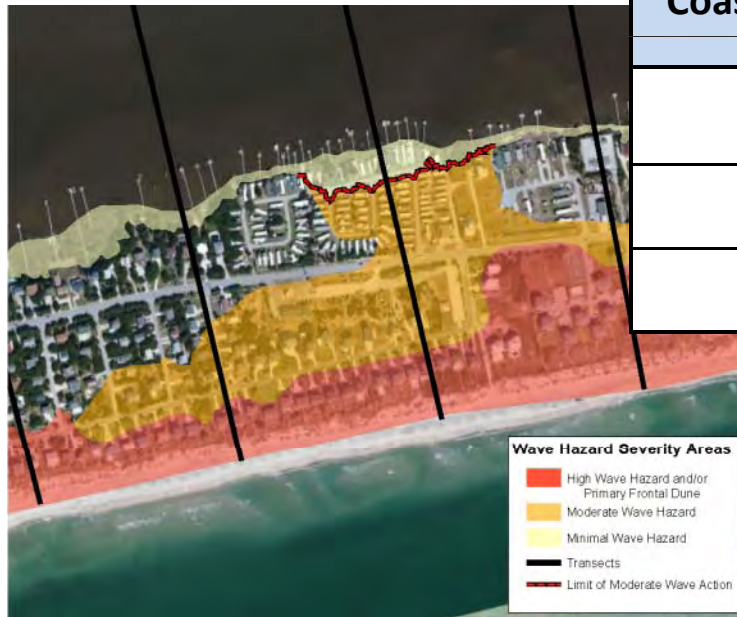
| Flood Event Frequency | Area of Additional Inundation (mi ²) | | | | |
|-----------------------|--|-----------------|-------|-----------------|-------|
| | 1-ft Increase | 2-ft Increase | | 3-ft Increase | |
| | | Newly Inundated | Total | Newly Inundated | Total |
| 1%-annual-chance | 0.6 | 0.8 | 1.4 | 1.2 | 2.6 |



Coastal Updates to Flood Risk Report



- Captures and reports the total area and number of structures (if available) within each of the 3 different levels of wave hazard (High, Moderate, and Minimal)



| Coastal Wave Hazard Severity | Total Area (mi ²) | # of Structures |
|------------------------------|-------------------------------|-----------------|
| High | 0.4 | 15 |
| Moderate | 2.6 | 187 |
| Minimal | 3.3 | 296 |



Non-Regulatory Product Usage and Action



- Risk MAP Products and Datasets help communities make good decisions to reduce flood risk:
 - Hazard Mitigation Planning
 - Floodplain Management and Community Rating System
 - Community Comprehensive or General Planning
 - Community Investment - Capital Improvement Planning
 - Public Outreach
 - Hazard Mitigation Assistance Grant Application Prioritization and Support
 - Other Non-FEMA Grants to Reduce Flood Risk
 - Response and Recovery Planning
- Mitigation Action Form

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How does this apply to my community?

- NFIP Compliance
- Local impacts of coastal study

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National Flood Insurance Program

- Allows property owners to purchase flood insurance at reduced rates
- Community responsibilities
 - adopt and enforce compliant regulations
- FOCUS is in building the local floodplain management capability



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V Zones for Lake Michigan?

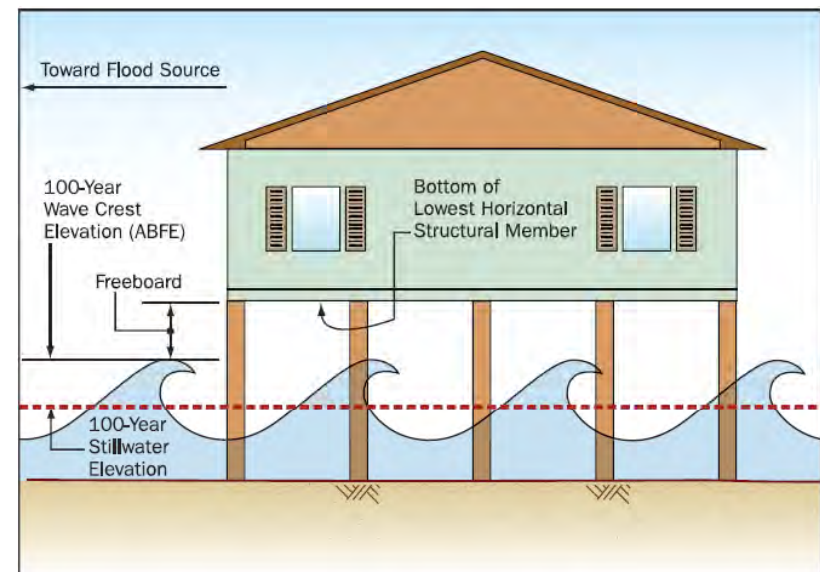
- Lake Michigan communities currently do not have V/VE Zones. Majority of the communities have coastal A/AE zones.
- If coastal AE and VE Zones are added on maps where they did not exist before, all affected communities must update regulations to include coastal requirements.
 - State will provide regulations assistance and technical support if/when coastal flood zones are added.



Coastal Zones and NFIP Compliance



- Must meet minimum NFIP and community coastal requirements
- NFIP design and construction requirements are more stringent in V zones due to wave, debris, and erosion hazards in V zones
- Recommendations for exceeding the minimum NFIP requirements (Coastal A Zones)
 - Can obtain CRS credits for Coastal A Zone Requirements
- Resources Available





Community Rating System (CRS)

- Flood insurance premium rates discounted to reward community actions that reduce flood losses, facilitate accurate insurance ratings, and promote the awareness of flood insurance
- Class rating system from 1 to 10
- Each Class improvement (500 point increments) results in additional 5% discount, up to 45% in SFHAs for Class 1 communities
- Uniform minimum credits give you points for activities on the state level (state laws) and make achieving a Class 9 relatively easy
- 18 creditable activities organized under four categories:
 - Public Information
 - Flood Damage Reduction
 - Mapping and Regulations
 - Flood Preparation
- <http://training.fema.gov/EMIWeb/CRS/>

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Interactive Session A

- View and Discuss Local Coastal Areas of Concern Using the Discovery Map

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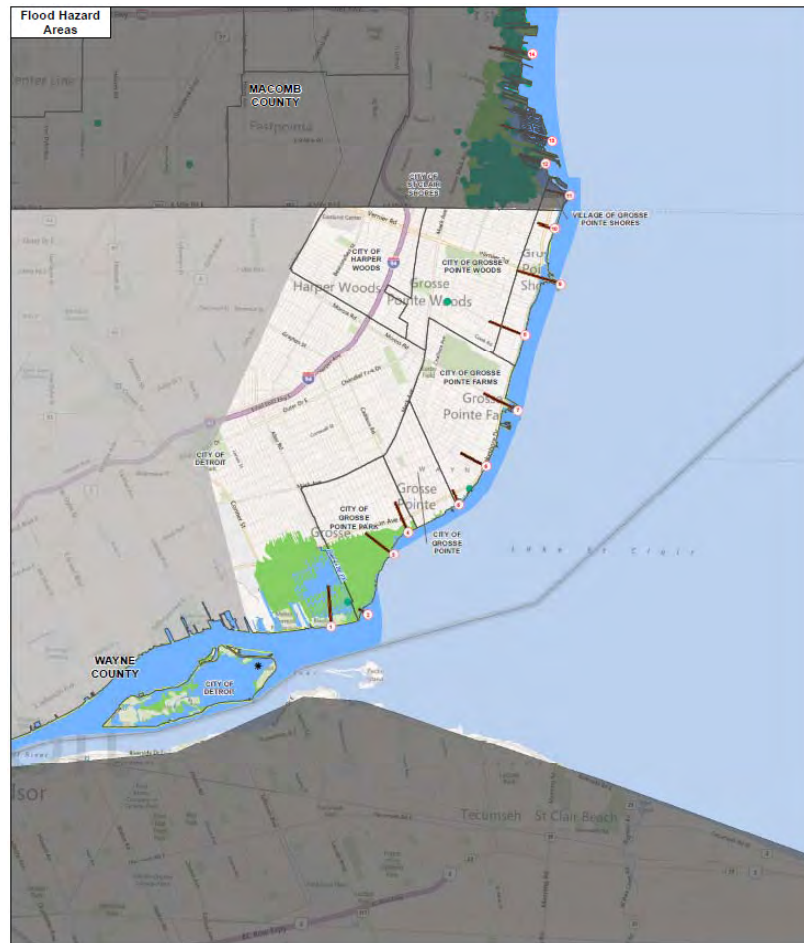


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Wayne County, MI Discovery Map – Flood Hazard Areas



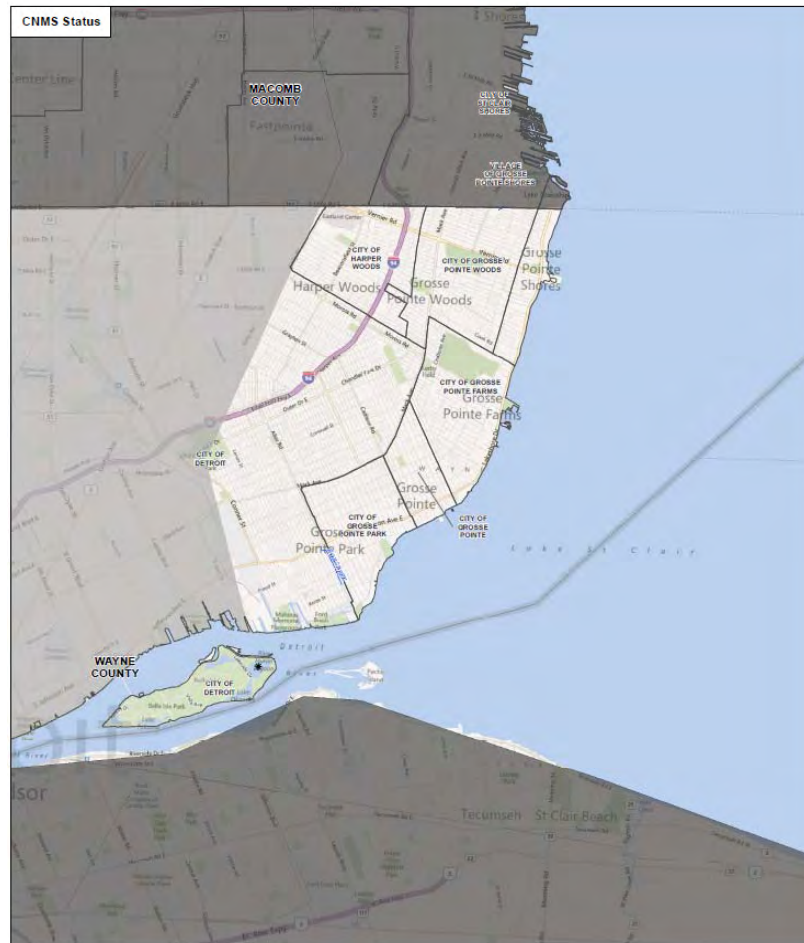
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Wayne County, MI Discovery Map – CNMS Status



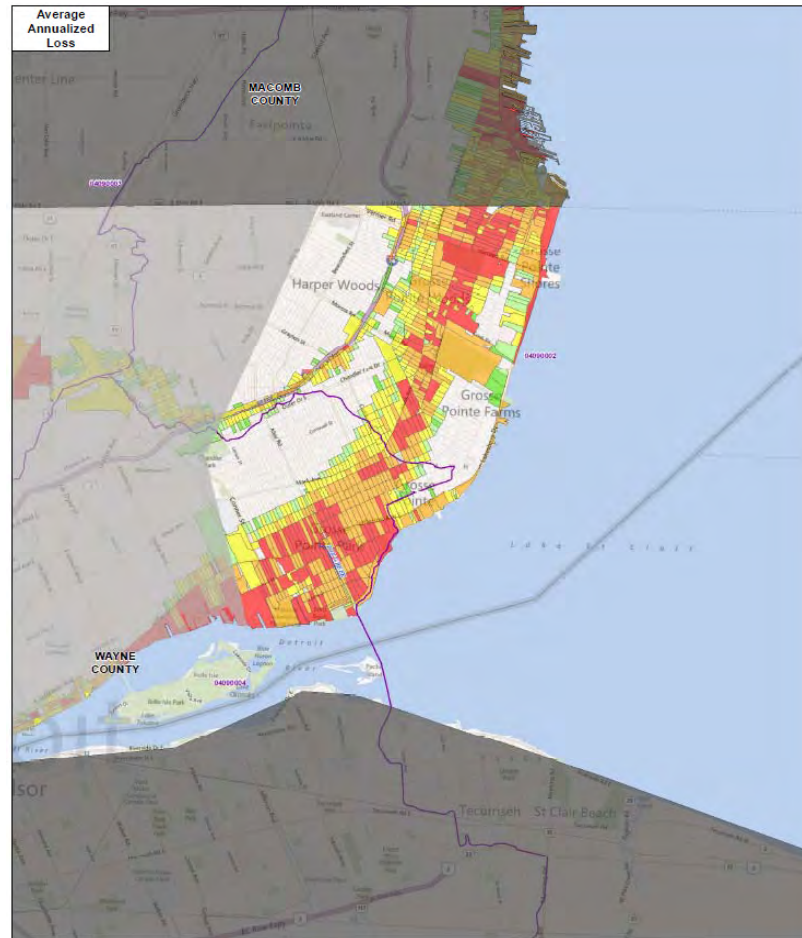
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Wayne County, MI Discovery Map – AAL and CBRS



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Hazard Mitigation

- Opportunities
- Grant Funding

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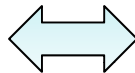
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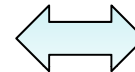
Local Hazard Mitigation Plans

Risk MAP
Risk MAP products
and Datasets



Hazard Mitigation Plan

- Uses Risk Information
- Identifies Projects/Actions
- Integrated with Other Community Plans



Other Community Plans

- Comprehensive plans
- Land Use Plans
- Capital Improvement
- Stormwater
- Management Plans
- Emergency Operations



Mitigation Actions/Projects



Mitigation Actions

- Address specific **existing** assets (e.g., elevate critical facility, enlarge a culvert, acquisition of floodplain properties, floodproof floodprone properties)
- Address **future** risks (e.g., update building codes)
- Based on local capabilities
 - Build on current strengths, ongoing efforts (add-on to stormwater management regulations)
 - Coordinate with Federal programs (e.g., NFIP, CRS)



Example Mitigation Actions



**STRUCTURAL /NON-
STRUCTURAL
PROJECTS**

- Detention
- Drainage
- Acquisition
- Elevation
- Retrofits

**PLANNING
MECHANISMS**

- Zoning
- Building Codes
- Ordinances
- Open Space Plan

**EDUCATION
& OUTREACH**

- Public Awareness
- Outreach
- Educational programs

**NATURAL
RESOURCE
PROTECTION**

- Stream and wetland restoration
- Erosion control



FEMA Funding Opportunities

- Hazard Mitigation Assistance includes both post-disaster and pre-disaster grants



HMGP is a post-disaster grant program.

PDM, FMA, RFC and SRL are available annually, subject to Congressional appropriations.

- Mitigation Plan Requirement
- Local/State Cost Share
- States Manage Programs and Set Funding Priorities
- State Hazard Mitigation Officer (SHMO) is contact



Mitigation Grants/Programs: OFAs



**US Army Corps
of Engineers**



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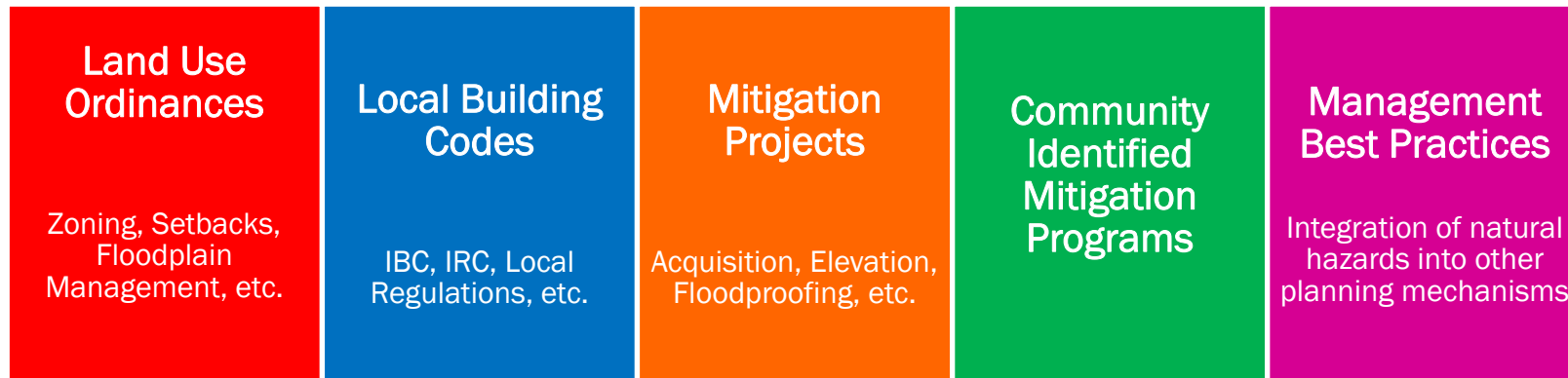
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Hazard Mitigation Resources, Strategies & Actions



- The right action (or mix of actions) will be based on recent community experiences and level of complexity in existing infrastructure
 - *Public Works*
 - *Building Standards*
 - *Community Planning and HM Plan Update / Integration processes*
 - *Communication Processes, GIS, etc.*
- Get the right people to the table: Integrated vs. Discipline-specific
- Document ideas and actions through the FEMA Mitigation Action Form



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Meet the Action Form

Mitigation Action Form



Purpose and Help

This form is meant to assist the collection of Mitigation Action Information.

Online Mitigation Action Collection:
<http://fema.starr-team.com>

State Hazard Mitigation Officers Directory:
<http://www.fema.gov/about/contact/shmo.shtml>

Your Information

Please enter the primary contact associated with this Mitigation Action.

1. Full Name ^{Required}
 Please provide your full name, e.g.: Michael Smith

2. Email Address ^{Required}
 Please provide your email address, e.g.: example@domain.com

3. Your Title and Organization ^{Required}
 Please provide your relevant title and organization. Example: City of Boulder, Colorado.

Mitigation Action Information

Below please enter information as it directly applies to this Mitigation Action.

4. Jurisdiction Name(s) ^{Required}
 Please provide the full name of the jurisdiction with which this Mitigation Action is associated.

5. Mitigation Activity Name ^{Required}
 The Mitigation Activity Name should be concise yet descriptive. Example: Flood Hazard Mitigation on south side of Main St.

6. Mitigation Action Status ^{Required}
 Please check the appropriate box. The Mitigation Action Status example, a "Scoped" status suggests that the action is planned and progress is being made toward "Completion".

Identified Scoped In Progress

7. Mitigation Action Source ^{Required}
 Please check the appropriate box. The Mitigation Action Source is the entity that refined the action or changing its status.

Risk MAP Process
 Comprehensive Land Use Plan
 Capital Improvement Plan

If this Mitigation Action was identified during a RiskMAP Project.

8. Mitigation Plan Name
 If known, please provide existing plan name. The Mitigation Plan is the plan adopted by this jurisdiction(s). For example, Flood Hazard Mitigation Plan.

9. Hazard Type ^{Required}

Select the main type of hazard affected by this Mitigation Action.

- | | |
|---|---|
| <input type="checkbox"/> Erosion | <input type="checkbox"/> Hurricane |
| <input type="checkbox"/> Extreme Temperatures | <input type="checkbox"/> Landslide |
| <input type="checkbox"/> Dam/Levee Failure | <input type="checkbox"/> Lightening |
| <input type="checkbox"/> Drought | <input type="checkbox"/> Sea Level Rise |
| <input type="checkbox"/> Earthquake | <input type="checkbox"/> Storm Surge |
| <input type="checkbox"/> Flood | <input type="checkbox"/> Structural Failure |
| <input type="checkbox"/> Hail | |

10. Mitigation Category ^{Required}

Select the type of Mitigation effort being undertaken.

- Local Plans and Regulations
 These activities include government actions that influence the way land and buildings are used. Examples include zoning, building codes, and other regulations.
- Structure and Infrastructure Project
 These actions involve modifying existing structures or removing them from a hazard area.
- Community Identified Program
 These are community efforts to reduce risk.

11. Category Type and Subtype ^{Required}

Please see Part B, Reference Sheet for applicable Category Type and Subtype.

Type:

12. Mitigation Action Commitment ^{Required}

Please indicate the level of commitment as to the Mitigation Action. Mitigation Commitment seeks to clarify if the action is for maintaining or strengthening something that already exists or to seek to "Strengthen Existing" flood ordinary risk.

- Maintain Existing
 Strengthen Existing
 Add New

13. Responsible Agency ^{Required}

Please indicate the Agency that will be responsible for this Mitigation Action. Check/circle only one.

- | | |
|---|---------------------------------------|
| <input type="checkbox"/> Building Code Department | <input type="checkbox"/> Planning |
| <input type="checkbox"/> Community Development | <input type="checkbox"/> Public Works |
| <input type="checkbox"/> Emergency Management | <input type="checkbox"/> State DOT |
| | <input type="checkbox"/> Other _____ |

14. Estimated Project Span

Enter the estimated start and completion of the project. Please use the mm/dd/yyyy format.

Start: _____ Completion: _____

15. Estimated Cost

Enter the estimated cost for the project. The Estimated Cost for the mitigation activity does not have to be precise. Rather it could be used for general planning or budgeting purposes. Results may also allow officials to associate actions with Hazard Mitigation Assistance resources where/when available.

\$ _____

16. Funding Source ^{Required}

Please indicate the expected funding source for the project. Check/circle only one.

- | | |
|--|---|
| <input type="checkbox"/> Community | <input type="checkbox"/> FEMA |
| <input type="checkbox"/> Private Sector, including Foundations | <input type="checkbox"/> Other Federal Agency _____ |
| <input type="checkbox"/> Regional Water Management District | <input type="checkbox"/> Property Owner |
| <input type="checkbox"/> County | <input type="checkbox"/> Other _____ |
| <input type="checkbox"/> State | |

17. Funding Source Type ^{Required if Applicable. See Part B: Reference Sheet}

Please see Part B, Reference Sheet for applicable funding types.

18. Additional Details

If you would like to enter additional information please fill in the space below.



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Interactive Session B

- Discuss Mitigation Action Opportunities and Introduce the Mitigation Action Form

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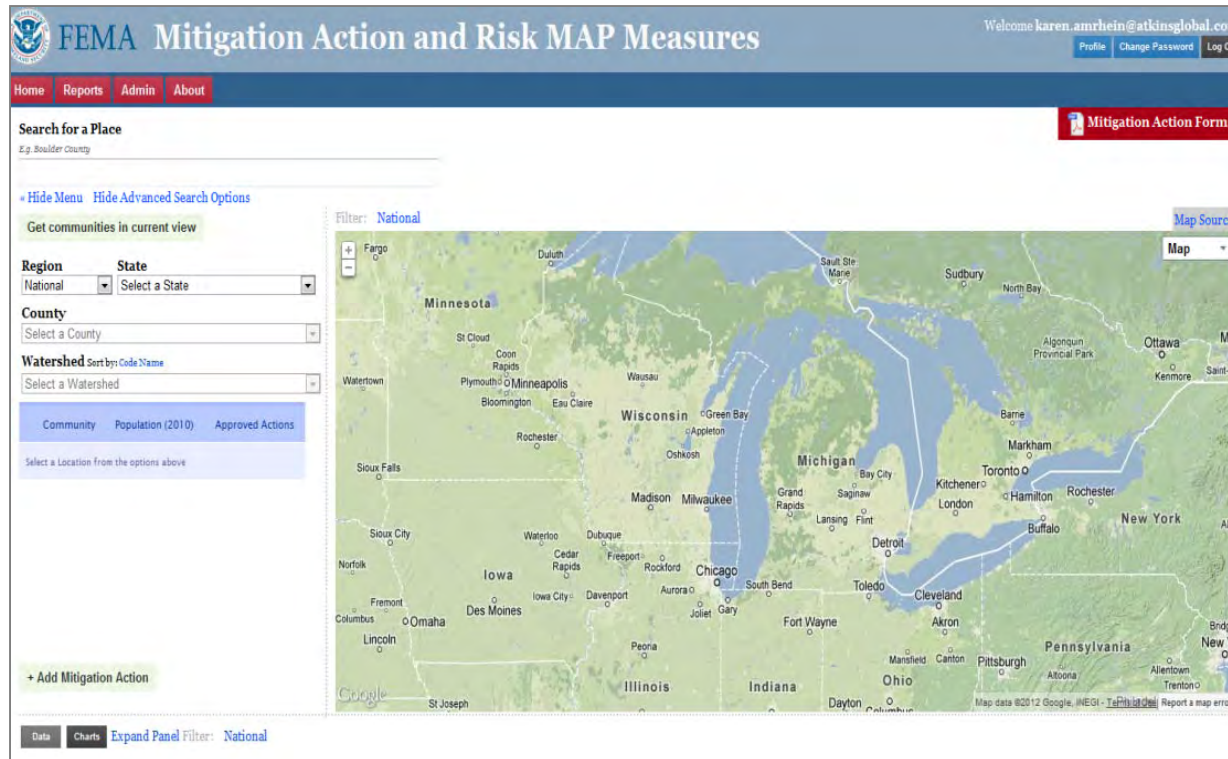


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Action Tracker



- New mitigation tool
- Houses community-identified mitigation actions
- Actions can be edited by community officials
- A tool for communities to support future mitigation planning efforts

We will input your community's action into the Action Tracker and send you a report and a link - <http://fema.starr-team.com>

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Results from Interactive Sessions

- Review and Clarify Communication, Planning, and Compliance Needs
 - Local coastal areas of concern
 - Existing local coastal data
 - Mitigation Action opportunities
 - Mitigation Action form
 - Action Tracker



Next Steps

- **Communities:**
 - Provide data and Mitigation Action Forms to STARR with a target date of September 14, 2012

- **STARR/FEMA will:**
 - Assess data and information provided
 - Email summary of today's Discovery Meeting to you within one month
 - Prepare final Discovery Maps and Discovery Report
 - Follow-up regarding Risk MAP Project





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Questions?

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Optional Interactive Stations

- **Draft Transect Map Station**
 - View draft transect locations and oblique imagery in data viewer
 - Discuss draft transect locations with technical staff
- **Mitigation Resources, Strategies, and Actions Station**
 - Talk with FEMA and State representatives about areas of concern and potential mitigation actions to help reduce risk
 - Fill out Mitigation Action Form

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Contact

- FEMA Region V
 - Ken Hinterlong @ ken.hinterlong@fema.dhs.gov
 - Erin Maloney @ erin.maloney@fema.dhs.gov
- Michigan Partners
 - Les Thomas @ Thomasl@michigan.gov
- STARR
 - Brian Caufield (technical) @ caufieldba@cdmsmith.com
 - Jaspreet Randhawa (outreach) @ randhawajg@cdmsmith.com
- Online
 - info@greatlakescoast.org





ATTACHMENT F
WAYNE COUNTY HAZARD MITIGATION GRANT PROGRAM
PROJECTS

HAZARD MITIGATION GRANT PROGRAM (HMGP) PROJECTS

Wayne County, MI

As of July 2012

| Disaster Number | Declaration Date | Incident Type | Disaster Title | Project Type | Project Description | Project Counties | Status |
|-----------------|------------------|-----------------|--|--|---|------------------|-----------|
| 1181 | 07/11/1997 | Severe Storm(s) | SEVERE STORMS, TORNADOES, AND FLOODING | 600.1: Warning Systems (as a Component of a Planned, Adopted, and Exercised Risk Reduction Plan) | 5% set aside project; The placement of an early warning siren within area of city most affected by storm event. It will be centrally located and is a stand alone unit with battery backup. It will alert residents of impending dangerous weather conditions, such as high winds and possible tornadoes. A public info. program throughout community will instruct on the purpose of the siren and what to do when the warning is sounded in the city. | WAYNE | Closed |
| 1181 | 07/11/1997 | Severe Storm(s) | SEVERE STORMS, TORNADOES, AND FLOODING | 600.1: Warning Systems (as a Component of a Planned, Adopted, and Exercised Risk Reduction Plan) | City of River Rouge is proposing that a new outdoor early warning siren be installed at a second location in the City on the roof of a local elementary school. The Vortex is an outdoor, public warning siren, suited for community warning applications. The system provides six warning tones which are selected via a remote pair of wires or through a local control module. 5% set aside project. | WAYNE | Closed |
| 1181 | 07/11/1997 | Severe Storm(s) | SEVERE STORMS, TORNADOES, AND FLOODING | 600.1: Warning Systems (as a Component of a Planned, Adopted, and Exercised Risk Reduction Plan) | 5% set aside project; A. Purchase and distribution of NOAA weather radios to every school, hospital and nursing care facility in Wayne County. B. Conducting 5 tornado shelter/spotter for employees of above and 5 spotter workshops for police, fire, and public services personnel in jurisdictions throughout the county. | WAYNE | Closed |
| 1181 | 07/11/1997 | Severe Storm(s) | SEVERE STORMS, TORNADOES, AND FLOODING | 100.1: Public Awareness and Education (Brochures, Workshops, Videos, etc.) | City of Detroit will hold several seminars throughout the city where a consultant will assist residents in determining the type of residential insurance they have, and inform them on the appropriate coverage they should have to better secure their property and lessen the effects of damage caused in future severe storm events. | WAYNE | Closed |
| 1181 | 07/11/1997 | Severe Storm(s) | SEVERE STORMS, TORNADOES, AND FLOODING | 100.1: Public Awareness and Education (Brochures, Workshops, Videos, etc.) | Duplication of hazard mitigation materials and distribution to all households via schools. 5% set aside project. | WAYNE | Closed |
| 1181 | 07/11/1997 | Severe Storm(s) | SEVERE STORMS, TORNADOES, AND FLOODING | 602.1: Other Equipment Purchase and Installation | PURCHASE AND INSTALL PUBLIC, OUTDOOR WARNING SIREN | WAYNE | Closed |
| 1181 | 07/11/1997 | Severe Storm(s) | SEVERE STORMS, TORNADOES, AND FLOODING | 202.1: Elevation of Private Structures - Riverine | elevate 7 homes (7 - 12 structures) | WAYNE | Closed |
| 1181 | 07/11/1997 | Severe Storm(s) | SEVERE STORMS, TORNADOES, AND FLOODING | 600.1: Warning Systems (as a Component of a Planned, Adopted, and Exercised Risk Reduction Plan) | To provide coverage to and a alert system for a major business district for thru City of Detroit. The previous siren stopped working and is unable to be repaired because of age and deterioration. This project will allow us to replace this affected siren with a new siren. | WAYNE | Closed |
| 1181 | 07/11/1997 | Severe Storm(s) | SEVERE STORMS, TORNADOES, AND FLOODING | 202.1: Elevation of Private Structures - Riverine | ELEVATION AND ACQUISITION OF FLOOD PRONE STRUCTURES IN THE CITY OF GIBRALTAR SUCH THAT THE FINISHED FLOOR IS ABOVE THE 100-YEAR FLOODPLAIN ALSO FUNDED UNDER 1226.0040 PROP SITE INVENTORY NEEDS TO BE COMPLETED | WAYNE | Closed |
| 1226 | 06/24/1998 | Severe Storm(s) | SEVERE STORMS | 202.1: Elevation of Private Structures - Riverine | THE CITY WILL BE USING THE OBLIGATED FUNDS TO ELEVATE 12 RESIDENTIAL STRUCTURES. | WAYNE | Closed |
| 1237 | 08/05/1998 | Severe Storm(s) | SEVERE STORMS AND HIGH WINDS | 301.1: Shoreline Stabilization (Riprap, etc.) | THIS PROJECT IS TO STABILIZE SECTIONS OF THE LOWER ROUGE RIVER STREAMBANKS IN THE CITY OF DEARBORN, MICHIGAN. PROJECT CANCELLED DUE TO CONFLICTING PRIORITIES FOR THE CITY OF DEARBORN. | WAYNE | Void |
| 1346 | 10/17/2000 | Severe Storm(s) | SEVERE STORMS AND FLOODING | 600.1: Warning Systems (as a Component of a Planned, Adopted, and Exercised Risk Reduction Plan) | Early warning sirens in the event of a disaster.-ATUSCHER-05/30/2007 14:37 GMT | WAYNE | Approved |
| 1346 | 10/17/2000 | Severe Storm(s) | SEVERE STORMS AND FLOODING | 600.1: Warning Systems (as a Component of a Planned, Adopted, and Exercised Risk Reduction Plan) | Gauging station to provide early warning to emergency management personnel.-ATUSCHER-05/30/2007 15:55 GMT | WAYNE | Approved |
| 1346 | 10/17/2000 | Severe Storm(s) | SEVERE STORMS AND FLOODING | 401.1: Water and Sanitary Sewer System Protective Measures | | WAYNE | Approved |
| 1346 | 10/17/2000 | Severe Storm(s) | SEVERE STORMS AND FLOODING | 602.1: Other Equipment Purchase and Installation | | WAYNE | Approved |
| 1346 | 10/17/2000 | Severe Storm(s) | SEVERE STORMS AND FLOODING | 601.1: Generators | This project is being fully deobligated and withdrawn.-MSAVAGE2-02/27/2008 19:42 GMT | WAYNE | Withdrawn |
| 1346 | 10/17/2000 | Severe Storm(s) | SEVERE STORMS AND FLOODING | 401.1: Water and Sanitary Sewer System Protective Measures | | WAYNE | Approved |
| 1346 | 10/17/2000 | Severe Storm(s) | SEVERE STORMS AND FLOODING | 601.1: Generators | | WAYNE | Approved |
| 1346 | 10/17/2000 | Severe Storm(s) | SEVERE STORMS AND FLOODING | 401.1: Water and Sanitary Sewer System Protective Measures | | WAYNE | Approved |
| 1346 | 10/17/2000 | Severe Storm(s) | SEVERE STORMS AND FLOODING | 403.1: Stormwater Management - Culverts; 403.2: Stormwater Management - Diversions | | WAYNE | Approved |
| 1346 | 10/17/2000 | Severe Storm(s) | SEVERE STORMS AND FLOODING | 405.1: Other Minor Flood Control | | WAYNE | Approved |
| 1346 | 10/17/2000 | Severe Storm(s) | SEVERE STORMS AND FLOODING | 401.1: Water and Sanitary Sewer System Protective Measures | | WAYNE | Approved |
| 1527 | 06/30/2004 | Severe Storm(s) | SEVERE STORMS, TORNADOES, AND FLOODING | 602.1: Other Equipment Purchase and Installation | | WAYNE | Approved |