

# What We Know or What We Think We Know



Expert Panel Meeting  
October 21-22, 2008



Closer, But Not There Yet.

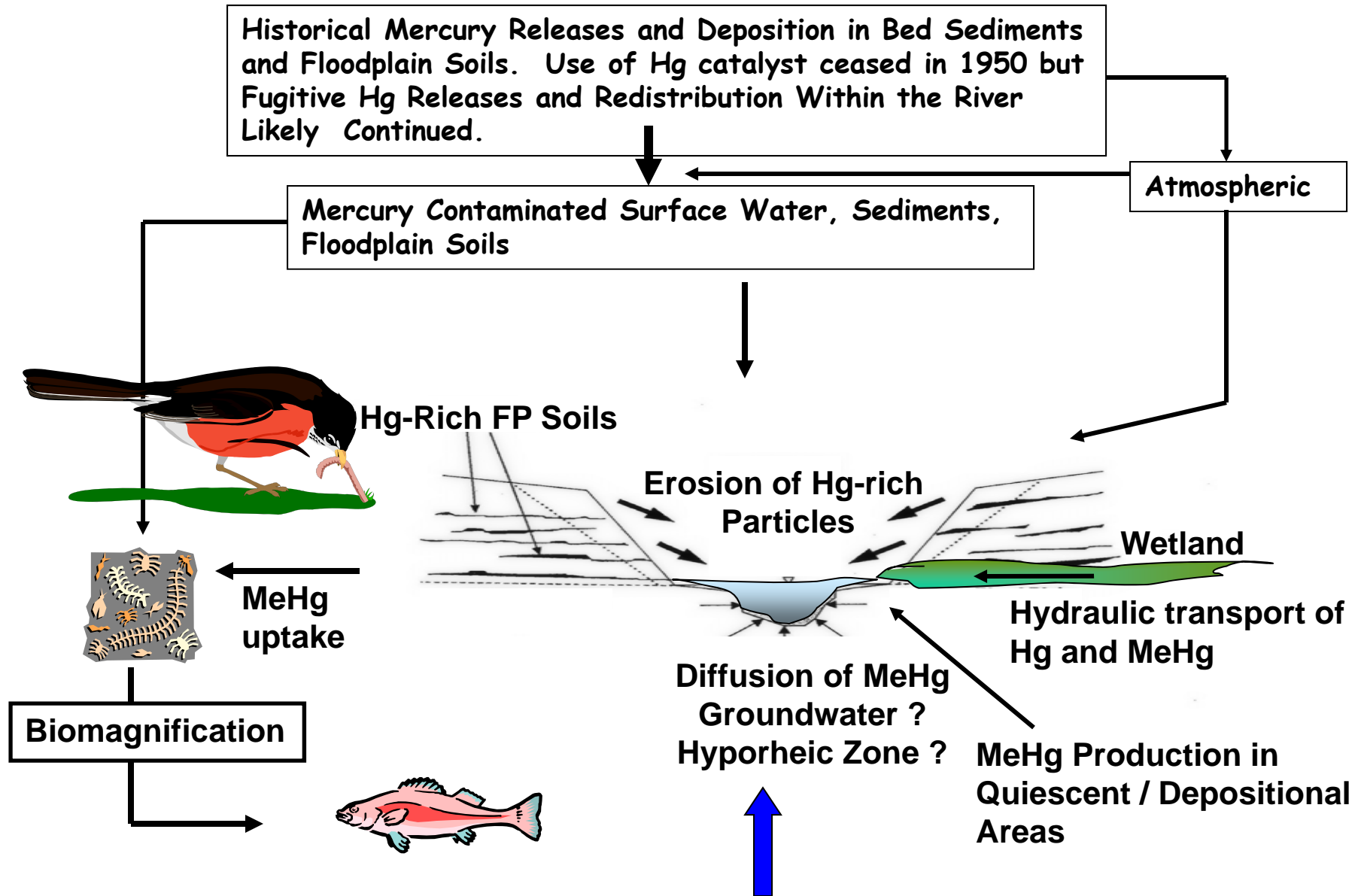


*south river*  
SCIENCE TEAM

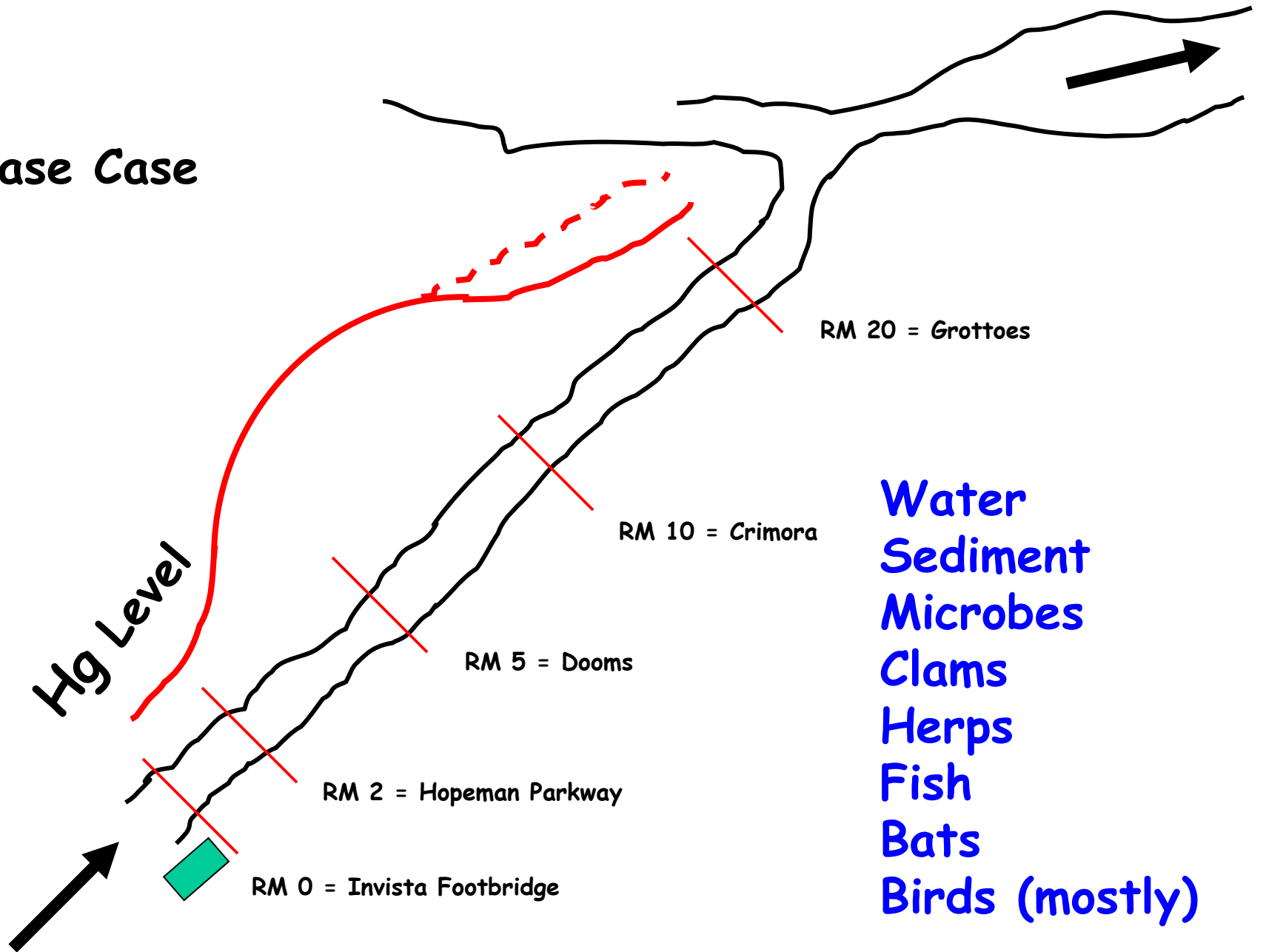
# So Much Data - So Little Time



# Conceptual System Model of Historical Mercury Contamination and Current Exposure Pathway To Fish in the South River, Virginia.



Base Case



Hg Level

RM 20 = Grottoes

RM 10 = Crimora

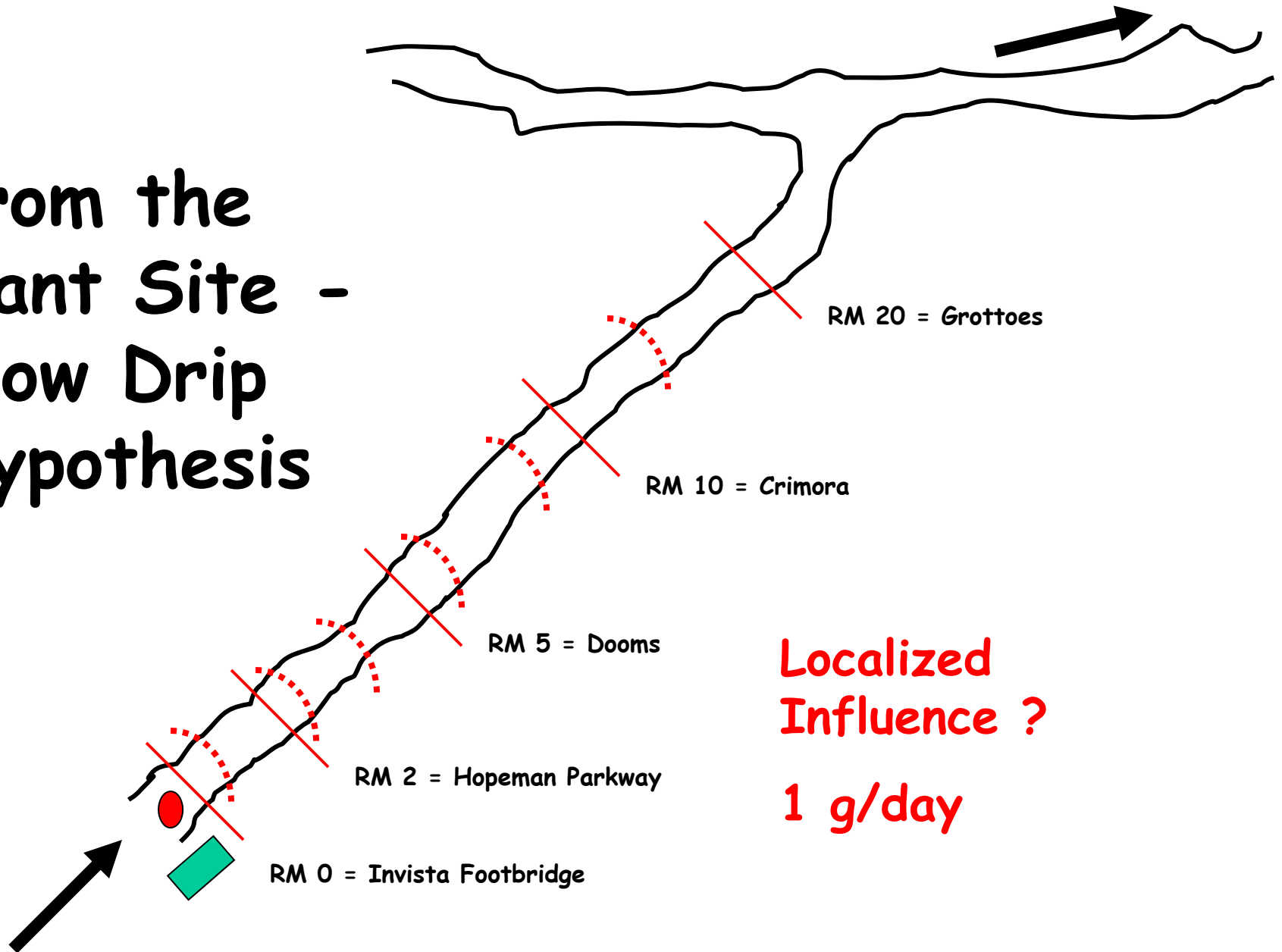
RM 5 = Dooms

RM 2 = Hopeman Parkway

RM 0 = Invista Footbridge

- Water
- Sediment
- Microbes
- Clams
- Herps
- Fish
- Bats
- Birds (mostly)

# From the Plant Site - Slow Drip Hypothesis

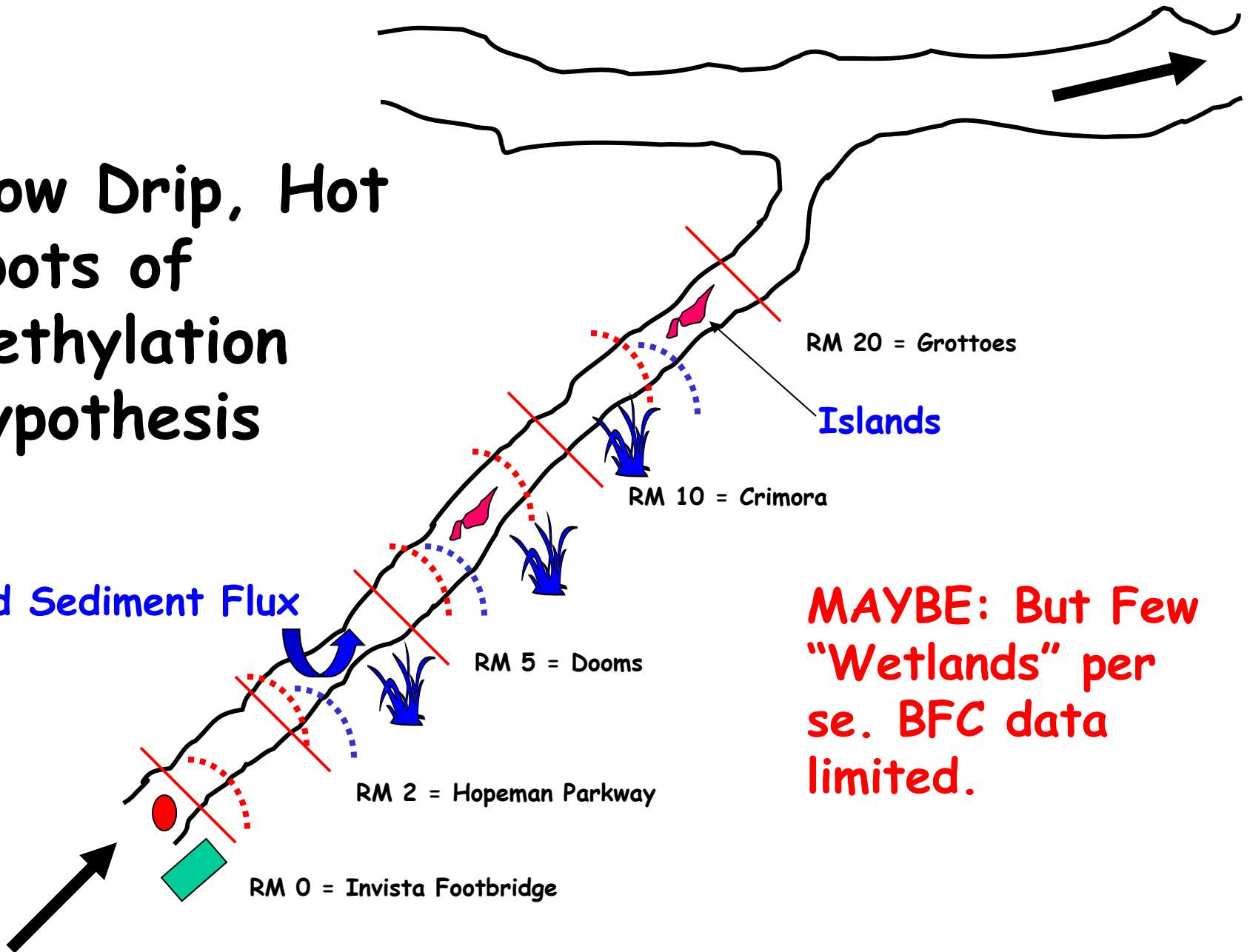


Localized Influence ?

1 g/day

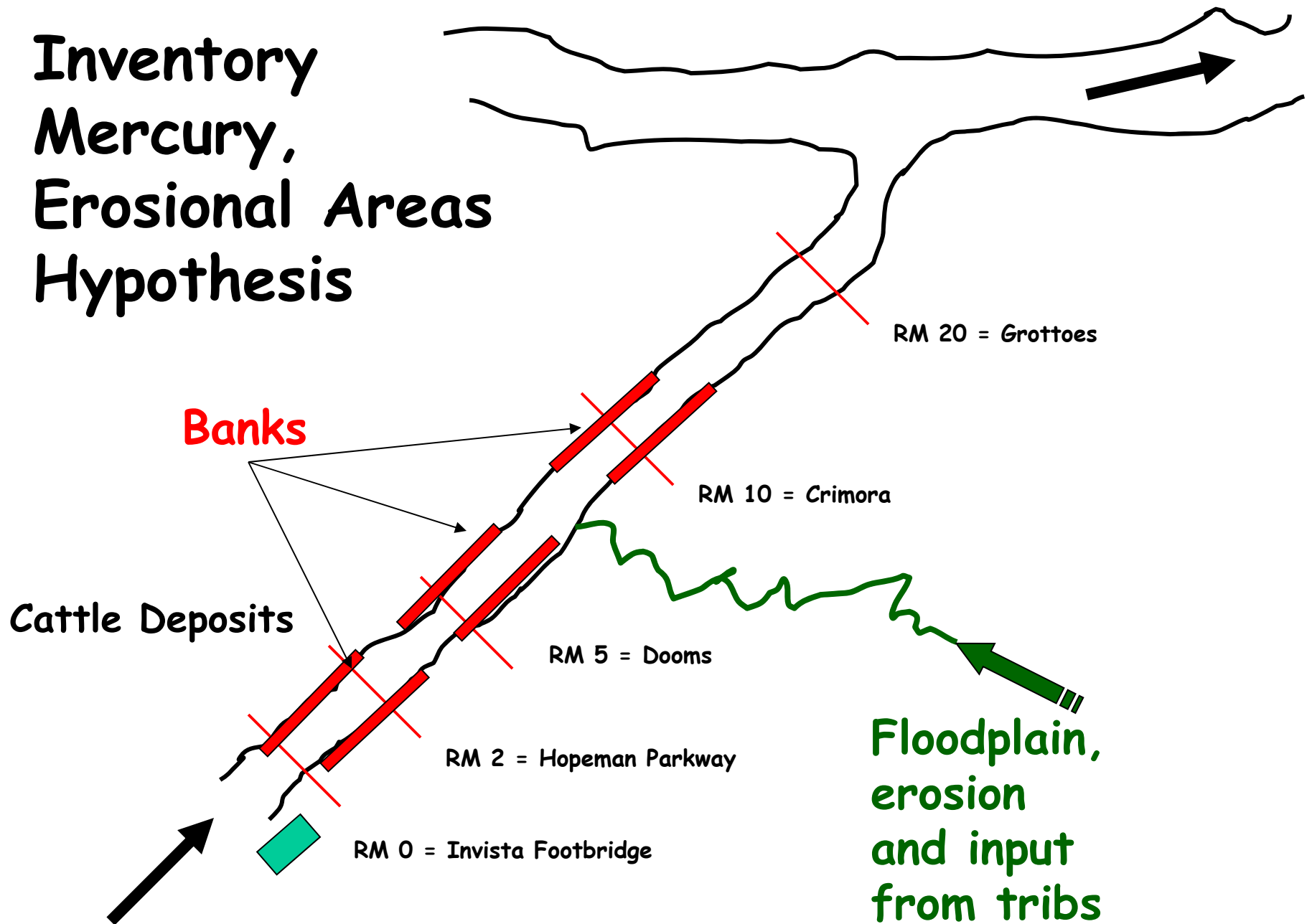
# Slow Drip, Hot Spots of Methylation Hypothesis

Bed Sediment Flux



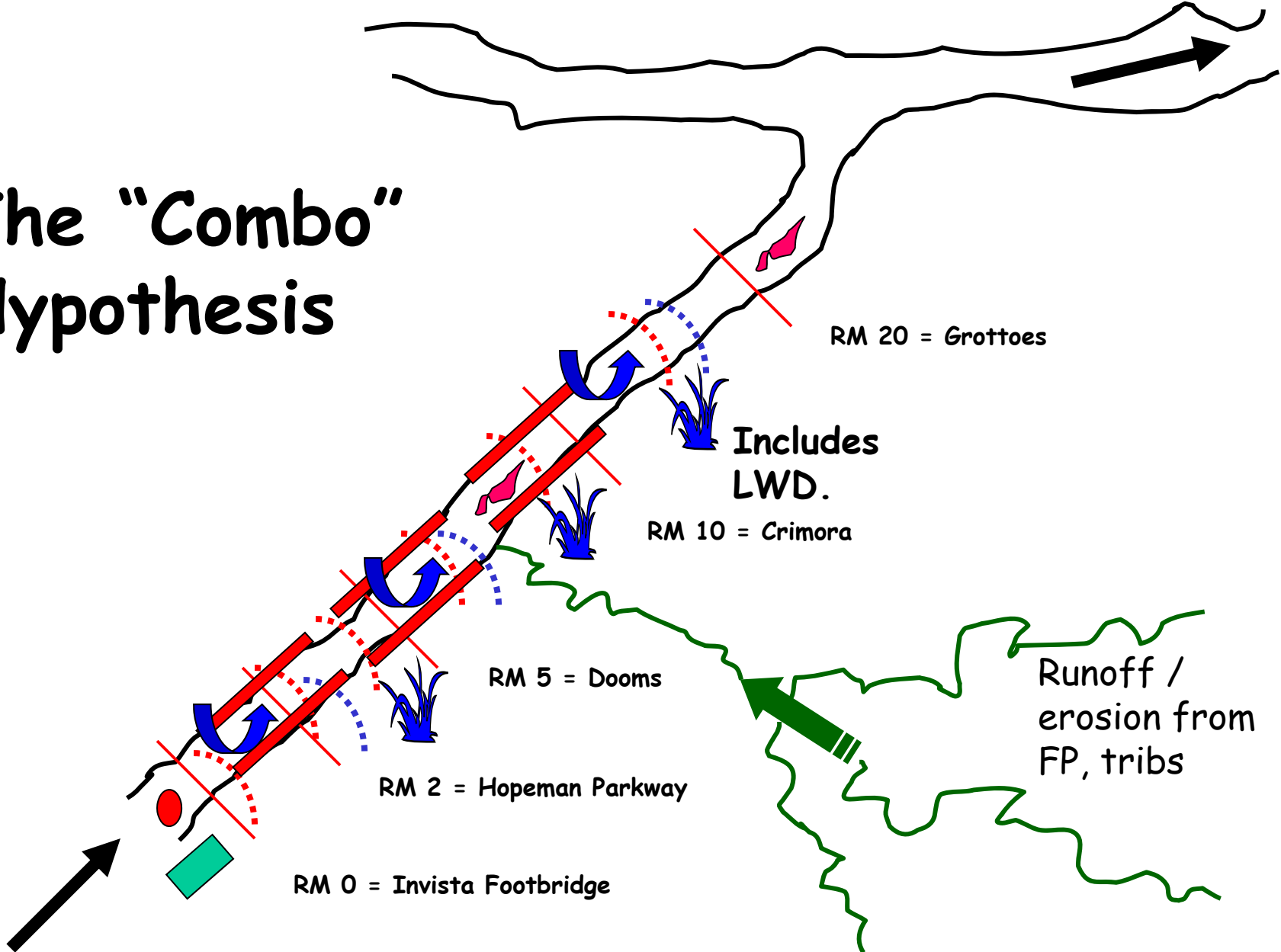
**MAYBE:** But Few "Wetlands" per se. BFC data limited.

# Inventory Mercury, Erosional Areas Hypothesis





# The "Combo" Hypothesis



RM 20 = Grottoes

Includes  
LWD.

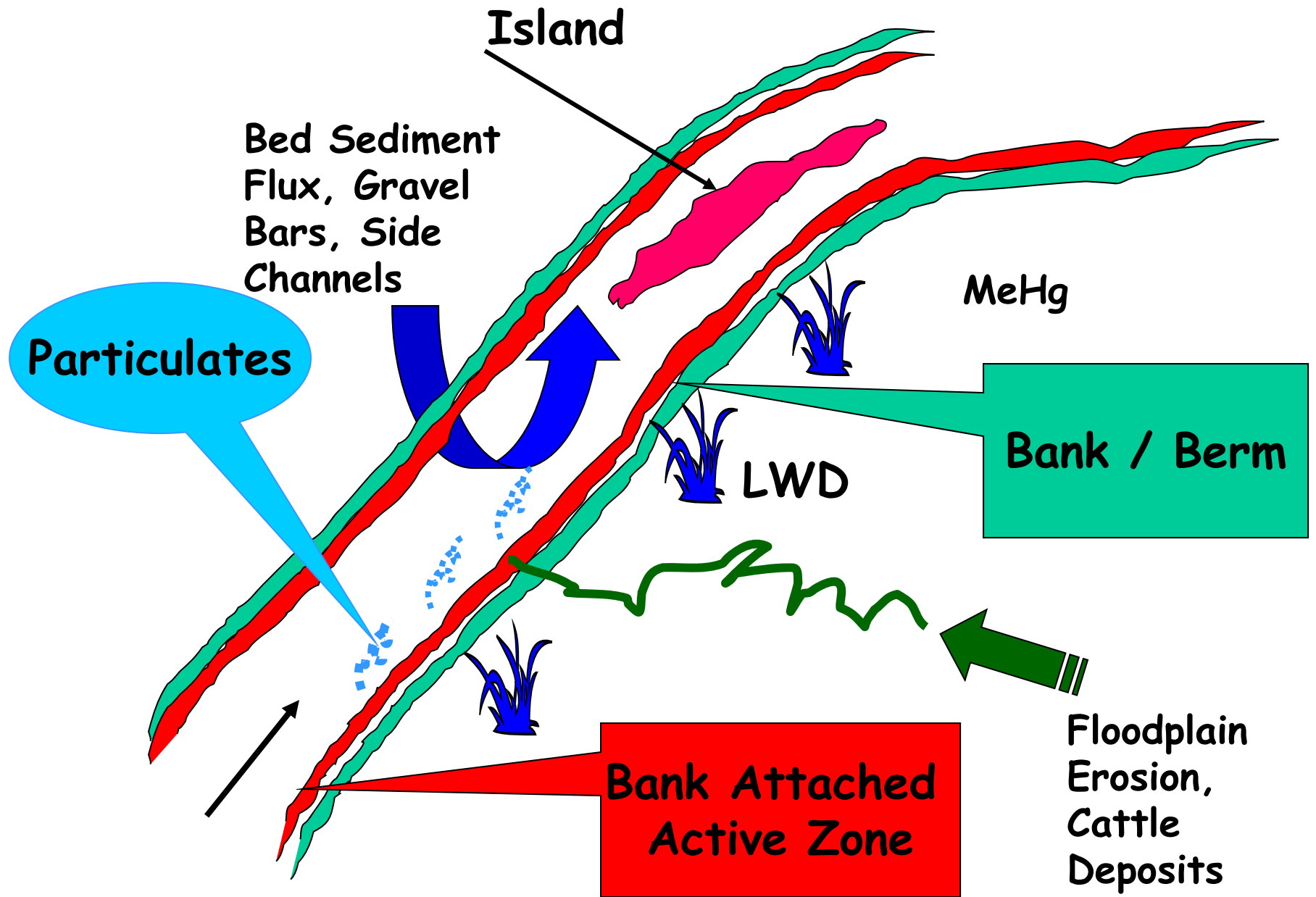
RM 10 = Crimora

RM 5 = Dooms

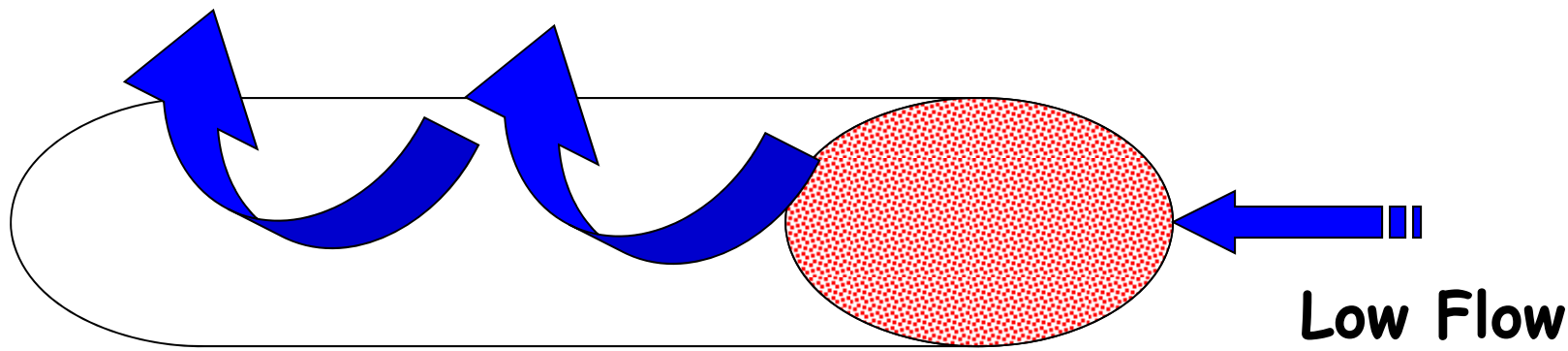
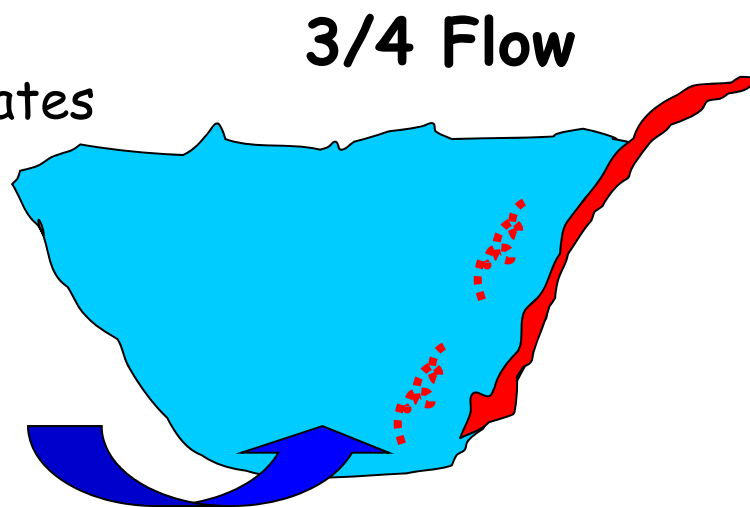
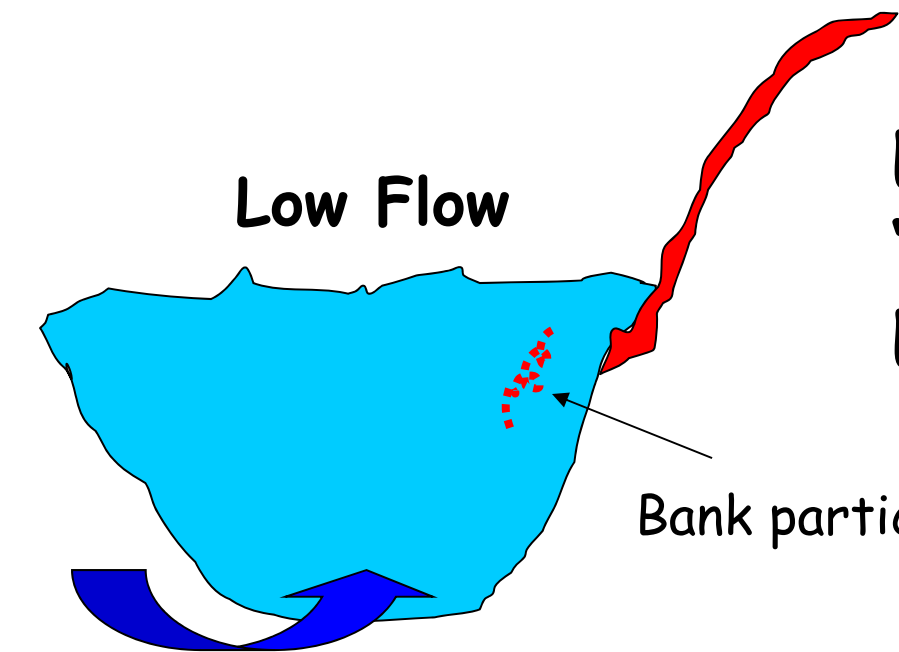
RM 2 = Hopeman Parkway

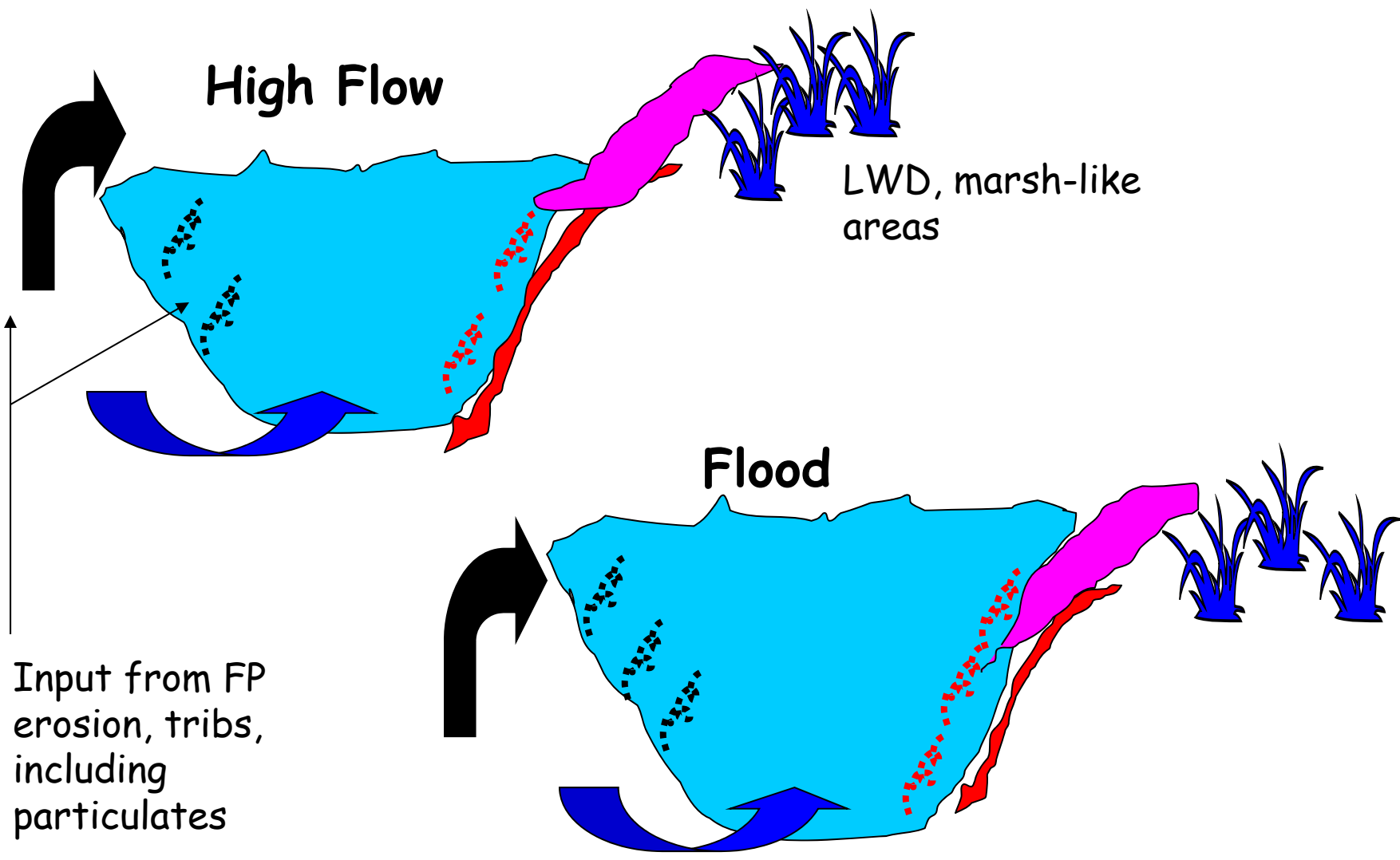
RM 0 = Invista Footbridge

Runoff /  
erosion from  
FP, tribs



# Erosion and "Packed Column" Effect





**High Flow**

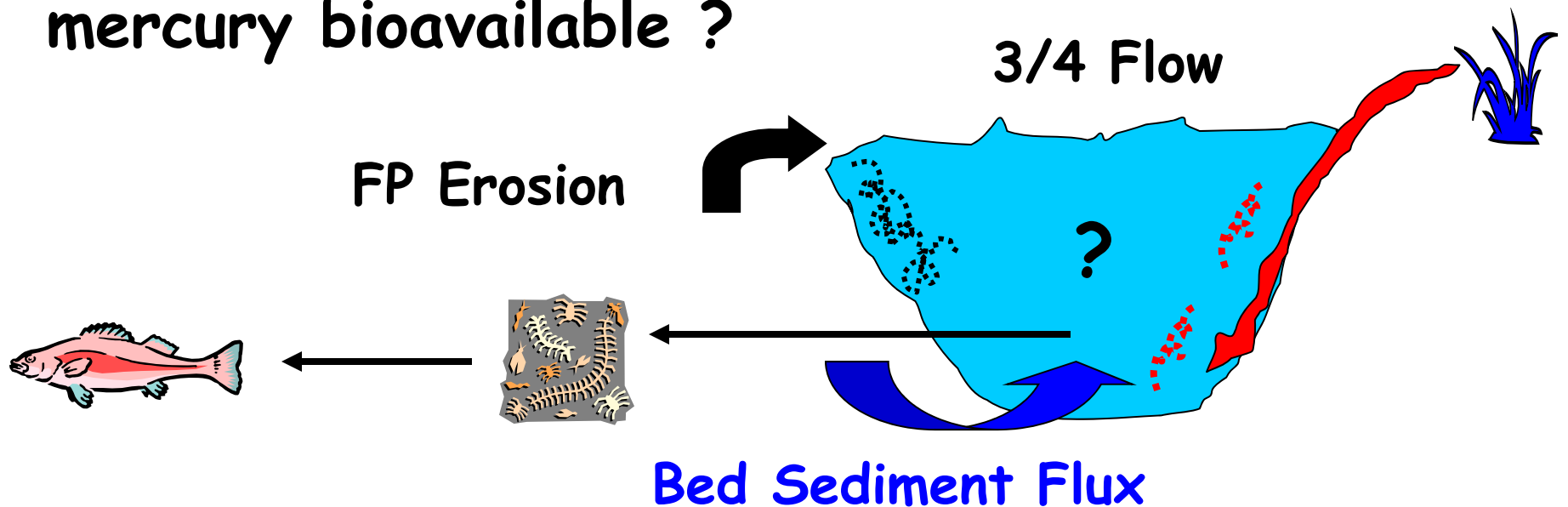
LWD, marsh-like areas

**Flood**

Input from FP erosion, tribs, including particulates

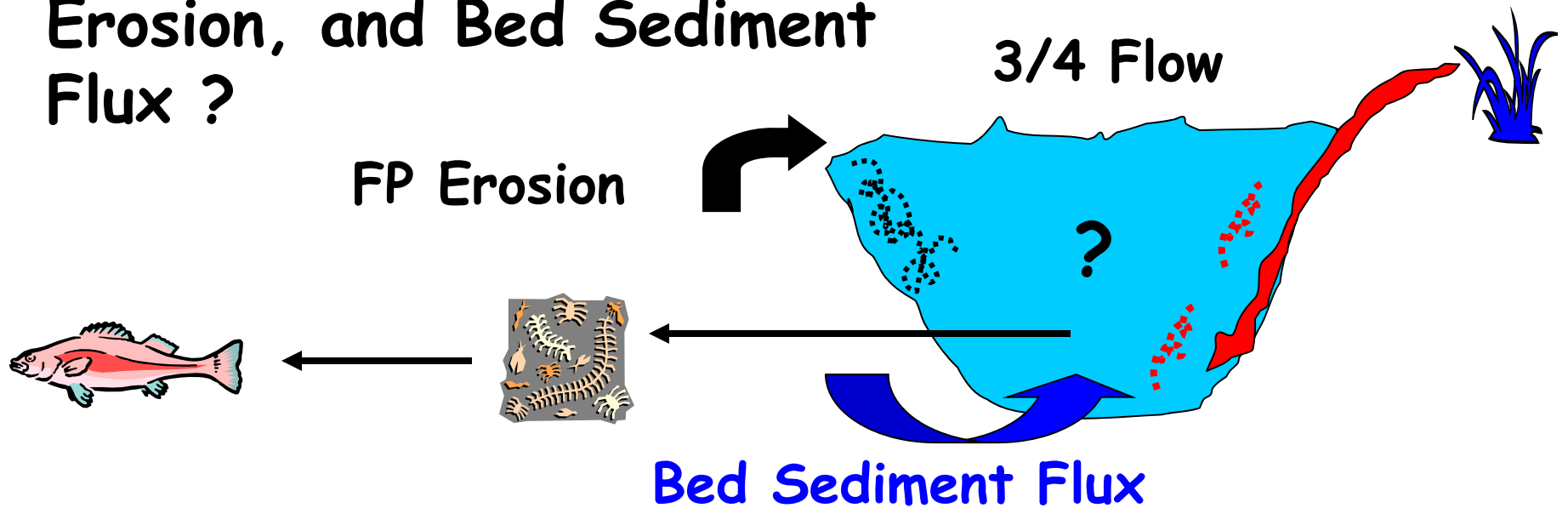
# Two Years Later - Bonus Question 1

- If this picture is accurate, what is the mechanism for making the mercury bioavailable ?



# Two Years Later - Bonus Question 2

- What are the Relative Contributions (source?) from FP Erosion, Bank Erosion, and Bed Sediment Flux ?



# Sooner, Or, Later

THE ANSWER



*south river*  
SCIENCE TEAM

# Next Steps





# EcoStudy Phase 2

- Assemble data for developing a mercury food web model for the riparian / terrestrial zones. - Dr. Newman
- Conduct in situ experimental studies
  - benthic flux chamber
  - methylation
  - biological uptake (mesocosm)



# Meetings and Publications

- **Meetings**
  - NRDA Meeting - Nov 12
  - SETAC NA - November 16-20
  - NRDC Consultation - Nov 18
  - Bio Summit - Dec 3
  - International Hg Conf - June
- **Publications**



# SRST Meetings - 2009

- January - web based
- April
- July
- October



# Discussion

