



Let's Get Digital!

New and Easy Tools for FEMA Flood Data

Kristine Sawica, P.E.

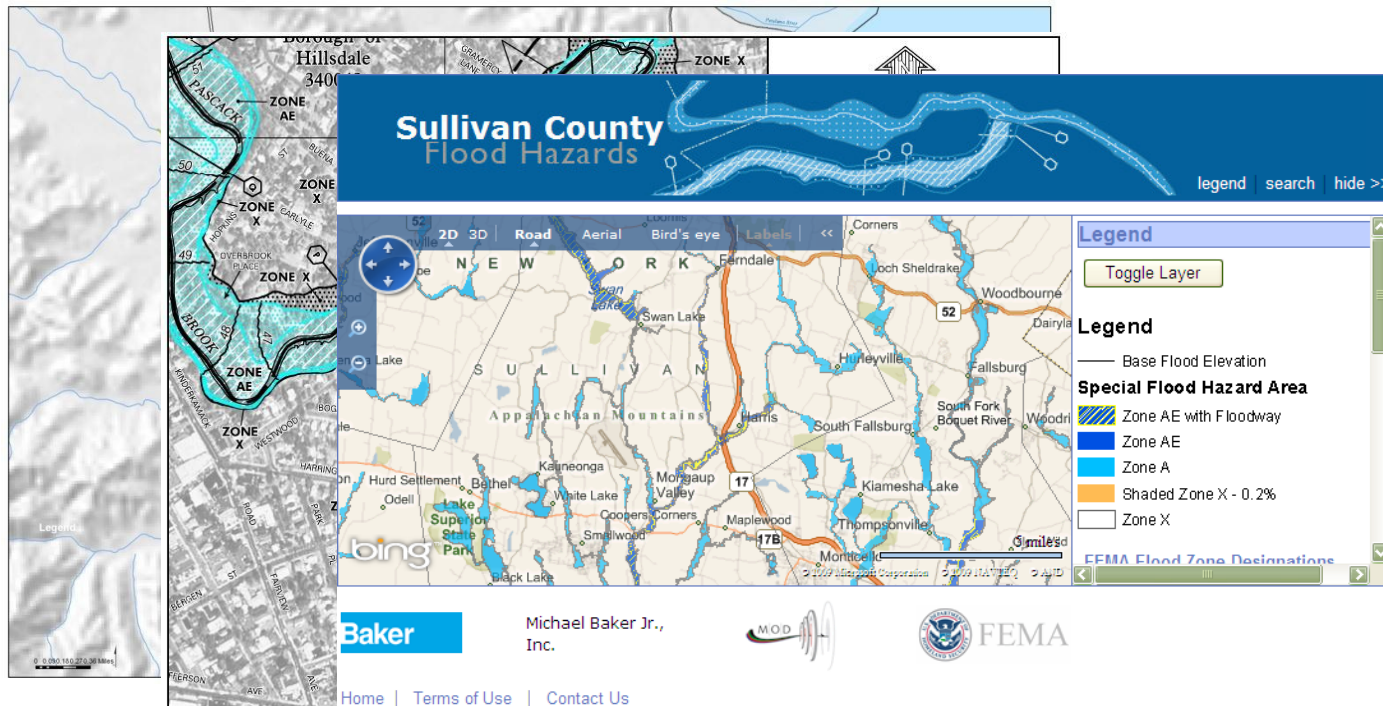
Michael Baker Jr., Inc.

Baker

Introduction

Flood Map Modernization has brought FEMA's maps and mapping process into the 21st century

- Mid-Term Levee Inventory
- DFIRM Tools
- SEQUOIA web and blackberry application



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Disclaimer: This map is provided for informational purposes only, and is provided as part of FEMA's outreach efforts. For an official copy of the DFIRM, please contact your community Floodplain Administrator. This map cannot be used for flood zone determination.

Mid-Term Levee Inventory (MLI)

TOPICS:

- Mid-term Levee Inventory (MLI)

Purpose

- National Levee Database (NLD) Model and MLI model



Purpose of Mid-Term Inventory

- Develop and assemble a geographic levee database of essential data for the Nation
- “Rolling” inventory
- Permit FEMA to quickly query all the nation’s levees and assess the risk for levee failure
- Provide the framework for implementation of FEMA Procedure Memos #34 and #43 for the Provisionally Accredited Levee (PAL) process
- Allow FEMA to answer questions from Congress and others

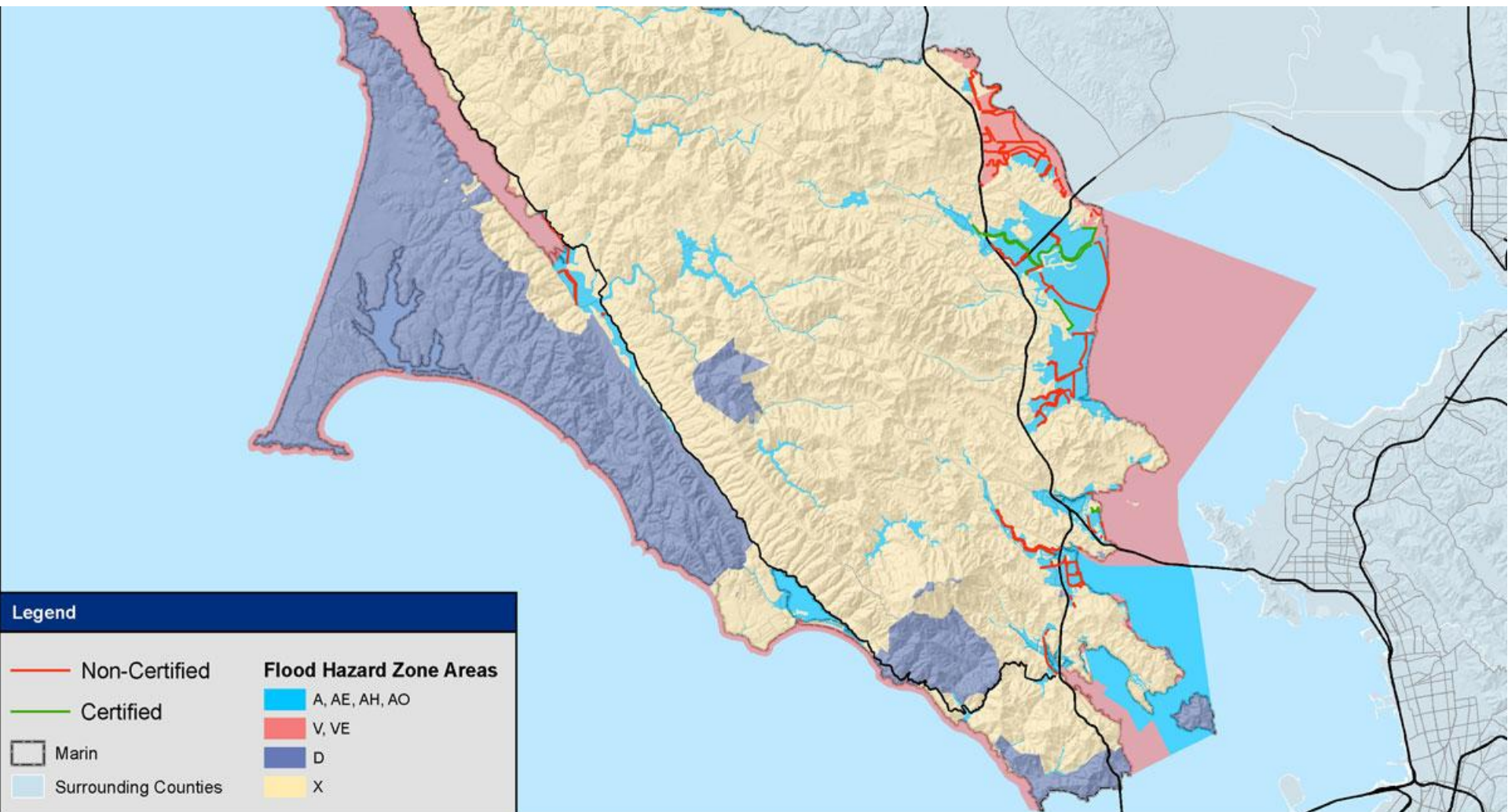
NLD/Mid-Term Levee Inventory

- **Mid-Term Levee Inventory Data Model**

- Structure is based on the Corps National Levee Database (NLD) model
- Subset of the Corps Levee Data Model, only data of high importance to FEMA is collected
- Identical Relationships and Fields
- Key Attributes
 - Levee Centerline Locations
 - Protection Status
 - Accreditation Status
 - Ownership Status
 - Area Protected
- KMZ file created for use in Google Earth



Marin County, CA

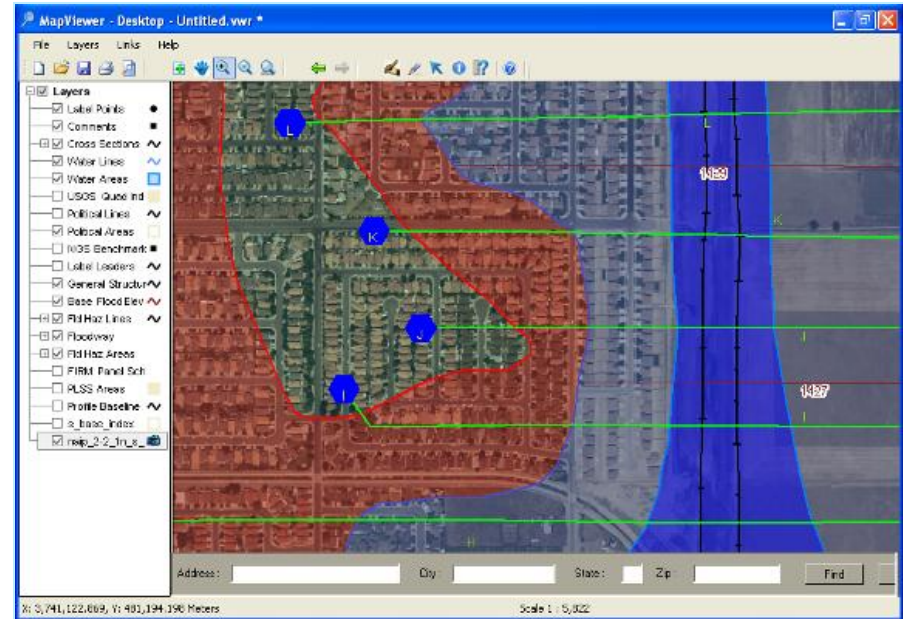


Summary

- **USACE is building a National Levee Dataset in conjunction with FEMA as a national asset**
- **To address the immediate needs of FEMA a Mid-term Levee Inventory was constructed, sourced from the NLD, to include the geospatial component and attributes vital for FEMA**

TOPICS:

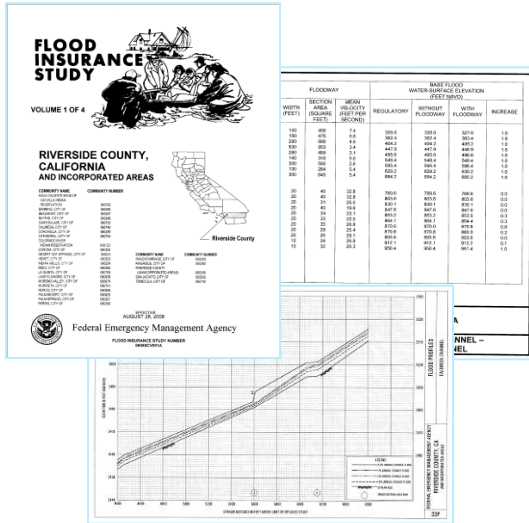
- Background
- FIRMette - Web
- Map Viewer – Web
- Web Map Services – Google Earth



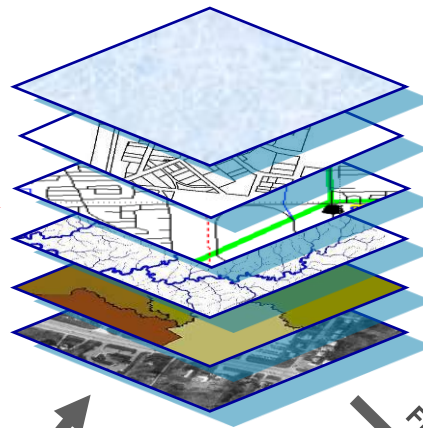
What is a DFIRM?

Flood Insurance Study (FIS)

Text/Report (digital & hard-copy)

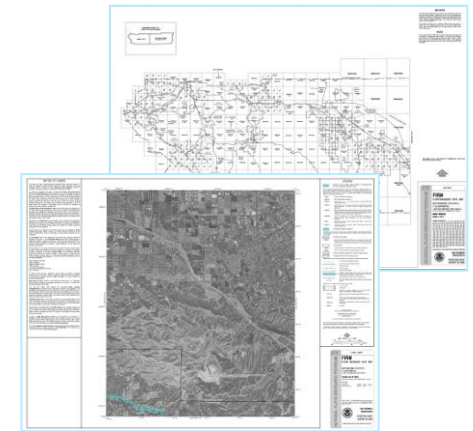


DFIRM Database

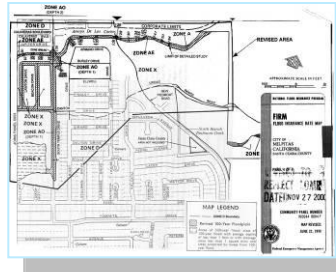


FIRM Panels

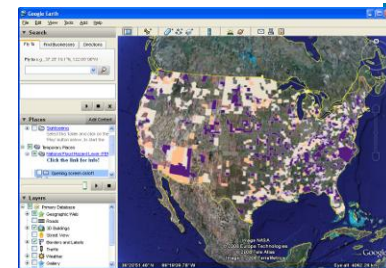
(digital & hard-copy)



Letters of Map Revision (LOMRs)



Future LOMRs sewn into NFHL daily



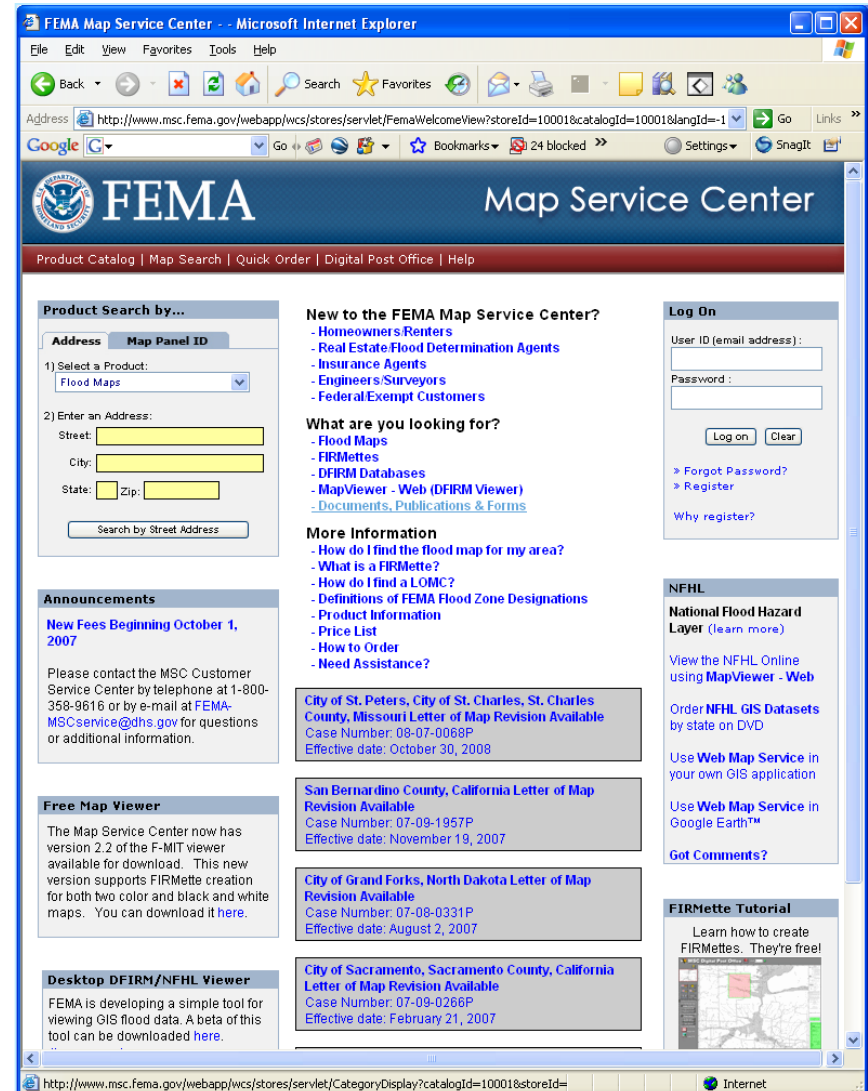
National Flood Hazard Layer (NFHL)

FEMA's Policy on Use of Digital Flood Data

- Paper maps, FIRMettes and DFIRM database are interchangeable and equivalent (digital as official)
 - Flood zones are defined precisely by geographic coordinates
- Allows use of local data with FEMA flood data
 - Communities can integrate FEMA flood hazard data with local data without FEMA approval
 - Additional responsibility on communities to verify their data meets FEMA's accuracy requirements
- Allows for the creation of a National Flood Hazard Layer (NFHL)

Map Service Center (MSC)

- <http://msc.fema.gov>
- Distribution mechanism for
 - Current & Historic Flood Maps (DFIRMs & FIRMs)
 - FIS Texts/Reports
 - DFIRM & NFHL Databases
 - Letters of Map Change (LOMC)
 - Letters of Map Amendment (LOMAs)
 - Letters of Map Revision (LOMR)
 - Other Data and Documents
- Download tools for viewing DFIRM/NFHL data



MSC Website

The screenshot shows the FEMA Map Service Center website. The header includes the FEMA logo and the text 'Map Service Center'. Below the header is a navigation bar with links: 'Product Catalog | Map Search | Quick Order | Digital Post Office | Help'.

Product Search by...

Address **Map Panel ID**

1) Select a Product:

2) Enter an Address:
 Street:
 City:
 State: Zip:

Announcements

New Fees Beginning October 1, 2007

Please contact the MSC Customer Service Center by telephone at 1-800-358-9616 or by e-mail at FEMA-MSCSERVICE@dhs.gov for questions or additional information.

Free Map Viewer

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Desktop DFIRM/NFHL Viewer

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[\(learn more\)](#)

New to the FEMA Map Service Center?

- Homeowners/Renters
- Real Estate/Flood Determination Agents
- Insurance Agents
- Engineers/Surveyors
- Federal/Exempt Customers

What are you looking for?

- Flood Maps
- FIRMettes
- DFIRM Databases
- MapViewer - Web (DFIRM viewer)
- Documents, Publications & Forms

More Information

- How do I find the flood map for my area?
- What is a FIRMette?
- How do I find a LOMC?
- Definitions of FEMA Flood Zone Designations
- Product Information
- Price List
- How to Order
- Need Assistance?

Log On

User ID (email address) :
 Password :

[» forgot Password?](#)
[» Register](#)
[Why register?](#)

NFHL

National Flood Hazard Layer ([learn more](#))

View the NFHL Online using [MapViewer - Web](#)

Order NFHL GIS Datasets by state on DVD


Use [Web Map Service](#) in your own GIS application

Use [Web Map Service](#) in Google Earth™

[Got Comments?](#)

FIRMette Tutorial

Learn how to create FIRMettes. They're free!



[Click here to learn how to create a FIRMette.](#)

San Bernardino County, California Letter of Map Revision Available
 Case Number: 08-09-1595P
 Effective date: August 29, 2008

City of St. Peters, City of St. Charles, St. Charles County, Missouri Letter of Map Revision Available
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City of Grand Forks, North Dakota Letter of Map Revision Available
 Case Number: 07-08-0331P
 Effective date: August 2, 2007

City of Sacramento, Sacramento County, California Letter of Map Revision Available
 Case Number: 07-09-0266P

**Product Search/
Catalog**

Login

**DFIRM
Database**

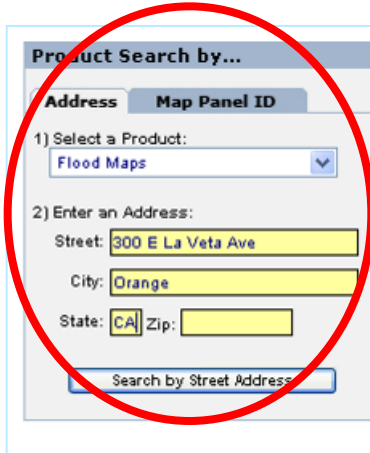
**National Flood
Hazard
Layer
(NFHL)**

**FIRMette –
Desktop
Download**

**MapViewer –
Desktop
Download**

**FIRMette -
Web Tool**

Baker Let's Get Started with the MSC



Product Search by...

Address Map Panel ID






1) Select a Product:
Flood Maps

2) Enter an Address:
Street: 300 E La Veta Ave
City: Orange
State: CA Zip:

Search by Street Address

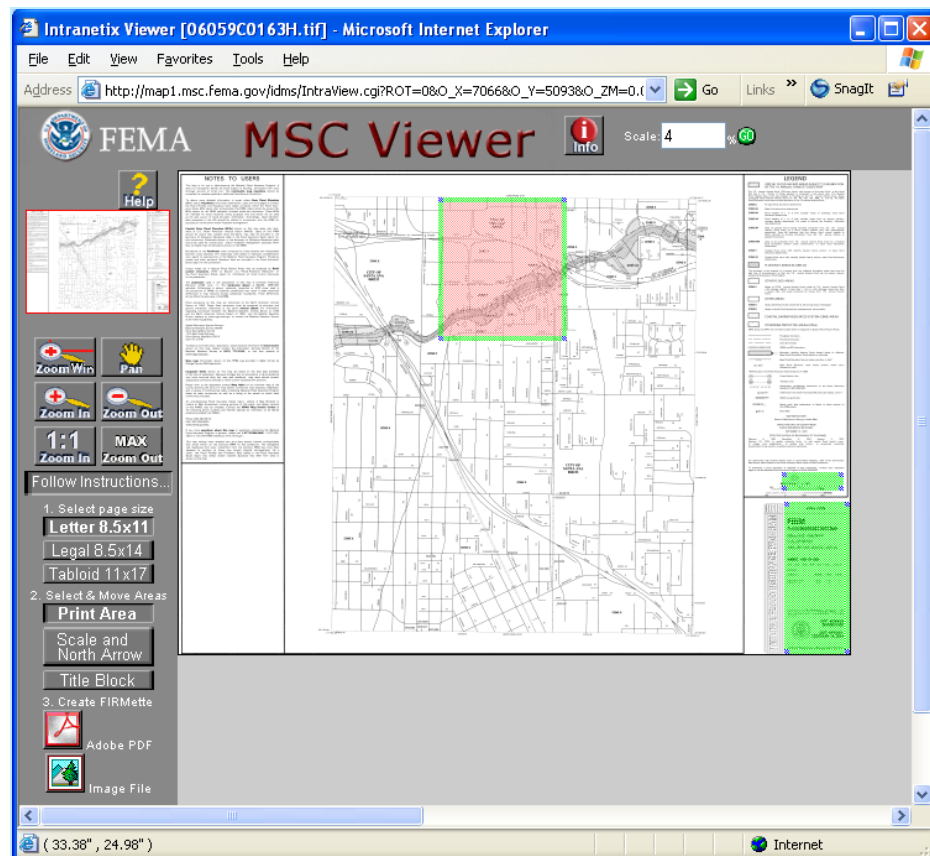
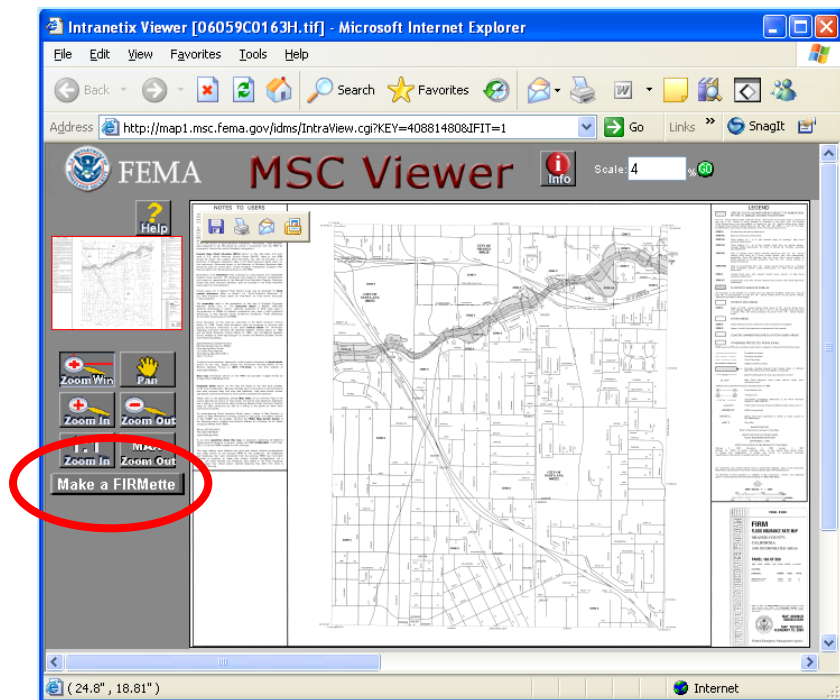
- To view MSC products available for a specific address, use the “Product Search by Address” feature
- Panels and LOMCs are listed
- Click the link in the View column to view panels and create a FIRMette

Map Panel Search Results

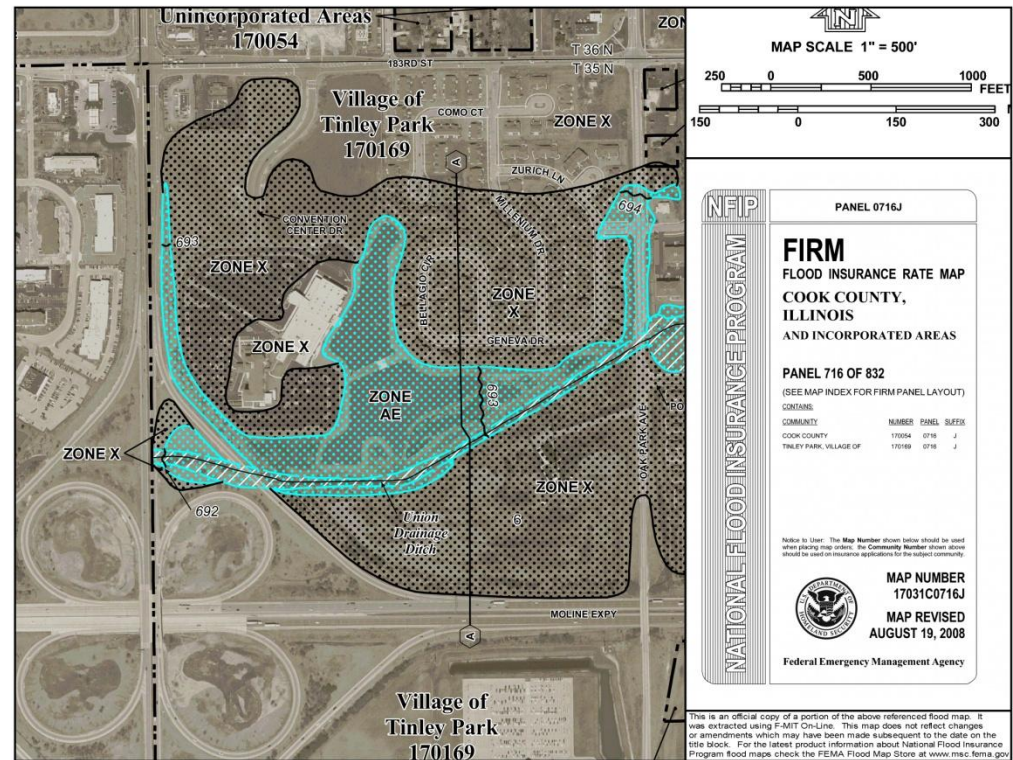
Map Item ID	Description	Effective Date	Show LOMC	View	Buy
06059C0443H	ORANGE CO., UNINC&INC AREAS	02/18/2004	-		
LOMC	05-09-0346P-060764	05/05/2005			
LOMC	07-09-0740A-060231	04/12/2007			
LOMC	05-09-0793P-060231	08/31/2006			

What is a FIRMette? (*FIR*Mette – Web)

- Select “Make a FIRMette”
- Adjust boxes accordingly
- Choose output size

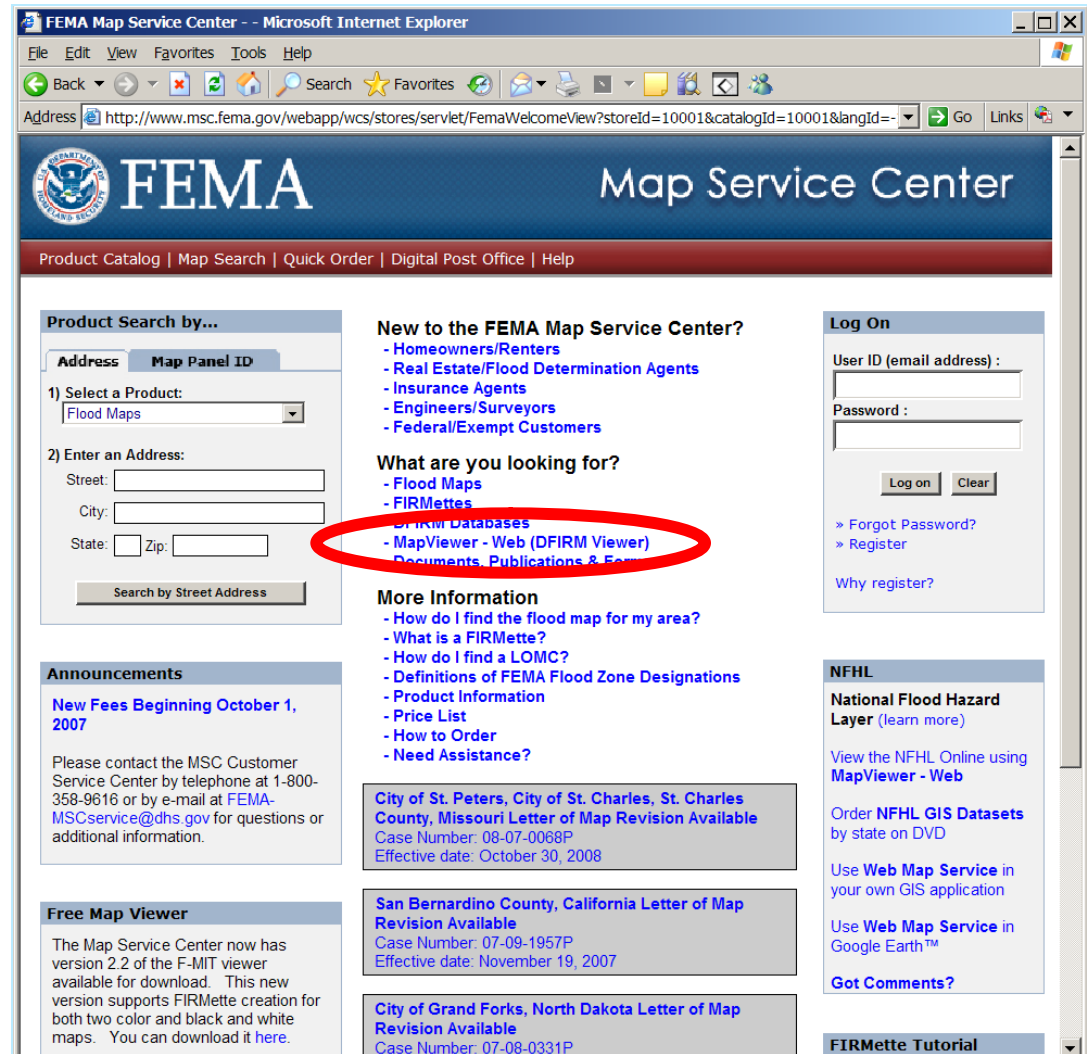


- Existing Tool
- FIRMettes are official
- 1.1 million FIRMettes downloaded each year
- Internet connection required



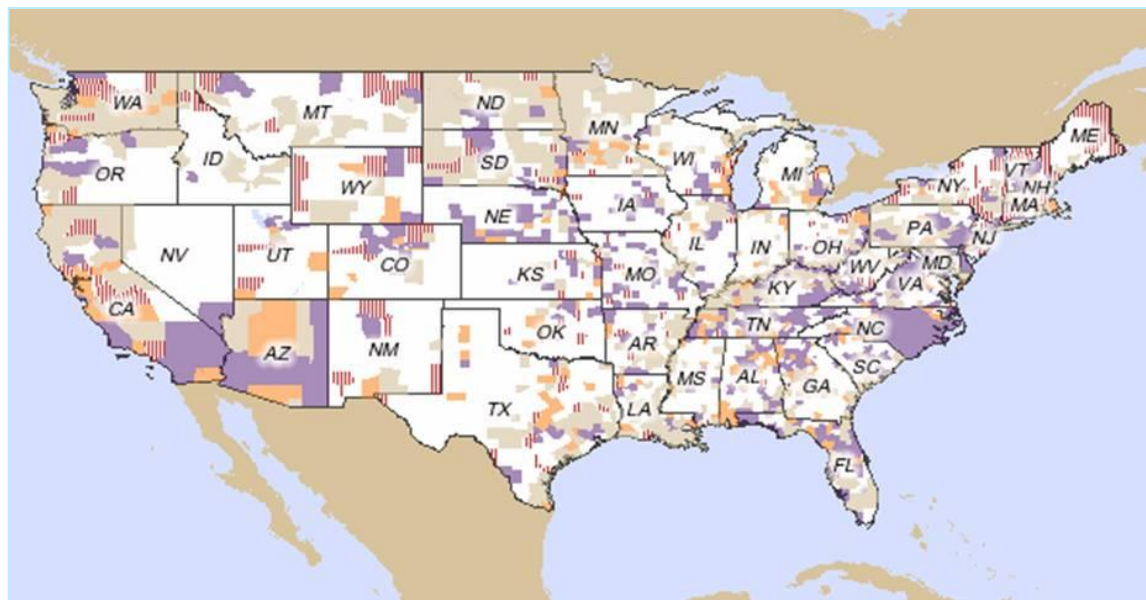
National Flood Hazard Layer (NFHL)

- Go to the MSC web site:
 - <http://msc.fema.gov>
- Click hyperlink for *MapView - Web*







National Flood Hazard Layer (NFHL)

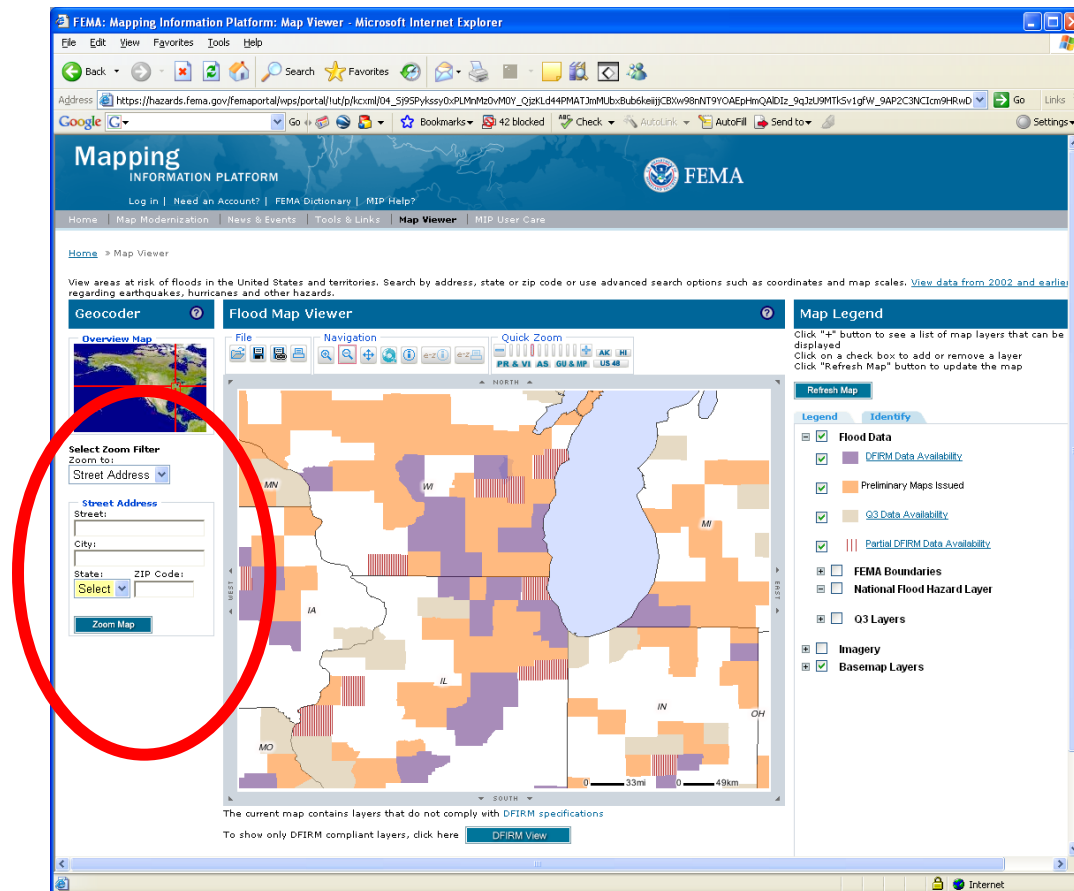
- All **effective** digital flood hazard data for the entire U.S.
- New DFIRM and LOMR data sewn in as they go **effective**
- FEMA's online tools for viewing NFHL data always reflect the most current NFHL data

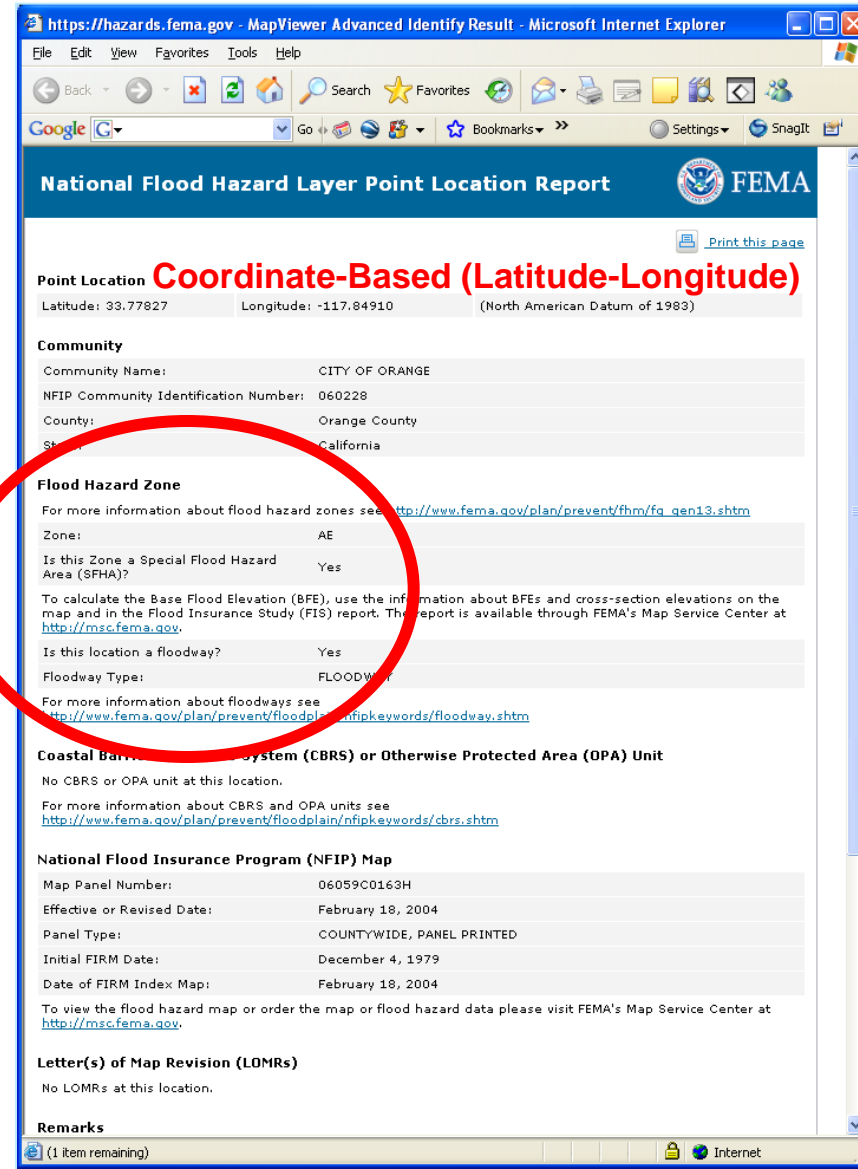


Flood Data

-  [DFIRM Data Availability](#)
-  Preliminary Maps Issued
-  [Q3 Data Availability](#)
-  [Partial DFIRM Data Availability](#)

- Search by address or community name



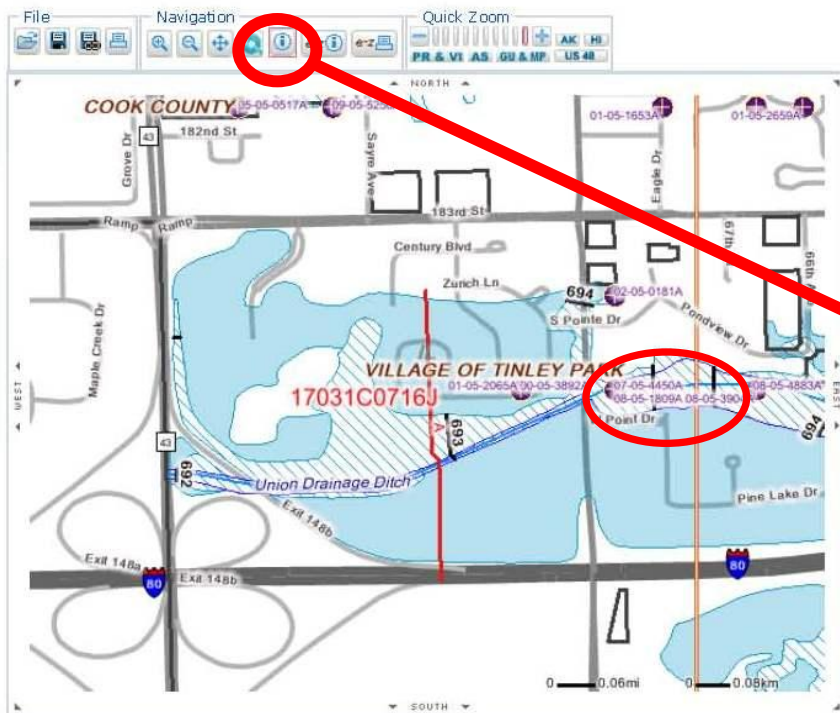


- **E-Z Identify and E-Z Print tools create flood hazard reports**
- **Flood zone determination is official for Lat-Long coordinates (not address)**
- **FIRM panel information is provided**

Can I get information on a LOMA or LOMR-F? (MapView – Web)

- Use Identify tool to select a LOMA
- Click hyperlink in legend (if LOMA is online)

Flood Map Viewer



Road data from 1984-2008 TeleAtlas, Rel. 05/2007

The current map contains layers that do not comply with DFIRM specifications

To show only DFIRM compliant layers, click here

[DFIRM View](#)

Map Legend

Click "+" button to see a list of map layers that can be added.
Click on a check box to add or remove a layer.
Click "Refresh Map" button to update the map.

[Refresh Map](#)

Legend Identify

☒ Flood Hazard Zones
☒ LOMA and LOMR-F (incomplete data before 2 locations approximate)

CASENUMBER 02-05-0181A
CID 170169
COMMUNITYNAME TINLEY PARK, VILLAGE OF
DATEENDED 11/02/2001
DATEENDEDSTR
DETERMINATIONTYPE
LAT 41.557
LONG 87.757
OBJECTID 25798
PDFHYPERLINK [Retrieve Amendment Determination Document \(final\)](#)
PROJECTCATEGORY LOMR-F
PROJECTNAME
SUBDIVISION, LOT 5, 18355 OAK PARK AVENUE
STATUS Completed
AREA 0
LEN 0
☒ Political Jurisdictions
☒ DFIRM Panels

Page 1 of 2	Date: November 2, 2001	Case No.: 02-05-0181A	LOMR-F
Federal Emergency Management Agency Washington, D.C. 20472			
LETTER OF MAP REVISION BASED ON FIRM DETERMINATION DOCUMENT (REMOVAL)			
COMMUNITY AND MAP PANEL INFORMATION		LEGAL PROPERTY DESCRIPTION	
COMMUNITY: Village of Tinley Park, Cook County, Illinois COMMUNITY NO.: 170169		Lot 5, Millers Subdivision, as described in Trustee's Deed, Document No. 001020976, filed for record on February 14, 2001, by the Recorder, Cook County, Illinois, save and except that part of said Lot 5 described as follows: BEGINNING at the Southwest corner of said Lot 5; thence North, along the East line of South Oak Park Avenue (100 feet wide), a distance of 131.00 feet to the Northwest corner of said Lot 5; thence East, along the North line of said Lot 5, a distance of 153.19 feet to the Northeast corner of said Lot 5; thence South, along the East line of said Lot 5, a distance of 20.00 feet to a point; thence West, along a line 20.00 feet South of and parallel to the North line of	
AFFECTED MAP PANEL: NAME: Cook County, Illinois and Incorporated Areas DATE: 11/02/2001		APPROXIMATE LATITUDE & LONGITUDE OF PROPERTY: 41.557 - 87.753 SOURCE OF LAT & LONG: MAP (LAST) DATE: NAD 83	
FLOODING SOURCE: UNION DRAINAGE DITCH			
DETERMINATION			
LOT	BLOCK/SECTION	SUBDIVISION	STREET
5	---	Millers	Portion of Property
		OUTCOME	FLOOD ZONE
		WHAT IS REMOVED FROM THE SFHA	X (shaded)
		1% ANNUAL CHANCE FLOOD ELEVATION (MGVD 25)	603.8 feet
		LOWEST ADJACENT GRADE ELEVATION (MGVD 25)	---
		LOWEST LOT ELEVATION (MGVD 25)	604.2 feet
Special Flood Hazard Area (SFHA) is an area that would be inundated by the flood having a 1 percent chance of being equaled or exceeded in any given year (base flood). Please refer to the appropriate section on Attachment 1 for the additional considerations listed below.			
ADDITIONAL CONSIDERATIONS: Please refer to the appropriate section on Attachment 1 for the additional considerations listed below.			
LEGAL PROPERTY DESCRIPTION (CONTINUED) ANNEXATION FIRM RECOMMENDATION: PORTION OF LOT 5 IN THE SFHA.			
This document provides the Federal Emergency Management Agency's determination regarding a request for a Letter of Map Revision based on FIRM for the property described above. Using the information submitted and the effective National Flood Insurance Program (NFIP) map, we have determined that the requested portion of the property is not located in the SFHA, an area maintained by the flood having a 1 percent chance of being equaled or exceeded in any given year (base flood). This document revises the effective NFIP map to remove the subject property from the SFHA located on the effective NFIP map. Therefore, the Federal mandatory flood insurance requirement does not apply. However, the landowner has the option to continue the flood insurance requirement to protect its financial risk on the loan. A Preferred Risk Policy (PRP) is available for buildings located outside the SFHA. Information about the PRP and how one can apply is enclosed.			
This determination is based on the flood data presently available. The enclosed documents provide additional information regarding this determination. If you have any questions about this document, please contact the FEMA Map Assistance Center toll free at (877) 336-2627 (877-FEMA MAP) or by letter addressed to the Federal Emergency Management Agency, 12101 Indian Creek Court, Beltsville, MD 20705.			
Matthew B. Miller, P.E., Chief Regional Study Branch Federal Insurance and Mitigation Administration Version 1.3.3 38100010004			

Are the NFHL Data Current?

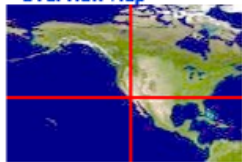
[Home](#) > Map Viewer

View areas at risk of floods in the United States and territories. Search by address, state or zip code or use advanced search options such as coordinates and map scales. [View data from 2002 and earlier](#) regarding earthquakes, hurricanes and other hazards.

Geocoder



Overview Map



Select Zoom Filter

Zoom to:

Community

Community

Select State for community

CA

Select community

ORANGE COUNTY

Zoom Map

Flood Map Viewer



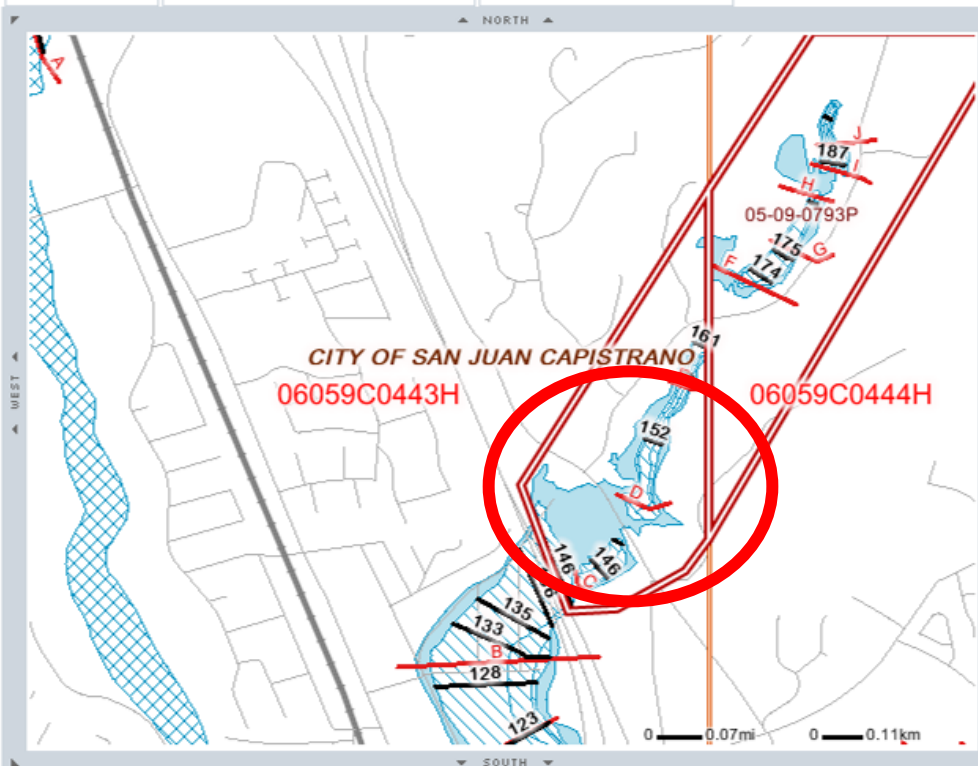
File



Navigation



Quick Zoom



Map Legend



Click "+" button to see a list of map layers that can be displayed

Click on a check box to add or remove a layer

Click "Refresh Map" button to update the map

Refresh Map

Legend

Identify

Flood Hazard Zones

Base Flood Elevation

LOMR's

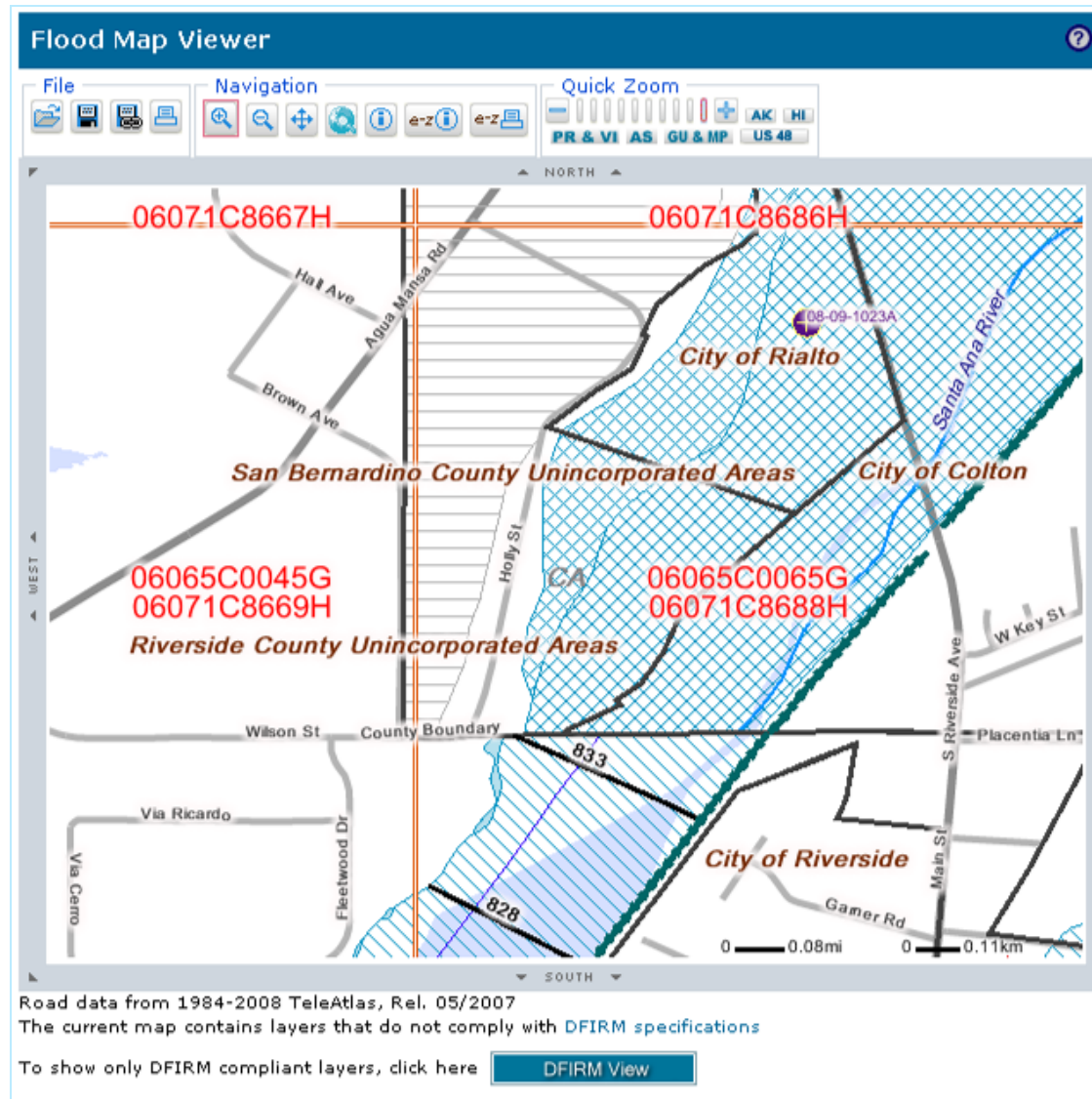
CASE_IIO 05-09-0793P
DFIRM_ID 06059C
EFF_DATE 08/31/2006
GFID 6CE198AF-FB88-44A7-992E-7668B76BF81B

LOMR_ID
OBJECTID 1847
SCALE 6000
SOURCE_CIT 1485681_LOMC14
STATUS EFFECTIVE
AREA 0.0000247535106046536
LEI 0.0233051812350155

Political Jurisdictions

DFIRM Panels

NFHL is Also Seamless Across Counties



■ Advantages

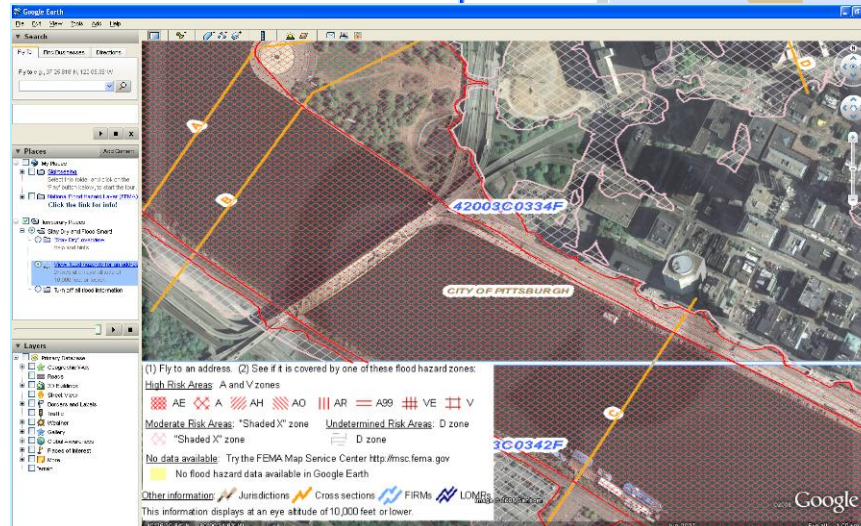
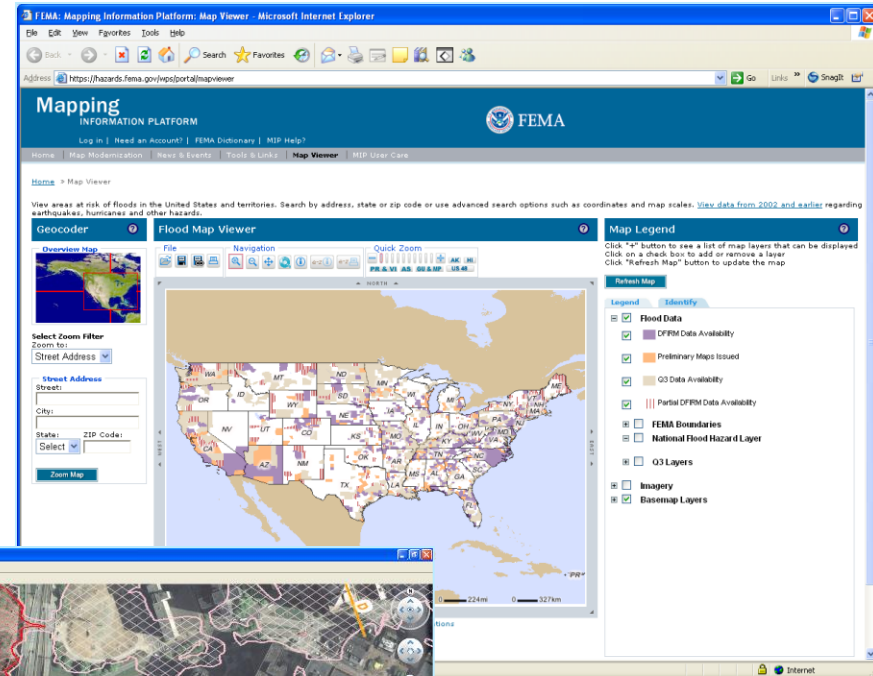
- View seamless layer of all effective DFIRM data
- Address search to point on map
- Can produce a simple report to determine if a clicked point is in a SFHA

■ Considerations


- NFHL not available until effective date
- Does not show local data

NFHL Web Map Services (WMS)

- Web Map Services (WMS)
- Google Earth
 - Two KMZ files available



MSC Website



FEMA

Map Service Center

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User ID (email address) :

Password :

» [Forgot Password?](#)
 » [Register](#)
 Why register?

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NFHL

National Flood Hazard Layer ([learn more](#))

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Use [Web Map Service](#) in Google Earth™

[Got Comments?](#)

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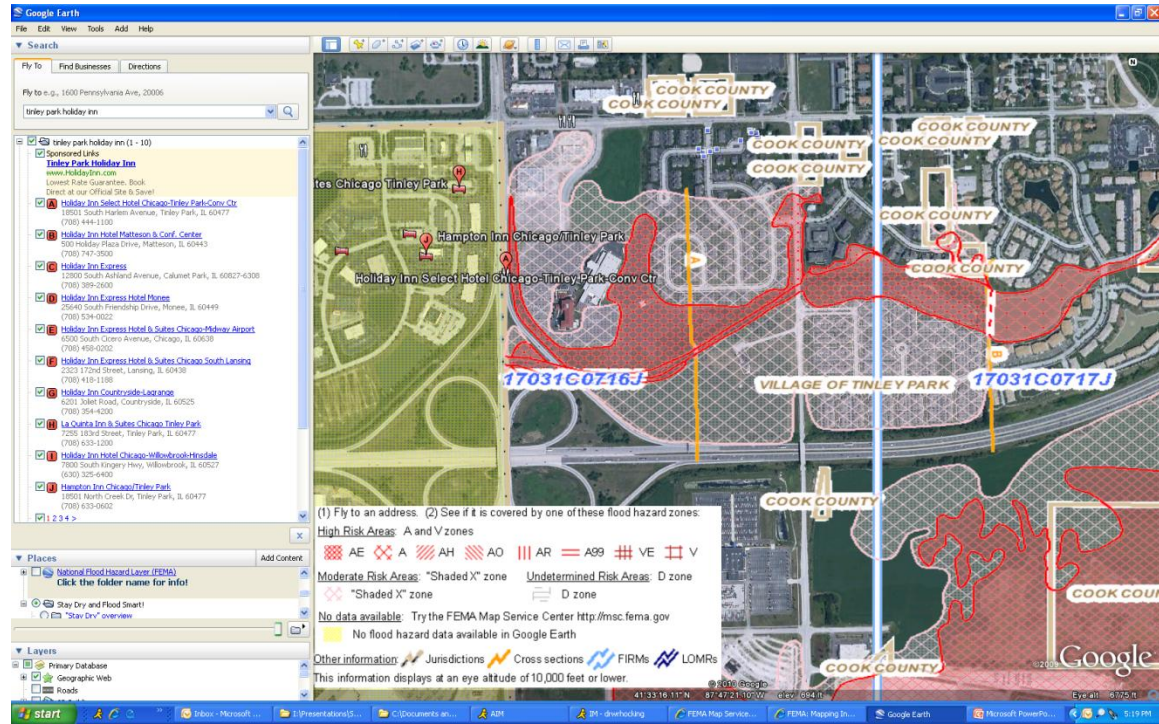


[Click here to learn how to create a FIRMette.](#)

NFHL in Google Earth

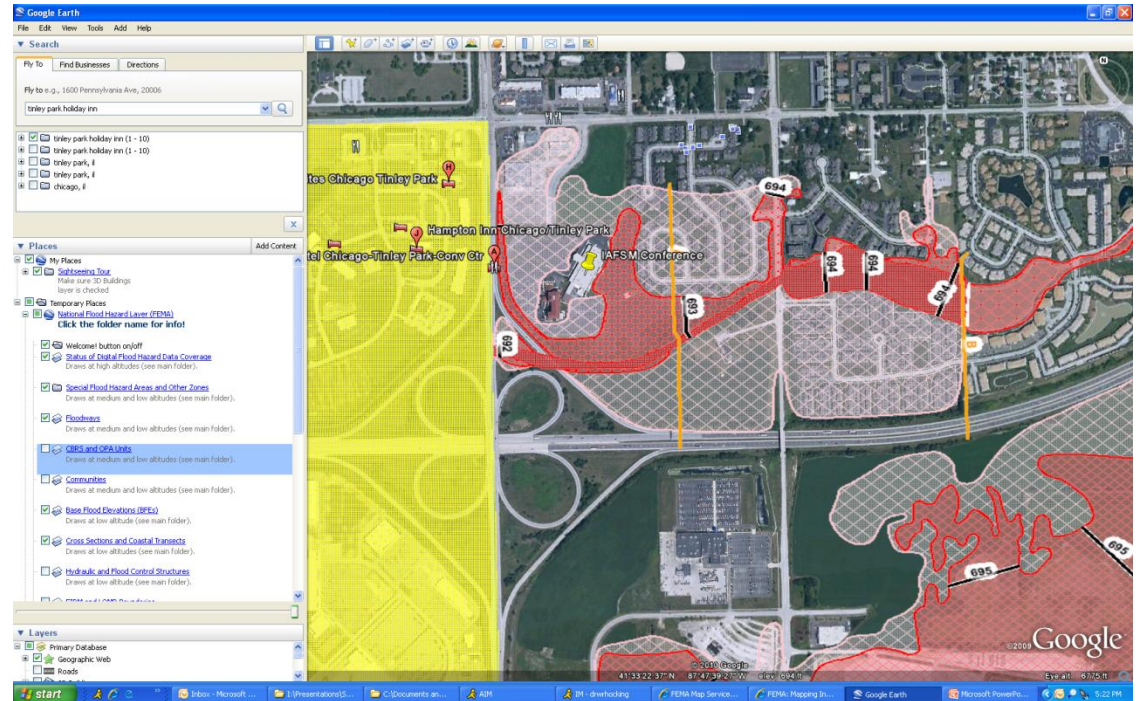
Stay Dry KMZ: the Basics

- Stay Dry KMZ shows
 - SFHAs
 - LOMRs
 - FIRM Boundaries
 - Cross Sections
 - Jurisdictions
- Can't reorder/hide specific layers
- Basic floodplain information
- Easy to understand

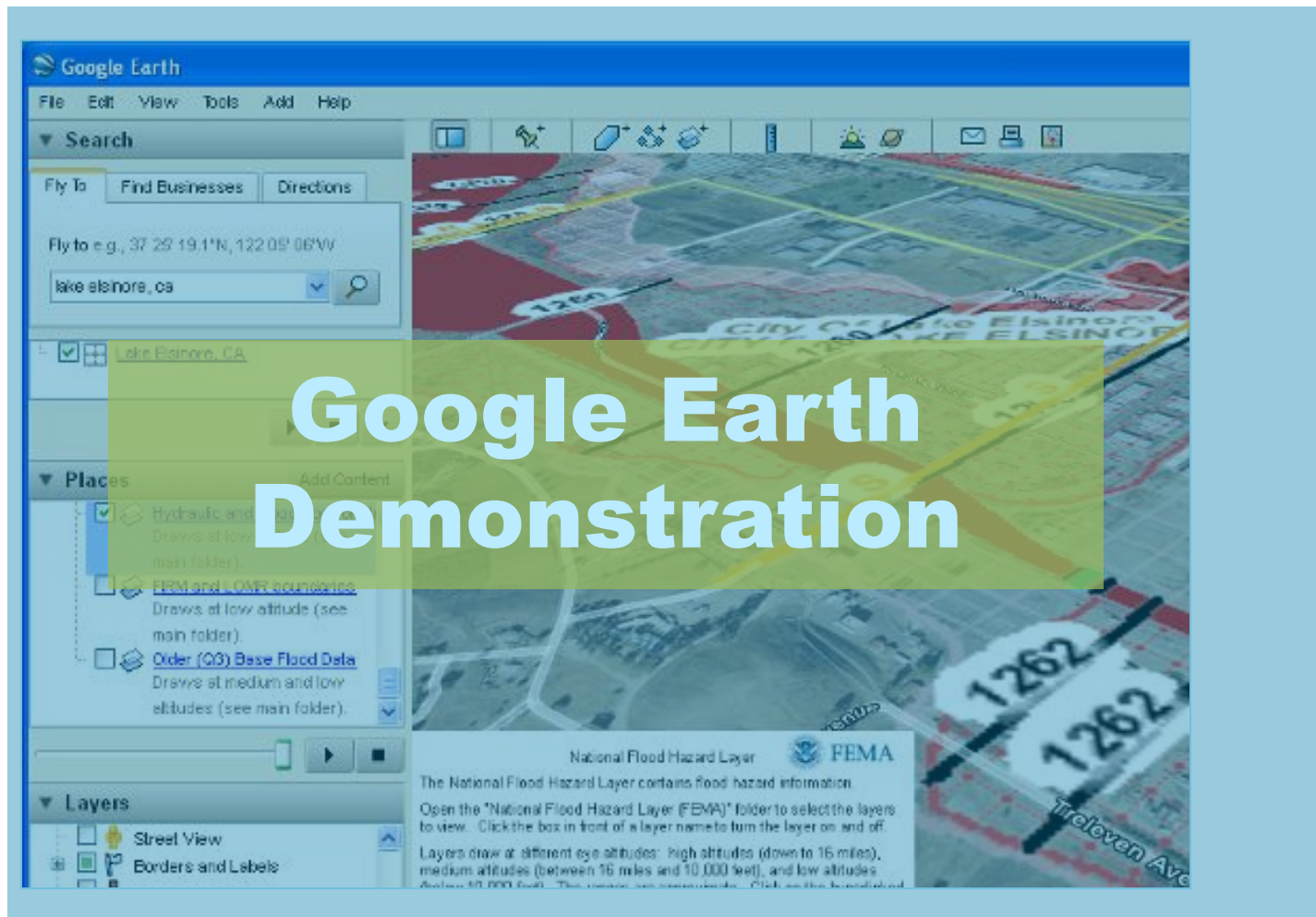


NFHL KMZ: Beyond the Basics

- **NFHL KMZ shows**
 - Stay Dry layers +
 - BFEs
 - LOMA/LOMR-Fs
 - Floodways
 - Flood Control Structures
- **Can reorder layers**
- **Can hide/show legends**
- **Hyperlinks to supplemental data**

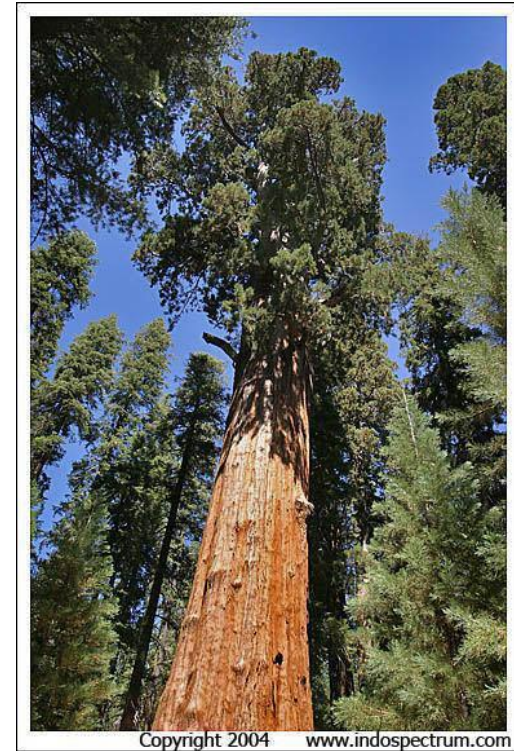


Google Earth WMS's



Sequoia Application

- Web-based mapping application created by Michael Baker Jr., Inc.
- Run using Microsoft Virtual Earth (Microsoft mapping platform that allows for the creation of customizable and interactive mapping applications)
- Microsoft VE Basemaps include:
 - Aerial photography
 - Street Map
 - Hybrid of Aerial/Street
 - 3D
- Arc2Earth software is an extension/tool created for ArcMap
- Converts flood map data to images
- Takes GIS data and converts to images, 'tiling' format (PNGs) which are then overlaid onto VE



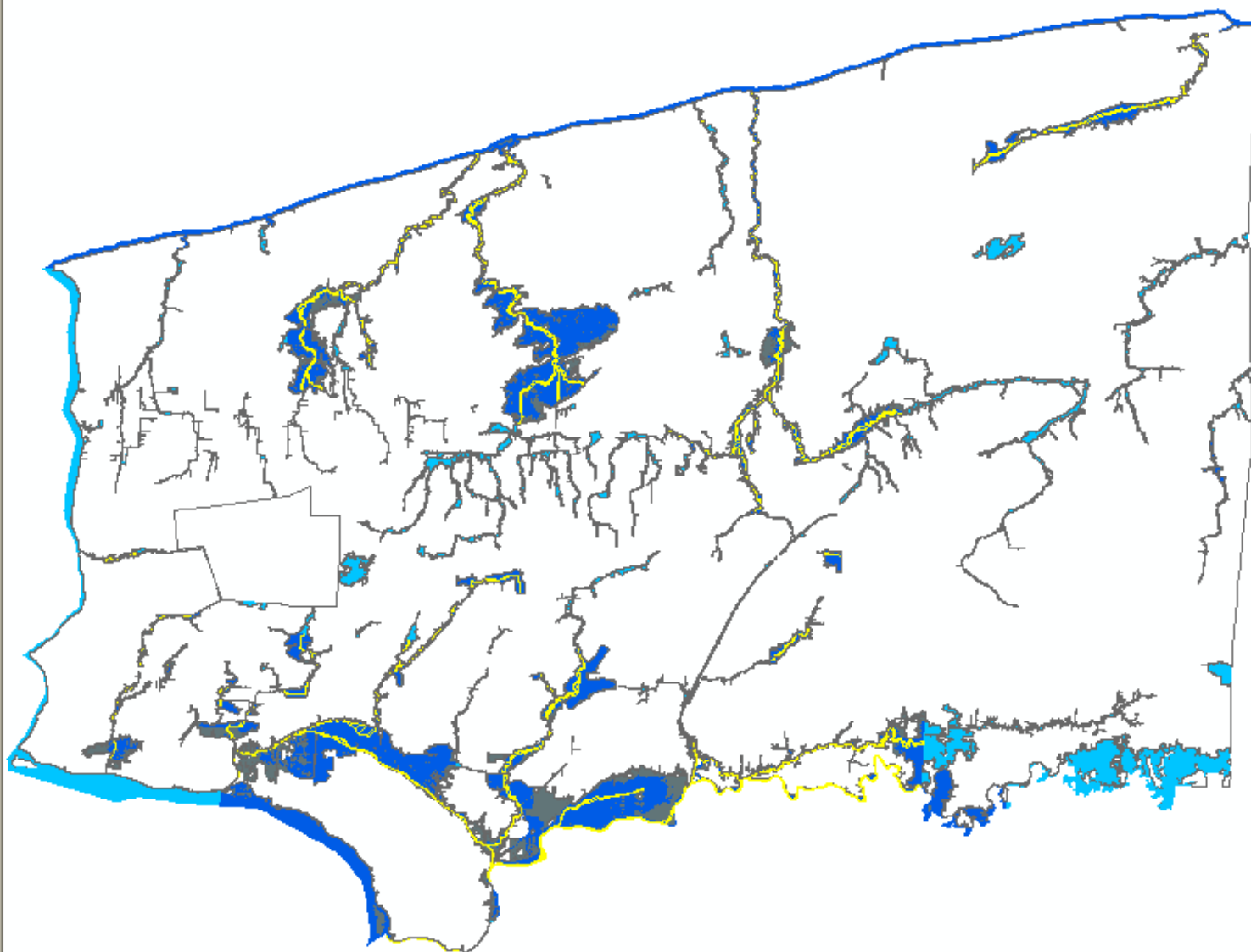
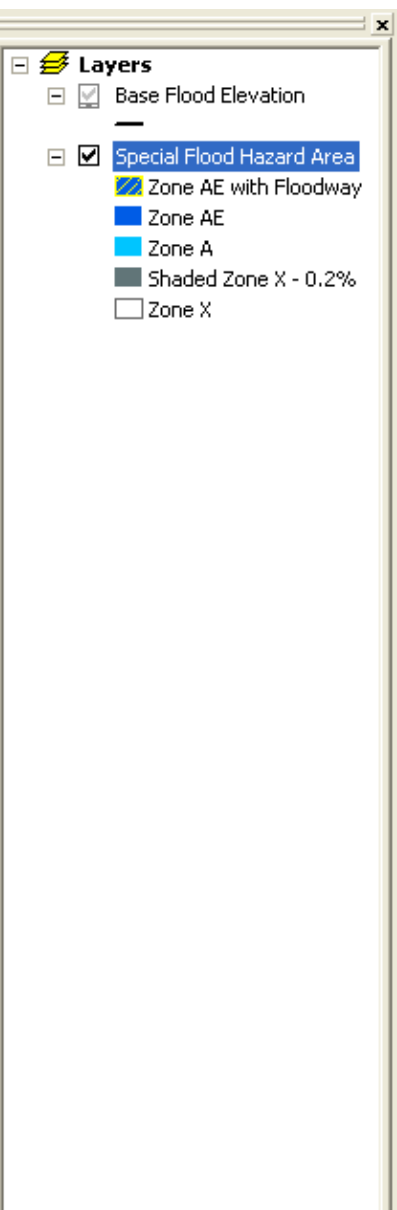
Tiling – Zoom Out

Arc2Earth

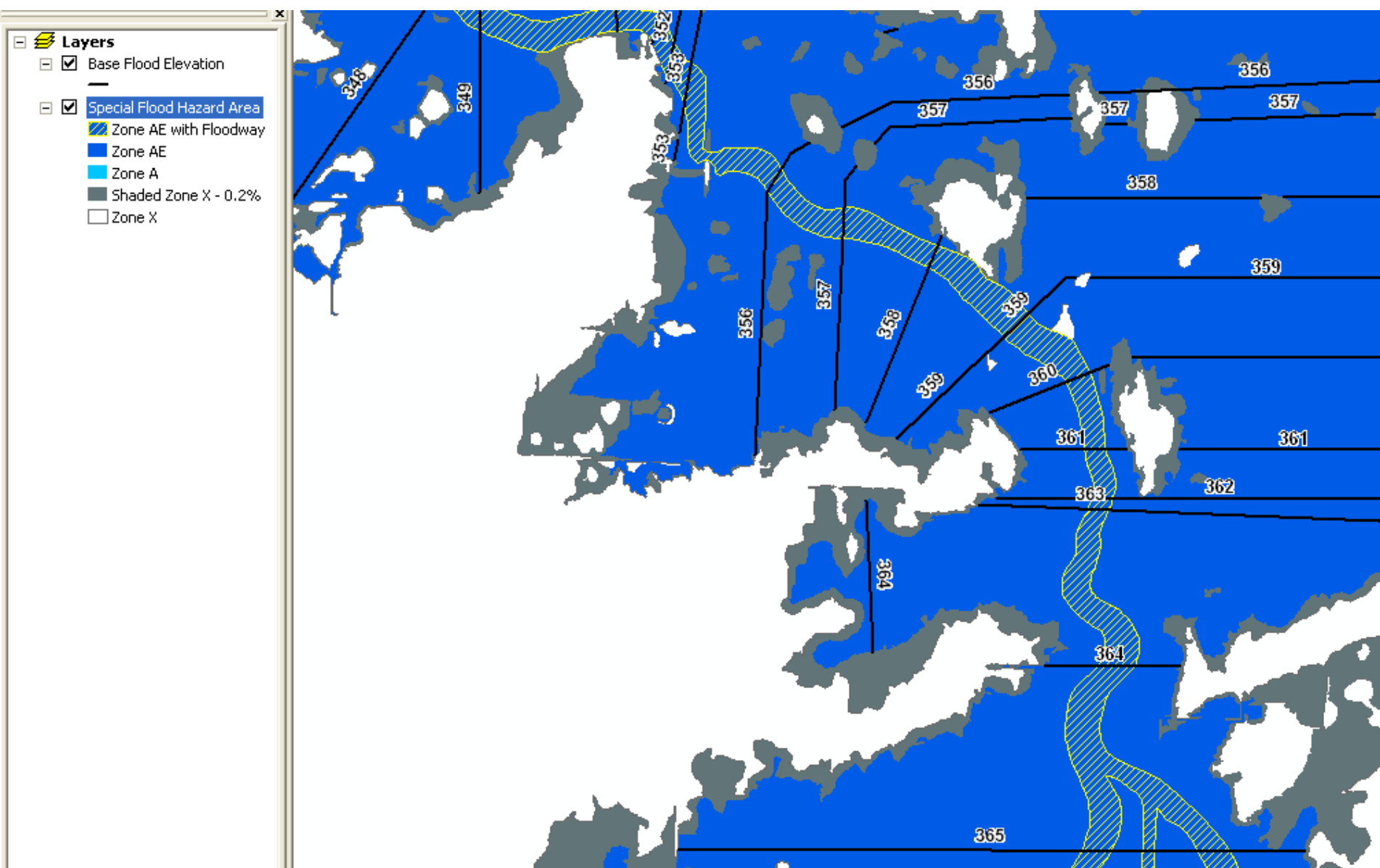
Import ▾

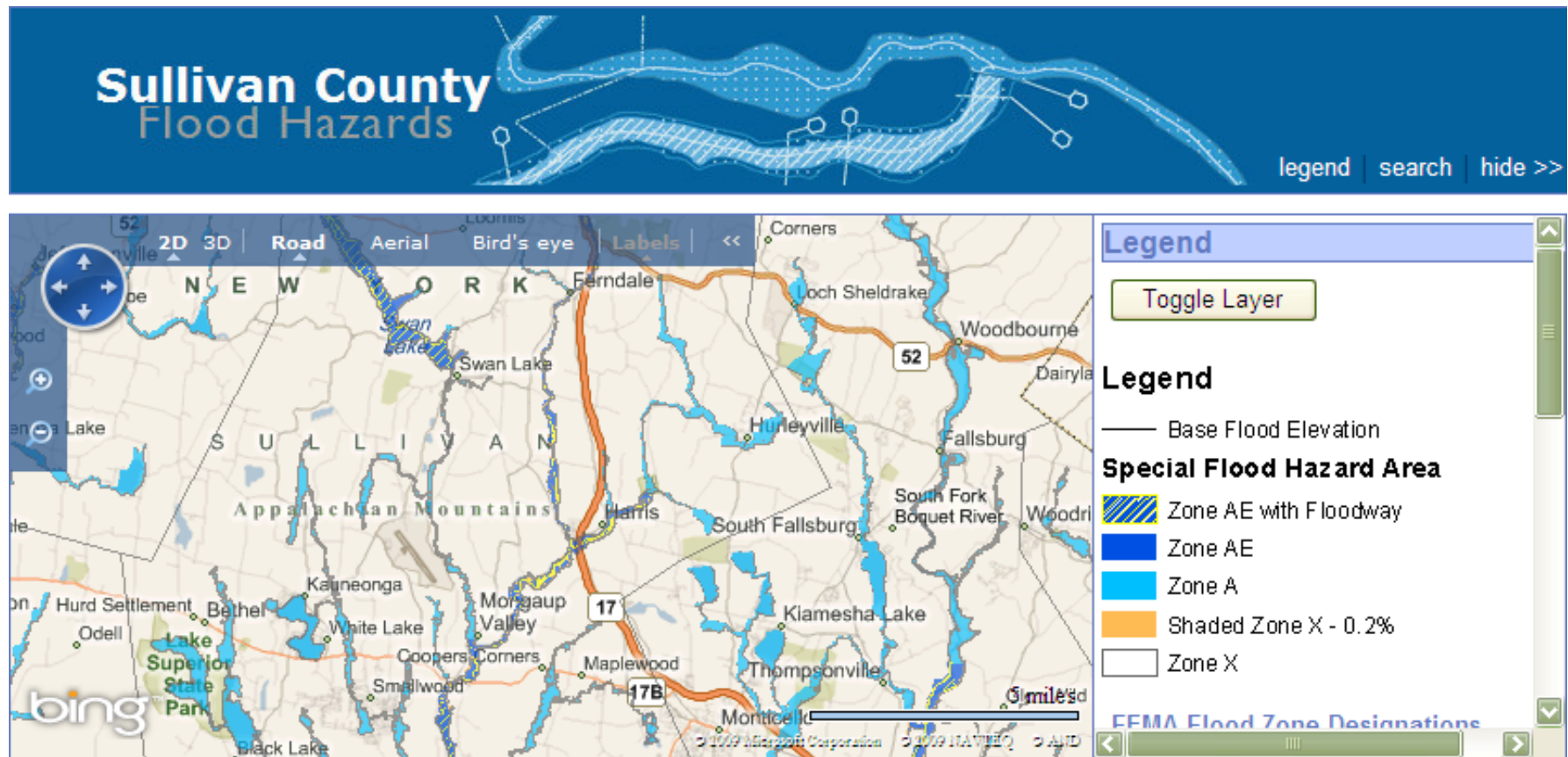
Export ▾

Help ▾



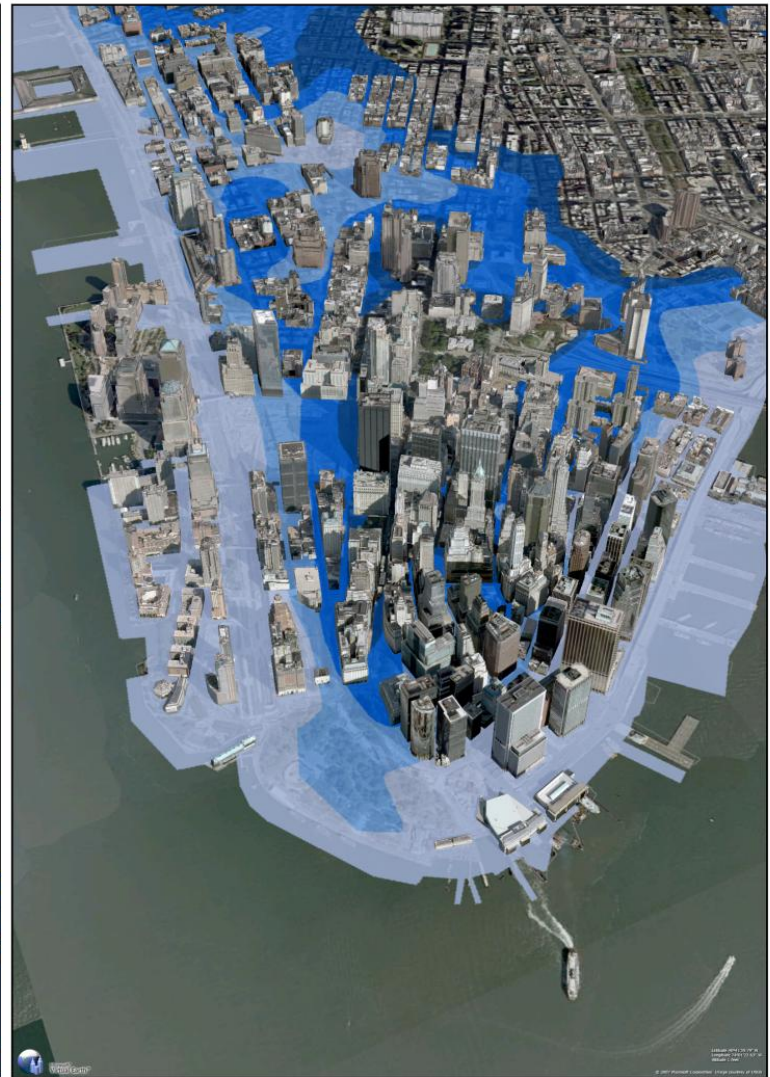
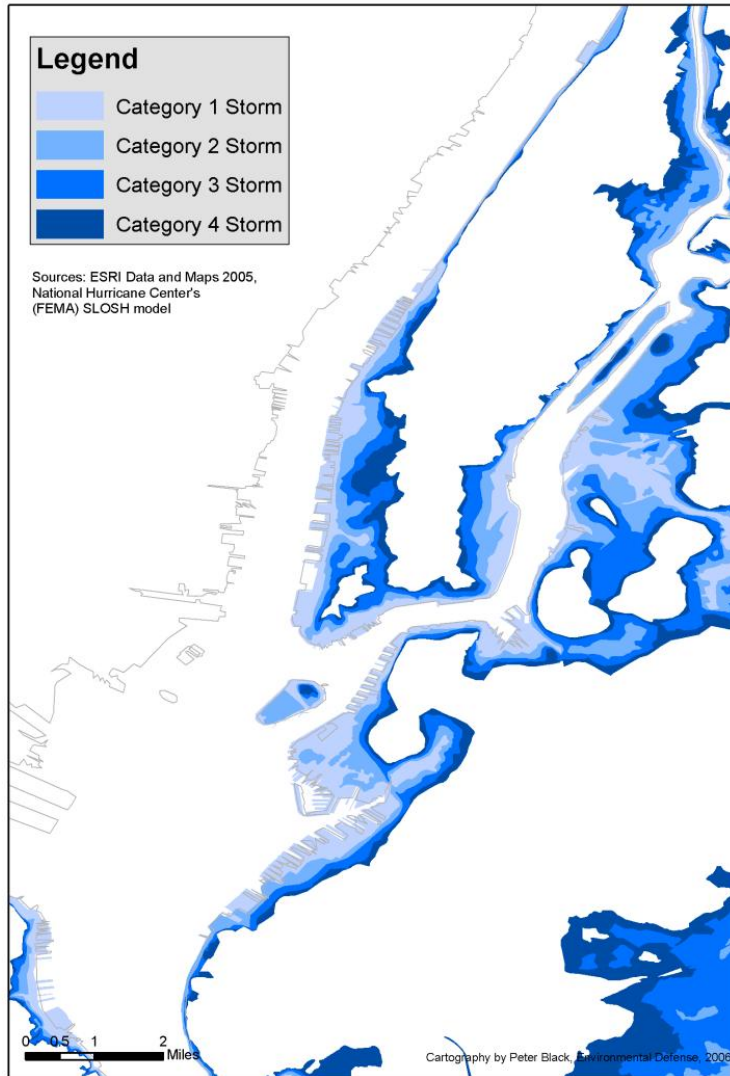
Tiling – Zoom In





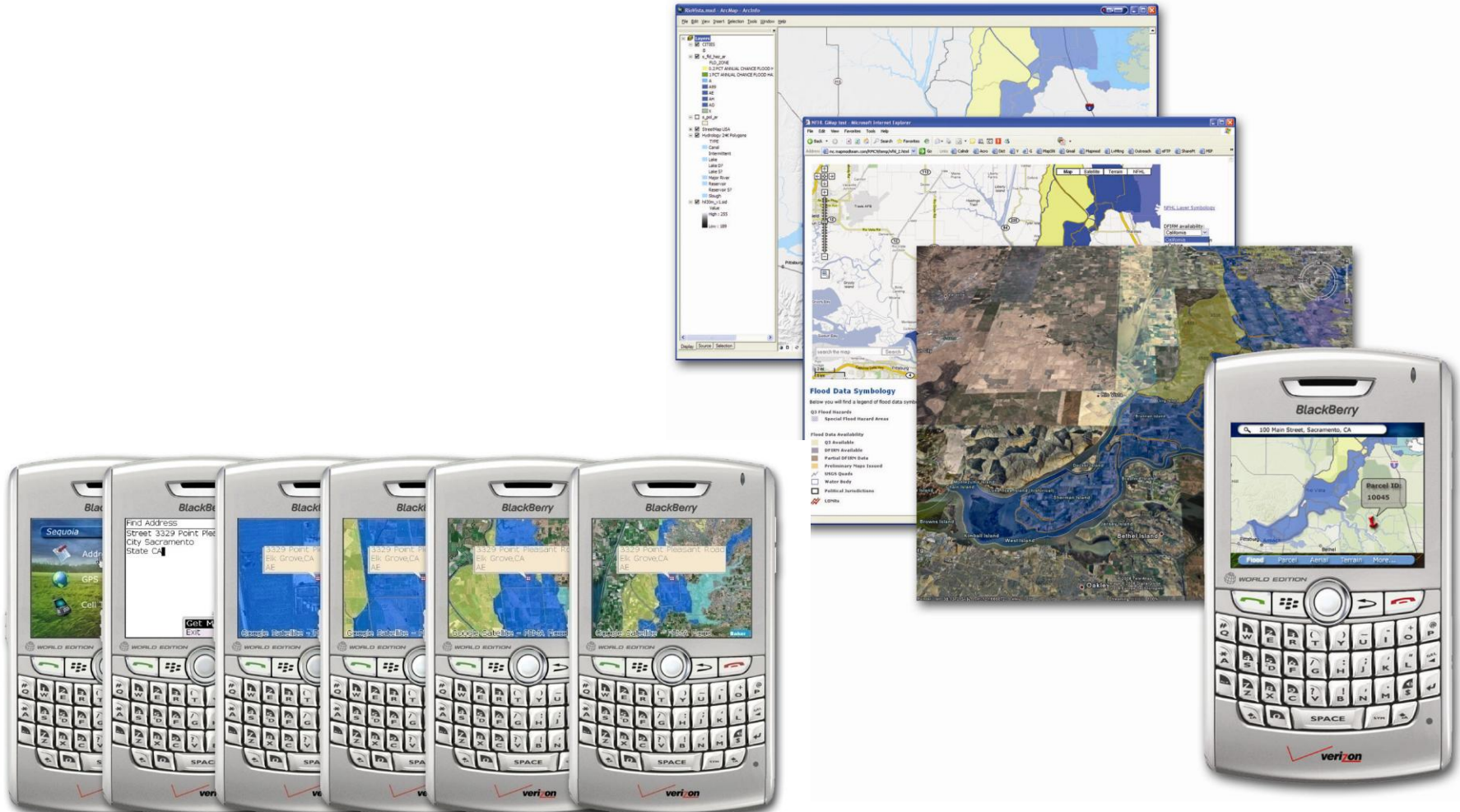
3D option

Storm Surge Risk in the New York Metropolitan Area



Mobile Technologies

- Smartphone mapping prototype for accessing flood hazard data





Baker