Reservoir Sedimentation

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Modern Functions of Reservoirs

Provide reliable water for:

- Municipal and industrial uses
- Agriculture use
- Ecosystem use

Flood control

Generate electricity

Recreation

Reservoir Sedimentation – Loss of Storage

Impacts:

- Water supply benefits
- Environmental benefits
- Flood control benefits
- Hydropower
- Navigation
- Recreation

Reduces useful life of the reservoir

Sediment Trapping

Impacts:

- Streambed degradation
- Ecology
  - Habitat structure
  - Loss of nutrients
- Accelerated coastal erosion

Sediment management is needed

Sediment Management Strategies

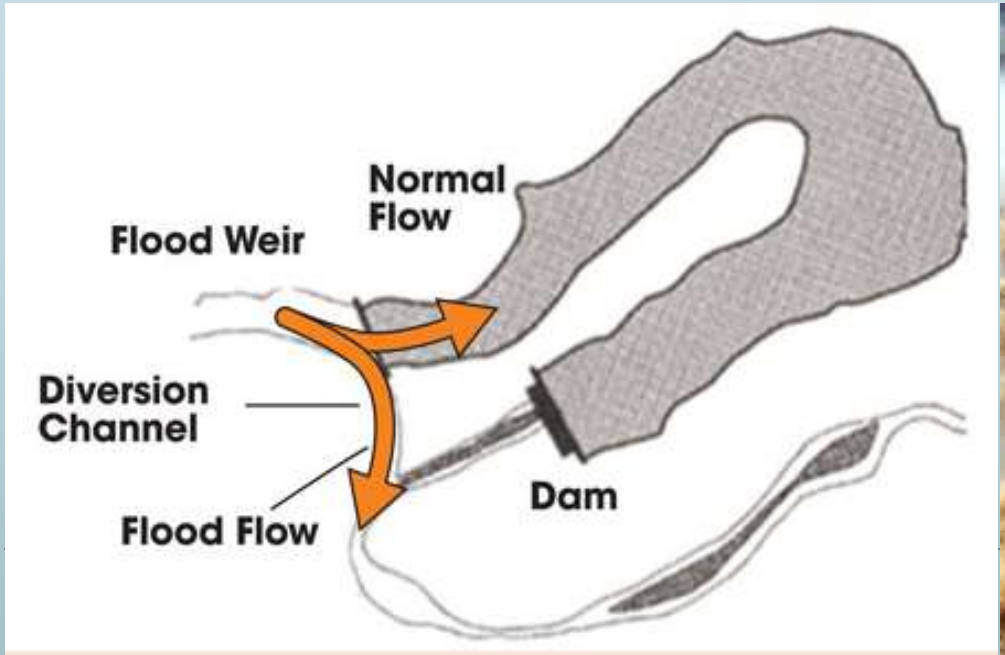
1. Reduce sediment inflow
2. Route sediment
3. Sediment Removal

1. Reduce Sediment inflow

- Erosion control
- Upstream trapping

2. Route Sediments

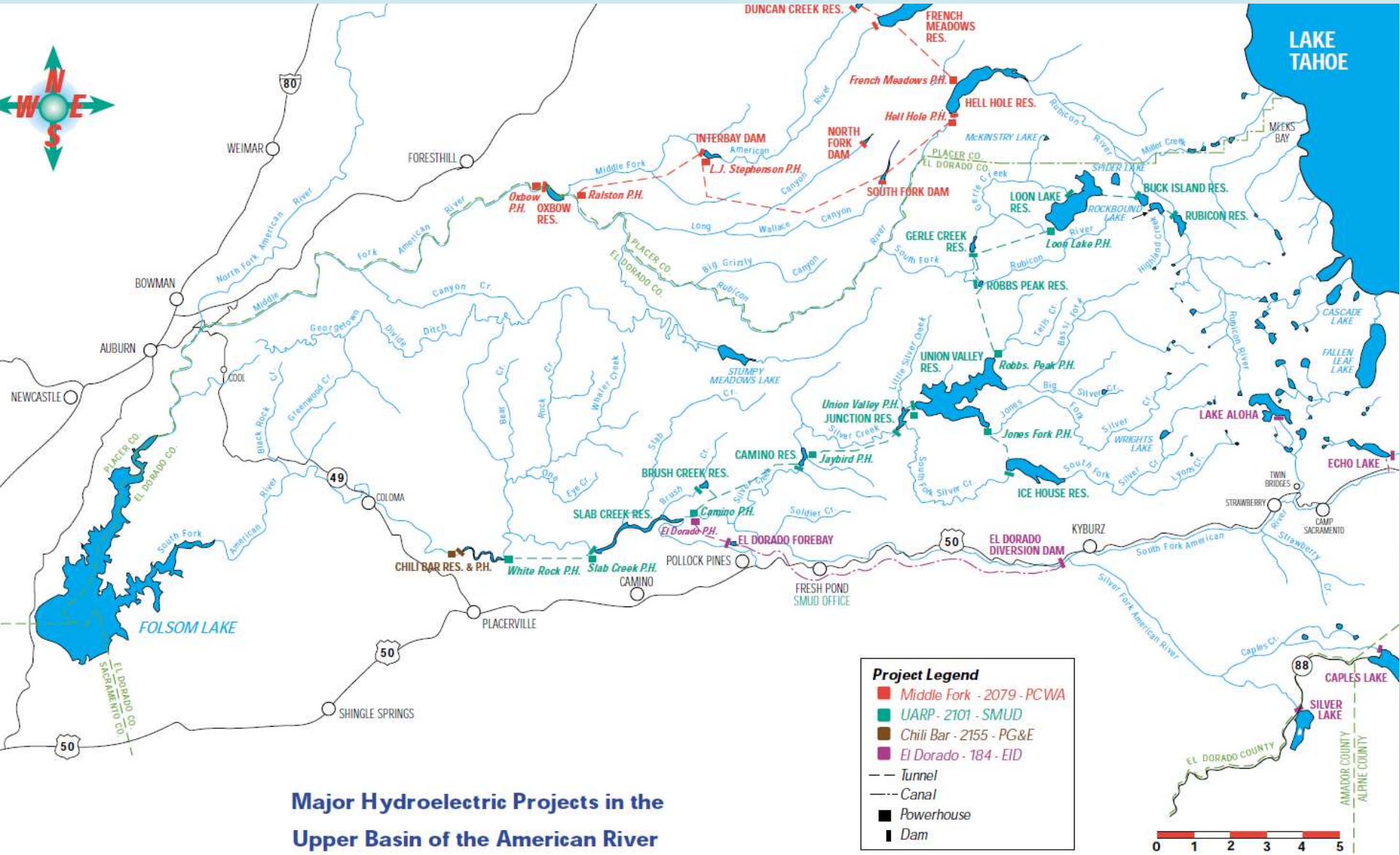
- Sediment bypass
- Sediment sluicing
- Offstream reservoirs



3. Sediment Removal

- Hydraulic flushing
- Hydraulic dredging
- Dry excavation

Multiple Dams on Rivers (an example)



Major Hydroelectric Projects in the Upper Basin of the American River

Number of Hydropower Dams

Major River Systems	No of Hydropower Facilities
American River System	17
Feather River System	9
Pit River	18
San Joaquin River System	27
Santa Ana River System	14
Yuba River System	20

Some Rough Costs

New Reservoir or Reservoir Expansion

~ $1500 to $2500 /acre-ft

Sediment Removal ($10 to $40/cy)

~ $17,000 to $70,000 /acre-ft

Recommendations

1. Sediment management needs to be done at a basin level
2. Reduce siltation
    - Sediment monitoring and data collection
    - Sediment management
    - Upstream Erosion control

Questions & Comments