The human dimension of flood risk: towards building resilience in vulnerable communities

Kristen Goodrich

Social Coast '16

FloodRISE
Resilient Infrastructure & Sustainable Environments

NSF

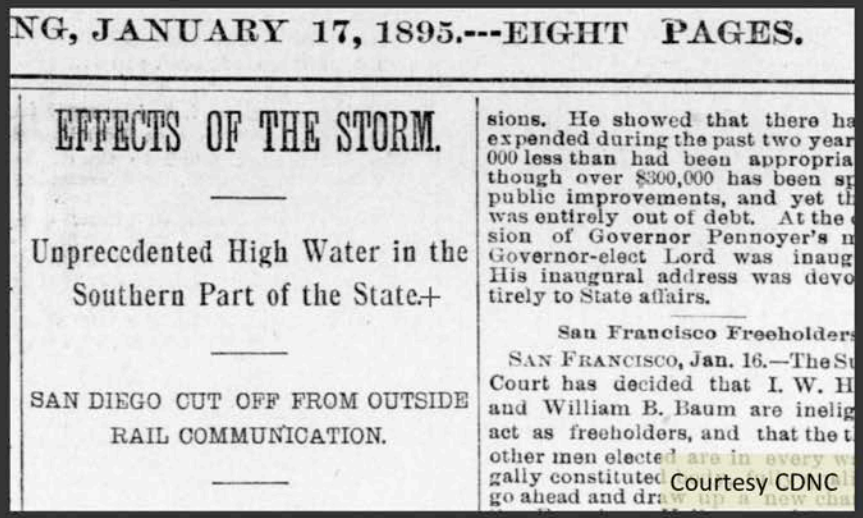
UCIrvine

Tijuana River
National Estuarine Research Reserve

FLOODING BY THE NUMBERS

- Estimated global annual damage over $1 trillion by 2050 (Hallegatte et al., 2013)
- Estimated losses in California $300 billion MORE than an earthquake of the same probability (Porter et al. 2011)
- “100 year” flood will become annual occurrence by 2050 (Tebaldi et al. 2012)

Textual accounts (1769-2014)



NG, JANUARY 17, 1895.---EIGHT PAGES.

EFFECTS OF THE STORM.

Unprecedented High Water in the Southern Part of the State.+

SAN DIEGO CUT OFF FROM OUTSIDE RAIL COMMUNICATION.

sions. He showed that there ha
expended during the past two year
000 less than had been appropria
though over $300,000 has been sp
public improvements, and yet th
was entirely out of debt. At the
sion of Governor Pennoyer's n
Governor-elect Lord was inaug
His inaugural address was devo
tirely to State affairs.

San Francisco Freeholders

SAN FRANCISCO, Jan. 16.—The Su
Court has decided that I. W. H
and William B. Baum are inelig
act as freeholders, and that the t
other men elected are in every w
gally constituted
go ahead and draw up a new cha

Courtesy CDNC

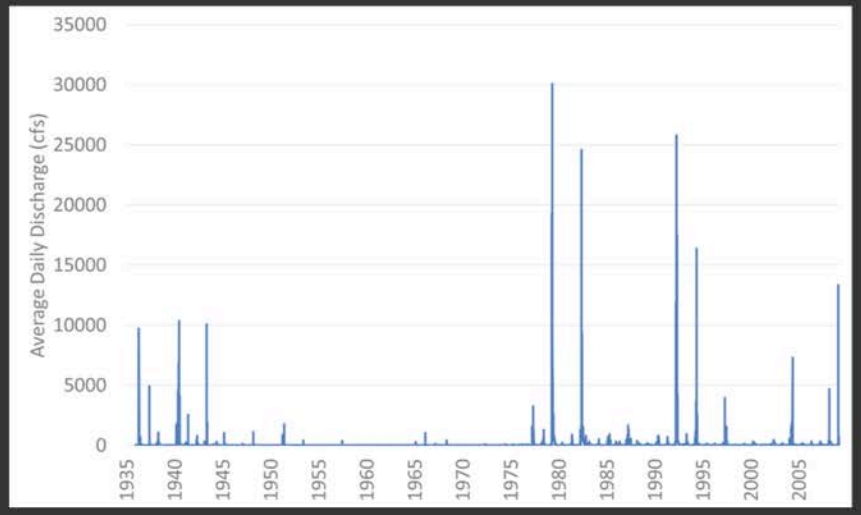
Flood maps (1937, 1963)

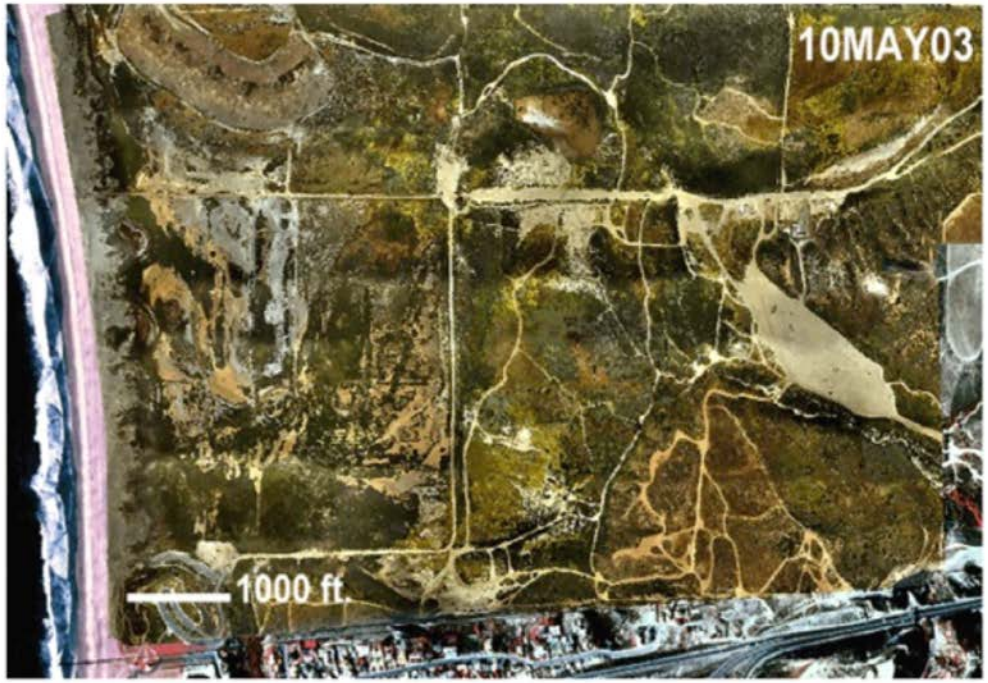
Cruse 1937, courtesy WRCA

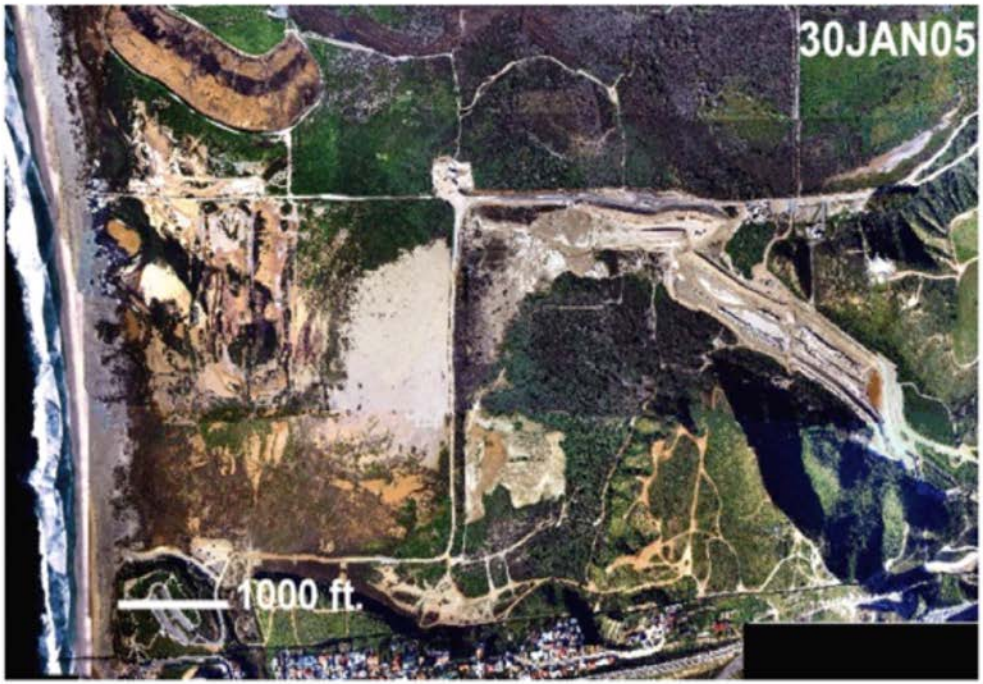
Landscape/aerial photos (earliest ca. 1890)

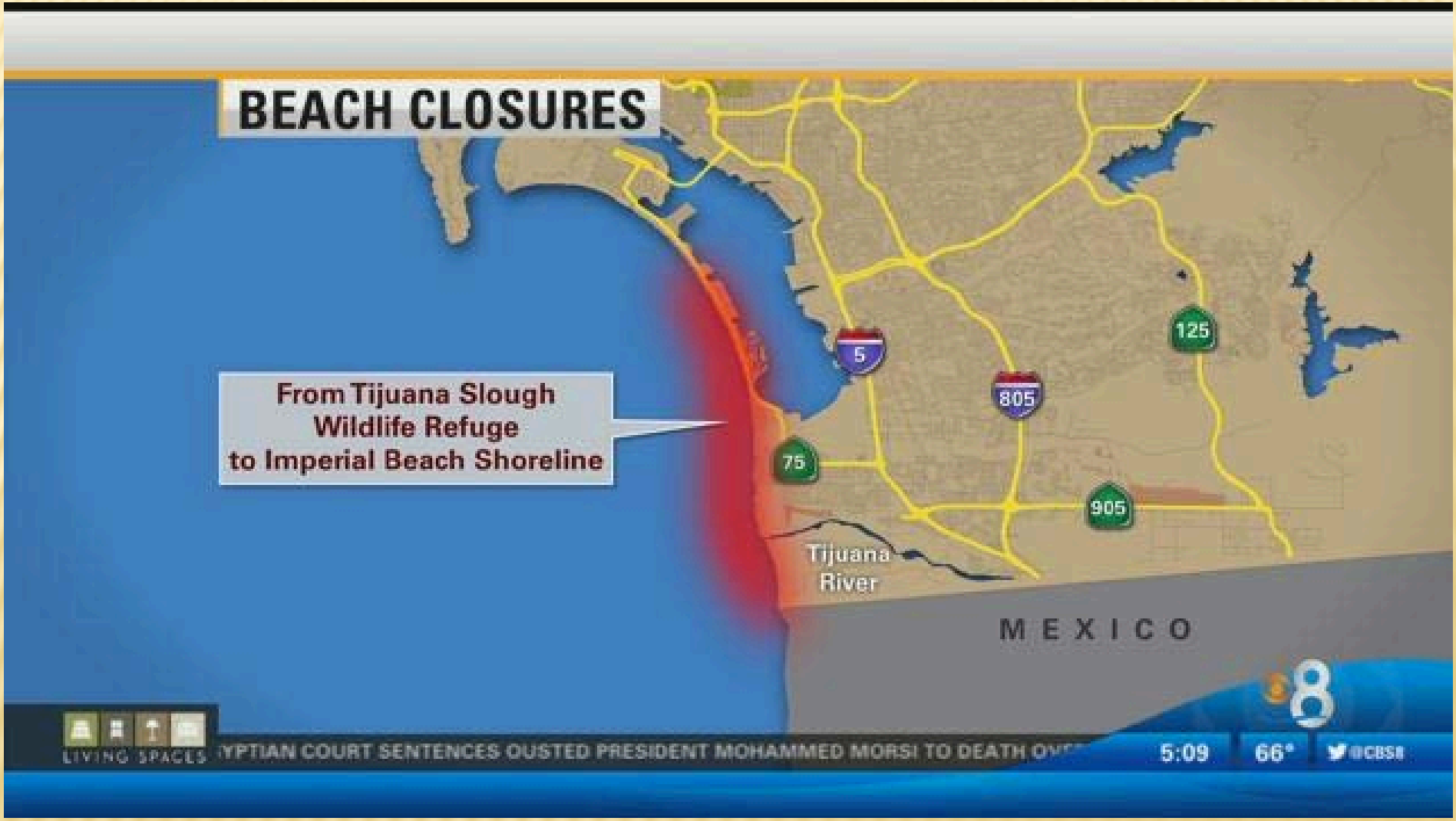
1918, courtesy SDHC

Gage data (1914-2009)




10MAY03
1000 ft.


30JAN05
1000 ft.


BEACH CLOSURES
From Tijuana Slough
Wildlife Refuge
to Imperial Beach Shoreline
5
805
125
75
905
Tijuana
River
MEXICO
LIVING SPACES
YPTIAN COURT SENTENCES OUSTED PRESIDENT MOHAMMED MORSI TO DEATH OVE
5:09
66°
@CBS8

THE MANY HUMAN DIMENSIONS OF FLOOD RISK

Many factors
(e.g. social, environmental, economic)

Many levels of decision-making
(e.g. federal, state, local, household)

Many possible scenarios
(i.e. models vary and that compounds decision-making)

Many degrees of preparedness and responses

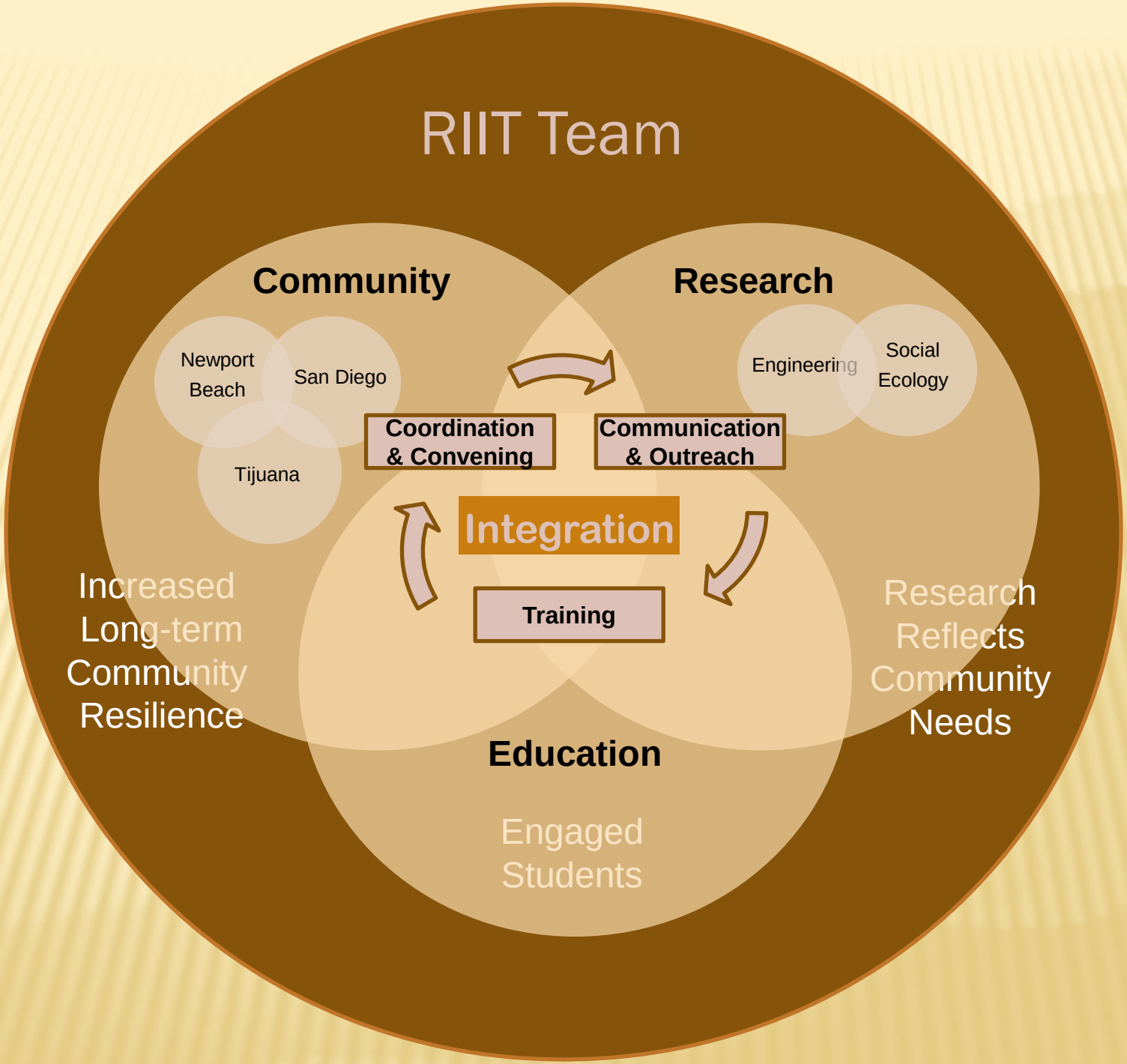
THE PROJECT SEEKS TO SUPPORT DECISION-MAKING, RISK COMMUNICATION, AND FUTURE TRAINING

APPROACH: ENGINEERING

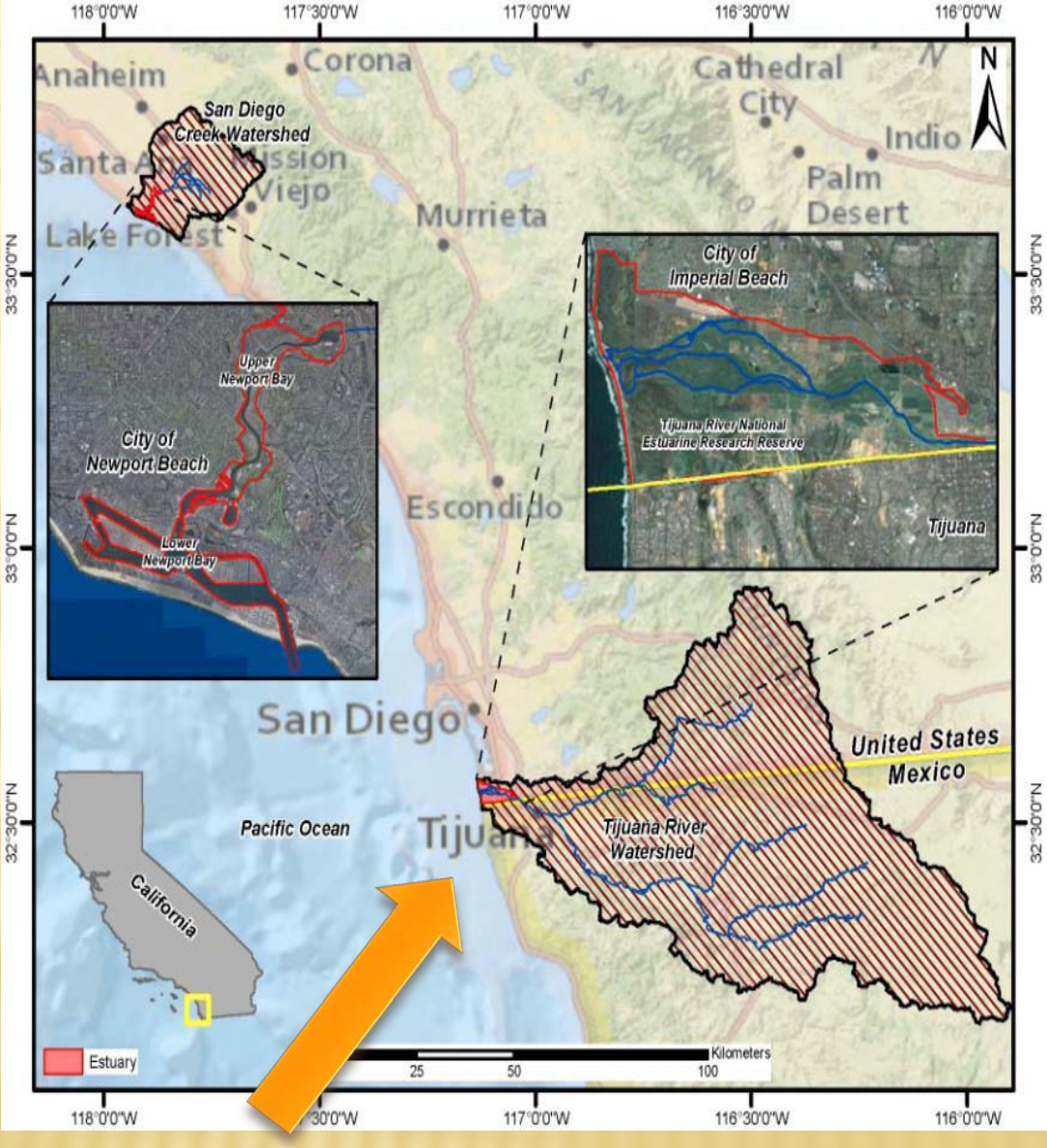
APPROACH: SOCIAL ECOLOGY

APPROACH: RESEARCH IMPACT AND INTEGRATION

Integrate community needs, research, and education


RIIT Team
Community
Research
Newport Beach
San Diego
Tijuana
Engineering
Social Ecology
Coordination & Convening
Communication & Outreach
Integration
Training
Increased Long-term Community Resilience
Research Reflects Community Needs
Education
Engaged Students

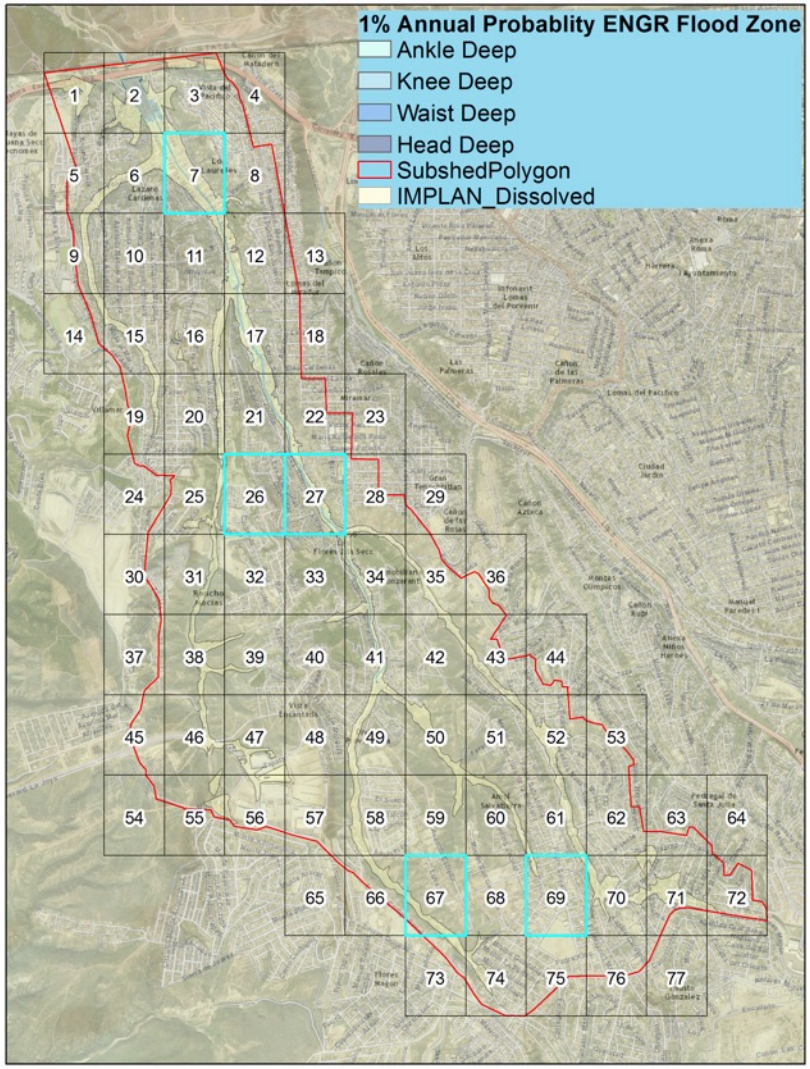
RESEARCH SITES AND FLOODING DRIVERS ARE DISTINCT



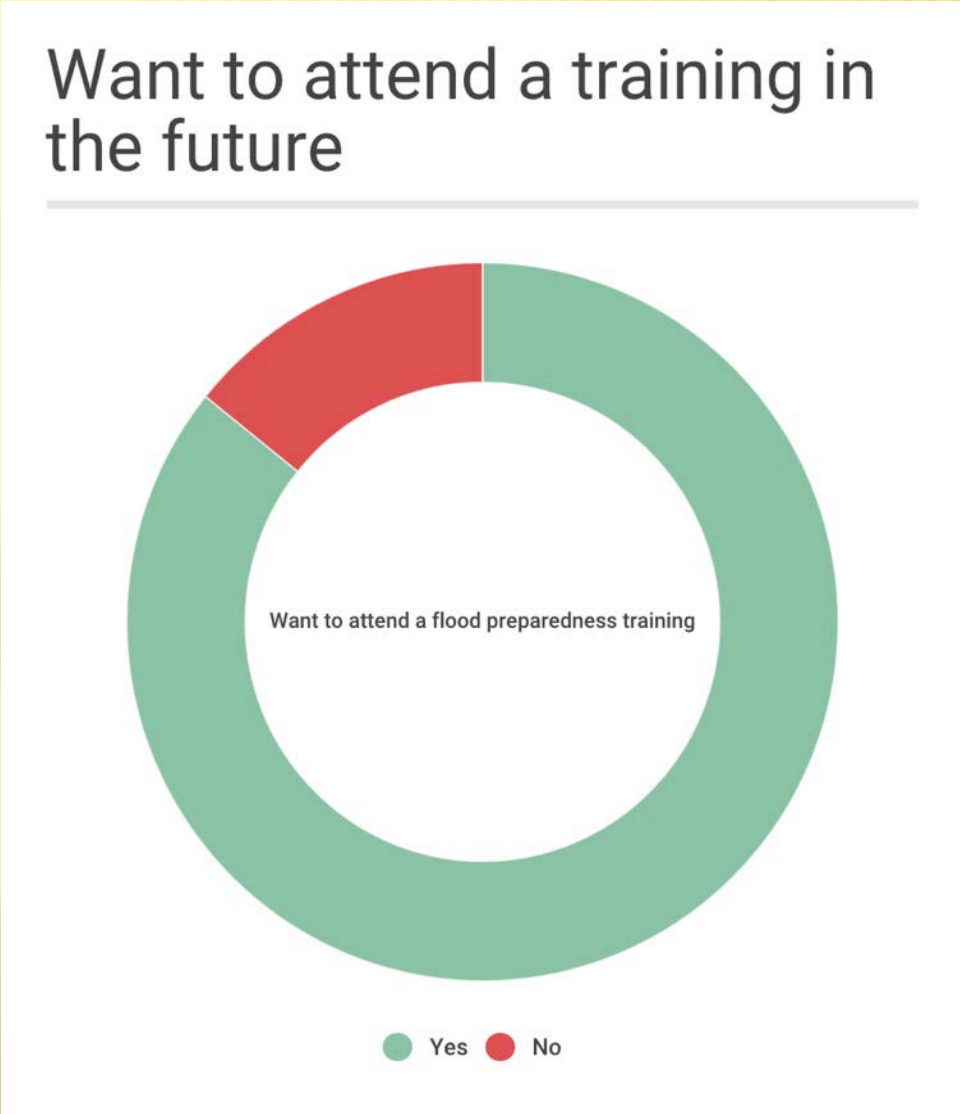
HOUSEHOLD SURVEYS WERE CONDUCTED IN TIJUANA

A NUMBER OF TOPICS WERE ADDRESSED IN THE SURVEY

- Risk perception (index)
- Attitudes towards government (trust) (index)
- Information sources (past & future)
- Experience with flooding (and erosion)
  - Causes
- Preparedness
- (Mapping exercises, flood experiment)
- Demographics



INSIGHTS FOR NEXT STEPS IN DEVELOPING COMMUNICATION



IN-DEPTH INTERVIEWS IN THE TRV

For more information and research updates

floodrise.uci.edu

Kristen Goodrich
School of Social Ecology, University of California, Irvine
Coastal Training Program Coordinator, Tijuana River National Estuarine Research Reserve
k.goodrich@uci.edu