

# Fine Sediment Lessons Learned

TRRP Lessons Learned Workshop

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# Fine Sediment

- Definition
  - grains <8mm
- Affects
  - Fine and coarse sediment transport
  - Channel planform
  - Berm Formation
  - Salmonid habitat
  - Macro-invertebrate production
- Management Objectives
  - Reduce tributary supply of fine sediment
  - Reduce mainstem fine sediment storage



Decomposed Granite

# Historic Issue: Overwhelming Sand



# Historic Impacts

- Covered bed
- Filled pools
- Reduced Spawning
- Built riparian berms



**Near Poker Bar  
Aug. 1975 - Sand is 1 m thick (DWR 1978)**



**Poker Bar Hole  
Aug. 1975**

# Historic Restoration Actions 1970's – 1990's

# Constructed Spawning Riffles (1970's)



# Riffle Cleansing



Riffle Shifter 1971

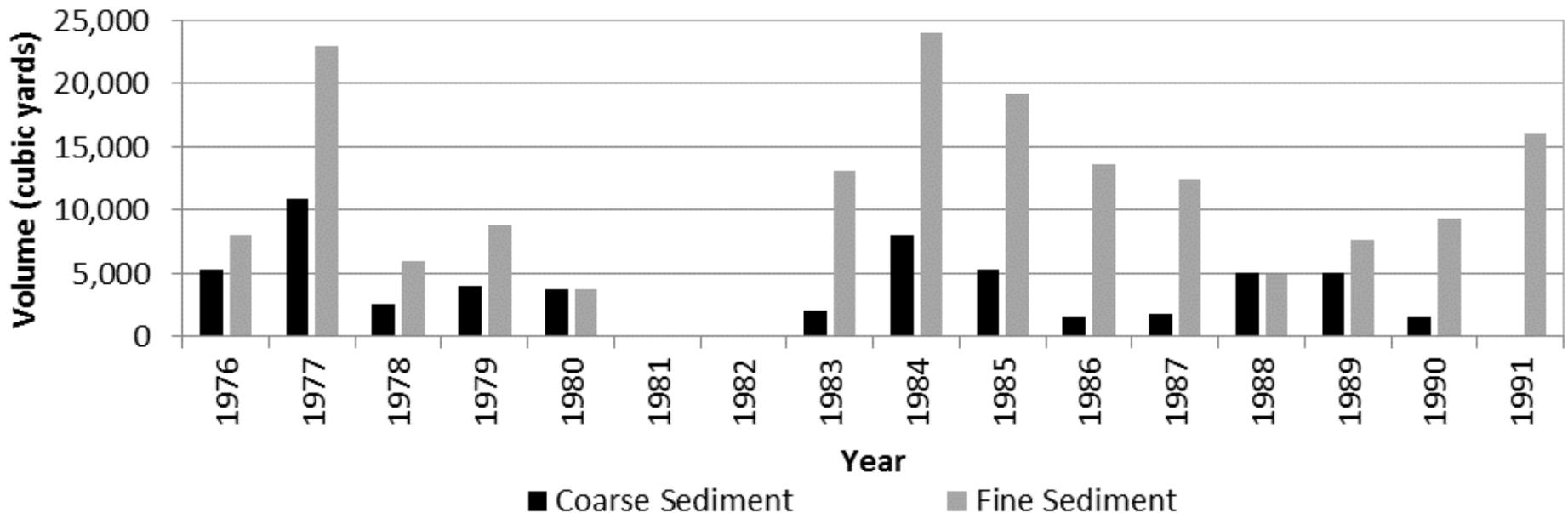


Riffle Ripping 1984

# Pool Dredging

# pools dredged = 15

# times a pool was dredged = 1 - 5



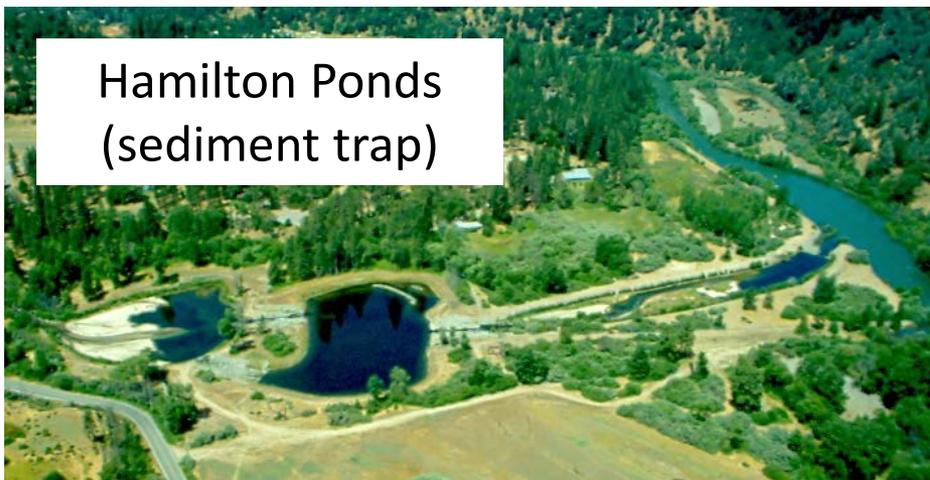
# Watershed Restoration in Grass Valley Creek



Buckhorn Dam  
(sediment trap)



Replanting



Hamilton Ponds  
(sediment trap)



Road Decommissioning

# Contemporary Restoration Actions

- Watershed restoration to reduce tributary fine sediment supply
- High flows to flush sand

# Flushing Sand with High Flows

Near Lewiston Dam



40 miles downstream  
North Fork Confluence

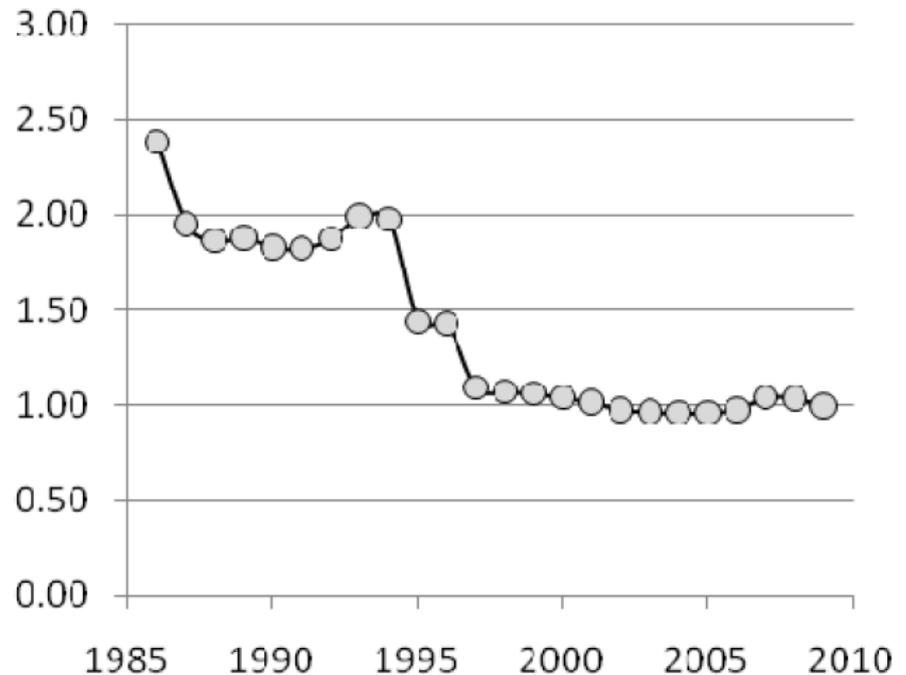


# Results

- Some data
  - Caveat
    - Snippets of data and analysis that have not been comprehensively analyzed
- Some photos

# Watershed Restoration Effectiveness

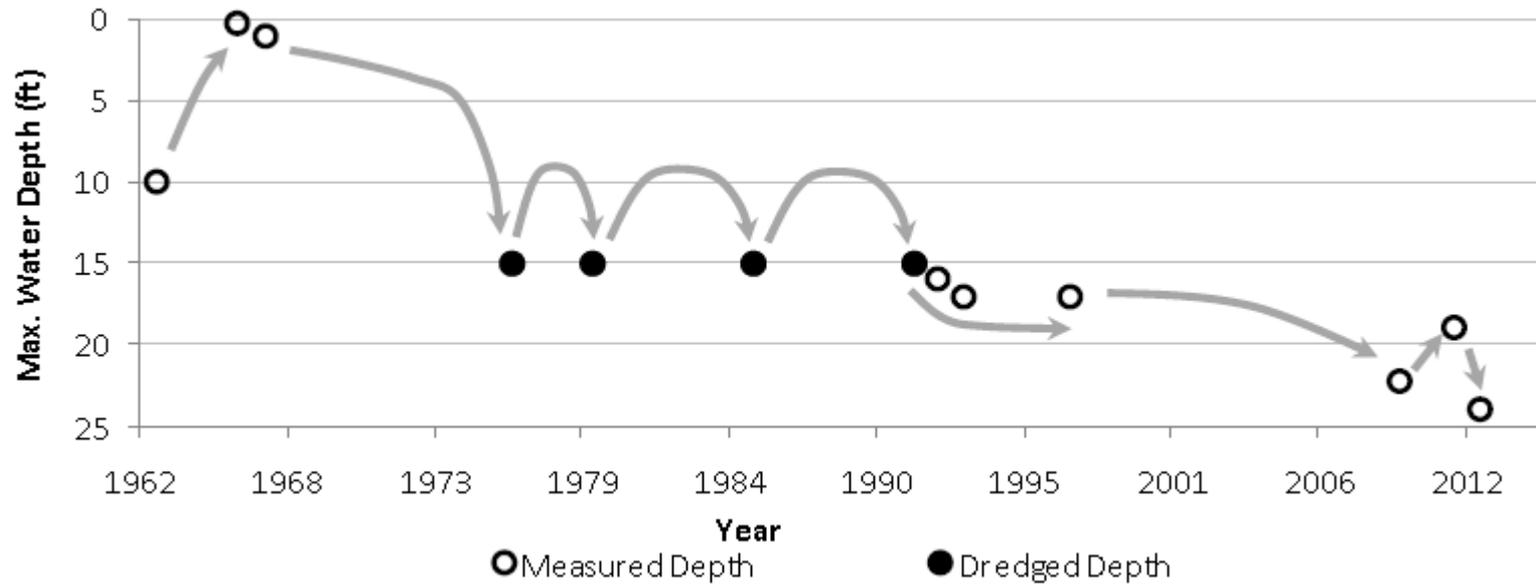
- Sediment supply to Hamilton Ponds diminished since 1980's
- Other watersheds not evaluated since the GMA (2000)



Hamilton Ponds: Ratio of the normalized total sediment delivery to normalized cumulative sum of Qp2

Source: Gaeuman (2010)

# Historic Pool depths



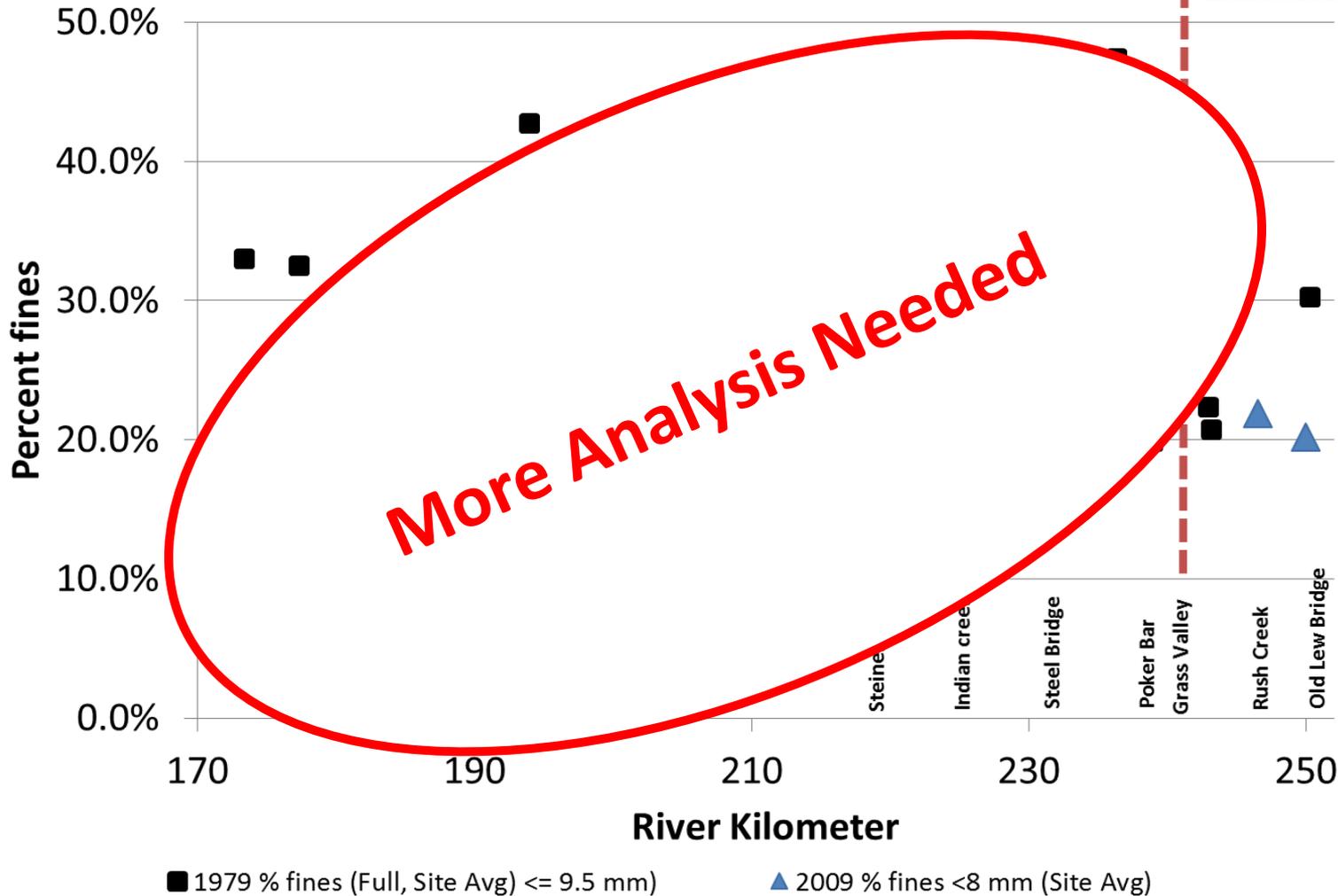
Poker Bar Hole (Stott Hole)

Source: Gaeuman and Krause (2103)

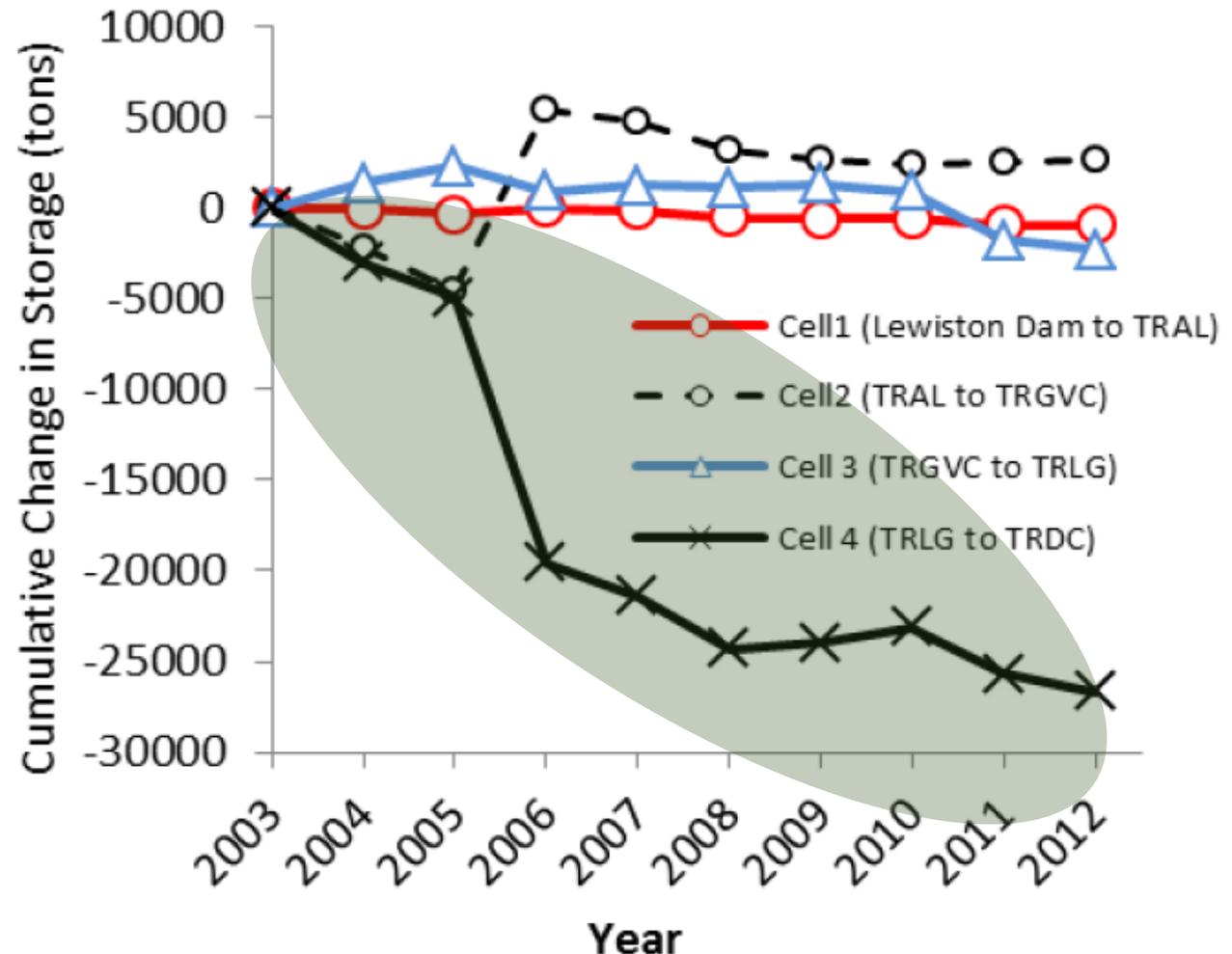
# Substrate Data from Bulk Samples



Trinity River Percent Fine Sediment < 8 or 9.5 mm



# Mainstem fine sediment budget

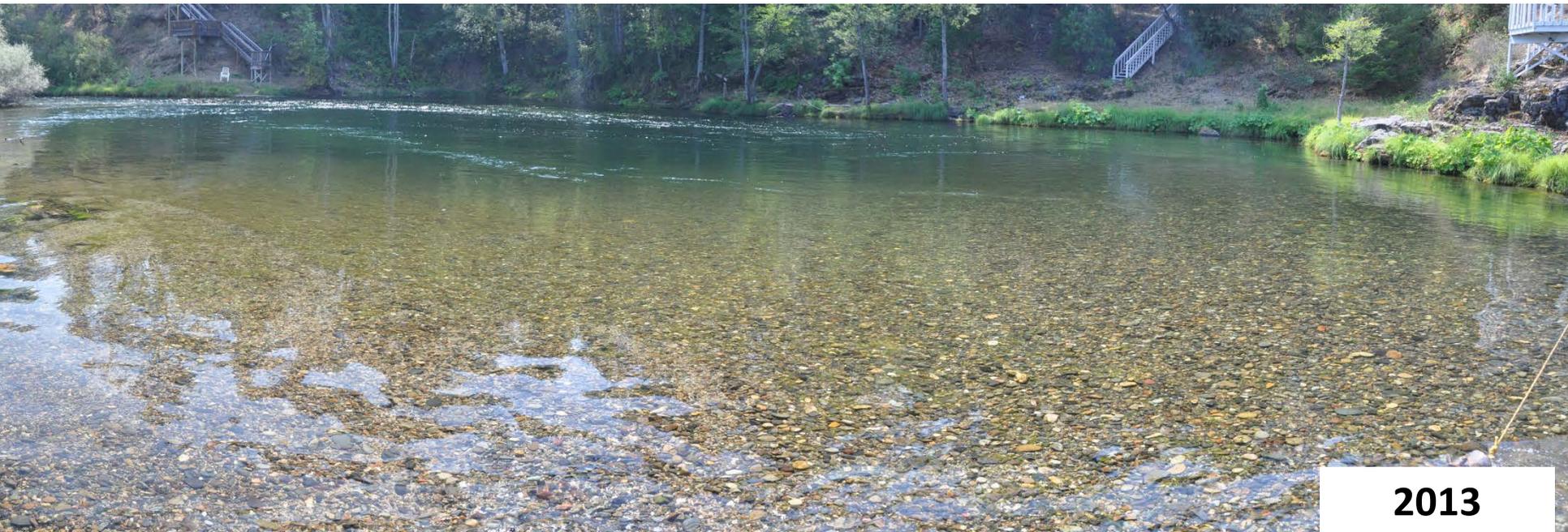


Cumulative changes in fine bed material storage with zero budget balance assigned to WY2003. Source: Gaeuman (2013)

High uncertainty  
so net reduction  
not conclusively  
demonstrated in  
cell 4

# Poker Bar Hole

(RM 102.5)

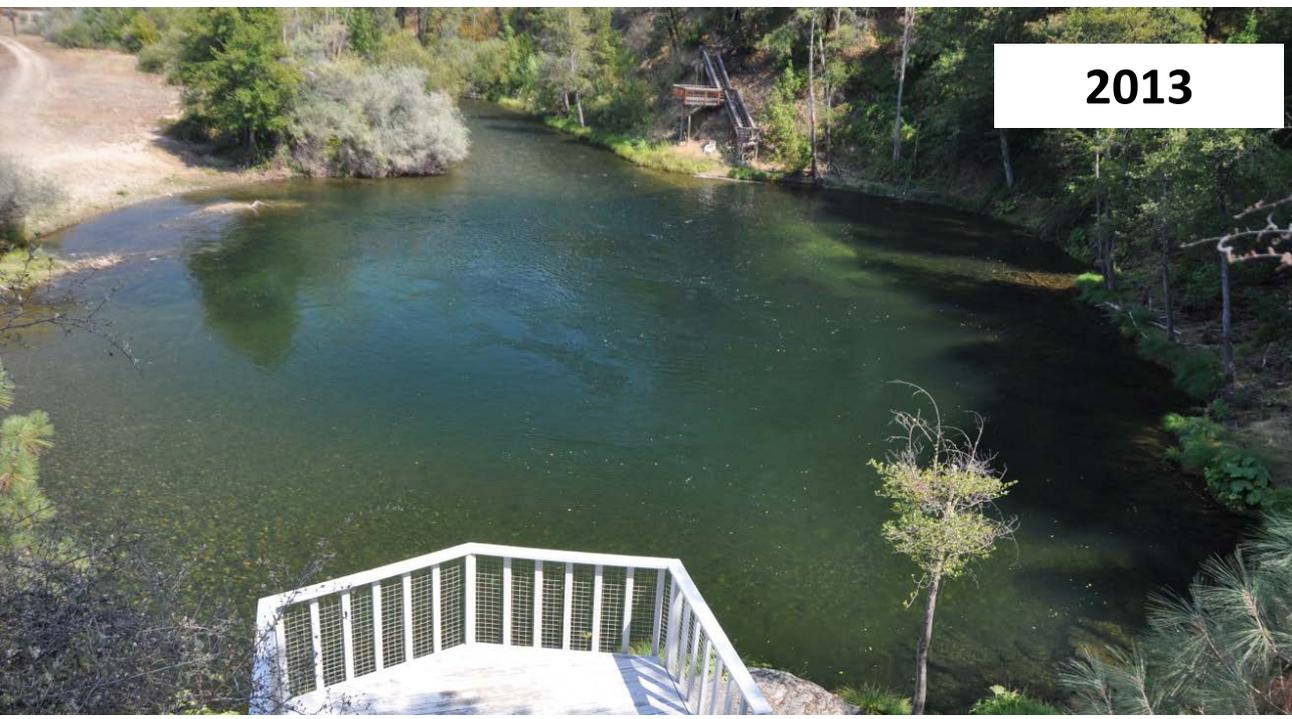


**May 1977**  
**(during sand dredging)**



**Poker Bar  
Hole**  
(RM 102.5)

**2013**



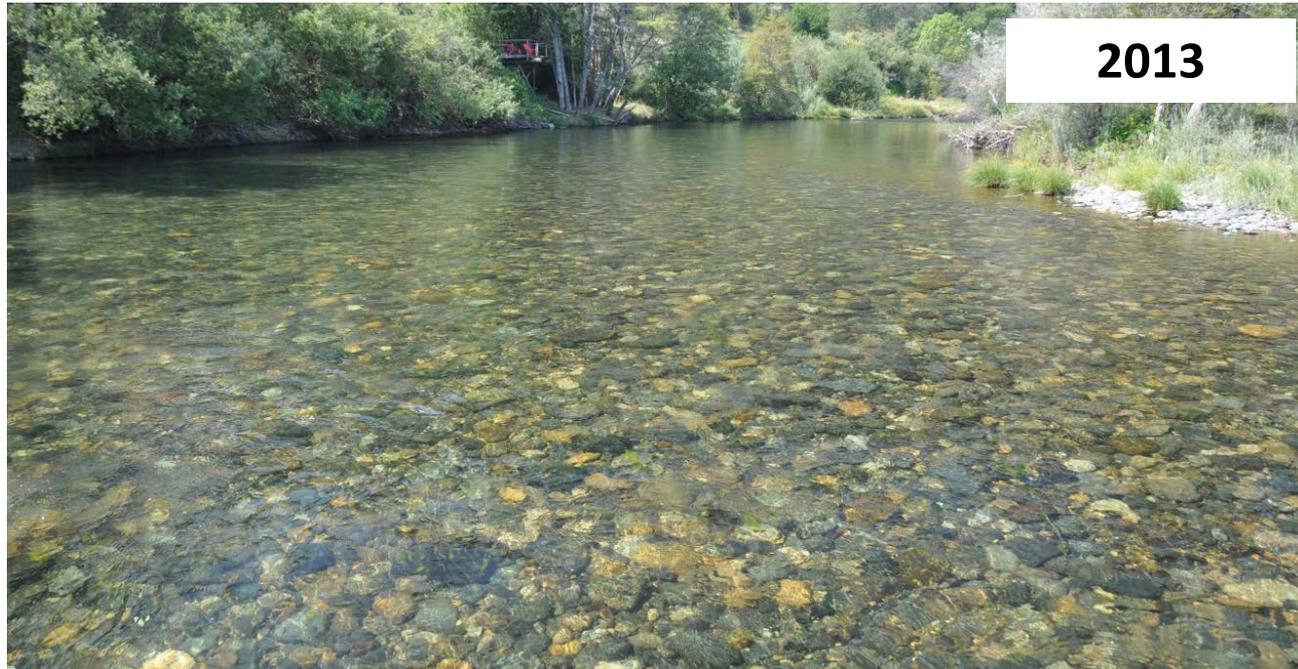
**Aug. 1975**



# Below Poker Bar Hole

(RM 102.3,  
DWR Sect 17)

**2013**



Sept. 1989



# Society Pool Tailout

(RM 101.74)

2013



June 1991

# Tom Lang Pool Tailout

(RM 103.15)



2013



# Lessons Learned

- Fine sediment less of an issue than it once was
  - Pervasive surficial sand deposits gone
- Major Accomplishment
  - needs to be better quantified

# Have Fine Sediment Management Objectives been Met?

- Reduce tributary fine sediment supply
  - Lack of data except in Grass Valley Creek
- Reduce mainstem fine sediment storage
  - Unclear if objective met
    - Disparate information → conclusions premature
    - Unquantified target

# Recommendations

- Synthesize data
  - Mainstem and tributary fine sediment
- Refine objective
  - ID biological lower limit
  - set quantitative target
- Identify how progress towards target will be assessed
- Consider management implications
  - River different than during TRFE studies
  - How affect management actions recommendations