# Humans Cause "Disasters" for Themselves too…..Independent of Natural Processes…

- Here are some examples of human-caused flooding in the U.S.
  - These were all preventable but caused by incompetence or lack of due attention.
    - Oroville dam overflow spillway damage
      - Poor construction and maintenance
      - Reactive instead of proactive approach to risks
    - Thistle Creek Mass Movement
      - Caused by removing the toe of a dormant mass movement for railroad tracks + precipitation event that activated mass movement…
    - Johnson Shut-ins Outburst flood
      - Humans left the water on and it overflowed… (human error)

# Oroville Dam, CA – 2017 Damage

# Thistle Creek Mass Movement-$400,000,000 cost

Photo: USGS

# Johnson Shut-ins Outburst Flood, Missouri, December 14th, 2005

*Missouri Department of Natural Resources*


They were still fixing it when I was there in May 2008


Johnson’s Shut-ins State Park, MO

# Being **Proactive** about geohazards

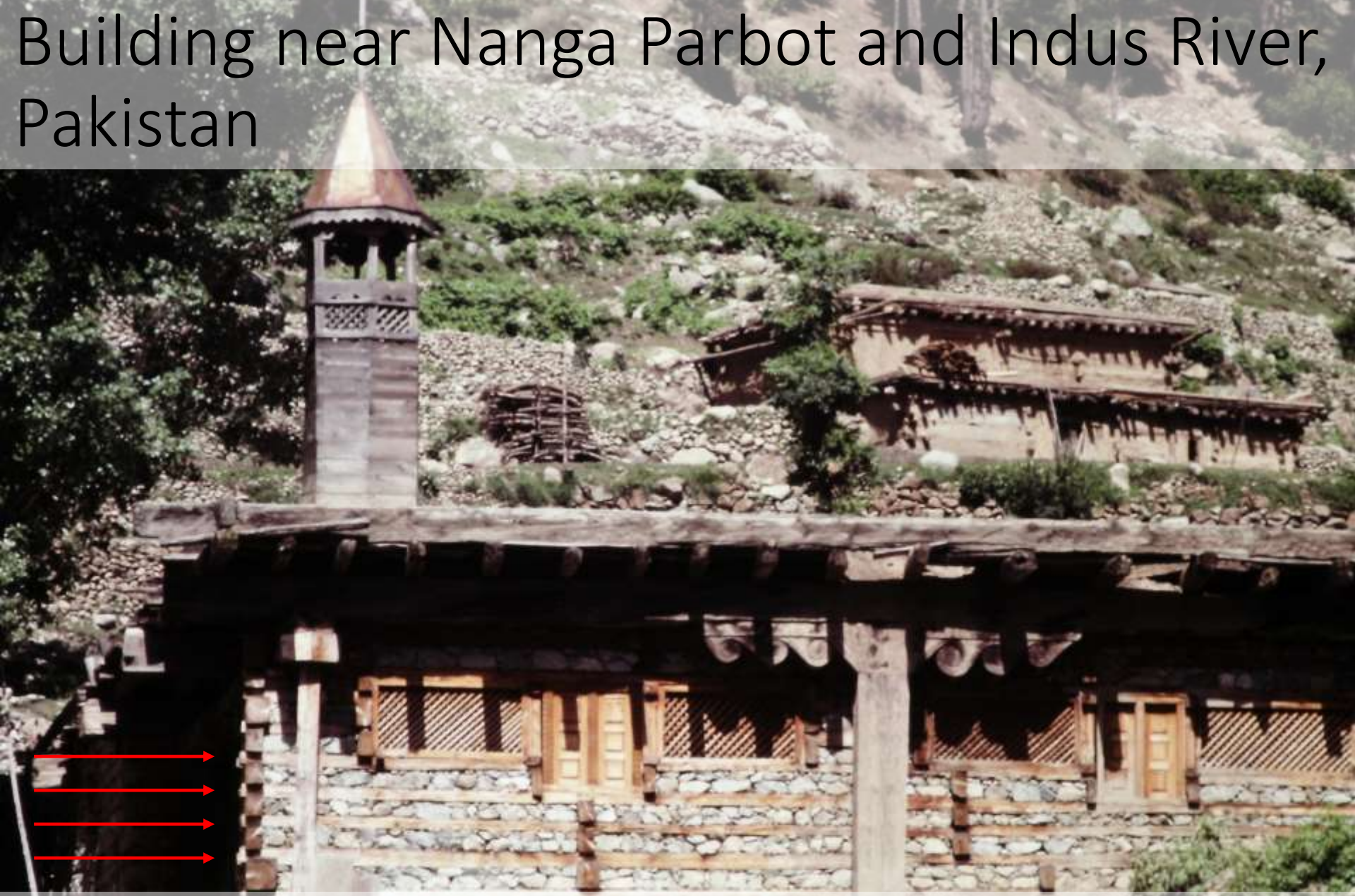
- "A critical part of the U.S. NPS' geohazard strategy is more proactive and less reactive management. A proactive stance allows practitioners to improve safety and resiliency. For example, we can identify and reduce risk before a damaging event occurs and expend funding where there will be a maximum benefit-to-cost ratio (Capps et al., 2019)" (Hults and Capps, in press)

- Prevention is more important than mitigation in some cases.
  - **"An ounce of prevention is worth a pound of the cure" ~Benjamin Franklin**

# Being proactive with Pakistan's geohazards

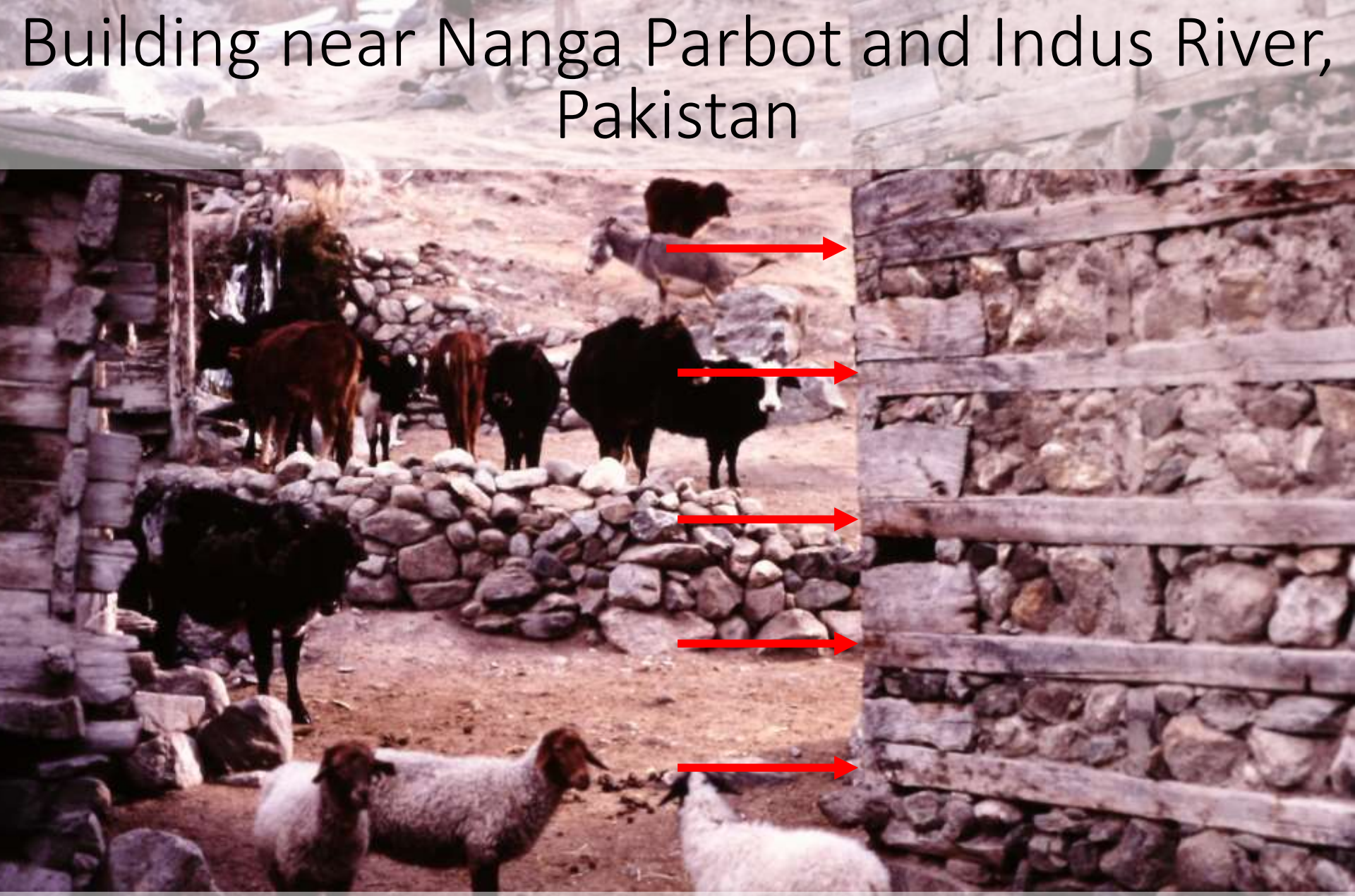
- Strengthen infrastructure against earthquake damage
  - Building codes for seismicity
  - Engineering/training for seismicity and other local/regional applications
- Reduce the risk of geohazards at known threats
  - Relieve dammed water that poses future risks
    - Landslide-dammed lakes, etc.
    - Hydroelectric possibilities
- Early warning systems
  - Hazard mapping
  - Floods
    - Sirens in valleys (network)
  - Mass movements (reactivating, etc.)
    - Tiltmeters
    - Laser monitoring
- Keep new infrastructure away from future hazards
  - Restricted construction:
    - on fault lines
    - below base flood elevations
    - on debris flow paths
    - on landslide dams

# Building near Nanga Parbot and Indus River, Pakistan



These lateral timbers help protect these old structures from lateral shear (Love Waves) during earthquakes. This is an old technique that has been updated with new materials, such as wire mesh, or gabion baskets (see pdf)

# Building near Nanga Parbot and Indus River, Pakistan

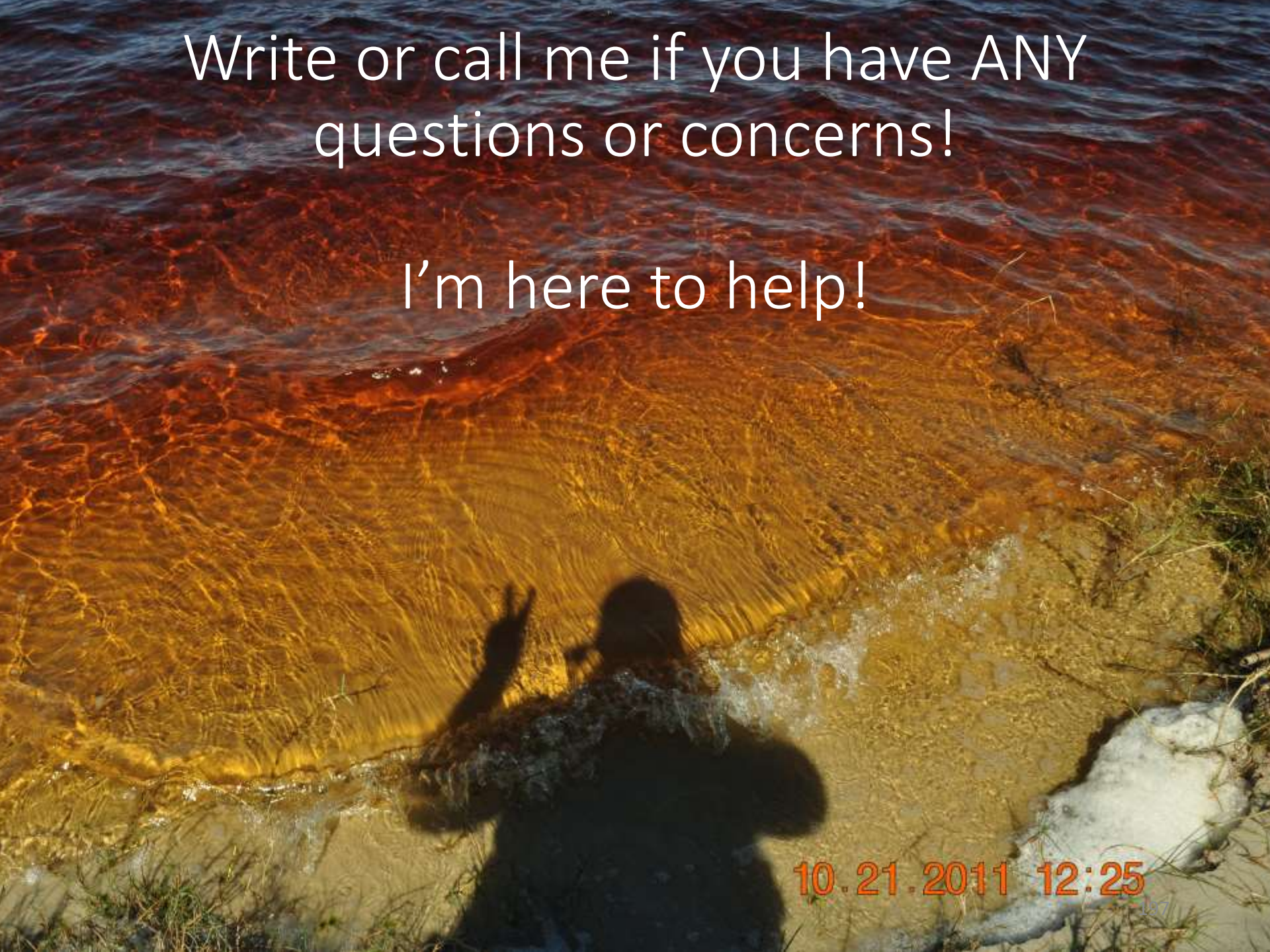


These lateral timbers help protect these old structures from lateral shear (Love Waves) during earthquakes. This is an old technique that has been updated with new materials, such as wire mesh, or gabion baskets (see pdf)

If you have questions about this material or anything else, don’t hesitate to write, call, or otherwise communicate with me.

I am here for **you**.

If you need my help in **any way**, tell me and **I will listen and help**.


Write or call me if you have ANY questions or concerns!
I’m here to help!
10.21.2011 12:25

# Questions?

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