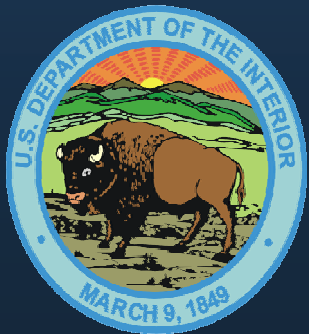
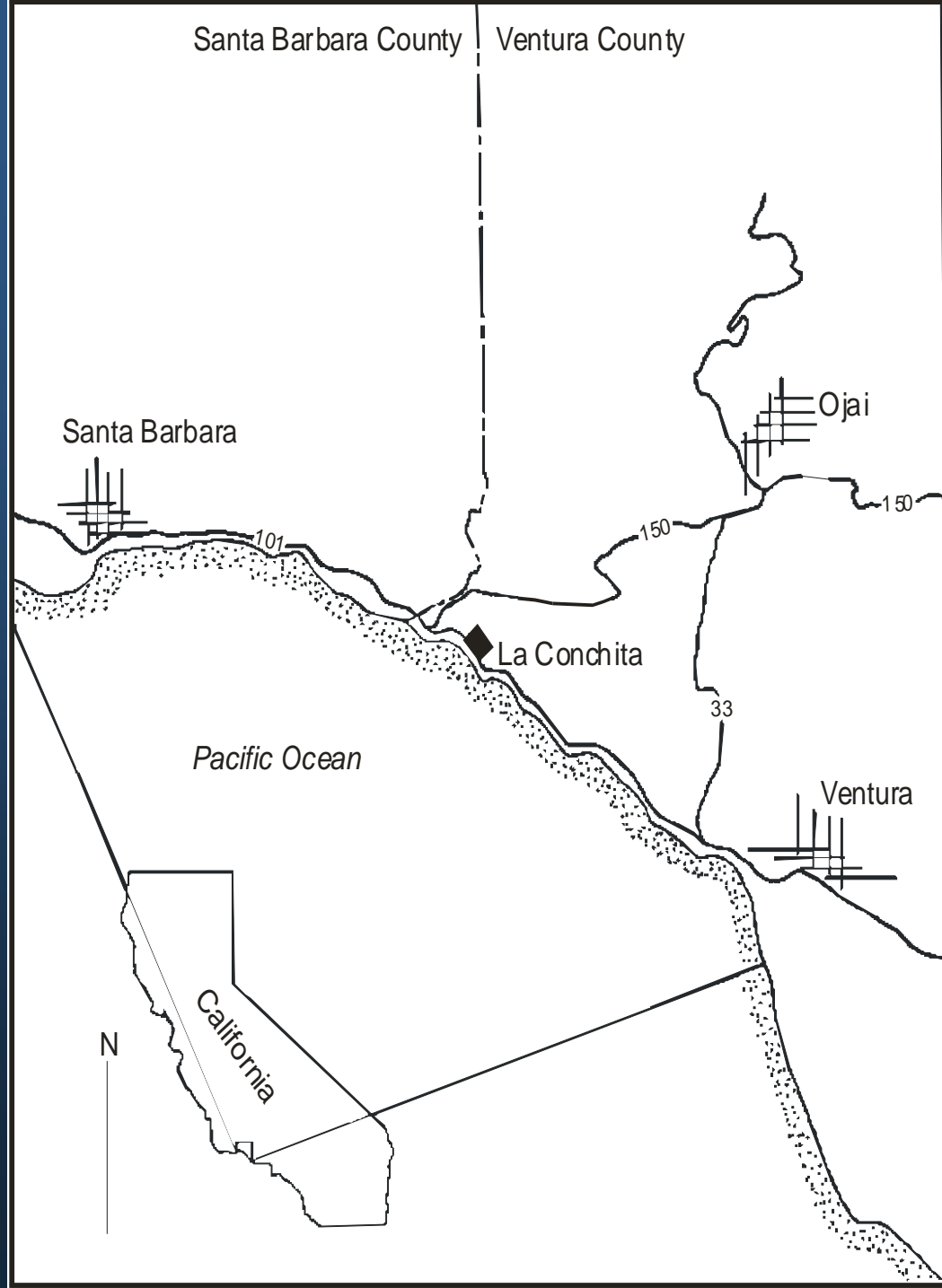


The La Conchita Landslides of 1995 and 2005

Randall W. Jibson

**U.S. Geological Survey
Golden, Colorado**









1995 La Conchita Landslide

- 400 mm of rain in January, then 200 mm in March
- Landslide began on 4 March 1995
- Landslide moved tens of meters in less than 10 minutes
- 350 m long by 120 m wide
- $\sim 1,300,000 \text{ m}^3$ volume
- Nine houses destroyed, no fatalities

2005 La Conchita Landslide

- Landslide occurred early afternoon on 10 January
- 430 mm of rainfall from 27 December to 10 January (record 15-day rainfall)
- About 200,000 m³ (15%) of the 1995 deposit mobilized and flowed rapidly into the community
- 13 houses destroyed, 23 red-tagged
- 10 fatalities



LOST IN 1995 SLIDE
 DESTROYED
 RED TAG
 YELLOW TAG

13 DESTROYED
 23 RED TAG
 2 YELLOW TAG



VENTURA COUNTY
 RESOURCE MANAGEMENT AGENCY
 MAPPING SERVICES - GIS



LA CONCHITA
 BASE MAP
 1/13/2005; 5:00 P.M.

0 100 200 Feet
 Disclaimer: This map was created by the Ventura County Resource Management Agency, Mapping Services - GIS, which is designed and operated solely for the convenience of the county and related public agencies. The county does not warrant the accuracy of this map, and no decision rendering a risk of inaccurate loss or physical injury should be made in reliance thereon.









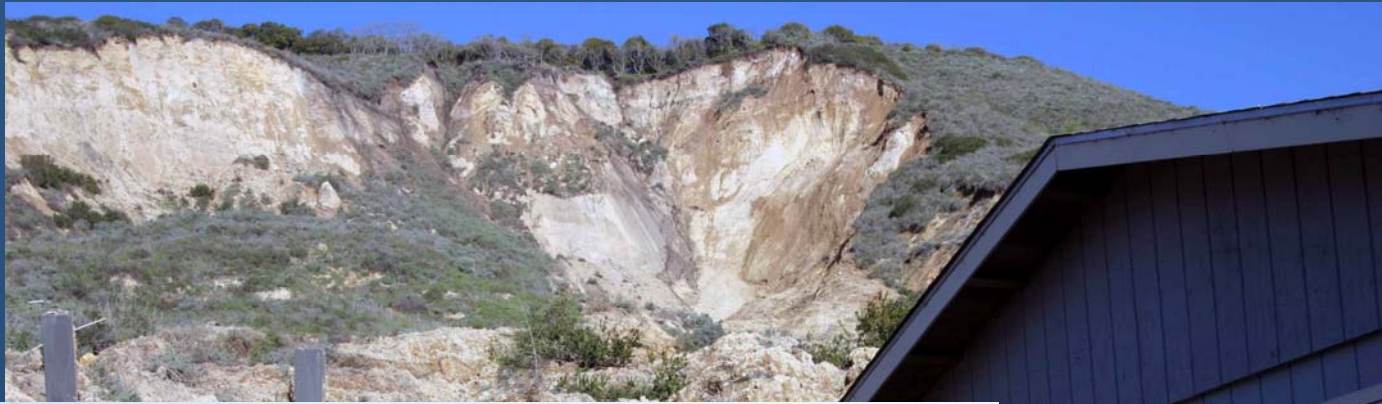


















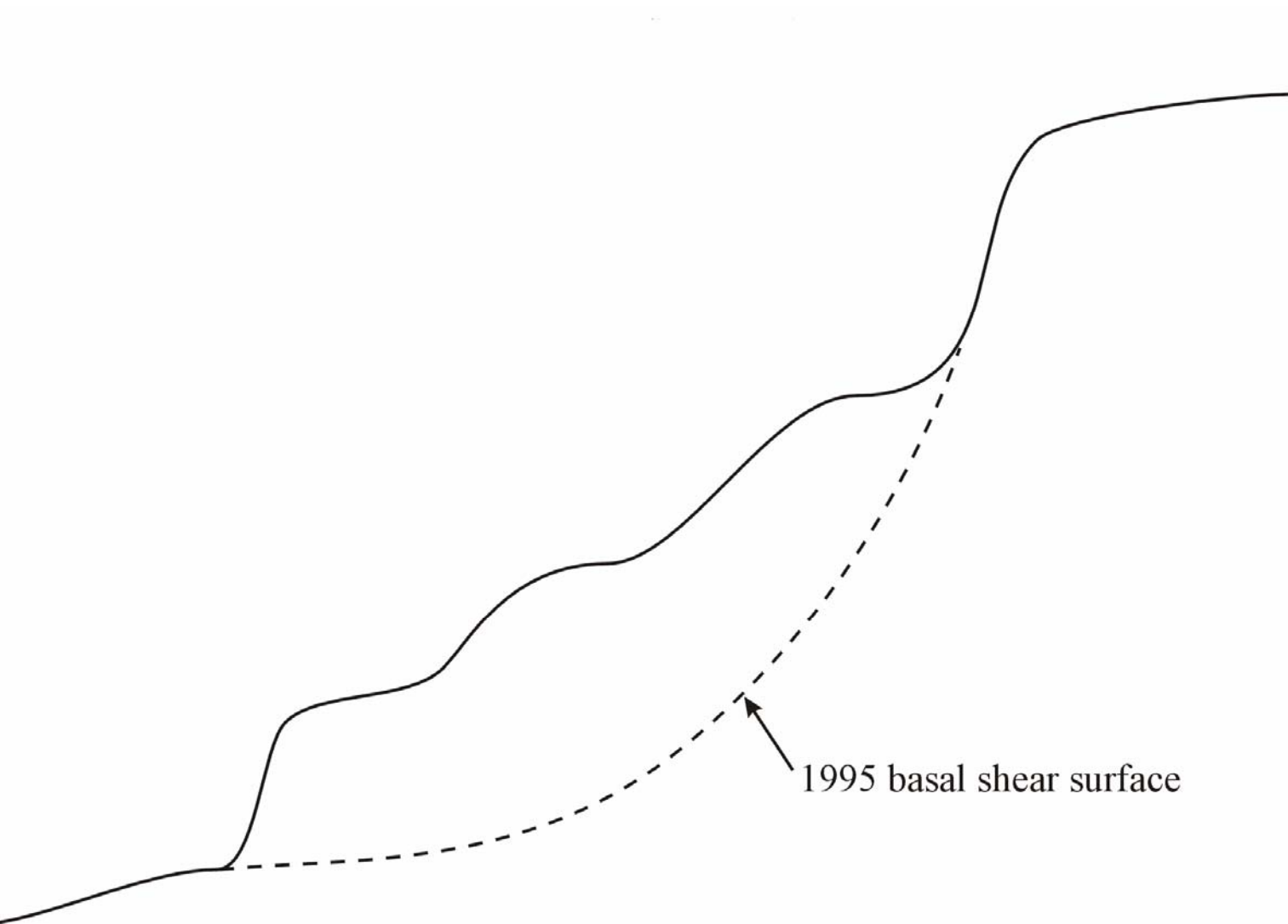


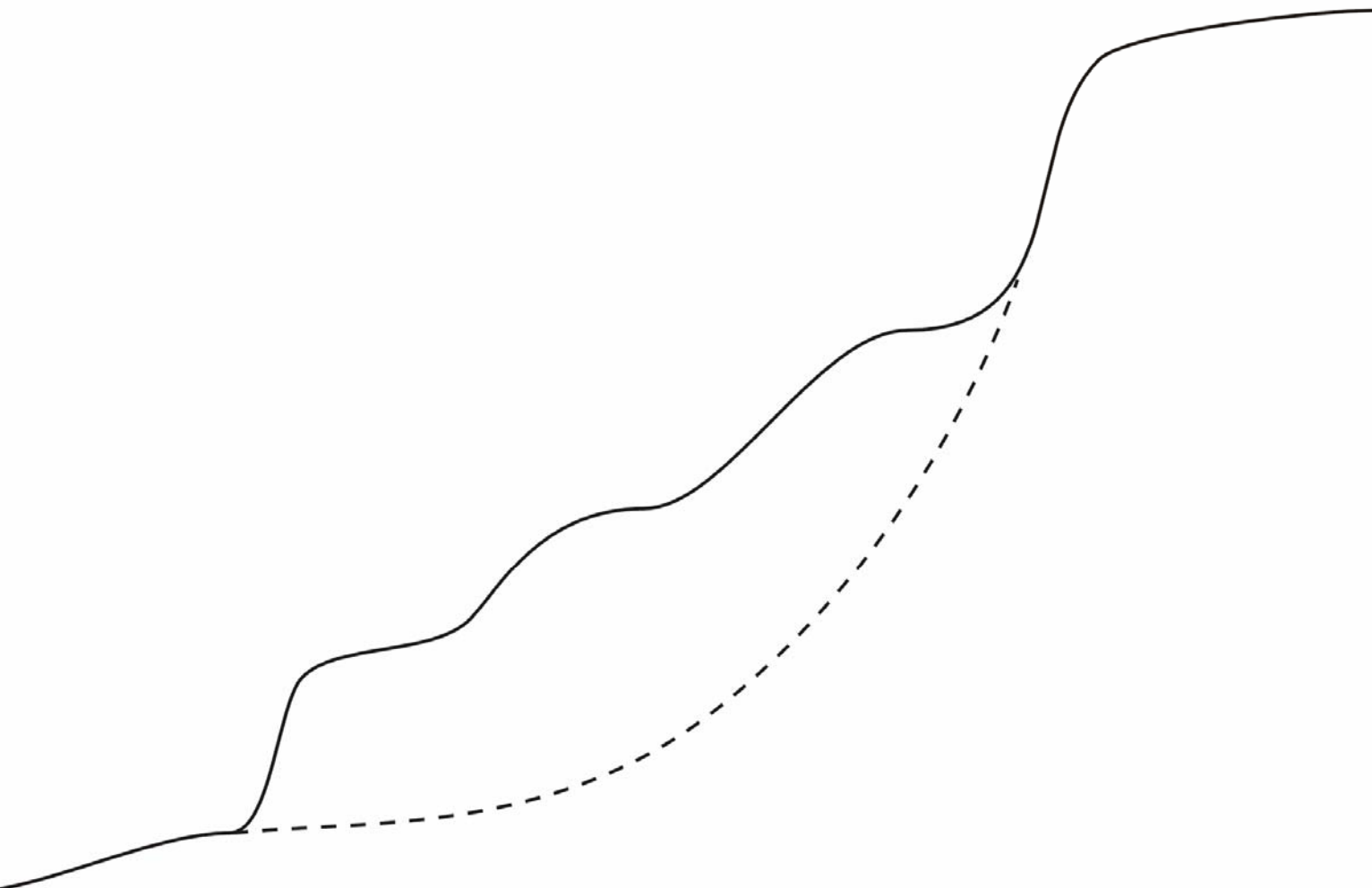
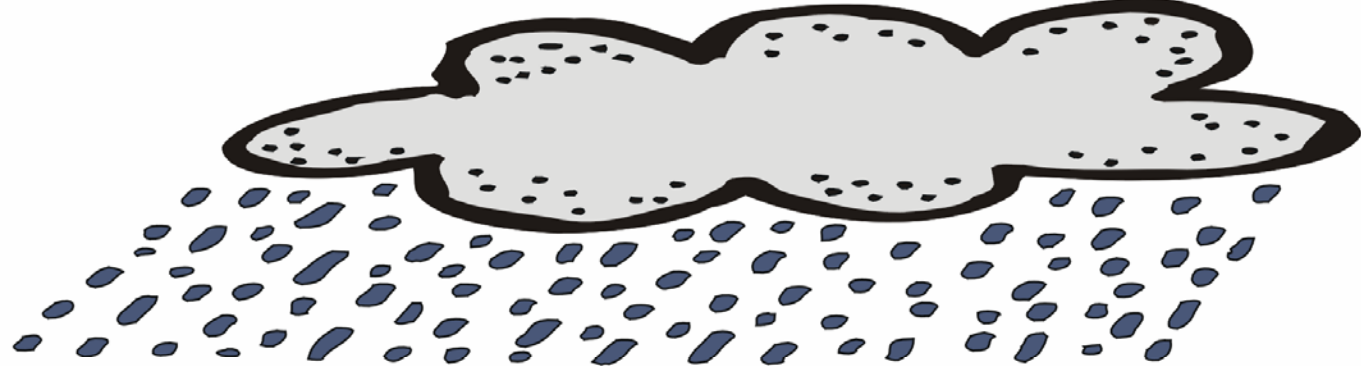


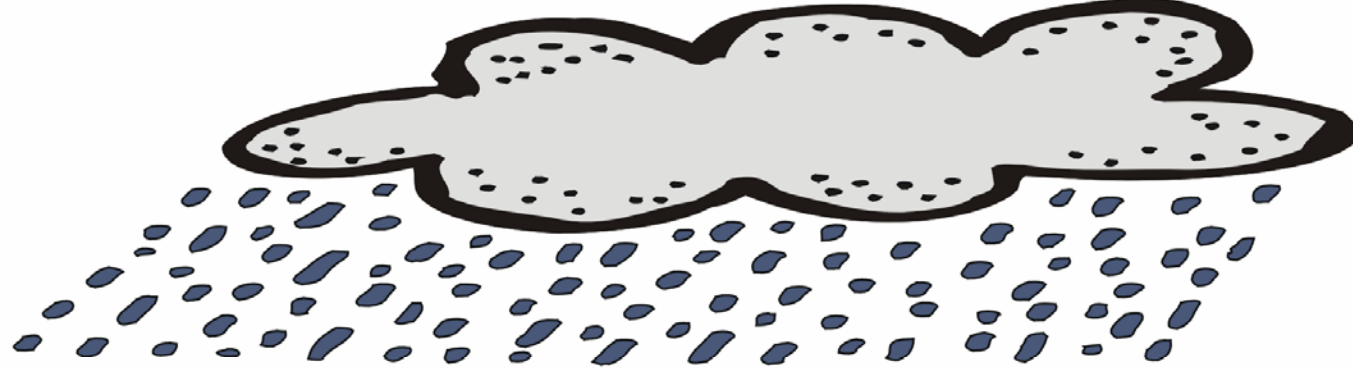
Much of the 2005 landslide deposit was dry...

- The video shows dust in the air above the rapidly flowing mass
- The County geologist was on the site within a couple of hours and observed that much of the deposit was dry material

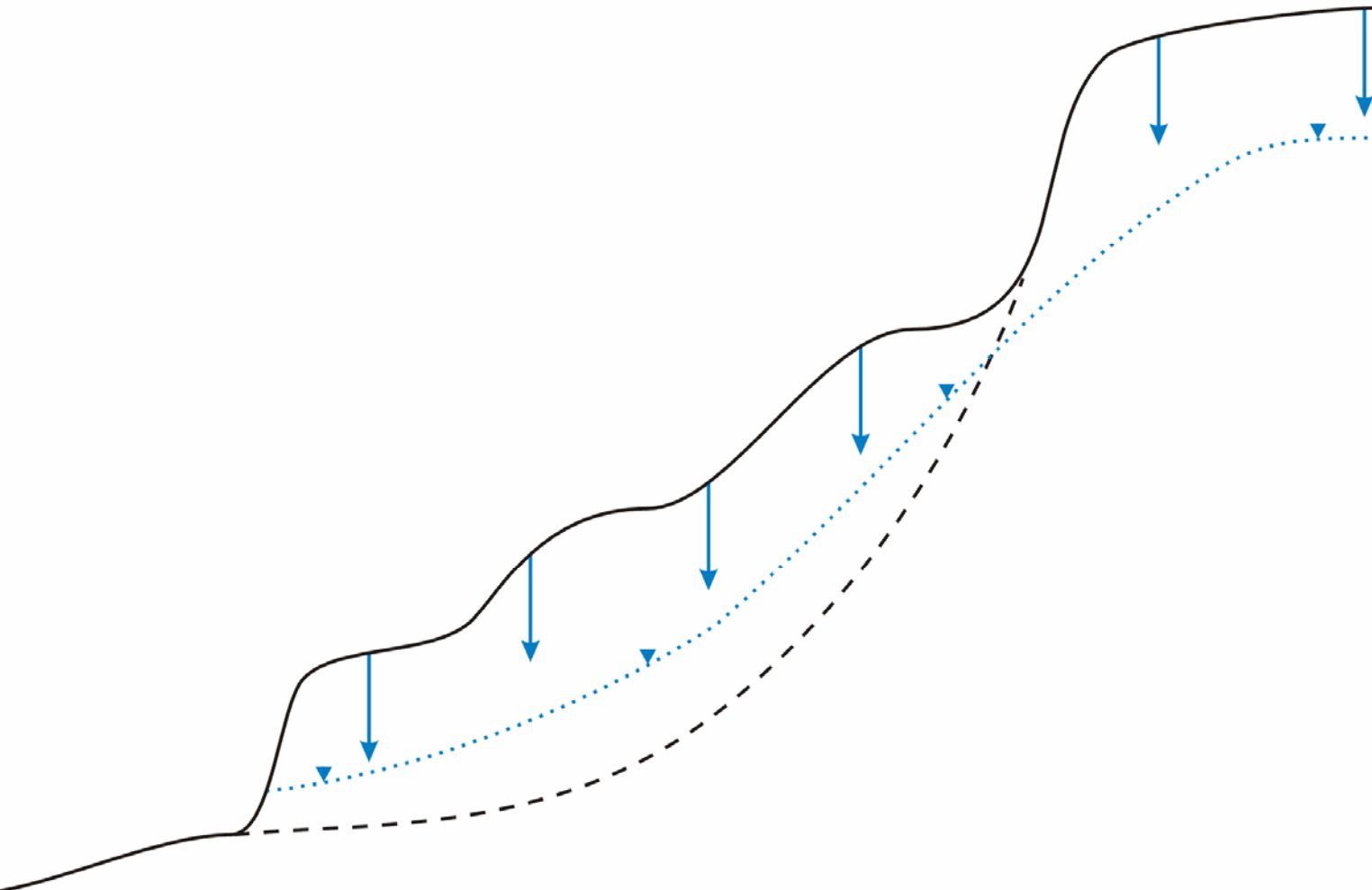
La Conchita slope profile

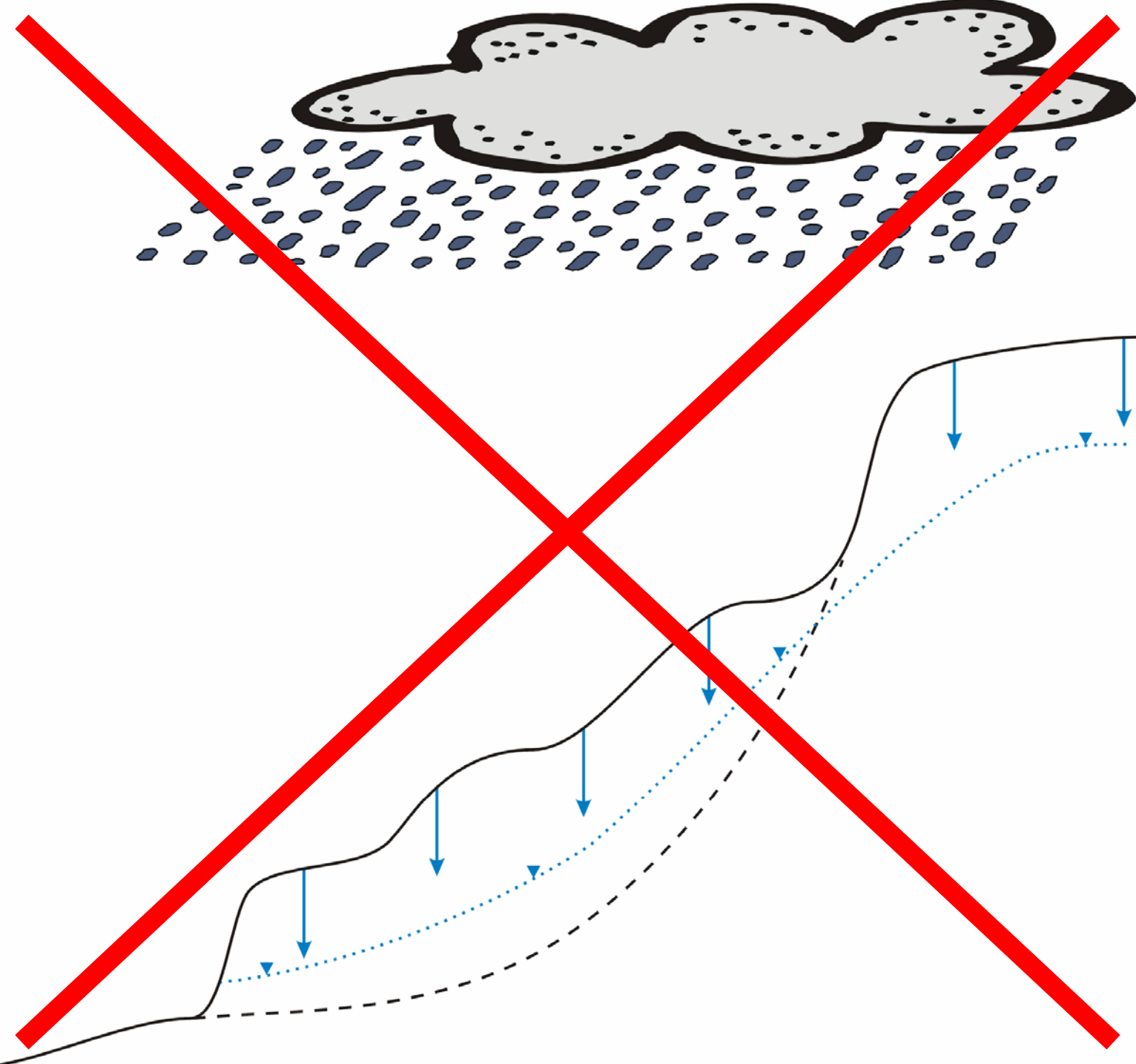




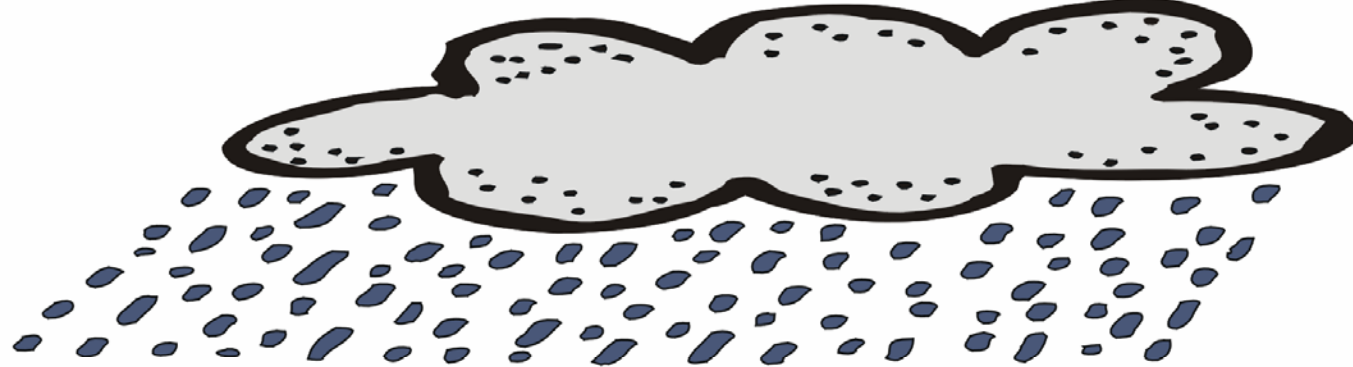


Uniform
vertical
infiltration of
a saturation
front

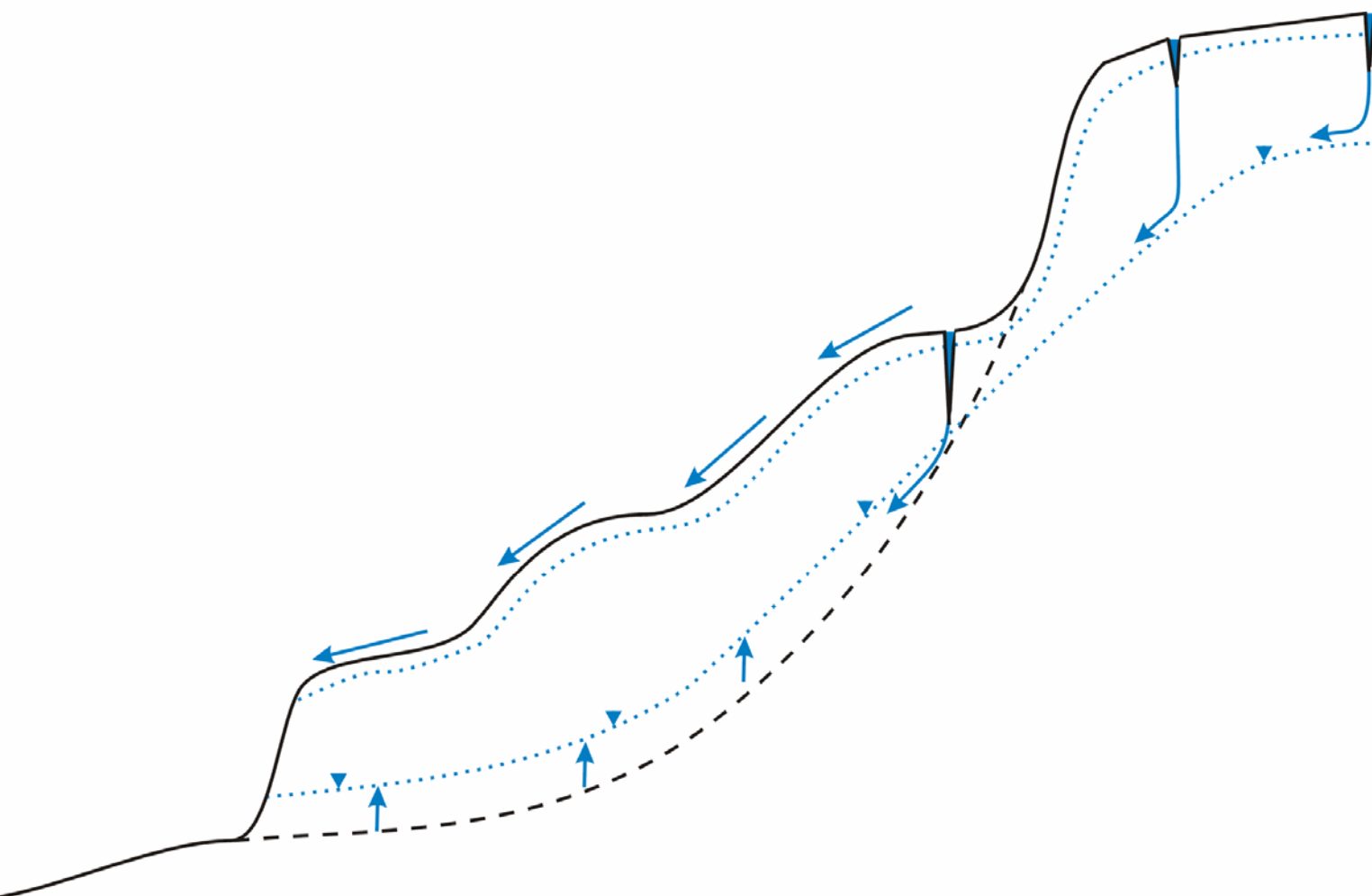


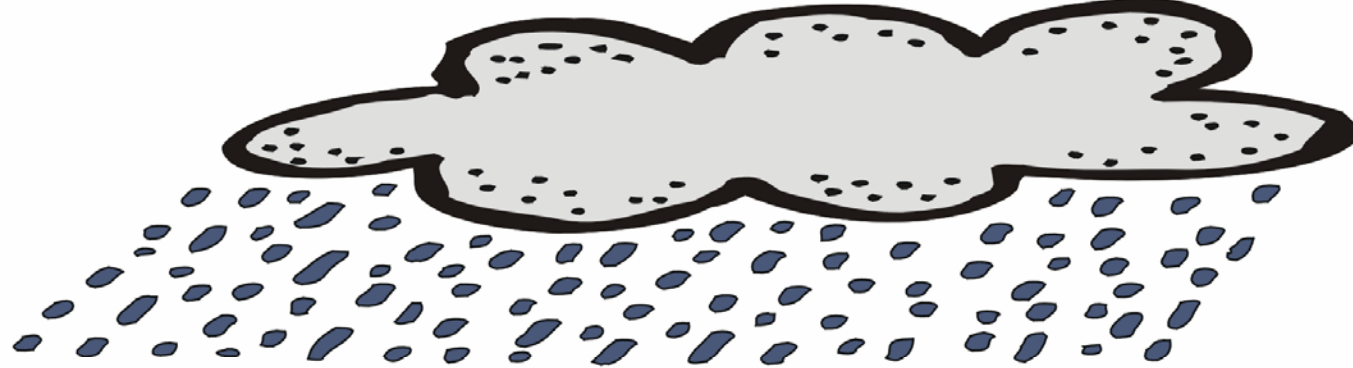


Uniform
vertical
infiltration of
a saturation
front

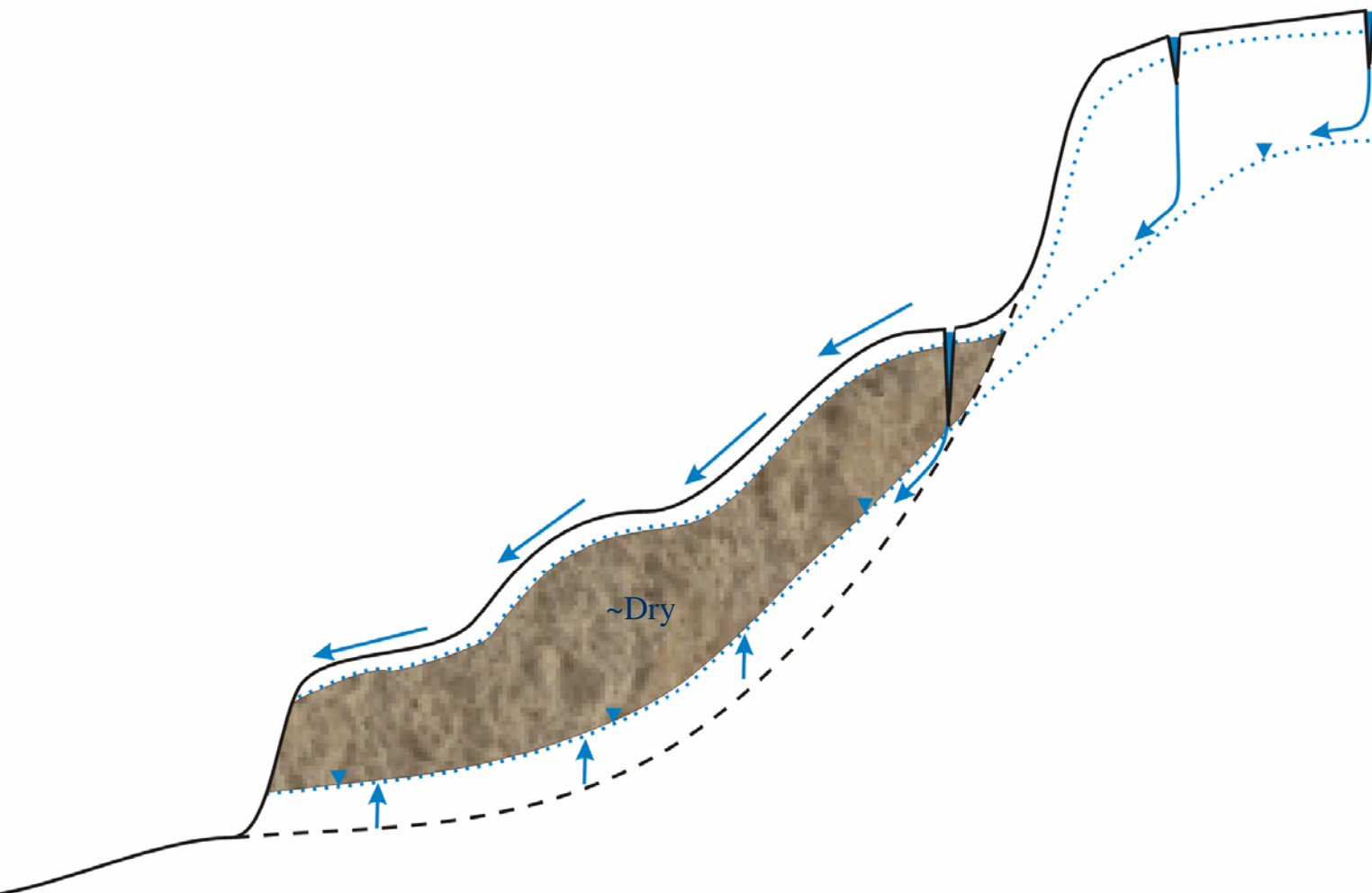


Non-uniform
infiltration
from upslope
leading to
basal
recharge



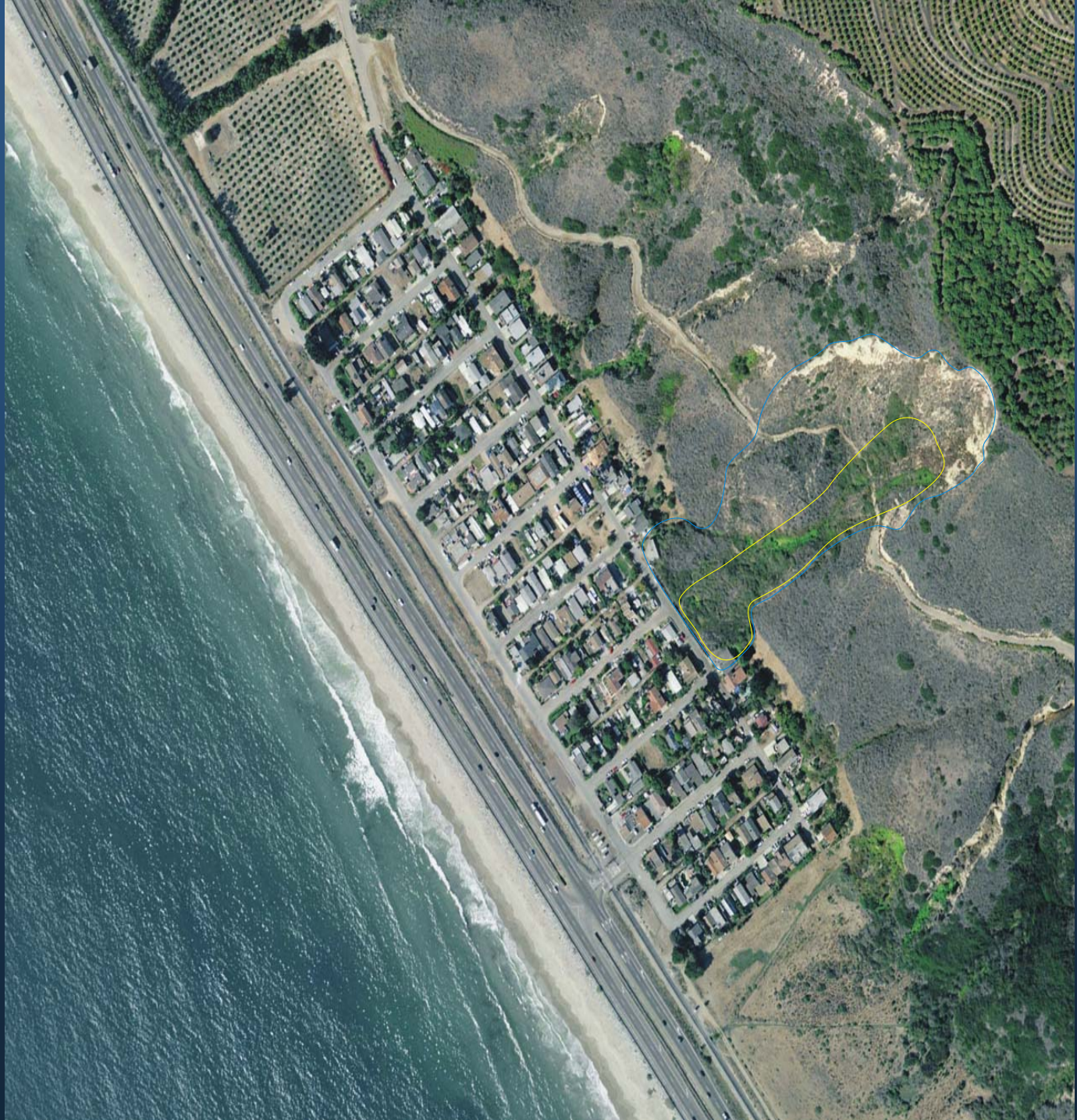


Non-uniform
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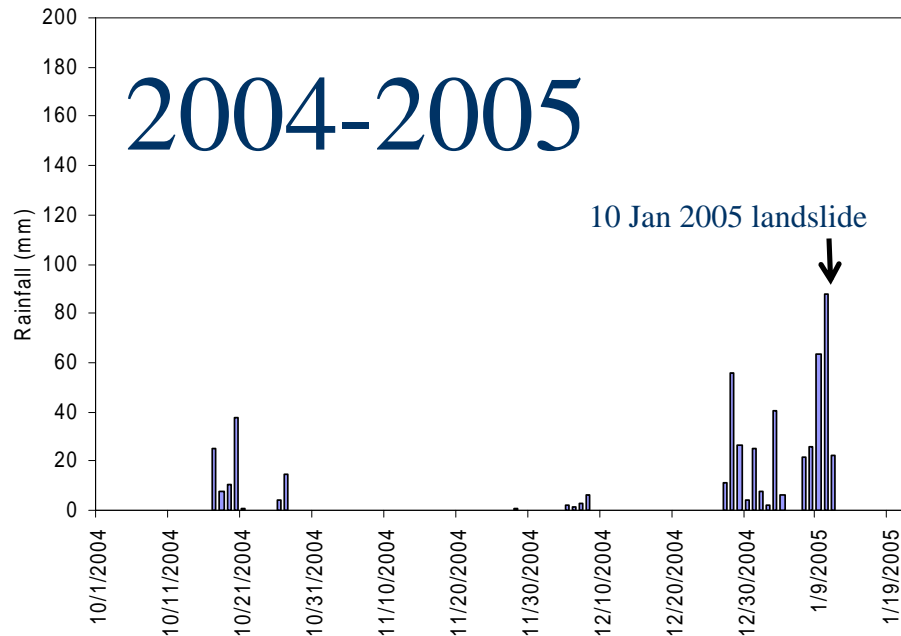
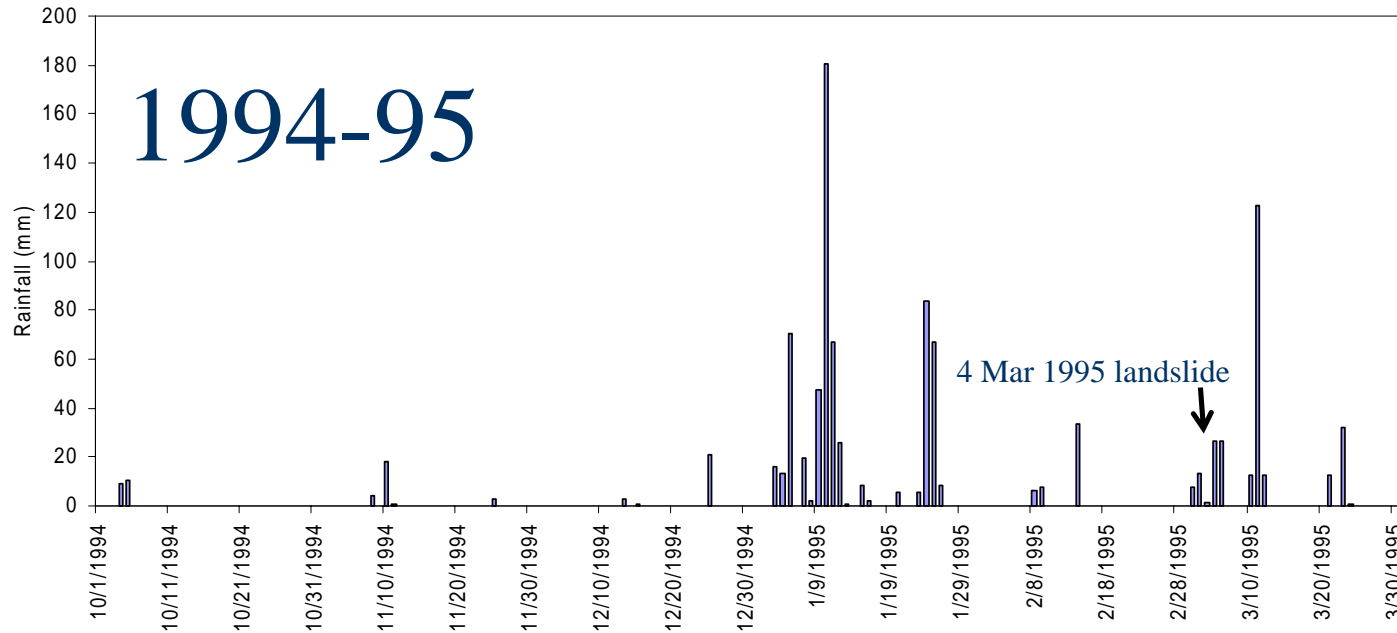


Why did the same landslide mass mobilize in two very different ways in substantially the same conditions?

- Subsidiary landsliding from the toe or scarp is common
- A wholesale remobilization of a significant portion of the 1995 mass as a rapid debris flow is...problematic



Ojai Daily Rainfall



Daily rainfall

Some challenging questions:

- Why did the landslide material not mobilize into a debris flow in 1995?
- Since only a fraction of the 1995 deposit remobilized in 2005, could the remainder also mobilize into a rapid debris flow, or is it more likely to remobilize as a slow earth flow? Or will it remain metastable?
- How do we predict which mode of failure will occur?
- What are the different rainfall thresholds and antecedent conditions required for shallow-rapid vs. deep-slow movement?
- What monitoring/warning would distinguish between these conditions?
- What is going to happen in the next wet period?

WARNING

THE LA CONCHITA COMMUNITY IS A GEOLOGIC HAZARD AREA. COUNTY OFFICIALS ADVISE AGAINST ENTRY INTO THE AREA.

Based on the present information known about ancient landslides and the 1995 and 2005 landslides, the following geologic hazards are present:

1. Catastrophic Failure: The large ancient landslide mass located above the Community could potentially fail, impacting residences within the Community AT ANY TIME AND WITHOUT WARNING.
2. Mudflows: Mudflows could potentially impact all residences and access roads within the Community.
3. Catastrophic Failure and Mudflows: Should both events occur simultaneously, the Community could be impacted.
4. No excavation (removal of earth material) or grading should be performed in the Community without recommendations from a geologist and/or geotechnical engineer and review by the County of Ventura, Public Works Agency.

THERE IS NO WARNING SYSTEM FOR THESE HAZARDS. ENTER AT YOUR OWN RISK

VENTURA COUNTY BUILDING AND SAFETY DIVISION 654-2771

DO
ALL ELECTRIC P

Your Utility Companies
are working on a plan to
Gas, Water,

You can assist in this pro
open and BY MOVING ALL
AND H

PRELIMINARY ESTIMAT

ELECTR

GAS

WATER

TELEPHONE NUMBERS TO

ELECTRIC

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CABLE TV

BUILDING & SAFETY









