

Thursday, November 7, 2024

# Hawaii Flood Hazard Mapping Updates

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FEMA Region 9, Mitigation Division, Risk Analysis Branch



FEMA

It's Good to be Back on Island!!



## Flood Mapping Discussion Topics

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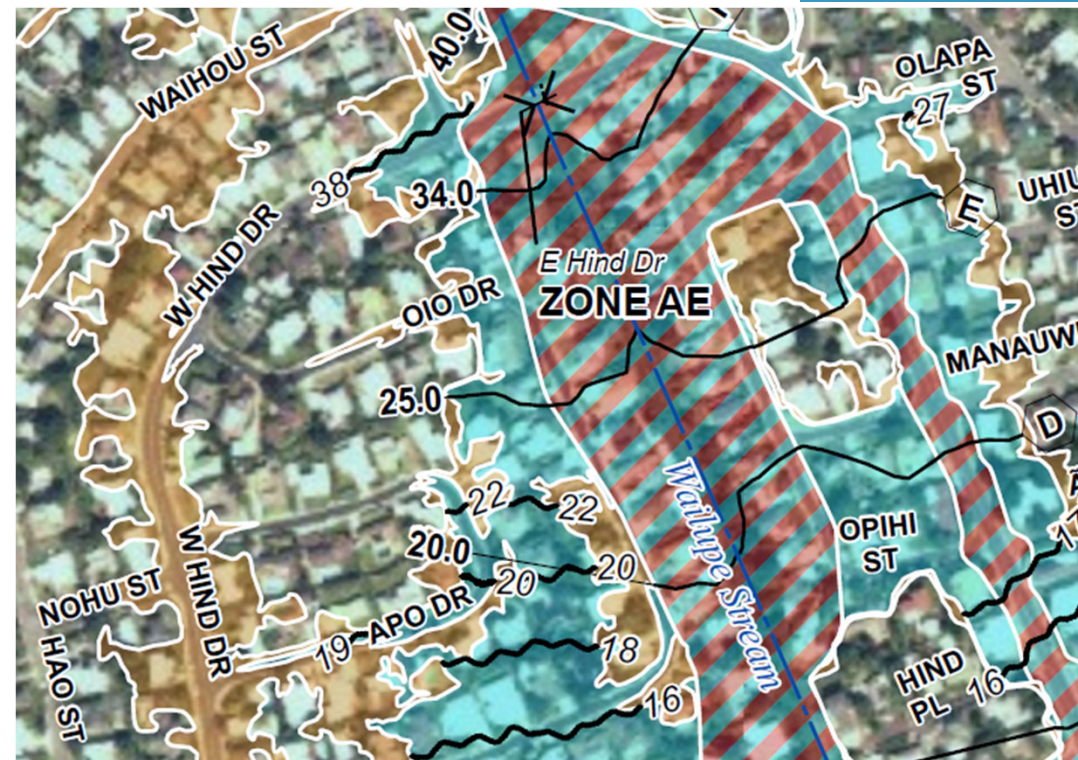
- Status of National Flood Insurance Program, FIRMs & Flood Map Updates
- Technical Mapping Advisory Council
- Future of Flood Risk Data
- Topographic Data Improvements
- Cooperating Technical Partners
- Other Program Highlights



**FEMA**

# Current Goals for FEMA's Risk MAP Program

- Maintain mapping inventory and advance ongoing projects
- Catalyze the whole community to reduce disaster suffering
- Improve the Nation's understanding of disaster risks
- Enhance community and stakeholder coordination
- Modernize the management and delivery of flood maps



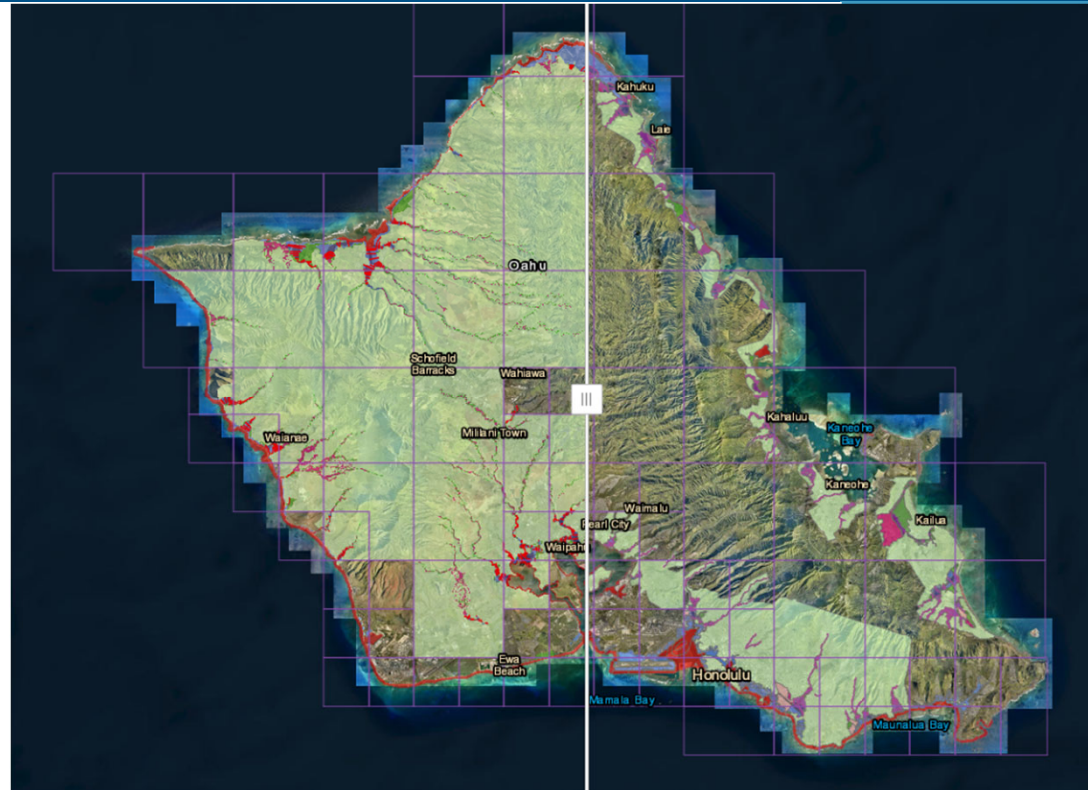
# City and County of Honolulu

- Initial digital Flood Insurance Rate Map (FIRM) effective September 2004
- Updated FIRM panels incorporating hurricane coastal study effective January 2011
- Additional flood insurance study to assess flood zones along Kawainui Stream and portions of Keaahala, Waialae-Nui, Malaekahana, Keaaulu, & 8 other streams effective November 5, 2014
- Flooding from Darby (2016) and in 2018 (upper level low pressure) highlighted flood mapping needs
- High level planning effort, called Discovery, completed in 2019 to support disaster loss reduction

# Ongoing Flood Map Revision for Oahu

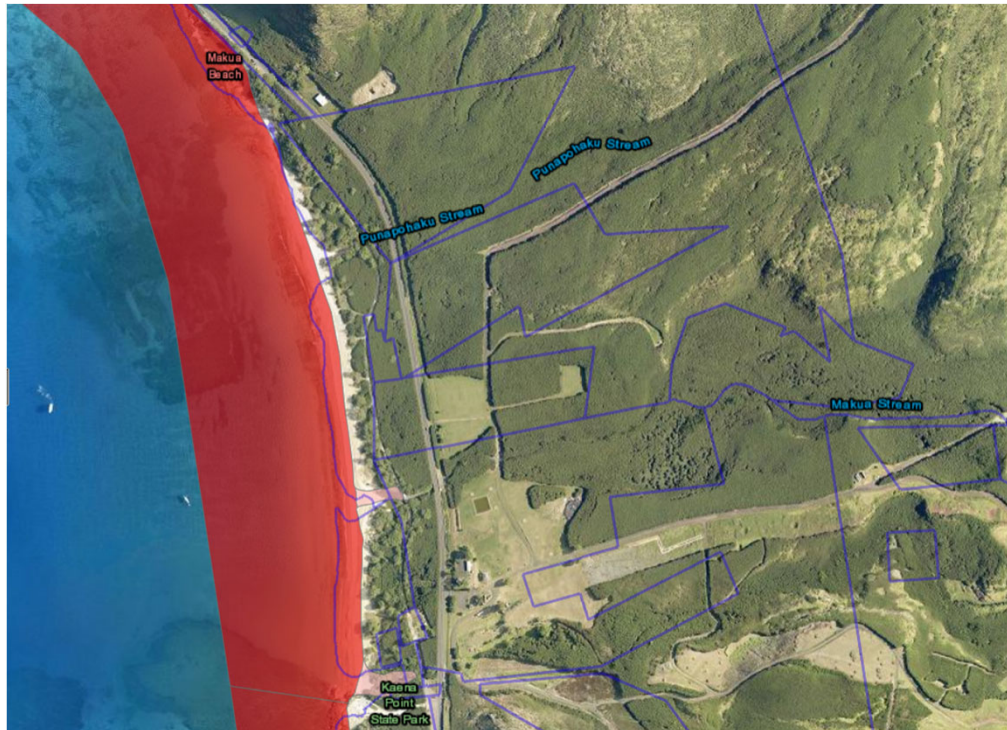
- Includes new mapping for 400+ stream miles using detailed topographic data
  - Reflects physical changes and previous letters of map revision from FEMA
  - Issued in preliminary format on July 31<sup>st</sup>
  - Honolulu map viewer with preliminary flood map in comparison with effective
  - Open Houses November 4 and 6<sup>th</sup>
  - Scheduled effective: 2026
- .... and this will be updated in future

<https://www.resilientoahu.org/getfloodready>

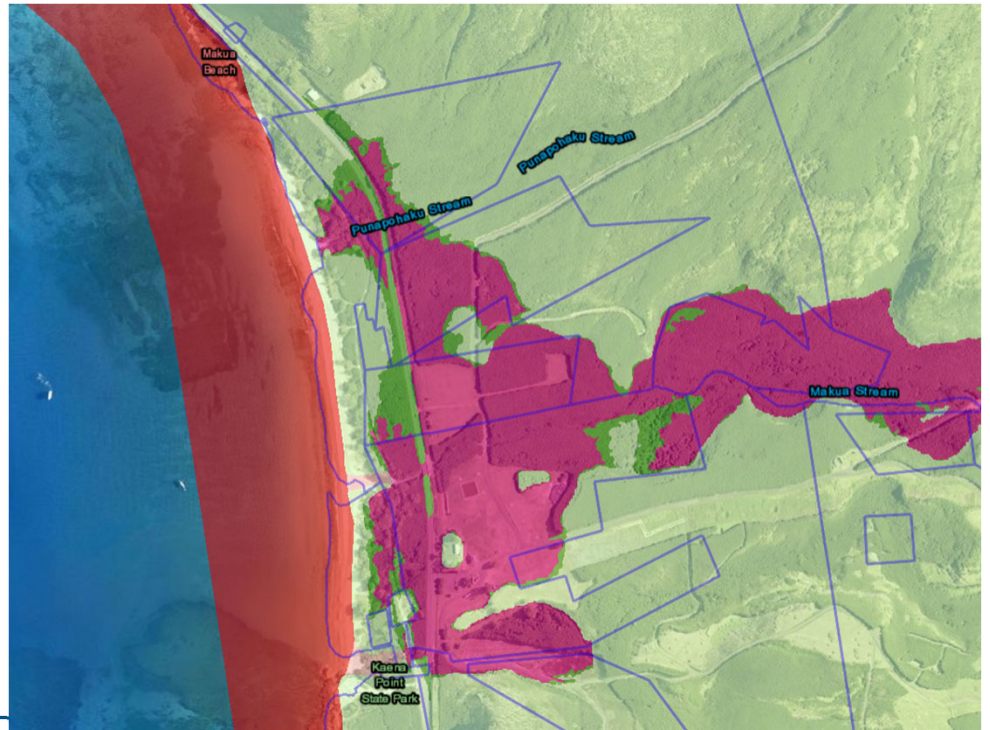


# Study Results Example – Proposed Changes

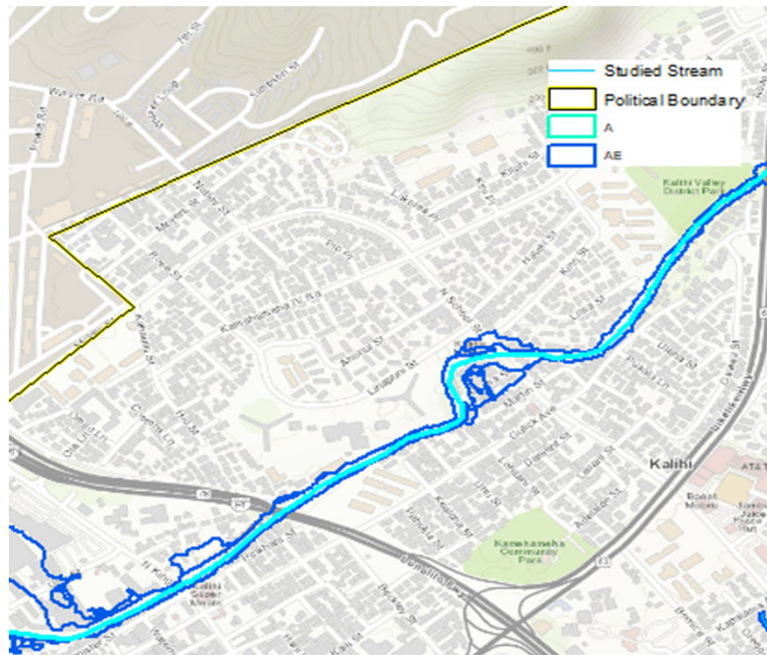
Effective FIRM dated January 19, 2011



Preliminary FIRM dated July 31, 2024



# What Areas Did We Study?



This map shows the preliminary floodplain mapping for 2.1 detailed miles of Kalihi Stream.

- Ahuimanu Stream
- Ahuimanu Stream Tributary
- East Makaha Stream (Kaupuni Tributary)
- Flood Control Canal
- Ihiihi Stream
- Inoaole Stream
- Inoaole Stream Tributary
- Kahawainui Stream
- Kalihi Stream
- Kamoalii Stream
- Kapalama Drainage Canal
- Kapalama Drainage Canal Tributary
- Kaupuni Stream
- Kuliouou Stream
- Kului Stream
- Niu Stream
- Niu Stream Tributary
- Nuuanu Stream
- Palolo Stream
- Waialae-Iki Stream
- Waikele Stream
- Wailupe Stream
- Waimalu Stream
- Waolani Stream
- Various additional streams studied using Base Level Engineering

# Maui County

- Initial digital Flood Insurance Rate Map (FIRM) effective September 2009
- Subsequent revision to incorporate updated coastal study (Honokahua Bay to Koali in Maui and Lanai) effective September 2012
- FEMA restudy for Molokai, Waikapu Stream, Keokea and Kihei Gulch 1 effective Nov 4, 2015; Kaunakakai LOMR issued subsequently; DLNR BLE study initiated.
- Study for Iao Stream and levees being reviewed

# Hawaii County

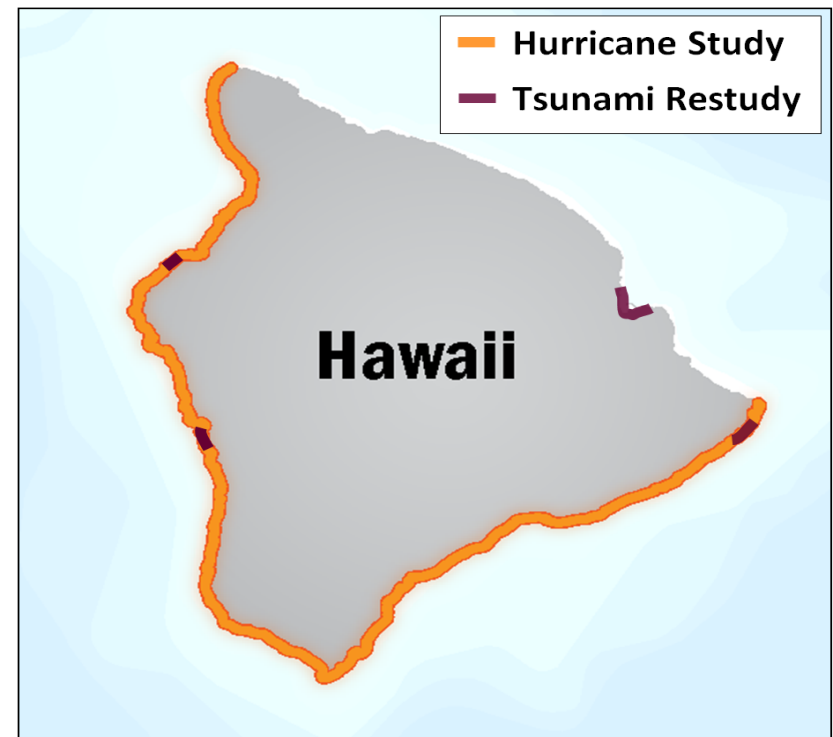
- Revised FIRM effective September 2017 with coastal study (southern coastlines and Hilo), North Kona, South Kona & Waiakea Stream studies, and other updated riverine zone delineations



Helping people before, during and after disasters

# Big Island Revised Flood Zones

- Coastal (Hurricane) Restudy - Upolu Point to Cape Kumukahi
- Tsunami Restudy
  - Hilo and Kapoho Bays (east-side)
  - Kuhio Point and Limukoko (west-side)



# Kauai County

- Digital FIRM effective September 2005
- Revised FIRM panels dated November 2010 reflecting coastal hurricane study (southern coastline)
- Subsequent FIRM revision to assess flood hazards along the Hanapepe River, Waimea River, and Moloaa Stream effective February 2021
- High level planning effort, called Discovery, initiated this year to support loss reduction

# BW-12 and HFIAA

## 2012 – Biggert Waters

- Reauthorized the NFIP for 5 years
- New insurance policies reflect full risk rate
- Created Technical Mapping Advisory Council

## 2014 – Homeowners Flood Insurance Affordability Act

- Law repeals and modifies certain provisions of BW-12
- Lowers the rate of increases on some insurance policies
- Implements a surcharge on all policyholders
- ‘Newly mapped’ insurance rating eligibility
- FEMA Flood Insurance Advocate

**NFIP Authorization Expires December 20, 2024**



# Technical Mapping Advisory Council (TMAC)

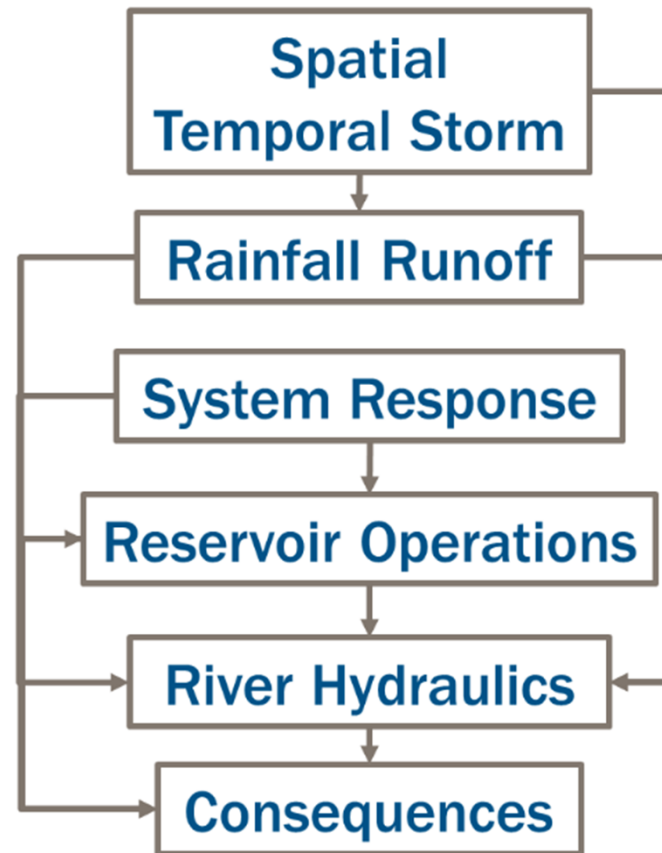
- TMAC providing recommendations on how to improve FEMA's flood mapping program, including the accuracy and quality of FIRMs
- 15 reports to FEMA since 2015
  - 100+ recommendations
- TMAC's work is not done, and they are actively working on another year's worth of effort...



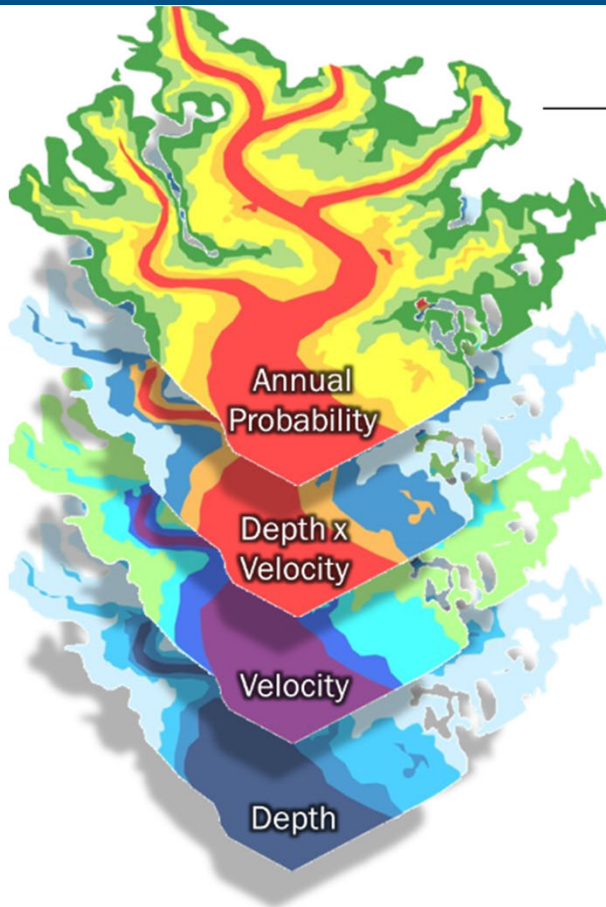
## The Future of Flood Risk Data (FFRD)

- Shift from binary mapping, i.e., in/out of SFHA, to graduated hazard mapping
- Support accurate risk rating for NFIP premiums as well as safer development via higher standards, i.e., Federal Flood Risk Management Standard, or FFRMS; ASCE 7-22/24-24, and consideration of future conditions in development decisions
- Ensure an appropriate role for the private sector, state, local, and territorial entities
- Increase access to flood hazard data to improve mitigation and insurance actions
- Better address residual risk, sea level rise, and other statutory requirements

# Advancing the Future of Flood Risk Data Vision

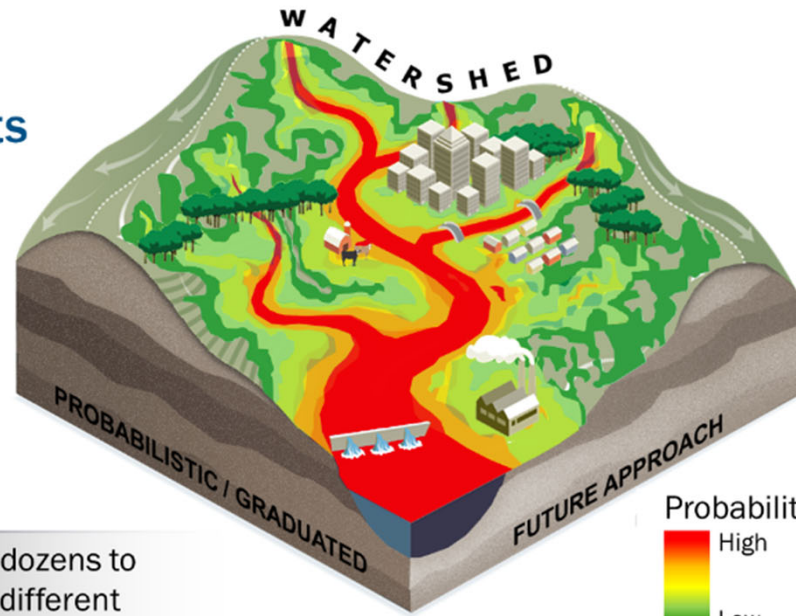


# FFRD Probabilistic-Derived Outcomes

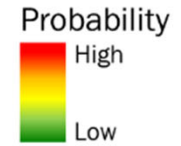


Probabilistically-derived from the extensive range of flood scenarios analyzed

## Key Outputs

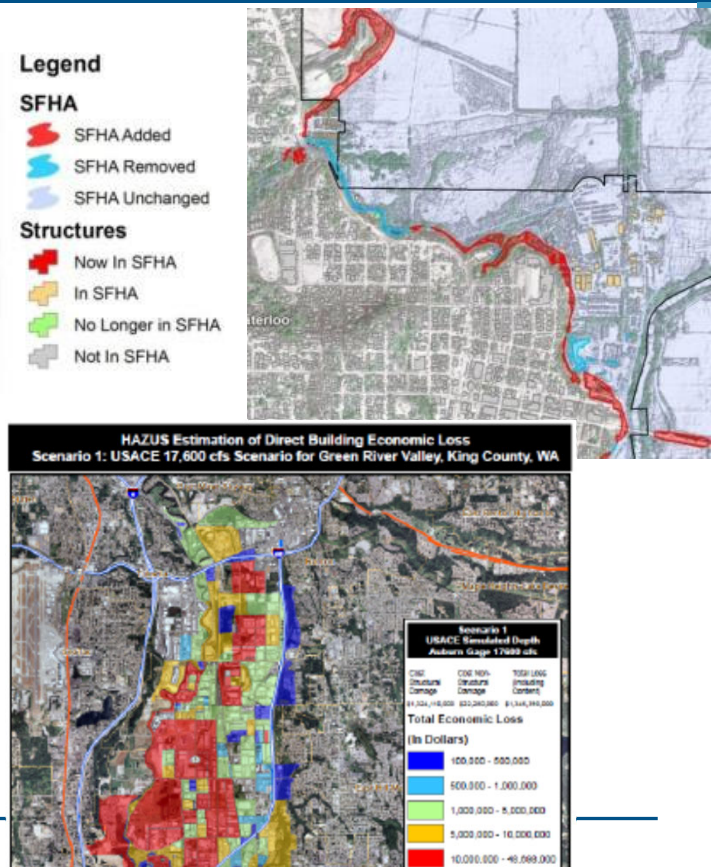


Available for dozens to hundreds of different modeled flood scenarios



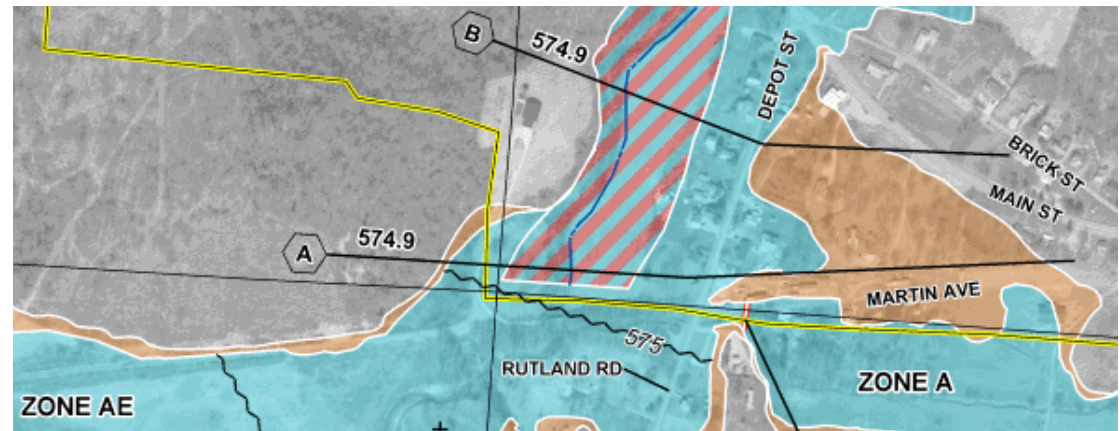
# Other Flood Products From a Flood Insurance Study

- Water Surface and Flood Depth Grids
- Changes Since Last FIRM
  - Shows areas of change
  - Improved outreach related to flood zone revisions.
- HAZUS Risk Assessment & Flood Risk Layer
  - Enables communities to better understand risk by reference to existing structures and predicted damage.



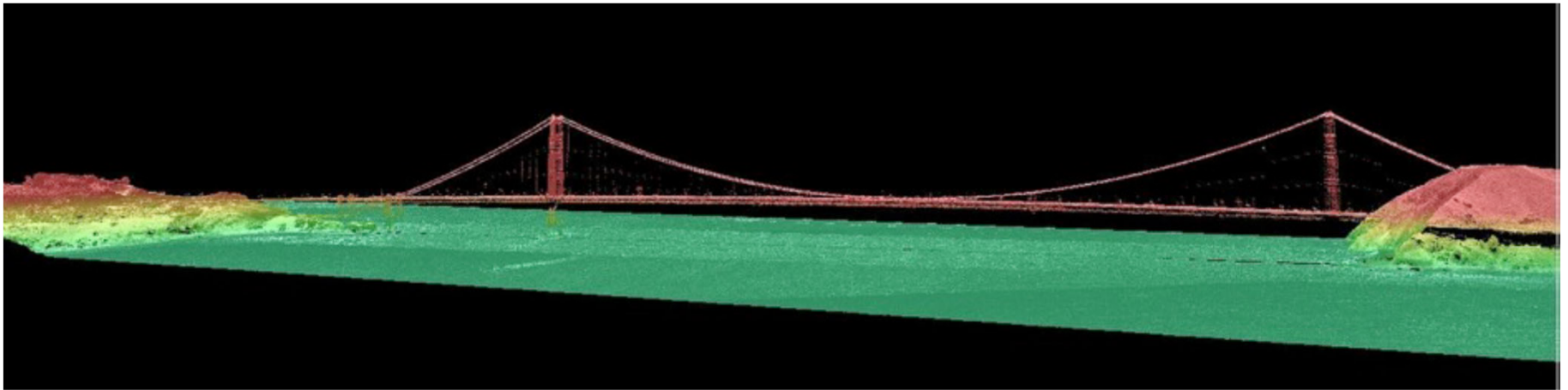
# National Flood Hazard Layer (NFHL)

- Hawaii DLNR's Tool:  
<http://gis.hawaiiinfip.org/FHAT/>
- FEMA Map Service Center Website:  
<http://msc.fema.gov/portal>
- GeoPlatform Map Viewer:  
<http://fema.maps.arcgis.com/home/>
- Web Map Services (e.g., NFHL in Google Earth)
- Your own GIS. For more information search:  
"data.gov nfhl"

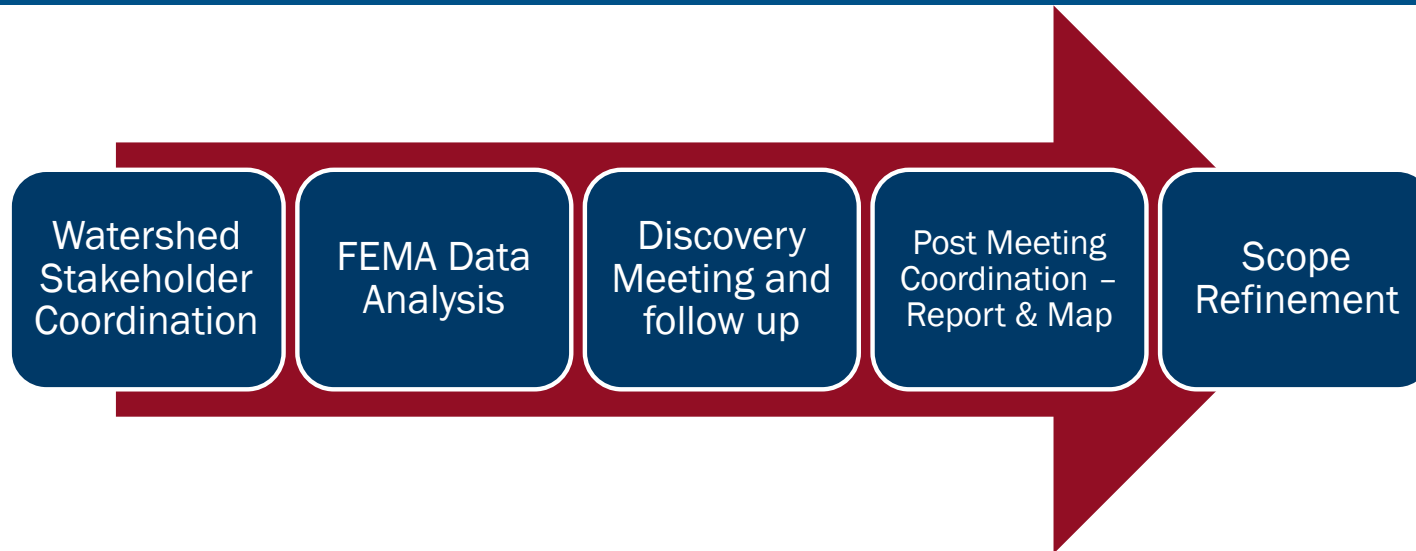


# Increased FEMA Investment in LIDAR

- FEMA is an investor in 3D Elevation Program (3DEP), a national program managed by the USGS to acquire high-resolution elevation data
- High resolution elevation data improves accuracy of flood mapping which enables risk reduction
- DLNR collecting available LIDAR data for the FHAT



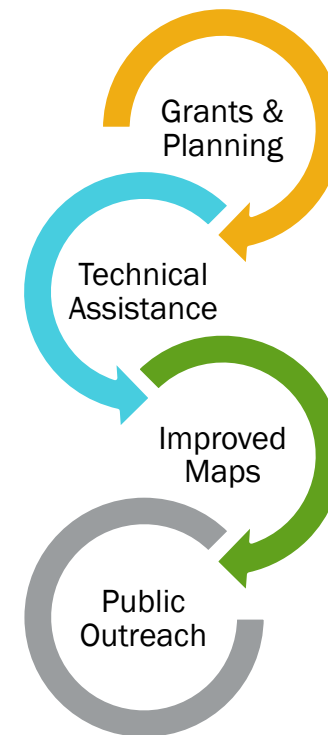
# Risk MAP Discovery Process



Discovery is FEMA's process of data mining, listening, and documenting local needs with the goals of risk reduction, future studies, and continued coordination. The Discovery process is ongoing with Kauai County, completed with Honolulu in 2019, and with Hawaii County in 2015.

# Discovery to Promote Risk Reduction

- Before a Risk MAP study is scoped or funded
- Promotes future loss reduction efforts
  - Increases visibility of flood information
- What do communities get?
  - FEMA and partner agency resources
  - Best practices, tools and lessons learned
  - Energized discussion to address needs
- Who is involved with FEMA Discovery:
  - Floodplain management officials
  - Emergency management staff
  - State agencies & other Federal agencies



# Current Risk MAP Providers

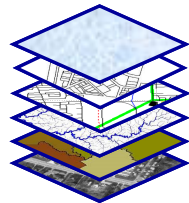
FEMA's current procurement framework reflects a focus on technical credibility, engagement with local officials, and moving communities to take mitigation actions



Production and Technical Services



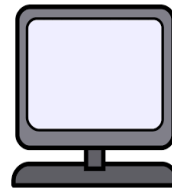
Community Engagement & Risk Communications



Other Federal Agencies



Program Management



Customer and Data Services



MT-1 (LOMA & LOMR-F) Processing



MT-2 (LOMR & CLOMR) Processing



Cooperating Technical Partners

# Cooperating Technical Partners in Hawaii

- Department of Land and Natural Resources
- Honolulu Office of Climate Change, Sustainability and Resilience

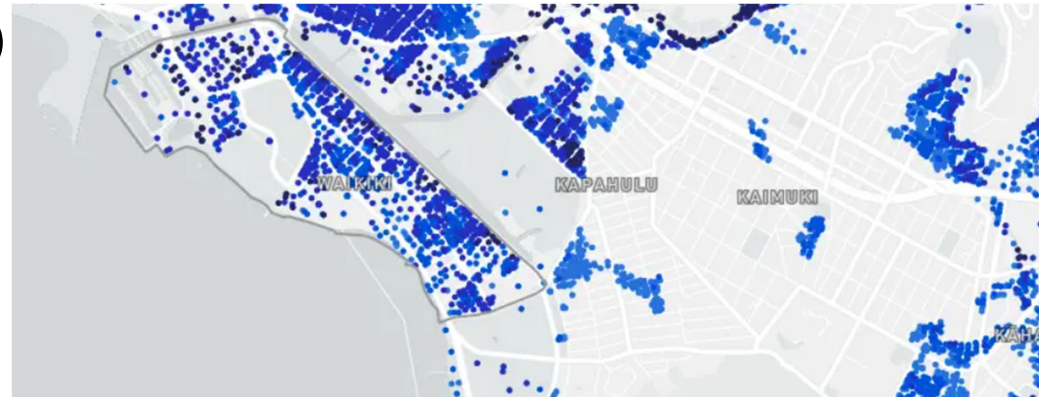


Mapunapuna Industrial Area

## Other Flood Data Sources outside of FEMA

<https://waihalana.Hawaii.gov/2022/06/09/new-flood-maps-for-hawaii-what-are-the-differences/>

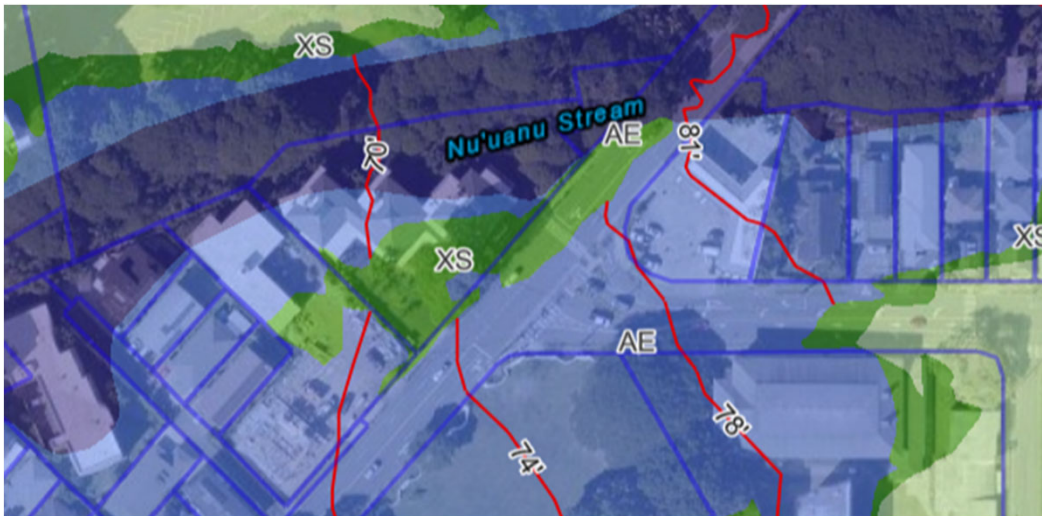
- Sea Level Rise Exposure Area (PacIOOS)
- Tsunami Evacuation Zones (each county)
- National Storm Surge Hazard Maps (NOAA)
- Risk Factor (First Street Foundation)
  - Zillow.com
  - Redfin.com
  - Realtor.com
  - Estate.ly.com



# Equity, Risk MAP and National Flood Insurance

- Justice 40 initiative
- Improving the Customer Experience
  - Information sharing and plain language
  - Data use and storytelling
- Equitable Program Delivery
  - Complete digital flood zone coverage (NFHL) and lidar data
  - Funding rural vs. urban; coastal vs riverine studies
  - Detailed analyses vs. courser catastrophic modeling
  - Flood insurance rates that reflect the risk, i.e., future losses

# Equitable Engagement and Outcomes



- Updated flood hazard data used to build an engagement plan to includes all communities
- FEMA products analyzed with socioeconomic data to inform outreach strategies and support vulnerable populations
- Data Leveraged with emergency management and climate resilience to help planning, signage and –when needed– disaster response

# Thank You

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Questions? Contact  
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