

DOCKETED

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What Happens When You Build in the Floodplain

Additional submitted attachment is included below.

WHAT HAPPENS WHEN YOU BUILD IN THE FLOODPLAIN?

Prepared for:
California Energy
Commission

Case: Mission
Rock Energy
Center

Prepared by:
Nina Danza, PE

February 2018

HOUSTON 2017



THREE 500-YR FLOODS IN 10 YEARS

FLORIDA 2017



JACKSONVILLE WORST FLOODING IN ITS 150 YEAR HISTORY

FLOODS ARE NOT TAKING PLACE AS PREDICTED BY STATISTICS

Flood Return Computations are Inaccurate and do not reflect:

- Poor Past Rainfall Records
 - Climate Change
- Lack of Site Specific Data

BATON ROUGE, LA 2016



FLOOD DAMAGES ARE ESCALATING

MISSOURI 2015



**CLIMATE CHANGE MEANS MORE FREQUENT,
GREATER INTENSITY STORMS**

FLOODPLAIN MAPS ARE FAULTY

OFFICE OF INSPECTOR GENERAL

FEMA Needs to Improve Management of Its Flood Mapping Programs

“Without accurate floodplain identification and mapping processes, management, and oversight, FEMA cannot provide members of the public with a reliable rendering of their true flood vulnerability or ensure that NFIP rates reflect the real risk of flooding.”

“This review focuses on riverine flooding, which occurs in waterways subject to overbank flooding, flash floods, and urban drainage system flooding.”

NATIONAL FLOOD INSURANCE PROGRAM IS BANKRUPT

CONGRESS OF THE UNITED STATES
CONGRESSIONAL BUDGET OFFICE

CBO

The National
Flood Insurance
Program:
Financial
Soundness and
Affordability



SEPTEMBER 2017

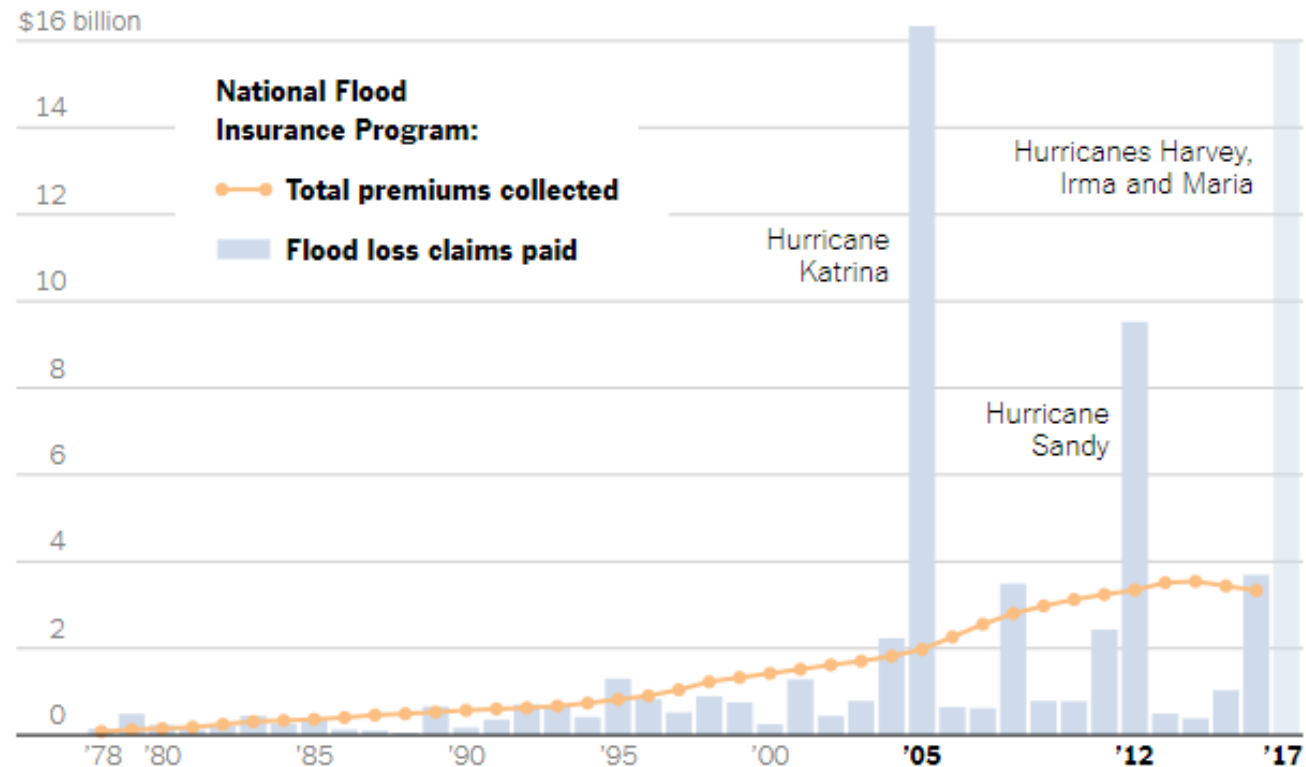
“Congressional Budget Office estimated that overall, considering all expenditures and premium income, the [NFIP] program had an expected one-year shortfall of **\$1.4 billion.**”

Excluding costs for mapping floodplains, mitigating flood risk, and making interest payments on debt accumulated from previous claims, CBO indicates NFIP is **still \$0.7 billion insolvent.**

NY TIMES 11/4/2017

Unable to Keep Up With the Floods

The National Flood Insurance Program has been in the red since 2005, when Hurricane Katrina flooded New Orleans and it suddenly had to pay out \$16.3 billion in claims.



By The New York Times | Source: Federal Emergency Management Agency. Note: Paid flood loss claims for 2017 are estimated.

INDUSTRY SCIENTISTS WARN

- Flood damage in the United States continues to escalate. From the early 1900s to the year 2007, flood damage increased six-fold, and now averages over \$6 billion annually, even when Hurricanes Katrina, Rita, and Wilma (2005) are not included.
- This has occurred despite the investment of billions of dollars in structural flood control.
- Even in the face of increasing flood losses, we continue to intensify development, and to do so in a manner in which flood-prone or marginally protected structures suddenly become susceptible to damage.

Association of State Floodplain Managers [ASFPM]

FLOODING CAUSES HAZARDOUS CHEMICAL SPILLS



2015 Austin TX Oil and Chemical Plant Failure

FLOODING CAUSES UTILITY FAILURES



2015 St Louis Sewage Treatment Plant Failure

**HOW DOES THIS APPLY
TO MREC?**

DO NOT USE LOCAL ORDINANCES FOR ADEQUATE FLOOD PROTECTION



SANTA PAULA AIRPORT FLOOD DAMAGE 2005

USE INDUSTRY EXPERTISE TO INFORM DECISIONS



A Guide for Higher Standards in Floodplain Management

Prepared by:

ASFPM Floodplain Regulations Committee

Revised March 2013

“ASFPM strongly believes the minimum NFIP floodplain regulations do not provide adequate long-term flood risk reduction for communities and that the benefits of flood risk reduction achieved by higher regulatory standards far outweighs the burden of administering them.”

Association of State Floodplain Managers [ASFPM]

ADDRESS EROSION HAZARD



**ASFPM RIVERINE EROSION HAZARDS
WHITE PAPER**

by

ASFPM Riverine Erosion Hazards Working Group

February 2016

“The nation must begin to break the costly cycle of encroachment, erosion-related damage, structural controls, further encroachment and so on.”

“The main purpose of this White Paper is to encourage state and local governments to begin mapping riverine erosion hazard areas in their communities.”

*Association of State Floodplain
Managers [ASFPM]*

EROSION CONTROL PROPOSED DOWNSTREAM OF MREC

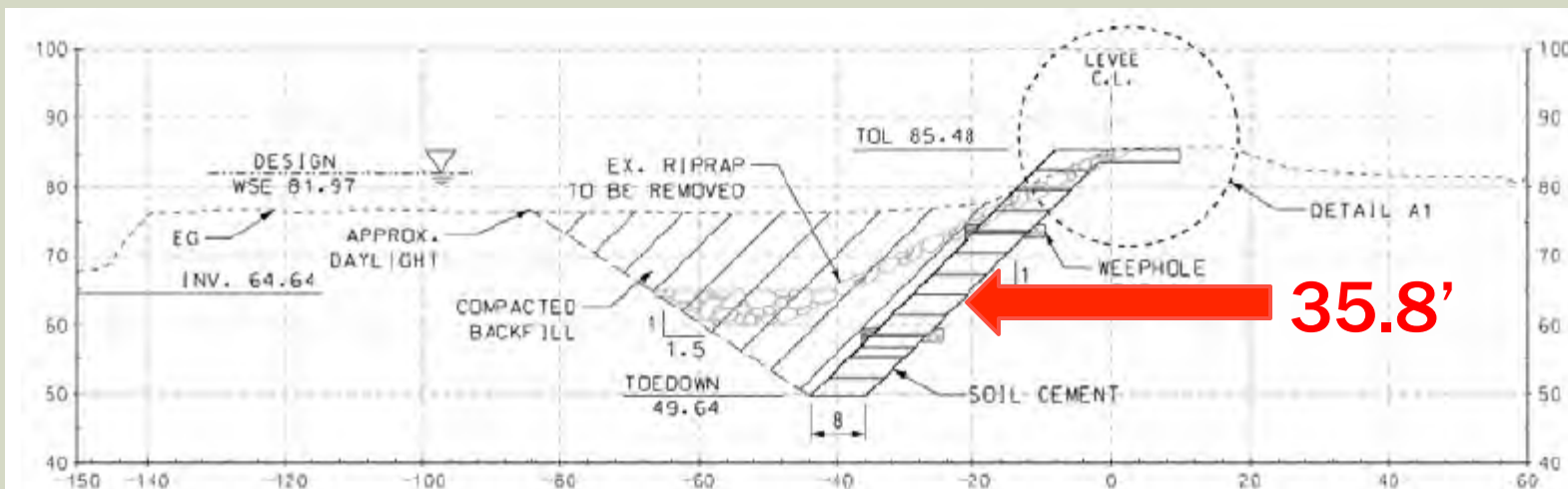


Figure 4.1 – Typical Cross Section of Alternative 1, Soil Cement for Design Flow (Sta. 270+00)

SANTA CLARA RIVER LEVEE REPAIR PROPOSED
8' THICK X 35.8' HIGH PAVED SIDE BANK

ANALYZE HIGH RISK



Geomorphic Assessment of the
Santa Clara River Watershed,
Synthesis of the Lower and
Upper Watershed Studies



Ventura and Los Angeles
Counties, California

April 2011



Prepared for
Ventura County Watershed Protection District
Planning and Regulatory Division
800 S. Victoria Avenue
Ventura, CA 93009

Los Angeles County Department of Public Works
900 S. Fremont Avenue
Alhambra, CA 91803

U.S. Army Corps of Engineers
Los Angeles District
915 Wilshire Boulevard, Suite 1101
Los Angeles, CA 90017



Prepared by
Stillwater Sciences
2855 Telegraph Avenue, Suite 400
Berkeley, CA 94705



*“The majority of sediment transport throughout the SCR occurs during very short periods of time...**25% of the total sediment discharge out of the entire SCR watershed for the period 1928–2000 occurred in four days.**”*

Stillwater Sciences
Geomorphic Assessment of the
Santa Clara River Watershed
April 2011

http://www.ladpw.org/wmd/scr/docs/SCR_Geomorph%20Synthesis_SWS_2011_FINAL.pdf

LEARN FROM THE PAST REALIZE THE FUTURE

**DO NOT
BUILD
IN THE
FLOOD
PLAIN**

www.vcwatershed.net/publicMaps/crs/

