APPENDIX H
Milwaukee, Racine, and Kenosha County, Wisconsin
Discovery Report

Discovery Report

Great Lakes Coastal Flood Study

Lake Michigan

Milwaukee County, Racine County, and Kenosha County, Wisconsin

Individual Discovery Report

Report Number 01

February 2013

U.S. Department of Homeland Security
Federal Emergency Management Agency Region V
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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.

Kenosha County*	Milwaukee County*	Racine County*
Kenosha, City of	Bayside, Village of	Caledonia, Village of
Kenosha County (unincorporated areas)*	Cudahy, City of	Mount Pleasant, Village of
Pleasant Prairie, Village of	Fox Point, Village of	North Bay, Village of
	Milwaukee, City of	Racine, City of
	Oak Creek, City of	Racine County (unincorporated areas)*
	Shorewood, Village of	Wind Point, Village of
	South Milwaukee, City of	
	St. Francis, City of	
	Whitefish Bay, Village of	

*In Wisconsin, only those jurisdictions known to be responsible for administering floodplain ordinances and potentially affected by the upcoming Lake Michigan coastal flood study were included in this Discovery process. However, all coastal communities are encouraged to participate in the future Lake Michigan coastal flood study process and may request to be included in future correspondence regarding the Lake Michigan coastal flood study.

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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
CNMS	Coordinated Needs Management Strategy
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
LiMWA	Limit of Moderate Wave Action
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 Kenosha, Milwaukee, and Racine County, Wisconsin. 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 and future congressional funding, but also on the type of datasets, local and national, that are available.

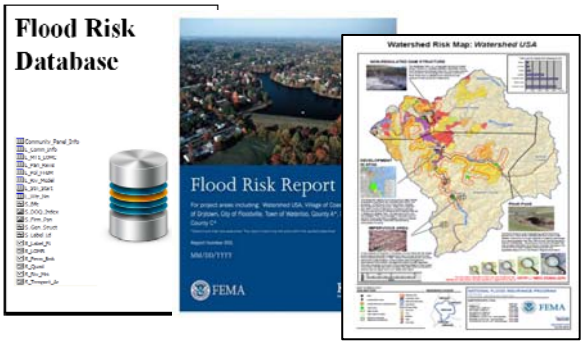
The following section describes the coastal flood risk products that a community may receive, as well as some products that are under development for the Great Lakes study areas.

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.

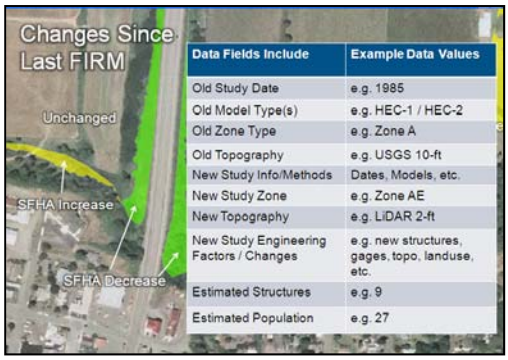
The three products are:

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



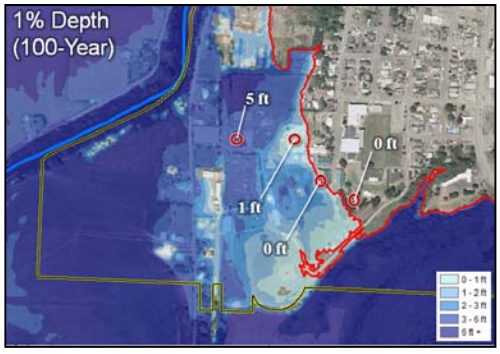
These products will summarize information captured in flood risk datasets that may be generated during a Risk MAP, or flood risk, study. The flood risk datasets could include regular and enhanced products. Standard flood risk datasets, also termed products, are listed below.

- **Changes Since Last FIRM (CSLF)**
  The CSLFs serve the following purposes:
  - Identify Areas and Types of Flood Zone Change:
    - Compares current effective (previous) with proposed (new) flood hazard mapping; and
    - Flood zone changes are categorized and quantified.
  - Provide Study/Reach Level Rationale for Changes Including:
    - Methodology and assumptions; and



- Changes of model inputs or parameters (also known as Contributing Engineering Factors).

- **Flood Depth and Analysis Grids (1-percent-annual-chance event only)**
  - Reflect total depth (i.e. stillwater and waves). Will be created for the 1-percent frequency event of the 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.

HAZUS MH
EARTHQUAKE • WIND • FLOOD

For more information about Hazus and data inputs, visit http://www.fema.gov/hazus 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 in 2012 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 Michigan Discovery Stakeholder Coordination

Meetings, emails, telephone calls, and letters are essential to communicate effectively throughout the life of this Lake Michigan 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 Coordinators, the State Hazard Mitigation Officers (SHMOs), and State Engineers. The core stakeholders reviewed the Discovery plan, objectives, and key outcomes for Lake Michigan Discovery with FEMA, provided suggestions for outreach and communication, and raised any concerns as it related to Lake Michigan and the coastal flood study process. Following this kick-off process, outreach, communication, and coordination with local stakeholders was initiated.

Discovery Meeting letter invitations were sent to local community and county stakeholders within the Kenosha, Milwaukee and Racine County portions of the Lake Michigan 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

Kenosha County, City of Kenosha, and Village of Pleasant Prairie (Kenosha County); Milwaukee County and City of Milwaukee (Milwaukee County); and Racine County, and City of Racine (Racine County) all returned information through use of the Coastal Data Request Form or via email and phone calls. A summary of the responses to the Coastal Data Request Form can be found in Section IV, Summary of Data Analysis, of this report.

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 a pre-Discovery Meeting conference call, also termed 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. Representatives from Kenosha, Milwaukee and Racine County, as well as the City of Kenosha (Kenosha County), Village of Pleasant Prairie (Kenosha County), City of St. Frances (Milwaukee County), Village of Pleasant Prairie (Milwaukee County), City of Milwaukee (Milwaukee County), and City of Whitefish Bay (Milwaukee County), and Southeastern Wisconsin Regional Planning Commission (SEWRPC) were in attendance. Stakeholders discussed their current data availability, as well as questions they had regarding the GLCFS, areas of concern, and the Coastal Data Request Form.

The core stakeholder documents, "Information Exchange Session" documents, stakeholder contact list, and Discovery Meeting invitations can be found in Attachment B, Kenosha, Milwaukee, and Racine County Pre-Meeting Correspondence.

III. Discovery Meeting

The Discovery Meeting for Kenosha, Milwaukee, and Racine County was held on August 16, 2012 in Milwaukee, Wisconsin. Communities and stakeholders affected by coastal flooding in Kenosha, Milwaukee, and Racine 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 presentations included the following information:

- An overview of the GLCFS 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 facilitated discussion regarding coastal study needs, mitigation project needs, desired compliance support, and local flood risk awareness efforts

Draft Discovery Maps for Kenosha, Milwaukee, and Racine County (Attachment C) were 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 Maps 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 Kenosha, Milwaukee, and Racine County Lake Michigan study area using the draft Discovery Maps and through general discussion during the meeting.

In addition to the draft Discovery Maps, figures showing the location of initially proposed draft transects around Kenosha, Milwaukee, and Racine County were available for review and comment immediately following the meetings. Stakeholders were encouraged to review the proposed draft transects and provide comments related to the location of the transects. The proposed draft transect maps that were available at the Discovery Meeting for Kenosha, Milwaukee, and Racine County can be found in Attachment D. A sample map is shown as Figure 1:

[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.

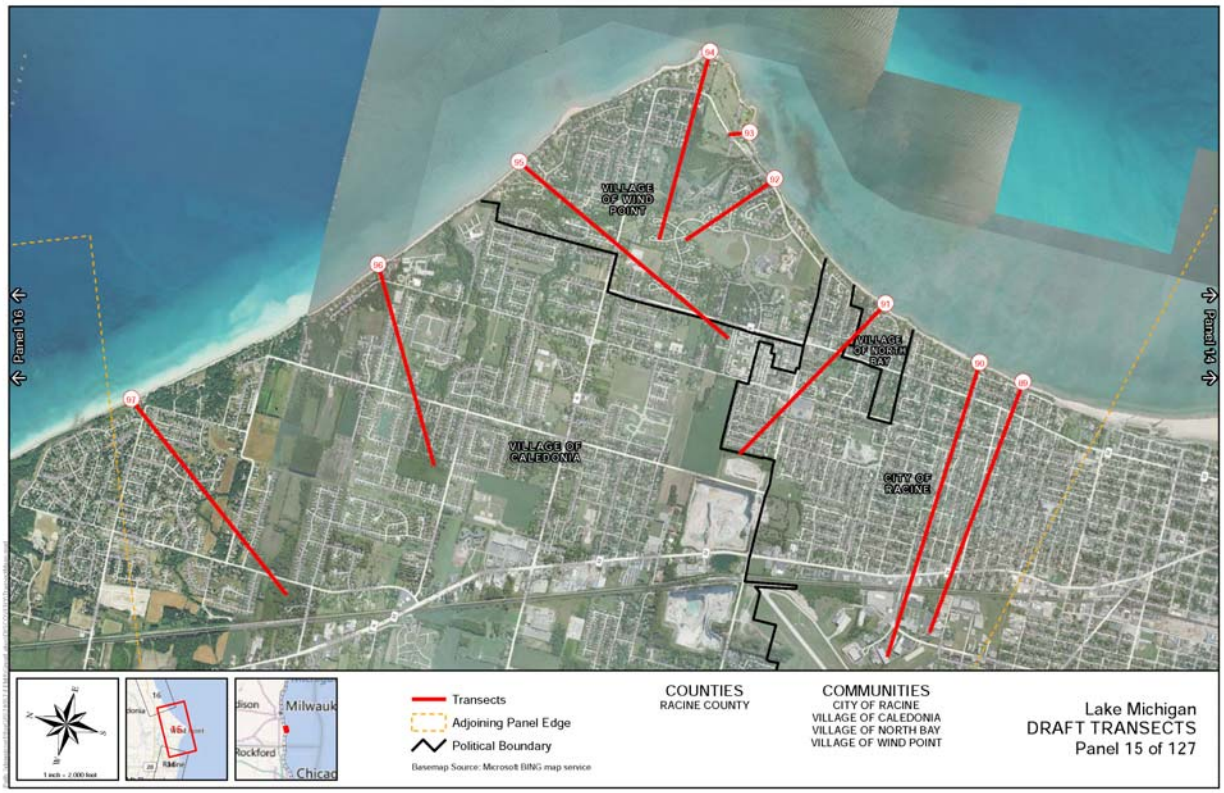


Figure 1: Sample Proposed Draft Transect Figure

All comments that were provided during the Kenosha, Milwaukee, and Racine County Discovery Meeting on the draft Discovery Maps and draft transect figures, as well as comments provided following the meeting, have been compiled into geospatial layers and associated tables. The GIS layers, titled "Stakeholder General Comments" and "Stakeholder Transect Comments", are shown on the Final Discovery Map in Appendix R of the basin-wide Lake Michigan Discovery Report (Federal Emergency Managment Agency, 2013). Each comment collected for Kenosha, Milwaukee, and Racine County can be found in Attachment E, Stakeholder Comments from Discovery Meeting, of this report. Each comment has a unique map identification number (if one exists) that correlates to its location on the Final Discovery Map. The identification of a comment (ID) categorized as a "Stakeholder General Comment" is represented by using the first three letters of the county name followed by a unique number (i.e. KEN – 1, KEN - 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. KEN-TR-1, KEN-TR-2).

A summary of the transect comments collected and the resulting revisions to the draft transect layout can be found in this report in Section IV, Summary of Data Analysis, under the "Proposed Draft Transects" subsection.

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

IV. Summary of Data Analysis

During this Discovery portion of the Lake Michigan Coastal Flood Study project, a massive 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, information exchange session conference calls, 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 Kenosha, Milwaukee, and Racine County study area, including information collected during and after the Discovery Meeting. The data analysis that follows Table 1 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 Kenosha, Milwaukee, and Racine County Lake Michigan Project Area prior to moving forward with the coastal flood study.

Table 1. Data Collected for Kenosha, Milwaukee, and Racine 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	2012/2013	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
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

Table 1. Data Collected for Kenosha, Milwaukee, and Racine County

Data Types	Deliverable/ Product	Source	Date of Data Collection	Level
Coordinated Needs Management Strategy (CNMS)	Discovery Map	FEMA	July 2012	Countywide
Critically Eroded Beach Areas	Discovery Report	Local Stakeholders	August 2012	Statewide
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	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	Effective Flood Insurance Study (FIS)	August 2012	Countywide
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	July 2012	Regionwide

Table 1. Data Collected for Kenosha, Milwaukee, and Racine County

Data Types	Deliverable/ Product	Source	Date of Data Collection	Level
		Laboratory		
Oblique Imagery	Discovery Report	USACE	2012	Lakewide
Ordinances	Discovery Report	Local Community Websites	July 2012	Countywide
Proposed Draft Transects	Discovery Map	FEMA	February 2013	Lakewide
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. The subsections below provide details on the data determined to be available within the project area.

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

Average Annualized Loss (AAL) data provides a general understanding of the dollar losses associated with a certain frequency of flood events within a county and is 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 or 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 shown in Table 2 include data for the entire county, as opposed to only the coastal project area. Information can also be obtained from the report titled FEMA *Hazus AAL Usability Analysis*, dated April 13, 2011 (Federal Emergency Managment Agency, 2011). AAL data summarized at the census block level are shown on the draft Discovery Maps (Attachment C).

Table 2. Hazus AAL Data for Kenosha, Milwaukee and Racine County

FIPS Code	County	Total Losses for Building and Content (in thousands of $)
55059	Kenosha	$203,192
55079	Milwaukee	$925,882
55117	Racine	$239,960

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 Michigan. 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.

Coastal erosion and recession along the Great Lakes shoreline is a significant issue in coastal communities in Wisconsin. According to the Wisconsin Coastal Management Program 2011-2016 Needs Assessment and Strategy, all fifteen of Wisconsin's coastal counties experience erosion. Wisconsin's Lake Michigan shoreline is generally vulnerable to shore erosion from the Illinois State line to the Sturgeon Bay Canal, a distance of 185 miles. From the Sturgeon Bay Canal around the northern tip of Door County to Green Bay, shore erosion is largely limited to bays and clay banks. Erosion rates are particularly high along sand plains and high bluffs composed of till. Short-term erosion rates of 3 to 15 feet

per year have been recorded along sand plains and 2 to 6 feet per year along high bluff lines (Wisconsin Department of Administration, 2010).

Erosion impacts along Wisconsin's Great Lakes coasts are varied in severity and geology. The sandy bluffs of the mid Lake Michigan are more susceptible to continual slope failures than the gradual shoreline of southern Lake Michigan or the rocky shoreline of Door County. The State of Wisconsin Hazard Mitigation Plan identifies coastal erosion as one of thirteen hazards that have the highest probability of affecting the state and the greatest potential for mitigation. Flooding is listed as having a high probability and high potential for mitigation (Wisconsin Department of Administration, 2010).

Studies and reports relevant to Wisconsin's coastal hazards, and in particular erosion, were pulled from the Wisconsin Coastal Management Needs Assessment and Strategy and are listed below:

- SEH/Baker, 1997. "Lake Michigan Recession Rate Study Final Report". (Report prepared for the Wisconsin Coastal Management Council, Wisconsin Department of Administration).
- Wisconsin Coastal Management Program (WCMP), October 2007. "A Strategic Vision for the Great Lakes". (http://www.doa.state.wi.us/docview.asp?docid=7039)
- Springman, R. and S. M. Born, 1979. "Wisconsin's Shore Erosion Plan: An Appraisal of Options and Strategies" (http://wisconsingeologicalsurvey.org/wofrs/WOFR1979-03.pdf)
- State of Wisconsin Hazard Mitigation Plan (updated 2008) (http://emergencymanagement.wi.gov/mitigation/planning.asp)
- Bay Lake Regional Planning Commission (BLRPC) study, "Coastal Bluff Stability Study, Inventory & Description", September 1995. (http://www.baylakerpc.org/about/publications)
- Southeastern Wisconsin Regional Planning Commission (SEWRPC) study (1997), Technical Report No. 36, "Lake Michigan Shoreline Recession and Bluff Stability in Southeastern Wisconsin", 1995 (http://maps.sewrpc.org/Publications/search.asp)
- Coastal Processes Manual (1998) (http://aqua.wisc.edu/publications/ProductDetails.aspx?productID=356)
- Lake Michigan Potential Damages Study (1999) (http://www.lre.usace.army.mil/greatlakes/hh/greatlakestudies/lakemichiganpotentialdamagesstudy/)

Additional reports available through SEWRPC's publication library website at http://maps.sewrpc.org/publications/search.asp?visit=1&keyword=Lake+Michigan&CompType=AND&reporttype=0&yearfilter=0&Submit=Search include:

- Memorandum Reports
    - No. 171 (2008) – "Assessment of Lake Michigan Shoreline Erosion Control Structures in Racine County, WI"
    - No. 156 (2004) – "Lake Park Bluff Stability and Plant Community Assessment:2003 (Milwaukee County, WI)"

- Community Assistance Planning Reports
    - No. 163 (1989) – "A Lake Michigan Shoreline Erosion Management Plan for Milwaukee County, WI"
    - No. 155 (1988) – "A Lake Michigan Shoreline Erosion Management Plan for Northern Milwaukee County, WI"
    - No. 110 (1984) – "A Lake Michigan Coastal Erosion and Related Land Use Management Study for the City of St. Francis, WI"
    - No. 86 (1982) – "A Lake Michigan Coastal Erosion Management Study for Racine County, WI"

Some additional historic studies and reports also include:

- Southeastern Wisconsin:
  Shoreline Recession and Bluff Stability - 1977 to 1995 – Southeastern Wisconsin Regional Planning Commission (SEWRPC) 1997 reports changes in bluff recession and bluff stability on selected bluff slopes between two specific measurement dates, two decades apart, in Kenosha, Racine, Milwaukee and Ozaukee counties shoreline.
- Northeastern Wisconsin:
  Recession and Slope Stability - 1977–1995 - Bay Lake Regional Planning Commission (BLRPC) (1996) reports changes in bluff recession and bluff stability on selected bluff slopes between four specific measurement dates 1977, 1980, 1988 and 1995 conducted by Bay Lakes Regional Planning Commission. The report covers nearly two decades of erosion studies in 23 shoreline reaches along 77 miles of the Lake Michigan coast in Sheboygan, Manitowoc, Kewaunee, and Door counties.

There are 11 Lake Michigan counties in Wisconsin that have maps depicting erosion rates. These counties include Marinette, Oconto, Brown, Door, Kewaunee, Manitowoc, Sheboygan, Ozaukee, Milwaukee, Racine, and Kenosha. These erosion maps were not obtained during this Discovery process. It was noted by stakeholders that the maps may be over 25 years old.

Wisconsin Coastal Management Needs Assessment and Strategy report also talks about methodologies used to determine setback requirements. The report noted that since the last Needs Assessment, members of the Coastal Hazard Work Group have led developments in determining setbacks. In particular, work group members have coordinated with Bayfield County zoning staff to develop a new setback ordinance for the counties. The outcome is currently a voluntary standard that will provide better protection of the county's shoreline (Wisconsin Department of Administration, 2010).

In addition, the Wisconsin Coastal Management Program (WCMP) funded a report titled "Managing Coastal Hazards in Wisconsin's Changing Climate." The report details coastal hazards and risk management on Wisconsin's shores and also provides recommendations. One recommendation is to restrict shore protection structures and encourage non-structural

options. WCMP also funded the University of Wisconsin-Madison efforts to investigate lakebed down cutting in Lake Michigan. The work resulted in a better understanding of erosion of the near shore lakebed and increased public awareness of bluff recession (Wisconsin Department of Administration, 2010).

Additional information on erosion affecting Wisconsin can be found in the Wisconsin State Hazard Mitigation Plan.

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.

No federal lands were found in the Kenosha, Milwaukee, and Racine County project area.

I.IV.i.4 Jurisdictional Boundaries

Kenosha, Milwaukee, and Racine County's jurisdictional boundaries were obtained from their effective FIRM databases, dated June 19, 2012, September 26, 2008, and May 2, 2012, respectively.

Jurisdictional boundaries can also be obtained from a derived set of TIGER line files available through the U.S. Census Bureau geography division. To find out more about TIGER line files and other Census TIGER database derived data sets visit http://www.census.gov/geo/www/tiger.

Wisconsin 2004 county and municipal boundaries are also available through Wisconsin Department of Natural Resources at http://dnr.wi.gov/maps/gis/appwebview.html.

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 of use during the coastal flood study update, and during the development of the coastal flood risk products discussed earlier in this report. 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.

The table in Attachment G compiles all the information collected for Kenosha, Milwaukee, and Racine County from the completed Coastal Data Request Forms or through email. Kenosha County, City of Kenosha, Village of Pleasant Prairie, Milwaukee County, Racine

County, City of Racine, and SEWRPC all provided information via the Coastal Data Request Form. In summary:

- Kenosha County, along with the City of Kenosha and Village of Pleasant Prairie, noted several digital datasets that were available, including topography and detailed LiDAR, 3" orthophotography, and property information.
- Kenosha County noted the status of their hazard mitigation plan update, along with ongoing mitigation projects and floodplain management programs that have been implemented.
- Milwaukee County indicated topography and property information is available in digital format, as well as Milwaukee County planimetric coastal data.
- Racine County identified several digital datasets, including topography, property information, and coastal features. They indicated the SEWRPC stores most of these datasets.
- Racine County also noted that coastal structures were studied in the past 5 years.
- SEWRPC provide a list of technical reports related to erosion and recession that are available through their publication library website at http://maps.sewrpc.org/publications/search.asp?visit=1&keyword=Lake+Michigan&CompType=AND&reporttype=0&yearfilter=0&Submit=Search .

The datasets noted above were not all provided or collected as part of this Discovery process. Those that were provided have been included on FEMA's Mapping Information Platform (MIP) Discovery Data Repository at J:\FEMA\DISCOVERY_DATA_REPOSITORY\R05_DATA\ and can be accessed by FEMA authorized users. The MIP can be accessed from https://hazards.fema.gov/.

I.IV.i.6 Publicly Owned Land

In Kenosha County, there are several public beaches along the Lake Michigan shoreline, in addition to Wisconsin Department of Natural Resources managed land. Milwaukee County has several county parks located along the shoreline as well and they can be viewed at http://county.milwaukee.gov/AbTheParkSystemmap10627.htm. In Racine County, parks are found sporadically along the Lake Michigan shoreline.

No statewide geospatial coverage dataset for publicly owned lands was identified during this Discovery process.

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 Michigan. 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 the USACE shoreline feature dataset, the approximate shoreline along Kenosha, Milwaukee and Racine Counties that is covered by this study totals 69.4 miles. The shoreline classification information for Kenosha, Milwaukee, and Racine County is summarized in Tables 3 through 6, including shoreline types, land uses, coverage, and vegetation types, respectively.

Table 3. 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)
Kenosha County	15.9	14.0	--	--	1.9	--
Milwaukee County	36.5	27.8	--	--	8.1	0.6
Racine County	17.1	14.0	--	--	3.1	--

Source: USACE 2012, Lake Michigan Shoreline Classification

Table 4. 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)
Kenosha County	15.9	5.1	--	--	1.2	0.6	5.8	3.1
Milwaukee County	36.5	21.8	--	--	0.6	--	9.1	5.0
Racine County	17.1	5.5	0.6	--	3.1	--	6.0	1.9

Source: USACE 2012, Lake Michigan Shoreline Classification

Table 5. Summary of Shoreline Coverage

County	Total Shoreline (mile)	Bluff 2'-10' (mile)	Coastal Wetland (mile)	Dune 2'-10' (mile)	Flat Coast (mile)	High Bluff 10'+ (mile)	High Dune 10'+ (mile)
Kenosha County	15.9	10.3	--	3.1	2.5	--	--
Milwaukee County	36.5	29.3	--	0.6	1.2	5.3	--
Racine County	17.1	14.6	--	--	0.6	1.9	--

Source: USACE 2012, Lake Michigan Shoreline Classification

Table 6. 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)
Kenosha County	15.9	--	--	12.5	3.3	--	--
Milwaukee County	36.5	3.7	4.3	13.1	7.2	8.1	--
Racine County	17.1	0.6	0.6	8.6	3.5	3.7	--

Source: USACE 2012, Lake Michigan Shoreline Classification

I.IV.i.8 Stream Lines/Hydrograph

Stream lines and water areas for Kenosha, Milwaukee and Racine Counties were acquired from the effective FIRM databases, dated June 19, 2012, September 26, 2008, and May 2, 2012, respectively. The data source is USGS's National Hydrography Dataset (NHD). 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. Data can be downloaded from http://nhd.usgs.gov/data.html.

The Wisconsin Department of Natural Resources (DNR) also maintains Wisconsin Rivers & Shorelines dataset, available by contacting the Wisconsin DNR Bureau of Technology Services or by visiting http://dnr.wi.gov/maps/gis/appwebview.html.

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 Michigan 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.

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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 percent 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 (RMSE[3]) in flat terrain and within +/-30 cm (RMSE[3]) in hilly terrain. Horizontal positions will be accurate to +/- 1.5m (RMSE[3]). 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 Michigan 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.

During the Information Exchange Session process, several communities and counties in Wisconsin noted there are aerial photographs, oblique photographs, and inland LiDAR available.

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 Kenosha, Milwaukee and Racine Counties effective FIRM databases, dated June 19, 2012, September 26, 2008, and May 2, 2012, respectively.

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).

Kenosha County contains portions of three HUC-8 watersheds: Pike-Root (04040002), Des Plaines (07120004), and Upper Fox (07120006).

Milwaukee County contains portions of three HUC-8 watersheds: Pike-Root (04040002), Milwaukee (04040003), and Upper Fox (07120006).

Racine County contains portions of three HUC-8 watersheds: Pike-Root (04040002), Des Plaines (07120004) and Upper Fox (07120006).

ii. Other Data and Information

Kenosha County is located in the extreme southeastern portion of Wisconsin, approximately 25 miles south of Milwaukee. It is bordered by Lake Michigan on the east, Racine County on the north, Walworth County on the west, and McHenry County and Lake County, Illinois, on the south. Kenosha County had a 2010 population of 166,426; the two largest municipalities in Kenosha County – Kenosha and Pleasant Prairie - have populations of 99,218 and 19,719, respectively (U.S. Census Bureau, 2010).

Milwaukee County is located in southeastern Wisconsin and is bordered on the east by Lake Michigan; on the south by Racine County; on the west by the Cities of Brookfield, Muskego, New Berlin and Villages of Butler, Elm Grove, and Menomonee Falls in Waukesha County; and on the north by the City of Mequon in Ozaukee County.

Milwaukee County has a land area of 242 square miles and a population of 947,735 in 2010 (U.S. Census Bureau, 2010).

Milwaukee County is on a glacial drift plain of moderate relief depressed eastward toward Lake Michigan. A pattern of alternating parallel north-south belts of ground moraine and end moraine extends within the county. Most of the county is between 100 and 200 feet above the mean level of Lake Michigan. The soils in Milwaukee County are of glacial origin and are almost entirely silty loams of various associations. They are well drained to somewhat poorly drained and have a subsoil of silty clay loam and silty clay. Residential housing is the predominant landuse in Milwaukee County. Other land uses include commercial, industrial, parklands, greenbelt, and transportation.

Racine County is located in southeastern Wisconsin, south of the City of Milwaukee along Lake Michigan, in the Eastern Ridges and Lowlands geographic province of Wisconsin, and in the Southern Lake Michigan Coastal and Southeast Plains ecological landscapes. The county straddles the Lake Michigan and Mississippi River drainage basins. The portion of the county that drains to Lake Michigan lies in the Southeast or Root/Pike watershed and is dominated by the Root River. The East and West Branches of the Root River Canal flow north in parallel courses till they converge to form the Root River Canal. The Root River flows east along the county border where it meanders in and out of the county; it then turns south before meandering east through the City of Racine and emptying into Lake Michigan. The Fox River (Illinois) is located in the west of the county and flows from north to south. Several lakes surround the river. The river was dammed at the City of Waterford to form Tichigan Lake. The streams in central and eastern Racine County flow in dendritic patterns, while the streams in the flat, marshy west flow in deranged patterns. According to the 2010 Census, the population of the County is 195,408 (U.S. Census Bureau, 2010).

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.

Kenosha, Milwaukee, and Racine Counties have no designated units of coastal barriers along the Lake Michigan shoreline and/or within this study area.

I.IV.ii.2 Coastal Flood Protection Measures

Coastal structures along Lake Michigan will be reviewed in more detail during the engineering analysis portion of the Lake Michigan 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.

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 no levee segments in Kenosha, Milwaukee, and Racine County study areas that provide protection from the 1-percent-annual-chance flood, however, as discussed below, other flood protection measures do exist.

In Kenosha County, the Lake Michigan shoreline includes areas of park land, as well as commercial/industrial and residential areas. Measures have been taken to preserve these parkways and private and commercial property from lake erosion since the 1800s. Breakwaters, riprap, groins, and landfills have been used to alleviate erosion problems (Federal Emergency Management Agency, 2012).

In Milwaukee County, floodwalls and bulkheads were built to offer protection from the 0.2-percent-annual-chance (500-year) flood elevation along Lake Michigan. Along the Lake Michigan shoreline, within the City of Milwaukee, all but the northerly 2.5 miles are protected against wave action by breakwaters (Federal Emergency Management Agency, 1987) .

No Lake Michigan flood protection measures were found in Racine County.

The USACE Coastal & Hydraulics Laboratory (CHL), a member of the Engineer Research & Development Center (ERDC), has compiled an inventory of coastal structures called the Enterprise Coastal Inventory Database (ECID). The ECID application and database houses information on more than 900 coastal structures in the U.S. and uses a Google Earth interface for users to access information on the structures including project reports, aerial photographs, wave and water level and bathymetric data. The database and application are available at http://chl.erdc.usace.army.mil/chl.aspx?p=s&a=Projects;246 . These maintained 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 structures include seawalls, bulkheads, revetments, dikes and levees, breakwaters, groins, sills/perched beaches, and jetties and piers.

The USACE coastal structures along Lake Michigan found within Kenosha, Milwaukee, and Racine County are compiled in Table 7. It is important to note that these coastal structures do not necessarily protect areas from the 1-percent-annual-chance flood event. Many of these USACE coastal structures were built between 1860 and 1940. Low lake levels since the 1990's have accelerated deterioration of these navigation structures and USACE Detroit District launched an investigation to assess the effects of changes in Lake

Michigan water levels on the performance and stability of these structures. An inventory of critical infrastructure protected by federally maintained navigation structures was conducted along with a condition assessment of the structures, including an estimation of the risk associated with structure failure. Structures were rated on the following scale:

A – Failure Unlikely
B – Low Risk of Failure
C – Medium Risk of Failure
D – High Risk of Failure
F – Failed

Table 7 also provides the condition assessment for each of the structures listed.

Table 7. USACE Coastal Structure Inventory

State	Location	Coastal Structure	USACE Condition Assessment	Structure Length (feet)
WI	Kenosha Harbor	Detached Breakwater	B	796
		North Pier		1077
		South Pier		1175
WI	Milwaukee Harbor	North Breakwater	D	9198
		North Pier		1656
		South Breakwater		9646
		South Pier		1601

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 8 shows the most recent CAV date by

community or jurisdiction. Not all communities within the project area were identified as having a CAV, therefore, those communities are not included in the table.

Table 8. Summary of Community Assisted Visits in Kenosha, Milwaukee, and Racine County

County	Community	CAV Date	FIRM Date
Kenosha	Kenosha County	9/30/2009	6/19/2012
Kenosha	Kenosha, City of	8/25/2010	6/19/2012
Kenosha	Pleasant Prairie, Village of	8/24/2010	6/19/2012
Milwaukee	Milwaukee, City of	3/3/2011	9/26/2008
Racine	Racine, City of	2/3/1995	5/2/2012
Racine	Racine County	7/10/1990	5/2/2012

CAV = Community Assisted Visit

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 coastal communities in Kenosha, Milwaukee, or Racine County 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.

Stakeholders from SEWRPC noted that hazard mitigation plan development for both Kenosha County and Racine County was done in coordination with Comprehensive Plan development for those counties. Both sets of plans used the same regional planning inventory datasets and both plans also adopted consistent planning goals and objectives, where appropriate. In addition, both plans used the SEWRPC floodplain boundary dataset. That same floodplain dataset was used in the preparation of the recently effective 2012 FIRMs for Kenosha and Racine Counties.

Through the Coastal Data Request Form, City of Racine (Racine County) and Village of Pleasant Prairie (Kenosha County) noted their hazard mitigation plans were coordinated with their respective comprehensive plans.

Kenosha, Milwaukee, and Racine County Comprehensive Plans can be downloaded from http://www.sewrpc.org/SEWRPC/communityassistance/ProjectPlanningServices.htm

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 Managment Agency, 2010).

Table 9 summarizes the draft results of the county-wide validation analysis obtained from CNMS in June 2012. CNMS only captures riverine studies at this time.

Table 9. CNMS Status for Kenosha, Milwaukee, and Racine County

County	FIPS	Unknown (stream miles)	Unverified (stream miles)	Valid (stream miles)	Total (stream miles)
Kenosha	55059	40	31	127	198
Milwaukee	55079	36	48	112	196
Racine	55101	46	73	85	205

FIPS = Federal Information Processing Standard

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.

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/. Each county was found to have critical facilities located within the effective floodplain, including communication towers, hazardous material sites, schools, and hospitals.

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 Kenosha, Milwaukee, and Racine respective hazard mitigation plans, but were not compiled as part of this report.

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

Critically eroded beaches and beach nourishment/dune replacement projects were not identified in Kenosha, Milwaukee, or Racine County at the time this report was issued, although it should be noted that all counties experience shore erosion.

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/.

At the time this report was compiled, the NID identified eight (8) dams in Kenosha County, three (3) dams in Milwaukee County, and seven (7) dams in Racine County within the project areas.

Wisconsin Department of Natural Resources (DNR) inventory may also be consulted when developing future information on dams, however a listing of that information was not compiled during this Discovery process. The DNR Dam Safety program's mapping application allows the public to view the Wisconsin Dams database through http://dnr.wi.gov/topic/Dams/data.html.

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 on the FEMA Website at http://www.fema.gov/data-feeds . Table 10 lists the major disaster declarations that have been declared in Kenosha, Milwaukee, and Racine Counties.

Table 10. Declared Disasters in Kenosha, Milwaukee and Racine County

Declared County/Area	Disaster Number	Declaration Date	Incident Type	Description
Kenosha (County)	376	4/27/1973	Flood	SEVERE STORMS & FLOODING
Kenosha (County)	775	10/7/1986	Flood	SEVERE STORMS & FLOODING
Kenosha (County)	994	7/2/1993	Severe Storm(s)	SEVERE STORMS, TORNADOES & FLOODING
Kenosha (County)	1332	6/24/2000	Severe Storm(s)	SEVERE STORMS, TORNADOES, AND FLOODING
Kenosha (County)	1526	6/18/2004	Severe Storm(s)	SEVERE STORMS AND FLOODING
Kenosha (County)	1719	8/26/2007	Severe Storm(s)	SEVERE STORMS AND FLOODING
Kenosha (County)	1768	6/14/2008	Severe Storm(s)	SEVERE STORMS, TORNADOES, AND FLOODING
Kenosha (County)	1966	4/5/2011	Snow	SEVERE WINTER STORM AND SNOWSTORM
Kenosha (County)	3069	1/19/1979	Snow	BLIZZARDS & SNOWSTORMS
Kenosha (County)	3163	1/24/2001	Snow	SNOW
Kenosha (County)	3249	9/13/2005	Hurricane	HURRICANE KATRINA EVACUATION*

Table 10. Declared Disasters in Kenosha, Milwaukee and Racine County

Declared County/Area	Disaster Number	Declaration Date	Incident Type	Description
Kenosha (County)	3285	3/19/2008	Snow	RECORD SNOW AND NEAR RECORD SNOW
Milwaukee (County)	264	7/11/1969	Flood	SEVERE STORMS & FLOODING
Milwaukee (County)	376	4/27/1973	Flood	SEVERE STORMS & FLOODING
Milwaukee (County)	496	3/23/1976	Flood	SEVERE STORMS, ICING, WIND & FLOODING
Milwaukee (County)	770	8/14/1986	Flood	SEVERE STORMS
Milwaukee (County)	775	10/7/1986	Flood	SEVERE STORMS & FLOODING
Milwaukee (County)	994	7/2/1993	Severe Storm(s)	SEVERE STORMS, TORNADOES & FLOODING
Milwaukee (County)	1180	7/7/1997	Severe Storm(s)	SEVERE STORMS AND FLOODING
Milwaukee (County)	1238	8/12/1998	Severe Storm(s)	SEVERE STORMS AND FLOODING
Milwaukee (County)	1332	6/24/2000	Severe Storm(s)	SEVERE STORMS, TORNADOES, AND FLOODING
Milwaukee (County)	1526	6/18/2004	Severe Storm(s)	SEVERE STORMS AND FLOODING
Milwaukee (County)	1768	6/14/2008	Severe Storm(s)	SEVERE STORMS, TORNADOES, AND FLOODING
Milwaukee (County)	1933	8/11/2010	Severe Storm(s)	SEVERE STORMS, TORNADOES, AND FLOODING
Milwaukee (County)	1966	4/5/2011	Snow	SEVERE WINTER STORM AND SNOWSTORM
Milwaukee (County)	3069	1/19/1979	Snow	BLIZZARDS & SNOWSTORMS
Milwaukee (County)	3163	1/24/2001	Snow	SNOW
Milwaukee (County)	3249	9/13/2005	Hurricane	HURRICANE KATRINA EVACUATION*
Milwaukee (County)	3285	3/19/2008	Snow	RECORD SNOW AND NEAR RECORD SNOW
Racine (County)	264	7/11/1969	Flood	SEVERE STORMS & FLOODING
Racine (County)	376	4/27/1973	Flood	SEVERE STORMS & FLOODING
Racine (County)	994	7/2/1993	Severe Storm(s)	SEVERE STORMS, TORNADOES & FLOODING
Racine (County)	1238	8/12/1998	Severe Storm(s)	SEVERE STORMS AND FLOODING
Racine (County)	1332	6/24/2000	Severe Storm(s)	SEVERE STORMS, TORNADOES, AND FLOODING
Racine (County)	1526	6/18/2004	Severe Storm(s)	SEVERE STORMS AND FLOODING
Racine (County)	1719	8/26/2007	Severe Storm(s)	SEVERE STORMS AND FLOODING
Racine (County)	1768	6/14/2008	Severe Storm(s)	SEVERE STORMS, TORNADOES, AND FLOODING
Racine (County)	1966	4/5/2011	Snow	SEVERE WINTER STORM AND SNOWSTORM
Racine (County)	3069	1/19/1979	Snow	BLIZZARDS & SNOWSTORMS
Racine (County)	3163	1/24/2001	Snow	SNOW

Table 10. Declared Disasters in Kenosha, Milwaukee and Racine County

Declared County/Area	Disaster Number	Declaration Date	Incident Type	Description
Racine (County)	3249	9/13/2005	Hurricane	HURRICANE KATRINA EVACUATION*
Racine (County)	3285	3/19/2008	Snow	RECORD SNOW AND NEAR RECORD SNOW

*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.

Additional information on disaster history can be found in the State of Wisconsin Hazard Mitigation Plan, Appendix A. This plan can be found at http://emergencymanagement.wi.gov/mitigation/planning.asp.

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 project, data on flood insurance policies were also gathered.

Table 11 summarizes the numbers and premiums of insurance policies, the total coverage, and the numbers and dollar amounts of paid losses in communities of Kenosha, Milwaukee, and Racine County. The data is based on Community Summary Reports that were extracted from FEMA's CIS website (https://portal.fema.gov/famsVuWeb/home) in July 2012.

Table 11. Summary of Flood Insurance Policies and Claims for Kenosha, Milwaukee and Racine County

County	Community	CID	No. Policies	Total Premium	Total Coverage	Number of claims since 1978	Dollar ($) paid for claims since 1978
Kenosha	Kenosha County	550523	165	$ 154,403	$ 32,484,000	188	$ 1,629,653
Kenosha	Kenosha, City of	550209	33	$ 23,822	$ 7,866,700	23	$ 96,614
Kenosha	Pleasant Prairie, Village of	550613	52	$ 28,201	$ 12,410,700	5	$ 24,620
Milwaukee	Bayside, Village of	550270	30	$14,517	$8,638,200	22	$77,911
Milwaukee	Cudahy, City of	550272	16	$6,425	$2,635,200	5	$92,533
Milwaukee	Fox Point, Village of	550274	60	$38,731	$16,081,800	39	$79,797
Milwaukee	Milwaukee, City of	550278	647	$390,856	$128,164,800	1524	$10,455,311
Milwaukee	Oak Creek, City of	550279	44	$26,707	$12,450,400	16	$269,251

Table 11. Summary of Flood Insurance Policies and Claims for Kenosha, Milwaukee and Racine County

County	Community	CID	No. Policies	Total Premium	Total Coverage	Number of claims since 1978	Dollar ($) paid for claims since 1978
Milwaukee	Shorewood, Village of	550282	48	$15,472	$10,410,000	9	$77,898
Milwaukee	South Milwaukee, City of	550283	15	$8,160	$3,874,300	1	$7,087
Milwaukee	St. Francis, City of	550281	3	$937	$658,000	0	$0
Milwaukee	Whitefish Bay, City of	550286	92	$ 30,682	$ 21,513,000	12	$ 134,202
Racine	Caledonia, Village of	390651	6	$ 1,916	$1,358,000	0	$0
Racine	Mount Pleasant, Village of	550322	10	$ 7,075	$ 1,900,400	0	$0
Racine	North Bay, Village of*	550350	--	--	--	--	--
Racine	Racine, City of	555575	78	$67,026	$12,584,200	64	$503,817
Racine	Racine County	550347	276	$ 221,010	$ 57,055,300	45	$696,481
Racine	Wind Point, Village of	550355	5	$ 4,067	$1,523,300	1	$0

*Community not currently participating in the NFIP
CID = Community Identification
Source: FEMA's CIS Summary Report "Insurance Reports"

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/ .

Table 12 shows the meteorological station identification number and location for the gages in the Lake Michigan's Kenosha, Milwaukee and Racine Counties project areas.

Table 12. NOAA Meteorological Stations on Lake Michigan near Kenosha, Milwaukee and Racine County

County	Station ID	Location	Owner	Data	Years of Historical Data
Kenosha	KNSW3	Kenosha, WI	NWS	Meteorological Observation	2005-Present
Milwaukee	MLWW3	Milwaukee, WI	GLERL	Meteorological Observation	2005-Present
Milwaukee	45013	Atwater Park, WI	UW Milwaukee	Meteorological Observation	N/A

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 13 below shows the gage identification numbers and locations for the gages in the study areas of Kenosha, Milwaukee, and Racine County. All USGS stream gage locations are shown on the draft Discovery Map.

Table 13. Stream Gage Stations in Kenosha, Milwaukee, and Racine County

County	Gage ID	Begin Date	End Date	Gage Location
KENOSHA	05527800	19670701	20000930	DES PLAINES RIVER AT RUSSELL, IL
KENOSHA	04087257	19711001	20000930	PIKE RIVER NEAR RACINE, WI
KENOSHA	05546500	19971201	19990818	FOX RIVER AT WILMOT, WI
KENOSHA	05548163	19861016	19870930	POWERS LAKE TRIBUTARY AT POWERS LAKE, WI
MILWAUKEE	04086941	19810326	19820630	LINCOLN CREEK AT 54TH ST AT MILWAUKEE, WI
MILWAUKEE	040869415	19930301	19970630	LINCOLN CREEK AT 47TH STREET AT MILWAUKEE, WI
MILWAUKEE	04086942	19810404	19820630	LINCOLN CREEK TRIB AT 47TH ST AT MILWAUKEE, WI
MILWAUKEE	04087000	19140430	20000930	MILWAUKEE RIVER AT MILWAUKEE, WI
MILWAUKEE	04087010	19790629	19841010	MILWAUKEE R ABOVE NORTH AVE DAM AT MILWAUKEE, WI
MILWAUKEE	04087056	19800522	19820630	TRIB LITTLE MENOMONEE R TRIB AT MILWAUKEE, WI
MILWAUKEE	04087060	19741126	19900930	NOYES CREEK AT MILWAUKEE, WI

Table 13. Stream Gage Stations in Kenosha, Milwaukee, and Racine County

County	Gage ID	Begin Date	End Date	Gage Location
MILWAUKEE	04087088	19741101	20000930	UNDERWOOD CREEK AT WAUWATOSA, WI
MILWAUKEE	04087101	19800403	19800707	DUP1-HONEY CREEK AT MILWAUKEE, WI
MILWAUKEE	04087113	19800313	19800707	DUP2-HONEY CREEK AT MILWAUKEE, WI
MILWAUKEE	04087115	19800320	19820629	HONEY CREEK TRIBUTARY AT WEST ALLIS, WI
MILWAUKEE	04087119	19741201	19810413	HONEY CREEK AT WAUWATOSA, WI
MILWAUKEE	04087120	19611001	20000930	MENOMONEE RIVER AT WAUWATOSA, WI
MILWAUKEE	04087125	19741118	19791130	SCHOONMAKER CREEK AT WAUWATOSA, WI
MILWAUKEE	04087130	19741014	19771205	HAWLEY ROAD STORM SEWER AT WAUWATOSA, WI
MILWAUKEE	04087133	19800225	19820630	MENOMONEE RIVER TRIBUTARY AT WEST MILWAUKEE, WI
MILWAUKEE	04087138	19790618	19840930	MENOMONEE RIVER AT MILWAUKEE, WI
MILWAUKEE	04087140	19750301	19770630	MENOMONEE RIVER AT FALK CORP AT MILWAUKEE, WI
MILWAUKEE	040871472	19961112	19970514	KINNICKINNIC R @ ST. LUKES HOSPTL @ MILWAUKEE,WI
MILWAUKEE	040871473	19961112	20000930	WILSON PARK CREEK @ GMIA INFALL AT MILWAUKEE, WI
MILWAUKEE	040871475	19961113	20000930	WILSON PARK CK @ GMIA OUTFALL #7 @ MILWAUKEE, WI
MILWAUKEE	040871476	19961112	20000930	HOLMES AVE CK TRB @ GMIA OUTFLL 1 @ MILWAUKEE,WI
MILWAUKEE	040871478	19961112	19970515	WILSON PARK CREEK AT 6TH ST. AT MILWAUKEE, WI
MILWAUKEE	040871482	19961118	19970509	WILSON PK CK @ WILSON PK&20TH PL @ MILWAUKEE, WI
MILWAUKEE	040871488	19961118	20000930	WILSON PARK CK @ ST. LUKES HOSPITAL @ MILWAUKEE,WI
MILWAUKEE	04087159	19821001	20000930	KINNICKINNIC RIVER AT S. 11TH ST. AT MILWAUKEE, WI
MILWAUKEE	04087160	19760701	19821231	KINNICKINNIC RIVER AT MILWAUKEE, WI
MILWAUKEE	04087170	19940401	19951031	MILWAUKEE R @ JONES ISL-@ MOUTH-AT MILWAUKEE, WI
MILWAUKEE	04087204	19631001	20000930	OAK CREEK AT SOUTH MILWAUKEE, WI
MILWAUKEE	04087220	19631001	20000930	ROOT RIVER NEAR FRANKLIN, WI
RACINE	04087233	19631001	20000930	ROOT RIVER CANAL NEAR FRANKLIN, WI
RACINE	04087240	19630822	20000930	ROOT RIVER AT RACINE, WI

Table 13. Stream Gage Stations in Kenosha, Milwaukee, and Racine County

County	Gage ID	Begin Date	End Date	Gage Location
RACINE	05545750	19391001	20000930	FOX RIVER NEAR NEW MUNSTER, WI
RACINE	424848088083100	-99	-99	WIND LAKE AT OUTLET AT WIND LAKE, WI

Water Level Station:

NOAA's Center for Operational Oceanographic Products and Services (CO-OPS) maintains several water level stations along Lake Michigan. 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. 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=LakeMichigan . The monthly high and low water level data from the year 1918 to 2011 at Lake Michigan are available at the USACE Website: http://www.lre.usace.army.mil/greatlakes/hh/greatlakeswaterlevels/.

Figure 2 depicts Historic Great Lakes Water Levels from 1918 to 2011 (U.S. Army Corps of Engineers, 2012).

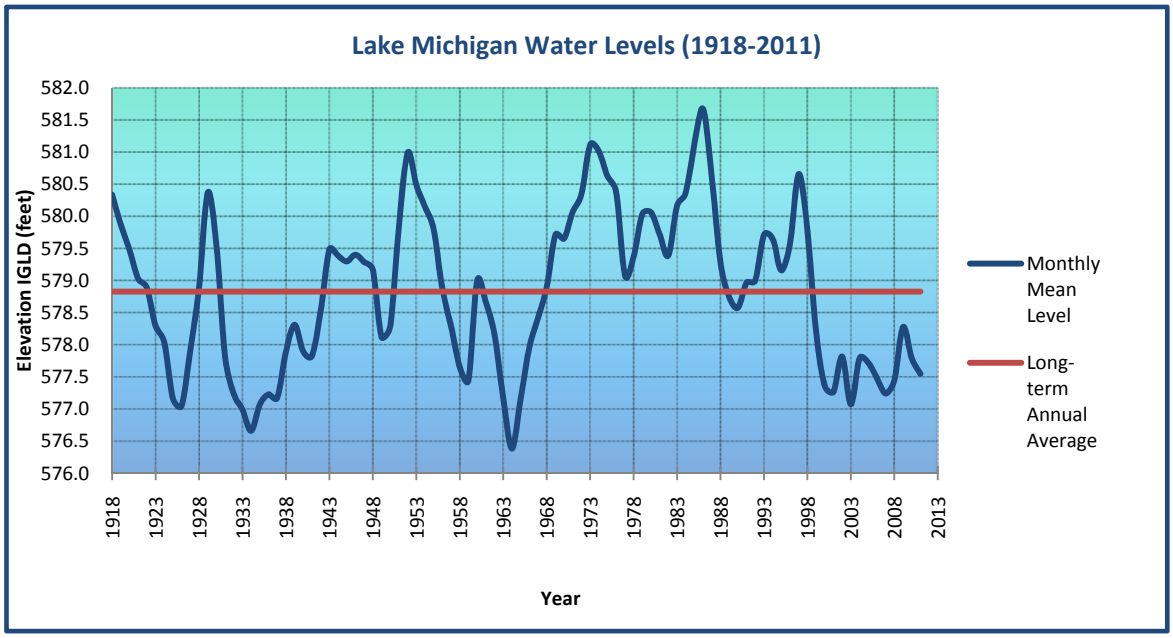

Figure 2: USACE Historic Great Lakes Water Level Data (1918-2011)

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

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/ .

I.IV.ii.13 Great Lakes Coastal Restoration Grants

The Great Lakes Restoration Initiative (GLRI) is a federal program that provides unprecedented funding for protection and restoration efforts on the five Great Lakes. State and local governments and non–profit organizations are eligible to receive grants from the U.S. Environmental Protection Agency (EPA) for projects addressing toxic substances, invasive species, non–point source pollution, habitat protection and restoration or accountability, monitoring, evaluation, communication and partnership building. The EPA has awarded nearly $39 million in GLRI funds to more than 60 protection and restoration projects in Wisconsin (Information obtained from http://dnr.wi.gov/topic/greatlakes/restore.html)

In 2011, eight organizations in Wisconsin were awarded $3,754,554 in grants by the EPA under the GLRI. A list of the projects funded in 2011 can be found at the Wisconsin Department of Natural Resources website http://dnr.wi.gov/topic/greatlakes/restore.html. Additional information can be found at the Great Lakes Restoration Initiative website at http://www.glri.us/.

I.IV.ii.14 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 14. The data was obtained from FEMA's Plan Approval Status Report based on Regional reports for the end of June 2012.

Table 14. Hazard Mitigation Plan Status

JURISDICTION	APPROVAL DATE	EXPIRATION DATE
Kenosha County	6/30/2011	6/30/2016
Milwaukee County	12/28/2011	12/28/2016
Milwaukee, City of	6/11/2012	6/11/2017
Racine County	11/30/2010	11/30/2015

Wisconsin Emergency Management has coordinated in the past with communities in developing and revising their Hazard Mitigation Plans and updated the State of Wisconsin Hazard Mitigation Plan. Wisconsin Coastal Management Program (WCMP) participated in some of those efforts. In addition, Bay-Lake Regional Planning Commission produced a report titled "A Guide to Hazard Mitigation Planning for Coastal Communities in Wisconsin," which was funded by WCMP. The guide assists communities with addressing coastal hazards issues within their hazard mitigation plans.

The State of Wisconsin Hazard Mitigation Plan, as well as various local Hazard Mitigation Plans, can be accessed by visiting http://emergencymanagement.wi.gov/mitigation/planning.asp#state .

I.IV.ii.15 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 for FEMA's HMGP. A summary of HMGP projects can be downloaded from https://explore.data.gov/catalog/raw.

I.IV.ii.16 Historical Flooding & High Water Marks

Coastal hazards are a serious threat to Wisconsin's shoreline communities and have historically been an area of high priority for Wisconsin. Over the years, coastal erosion and

flooding have caused millions of dollars in property damages in Wisconsin (Wisconsin Department of Administration, 2010).

The State of Wisconsin Hazard Mitigation Plan discusses historical flooding and areas of flooding concerns. The plan can be downloaded at http://emergencymanagement.wi.gov/mitigation/planning.asp.

As part of this Discovery process, effective Flood Insurance Studies (FISs) were reviewed for information on historical flooding and high water mark data. No information specific to Lake Michigan flooding or HWMs was identified for these counties.

If local stakeholders have additional available high water mark data, historical flooding information, or historic flooding photographs they are encouraged to submit them to FEMA Region V Mitigation Division.

I.IV.ii.17 Land Use

Kenosha County-wide zoning is administered by the Department of Planning & Development. The County Zoning and Floodplain/Shoreland Ordinance regulates development and land use with special concern for shoreland, wetland, and floodplain areas.

In Racine County, the Planning and Development Department is also involved in protecting and preserving Racine County's environment through the administration of shoreland, wetland, and floodplain regulations and by balancing economic development with environmental protection. The County noted during this Discovery process that no buildings are allowed in floodplains without compliance to the ordinances. Also, bluff stabilization is required before permits are issued for new construction on top of bluffs along Lake Michigan.

Land use for Milwaukee County as it relates to floodplain regulations was not found, provided, or compiled at the time this report was created.

I.IV.ii.18 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 15 lists the number of LOMCs in the project area per county. No Conditional LOMAs or Conditional LOMR-Fs were included. The LOMCs are shown on the Discovery Maps. Clusters of LOMCs indicate a need for updated maps.

Table 15. Summary of LOMC cases in Kenosha, Milwaukee, and Racine County

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
Kenosha	67	10	0	0
Milwaukee	173	37	19	0
Racine	131	53	0	0

I.IV.ii.19 Locally Identified Mitigation Actions

Table 16 lists the potential mitigation actions and strategies as pulled from the State of Wisconsin Hazard Mitigation Plan and the Milwaukee County Hazard Mitigation Plan. Note that actions listed may not be specific to coastal flooding.

Table 16. Hazard Mitigation Actions for Kenosha, Milwaukee, and Racine County

Name of Plan	County	Hazard Mitigation Action
State of Wisconsin Hazard Mitigation Plan, October 2011	Kenosha County	Communication: Public Education on Hazards
State of Wisconsin Hazard Mitigation Plan, October 2011	Kenosha County	Purchase houses in floodplain: relocating of buildings, flood-proofing structures, elevation of structures
State of Wisconsin Hazard Mitigation Plan, October 2011	Kenosha County	Structural Mitigation: Sewer Upgrades/Improve Existing Stormwater Management Systems
State of Wisconsin Hazard Mitigation Plan, October 2011	Kenosha County	Structural Mitigation: Flood Walls and Berms
State of Wisconsin Hazard Mitigation Plan, October 2011	Kenosha County	Structural Mitigation: Culverts
State of Wisconsin Hazard Mitigation Plan, October 2011	Kenosha County	Structural Mitigation: Enhance slope stability.
State of Wisconsin Hazard Mitigation Plan, October 2011	Kenosha County	Structural Mitigation: Retrofitting structures
State of Wisconsin Hazard Mitigation Plan, October 2011	Kenosha County	Non-Structural Mitigation: River/ Stream/Lake Maintenance
Milwaukee County Pre-Disaster Mitigation Plan, June 2011	Milwaukee County	Continue to enforce municipal ordinances which require no development in the Floodplain
Milwaukee County Pre-Disaster Mitigation Plan, June 2011	Milwaukee County	Continue to enforce local building codes for existing and new construction, based on the 2006 International Building Codes
Milwaukee County Pre-Disaster Mitigation Plan, June 2011	Milwaukee County	Creation of emergency plans with senior housing, CBRFs, and day care centers
Milwaukee County Pre-Disaster Mitigation Plan, June 2011	Milwaukee County	Access contracts for and mitigate all Cudahy detention ponds
Milwaukee County Pre-Disaster Mitigation Plan, June 2011	Milwaukee County	Acquisition and demolition of two repetitive loss structures

Table 16. Hazard Mitigation Actions for Kenosha, Milwaukee, and Racine County

Name of Plan	County	Hazard Mitigation Action
Milwaukee County Pre-Disaster Mitigation Plan, June 2011	Milwaukee County	Acquisition and demolition of five repetitive loss structures
Milwaukee County Pre-Disaster Mitigation Plan, June 2011	Milwaukee County	Easement of two repetitive loss structures
Milwaukee County Pre-Disaster Mitigation Plan, June 2011	Milwaukee County	Development of channel
Milwaukee County Pre-Disaster Mitigation Plan, June 2011	Milwaukee County	Clear debris from ravine ditch between Fox Lane to Beach Drive; Replace rip rap and re-establish channel
Milwaukee County Pre-Disaster Mitigation Plan, June 2011	Milwaukee County	Create and expand ditches along West side of Beach Drive from 7600-7900 Block
Milwaukee County Pre-Disaster Mitigation Plan, June 2011	Milwaukee County	Place catchment systems in various ravines to catch debris that floats downstream in heavy rain events
Milwaukee County Pre-Disaster Mitigation Plan, June 2011	Milwaukee County	Upsize drainage pipes in select locations throughout the Village to alleviate blockage
Milwaukee County Pre-Disaster Mitigation Plan, June 2011	Milwaukee County	Address erosion issue on North side of Beach Drive Hill
Milwaukee County Pre-Disaster Mitigation Plan, June 2011	Milwaukee County	Remove and replace undersized drainage pipe throughout the village
Milwaukee County Pre-Disaster Mitigation Plan, June 2011	Milwaukee County	Remove obstructions in drainage channels at Regent Road / Regent Court and Indian Creek and Seneca
Milwaukee County Pre-Disaster Mitigation Plan, June 2011	Milwaukee County	Impact and clean channel in wooded ravine north of Fairfield Court
Milwaukee County Pre-Disaster Mitigation Plan, June 2011	Milwaukee County	Remove sediment and debris from Bender Creek
Milwaukee County Pre-Disaster Mitigation Plan, June 2011	Milwaukee County	Continue to work in developing and implementing a water course system plan for the Milwaukee River, as it relates to floodplain ordinances, enforcement, and flood mitigation planning
Milwaukee County Pre-Disaster Mitigation Plan, June 2011	Milwaukee County	Removal of accumulated rocks downstream of the Silver Spring Drive culvert
Milwaukee County Pre-Disaster Mitigation Plan, June 2011	Milwaukee County	Purchase and install of backflow preventer valves in 50 residences
Milwaukee County Pre-Disaster Mitigation Plan, June 2011	Milwaukee County	Clean channel along 43rd St. near Ramsey Ave.
Milwaukee County Pre-Disaster Mitigation Plan, June 2011	Milwaukee County	Regular cleaning and inspection of storm inlets
Milwaukee County Pre-Disaster Mitigation Plan, June 2011	Milwaukee County	Work with Milwaukee County to keep Dale Creek free of obstructions
Milwaukee County Pre-Disaster Mitigation Plan, June 2011	Milwaukee County	Continue and expand shared services with Greendale School District
Milwaukee County Pre-Disaster Mitigation Plan, June 2011	Milwaukee County	Clean and straighten drainage channels

Table 16. Hazard Mitigation Actions for Kenosha, Milwaukee, and Racine County

Name of Plan	County	Hazard Mitigation Action
Milwaukee County Pre-Disaster Mitigation Plan, June 2011	Milwaukee County	Encourage residents to report concerns early
Milwaukee County Pre-Disaster Mitigation Plan, June 2011	Milwaukee County	Educate residents about dumping into storm sewers
Milwaukee County Pre-Disaster Mitigation Plan, June 2011	Milwaukee County	Acquire repetitive loss structures in the Root River Drive Area
Milwaukee County Pre-Disaster Mitigation Plan, June 2011	Milwaukee County	Install wet detention ponds
Milwaukee County Pre-Disaster Mitigation Plan, June 2011	Milwaukee County	Maintain storm sewer outlets
Milwaukee County Pre-Disaster Mitigation Plan, June 2011	Milwaukee County	Acquisition of 1.0 acres of a 6.613 acres mobile home park
Milwaukee County Pre-Disaster Mitigation Plan, June 2011	Milwaukee County	Acquire repetitive loss structure
Milwaukee County Pre-Disaster Mitigation Plan, June 2011	Milwaukee County	Vacating mobile homes sites in Oak Creek Estates and acquisition of the underlying real estate
Milwaukee County Pre-Disaster Mitigation Plan, June 2011	Milwaukee County	Acquire repetitive loss structures
Milwaukee County Pre-Disaster Mitigation Plan, June 2011	Milwaukee County	Acquire backflow valves, iron gate valves, sewer ejector systems, sump pumps w/backup power for 100 residences
Milwaukee County Pre-Disaster Mitigation Plan, June 2011	Milwaukee County	Pre-established mutual aid agreements between municipalities for equipment Fire, Health, & Police established., statewide DPW
Milwaukee County Pre-Disaster Mitigation Plan, June 2011	Milwaukee County	Locating vulnerable facilities in GIS
Milwaukee County Pre-Disaster Mitigation Plan, June 2011	Milwaukee County	Reverse 911 Emergency Notification System (MyStateUSA)
Milwaukee County Pre-Disaster Mitigation Plan, June 2011	Milwaukee County	Repair slope stability
Milwaukee County Pre-Disaster Mitigation Plan, June 2011	Milwaukee County	Parkway Drive Storm Sewer work
Milwaukee County Pre-Disaster Mitigation Plan, June 2011	Milwaukee County	Brookdale Court Storm Sewer work
Milwaukee County Pre-Disaster Mitigation Plan, June 2011	Milwaukee County	Research barriers for wastewater lift stations to prevent sewer backups if flooding of Oak creek
Milwaukee County Pre-Disaster Mitigation Plan, June 2011	Milwaukee County	Severe Channel Erosion and slope stabilization at Wastewater Treatment Plant Project
Milwaukee County Pre-Disaster Mitigation Plan, June 2011	Milwaukee County	Slope stability Michigan Avenue to Oak Creek Parkway Repair
Milwaukee County Pre-Disaster Mitigation Plan, June 2011	Milwaukee County	Slope Stability Hawthorne Avenue Repair
Milwaukee County Pre-Disaster Mitigation Plan, June 2011	Milwaukee County	Dredging of Oak Creek to remove overgrowth.
Milwaukee County Pre-Disaster Mitigation Plan, June 2011	Milwaukee County	Dredging of the Mill Pond

Table 16. Hazard Mitigation Actions for Kenosha, Milwaukee, and Racine County

Name of Plan	County	Hazard Mitigation Action
Milwaukee County Pre-Disaster Mitigation Plan, June 2011	Milwaukee County	Sanitary Sewer project relocation of relay Lakeshore Blvd. Montana Ave. to Lift Station
Milwaukee County Pre-Disaster Mitigation Plan, June 2011	Milwaukee County	Sanitary Sewer pipe lining to eliminate clear water intrusion from heavy rainfall
Milwaukee County Pre-Disaster Mitigation Plan, June 2011	Milwaukee County	Repair, Replace, Relocate siren currently behind SM Fire Dept.
Milwaukee County Pre-Disaster Mitigation Plan, June 2011	Milwaukee County	Replace Police radios both portables and radios in squads
Milwaukee County Pre-Disaster Mitigation Plan, June 2011	Milwaukee County	Back up Generation installation Project at Wastewater Treatment Facility
Milwaukee County Pre-Disaster Mitigation Plan, June 2011	Milwaukee County	Bidirectional Amplifier for Water Department for Radio Communication
Milwaukee County Pre-Disaster Mitigation Plan, June 2011	Milwaukee County	Replacement of retaining wall on Blanchard Street pumping station
Milwaukee County Pre-Disaster Mitigation Plan, June 2011	Milwaukee County	Flood proofing of 3 repetitive loss structures
Milwaukee County Pre-Disaster Mitigation Plan, June 2011	Milwaukee County	Work with local businesses to install storm water detention in large parking lots
Milwaukee County Pre-Disaster Mitigation Plan, June 2011	Milwaukee County	Storm sewer replacement where needed
Milwaukee County Pre-Disaster Mitigation Plan, June 2011	Milwaukee County	Storm sewer replacement where needed
Milwaukee County Pre-Disaster Mitigation Plan, June 2011	Milwaukee County	Storm water management plan for localized southwest drainage basin flooding
Milwaukee County Pre-Disaster Mitigation Plan, June 2011	Milwaukee County	Contractor list of equipment
Milwaukee County Pre-Disaster Mitigation Plan, June 2011	Milwaukee County	Migrate special facilities database from excel to internet application
Racine County Hazard Mitigation Plan Update; April 27, 2010	Racine County	Floodland and wetland zoning and zoning review
Racine County Hazard Mitigation Plan Update; April 27, 2010	Racine County	Purchase, demolition, and removal or floodproofing of 677 structures.
Racine County Hazard Mitigation Plan Update; April 27, 2010	Racine County	Channel clearing, maintenance, or rehabilitation
Racine County Hazard Mitigation Plan Update; April 27, 2010	Racine County	Stormwater management planning and regulation
State of Wisconsin Hazard Mitigation Plan, October 2011	Racine County	Flood proofing of structures.
State of Wisconsin Hazard Mitigation Plan, October 2011	Racine County	Structural Mitigation: Flood walls & berms
State of Wisconsin Hazard Mitigation Plan, October 2011	Racine County	Structural Mitigation: Culverts
State of Wisconsin Hazard Mitigation Plan, October 2011	Racine County	Structural Mitigation: Minor flood control/dams.
State of Wisconsin Hazard Mitigation Plan, October 2011	Racine County	Regulations, Laws, and Codes: Dissuade Development in Hazard Areas

Table 16. Hazard Mitigation Actions for Kenosha, Milwaukee, and Racine County

Name of Plan	County	Hazard Mitigation Action
State of Wisconsin Hazard Mitigation Plan, October 2011	Racine County	Regulations, Laws, and Codes: Shoreland/ Floodplain Protection
State of Wisconsin Hazard Mitigation Plan, October 2011	Racine County	Regulations, Laws, and Codes: Strengthen Local Building Codes

During this Discovery process, Areas of Mitigation Interest (AoMI) were identified by the local stakeholders and should be considered for future mitigation actions and incorporation into Hazard Mitigation Plan updates. This includes:

- Milwaukee Emergency Planning Department noted that the northern part of Milwaukee County, Village of Bayside, Fox Point, Whitefish Bay, and Shorewood, have had storm sewer back-up issues and flooding. This is an existing identified area of concern. They are re-doing the culverts in this area.
- Milwaukee County has had a difficult time enforcing floodplain regulations in southern part of county.

The Wisconsin State Hazard Mitigation Plan, Appendix C, identifies hazard mitigation projects already implemented in the state through FEMA mitigation programs, Community Development Block Grants (CDBGs), and the Department of Natural Resources (DNR) Municipal Flood Control Program. The plan, including Appendix C, can be downloaded by visiting http://emergencymanagement.wi.gov/mitigation/planning.asp

I.IV.ii.20 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:

Ordinance Level	Description
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

Table 17. Program Status and Ordinance Level for Kenosha, Milwaukee, and Racine County

County	Community	CID	Program Status	Ordinance Level
Kenosha	Kenosha, City of	550209	Participating	D
Kenosha	Kenosha County	550523	Participating	D
Kenosha	Pleasant Prairie, Village of	550613	Participating	D
Milwaukee	Bayside, Village of	550270	Participating	D
Milwaukee	Cudahy, City of	550272	Participating	D
Milwaukee	Fox Point, Village of	550274	Participating	D
Milwaukee	Milwaukee, City of	550278	Participating	D
Milwaukee	Oak Creek, City of	550279	Participating	D
Milwaukee	Shorewood, Village of	550282	Participating	D
Milwaukee	South Milwaukee, City of	550283	Participating	D
Milwaukee	St. Francis, City of	550281	Participating	D
Milwaukee	Whitefish Bay, Village of	550286	Participating	D
Racine	Caledonia, Village of	550628	Participating	D
Racine	Mount Pleasant, Village of	550322	Participating	D
Racine	North Bay, Village of	550350	Not Participating	N/A
Racine	Racine, City of	555575	Participating	D
Racine	Racine County	550347	Participating	D
Racine	Wind Point, Village of	550355	Participating	D

CID = community identification

I.IV.ii.21 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 Michigan shoreline.

The originally proposed draft transect layout is shown on the draft Discovery Map for Kenosha, Milwaukee, and Racine 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 draft transect shapefiles (GIS digital data) upon request, and the proposed draft transects (Attachment D) were also reviewed by stakeholders during and after the Discovery Meeting. Input from local officials was requested regarding the placement and the number of transects. The detailed comments collected can be found in Attachment E, Stakeholder Comments from Discovery Meeting. The ID numbers in this table correspond to the location of the comment, which is shown on the Final Discovery Maps in Appendix R of the basin-wide Lake Michigan Discovery Report (Federal Emergency Managment Agency, 2013).

Below is a summary of the comments received during the Discovery Meeting and their impact on revisions to the proposed draft transects along the Lake Michigan shoreline in Kenosha, Milwaukee, and Racine County:

- Kenosha County: No stakeholder comments related to the draft transects were provided through this Discovery process.
- Milwaukee County: Stakeholders provided comments related to areas of erosion concern, new development, and critical facilities. In addition, stakeholders suggested two transect locations based on the fact that new structures exist. All comments were able to be taken into account.
- Racine County: Stakeholders provided suggested location of a new transect due to development potential in the area. Comment was incorporated and a new transect was added at that location.

All comments were reviewed and incorporated where possible and a revised proposed draft transect layout was created. This revised transect layout can be found on the Final Discovery Maps in Appendix R of the Lake Michigan basin-wide report, and is not an attachment in this county-based report (Federal Emergency Managment Agency, 2013). It should be noted that these transects remain subject to change pending future coastal analysis.

I.IV.ii.22 Pre-Disaster Mitigation Grant 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.23 Public Assistance (PA) Grant Program

The mission 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.24 Regulatory Mapping

The effective mapping status for communities in the Kenosha, Milwaukee, and Racine County project area is listed in Table 18.

Table 18. Effective Mapping Status of Kenosha, Milwaukee, and Racine County

County	Community	CID	FIRM Date	Program Status
Kenosha	Kenosha, City of	550209	6/19/2012	Participating
Kenosha	Kenosha County	550523	6/19/2012	Participating
Kenosha	Pleasant Prairie, Village of	550613	6/19/2012	Participating
Milwaukee	Bayside, Village of	550270	9/26/2008	Participating
Milwaukee	Cudahy, City of	550272	9/26/2008	Participating
Milwaukee	Fox Point, Village of	550274	9/26/2008	Participating
Milwaukee	Milwaukee, City of	550278	9/26/2008	Participating
Milwaukee	Oak Creek, City of	550279	9/26/2008	Participating
Milwaukee	Shorewood, Village of	550282	9/26/2008	Participating

County	Community	CID	FIRM Date	Program Status
Milwaukee	South Milwaukee, City of	550283	9/26/2008	Participating
Milwaukee	St. Francis, City of	550281	9/26/2008	Participating
Milwaukee	Whitefish Bay, Village of	550286	9/26/2008	Participating
Racine	Caledonia, Village of	550628	5/2/2012	Participating
Racine	North Bay, Village of	550350	5/2/2012	Not Participating
Racine	Mount Pleasant, Village of	550322	5/2/2012	Participating
Racine	Racine, City of	555575	5/2/2012	Participating
Racine	Racine County	550347	5/2/2012	Participating
Racine	Wind Point, Village of	550355	5/2/2012	Participating

CID = community identification
FIRM = Flood Insurance Rate Map

Effective FIRMs and FISs can be downloaded from FEMA's Map Service Center (MSC) at https://msc.fema.gov.

I.IV.ii.25 Repetitive Loss

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 reviewed in FEMA's CIS "Community Disaster Detail – Flood Insurance" report. Table 19 details the total number of repetitive loss structures and total amount of repetitive loss payments in Kenosha, Milwaukee, and Racine project area communities.

Table 19. Repetitive Loss

County	Community	CID	Total Repetitive Loss Structures	Total Repetitive Loss Payment
Kenosha	Kenosha, City of	550209	$0	$0
Kenosha	Kenosha County	550523	21	$743,137
Kenosha	Pleasant Prairie, Village of	550613	$0	$0
Milwaukee	Bayside, Village of	550270	2	$18,166
Milwaukee	Cudahy, City of	550272	$0	$0
Milwaukee	Fox Point, Village of	550274	$0	$0
Milwaukee	Milwaukee, City of	550278	222	$4,736,004
Milwaukee	Oak Creek, City of	550279	2	$151,335
Milwaukee	Shorewood, Village of	550282	$0	$0
Milwaukee	South Milwaukee, City of	550283	$0	$0
Milwaukee	St. Francis, City of	550281	$0	$0
Milwaukee	Whitefish Bay, Village of	550286	$0	$0
Racine	Caledonia, Village of	550628	$0	$0
Racine	North Bay, Village of	550350	$0	$0
Racine	Mount Pleasant, Village of	550322	$0	$0
Racine	Racine, City of	555575	2	$38,705
Racine	Racine County	550347	2	$26,398
Racine	Wind Point, Village of	550355	$0	$0

CID = community identification

I.IV.ii.26 Socio-Economic Analysis

In Kenosha, Milwaukee, and Racine County, the manufacturing industry plays a large role in the economy; however, the counties are transitioning to knowledge-based industries, professional services, and entrepreneurship.

In Kenosha County, in 2009, lake-related businesses provided 3.3 percent of the total jobs in the County. This accounted for 1,742 jobs, $23 million in wages, and $46 million in goods & services. This represents a 29 percent increase in lake jobs since 2005 (National Oceanic & Atmospheric Administration, 2009).

In Milwaukee County, lake-related businesses provided 2.9 percent of the total jobs in the County in 2009. This accounted for 13,400 jobs, $429 million in wages, and $784 million in goods & services. This represents a 19 percent increase in lake jobs since 2005 (National Oceanic & Atmospheric Administration, 2009).

In Racine County, in 2009, lake-related businesses provided 1.6 percent of the total jobs in the County. This accounted for 1,122 jobs, $15 million in wages, and $33 million in goods & services. This represents a 1 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. Kenosha has approximately 7 percent of the population located within the floodplain, while Milwaukee has approximately 3 percent inside the floodplain, and Racine has 8 percent (National Oceanic & Atmospheric Administration, 2009).

I.IV.ii.27 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.

Needs Assessment and Strategy:

As part of this Discovery process, information related to Great Lakes datasets, reports, programs, and grants was extracted from the Wisconsin Coastal Management Program (WCMP) 2011-2016 Needs Assessment and Strategy, completed November 2010 (Wisconsin 2011-2016 Needs Assessment and Strategy, 2010).

Studies and reports relevant to Wisconsin's Coastal Hazards include:

- SEH/Baker, 1997. "Lake Michigan Recession Rate Study Final Report". (Report prepared for the Wisconsin Coastal Management Council, Wisconsin Department of Administration).
- Wisconsin Coastal Management Program (WCMP), October 2007. "A Strategic Vision for the Great Lakes". (http://www.doa.state.wi.us/docview.asp?docid=7039)
- Springman, R. and S. M. Born, 1979. "Wisconsin's Shore Erosion Plan: An Appraisal of Options and Strategies" (http://wisconsingeologicalsurvey.org/wofrs/WOFR1979-03.pdf)

- State of Wisconsin Hazard Mitigation Plan (updated 2008) (http://emergencymanagement.wi.gov/mitigation/planning.asp)
- Bay Lake Regional Planning Commission (BLRPC) study, "Coastal Bluff Stability Study, Inventory & Description", September 1995. (http://www.baylakerpc.org/about/publications)
- Southeastern Wisconsin Regional Planning Commission (SEWRPC) study (1997), Technical Report No. 36, "Lake Michigan Shoreline Recession and Bluff Stability in Southeastern Wisconsin", 1995 (http://maps.sewrpc.org/Publications/search.asp)
- Coastal Processes Manual (1998) (http://aqua.wisc.edu/publications/ProductDetails.aspx?productID=356)
- Lake Michigan Potential Damages Study (1999) (http://www.lre.usace.army.mil/greatlakes/hh/greatlakestudies/lakemichiganpotentialdamagesstudy/)

Additional reports available through SEWRPC's publication library website at http://maps.sewrpc.org/publications/search.asp?visit=1&keyword=Lake+Michigan&CompType=AND&reporttype=0&yearfilter=0&Submit=Search include:

- Memorandum Reports
  - No. 171 (2008) – "Assessment of Lake Michigan Shoreline Erosion Control Structures in Racine County, WI"
  - No. 156 (2004) – "Lake Park Bluff Stability and Plant Community Assessment:2003 (Milwaukee County, WI)"
- Community Assistance Planning Reports
  - No. 163 (1989) – "A Lake Michigan Shoreline Erosion Management Plan for Milwaukee County, WI"
  - No. 155 (1988) – "A Lake Michigan Shoreline Erosion Management Plan for Northern Milwaukee County, WI"
  - No. 110 (1984) – "A Lake Michigan Coastal Erosion and Related Land Use Management Study for the City of St. Francis, WI"
  - No. 86 (1982) – "A Lake Michigan Coastal Erosion Management Study for Racine County, WI"

Hazards Research and Monitoring:

WCMP funded the University of Wisconsin-Madison efforts to investigate lakebed down cutting in Lake Michigan. The work resulted in a much clearer understanding of erosion of the near shore lakebed and increased public awareness of bluff recession.

The WCMP also funded projects that resulted in oblique photographs of Wisconsin's coasts. The photographs were geolocated. Older oblique photos were digitized and geolocated, and a GIS database built to allow comparison between the sets. The work resulted in a database that allows users to analyze change to the state's shoreline.

Wisconsin Great Lakes Strategy: Restoring and Protecting Our Great Lakes:
This guidance document, developed by the Wisconsin Department of Natural Resources Office of the Great Lakes, was updated in 2009 and reflects changes in priorities and actions since last updated in 2006. The Wisconsin Great Lakes Strategy addresses eight of the nine priorities identified by the Council of Great Lakes Governors for the restoration and protection of the Great Lakes. The goals of the Strategy are to:

- translate the recommendations from the Great Lakes Regional Collaboration into Wisconsin specific actions,
- be a vehicle for coordinating efforts and developing shared priorities,
- serve as a menu for securing and allocating resources, and
- promote developing projects for implementation and position Wisconsin to
- compete for federal restoration and protection funding.

The Strategy focuses on resources and ecosystems impacted by the Great Lakes. This includes tributary and groundwater connections, species dependent on the Great Lakes and their tributaries, and land use influences on water quality and quantity.

Wisconsin's Great Lakes Beach Monitoring and Notification Program:
This program is coordinated through the Wisconsin Department of Natural Resources Bureau of Watershed Management. With funding from the U.S. Environmental Protection Agency (EPA) under the authority of the BEACH Act, the Wisconsin Department of Natural Resources implements the program with assistance from other federal, state, and local government partners. The program goal is to monitor Great Lakes beaches to improve public notification of advisories and reduce beach visitors' risk of exposure to disease-causing microorganisms. As of 2008, 123 of Wisconsin's 192 Great Lakes beaches are now being monitored. Since the introduction of the sanitary survey by the U.S. EPA, the state has increasingly utilized sanitary surveys, local, and nonprofit partners since 2007. Sanitary surveys may provide valuable information about potential pollution sources and assist stakeholders with implementing remediation measures.

Additional information on the Wisconsin Great Lakes areas can be found from the below resources:

- Wisconsin Initiative on Climate Change Impacts: http://www.wicci.wisc.edu/report/Coastal-Communities.pdf
- International Joint Commission:
  - A series of publications are available on the Great Lakes, including Groundwater in the Great Lakes Basin, the Impact of Urban Areas on Great Lakes Water Quality, Great Lakes Priority Issues, Emerging Issues of the Great Lakes, and Lake Levels. This information can be downloaded from http://ijc.org/en/activities/main_princ.htm
- Great Lakes Water Institute – Wisconsin Aquatic Technology and Environmental Research: http://www.glwi.uwm.edu/

V. Risk MAP Projects and Needs

This section provides information about the planned next steps for the Lake Michigan GLCFS, including information about the upcoming coastal analysis, potential for mitigation technical assistance within the project area, potential for 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 this Discovery effort and provided in this report will be utilized in the upcoming coastal flood study for Lake Michigan.

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 Michigan 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 Michigan 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 Michigan Discovery Report (Federal Emergency Managment Agency, 2013).

Engineering & Mapping:
Coastal flood hazard analyses for the coastal communities of the United States located along the Lake Michigan 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 dependent 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. 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 20 summarizes the products projected for the coastal communities in this project area.

Table 20: Potential Flood Risk Products

County	State	Flood Risk Map and Flood Risk Report	Changes Since Last FIRM	Flood Depth and Analysis Grids	Optional Flood Risk Assessment Products
Kenosha	WI	✓	✓	✓	TBD
Milwaukee	WI	✓	✓	✓	TBD
Racine	WI	✓	✓	✓	TBD

ii. Potential for Mitigation Assistance

As part of a Risk MAP project, Mitigation Planning Technical Assistance (MPTA) may be 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.

While the need for technical assistance did not specifically come up during the Discovery process for Kenosha, Milwaukee, and Racine Counties, the need for assistance through MPTA may exist. It is recommended additional discussion occur between FEMA and 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 Michigan Discovery Report (Federal Emergency Managment Agency, 2013).

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

During this Discovery process, stakeholders provided FEMA with a wide variety of information. Some of the information, while valuable, may not be able to be utilized in the upcoming coastal study. In addition, some questions may be unresolved as of the end of this Discovery process. This section seeks to summarize those unmet needs and to provide the steps that may be taken to address them in the future.

During the Discovery Meetings and throughout the Discovery process, Lake Michigan stakeholders were concerned about what to expect in terms of extent of new SFHA boundaries, the possible introduction of VE Zones, the number of property owners who would be affected, and the additional NFIP requirements and flood insurance costs that may go along with a flood map revision. FEMA acknowledged this concern, adding that

upcoming engineering and mapping tasks include the distribution of workmaps and other flood risk products designed to give local stakeholders an opportunity to review and comment on flood risk data before the data is carried into NFIP FIRM maps.

In addition, comments related to the proposed draft transects were provided during the Discovery Meeting by local stakeholders. Those comments were incorporated into an updated draft transect layout where possible. However, it should be noted that the draft transects proposed in this report remain subject to change pending future coastal analysis. Stakeholders will be made aware of revised transect locations via the future workmaps that will be provided to local communities for review as the study moves forward.

VI. Close

Federal, State, and local stakeholders that were involved in this Discovery process contributed valuable information about Lake Michigan, including information and data that may be utilized in the upcoming Lake Michigan coastal flood study. The data and opportunities presented in this report will be considered as the study process moves forward and will assist the project team as the Lake Michigan coastal flood study proceeds. FEMA encourages continued participation and engagement from stakeholders throughout this coastal flood study.

The ultimate goal of this Discovery process and the future coastal flood study is to provide updated flood risk information to local stakeholders and to increase awareness of those flood risks, which in turn leads to actions that reduce risk.

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\ 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/.

Attachments in this report include:

Attachment A: Coastal Data Request Form
Attachment B: Kenosha, Milwaukee, and Racine County Pre-Meeting Correspondence
Attachment C: Draft Discovery Maps
Attachment D: Proposed Draft Transect Figures
Attachment E: Stakeholder Comments from Discovery Meeting
Attachment F: Kenosha, Milwaukee, and Racine County Discovery Meeting Documents
Attachment G: Coastal Data Request Form Compilation

ATTACHMENT A

COASTAL DATA REQUEST FORM

U.S. Department of Homeland Security
536 S. Clark St. 6th Floor
Chicago, IL 60605
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	☐ Email ☐ Phone ☐ Mail

U.S. Department of Homeland Security
536 S. Clark St. 6th Floor
Chicago, IL 60605
FEMA

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

U.S. Department of Homeland Security
536 S. Clark St. 6th Floor
Chicago, IL 60605
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:	☐ yes ☐ 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?	☐ yes ☐ no	If yes, please describe:
Does your community have other risk assessment data?	☐ yes ☐ no	If yes, please describe:

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Chicago, IL 60605
FEMA

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

Any specific coastal mitigation projects?	☐ yes ☐ no	If yes, please explain:
Does your community have experience with coastal flood disasters and flood disaster recovery?	☐ yes ☐ 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?	☐ yes ☐ no	If yes, please explain:

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Chicago, IL 60605
FEMA

Have you had any prior proactive mitigation actions and planning efforts that resulted in reduced losses? If possible, any coastal specific?	☐ yes ☐ no	If yes, please describe:
Has your community applied and granted Individual Assistance/Public Assistance grants for declared disasters?	☐ yes ☐ no	If yes, please describe and provide the locations of these grants projects:
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?	☐ yes ☐ no	If yes, please describe and provide the locations of on-going/planned/finished grants projects/structures:

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Chicago, IL 60605
FEMA

How would you rank the community's ability to implement mitigation actions and to communicate flood risk to citizens?		☐ high ☐ medium ☐ low
Community Plans and Projects		
Does your community have a comprehensive plan?	☐ yes ☐ no	If you answered yes and you have a hazard mitigation plan, was your hazard mitigation plan coordinated with the comprehensive plan? ☐ yes ☐ no
Does your community's comprehensive plan have a special consideration for coastal areas?	☐ yes ☐ no	If yes, please explain elements/regulations that affect coastal area development.
Does your community have a coastal zone management plan?	☐ yes ☐ 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?	☐ yes ☐ no	If yes, please explain this group's role in floodplain management and provide examples of the types of programs in place:

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Chicago, IL 60605
FEMA

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):	☐ yes ☐ no	If yes, please describe:
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.)	☐ yes ☐ no	If yes, please describe:
Any other comments/concerns based on local knowledge:		

ATTACHMENT B

KENOSHA, MILWAUKEE, AND RACINE COUNTY

PRE-MEETING CORRESPONDENCE

Core Stakeholder Pre-Meeting Documents

Information Exchange Session Documents

CEO/FPA Mailing List

Hard Copy Discovery Meeting Invitations

Email Discovery Meeting Invitation

Keating, Laura

From: Keating, Laura [KeatingLE@cdmsmith.com]
Sent: Thursday, June 21, 2012 3:26 PM
To: 'Alan Lulloff'; Caufield, Brian A.; 'Eric Kuklewski'; 'Gregory Mausolf'; 'Heather Stirratt'; Hillier, Timothy; 'Holly Davis'; 'Jennifer Day'; 'Julia McCarthy'; 'Julie Tochor'; 'Kate Barrett'; 'Kathleen Angel'; 'Katie McMahan'; 'Laura Keating'; 'Lee Traeger'; 'Mary Weldel'; 'Meg Galloway (WDNR)'; 'Megan Hart'; 'Michelle Hase (WDNR)'; 'Miles Winkler (WDNR)'; Randhawa, Jaspreet; 'Ronald Wencl'; 'Roxanne Gray'; 'Tambrete Phillps'; 'Tanya Lourigan (WDNR)'; 'Tom Smith'; 'Wayne Lasch'; 'Ken Hinterlong'; 'michael.friis@wisconsin.gov'; 'Christopher.Olds@Wisconsin.gov'; 'Susan.Boldt@Wisconsin.gov'; 'Gary.Heinrichs@Wisconsin.gov'; 'Roberts, Stacey'; Luce, Janet K
Cc: Hinterlong, Ken
Subject: RE: FEMA Invitation to Lake Michigan Discovery Kickoff Meeting WebEx for Wisconsin Core Stakeholders
Attachments: CEO_FPA_Discovery_Invitation_List_Great_Lakes_Study_WI.xlsx; GLCFS_ LiMWA Fact Sheet.pdf; Draft_Transects_LakeMichigan_WISCONSIN_JUNE2012.zip; Email_Invitations_Lake_MI Stakeholder_List_modified 6-18.xls

Good Afternoon,

Thank you for attending the Wisconsin Core Stakeholder Lake Michigan pre-Discovery Kickoff meeting last week.

If you were unable to attend, but would like to learn more about the Great Lakes Coastal Discovery process, please feel free to contact myself or Ken Hinterlong of FEMA Region V directly (Ken.Hinterlong@fema.dhs.gov).

Please find below and attached some information that we discussed during the call:

1. Contact List with local official (CEO/FPA) information for the Wisconsin coastal communities and counties along Lake Michigan coastline. This is the list of local stakeholders who will receive a hard copy coastal Discovery Invitation, and will be invited to attend the Information Exchange Sessions. They will also be encouraged to identify and invite other local stakeholders who would benefit from the Discovery Meeting. **If you have specific contacts you would like us to add, please let me know.**

2. Great Lakes Coastal Flood Study Contact List. This is a comprehensive list of various Lake Michigan stakeholders, including technical resources, other federal agencies, associations, universities, etc. Utilizing this list as a basis, we will be providing an email invitation to the Discovery Meetings. Invitees may then forward on the invite to others in the Great Lakes region. Please note, this list is being continually updated throughout the Great Lakes study process.

3. Limit of Moderate Wave Action (LiMWA) Fact Sheet

4. Draft transects (.shp) for Wisconsin portion of Lake Michigan.

These additional items will follow:

1. Meeting Minutes

2. Draft Data Request Form, which includes requests for coastal flood risk data and information from local officials. The collection of this information in advance of the Discovery Meetings will help us to cater our message during the meeting to local flood risk concerns and local flood risk reduction opportunities.

Thank you again for your participation in the process. We look forward to working closely with you in the upcoming months.

Laura

Laura Keating, CFM
STARR

direct/fax: 925-296-8048
cell: 617-319-2472

-----Original Appointment-----
From: Keating, Laura
Sent: Wednesday, June 06, 2012 4:21 PM
To: Keating, Laura; 'Alan Lulloff'; Caufield, Brian A.; 'Eric Kuklewski'; 'Gregory Mausolf'; 'Heather Stirratt'; Hillier, Timothy; 'Holly Davis'; 'Jennifer Day'; 'Julia McCarthy'; 'Julie Tochor'; 'Kate Barrett'; 'Kathleen Angel'; 'Katie McMahan'; 'Laura Keating'; 'Lee Traeger'; 'Mary Weldel'; 'Meg Galloway (WDNR)'; 'Megan Hart'; 'Michelle Hase (WDNR)'; 'Miles Winkler (WDNR)'; Randhawa, Jaspreet; 'Ronald Wencl'; 'Roxanne Gray'; 'Tambrete Phillps'; 'Tanya Lourigan (WDNR)'; 'Tom Smith'; 'Wayne Lasch'; 'Ken Hinterlong'; michael.friis@wisconsin.gov; Christopher.Olds@Wisconsin.gov; Susan.Boldt@Wisconsin.gov; Gary.Heinrichs@Wisconsin.gov; 'Roberts, Stacey'
Cc: Luce, Janet K
Subject: FEMA Invitation to Lake Michigan Discovery Kickoff Meeting WebEx for Wisconsin Core Stakeholders
When: Friday, June 15, 2012 7:00 AM-8:30 AM (GMT-08:00) Pacific Time (US & Canada).
Where: Call-in: 866-710-4609 Passcode: 9577577 and WebEx

Good Afternoon,

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 Discovery Project in the State of Wisconsin. 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 coastal communities in the State of Wisconsin. We will also review the Lake Michigan Discovery Meeting Plan and discuss State-specific requirements.

In the past few months, STARR may have already contacted you to participate in a Lake Michigan 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 Discovery Meeting dates for the State of Wisconsin:

Counties	Venue	Address	Date, Time
Marinette	Oconto County Courthouse,	301 Washington Street, Oconto,	Wednesday

Oconto	Conference Room 1003 & 1004	WI 54153	08/15/2012; 9.30 - 11.30 AM
Kewaunee Door Brown	Neville Public Museum	210 Museum Place Green Bay, WI 54303	Wednesday 08/15/2012; 2:00 - 4:00 PM
Sheboygan Manitowoc Ozaukee	Lakeshore Technical College	Wells Fargo Conference Room, 1290 North Avenue, Cleveland, WI 53015	Thursday 08/16/2012; 9.00 - 11:00 AM
Milwaukee Racine Kenosha	MMSD Commission Room	260 W. Seeboth, Milwaukee, WI	Thursday 08/16/2012; 3:00 - 5:00 PM

Please let me know if the proposed time on this meeting invitation **(9am Central)** is acceptable. We are trying to determine the best time for everyone to participate in the Lake Michigan Discovery Kickoff Meeting WebEx for the State of Wisconsin.

I look forward to discussing this project with you during the Discovery Kickoff Meeting. 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

WebEx information:

Participant Join URL: http://e-meetings.verizonbusiness.com/nc/join.php?i=743676568&p=website&t=c

Meeting number: 743676568

Meeting passcode: website

Project Name:	Lake Michigan Discovery Project
Meeting:	Lake Michigan Pre-Discovery Kickoff Meeting for Wisconsin Core Stakeholders
Date and Time:	Friday, June 15, 2012 at 9am CDT
Place:	Call in: 866-710-4609 Passcode: 9577577 Participant Join URL: http://e-meetings.verizonbusiness.com/nc/join.php?i=743676568&p=website&t=c Meeting number: 743676568 Meeting passcode: website
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

- 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
- LiMWA
- Coastal Zone Mapping

Next Steps

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

Questions/Comments

Keating, Laura

Subject:	FEMA's Great Lakes Coastal Flood Study: Discovery Information Exchange Session for Milwaukee, Racine, and Kenosha Counties
Location:	Call in number: 1-866-398-2885 Participant Code: 197462 and WebEx
Start:	Tue 7/24/2012 12:00 PM
End:	Tue 7/24/2012 1:00 PM
Show Time As:	Tentative
Recurrence:	(none)
Meeting Status:	Not yet responded
Organizer:	Keating, Laura
Required Attendees:	'Hinterlong, Ken'; Keating, Laura; brad.blumer@milwcnty.com
Optional Attendees:	sdickman@bayside-wi.gov; ahenderson@bayside-wi.gov; dayt@ci.cudahy.wi.us; langemj@ci.cudahy.wi.us; srobertson@vil.fox-point.wi.us; sbrandmeier@vil.fox-point.wi.us; j.tepper@glendale-wi.org; c.johnson@glendale-wi.org; mayor@milwaukee.gov; crute@milwaukee.gov; Timothy.Thur@milwaukee.gov; pwagner@oakcreekwi.org; pbeiermeister@oakcreekwi.org; sbostedt@stfranwi.org; flockwood@stfranwi.org; presidentjohnson@villageofshorewood.org; cswartz@villageofshorewood.org; zepecki@ci.south-milwaukee.wi.us; vandercar@smwi.org; presidentsiegel@wfbvillage.org; d.naze@wfbvillage.org; countyexec@milwcnty.com; carl.stenbol@milwcnty.com; bill.shaw@milwcnty.com; james.ladwig@goracine.org; julie.anderson@goracine.org; rcoutts@wi.rr.com; rcoutts@caledoniawi.com; mhayek@caledoniawi.com; cmilkie@mtpleasantwi.gov; bsasse@mtpleasantwi.gov; holmberg@uwp.edu; harrysfolk@aol.com; mayor@cityofracine.org; mark.yehlen@cityofracine.org; brian.oconnell@cityofracine.org; info@windpointwi.us; administrator@windpointwi.us; county.executive@kenoshacounty.org; dan.treloar@kenoshacounty.org; mayor@kenosha.org; rschroeder@kenosha.org; JohnPSteinbrink@plprairie.com; mspence@plprairiewi.com; Randhawa, Jaspreet; Holly.Davis@atkinsglobal.com

Good Afternoon,

You are receiving this meeting invitation because you have been identified as a ***Lake Michigan*** 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 24th at 2pm CT**. 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 24, 2012; 2:00 - 3:00 pm CT
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.

LAKE MICHIGAN
Discovery Coasta...

Thanks,
Laura

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

FEMA

Information Exchange Session for Lake Michigan Discovery

Kenosha, Milwaukee, and Racine Counties

July 24, 2012

2pm – 3pm

RiskMAP
Increasing Resilience Together

Great Lakes Coastal Flood Study

Lake Michigan Discovery Report Appendix H - Milwaukee, Racine, and Kenosha County

greatlakescoast.org

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

Overview of Great Lakes Coastal Flood Study

FEMA

- 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

Hazard Mitigation Resources, Strategies & Actions

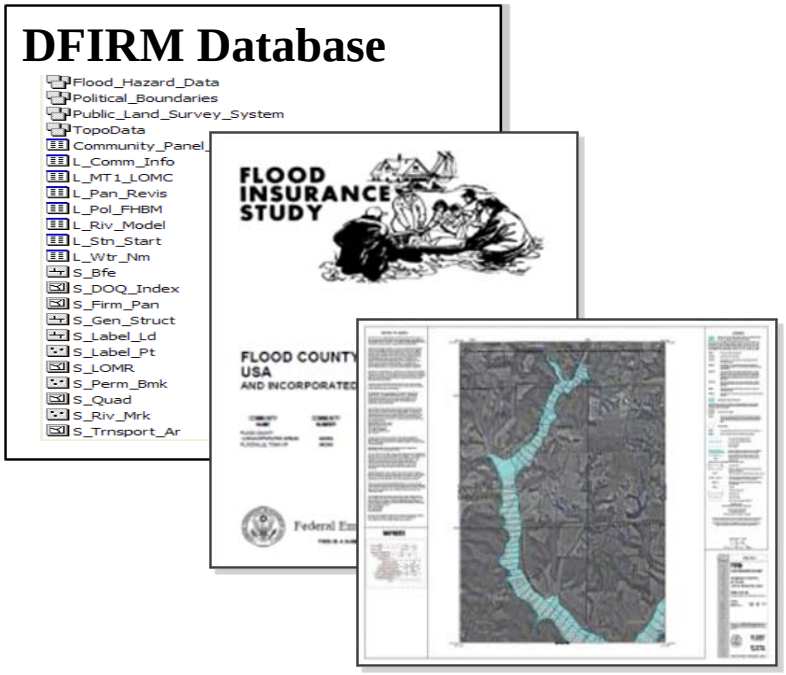
- Recent community hazard mitigation experiences?
  - *Public Works*
  - *Building Standards*
  - *Community Planning and Hazard Mitigation Plan Update*
  - *Communication Processes, GIS, etc.*
- New option to document ideas and actions through the FEMA Mitigation Action Form

Land Use Ordinances	Local Building Codes	Mitigation Projects	Community Identified Mitigation Programs	Management Best Practices
Zoning, Setbacks, Floodplain Management, etc.	IBC, IRC, Local Regulations, etc.	Acquisition, Elevation, Floodproofing, etc.		Integration of natural hazards into other planning mechanisms

Products and Datasets: Regulatory and Non-regulatory

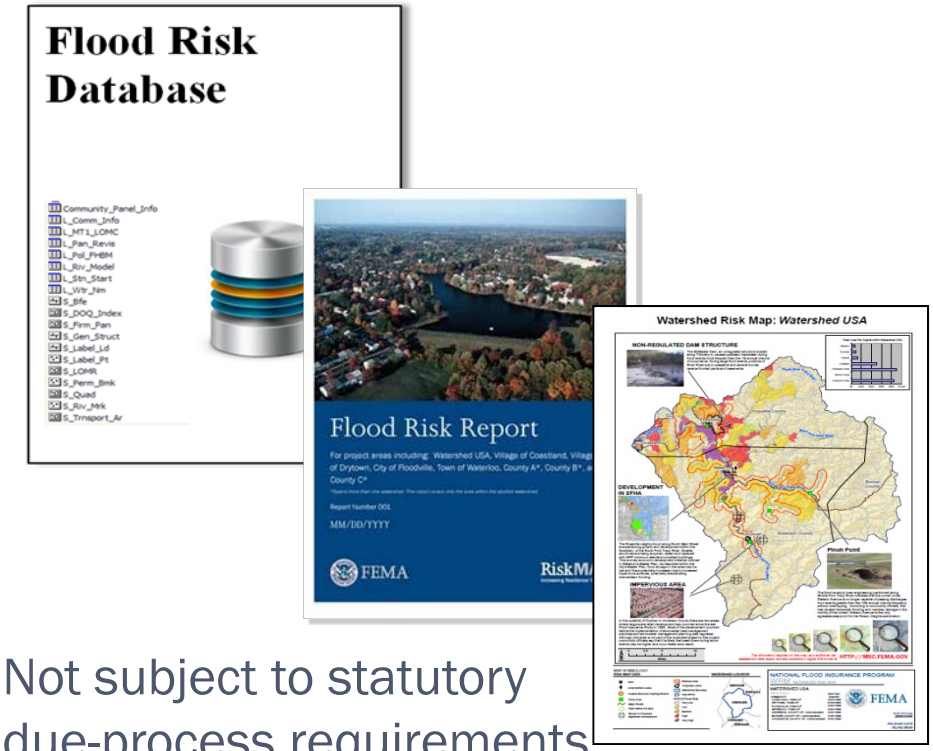
FEMA

Traditional Regulatory Products



Subject to statutory due-process requirements

Non-Regulatory Products



Not subject to statutory due-process requirements

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

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

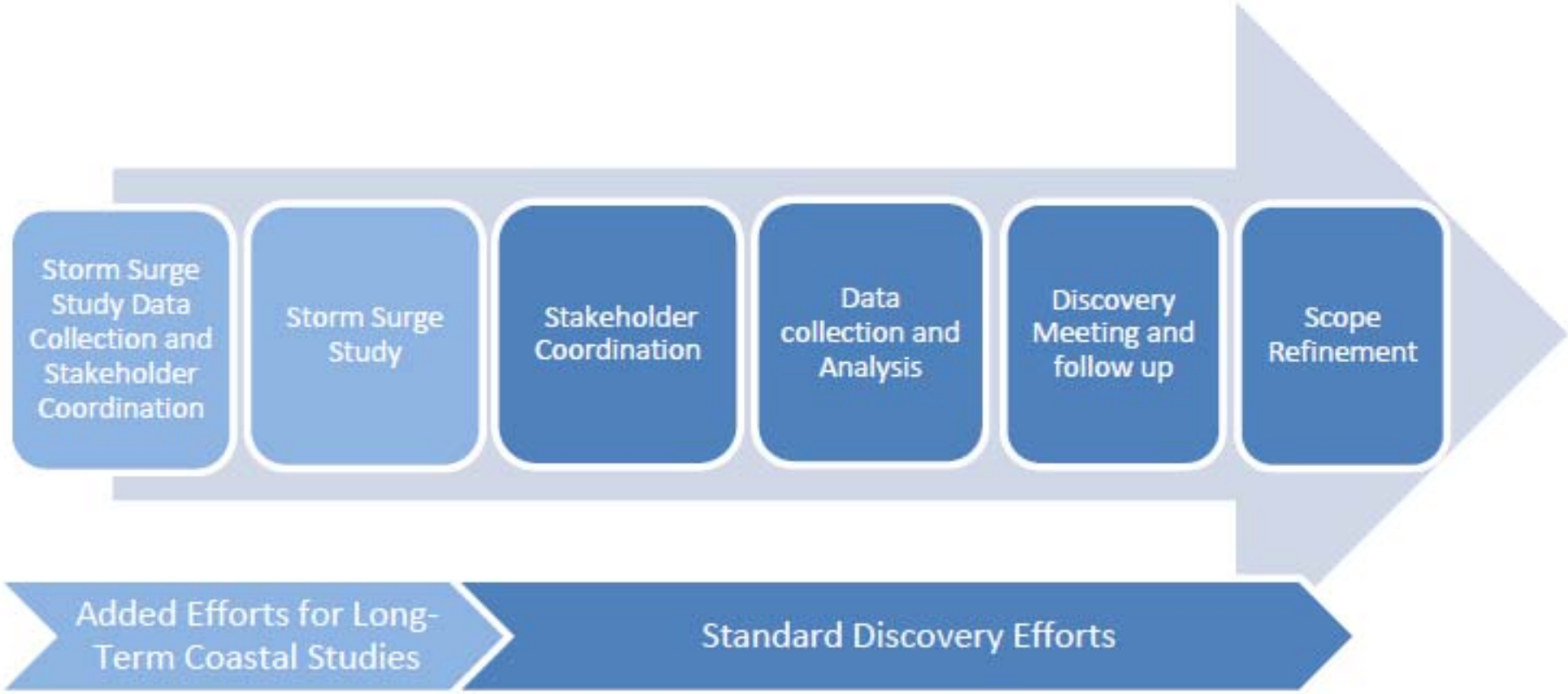
Primary Coast Type
High Dune, 10'+
Dune, 2' - 10'
High Bluff, 10'+
Bluff, 2' - 10'
Coastal Wetland
Flat Coast

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

FEMA



Great Lakes Coastal Flood Study
Discovery Meeting

Discovery Meeting Venue	Discovery Meeting Address	Discovery Meeting Date, Time
Milwaukee Metropolitan Sewerage District (MMSD), Commission Room	260 W. Seeboth Street, Milwaukee, WI 53204	Thursday 08/16/2012; 2:00 - 4:00 PM CT

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.

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

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

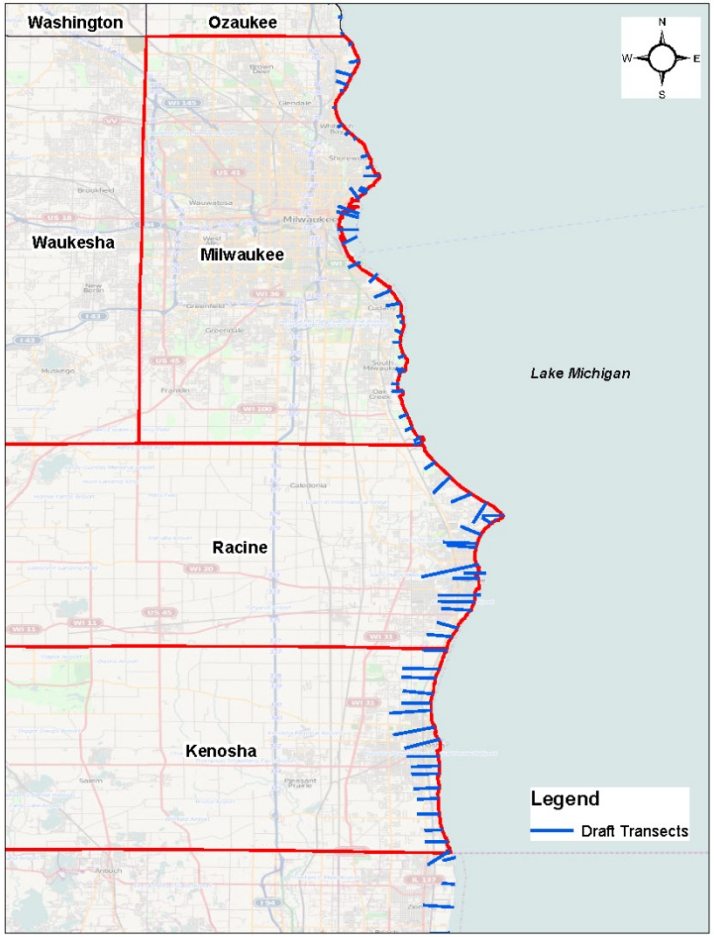
FEMA

Lake Michigan coastal communities in Kenosha, Milwaukee, and Racine Counties:

Kenosha County
Kenosha (City)
Pleasant Prairie

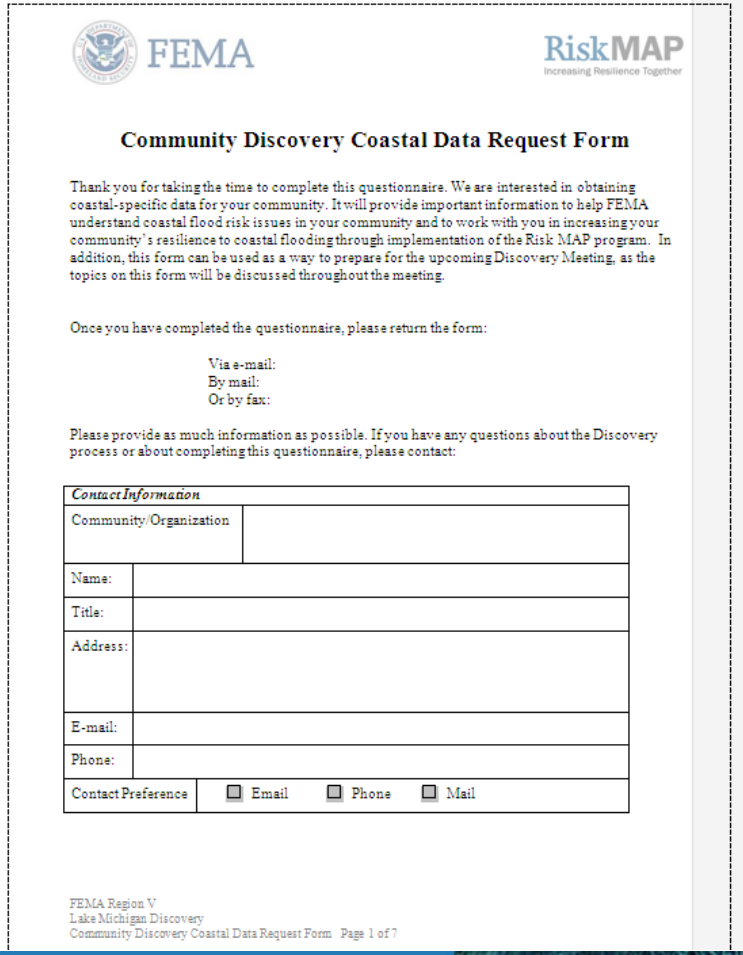
Milwaukee County
Bayside
Cudahy
Fox Point
Milwaukee (City)
Oak Creek
Shorewood
South Milwaukee
St. Francis
Whitefish Bay

Racine County
Caledonia
Mount Pleasant
North Bay
Racine (City)
Wind Point



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	☐ Email ☐ Phone ☐ 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
- Report on Assessment of Shoreline Erosion Protection Structures (Racine County)
- LiDAR (1' contours – Kenosha Co.)
- Hazard Mitigation Plans
- Hazard Mitigation Grants Program (HMGP) projects
- Pre-Disaster Mitigation Program projects
- Declared Disasters
- Repetitive loss claims by community

Incident Type	Incident Begin Date	Incident End Date	Declared County/Area
Severe Storm(s)	6/5/2008	7/25/2008	Kenosha (County)
Severe Storm(s)	6/5/2008	7/25/2008	Milwaukee (County)
Severe Storm(s)	6/5/2008	7/25/2008	Racine (County)
Severe Storm(s)	7/20/2010	7/24/2010	Milwaukee (County)

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!

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
  - Lee Traeger @ Lee.Traeger@fema.dhs.gov
- STARR
  - Laura Keating @ laura.keating@starr-team.com
  - Jaspreet Randhawa @ Jaspreet.Randhawa@starr-team.com

Questions?

Community CEO/FPA List - Milwaukee County, Wisconsin - July 2012

County/City/Township	First/ Last Name	Title	Address	Address	ZIP	Phone	Email
Bayside, Village	Samuel Dickman	President, Board of Trustees	Village Hall	9075 North Regent Road, Bayside, WI	53217	414.351.8811 x111	sdickman@bayside-wi.gov
	Alex Herderson	Director of Community and Utility Services (FPA)	Village Hall	9075 North Regent Road, Bayside, WI	53217	414.351.8811 x105	ahenderson@bayside-wi.gov
Cudahy, City	Tony Day	Mayor	City Hall	5050 South Lake Drive, Cudahy, WI	53110	414.769.2222	dayt@ci.cudahy.wi.us
	Mary Jo Lange	Director of Public Works and City Engineer (FPA)	City Hall	5050 South Lake Drive, Cudahy, WI	53110	414.769.2253	langemj@ci.cudahy.wi.us
Fox Point, Village	Michael A. West	Village President	Village Hall	7200 North Santa Monica Boulevard, Fox	53217	414.351.8900	srobertson@vil.fox-point.wi.us
	Scott Brandmeier	Director of Public Works and Village Engineer	Village Hall	7200 North Santa Monica Boulevard, Fox	53217	414.351.8900	sbrandmeier@vil.fox-point.wi.us
Glendale, City	Jerome A. Tepper	Mayor	City Hall	5909 North Milwaukee River Parkway, Glendale, WI	53209	414.228.1705	j.tepper@glendale-wi.org
	Collin M. Johnson	Director of Inspection Services (I	City Hall	5909 North Milwaukee River Parkway, Glendale, WI	53209	414.228.1711	c.johnson@glendale-wi.org
Milwaukee, City	Tom Barrett	Mayor	City Hall	200 East Wells Street, Room 201, Milwau	53202	414.286.2200	mayor@milwaukee.gov
	Christopher Rute	Development Center Manager (FPA)	City Hall	200 East Wells Street, Room 201, Milwau	53202	414.286.5714	crute@milwaukee.gov
	Tim Thur	Environmental Engineering, Dep	Zeidler Municipal Buildi	841 N Broadway Milwaukee, WI	53202	(414) 286-2463	Timothy.Thur@milwaukee.gov
Oak Creek, City	Allan Foeckler	Interim Mayor	City Hall	Post Office Box 27/8640 South Howell Avenue, Oak Creek, WI	53154	414.768.6500	
	Pete Wagner	Zoning Administrator (FPA)	City Hall	Post Office Box 27/8640 South Howell Avenue, Oak Creek, WI	53154	414.768.6529	pwagner@oakcreekwi.org
	Phil Beiermeister	Environmental Engineer	City Hall	Post Office Box 27/8640 South Howell Avenue, Oak Creek, WI	53154	(414) 768-5855	pbeiermeister@oakcreekwi.org
St. Francis, City	Susan Bostedt	Council President	City Hall	4238 South Nicholson Avenue, St. Francis, WI	53235	414.481.2300	sbostedt@stfranwi.org
	Frank E. Lockwood	Emergency Government Director and Fire Chief (FPA)	City Hall	4238 South Nicholson Avenue, St. Francis, WI	53235	414.483.4424	flockwood@stfranwi.org
Shorewood, Village	Guy Johnson	Village President	Village Hall	3920 North Murray Avenue, Shorewood, W	53211	414.847.2700	presidentjohnson@villageofshorewood.org
	M. Chris Swartz	Village Manager (FPA)	Village Hall	3930 North Murray Avenue, Shorewood, W	53211	414.847.2700	cswartz@villageofshorewood.org

Community CEO/FPA List - Milwaukee County, Wisconsin - July 2012

County/City/Township	First/ Last Name	Title	Address	Address	ZIP	Phone	Email
South Milwaukee, City	Thomas Zepecki	Mayor	City Hall	2424 15th Avenue, South Milwaukee, WI	53172	414.762.2222	zepecki@ci.south-milwaukee.wi.us
	Kyle Vandercar	City Engineer (FPA)	City Hall	2424 15th Avenue, South Milwaukee, WI	53172	414.768.8053	vandercar@smwi.org
Whitefish Bay, Village	Julie Siegel	Village President	City Hall	5300 North Marlborough Drive, Whitefish I	53217-5399	414.962.6690	presidentsiegel@wfbvillage.org
	Dan Naze	Village Engineer (FPA)	City Hall	5300 North Marlborough Drive, Whitefish I	53217-5399	414.962.6690	d.naze@wfbvillage.org
Milwaukee, County	Chris Abele	County Executive	Milwaukee County Cou	901 North 9th Street, Room 306, Milwauke	53233	(414) 278-4211	countyexec@milwcnty.com
	Carl Stenbol	Administrator of the Emergency Management Bureau		9225 South 68th Street, Franklin, WI	53132		carl.stenbol@milwcnty.com
	William Shaw	MCAMLIS Project Manager	Milwaukee County City	2711 W. Wells Street Milwaukee, WI	53208	(414) 278-2176	bill.shaw@milwcnty.com

Community CEO/FPA List - Kenosha County, Wisconsin - July 2012

Town	First/ Last Name	Title	Address	Address	ZIP	Phone	Email
Kenosha County	Jim Kreuser	County Executive	Administrative Building	WI	53140-3738	262.653.2600	county.executive@kenoshacounty.org
	Daniel Treloar	Conservation Planner (FPA)	Kenosha County Department of Planning and Development	19600 75th Street/PO Box 520, Bristol, WI	53104-0520	262.857.1895	dan.treloar@kenoshacounty.org
	George E. Melcher	Director of Planning and Development	Kenosha County Center	19600 75th Street, P.O. Box 520. Bristol, WI	53104-0520	(262) 857-1895	
Kenosha, City of	Keith G. Bosman	Mayor	City Hall	625 52nd Street, Room 300, Kenosha, WI	53140	262.653.4000	mayor@kenosha.org
	Rich Schroeder	Assistant City Planner (FPA)	City Hall	625 52nd Street, Room 308, Kenosha, WI	53140	262.653.4034	rschroeder@kenosha.org
Pleasant Prairie, Village of	John Steinbrink	Village President	Village Hall	9915 39th Avenue, Pleasant Prairie, WI	53158	262.925.6721	JohnPSteinbrink@plprairie.com
	Michael R. Spence, P.E., LEED AP	Village Engineer (FPA)	Village Hall	9915 39th Avenue, Pleasant Prairie, WI	53158	262.948.8931	mspence@plprairiewi.com

Community CEO/FPA List - Racine County, Wisconsin - July 2012

County/City/Town/Village	First /Last Name	Title	Address	Town, State and Zip Code	Phone Number	Email
Racine County	James A. Ladwig	County Executive	Racine County Courthouse	730 Wisconsin Avenue, Racine, Wisconsin 53403	262.636.3371	james.ladwig@goracine.org
	Julie A. Anderson	Director of Public Works and Services (FPA)	14200 Washington Avenue	Racine, Wisconsin 53403	262.886.8470	julie.anderson@goracine.org
Village of Caledonia	Ron Coutts	President	Village Hall, 6922 Nicholson Road	Caledonia, Wisconsin 53108	262.835.4451	rcoutts@wi.rr.com rcoutts@caledoniawi.com
	Michael Hayek, P.E.	Village Engineer (FPA)	Village Hall, 6922 Nicholson Road	Caledonia, Wisconsin 53108	262.835.6423	mhayek@caledoniawi.com
Village of Mount Pleasant	Carolyn A. Milkie	President, Village Board of Trustees	Village Hall, 8811 Campus Drive	Mount Pleasant, Wisconsin 53406	262.664.7810	cmilkie@mtpleasantwi.gov
	William Sasse	Director of Engineering (FPA)	Village Hall, 8811 Campus Drive	Mount Pleasant, Wisconsin 53406	262.664.7833	bsasse@mtpleasantwi.gov
Village of North Bay	Kristin Wright	President	Village Hall, 3615 Hennepin Place	North Bay, Wisconsin 53402	262.681.3062 (home number)	holmberg@uwp.edu
	Lynne Fiser	Trustee #1, Public Works (FPA)	Village Hall, 3615 Hennepin Place	North Bay, Wisconsin 53402	262.681.6498	harrysfolk@aol.com
City of Racine	John Dickert	Mayor	City Hall, 730 Washington Avenue, Room 201	Racine, Wisconsin 53403	262.636.9111	mayor@cityofracine.org
	Kenneth D. Plaski	Chief Building Inspector and Zoning Administrator	City Hall, 730 Washington Avenue	Racine, Wisconsin 53403		
	Thomas Friedel	City Administrator	City Hall, 730 Washington Avenue	Racine, Wisconsin 53403		
	Mark H. Yehlen	Commissioner of Public Works and City Engineer (FPA)	City Hall, 730 Washington Avenue	Racine, Wisconsin 53403	262.636.9121	mark.yehlen@cityofracine.org
	Brian O'Connell	Director of City Development	City Hall, 730 Washington Avenue	Racine, Wisconsin 53403	262-636-9478	brian.oconnell@cityofracine.org
Village of Wind Point	Bill Bensman	Village President	Clerks Office, 215 East Four Mile Road	Wind Point, Wisconsin 53402	262.639.3527	info@windpointwi.us
	Barbara Grant	Village Administrator (FPA)	Clerks Office, 215 East Four Mile Road	Wind Point, Wisconsin 53402	262.639.3524	administrator@windpointwi.us

U.S. Department of Homeland Security
536 S. Clark St. 6th Floor
Chicago, IL 60605
FEMA

July 12, 2012

The Honorable John Dickert
Mayor, City of Racine
City Hall
730 Washington Avenue, Room 201
Racine, Wisconsin 53403

Re: Invitation to Attend Community Meetings Regarding Lake Michigan Coastal Flood Risk

Dear Mayor Dickert:

The Federal Emergency Management Agency (FEMA) is conducting a comprehensive study of flood hazards for Lake Michigan and the rest of 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:	Thursday, August 16, 2012; 2:00 - 4:00 pm CT
Location:	Milwaukee Metropolitan Sewerage District (MMSD), Commission Room
Address:	260 West Seeboth Street Milwaukee, Wisconsin 53204

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 3, 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 24, 2012; 2:00 - 3:00 pm CT
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 3, 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

Christine Stack
Division Director
Mitigation Division, FEMA Region V

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

cc: Kenneth Plaski, Chief Building Inspector, City of Racine
Brian O'Connell, Director of City Development, City of Racine
Gary Heinrichs, Wisconsin Department of Natural Resources
Katie McMahan, Wisconsin Department of Natural Resources
Meg Galloway, Wisconsin Department of Natural Resources

U.S. Department of Homeland Security
536 S. Clark St. 6th Floor
Chicago, IL 60605

FEMA

July 12, 2012

Mr. James Ladwig
County Executive, Racine County
Racine County Courthouse
730 Washington Avenue
Racine, Wisconsin 53403

Re: Invitation to Attend Community Meetings Regarding Lake Michigan Coastal Flood Risk

Dear Mr. Ladwig:

The Federal Emergency Management Agency (FEMA) is conducting a comprehensive study of flood hazards for Lake Michigan and the rest of 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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Banjavcic at (312) 780-7755 or email to GreatLakesFloodStudy@starr-team.com no later than **August 3, 2012.** Please reference the Discovery Meeting date and time in your RSVP.

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

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Sincerely,

Christine Stack

Christine Stack
Division Director
Mitigation Division, FEMA Region V

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

cc: Julie Anderson, Director of Public Works and Services, Racine County
Gary Heinrichs, Wisconsin Department of Natural Resources
Katie McMahan, Wisconsin Department of Natural Resources
Meg Galloway, Wisconsin Department of Natural Resources

U.S. Department of Homeland Security
536 S. Clark St. 6th Floor
Chicago, IL 60605
FEMA

July 12, 2012

Mr. Ron Coutts
President, Village of Caledonia
Village Hall
6922 Nicholson Road
Caledonia, Wisconsin 53108

Re: Invitation to Attend Community Meetings Regarding Lake Michigan Coastal Flood Risk

Dear Mr. Coutts:

The Federal Emergency Management Agency (FEMA) is conducting a comprehensive study of flood hazards for Lake Michigan and the rest of 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:	260 West Seeboth Street Milwaukee, Wisconsin 53204

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Banjavcic at (312) 780-7755 or email to GreatLakesFloodStudy@starr-team.com no later than **August 3, 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 24, 2012; 2:00 - 3:00 pm CT
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 3, 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

Christine Stack
Division Director
Mitigation Division, FEMA Region V

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

cc: Michael Hayek, Village Engineer, Village of Caledonia
Gary Heinrichs, Wisconsin Department of Natural Resources
Katie McMahan, Wisconsin Department of Natural Resources
Meg Galloway, Wisconsin Department of Natural Resources

U.S. Department of Homeland Security
536 S. Clark St. 6th Floor
Chicago, IL 60605
FEMA

July 12, 2012

Ms. Carolyn Milkie
President, Village Board of Trustees, Village of Mount Pleasant
Village Hall
8811 Campus Drive
Mount Pleasant, Wisconsin 53406

Re: Invitation to Attend Community Meetings Regarding Lake Michigan Coastal Flood Risk

Dear Ms. Milkie:

The Federal Emergency Management Agency (FEMA) is conducting a comprehensive study of flood hazards for Lake Michigan and the rest of 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:	Thursday, August 16, 2012; 2:00 - 4:00 pm CT
Location:	Milwaukee Metropolitan Sewerage District (MMSD), Commission Room
Address:	260 West Seeboth Street Milwaukee, Wisconsin 53204

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Sincerely,

Christine Stack

Christine Stack
Division Director
Mitigation Division, FEMA Region V

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

cc: William Sasse, Director of Engineering, Village of Mount Pleasant
Gary Heinrichs, Wisconsin Department of Natural Resources
Katie McMahan, Wisconsin Department of Natural Resources
Meg Galloway, Wisconsin Department of Natural Resources

U.S. Department of Homeland Security
536 S. Clark St. 6th Floor
Chicago, IL 60605
FEMA

July 12, 2012

Ms. Kristin Wright
President, Village of North Bay
Village Hall
3615 Hennepin Place
North Bay, Wisconsin 53402

Re: Invitation to Attend Community Meetings Regarding Lake Michigan Coastal Flood Risk

Dear Ms. Wright:

The Federal Emergency Management Agency (FEMA) is conducting a comprehensive study of flood hazards for Lake Michigan and the rest of 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:	260 West Seeboth Street Milwaukee, Wisconsin 53204

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Sincerely,

Christine Stack

Christine Stack
Division Director
Mitigation Division, FEMA Region V

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

cc: Lynne Fiser, Trustee #1, Public Works, Village of North Bay
Gary Heinrichs, Wisconsin Department of Natural Resources
Katie McMahan, Wisconsin Department of Natural Resources
Meg Galloway, Wisconsin Department of Natural Resources

U.S. Department of Homeland Security
536 S. Clark St. 6th Floor
Chicago, IL 60605
FEMA

July 12, 2012

Mr. Bill Bensman
President, Village of Wind Point
Clerks Office
215 East Four Mile Road
Wind Point, Wisconsin 53402

Re: Invitation to Attend Community Meetings Regarding Lake Michigan Coastal Flood Risk

Dear Mr. Bensman:

The Federal Emergency Management Agency (FEMA) is conducting a comprehensive study of flood hazards for Lake Michigan and the rest of 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:	Thursday, August 16, 2012; 2:00 - 4:00 pm CT
Location:	Milwaukee Metropolitan Sewerage District (MMSD), Commission Room
Address:	260 West Seeboth Street Milwaukee, Wisconsin 53204

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Sincerely,

Christine Stack

Christine Stack
Division Director
Mitigation Division, FEMA Region V

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

cc: Barbara Grant, Village Administrator, Village of Wind Point
Gary Heinrichs, Wisconsin Department of Natural Resources
Katie McMahan, Wisconsin Department of Natural Resources
Meg Galloway, Wisconsin Department of Natural Resources

U.S. Department of Homeland Security
536 S. Clark St. 6th Floor
Chicago, IL 60605

FEMA

July 12, 2012

The Honorable Tony Day
Mayor, City of Cudahy
5050 South Lake Drive
Cudahy, Wisconsin 53110

Re: Invitation to Attend Community Meetings Regarding Lake Michigan Coastal Flood Risk

Dear Mayor Day:

The Federal Emergency Management Agency (FEMA) is conducting a comprehensive study of flood hazards for Lake Michigan and the rest of 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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Location:	Milwaukee Metropolitan Sewerage District (MMSD), Commission Room
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Sincerely,

Christine Stack

Christine Stack
Division Director
Mitigation Division, FEMA Region V

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

cc: Mary Lange, Director of Public Works, City of Cudahy
Gary Heinrichs, Wisconsin Department of Natural Resources
Katie McMahan, Wisconsin Department of Natural Resources
Meg Galloway, Wisconsin Department of Natural Resources

U.S. Department of Homeland Security
536 S. Clark St. 6th Floor
Chicago, IL 60605
FEMA

July 12, 2012

The Honorable Jerome Tepper
Mayor, City of Glendale
City Hall
5909 North Milwaukee River Parkway
Glendale, Wisconsin 53209

Re: Invitation to Attend Community Meetings Regarding Lake Michigan Coastal Flood Risk

Dear Mayor Tepper:

The Federal Emergency Management Agency (FEMA) is conducting a comprehensive study of flood hazards for Lake Michigan and the rest of 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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Sincerely,

Christine Stack

Christine Stack
Division Director
Mitigation Division, FEMA Region V

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

cc: Collin Johnson, Director of Inspection, City of Glendale
Gary Heinrichs, Wisconsin Department of Natural Resources
Katie McMahan, Wisconsin Department of Natural Resources
Meg Galloway, Wisconsin Department of Natural Resources

U.S. Department of Homeland Security
536 S. Clark St. 6th Floor
Chicago, IL 60605
FEMA

July 12, 2012

The Honorable Tom Barrett
Mayor, City of Milwaukee
City Hall
200 E. Wells Street, Room 201
Milwaukee, Wisconsin 53202

Re: Invitation to Attend Community Meetings Regarding Lake Michigan Coastal Flood Risk

Dear Mayor Barrett:

The Federal Emergency Management Agency (FEMA) is conducting a comprehensive study of flood hazards for Lake Michigan and the rest of 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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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

Christine Stack
Division Director
Mitigation Division, FEMA Region V

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

cc: Christopher Rute, Development Center Manager, City of Milwaukee
Tim Thur, Environmental Engineering, Department of Public Works, City of Milwaukee
Gary Heinrichs, Wisconsin Department of Natural Resources
Katie McMahan, Wisconsin Department of Natural Resources
Meg Galloway, Wisconsin Department of Natural Resources

U.S. Department of Homeland Security
536 S. Clark St. 6th Floor
Chicago, IL 60605

FEMA

July 12, 2012

The Honorable Allan Foeckler
Mayor, City of Oak Creek
8640 South Howell Avenue, Post Office Box 27
Oak Creek, Wisconsin 53154

Re: Invitation to Attend Community Meetings Regarding Lake Michigan Coastal Flood Risk

Dear Mayor Foeckler:

The Federal Emergency Management Agency (FEMA) is conducting a comprehensive study of flood hazards for Lake Michigan and the rest of 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:	Thursday, August 16, 2012; 2:00 - 4:00 pm CT
Location:	Milwaukee Metropolitan Sewerage District (MMSD), Commission Room
Address:	260 West Seeboth Street Milwaukee, Wisconsin 53204

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 3, 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 24, 2012; 2:00 - 3:00 pm CT
Link to WebEx:	http://e-meetings.verizonbusiness.com/nc/join.php
Meeting Number:	445288484
Call in number:	1-866-398-2885
Participant Code:	197462

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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

Christine Stack
Division Director
Mitigation Division, FEMA Region V

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

cc: Pete Wagner, Zoning Administrator, City of Oak Creek
Phil Beiermeister, Environmental Engineer, City of Oak Creek
Gary Heinrichs, Wisconsin Department of Natural Resources
Katie McMahan, Wisconsin Department of Natural Resources
Meg Galloway, Wisconsin Department of Natural Resources

U.S. Department of Homeland Security
536 S. Clark St. 6th Floor
Chicago, IL 60605
FEMA

July 12, 2012

The Honorable Thomas Zepecki
Mayor, City of South Milwaukee
2424 15th Avenue
South Milwaukee, Wisconsin 53172

Re: Invitation to Attend Community Meetings Regarding Lake Michigan Coastal Flood Risk

Dear Mayor Zepecki:

The Federal Emergency Management Agency (FEMA) is conducting a comprehensive study of flood hazards for Lake Michigan and the rest of 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:	Thursday, August 16, 2012; 2:00 - 4:00 pm CT
Location:	Milwaukee Metropolitan Sewerage District (MMSD), Commission Room
Address:	260 West Seeboth Street Milwaukee, Wisconsin 53204

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Sincerely,

Christine Stack

Christine Stack
Division Director
Mitigation Division, FEMA Region V

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

cc: Kyle Vandercar, City Engineer, City of South Milwaukee
Gary Heinrichs, Wisconsin Department of Natural Resources
Katie McMahan, Wisconsin Department of Natural Resources
Meg Galloway, Wisconsin Department of Natural Resources

U.S. Department of Homeland Security
536 S. Clark St. 6th Floor
Chicago, IL 60605
FEMA

July 12, 2012

Ms. Susan Bostedt
Council President, City of St. Francis
4238 South Nicholson Avenue
St. Francis, Wisconsin 53235

Re: Invitation to Attend Community Meetings Regarding Lake Michigan Coastal Flood Risk

Dear Ms. Bostedt:

The Federal Emergency Management Agency (FEMA) is conducting a comprehensive study of flood hazards for Lake Michigan and the rest of 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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Date/Time:	Thursday, August 16, 2012; 2:00 - 4:00 pm CT
Location:	Milwaukee Metropolitan Sewerage District (MMSD), Commission Room
Address:	260 West Seeboth Street Milwaukee, Wisconsin 53204

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Sincerely,

Christine Stack

Christine Stack
Division Director
Mitigation Division, FEMA Region V

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

cc: Frank Lockwood, Emergency Government Director, City of St. Francis
Gary Heinrichs, Wisconsin Department of Natural Resources
Katie McMahan, Wisconsin Department of Natural Resources
Meg Galloway, Wisconsin Department of Natural Resources

U.S. Department of Homeland Security
536 S. Clark St. 6th Floor
Chicago, IL 60605

FEMA

July 12, 2012

Mr. Chris Abele
County Executive, Milwaukee County
901 North 9th Street, Room 306
Milwaukee, Wisconsin 53233

Re: Invitation to Attend Community Meetings Regarding Lake Michigan Coastal Flood Risk

Dear Mr. Abele:

The Federal Emergency Management Agency (FEMA) is conducting a comprehensive study of flood hazards for Lake Michigan and the rest of 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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Sincerely,

Christine Stack

Christine Stack
Division Director
Mitigation Division, FEMA Region V

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

cc: Carl Stenbol, Administrator, Emergency Management Bureau, Milwaukee County
William Shaw, MCAMLIS Project Manager, Milwaukee County
Gary Heinrichs, Wisconsin Department of Natural Resources
Katie McMahan, Wisconsin Department of Natural Resources
Meg Galloway, Wisconsin Department of Natural Resources

U.S. Department of Homeland Security
536 S. Clark St. 6th Floor
Chicago, IL 60605

FEMA

July 12, 2012

Mr. Samuel Dickmann
Board of Trustees President, Village of Bayside
9075 North Regent Road
Bayside, Wisconsin 53217

Re: Invitation to Attend Community Meetings Regarding Lake Michigan Coastal Flood Risk

Dear Mr. Dickmann:

The Federal Emergency Management Agency (FEMA) is conducting a comprehensive study of flood hazards for Lake Michigan and the rest of 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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Sincerely,

Christine Stack

Christine Stack
Division Director
Mitigation Division, FEMA Region V

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

cc: Alex Henderson, Director, Community and Utility Services, Village of Bayside
Gary Heinrichs, Wisconsin Department of Natural Resources
Katie McMahan, Wisconsin Department of Natural Resources
Meg Galloway, Wisconsin Department of Natural Resources

U.S. Department of Homeland Security
536 S. Clark St. 6th Floor
Chicago, IL 60605
FEMA

July 12, 2012

Mr. Michael West
President, Village of Fox Point
7200 North Santa Monica Boulevard
Fox Point, Wisconsin 53217

Re: Invitation to Attend Community Meetings Regarding Lake Michigan Coastal Flood Risk

Dear Mr. West:

The Federal Emergency Management Agency (FEMA) is conducting a comprehensive study of flood hazards for Lake Michigan and the rest of 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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Sincerely,

Christine Stack

Christine Stack
Division Director
Mitigation Division, FEMA Region V

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

cc: Scott Brandmeier, Director of Public Works, Village of Fox Point
Gary Heinrichs, Wisconsin Department of Natural Resources
Katie McMahan, Wisconsin Department of Natural Resources
Meg Galloway, Wisconsin Department of Natural Resources

U.S. Department of Homeland Security
536 S. Clark St. 6th Floor
Chicago, IL 60605

FEMA

July 12, 2012

Mr. Guy Johnson
President, Village of Shorewood
3920 North Murray Avenue
Shorewood, Wisconsin 53211

Re: Invitation to Attend Community Meetings Regarding Lake Michigan Coastal Flood Risk

Dear Mr. Johnson:

The Federal Emergency Management Agency (FEMA) is conducting a comprehensive study of flood hazards for Lake Michigan and the rest of 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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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:	Thursday, August 16, 2012; 2:00 - 4:00 pm CT
Location:	Milwaukee Metropolitan Sewerage District (MMSD), Commission Room
Address:	260 West Seeboth Street Milwaukee, Wisconsin 53204

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 3, 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 24, 2012; 2:00 - 3:00 pm CT
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 3, 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

Christine Stack
Division Director
Mitigation Division, FEMA Region V

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

cc: Chris M. Swartz, Manager, Village of Shorewood
Gary Heinrichs, Wisconsin Department of Natural Resources
Katie McMahan, Wisconsin Department of Natural Resources
Meg Galloway, Wisconsin Department of Natural Resources

U.S. Department of Homeland Security
536 S. Clark St. 6th Floor
Chicago, IL 60605
FEMA

July 12, 2012

Ms. Julie Siegel
President, Village of Whitefish Bay
5300 North Marlborough Drive
Whitefish Bay, Wisconsin 53217

Re: Invitation to Attend Community Meetings Regarding Lake Michigan Coastal Flood Risk

Dear Ms. Siegel:

The Federal Emergency Management Agency (FEMA) is conducting a comprehensive study of flood hazards for Lake Michigan and the rest of 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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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.

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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.

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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

Christine Stack
Division Director
Mitigation Division, FEMA Region V

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

cc: Dan Naze, Village Engineer, Village of Whitefish Bay
Gary Heinrichs, Wisconsin Department of Natural Resources
Katie McMahan, Wisconsin Department of Natural Resources
Meg Galloway, Wisconsin Department of Natural Resources

Keating, Laura

From: Banjavcic, Scott
Sent: Tuesday, August 07, 2012 9:13 AM
To: Keating, Laura
Subject: FW: Test Message - Text Format:Invitation to Community Meetings Re: Lake Michigan Coastal Flood Risk

-----Original Message-----
From: Great Lakes Coastal Flood Study [mailto:Great_Lakes_Coastal_Flood_Study@mail.vresp.com]
Sent: Friday, July 27, 2012 11:51 AM
To: Banjavcic, Scott
Subject: Test Message - Text Format:Invitation to Community Meetings Re: Lake Michigan Coastal Flood Risk

Dear State of Wisconsin Lake Michigan Coastal Flood Study
Stakeholders:

The Federal Emergency Management Agency (FEMA) is conducting a comprehensive study of flood hazards for Lake Michigan and the rest of 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://cts.vresp.com/c/?OPP/82c700126e/TEST/325458b8b1 .

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://cts.vresp.com/c/?OPP/82c700126e/TEST/0cb914bbf5 .

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 Wisconsin for Lake Michigan. Although each Discovery Meeting will give the same overall message, each meeting will be catered to the coastal communities within the counties listed
below:

Marinette County and Oconto County (Discovery Meeting) Wednesday, August 15, 2012 8:30 - 10:30 am CT Oconto County Courthouse Conference Room 1003 & 1004
301 Washington Street
Oconto, WI 54153

Kewaunee County, Door County and Brown County (Discovery Meeting) Wednesday, August 15, 2012 2:00 - 4:00 pm CT Neville Public Museum 210 Museum Place Green Bay, WI 54303

Sheboygan County, Manitowoc County and Ozaukee County (Discovery Meeting)
Thursday, August 16, 2012
8:30 - 10:30 am CT
Lakeshore Technical College
Wells Fargo Conference Room
1290 North Avenue
Cleveland, WI 53015

Milwaukee County, Racine County and Kenosha County (Discovery Meeting)
Thursday, August 16, 2012
2:00 - 4:00 pm CT
Milwaukee Metropolitan Sewerage District (MMSD), Commission Room 260 W. Seeboth Street Milwaukee, WI 53204

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 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 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://cts.vresp.com/c/?OPP/82c700126e/TEST/aa53784db9 .

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://cts.vresp.com/c/?OPP/82c700126e/TEST/644d377ebd 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.

For additional information on the Great Lakes Coastal Flood Study, please visit:
http://cts.vresp.com/c/?OPP/82c700126e/TEST/c4c492e324 .

- http://cts.vresp.com/c/?OPP/82c700126e/TEST/67378908c0
Follow GreatLakesCoast on Twitter | -
http://cts.vresp.com/c/?OPP/82c700126e/TEST/f94889858b
Like GreatLakesCoast on Facebook

Click to view this email in a browser
http://hosted.verticalresponse.com/290205/82c700126e/TEST/TEST/

If you want to "Unsubscribe" from this list and no longer receive emails regarding the Great Lakes Coastal Flood Study, please click on the following link:

http://cts.vresp.com/u?82c700126e/TEST/TEST

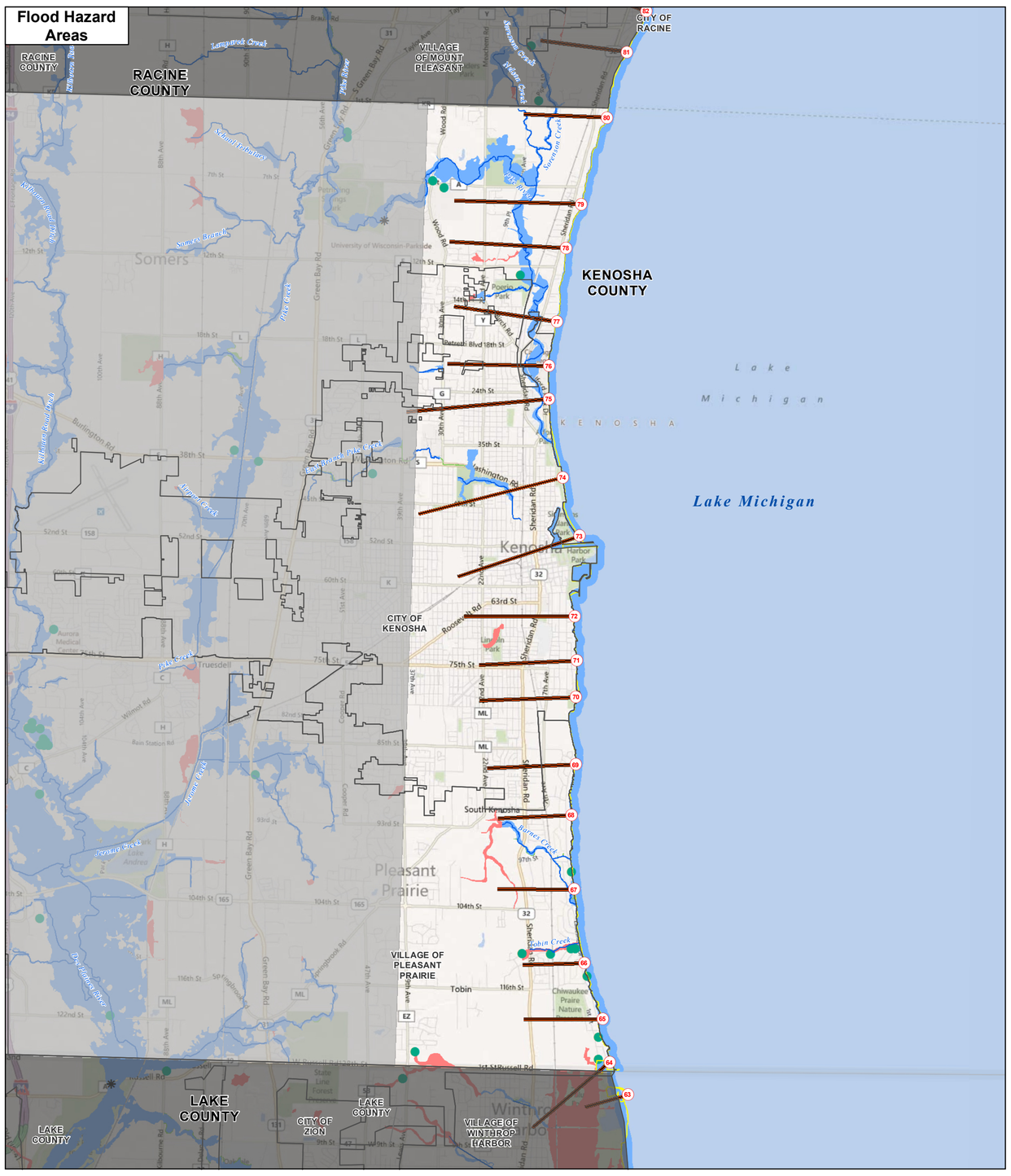
This message was sent by Great Lakes Coastal Flood Study using VerticalResponse

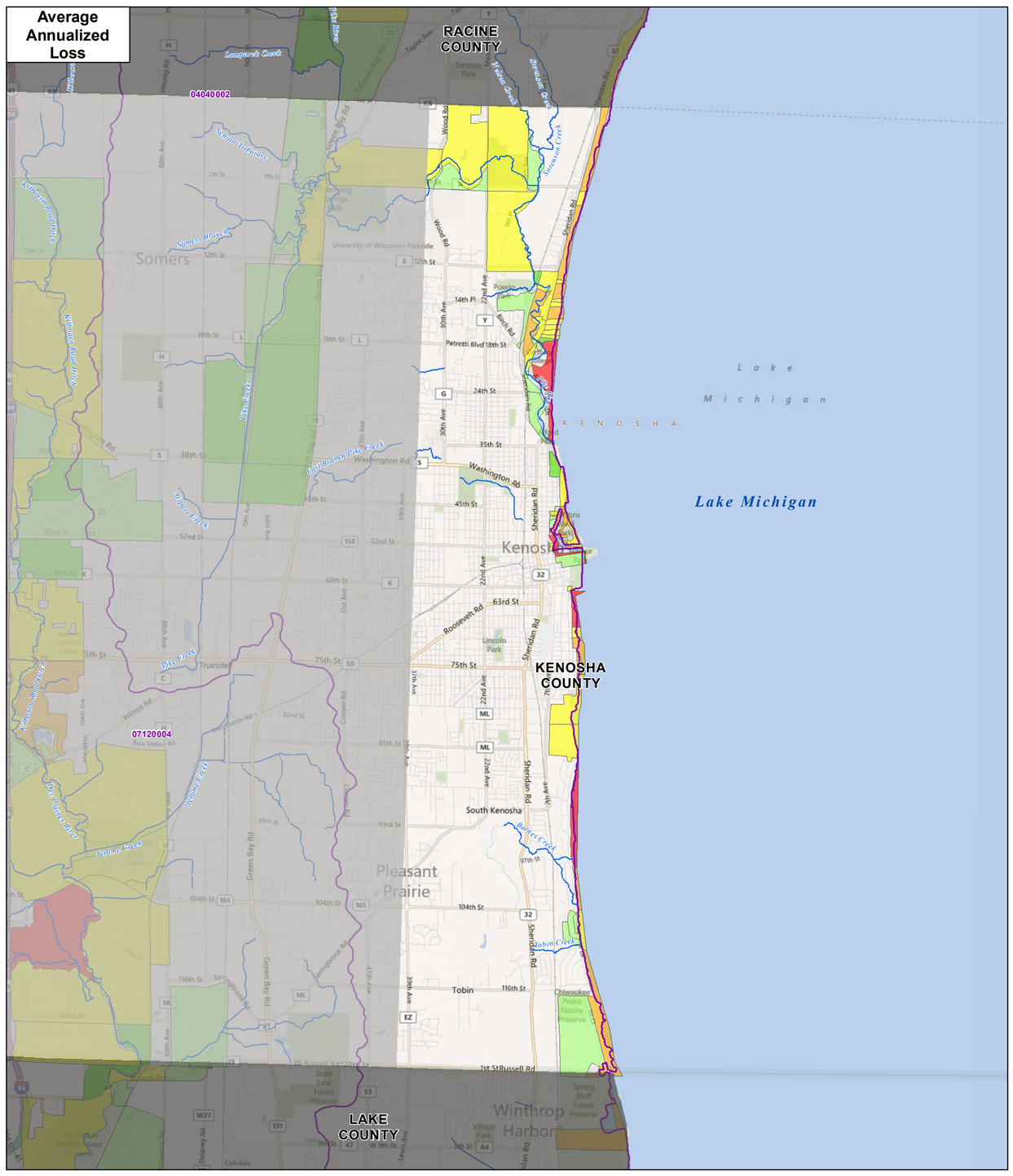
Great Lakes Coastal Flood Study
2809 Fish Hatchery Road, Suite 204
Madison, WI 53713
US

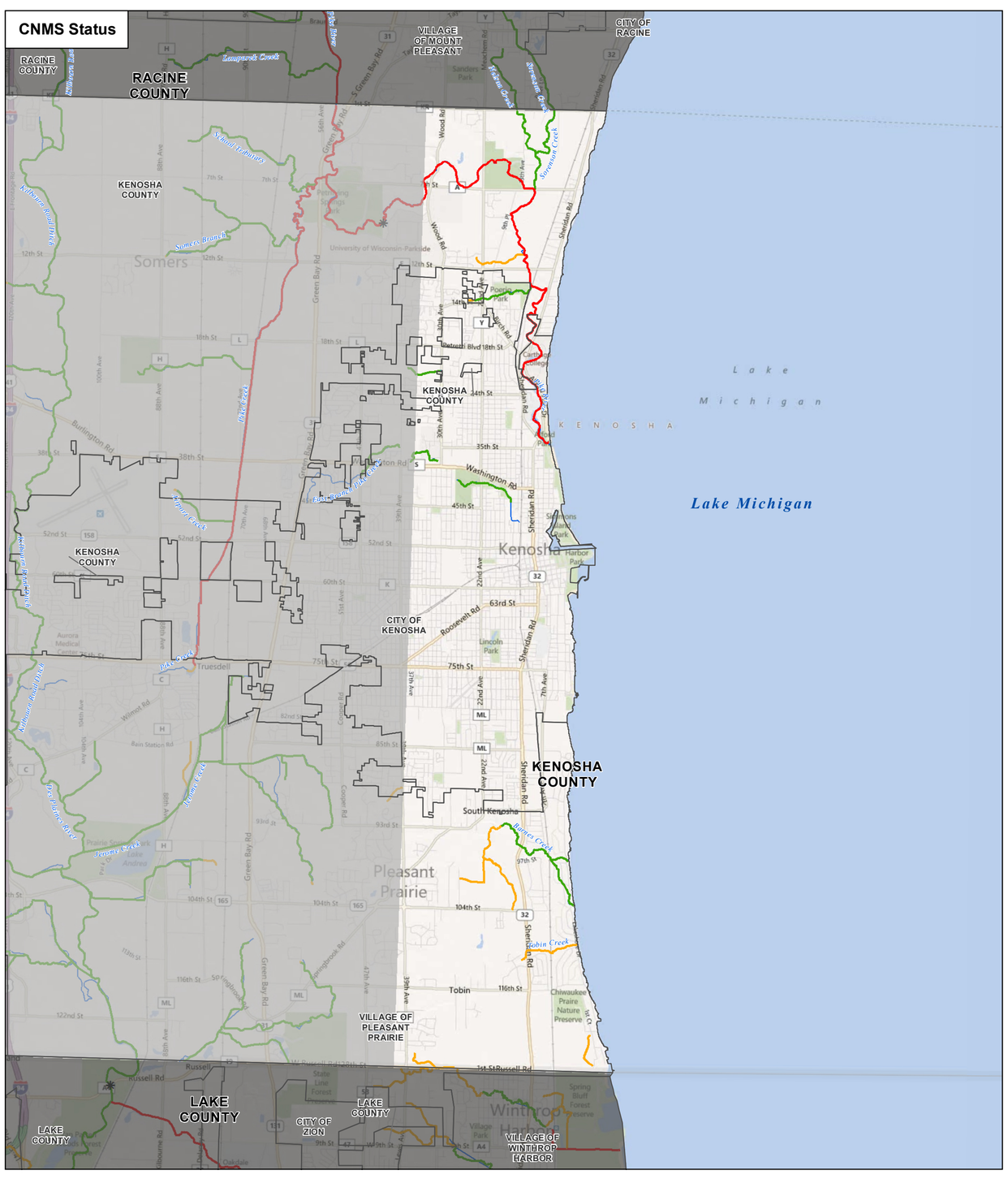
ATTACHMENT C

KENOSHA, MILWAUKEE, AND RACINE COUNTY

DRAFT DISCOVERY MAPS







Declared Disasters

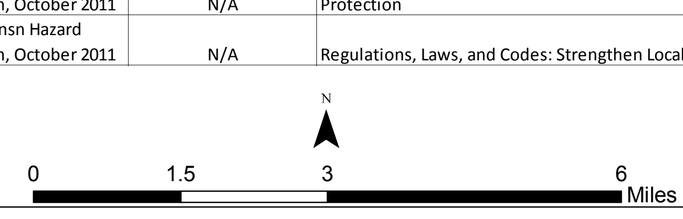
Lake	State	Declared County/Area	Declaration Date	Disaster Type	Incident Type	Description
Lake Michigan	WI	Kenosha (County)	4/27/1973	DR	Flood	SEVERE STORMS & FLOODING
Lake Michigan	WI	Kenosha (County)	10/7/1986	DR	Flood	SEVERE STORMS & FLOODING
Lake Michigan	WI	Kenosha (County)	7/2/1993	DR	Severe Storm(s)	SEVERE STORMS, TORNADOES & FLOODING
Lake Michigan	WI	Kenosha (County)	6/24/2000	DR	Severe Storm(s)	SEVERE STORMS, TORNADOES, AND FLOODING
Lake Michigan	WI	Kenosha (County)	6/18/2004	DR	Severe Storm(s)	SEVERE STORMS AND FLOODING
Lake Michigan	WI	Kenosha (County)	8/26/2007	DR	Severe Storm(s)	SEVERE STORMS AND FLOODING
Lake Michigan	WI	Kenosha (County)	6/14/2008	DR	Severe Storm(s)	SEVERE STORMS, TORNADOES, AND FLOODING
Lake Michigan	WI	Kenosha (County)	4/5/2011	DR	Snow	SEVERE WINTER STORM AND SNOWSTORM
Lake Michigan	WI	Kenosha (County)	1/19/1979	EM	Snow	BLIZZARDS & SNOWSTORMS
Lake Michigan	WI	Kenosha (County)	1/24/2001	EM	Snow	SNOW
Lake Michigan	WI	Kenosha (County)	9/13/2005	EM	Hurricane	HURRICANE KATRINA EVACUATION
Lake Michigan	WI	Kenosha (County)	3/19/2008	EM	Snow	RECORD SNOW AND NEAR RECORD SNOW

Summary of Flood Insurance Policies and Claims

Lake	State	County	Community	CID	No. Policies	Total Premium	Total Coverage	Number of claims since 1978	Dollar ($) paid for claims since 1978
Lake Michigan	WI	Kenosha	Kenosha County	550523	141	$125,018	$26,787,100	188	$1,623,095
Lake Michigan	WI	Kenosha	Kenosha, City of	550209	27	$14,202	$6,556,700	23	$96,614
Lake Michigan	WI	Kenosha	Pleasant Prairie, Village of	550613	39	$22,125	$9,215,000	5	$24,620

Mitigation Action

Name of Plan	Plan Expiration Date	Identified Hazard Mitigation Action
State of Wisconsn Hazard Mitigation Plan, October 2011	N/A	Communication: Public Education on Hazards
State of Wisconsn Hazard Mitigation Plan, October 2011	N/A	Purchase houses in floodplain: relocating of buildings, flood-proofing structures, elevation of structures
State of Wisconsn Hazard Mitigation Plan, October 2011	N/A	Structural Mitigation: Sewer Upgrades/Improve Existing Stormwater Management Systems
State of Wisconsn Hazard Mitigation Plan, October 2011	N/A	Structural Mitigation: Flood Walls and Berms
State of Wisconsn Hazard Mitigation Plan, October 2011	N/A	Structural Mitigation: Culverts
State of Wisconsn Hazard Mitigation Plan, October 2011	N/A	Structural Mitigation: Enhance slope stability.
State of Wisconsn Hazard Mitigation Plan, October 2011	N/A	Structural Mitigation: Retrofitting structures
State of Wisconsn Hazard Mitigation Plan, October 2011	N/A	Non-Structural Mitigation: River/ Stream/Lake Maintenance
State of Wisconsn Hazard Mitigation Plan, October 2011	N/A	Non-Structural Mitigation: Wetland Restoration
State of Wisconsn Hazard Mitigation Plan, October 2011	N/A	Planning: Locate Vulnerable Facilities
State of Wisconsn Hazard Mitigation Plan, October 2011	N/A	Planning: Update Databases and Maps
State of Wisconsn Hazard Mitigation Plan, October 2011	N/A	Regulations, Laws, and Codes: Shoreland/ Floodplain Protection
State of Wisconsn Hazard Mitigation Plan, October 2011	N/A	Regulations, Laws, and Codes: Strengthen Local Building Codes



MAP SYMBOLOGY

LEGEND

- Dams
- LOMCs
- USGS Gages
- Transects
- Shoreline
- Streams
- Watersheds (HUC 8)
- Coastal Barrier Resource System
- Coastal Discovery Area
- Surrounding Counties
- Municipal Boundaries

EFFECTIVE SFHA

- A
- AE
- 0.2% PCT ANNUAL CHANCE FLOOD

AAL DATA
Total Average Annualized Losses per Census Block

- Less than $10,000
- $10,001 - $100,000
- $100,001 - $1,000,000
- $1,000,001 - $5,000,000
- Greater than $5,000,000

Coordinated Needs Management Strategy (CNMS)
Validation Status

- Unverified
- Unknown
- Valid

COASTAL STUDY LOCATOR

NATIONAL FLOOD INSURANCE PROGRAM
Discovery Map

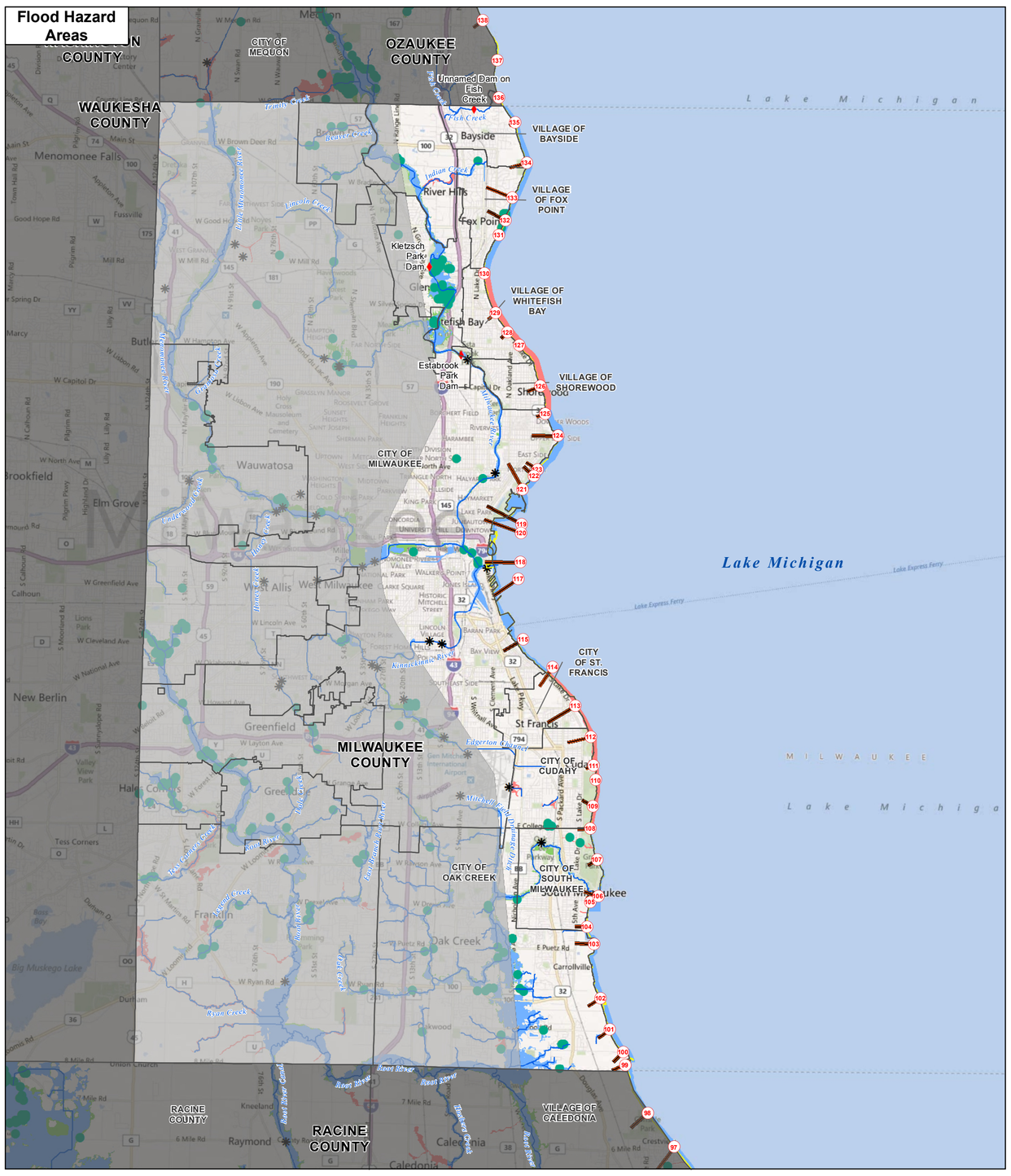
LAKE MICHIGAN COASTAL STUDY

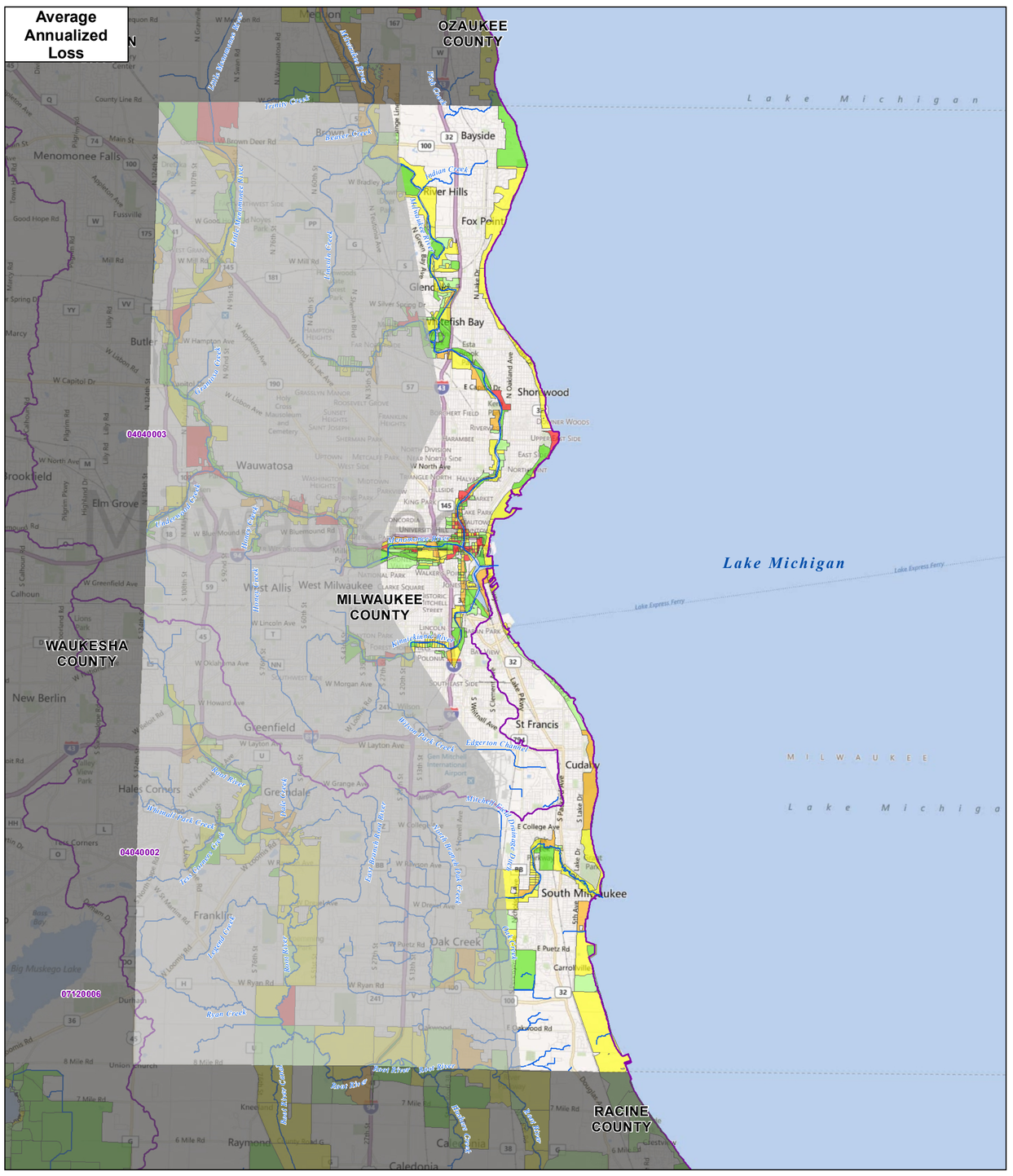
KENOSHA COUNTY, WISCONSIN COASTAL STUDY COMMUNITIES

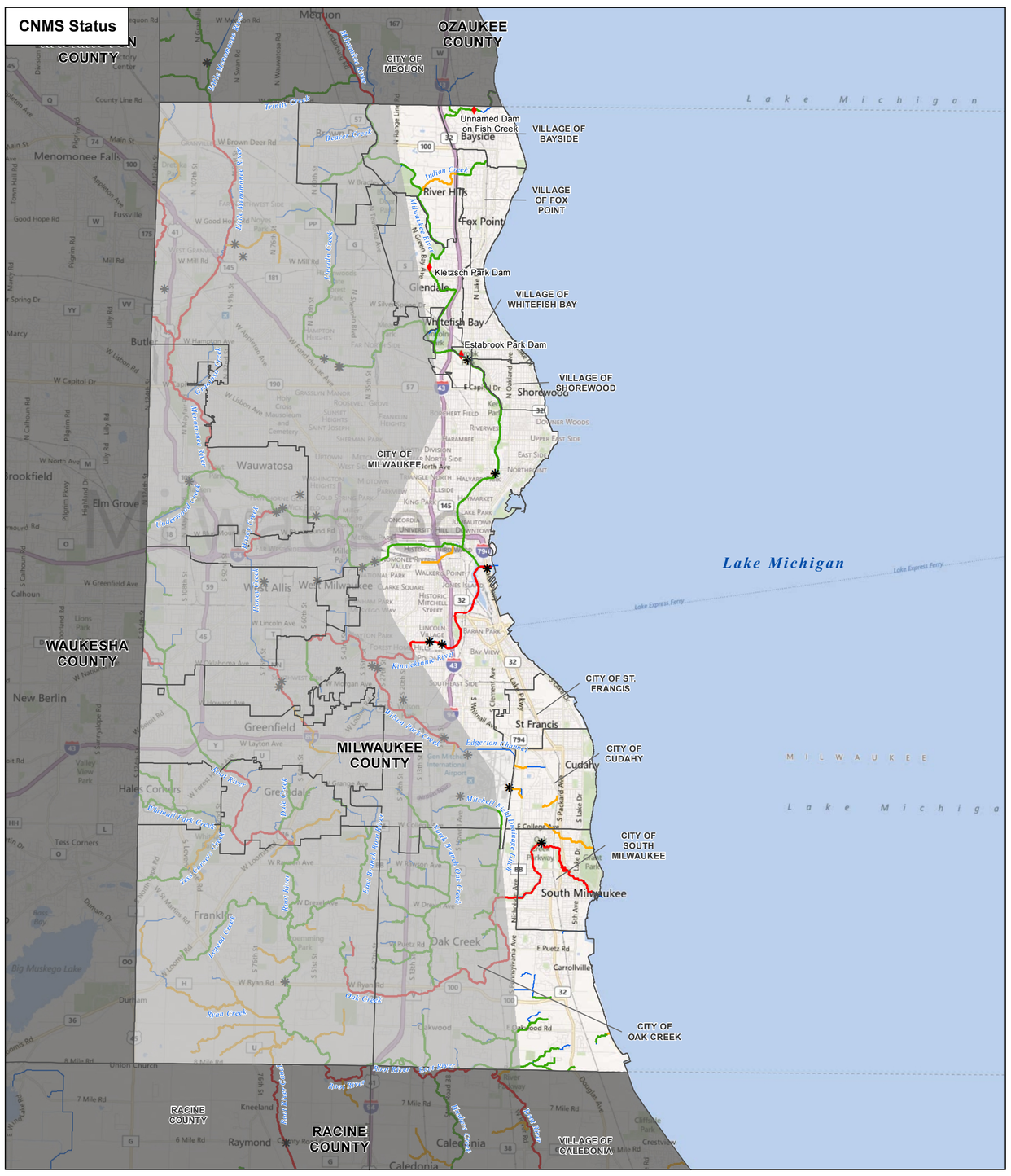
Kenosha County
Kenosha, City of
Pleasant Prairie, Village of

STARR

FEMA







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Lake Michigan	WI	Milwaukee (County)	4/27/1973	DR	Flood	SEVERE STORMS & FLOODING
Lake Michigan	WI	Milwaukee (County)	3/23/1976	DR	Flood	SEVERE STORMS, ICING, WIND & FLOODING
Lake Michigan	WI	Milwaukee (County)	8/14/1986	DR	Flood	SEVERE STORMS
Lake Michigan	WI	Milwaukee (County)	10/7/1986	DR	Flood	SEVERE STORMS & FLOODING
Lake Michigan	WI	Milwaukee (County)	7/2/1993	DR	Severe Storm(s)	SEVERE STORMS, TORNADOES & FLOODING
Lake Michigan	WI	Milwaukee (County)	7/7/1997	DR	Severe Storm(s)	SEVERE STORMS AND FLOODING
Lake Michigan	WI	Milwaukee (County)	8/12/1998	DR	Severe Storm(s)	SEVERE STORMS AND FLOODING
Lake Michigan	WI	Milwaukee (County)	6/24/2000	DR	Severe Storm(s)	SEVERE STORMS, TORNADOES, AND FLOODING
Lake Michigan	WI	Milwaukee (County)	6/18/2004	DR	Severe Storm(s)	SEVERE STORMS AND FLOODING
Lake Michigan	WI	Milwaukee (County)	6/14/2008	DR	Severe Storm(s)	SEVERE STORMS, TORNADOES, AND FLOODING
Lake Michigan	WI	Milwaukee (County)	8/11/2010	DR	Severe Storm(s)	SEVERE STORMS, TORNADOES, AND FLOODING
Lake Michigan	WI	Milwaukee (County)	4/5/2011	DR	Snow	SEVERE WINTER STORM AND SNOWSTORM
Lake Michigan	WI	Milwaukee (County)	1/19/1979	EM	Snow	BLIZZARDS & SNOWSTORMS
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Lake	State	County	Community	CID	No. Policies	Total Premium	Total Coverage	Number of claims since 1978	Dollar ($) paid for claims since 1978
Lake Michigan	WI	Milwaukee	Milwaukee County	Not Participating					
Lake Michigan	WI	Milwaukee	Bayside, Village of	550270	30	$14,517	$8,638,200	22	$77,911
Lake Michigan	WI	Milwaukee	Cudahy, City of	550272	16	$6,425	$2,635,200	5	$92,533
Lake Michigan	WI	Milwaukee	Fox Point, Village of	550274	60	$38,731	$16,081,800	39	$79,797
Lake Michigan	WI	Milwaukee	Milwaukee, City of	550278	647	$390,856	$128,164,800	1524	$10,455,311
Lake Michigan	WI	Milwaukee	Oak Creek, City of	550279	44	$26,707	$12,450,400	16	$269,251
Lake Michigan	WI	Milwaukee	Shorewood, Village of	550282	48	$15,472	$10,410,000	9	$77,898
Lake Michigan	WI	Milwaukee	South Milwaukee, City of	550283	15	$8,160	$3,874,300	1	$7,087
Lake Michigan	WI	Milwaukee	St. Francis, City of	550281	3	$937	$658,000	0	$0
Lake Michigan	WI	Milwaukee	Whitefish Bay, City of	Not Participating	0	$0	$0	0	$0

Mitigation Action

Name of Plan	Plan Expiration Date	Identified Hazard Mitigation Action
Milwaukee County Pre-Disaster Mitigation Plan, June 2011	12/28/2016	Continue to enforce municipal ordinances which require no development in the Floodplain
Milwaukee County Pre-Disaster Mitigation Plan, June 2011	12/28/2016	Continue to enforce local building codes for existing and new construction, based on the 2006 International Building Codes
Milwaukee County Pre-Disaster Mitigation Plan, June 2011	12/28/2016	Acquisition and demolition of two repetitive loss structures
Milwaukee County Pre-Disaster Mitigation Plan, June 2011	12/28/2016	Acquisition and demolition of five repetitive loss structures
Milwaukee County Pre-Disaster Mitigation Plan, June 2011	12/28/2016	Easement of two repetitive loss structures
Milwaukee County Pre-Disaster Mitigation Plan, June 2011	12/28/2016	Clear debris from ravine ditch between Fox Lane to Beach Drive; Replace rip rap and re-establish channel
Milwaukee County Pre-Disaster Mitigation Plan, June 2011	12/28/2016	Address erosion issue on North side of Beach Drive Hill

N

0 3 6 12 Miles

MAP SYMBOLOGY

LEGEND

- Dams
- LOMCs
- USGS Gages
- Transects
- Shoreline
- Streams
- Watersheds (HUC 8)
- Coastal Barrier Resource System
- Coastal Discovery Area
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Coordinated Needs Management Strategy (CNMS)
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COASTAL STUDY LOCATOR

NATIONAL FLOOD INSURANCE PROGRAM
Discovery Map

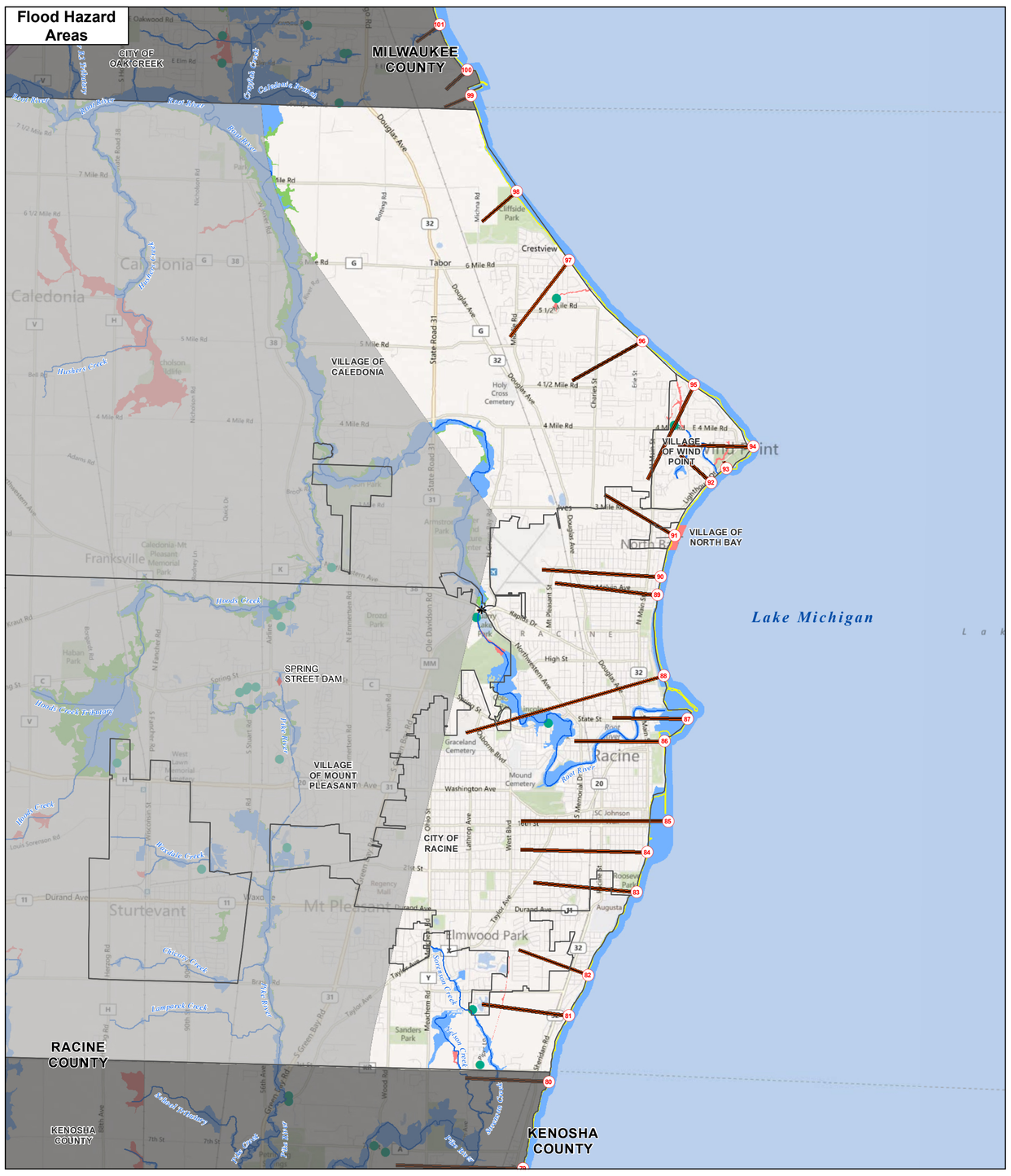
LAKE MICHIGAN COASTAL STUDY

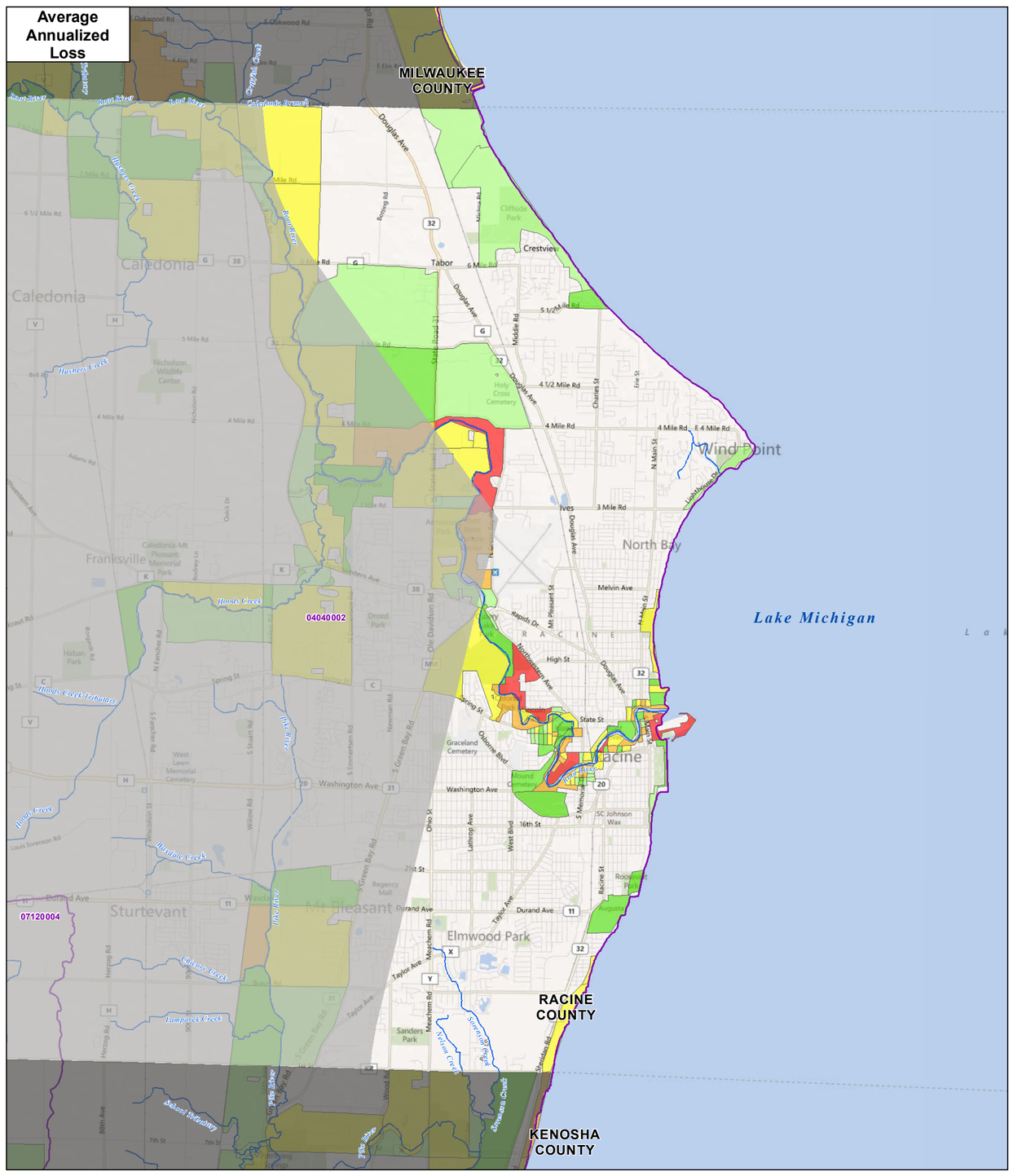
MILWAUKEE COUNTY, WISCONSIN COASTAL STUDY COMMUNITIES

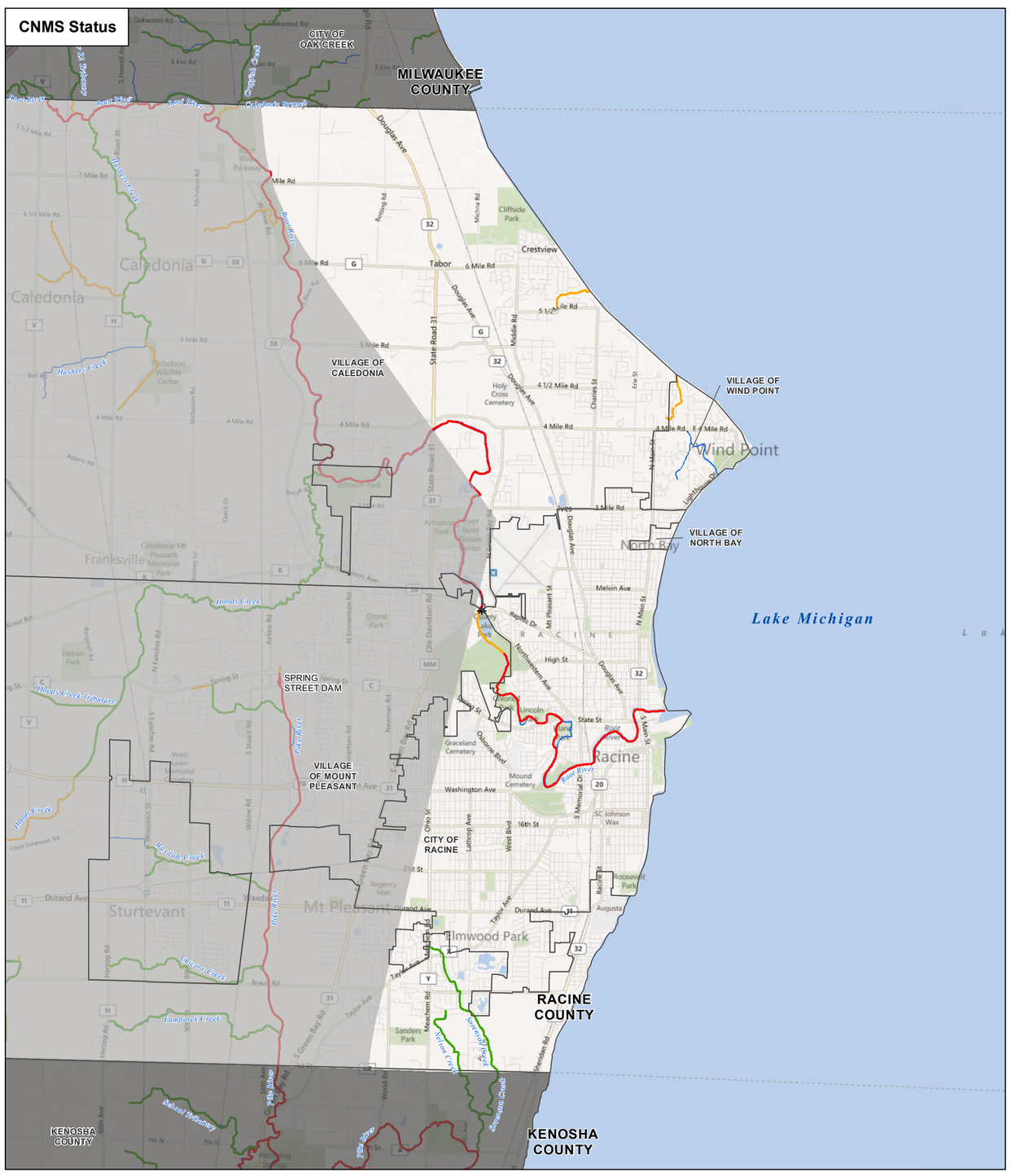
Milwaukee County
Bayside, Village of
Cudahy, City of
Fox Point, Village of
Milwaukee, City of
Oak Creek, City of
Shorewood, Village of
South Milwaukee, City of
St. Francis, City of
Whitefish Bay, City of

STARR

FEMA







Declared Disasters

Lake	State	Declared County/Area	Declaration Date	Disaster Type	Incident Type	Description
Lake Michigan	WI	Racine (County)	7/11/1969	DR	Flood	SEVERE STORMS & FLOODING
Lake Michigan	WI	Racine (County)	4/27/1973	DR	Flood	SEVERE STORMS & FLOODING
Lake Michigan	WI	Racine (County)	7/2/1993	DR	Severe Storm(s)	SEVERE STORMS, TORNADOES & FLOODING
Lake Michigan	WI	Racine (County)	8/12/1998	DR	Severe Storm(s)	SEVERE STORMS AND FLOODING
Lake Michigan	WI	Racine (County)	6/24/2000	DR	Severe Storm(s)	SEVERE STORMS, TORNADOES, AND FLOODING
Lake Michigan	WI	Racine (County)	6/18/2004	DR	Severe Storm(s)	SEVERE STORMS AND FLOODING
Lake Michigan	WI	Racine (County)	8/26/2007	DR	Severe Storm(s)	SEVERE STORMS AND FLOODING
Lake Michigan	WI	Racine (County)	6/14/2008	DR	Severe Storm(s)	SEVERE STORMS, TORNADOES, AND FLOODING
Lake Michigan	WI	Racine (County)	4/5/2011	DR	Snow	SEVERE WINTER STORM AND SNOWSTORM
Lake Michigan	WI	Racine (County)	1/19/1979	EM	Snow	BLIZZARDS & SNOWSTORMS
Lake Michigan	WI	Racine (County)	1/24/2001	EM	Snow	SNOW
Lake Michigan	WI	Racine (County)	9/13/2005	EM	Hurricane	HURRICANE KATRINA EVACUATION
Lake Michigan	WI	Racine (County)	3/19/2008	EM	Snow	RECORD SNOW AND NEAR RECORD SNOW

Summary of Flood Insurance Policies and Claims

Lake	State	County	Community	CID	No. Policies	Total Premium	Total Coverage	Number of claims since 1978	Dollar ($) paid for claims since 1978
Lake Michigan	WI	Racine	Racine County	550347	261	$224,887	$56,887,300	45	$696,481
Lake Michigan	WI	Racine	Caledonia, Village of	390651	3	$1,618	438,300	2	$7,590
Lake Michigan	WI	Racine	Mount Pleasant, Village of	Not Participating	0	$0	$0	0	$0
Lake Michigan	WI	Racine	North Bay, Village of	Not Participating	0	$0	$0	0	$0
Lake Michigan	WI	Racine	Racine, City of	555575	78	$67,026	$12,584,200	64	$503,817
Lake Michigan	WI	Racine	Wind Point, Village of	550355	5	$4,055	$1,523,300	1	$0

Mitigation Action

Name of Plan	Plan Expiration Date	Identified Hazard Mitigation Action
Racine County Hazard Mitigation Plan Update; April 27, 2010	11/30/2015	Floodland and wetland zoning and zoning review
Racine County Hazard Mitigation Plan Update; April 27, 2010	11/30/2015	Preservation of open and sensitive areas
Racine County Hazard Mitigation Plan Update; April 27, 2010	11/30/2015	Purchase, demolition, and removal or floodproofing of 677 structures.
Racine County Hazard Mitigation Plan Update; April 27, 2010	11/30/2015	Channel clearing, maintenance, or rehabilitation
Racine County Hazard Mitigation Plan Update; April 27, 2010	11/30/2015	Stormwater management planning and regulation
Racine County Hazard Mitigation Plan Update; April 27, 2010	11/30/2015	Survey of buildings near flood hazard areas

N

0 1.5 3 6 Miles

MAP SYMBOLOGY

LEGEND

- Dams
- LOMCs
- USGS Gages
- Transects
- Shoreline
- Streams
- Watersheds (HUC 8)
- Coastal Barrier Resource System
- Coastal Discovery Area
- Surrounding Counties
- Municipal Boundaries

EFFECTIVE SFHA

- A
- AE
- 0.2% PCT ANNUAL CHANCE FLOOD

AAL DATA
Total Average Annualized Losses per Census Block

- Less than $10,000
- $10,001 - $100,000
- $100,001 - $1,000,000
- $1,000,001 - $5,000,000
- Greater than $5,000,000

Coordinated Needs Management Strategy (CNMS)
Validation Status

- Unverified
- Unknown
- Valid

COASTAL STUDY LOCATOR

NATIONAL FLOOD INSURANCE PROGRAM
Discovery Map

LAKE MICHIGAN COASTAL STUDY

RACINE COUNTY, WISCONSIN COASTAL STUDY COMMUNITIES

Racine County
Caledonia, Village of
Mount Pleasant, Village of
North Bay, Village of
Racine, City of
Wind Point, Village of

STARR

FEMA

ATTACHMENT D

PROPOSED DRAFT TRANSECTS FIGURES

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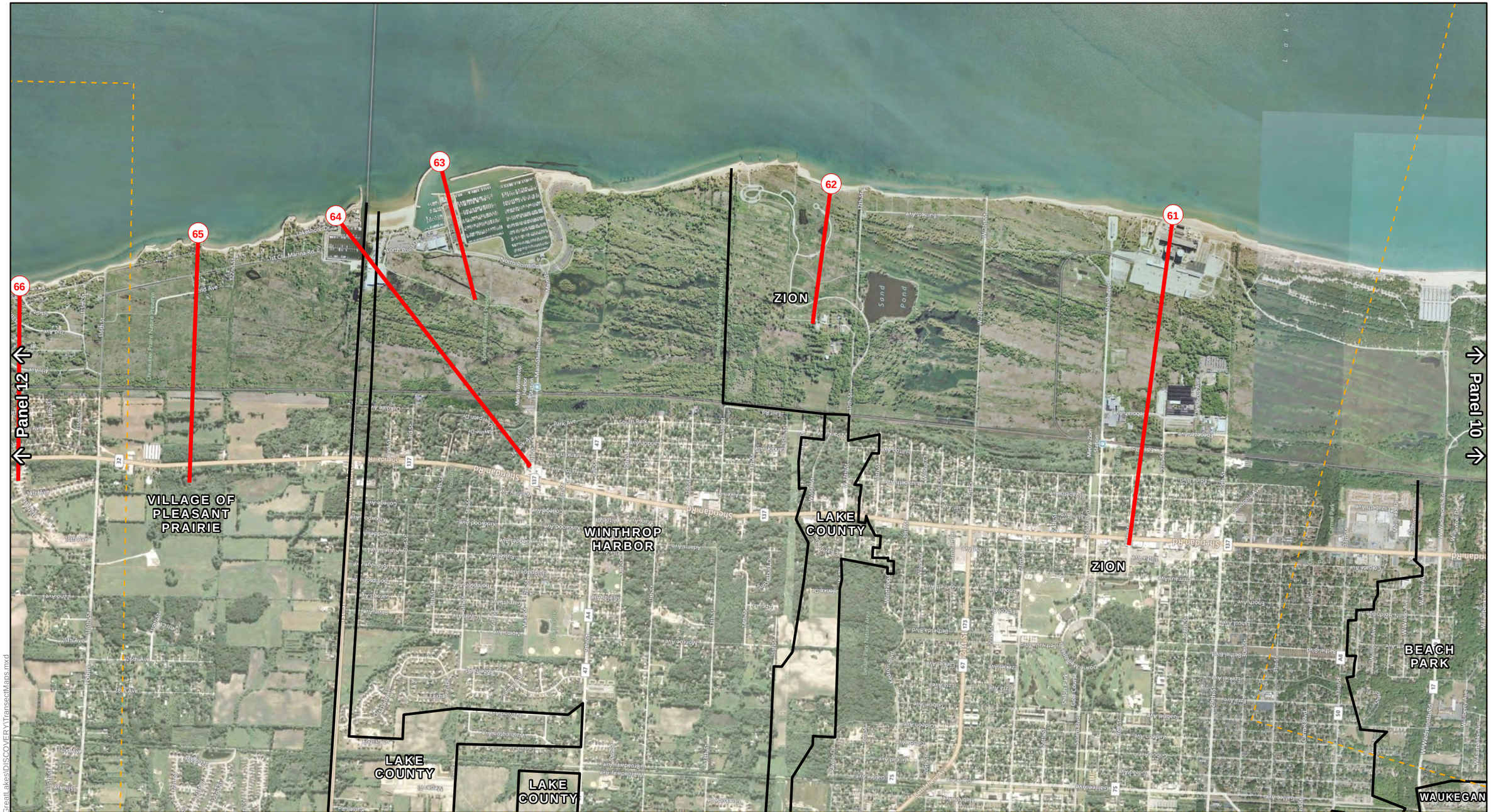
Transect Map Panels

County Boundaries

Lake Michigan
DRAFT TRANSECT MAPS
Index - Wisconsin (South)



1 inch = 2,000 feet

Transects

Adjoining Panel Edge

Political Boundary

Basemap Source: Microsoft BING map service

COUNTIES

KENOSHA COUNTY
LAKE COUNTY

COMMUNITIES

BEACH PARK
VILLAGE OF PLEASANT PRAIRIE
WAUKEGAN
WINTHROP HARBOR
ZION

Lake Michigan
DRAFT TRANSECTS
Panel 11 of 127

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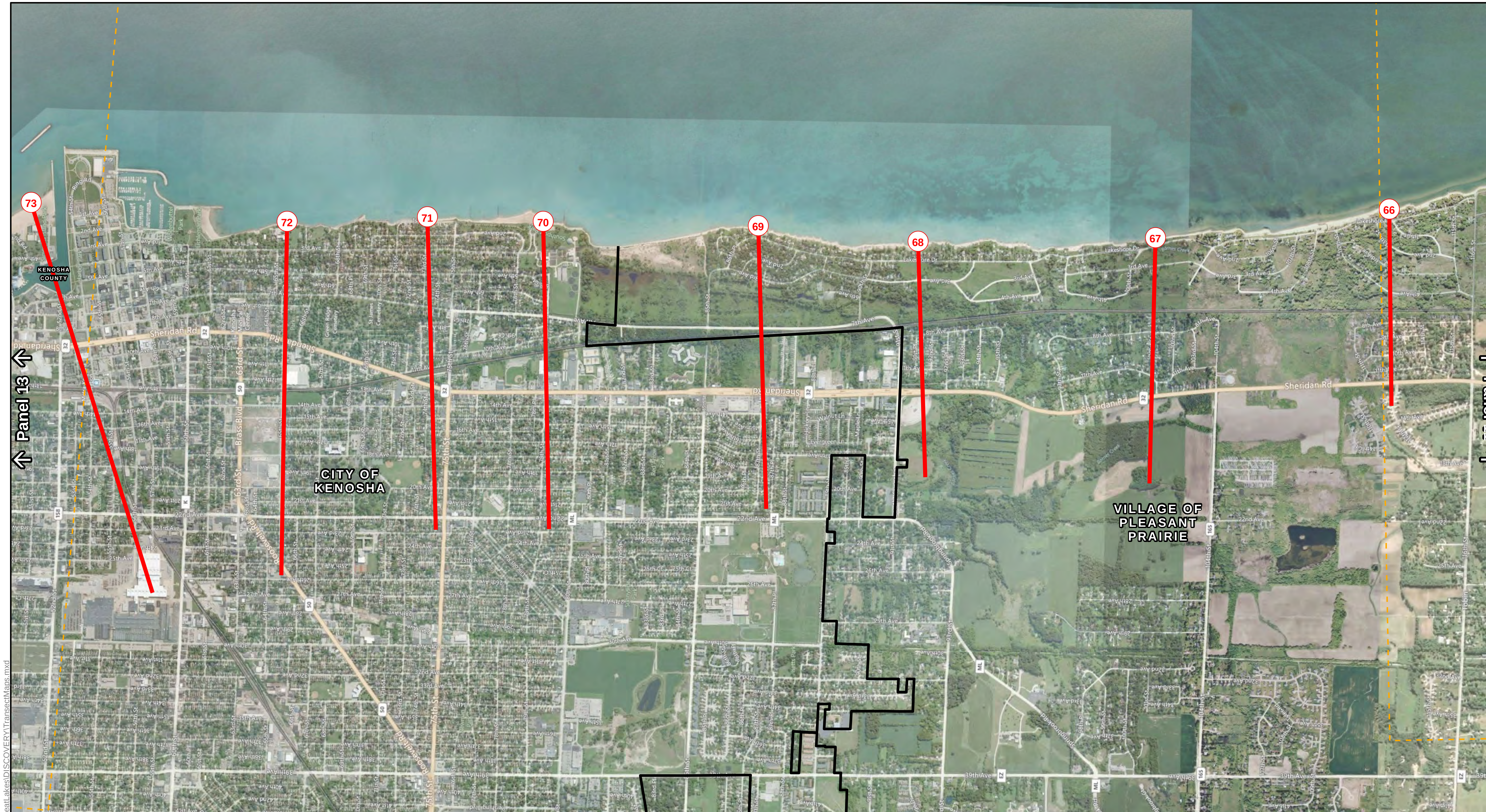

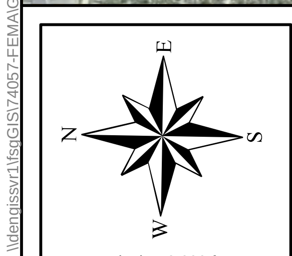

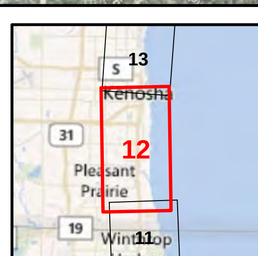

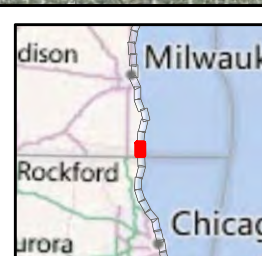

Transects
Adjoining Panel Edge
Political Boundary

Basemap Source: Microsoft BING map service

COUNTIES
KENOSHA COUNTY

COMMUNITIES
CITY OF KENOSHA
VILLAGE OF PLEASANT PRAIRIE

Lake Michigan
DRAFT TRANSECTS
Panel 12 of 127

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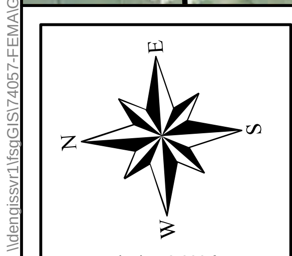

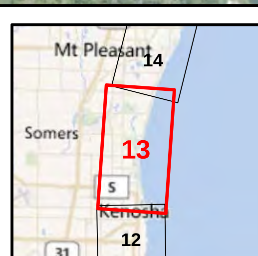

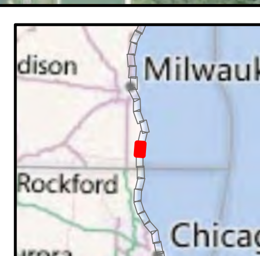

- Transects
- Adjoining Panel Edge
- Political Boundary

Basemap Source: Microsoft BING map service

COUNTIES
KENOSHA COUNTY
RACINE COUNTY

COMMUNITIES
CITY OF KENOSHA
VILLAGE OF MOUNT PLEASANT

Lake Michigan
DRAFT TRANSECTS
Panel 13 of 127

Transects

Adjoining Panel Edge

Political Boundary

Basemap Source: Microsoft BING map service

COUNTIES

KENOSHA COUNTY
RACINE COUNTY

COMMUNITIES

CITY OF RACINE
VILLAGE OF CALEDONIA
VILLAGE OF MOUNT PLEASANT

Lake Michigan
DRAFT TRANSECTS
Panel 14 of 127

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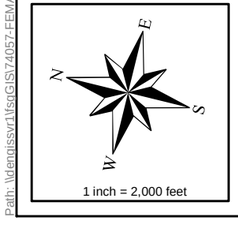

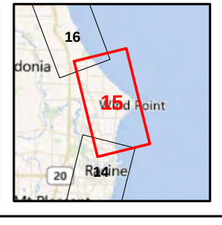

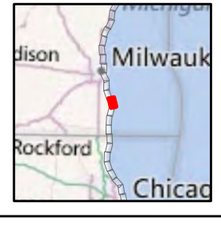

Transects

Adjoining Panel Edge

Political Boundary

Basemap Source: Microsoft BING map service

COUNTIES

RACINE COUNTY

COMMUNITIES

CITY OF RACINE
VILLAGE OF CALEDONIA
VILLAGE OF NORTH BAY
VILLAGE OF WIND POINT

Lake Michigan
DRAFT TRANSECTS
Panel 15 of 127

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1 inch = 2,000 feet

- Transects
- Adjoining Panel Edge
- Political Boundary

Basemap Source: Microsoft BING map service

COUNTIES
MILWAUKEE COUNTY
RACINE COUNTY

COMMUNITIES
CITY OF OAK CREEK
CITY OF SOUTH MILWAUKEE
VILLAGE OF CALEDONIA

Lake Michigan
DRAFT TRANSECTS
Panel 16 of 127

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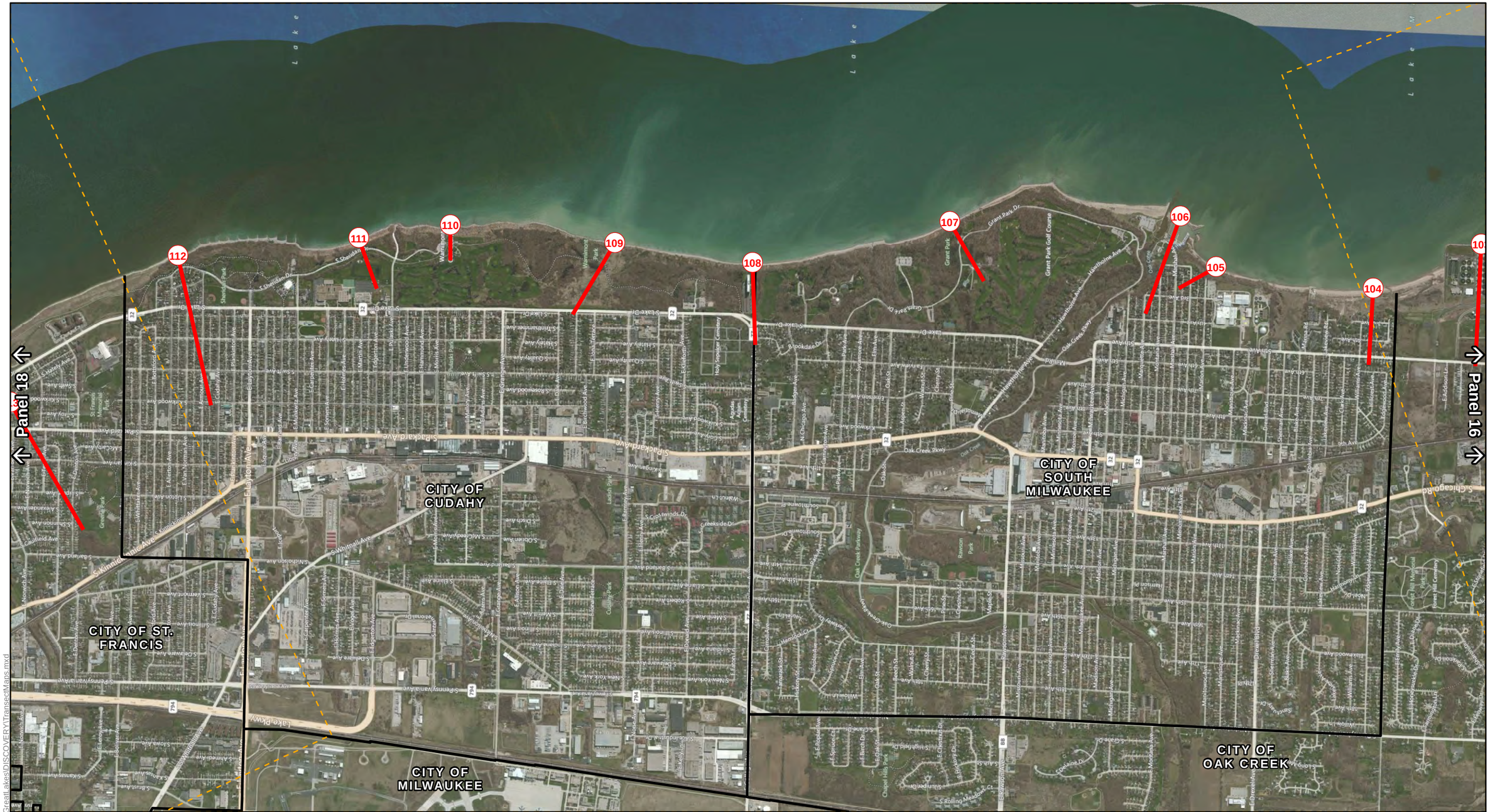
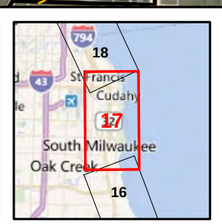
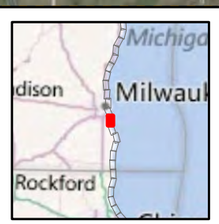


1 inch = 2,000 feet





Transects

Adjoining Panel Edge

Political Boundary

Basemap Source: Microsoft BING map service

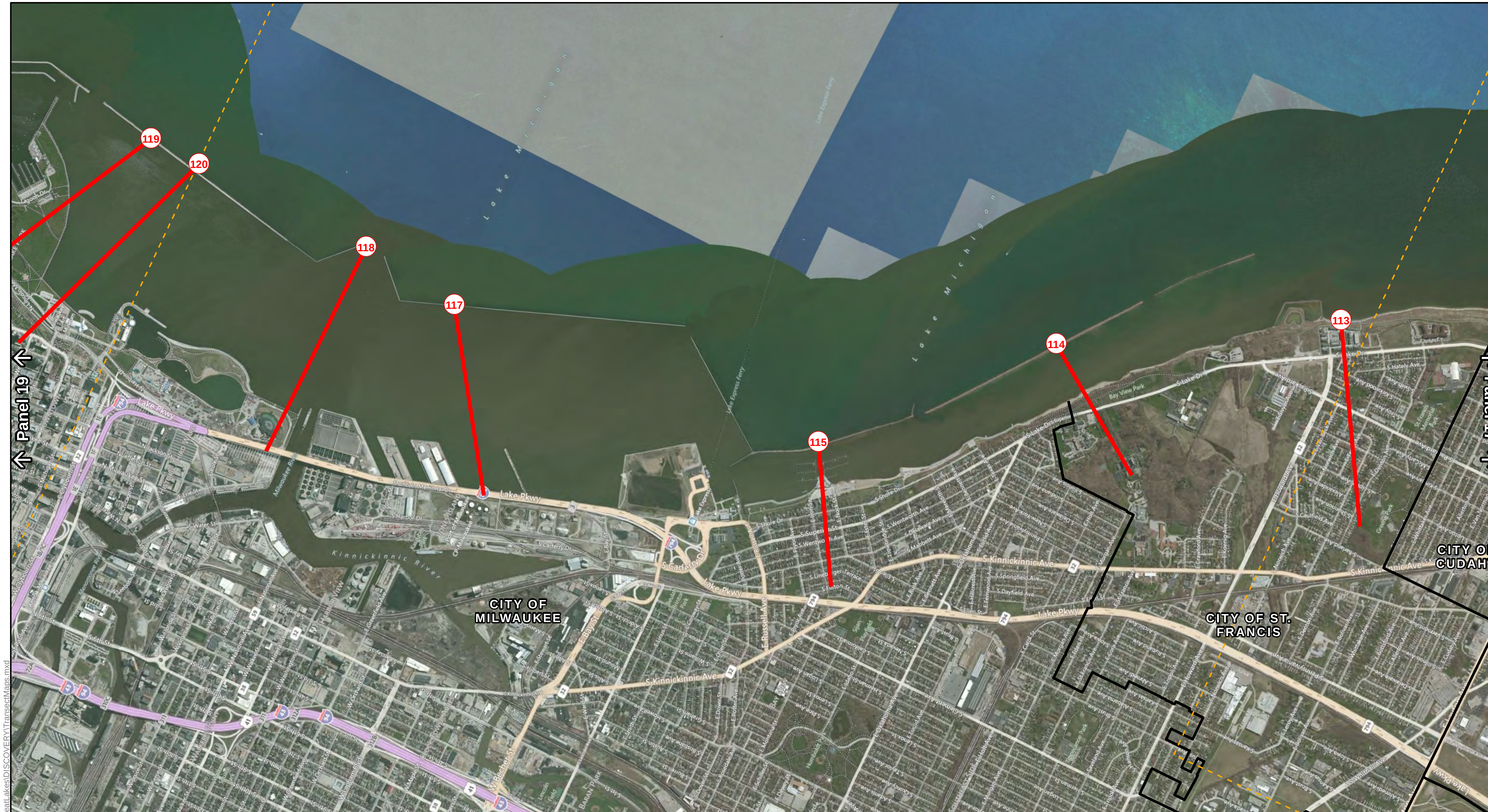
COUNTIES

MILWAUKEE COUNTY

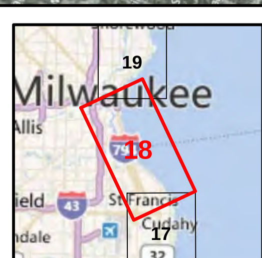
COMMUNITIES

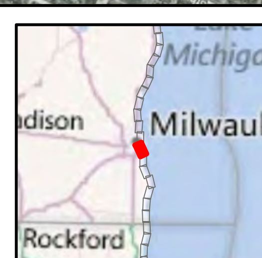
CITY OF CUDAHY
CITY OF MILWAUKEE
CITY OF OAK CREEK
CITY OF SOUTH MILWAUKEE
CITY OF ST. FRANCIS

Lake Michigan
DRAFT TRANSECTS
Panel 17 of 127



1 inch = 2,000 feet





Transects
Adjoining Panel Edge
Political Boundary

Basemap Source: Microsoft BING map service

COUNTIES
MILWAUKEE COUNTY

COMMUNITIES
CITY OF CUDAHY
CITY OF MILWAUKEE
CITY OF ST. FRANCIS

Lake Michigan
DRAFT TRANSECTS
Panel 18 of 127

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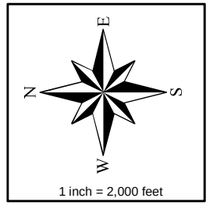

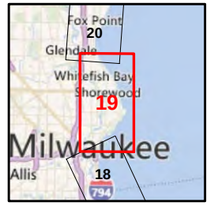

Transects

Adjoining Panel Edge

Political Boundary

Basemap Source: Microsoft BING map service

COUNTIES

MILWAUKEE COUNTY

COMMUNITIES

CITY OF GLENDALE
CITY OF MILWAUKEE
VILLAGE OF SHOREWOOD
VILLAGE OF WHITEFISH BAY

Lake Michigan
DRAFT TRANSECTS
Panel 19 of 127

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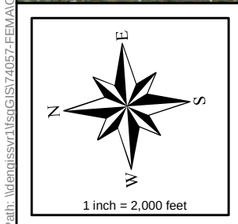

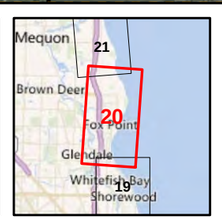

Transects

Adjoining Panel Edge

Political Boundary

Basemap Source: Microsoft BING map service

COUNTIES

MILWAUKEE COUNTY
OZAUKEE COUNTY

COMMUNITIES

CITY OF GLENDALE
CITY OF MEQUON
CITY OF MILWAUKEE
VILLAGE OF BAYSIDE
VILLAGE OF FOX POINT
VILLAGE OF RIVER HILLS
VILLAGE OF WHITEFISH BAY

Lake Michigan
DRAFT TRANSECTS
Panel 20 of 127

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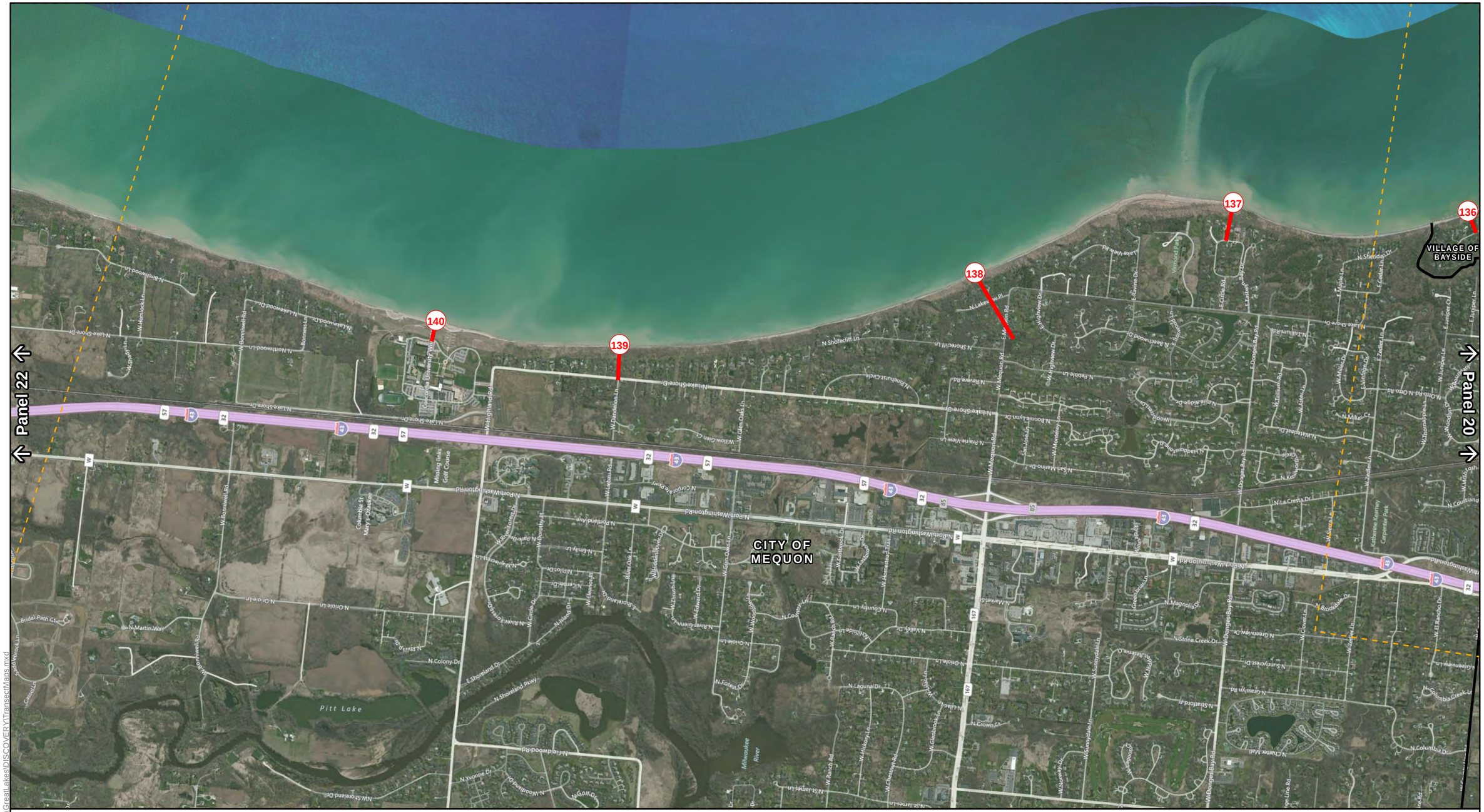

1 inch = 2,000 feet

Transects

Adjoining Panel Edge

Political Boundary

Basemap Source: Microsoft BING map service

COUNTIES

MILWAUKEE COUNTY
OZAUKEE COUNTY

COMMUNITIES

CITY OF MEQUON
VILLAGE OF BAYSIDE
VILLAGE OF RIVER HILLS

Lake Michigan
DRAFT TRANSECTS
Panel 21 of 127

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ATTACHMENT E

STAKEHOLDER COMMENTS FROM DISCOVERY MEETING

Stakeholder Comments from Discovery Meeting

ID (Corresponds to Final Discovery Map)	State	County	Location of Comment	FIPS	CID	Comment (from Discovery Meetings or on draft Discovery Map/transect figures)[i]	Type
MIL-120	Wisconsin	Milwaukee	Oak Creek, City of	55079	550279	Mixed use redevelopment; 5-8 yrs in the works	General Comment
MIL-121	Wisconsin	Milwaukee	Oak Creek, City of	55079	550279	Maybe move for re-development;(draft transect number 102) ; related to comment MIL-120;	General Comment
MIL-122	Wisconsin	Milwaukee	Milwaukee County	55079	N/A	Enforcing floodplain regulations	General Comment
MIL-123	Wisconsin	Milwaukee	Milwaukee County along shoreline	55079	N/A	Coastal erosion; Currently re-doing culverts	General Comment
MIL-124	Wisconsin	Milwaukee	Milwaukee County	55079	N/A	Sewer back-up issues along tunnel	General Comment
MIL-TR-10	Wisconsin	Milwaukee	Milwaukee, City of	55079	550278	Stakeholder indicated suggested transect location	Transect Comment
MIL-TR-11	Wisconsin	Milwaukee	Milwaukee, City of	55079	550278	Stakeholder indicated suggested transect location; Jones Island Sewage Treatment Plant	Transect Comment
MIL-TR-12	Wisconsin	Milwaukee	Milwaukee, City of	55079	550278	Stakeholder indicated suggested transect location; new structure in harbor	Transect Comment
RAC-125	Wisconsin	Racine	Racine, City of	55101	555575	Development potential; possible transect move; (draft transect number 82)	General Comment
RAC-126	Wisconsin	Racine	Mount Pleasant	55101	550322	Correction on map. Racine Mount Pleasant is participating now-2008	General Comment
RAC-TR-13	Wisconsin	Racine	Racine, City of	55101	555575	Stakeholder indicated suggested transect location; development potential	Transect Comment

[i] Due to the various methods used to collect flood risk information and transect comments, including discussions during Discovery Meetings, maps marked up with comments, and emails or letters sent containing comments, the meaning of some comments may not be clear in this table and are subject to interpretation.

ATTACHMENT F

KENOSHA, MILWAUKEE, AND RACINE 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:	MILWAUKEE, RACINE, KENOSHA COUNTIES Great Lakes Coastal Discovery Meeting
Date and Time:	THURSDAY, AUGUST 16, 2012; 2:00 – 4:00 PM CT
Place:	MILWAUKEE METROPOLITAN SEWERAGE DISTRICT
Facilitator:	LEE TRAEGER, FEMA GARY HEINRICHS, WDNR JASPREET RANDHAWA, SCOTT BANJAVCIC, TROY THIELEN, STARR

Discovery Meeting Agenda

1. **Why are we here? (2:00 – 2:15 PM CT)**
   - 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 CT)**

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

4. **Interactive Session A (2:50 – 3:15 PM CT)**
   - 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 CT)**

6. **Interactive Session B (3:25 – 3: 50 PM CT)**
   - Discuss Mitigation Action Opportunities
   - Introduce the Mitigation Action Form and Mitigation Action Tracker

7. **Wrap Up (3:50 – 4:00 PM CT)**
   - 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 16, 2012 MILWAUKEE, RACINE, KENOSHA, COUNTIES DISCOVERY MEETING SIGN-IN SHEET

Please verify contact information and intial meeting attendance.

No.	Sign Intials	Affiliation	Title	Name First	Name Last	Street Address	Phone	Email Address
21	NB	City Kenosha	Civil Engineer	Nick	Bruckbauer	625 52nd St Kenosha		nbruckbauer@kenosha.org
22		Kenosha Co.	Conservationist	Dan	Treloar	19600-75th St Bristol WI		Dan.Treloar@kenoshacounty.org
23	MSH	SEWRPC	Chief Environmental Engineer	Mike	Hahn	P.O Box 1607 Waukesha, WI 53187	262-547-6722 ext. 243	mhahn@sewrpc.org
24	LLK	SEWRPC	Principal Engineer	Laura	Kletti	"	262-547 6722 x224	lkletti@sewrpc.org
25	DCF	MMSD	Senior Project Mngr	Dave	Fowler	260 W. Seeboth Milw, 53204	414-277 6368	DFowler@mmsd.com
26								
27								
28								
29								
30								

August 16, 2012 MILWAUKEE, RACINE, KENOSHA, COUNTIES DISCOVERY MEETING SIGN-IN SHEET

Please verify contact information and intial meeting attendance.

No.	Sign Intials	Affiliation	Title	Name First	Name Last	Street Address	Phone	Email Address
11	SAW	City of Oak Creek	Engineer	Sue	Winner	8640 S Howell Ave Oak Creek, WI 53154	414-768-8057	swinner@oakcreekwi.org
12		City of South Milwaukee	City Engineer	Kyle	Vandercar	2424 15th Ave. South Milwaukee	414 762-2222 x136	vandercar@smwi.org
13	TB	Village Mt. Pleasant	Engineer	Tony	Beyer	8811 Campus Dr. Mt. Pleasant	(262) 664-7849	tbeyer@mtpleasantwi.gov
14	DS	Milwaukee County Emerg. Management	coordinator	DEonna	Johnson	9225 S. 68th St. Franklin, WI	414-525-5770	Carl.stenbale milwcnty.com
15		MILW CNTY	GIS	BILL	SHAW			~~BS~~ BILLSHAW@MILWCNTY.COM
16		Milw CNTY	Specialist	Brad	Blume			BradBlume@milwcnty.com
17		RCEM	COORDINATOR	DAVID	MACK	730 WISCONSIN AVE, RACINE	2626363515	david-mack@goracine.org
18	TJT	City of Milwaukee	Engineer	Tim	Thur	841 N. Broadway, Rm820 Mil, WI 53222	414-286-2463	timothy.thur@milwaukee.gov
19	CL	Village of Bayside	Mgt Asst.	Cathy	Lower	9075 N Port Rd Bayside WI	414-351-8811	clower@bayside-wi.gov
20	RJP	SEWRPC	Principal Engineer	Ron	Printz	PO Box 1607 Waukesha 53187-1607	262-547-6721	rprintz@sewrpc.org

August 16, 2012 MILWAUKEE, RACINE, KENOSHA, COUNTIES DISCOVERY MEETING SIGN-IN SHEET

Please verify contact information and intial meeting attendance.

No.	Sign Intials	Affiliation	Title	Name First	Name Last	Street Address	Phone	Email Address
1		City of Milwaukee	Engineer	Kurt	Sprangers		(414) 286-0515	
2		Racine County	Director Public Works and Development Services	Julie	Anderson	14200 Washington Avenue Sturtevant, WI 53177-1253	(262) 886-8440	Julie.Anderson@GORacine.org
3		Wisconsin Department of Natural Resources	Water Management Engineer	Tanya	Lourigan	Milwaukee Service Center 2300 N Dr Martin Luther King Jr Dr Milwaukee, WI 53212	(414) 263-8641	Tanya.Lourigan@wisconsin.gov
4		FEMA Region V	Senior Engineer	Lee	Traeger	536 South Clark St., 6th Floor Chicago, IL 60605	(312) 408-5500	lee.traeger@fema.dhs.gov
5		STARR	Engineer	Scott	Banjavcic	125 South Wacker Drive Chicago, IL 60606	(312) 346-5000	banjavcics@cdmsmith.com
6		STARR	Engineer	Jaspreet	Randhawa	125 South Wacker Drive Chicago, IL 60606	(312) 346-5000	randhawajg@cdmsmith.com
7		STARR	GIS Specialist	Troy	Thielen	125 South Wacker Drive Chicago, IL 60606	(312) 346-5000	thielentr@cdmsmith.com
8		Wisconsin Department of Natural Resources	Floodplain Planning Program Manager	Gary	Heinrichs	101 S Webster St. Madison, WI 53707	(608) 266-3093	gary.heinrichs@wisconsin.gov
9	TH	Village of Pleasant Prairie	Utility Analyst	Tom	Hupp	8600 Greenbay rd Pleasant Prairie WI.	262-694-1403	thupp@pprairiewi.com
10		ASFPM	GIS ANALYST	JASON	HOCHSCHILD		608-441-3015	gisjasw@floods.org

Lake Michigan Discovery Report Appendix H - Milwaukee, Racine, and Kenosha County

Meeting schedule: Thursday, August 16, 2012 2:00 – 4:00 pm (CT)
Meeting Location: MMSD, Milwaukee, WI
Discovery Area: Coastal communities in Milwaukee, Racine and Kenosha Counties, WI
Attendees: 24 people attended the Lake Michigan Discovery Meeting. Please see attached sign-in sheet for a complete list of attendees

FACILITATORS

FEMA
Lee Traeger

Wisconsin DNR
Gary Heinrichs, NFIP Coordinator
Roxanne Grey, SHMO
Katie McMahan, CTP Lead

STARR Contractor
Jaspreet Randhawa
Scott Banjavcic
Troy Thielen

ASFPM
Jason Hochschild

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:

- Mike Hahn from SEWRPC commented that the mitigation action form is a good tool for the first step in planning, and communities should use it as a brainstorming tool.
- Mike Hahn asked about erosion and how it is taken into account in the models. STARR explained that erosion will be taken into account for erodible soils by using the model to predict erosion for events and then using the eroded profile for the analysis.
- SEWRPC asked if individuals could place a transect after the maps have become effective and if FEMA would redo the maps. STARR answered that communities or individual property owners can use the LOMA and LOMR process to refine floodplain designations for properties.
- Question: How are transects placed and what do they represent? Answer: Transects are a place on-shore where the model will be evaluated. The transect should represent a reach of coastline that has similar coastal features.
- STARR demonstrated the use of USACE's online viewer for oblique photos.
- Mount Pleasant is a participating NFIP community since 2008. Discovery map needs to be updated to reflect correct date.

FEATURES NOTED ON MAPS:

- Possibly move Transect 82 in Mount Pleasant north to capture area of proposed development between Transects 82 and 83.
- Possibly move Transect 102 in Carrollville north to capture area of proposed development between Transects 102 and 103.
- There are new structures present in the City of Milwaukee between Transects 118 and 120.
- Jane Island Sewer Treatment Plant is important to City of Milwaukee.
- Ferry Terminal and confined sediment disposal facility is being expanded in City of Milwaukee and may warrant a transect.
- Northern area in Milwaukee County has had erosion issues.

MITIGATION ACTIONS:

- Milwaukee Emergency Planning Department noted that northern part of county Village of Bayside, Fox Point, Whitefish Bay, Shorewood has had storm sewer back-up issues and flooding. This is an existing identified area of concern. They are redoing the culverts in this area.
- Milwaukee County has had a hard time enforcing floodplain regulations in southern part of county.

FEMA

Lake Michigan Discovery

Milwaukee County, WI
Racine County, WI
Kenosha County, WI

August 16, 2012
2 pm to 4 pm
Milwaukee Metropolitan
Sewerage District

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Great Lakes Coastal Flood Study
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Introductions

Who's here?

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

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
- Wrap Up
- Optional Interactive Stations

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

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Great Lakes Coastal Flood Study

U.S. Army Corps of Engineers, Detroit District

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Lake Michigan Discovery Report Appendix H - Milwaukee, Racine, and Kenosha County

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
  - Engineering Research and Development Center (ERDC)
  - ASFPM
  - States
  - FEMA Contractors

Lake Michigan Discovery

- 34 counties in total
  - 4 counties in UP Michigan
  - 11 counties in Wisconsin
  - 2 counties in Illinois
  - 3 counties in Indiana
  - 14 counties in lower Michigan
- 226 coastal communities

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Great Lakes Coastal Flood Study

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Great Lakes Coastal Flood Study
Discovery Study Area

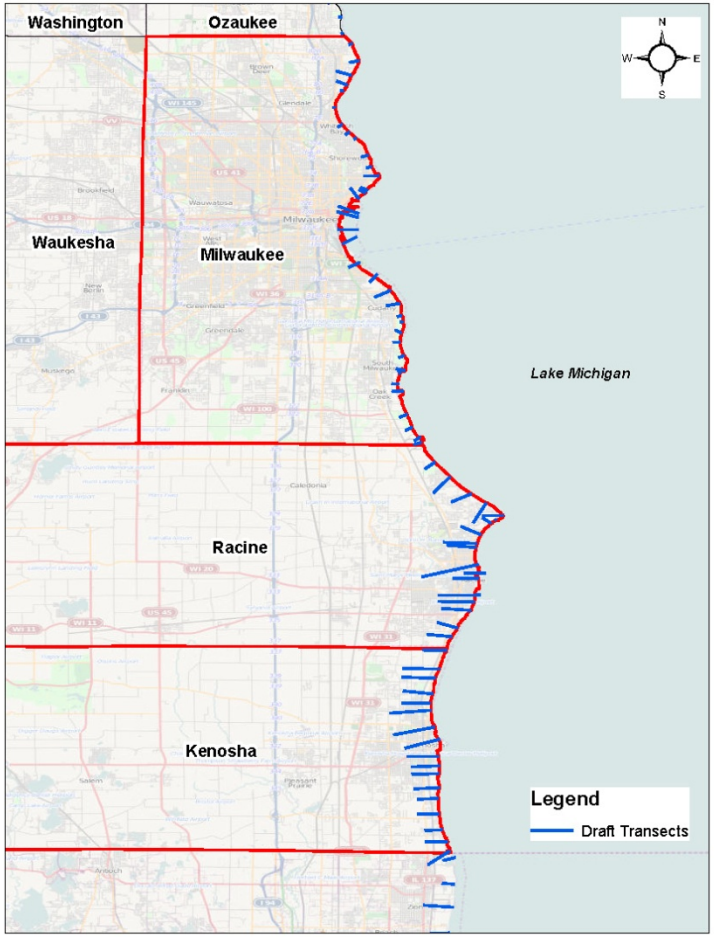
FEMA

Lake Michigan coastal communities in Kenosha, Milwaukee, and Racine Counties:

Kenosha County
Kenosha (City)
Pleasant Prairie

Milwaukee County
Bayside
Cudahy
Fox Point
Milwaukee (City)
Oak Creek
Shorewood
South Milwaukee
St. Francis
Whitefish Bay

Racine County
Caledonia
Mount Pleasant
North Bay
Racine (City)
Wind Point



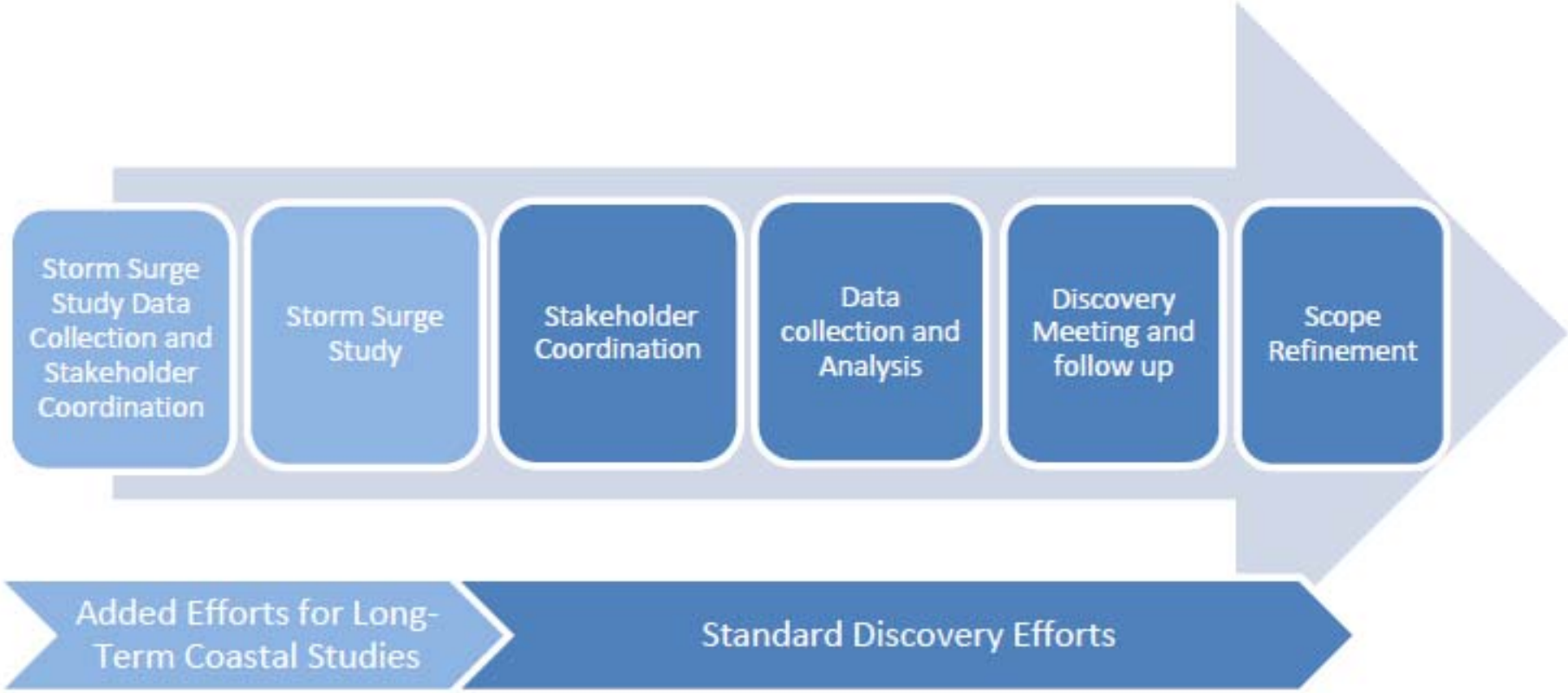
Effective Map Status

- Milwaukee County went effective on 9/6/2008
- Racine County went effective on 5/2/2012
- Kenosha County went effective on 6/19/2012

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

Discovery Schedule Overview



Lake Michigan 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 Michigan, 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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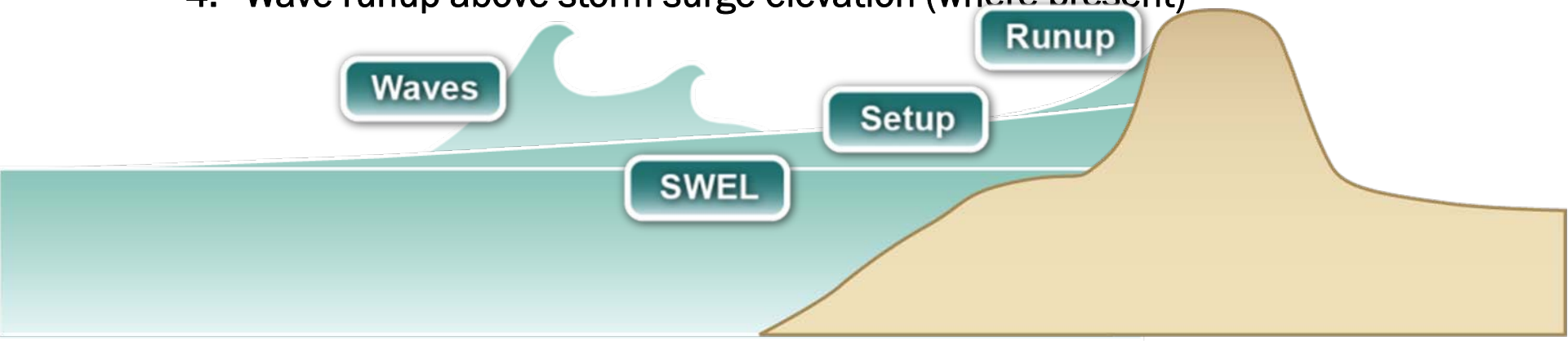
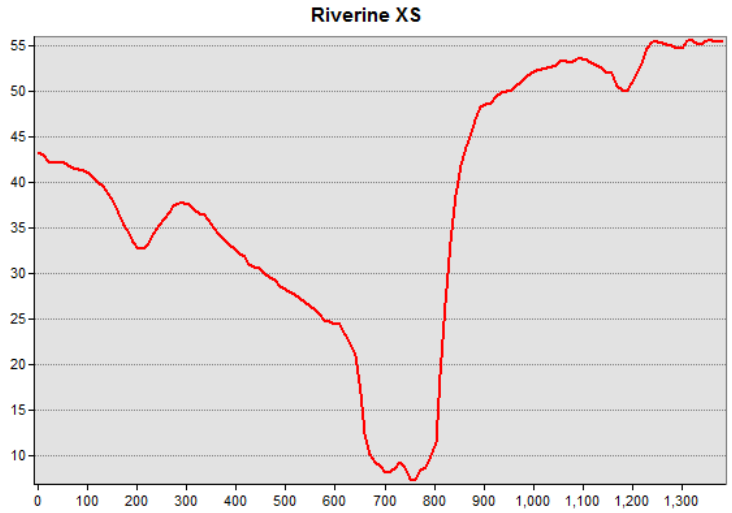
Basic Elements of a Coastal Hazard Analysis

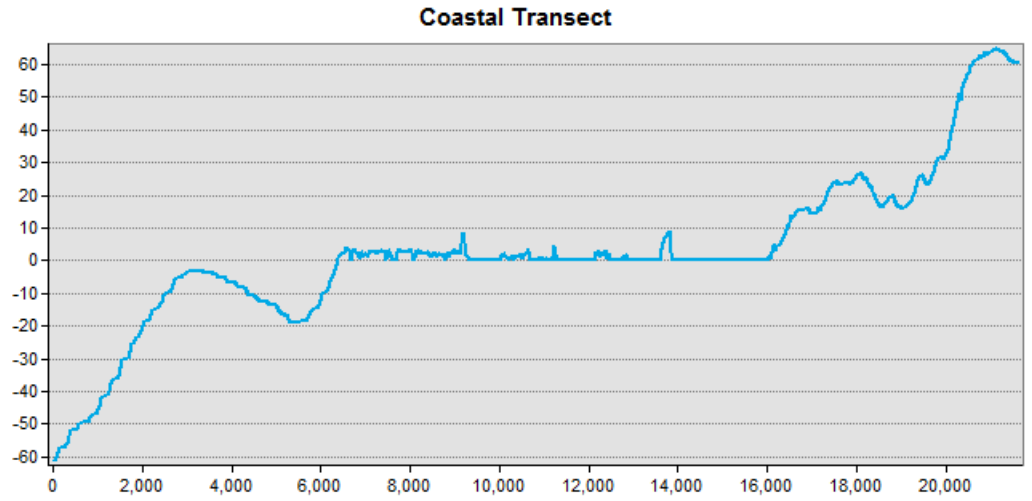
Base Flood Elevation on FIRM includes 4 components:

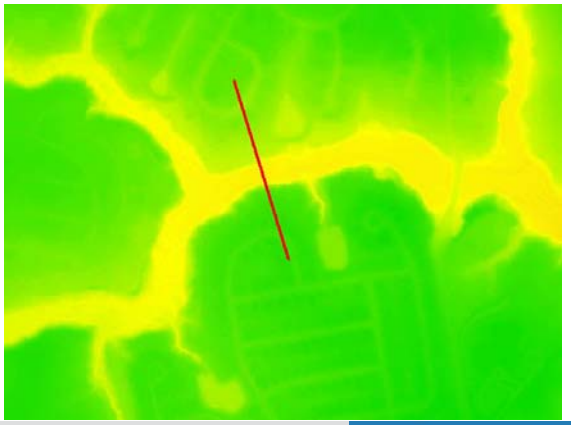
1. Storm surge stillwater elevation (SWEL) – determined from storm surge model
2. Amount of wave setup
3. Wave height above storm surge (stillwater) elevation
4. Wave runup above storm surge elevation (where present)

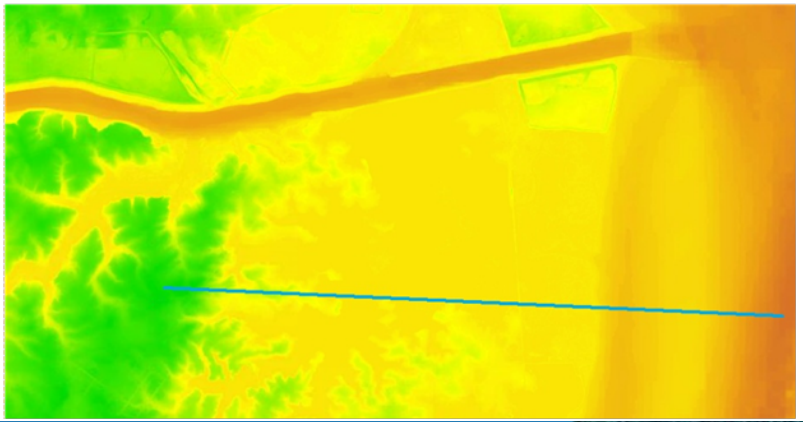


Riverine XS vs Coastal Transect



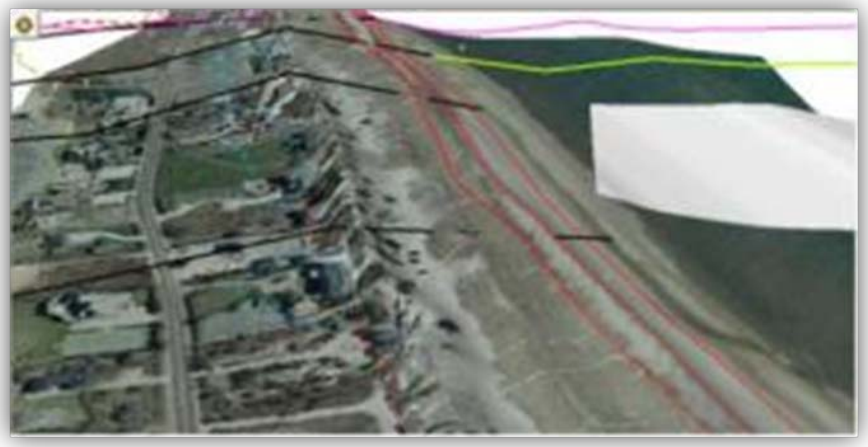






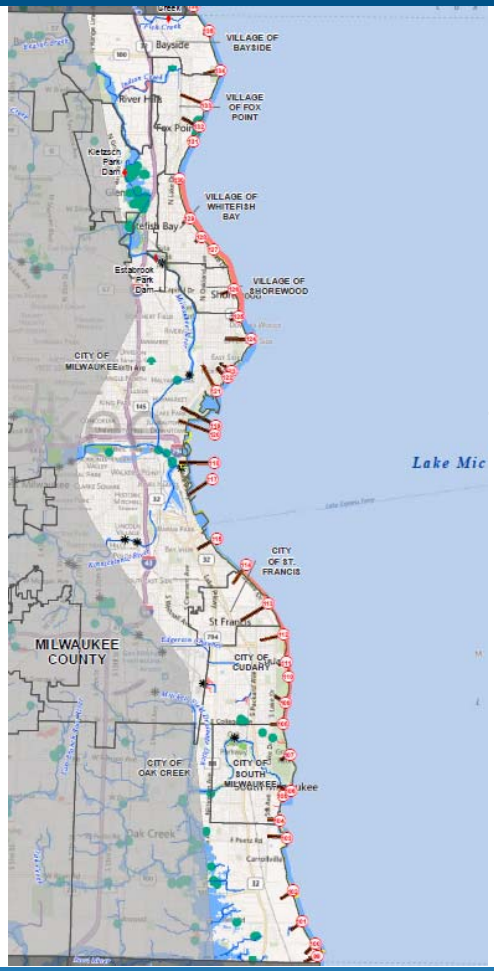
Transect Placement

- 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



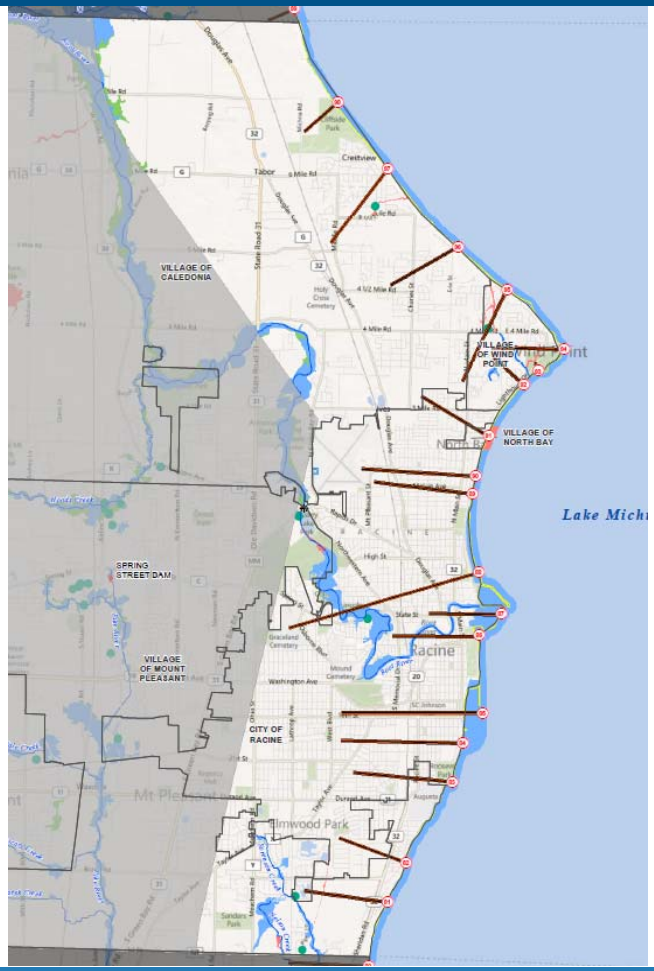
Draft Transect Layout Milwaukee County

- 37 transects
- 29 miles of shoreline along Lake Michigan



Draft Transect Layout Racine County

- 18 transects
- 16 miles of shoreline along Lake Michigan



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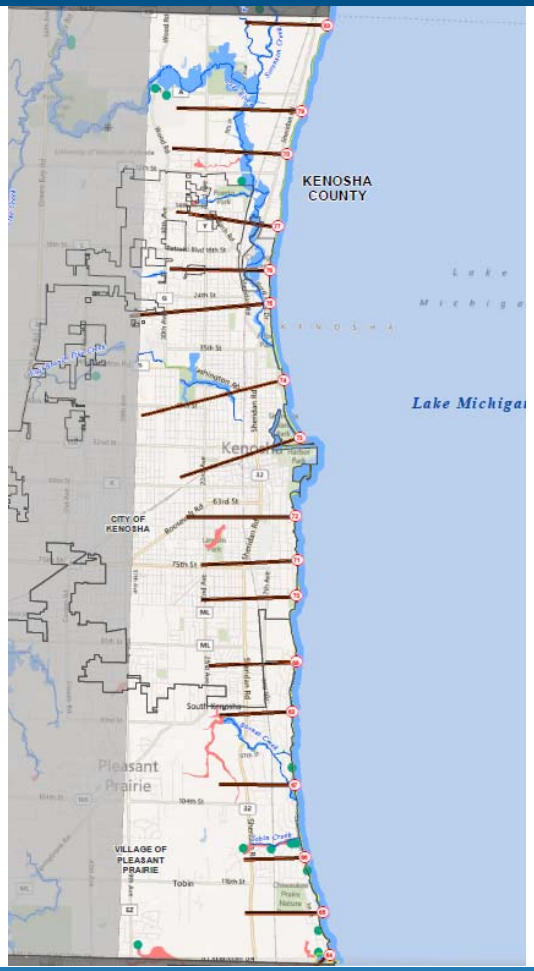
Draft Transect Layout Kenosha County

- 17 transects
- 13 miles of shoreline along Lake Michigan



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
  - 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

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

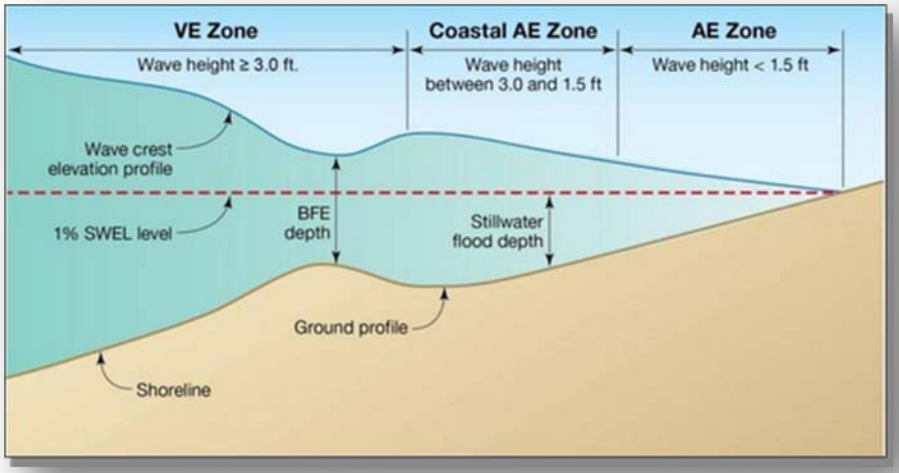
- US Army Corps of Engineers – 1973
  - Breaking wave height of 3 feet
  - “area subject to high velocity waters, including but not limited to hurricane wave wash”
- FEMA – 2000
  - Coastal Construction Manual
  - Additional post-storm damage assessments identified 1.5 wave also can knock a structure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

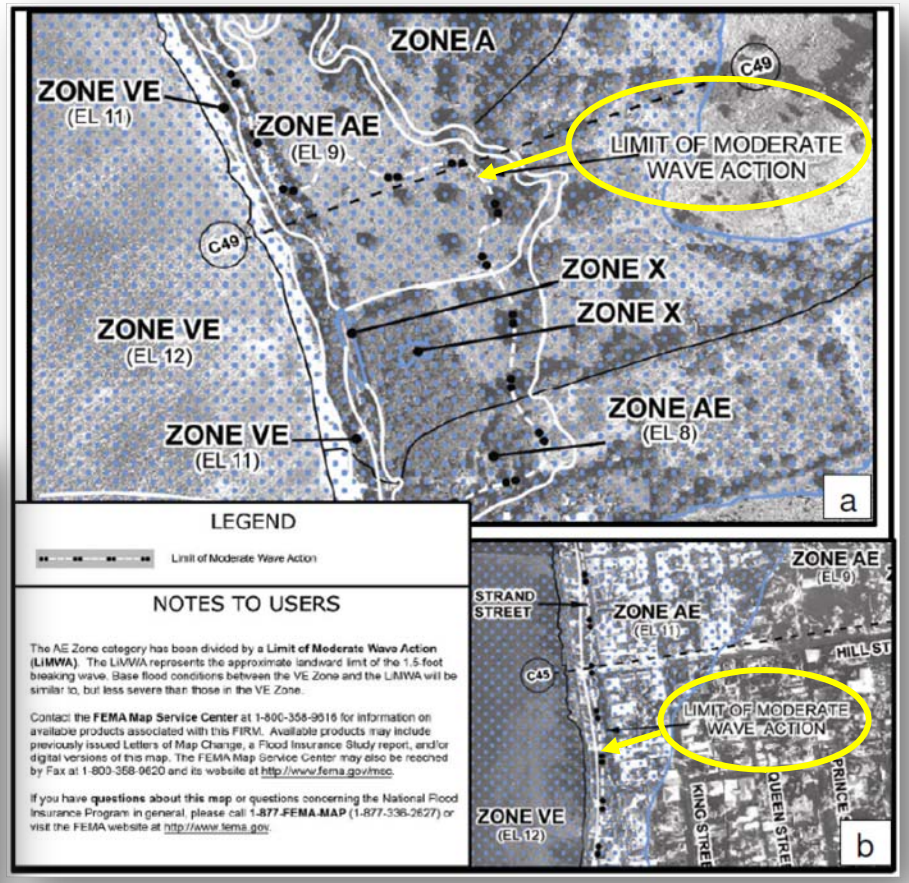
http://www.fema.gov/pdf/rebuild/mat/coastal_a_zones.pdf

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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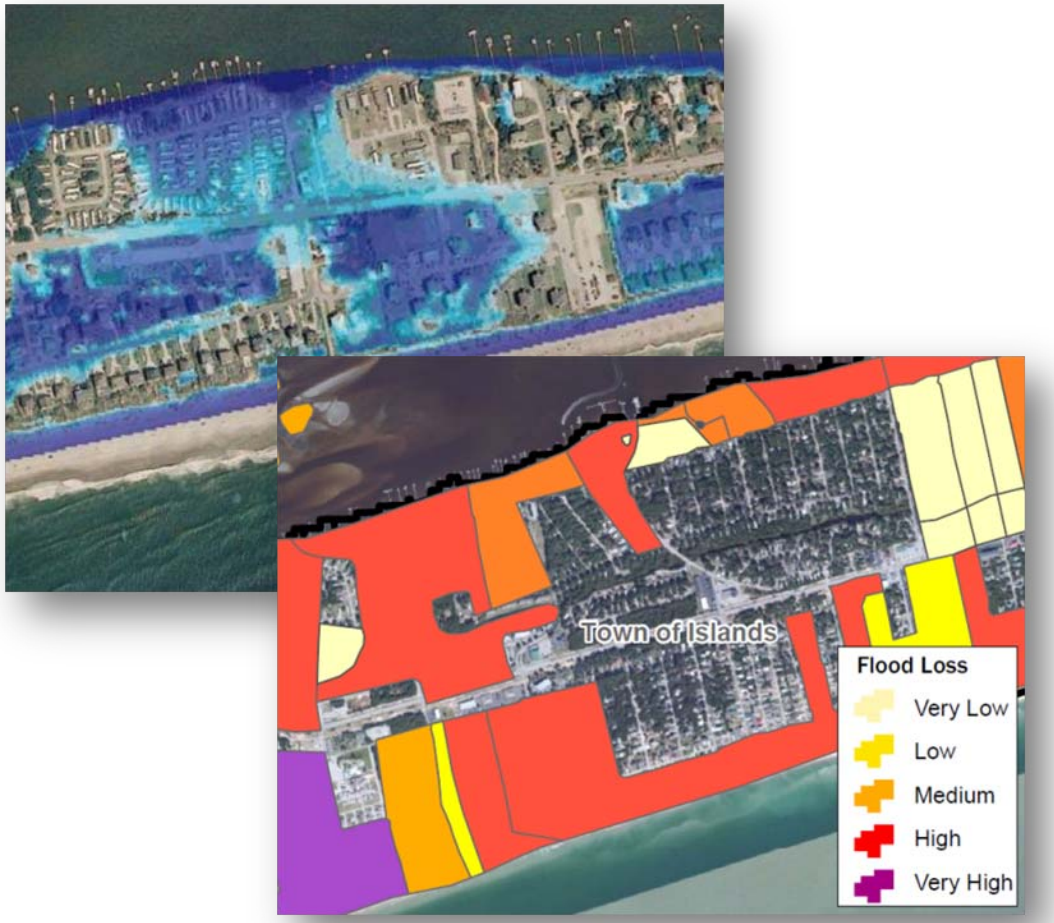
Coastal Flood Risk Products

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

Standard Flood Risk Products

- Coastal Depth Grids
- Flood Risk Assessment (HAZUS)



HAZUS MH
EARTHQUAKE • WIND • FLOOD

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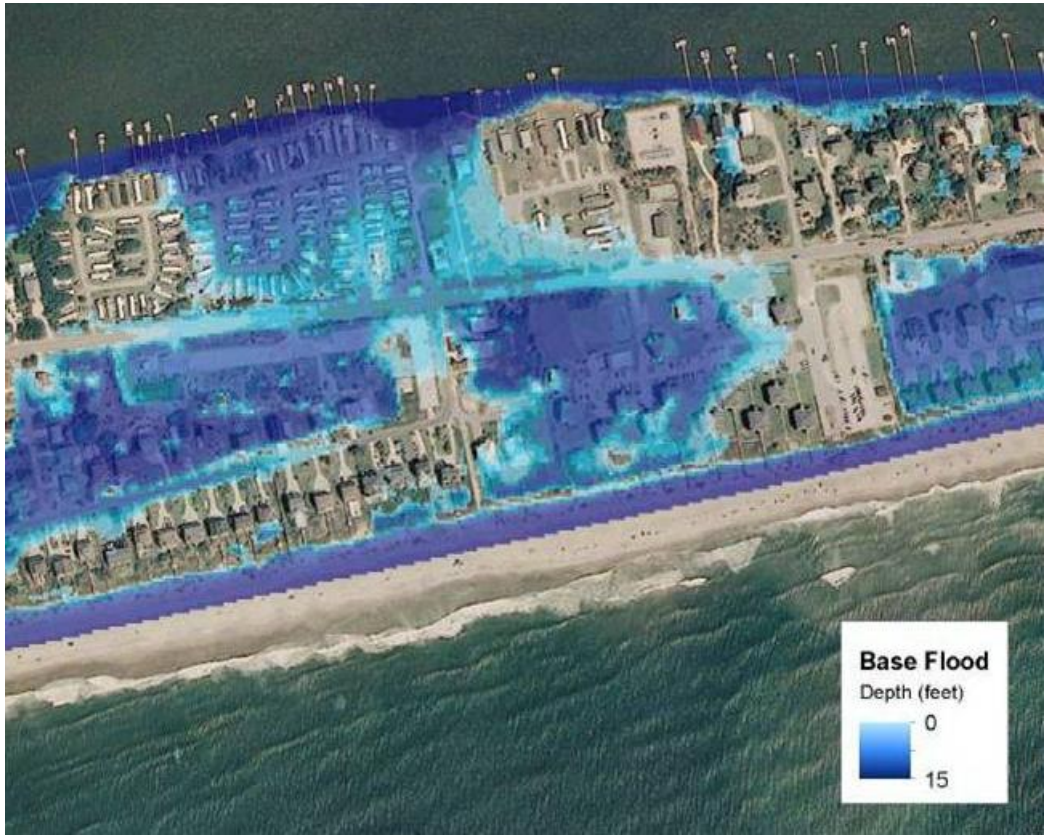
Coastal Depth Grid

- 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

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

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

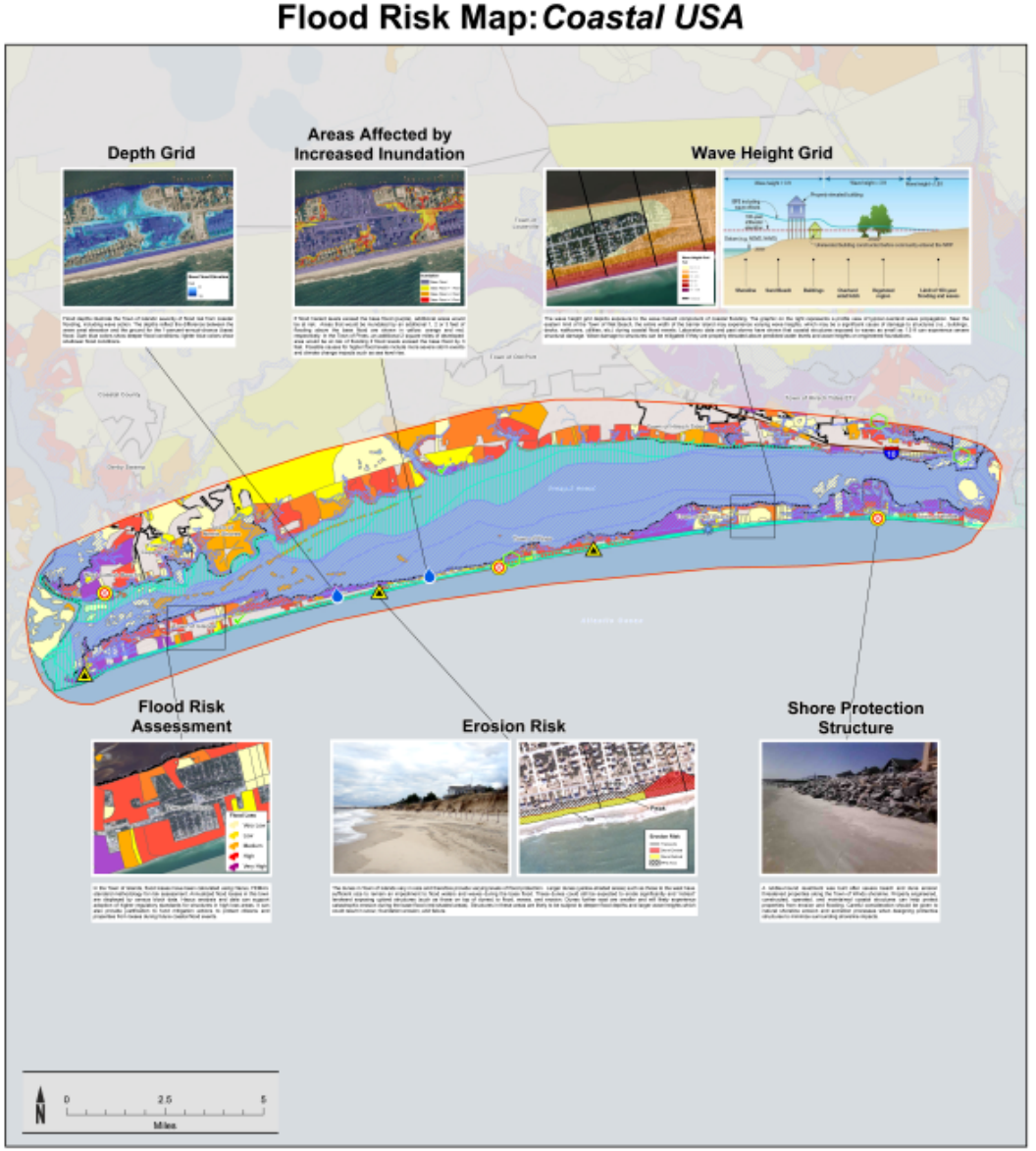
Primary Coast Type
High Dune, 10'+
Dune, 2' - 10'
High Bluff, 10'+
Bluff, 2' - 10'
Coastal Wetland
Flat Coast

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

Coastal FRM

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



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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*

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

FEMA

How does this apply to my community?

- NFIP Compliance
- Local impacts of coastal study

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

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 costal 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.

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	Mapping and Regulations
Flood Damage Reduction	Flood Preparation

- http://training.fema.gov/EMIWeb/CRS/

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Hazard Mitigation

- Opportunities
- Grant Funding

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 floodproone 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)

Mitigation Activities

Milwaukee County Pre-Disaster Mitigation Plan

Plan Expiration Date	Identified Hazard Mitigation Action
12/28/2016	Continue to enforce municipal ordinances which require no development in the Floodplain
12/28/2016	Continue to enforce local building codes for existing and new construction, based on the 2006 International Building Codes
12/28/2016	Acquisition and demolition of two repetitive loss structures
12/28/2016	Acquisition and demolition of five repetitive loss structures
12/28/2016	Easement of two repetitive loss structures
12/28/2016	Clear debris from ravine ditch between Fox Lane to Beach Drive; Replace rip rap and re-establish channel
12/28/2016	Address erosion issue on North side of Beach Drive Hill

Mitigation Activities

Racine County Hazard Mitigation Plan Update

Plan Expiration Date	Identified Hazard Mitigation Action
11/30/2015	Floodland and wetland zoning and zoning review
11/30/2015	Preservation of open and sensitive areas
11/30/2015	Purchase, demolition, and removal or floodproofing of 677 structures.
11/30/2015	Channel clearing, maintenance, or rehabilitation
11/30/2015	Stormwater management planning and regulation
11/30/2015	Survey of buildings near flood hazard areas

Mitigation Activities

State of Wisconsin Hazard Mitigation Plan, October 2011

Identified Hazard Mitigation Action for Kenosha County
Communication: Public Education on Hazards
Purchase houses in floodplain: relocating of buildings, flood-proofing structures, elevation of structures
Structural Mitigation: Sewer Upgrades/Improve Existing Stormwater Management Systems
Structural Mitigation: Flood Walls and Berms
Structural Mitigation: Culverts
Structural Mitigation: Enhance slope stability.
Structural Mitigation: Retrofitting structures
Non-Structural Mitigation: River/ Stream/Lake Maintenance
Non-Structural Mitigation: Wetland Restoration
Planning: Locate Vulnerable Facilities
Planning: Update Databases and Maps
Regulations, Laws, and Codes: Shoreland/ Floodplain Protection
Regulations, Laws, and Codes: Strengthen Local Building Codes

Mitigation Examples

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®

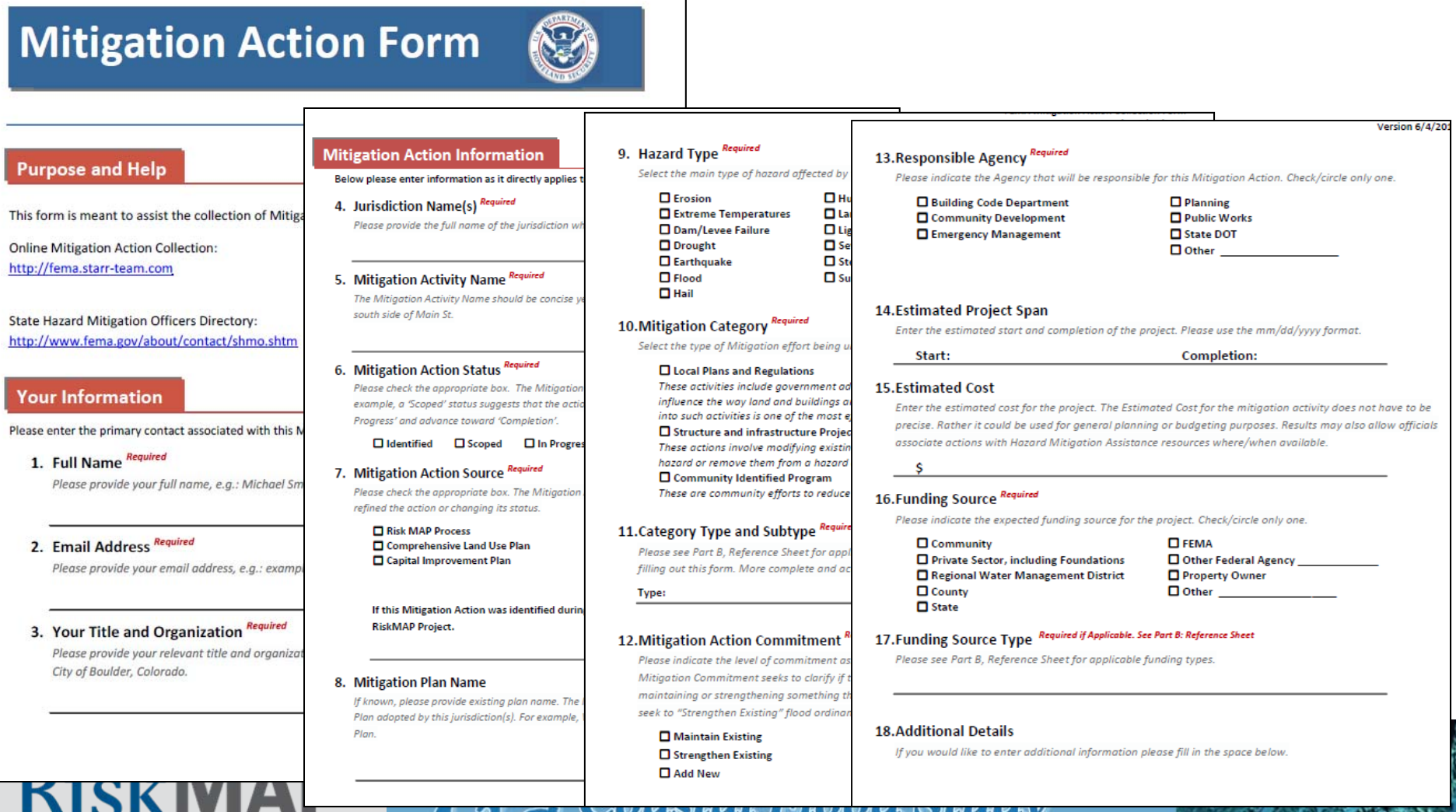
RiskMAP
Increasing Resilience Together

Great Lakes Coastal Flood Study

Lake Michigan Discovery Report Appendix H - Milwaukee, Racine, and Kenosha County

greatlakescoast.org

Meet the Action Form



Mitigation Action Form

Purpose and Help

This form is meant to assist the collection of Mitiga

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

State Hazard Mitigation Officers Directory:
http://www.fema.gov/about/contact/shmo.shtm

Your Information

Please enter the primary contact associated with this M

1. **Full Name** Required
   Please provide your full name, e.g.: Michael Sm
2. **Email Address** Required
   Please provide your email address, e.g.: exampl
3. **Your Title and Organization** Required
   Please provide your relevant title and organizat
   City of Boulder, Colorado.

Mitigation Action Information

Below please enter information as it directly applies t

4. **Jurisdiction Name(s)** Required
   Please provide the full name of the jurisdiction wh
5. **Mitigation Activity Name** Required
   The Mitigation Activity Name should be concise ye
   south side of Main St.
6. **Mitigation Action Status** Required
   Please check the appropriate box. The Mitigation
   example, a 'Scoped' status suggests that the actio
   Progress' and advance toward 'Completion'.
   ☐ Identified ☐ Scoped ☐ In Progres
7. **Mitigation Action Source** Required
   Please check the appropriate box. The Mitigation
   refined the action or changing its status.
   ☐ Risk MAP Process
   ☐ Comprehensive Land Use Plan
   ☐ Capital Improvement Plan

   If this Mitigation Action was identified durin
   RiskMAP Project.
8. **Mitigation Plan Name**
   If known, please provide existing plan name. The
   Plan adopted by this jurisdiction(s). For example,
   Plan.

9. **Hazard Type** Required
   Select the main type of hazard affected by
   ☐ Erosion
   ☐ Extreme Temperatures
   ☐ Dam/Levee Failure
   ☐ Drought
   ☐ Earthquake
   ☐ Flood
   ☐ Hail
   ☐ Hu
   ☐ La
   ☐ Lig
   ☐ Se
   ☐ St
   ☐ Su
10. **Mitigation Category** Required
    Select the type of Mitigation effort being u
    ☐ Local Plans and Regulations
    These activities include government ad
    influence the way land and buildings a
    into such activities is one of the most e
    ☐ Structure and infrastructure Projec
    These actions involve modifying existin
    hazard or remove them from a hazard
    ☐ Community Identified Program
    These are community efforts to reduce
11. **Category Type and Subtype** Require
    Please see Part B, Reference Sheet for appl
    filling out this form. More complete and ac
    Type:
12. **Mitigation Action Commitment** R
    Please indicate the level of commitment as
    Mitigation Commitment seeks to clarify if t
    maintaining or strengthening something th
    seek to "Strengthen Existing" flood ordinan
    ☐ Maintain Existing
    ☐ Strengthen Existing
    ☐ Add New

Version 6/4/201

13. **Responsible Agency** Required
    Please indicate the Agency that will be responsible for this Mitigation Action. Check/circle only one.
    ☐ Building Code Department
    ☐ Community Development
    ☐ Emergency Management
    ☐ Planning
    ☐ Public Works
    ☐ State DOT
    ☐ 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 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.
    ☐ Community
    ☐ Private Sector, including Foundations
    ☐ Regional Water Management District
    ☐ County
    ☐ State
    ☐ FEMA
    ☐ Other Federal Agency _____
    ☐ Property Owner
    ☐ Other _____
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.

RISKMAP
Increasing Resilience Together

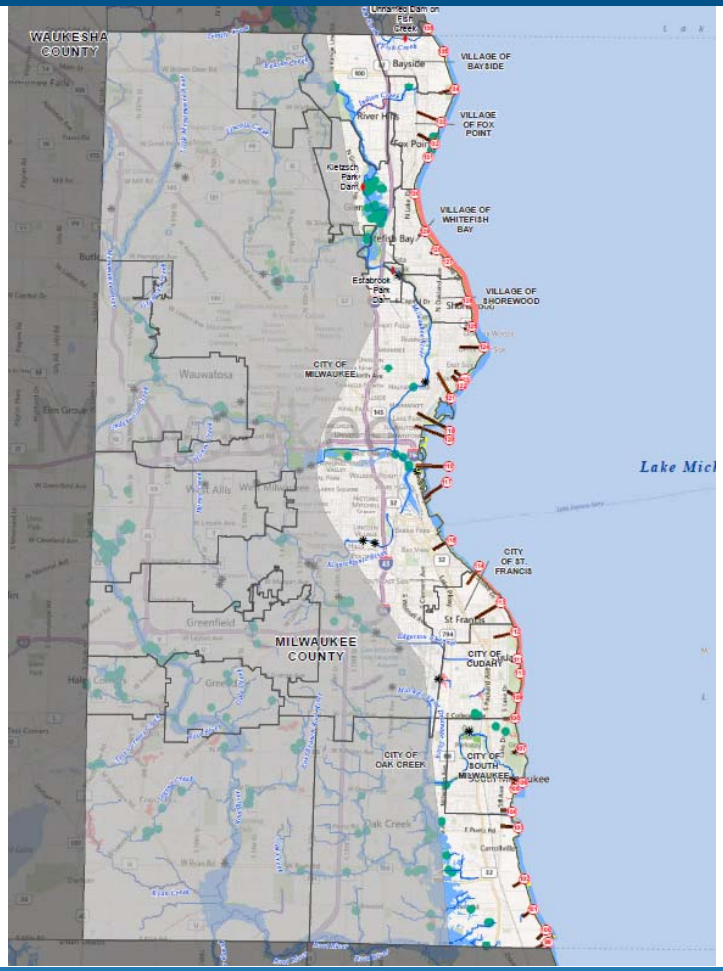
greatlakescoast.org

FEMA

Interactive Session

- View and Discuss Local Coastal Areas of Concern Using the Discovery Map
- Discuss Mitigation Action Opportunities and Introduce the Mitigation Action Form

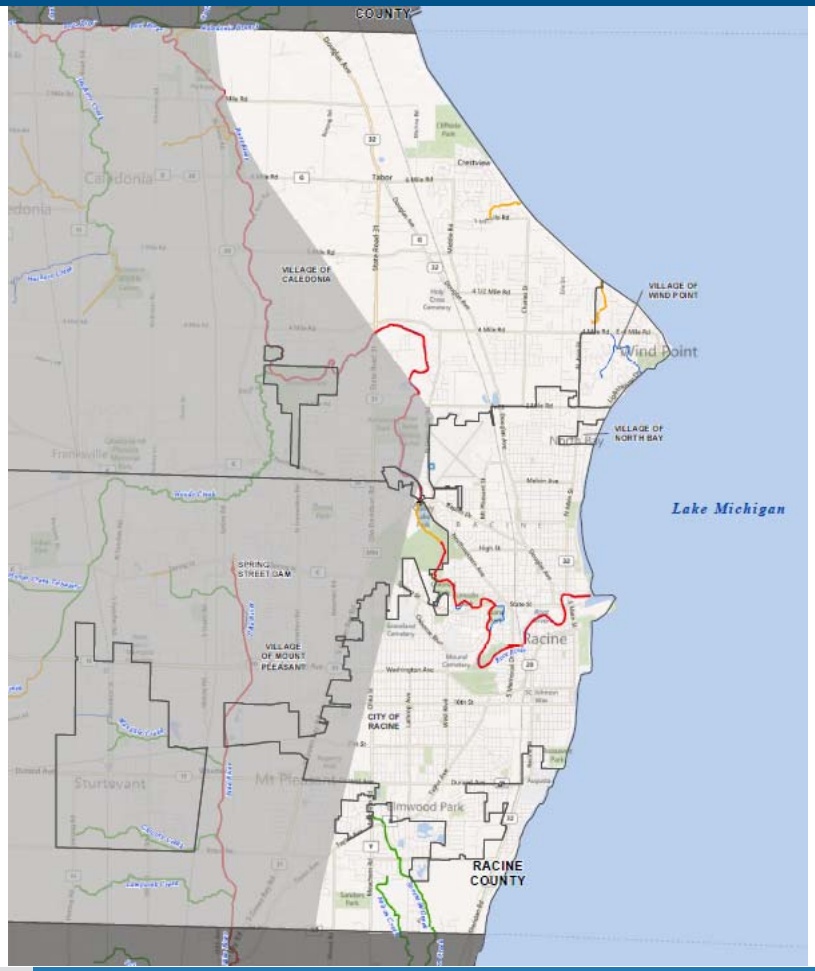
Milwaukee County, WI
Discovery Map – Flood Hazard Areas



RiskMAP
Increasing Resilience Together

Great Lakes Coastal Flood Study
greatlakescoast.org

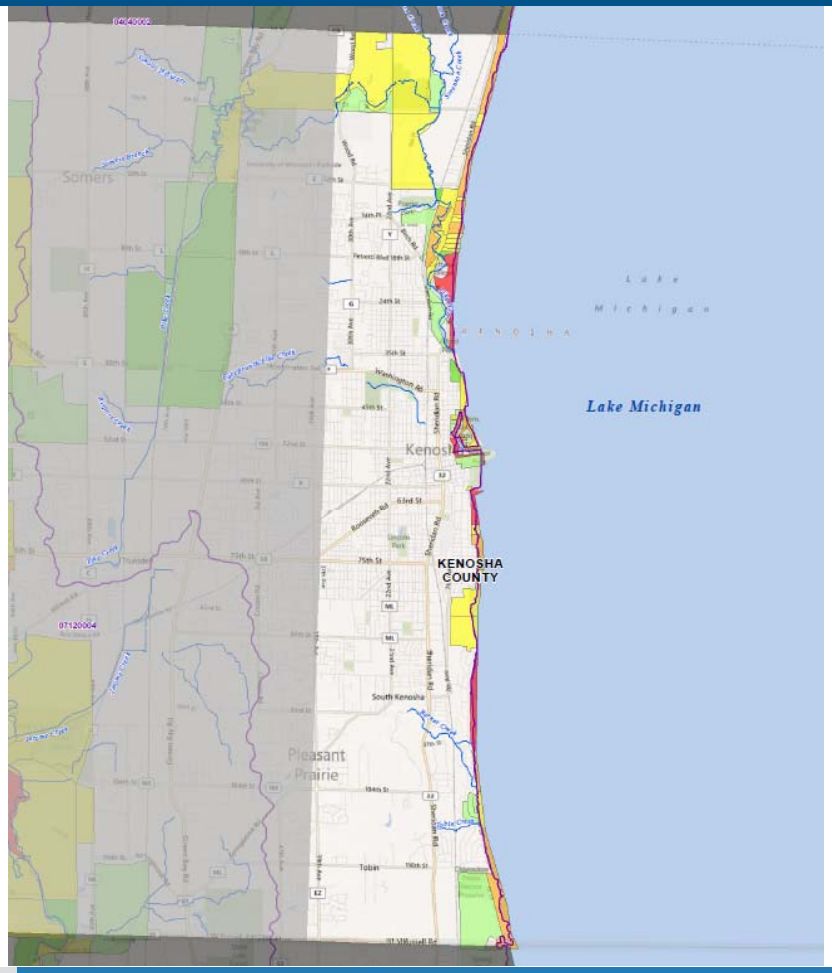
Racine County, WI
Discovery Map – CNMS Status



RiskMAP
Increasing Resilience Together

Great Lakes Coastal Flood Study
greatlakescoast.org

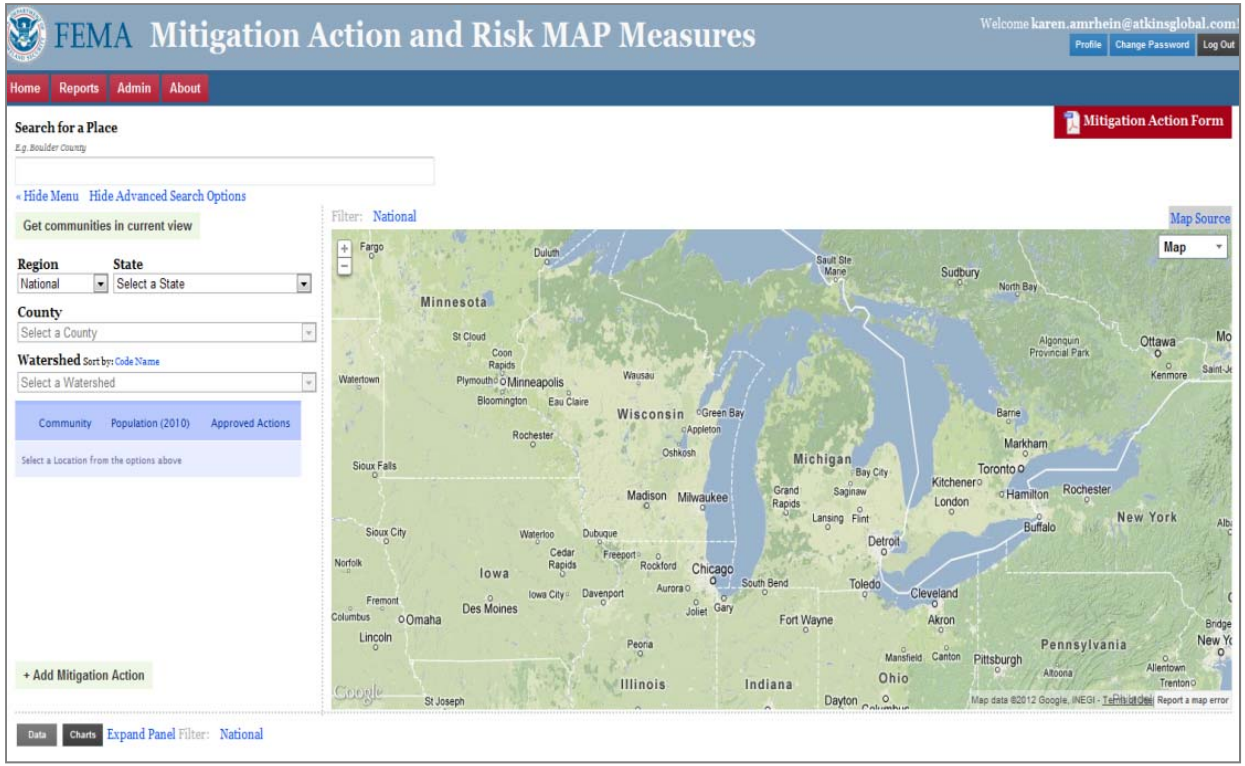
Kenosha County, WI
Discovery Map – AAL



RiskMAP
Increasing Resilience Together

Great Lakes Coastal Flood Study
greatlakescoast.org

Action Tracker



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

- 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

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

FEMA

Questions?

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

Contact

- FEMA Region V
  - Ken Hinterlong @ ken.hinterlong@fema.dhs.gov
  - Lee Traeger @ Lee.traeger@fema.dhs.gov
- Wisconsin Partners
  - Gary Heinrichs @Gary.Heinrichs@Wisconsin.gov
- STARR
  - Brian Caufield (technical) @ caufieldac@cdmsmith.com
  - Jaspreet Randhawa (outreach) @ randhawajg@cdmsmith.com
- Online
  - info@greatlakescoast.org

ATTACHMENT G

COASTAL DATA REQUEST FORM COMPILATION

Lake Michigan Coastal Data Request Form Compilation
Risk Assessment and Flood Mitigation Information
***Please refer to sample Coastal Data Request Form found in Attachment A**

CONTACT INFORMATION				RISK ASSESSMENT		FLOOD MITIGATION INFORMATION										
Community, County or State Organization	**County**	**Contact Name**	**Contact Title**	**Does your community have HAZUS-based loss estimates from average annualized loss?**	**Does your community have other risk assessment data?**	**Does your community have a hazard mitigation plan?**	**Does the plan reflect any coastal flood hazards?**	**Does the hazard mitigation plan indicate any data deficiencies for flood hazards that could be addressed through a flood study, especially near coastal zones?**	**Does your community have on-going mitigation projects, such as acquisition, elevation, flood control, soil stabilization, natural systems restoration, floodproofing, etc.**	**Any specific coastal mitigation projects?**	**Does your community have experience with coastal flood disasters and flood disaster recovery?**	**Does your community coordinate floodplain management programs with programs for the management and planning of open space? If possible, any coastal specific?**	**Have you had any prior proactive mitigation actions and planning efforts that resulted in reduced losses? If possible, any coastal specific?**	**Has your community applied and granted Individual Assistance/Public Assistance grants for declared disasters?**	**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?**	**How would you rank the community's ability to implement mitigation actions and to communicate flood risk to citizens?**
Kenosha County	Kenosha	Dan Treloar	County Conservationist	Yes - The State of Wisconsin Hazard Mitigation Plan	Yes - Kenosha County Hazard Mitigation Plan Update (SEWRPC CAPR No. 278, 2nd Edition)	Yes - it has been adopted	Yes - Kenosha County Hazard Mitigation Plan Update (SEWRPC CAPR No. 278, 2nd Edition)	No	Yes - Fox River Flood Mitigation Program in the Fox River watershed. The acquisition and relocation program was established in 1995.	No	No	Yes - All of the watershed, open space and land use plans adopted by Kenosha County recommend the protection and preservation of open space, floodplain and environmental corridors. No specific coastal examples are available.				Medium
Kenosha, City of	Kenosha	Rich Schroeder	Deputy Director, Department of Community Development	Yes - State of Wisconsin Hazard Mitigation Plan	Yes - Kenosha County Hazard Mitigation Plan Update (SEWRPC CAPR No. 278, 2nd Edition)	Yes - it has been adopted	Yes - Kenosha County Hazard Mitigation Plan Update (SEWRPC CAPR No. 278, 2nd Edition)		No	No	No	Yes - Detention basins within City Park Space (no known coastal specific)	Yes - FEMA Loss Avoidance Study, Wisconsin Property Acquisition and Structure Demolition, September 2009			Medium
Village of Pleasant Prairie	Kenosha	Michael Spence (MS), P.E./Jean Werbie-Harris (JWH)	Village Engineer (MS)/Community Development Director - Planning and Zoning Administrator (JWH)	Yes - The State of Wisconsin Hazard Mitigation Plan	Yes - Kenosha County Hazard Mitigation Plan Update (SEWRPC CAPR No. 278, 2nd Edition)	Yes - it has been adopted	Yes - Kenosha County Hazard Mitigation Plan Update (SEWRPC CAPR No. 278, 2nd Edition)	No	Yes - In Kenosha County - Fox River Flood Mitigation Program in the Fox River watershed. The acquisition and relocation program was established in 1995. In Pleasant Prairie - South Kenosha Storm Water Project. (Location - 22nd-30th Avenues from 90th Street to Springbrook Road). In Pleasant Prairie - Chateau Eau Plaines Storm Water Management Project. (Location 75th-80th Streets from 104th-115th Avenues).	Yes - Village has completed the following projects: Armor wall plating; Carol Beach Subdivision Unit #2 stormwater projects; Shore protection/rip rap projections along shore adjacent to Lake Shore Drive in 1987-1988.	Yes - Village has experienced area-wide flooding events in 2000, 2007, 2008, 2009, 2010 and 2011. Flood disaster recovery funding was obtained. Contact John Steinbrink, Jr., Public Works Director at 262-925-6768 for more information.	Yes - All of the watershed, open space and land use plans adopted by the Village recommend the protection and preservation of open space, floodplain and environmental corridors. No specific coastal examples area available. A specific plan for the coastal area is SEWRPC CAPR #88, A Land Use Management Plan for the Chiwaukee Prairie - Carol Beach Area for the Town (now Village) of Pleasant Prairie, Kenosha County, WI. The plan is available electronically.	Yes, in Kenosha County - Loss Avoidance Study Wisconsin, Property Acquisition and Structure Demolition September 2009 (Fox River Buyout Program). http://emergencymanagement.wi.gov/mitigation/stories/Wisconsin_LAS_11-09-09.pdf. No, not in the Village.	Yes - South Kenosha 2008 Community Development Block Grant assistance for storm water projects needed due to flooding. Snow/Wind Storm Damage Financial Assistance Grant in 2011. Village has applied for Public Assistance for area-wide flooding that occurred.	Yes - Hazard Mitigation Grant Program (HMGP) - Chateau Eau Plaines Subdivision area - applied for in 2011.	High - Village communicates regularly with its residents/businesses - features and information stories on Cable Channel 25; Website - emergencies and information pleasantprairieonline.com; Nixle text messages; Twitter messages; Monthly community-wide newsletters; and regular press releases. In addition to the adoption of the County Hazard Mitigation Plan, the Village has adopted the Emergency Management Plan, is a a member of the MABAS, and most of the Department Heads/Supervisors are CERT trained. The Fire & Rescue and Police Departments participate regularly in training emergency training exercises.
Southeastern Wisconsin Regional Planning Commission	Kenosha, Racine, Milwaukee and Ozaukee	Laura L. Kletti P.E., CFM	Southeastern Wisconsin Regional Planning Commission													
Milwaukee County	Milwaukee	Brad Blumer	GIS Specialist													
Racine County	Racine	Julie A. Anderson	Director, Public Works & Development Services	No		Yes -it has been adopted	No	No	No	Yes - USACOE Groin project for bluff stabilization in Caledonia - Col. Chapla Park	No	No	DWR-NR 116 Floodplain Regulations administered in Racine County have resulted in fewer flood losses.	No	Yes	High

Lake Michigan Coastal Data Request Form Compilation
Risk Assessment and Flood Mitigation Information
***Please refer to sample Coastal Data Request Form found in Attachment A**

CONTACT INFORMATION				RISK ASSESSMENT		FLOOD MITIGATION INFORMATION										
Community, County or State Organization	**County**	**Contact Name**	**Contact Title**	**Does your community have HAZUS-based loss estimates from average annualized loss?**	**Does your community have other risk assessment data?**	**Does your community have a hazard mitigation plan?**	**Does the plan reflect any coastal flood hazards?**	**Does the hazard mitigation plan indicate any data deficiencies for flood hazards that could be addressed through a flood study, especially near coastal zones?**	**Does your community have on-going mitigation projects, such as acquisition, elevation, flood control, soil stabilization, natural systems restoration, floodproofing, etc.**	**Any specific coastal mitigation projects?**	**Does your community have experience with coastal flood disasters and flood disaster recovery?**	**Does your community coordinate floodplain management programs with programs for the management and planning of open space? If possible, any coastal specific?**	**Have you had any prior proactive mitigation actions and planning efforts that resulted in reduced losses? If possible, any coastal specific?**	**Has your community applied and granted Individual Assistance/Public Assistance grants for declared disasters?**	**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?**	**How would you rank the community's ability to implement mitigation actions and to communicate flood risk to citizens?**
Racine, City of	Racine	Brian F. O'Connell	Director of City Development	No	No	Yes - it has been adopted	No	No	No - some	No	No	No	No	No	No	Medium

Lake Michigan Coastal Data Request Form Compilation
Other Data and Historical Flood Data
***Please refer to sample Coastal Data Request Form found in Attachment A**

CONTACT INFORMATION					OTHER DATA					HISTORICAL FLOOD DATA
Community, County or State Organization	**County**	**State**	**Contact Name**	**Contact Title**	**Hydraulic Structures (i.e. bridges, culverts, levees, dams) with inspection status, if available**	**Elevated roads**	**Critical Facilities**	**Other known hazards with geographical boundaries, i.e., landslide hazard areas, storm surge inundation zones, wildfire hazard areas, etc.**	**Other relevant data**	**Are you aware of any coastal flooding issues not represented on effective FIRMs:**
Kenosha County	Kenosha	WI	Dan Treloar	County Conservationist			Digital			No
Kenosha, City of	Kenosha	WI	Rich Schroeder	Deputy Director, Department of Community Development	Digital - City of Kenosha Storm Water Utility Plat Book		Digital - Kenosha County GIS; Water Distribution Plant; Waste Water Treatment Plant			No
Village of Pleasant Prairie	Kenosha	WI	Michael Spence (MS), P.E./Jean Werbie-Harris (JWH)	Village Engineer (MS)/Community Development Director - Planning and Zoning Administrator (JWH)			Digital			Yes - See SEWRPC CAPR #88, A Land Use Management Plan for the Chiwaukee Prairie - Carol Beach Area of the Town (now a Village) of Pleasant Prairie, Kenosha County, WI.
Southeastern Wisconsin Regional Planning Commission	Kenosha, Racine, Milwaukee and Ozaukee	WI	Laura L. Kletti P.E., CFM	Southeastern Wisconsin Regional Planning Commission						

Lake Michigan Coastal Data Request Form Compilation
Other Data and Historical Flood Data
***Please refer to sample Coastal Data Request Form found in Attachment A**

CONTACT INFORMATION					OTHER DATA					HISTORICAL FLOOD DATA
Community, County or State Organization	**County**	**State**	**Contact Name**	**Contact Title**	**Hydraulic Structures (i.e. bridges, culverts, levees, dams) with inspection status, if available**	**Elevated roads**	**Critical Facilities**	**Other known hazards with geographical boundaries, i.e., landslide hazard areas, storm surge inundation zones, wildfire hazard areas, etc.**	**Other relevant data**	**Are you aware of any coastal flooding issues not represented on effective FIRMs:**
Milwaukee County	Milwaukee	WI	Brad Blumer	GIS Specialist						
Racine County	Racine	WI	Julie A. Anderson	Director, Public Works & Development Services			Digital			No
Racine, City of	Racine	WI	Brian F. O'Connell	Director of City Development						No

Lake Michigan Coastal Data Request Form Compilation
Basemap Data and Coastal Data
***Please refer to sample Coastal Data Request Form found in Attachment A**

CONTACT INFORMATION					BASE MAP DATA		COASTAL DATA						
Community, County or State Organization	**County**	**State**	**Contact Name**	**Contact Title**	**Topography**	**Property Information (Building Footprints, Parcel Data, Tax Assessor's Data)**	**Coastal Structure Inventory (Seawalls, Jetties, etc)**	**Coastal Feature Inventory (dunes, bluffs, etc)**	**Shoreline Change Data**	**Locations of beach nourishment or dune restoration projects**	**Areas of significant beach or dune erosion**	**Mean high water**	**Mean lake level**
Kenosha County	Kenosha	WI	Dan Treloar	County Conservationist	Digital data available	Digital data available	Digital - Kenosha County 3' orthophotography and detailed LiDAR will help identify the coastal data features.	Digital - Kenosha County 3' orthophotography and detailed LiDAR will help identify the coastal data features.	Digital - Kenosha County 3' orthophotography and detailed LiDAR will help identify the coastal data features.	Digital - Kenosha County 3' orthophotography and detailed LiDAR will help identify the coastal data features.	Digital - Kenosha County 3' orthophotography and detailed LiDAR will help identify the coastal data features.		Digital - Kenosha County 3' orthophotography and detailed LiDAR will help identify the coastal data features.
Kenosha, City of	Kenosha	WI	Rich Schroeder	Deputy Director, Department of Community Development	Digital - Kenosha County GIS	Digital - Kenosha County GIS	Digital - Aerial photos, Kenosha County GIS	Digital - Aerial photos, Kenosha County GIS	Digital - Aerial photos, Kenosha County GIS	Digital - SEWRPC Technical Report No. 36			
Village of Pleasant Prairie	Kenosha	WI	Michael Spence (MS), P.E./Jean Werbie-Harris (JWH)	Village Engineer (MS)/Community Development Director - Planning and Zoning Administrator (JWH)	Digital data available	Digital data available	Digital data available	Digital data available	Digital data available	Digital data available	Digital data available		Digital

Lake Michigan Coastal Data Request Form Compilation
Basemap Data and Coastal Data
***Please refer to sample Coastal Data Request Form found in Attachment A**

CONTACT INFORMATION					BASE MAP DATA		COASTAL DATA						
Community, County or State Organization	**County**	**State**	**Contact Name**	**Contact Title**	**Topography**	**Property Information (Building Footprints, Parcel Data, Tax Assessor's Data)**	**Coastal Structure Inventory (Seawalls, Jetties, etc)**	**Coastal Feature Inventory (dunes, bluffs, etc)**	**Shoreline Change Data**	**Locations of beach nourishment or dune restoration projects**	**Areas of significant beach or dune erosion**	**Mean high water**	**Mean lake level**
Southeastern Wisconsin Regional Planning Commission	Kenosha, Racine, Milwaukee and Ozaukee	WI	Laura L. Kletti P.E., CFM	Southeastern Wisconsin Regional Planning Commission									
Milwaukee County	Milwaukee	WI	Brad Blumer	GIS Specialist	Digital data available	Digital data available							
Racine County	Racine	WI	Julie A. Anderson	Director, Public Works & Development Services	Digital	Digital	Digital	Digital	Digital	Digital	Digital	Digital	Digital
Racine, City of	Racine	WI	Brian F. O'Connell	Director of City Development									

Lake Michigan Coastal Data Request Form Compilation
Community Plans and Projects and Other GIS Data
***Please refer to sample Coastal Data Request Form found in Attachment A**

CONTACT INFORMATION				COMMUNITY PLANS AND PROJECTS							GIS DATA
Community, County or State Organization	**County**	**Contact Name**	**Contact Title**	**Does your community have a comprehensive plan? If so, was your hazard mitigation plan coordinated with the comprehensive plan?**	**Does your community's comprehensive plan have a special consideration for coastal areas?**	**Does your community have a coastal zone management 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? If so, explain the role in floodplain management and provide examples of programs in place.**	**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):**	**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.)**	**Any other comments/concerns based on local knowledge:**	**Other GIS Data Available - include type of data, date of data, data sources, etc if available**
Kenosha County	Kenosha	Dan Treloar	County Conservationist	Yes - Our community has a Comprehensive Plan. No - Our community's Hazard Mitigation Plan was not coordinated with the Comprehensive Plan.	No	Yes - Lake Michigan Shoreline Recession and Bluff Stability report (SEWRPC TR No. 36)	Yes - Kenosha County-wide zoning is administered by the Department of Planning & Development. The County Zoning, Floodplain/Shoreland Ordinance regulates the development and land use with special concern for shoreland, wetland and floodplain areas.	No	Yes -I-94 NORTH-SOUTH Freeway Project will have an effect on the currently adopted DFIRMs.		LiDAR, Contours, Buildings, Othophotography, Parcel Mapping, Parcel Tax Data, Right of Ways, Street Center Lines (Kenosha County)
Kenosha, City of	Kenosha	Rich Schroeder	Deputy Director, Department of Community Development	Yes - Our community has a Comprehensive Plan. Unknown -The Hazard Mitigation Plan may/may not have been coordinated with the Comprehensive Plan.	No	Yes - SEWRPC Technical Report No. 36	Yes - Community Development staff; Public Works/Engineering staff; Zoning Ordinance; Code of General Ordinances	Yes - Demolition of existing Chrysler industrial plant (no current plans for redevelopment)			Othophotography, Parcel Mapping, Parcel Tax Data, Right of Ways, Street Center Lines (Kenosha County)
Village of Pleasant Prairie	Kenosha	Michael Spence (MS), P.E./Jean Werbie-Harris (JWH)	Village Engineer (MS)/Community Development Director - Planning and Zoning Administrator (JWH)	Yes - Our community has a Comprehensive Plan. Yes - The Hazard Mitigation Plan was coordinated with the Comprehensive Plan. Information was taken into account during the plan preparation. The Village's Comprehensive Plan is available on the Village website. Contact Jean Werbie-Harris for more information at 262-925-6717.	Yes - As the plan follows CAPR #88 for coastal and shoreland protection areas.	Yes - Lake Michigan Shoreline Recession and Bluff Stability report (SEWRPC TR No. 36)	Yes - Village zoning regulations are administered by the Community Development Department - Zoning Administrator and Deputy Zoning Administrator. The Village Zoning, Floodplain/Shoreland Ordinance regulates the development and land use with special concern for shoreland, wetland and floodplain areas.	No - We have no areas of planning new development in direct proximity (within 3/4 of a mile) to the coastal areas. However, there are numerous areas west of sheridan Road throughout the Village that have been developed and will be developed for urban purposes.	Yes - IH-94 NORTH-SOUTH Freeway Project will have an effect on the currently adopted DFIRMs.		Othophotography, Parcel Mapping, Parcel Tax Data, Right of Ways, Street Center Lines (Kenosha County)

Lake Michigan Coastal Data Request Form Compilation
Community Plans and Projects and Other GIS Data
***Please refer to sample Coastal Data Request Form found in Attachment A**

CONTACT INFORMATION				COMMUNITY PLANS AND PROJECTS							GIS DATA
Community, County or State Organization	**County**	**Contact Name**	**Contact Title**	**Does your community have a comprehensive plan? If so, was your hazard mitigation plan coordinated with the comprehensive plan?**	**Does your community's comprehensive plan have a special consideration for coastal areas?**	**Does your community have a coastal zone management 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? If so, explain the role in floodplain management and provide examples of programs in place.**	**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):**	**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.)**	**Any other comments/concerns based on local knowledge:**	**Other GIS Data Available - include type of data, date of data, data sources, etc if available**
Southeastern Wisconsin Regional Planning Commission	Kenosha, Racine, Milwaukee and Ozaukee	Laura L. Kletti P.E., CFM	Southeastern Wisconsin Regional Planning Commission							Several reports/documents and technical data are available online. GO TO: http://www.sewrpc.org/. Data & Resources_Publication Search. 1. Technical Report No. 36 (1997) – Lake Michigan Shoreline Recession and Bluff Stability in Southeastern WI:1995 2. Memorandum Reports: a. No. 171 (2008) – Assessment of Lake Michigan Shoreline Erosion Control Structures in Racine County, WI; b. No. 156 (2004) – Lake Park Bluff Stability and Plant Community Assessment:2003 (Milwaukee County, WI) 3. Community Assistance Planning Report: a. No. 163 (1989) – A Lake Michigan Shoreline Erosion Management Plan for Milwaukee County, WI; b. No. 155 (1988) – A Lake Michigan Shoreline Erosion Management Plan for Northern Milwaukee County, WI; c. No. 110 (1984) – A Lake Michigan Coastal Erosion and Related Land Use Management Study for the City of St. Francis, WI; d. No. 86 (1982) – A Lake Michigan Coastal Erosion Management Study for Racine County, WI. Also, WCM_Erosion Study1977 is also available.	
Milwaukee County	Milwaukee	Brad Blumer	GIS Specialist								Milwaukee County Planimetric Coastal Data was provided. Contact Brad Blumer to coordinate obtaining county data.
Racine County	Racine	Julie A. Anderson	Director, Public Works & Development Services	Yes - Our community has a Comprehensive Plan. Yes - The Hazard Mitigation Plan was coordinated with the Comprehensive Plan.	No	Yes - Very old, done 30+ years ago	Yes - No building in floodplain zones without compliance to ordinances. Bluff stabilization required before permits issued for new construction on top of buff along Lake Michigan.	No	No	The Southeastern Wisconsin Regional Planning Commission has most of the data sets requested in this survey. Also, coastal structures in Racine County were studied by Dr. Scudder Mackey in past 5 years. In Racine County, there are many high bluffs, and there is likely higher erosion risk than flood risk.	
Racine, City of	Racine	Brian F. O'Connell	Director of City Development	Yes - Our community has a Comprehensive Plan. Yes - The Hazard Mitigation Plan was coordinated with the Comprehensive Plan.	No	No	Yes	No	No		Parcel data is available. Contact Brian O'Connell