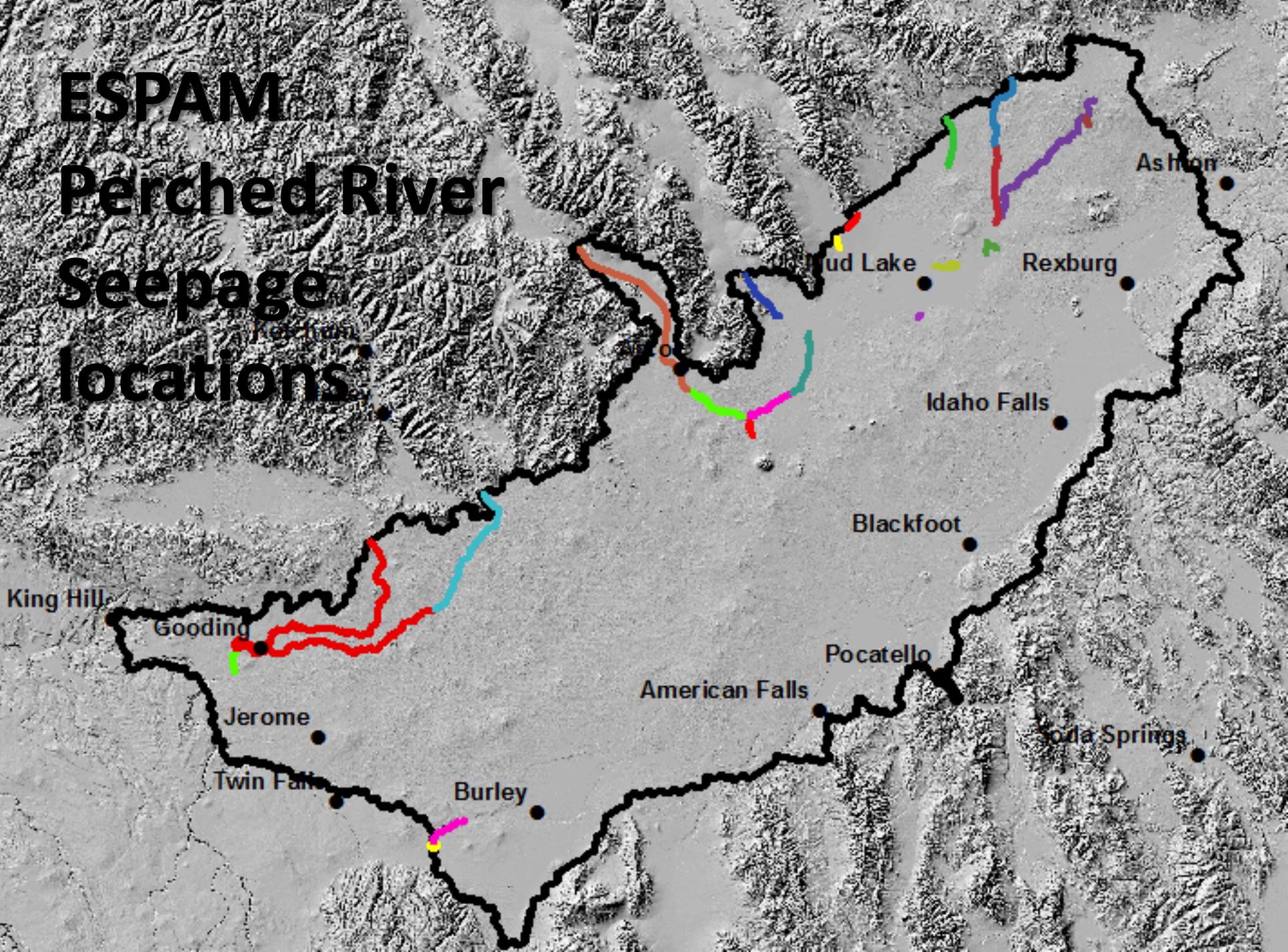


# Review of ESPAM2.1 Perched River Seepage Calculations

**Presented by Stacey Taylor  
Idaho Water Resources Research  
Institute, University of Idaho**



# ESPAM Perched River Seepage Locations

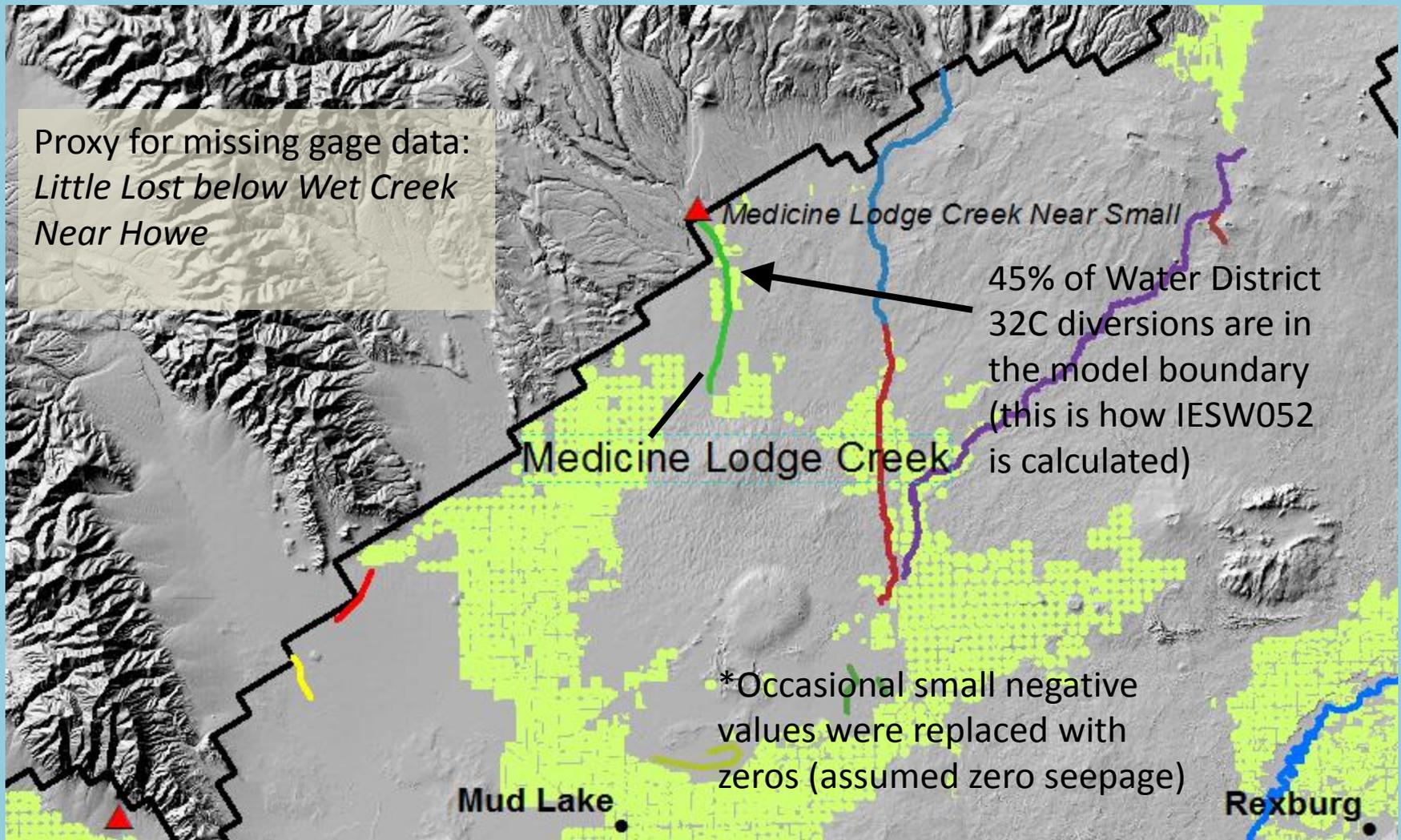


# Review

- Basic calculation used when conditions permitted:
  - Upstream gage – downstream gage – diversions = seepage
  - Many times all flow goes to diversions so downstream gage isn't necessary and calculation is simply: Upstream gage - diversions
- Many locations lacking gage in suitable (for calculation purposes) location or gage available lacking data during calibration period
- If gage data were not available at one source, another gage with similar characteristics in terms of location and flow was chosen as a proxy
  - Linear regressions were developed between the proxy and the site of interest to develop the missing data

# Medicine Lodge Creek

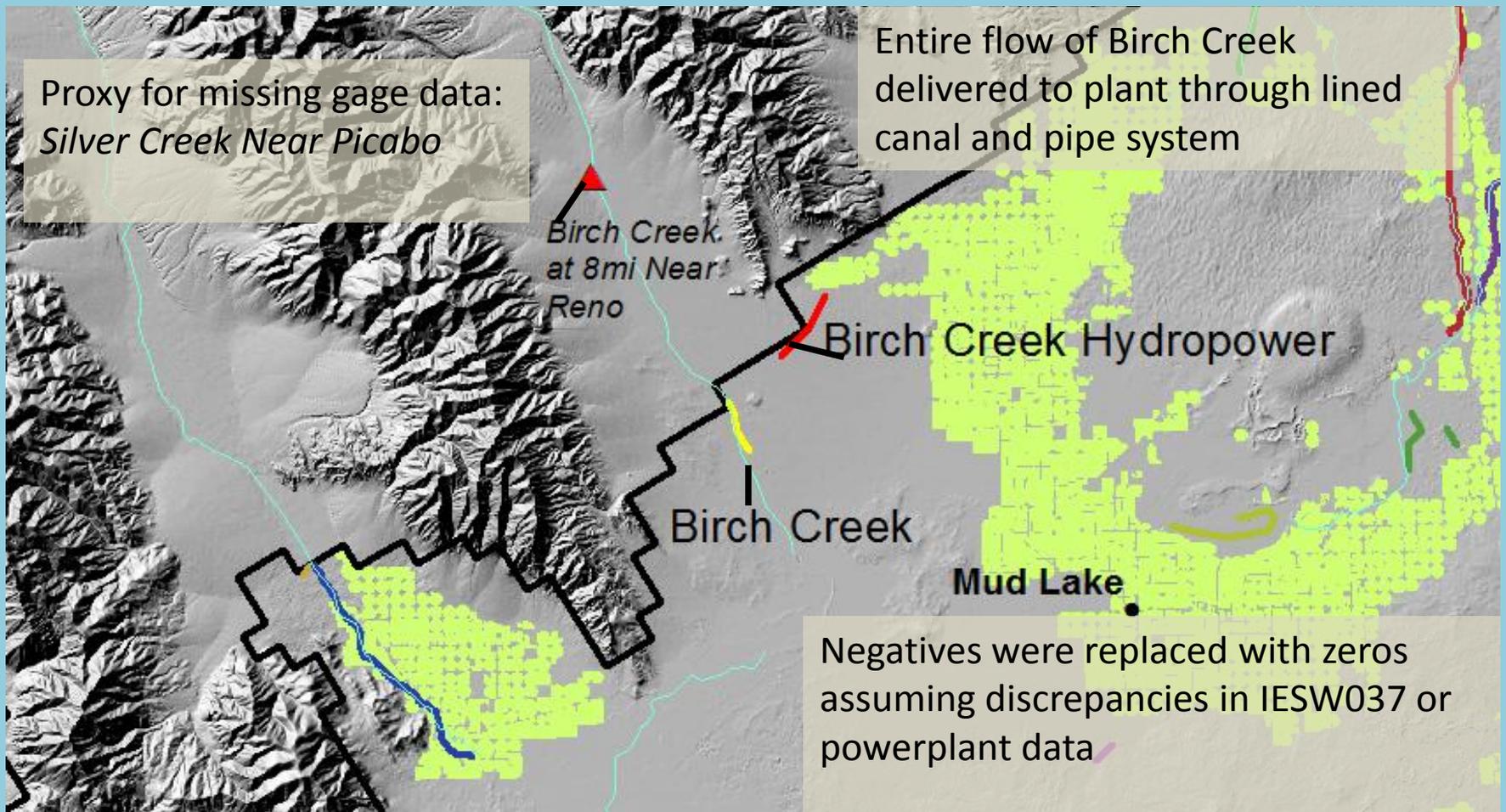
Seepage = *Near Small* – IESW052 diversions



# Birch Creek and Birch Hydropower

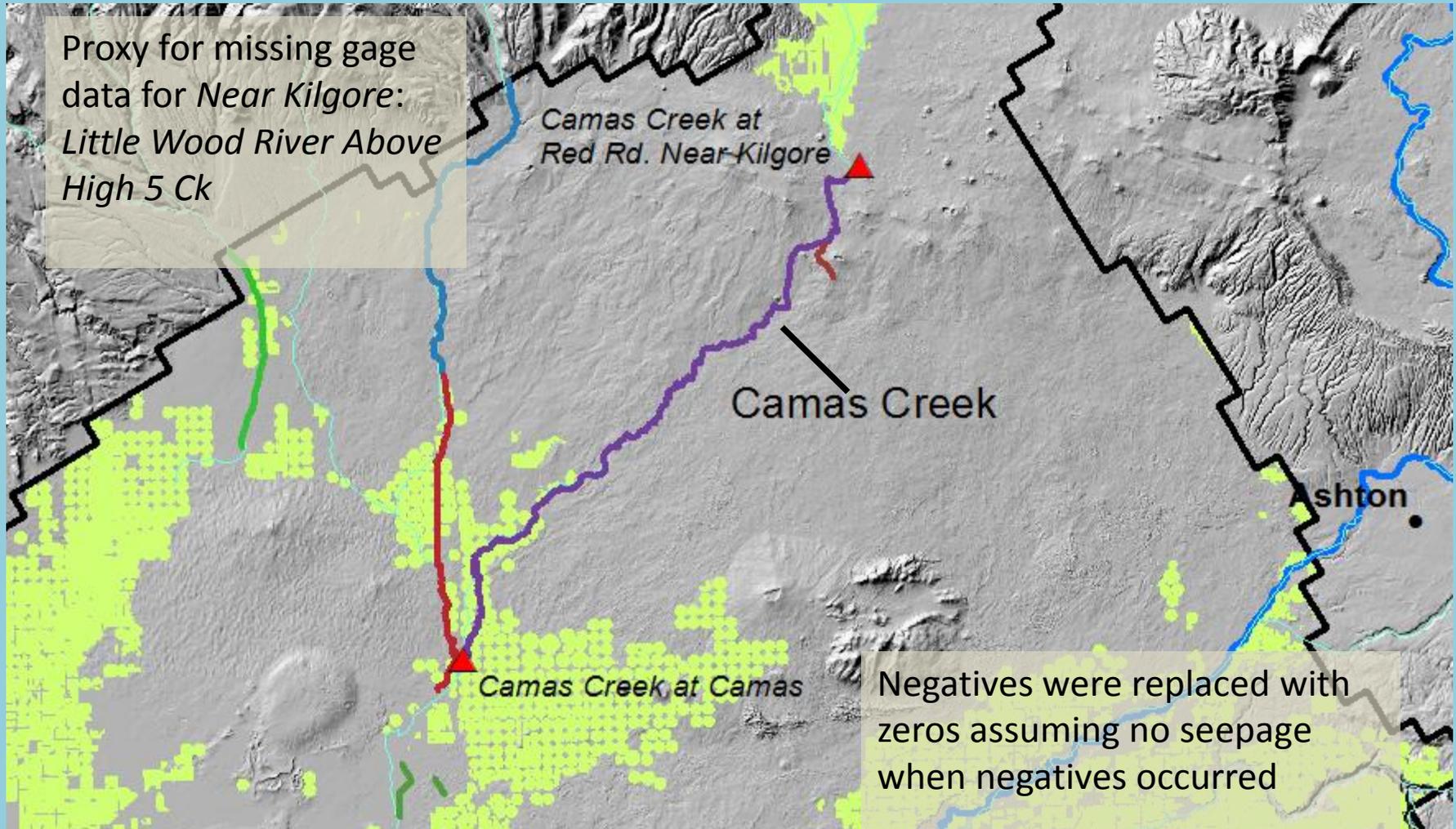
Seepage prior to 1987 = *Near Reno* – IESW037 diversions

Seepage post 1987 = *Near Reno* – (Difference between Hydropower Plant Discharge and IESW037)



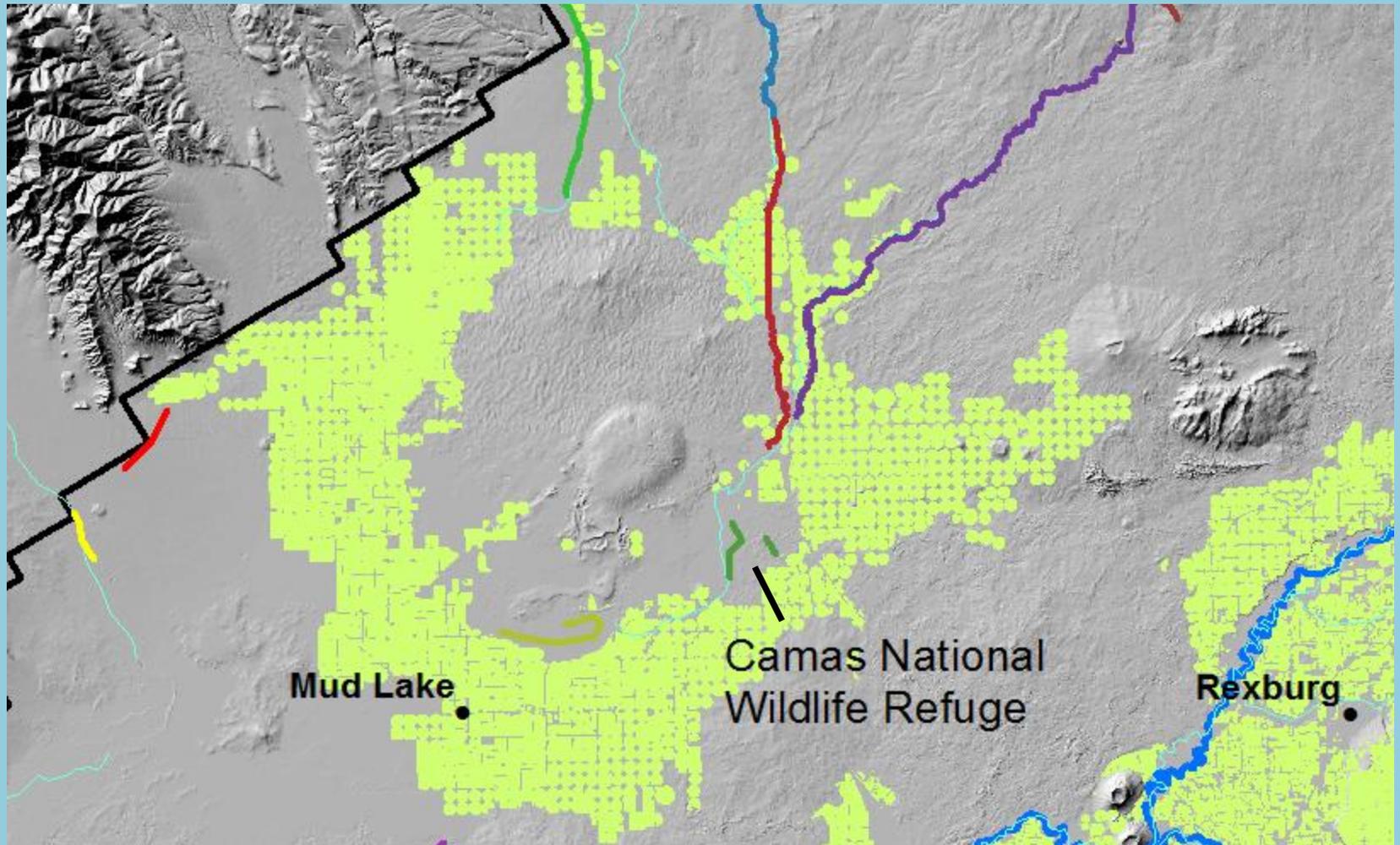
# Camas Creek

Seepage = *Near Kilgore* – *At Camas* – Diversions between  
Lone Tree & Mud Lake (WD 31 records)



# Camas National Wildlife Refuge

Seepage = data reported in Water District 31  
watermaster report data



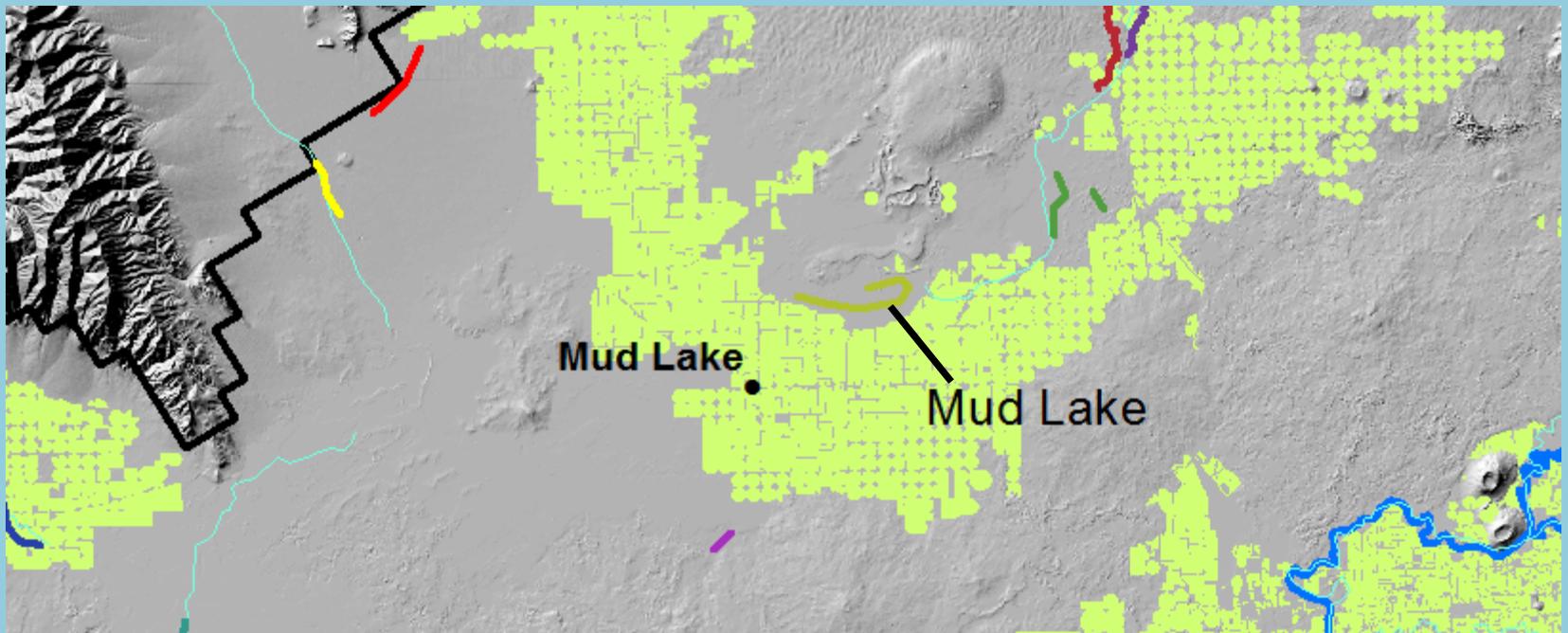
# Mud Lake

Seepage = Mud Lake inflows – Mud Lake outflows

Inflows = *Camas Creek at Camas* + Exchange wells

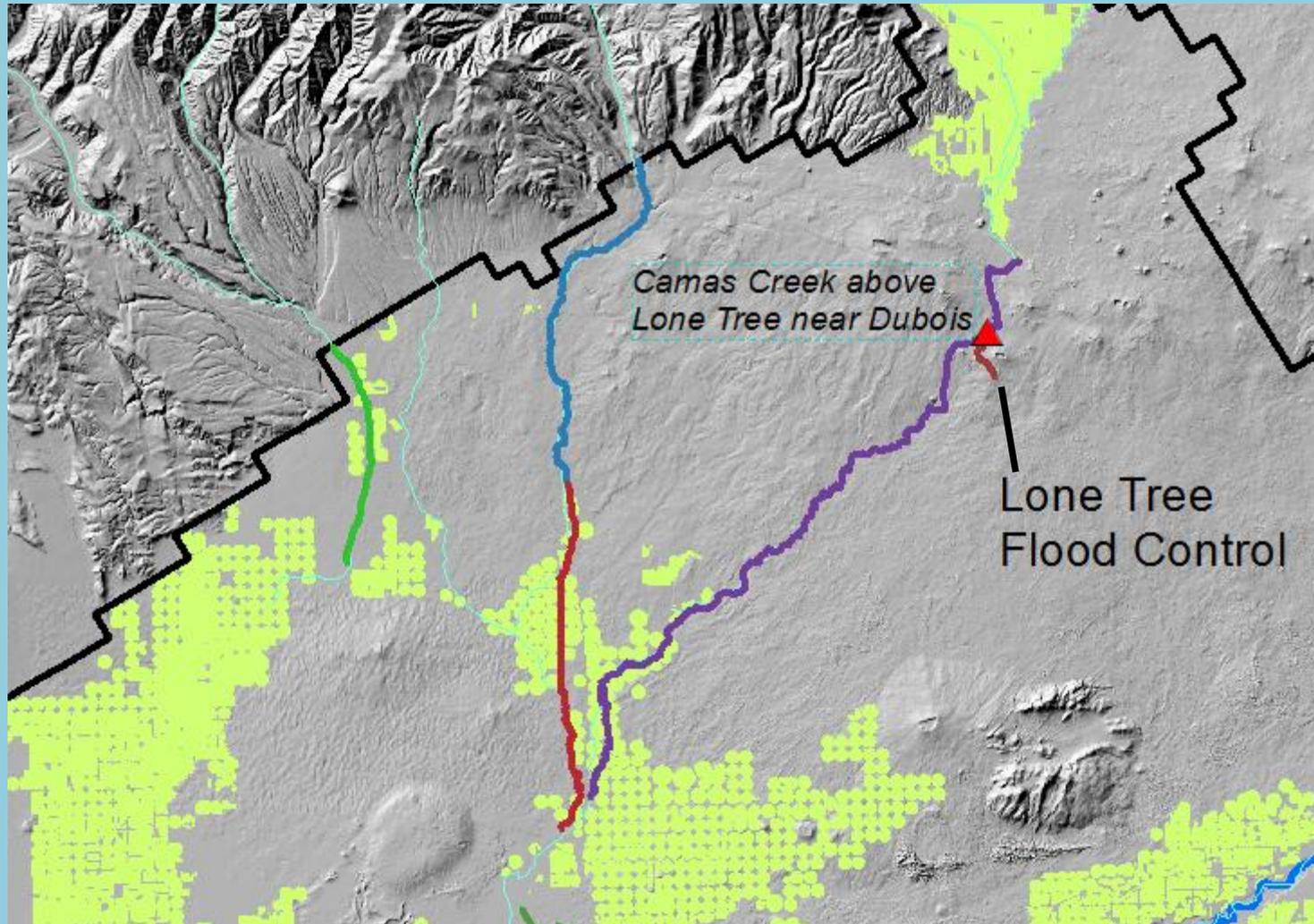
Outflows = IESW029, Camas NWR, Basin 31 Flood Control,  
Mud Lake Seepage, Mud Lake Seepage

Mud Lake Seepage calculated from stage measurements



# Lone Tree Flood Control

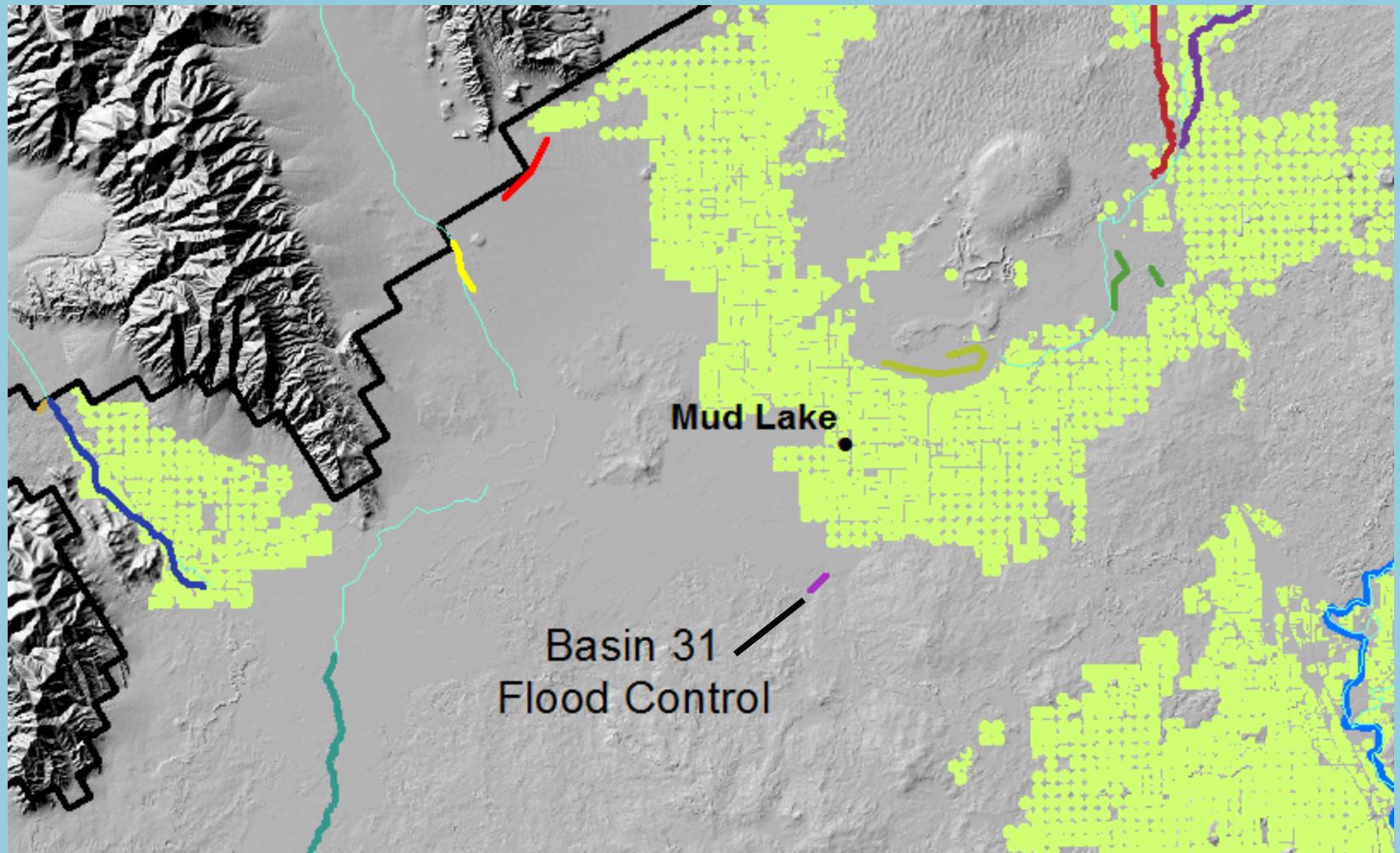
Seepage = *Camas Creek Above Lone Tree Near Dubois*



# Basin 31 Flood Control

Seepage = *Data from Water District 31 watermaster*

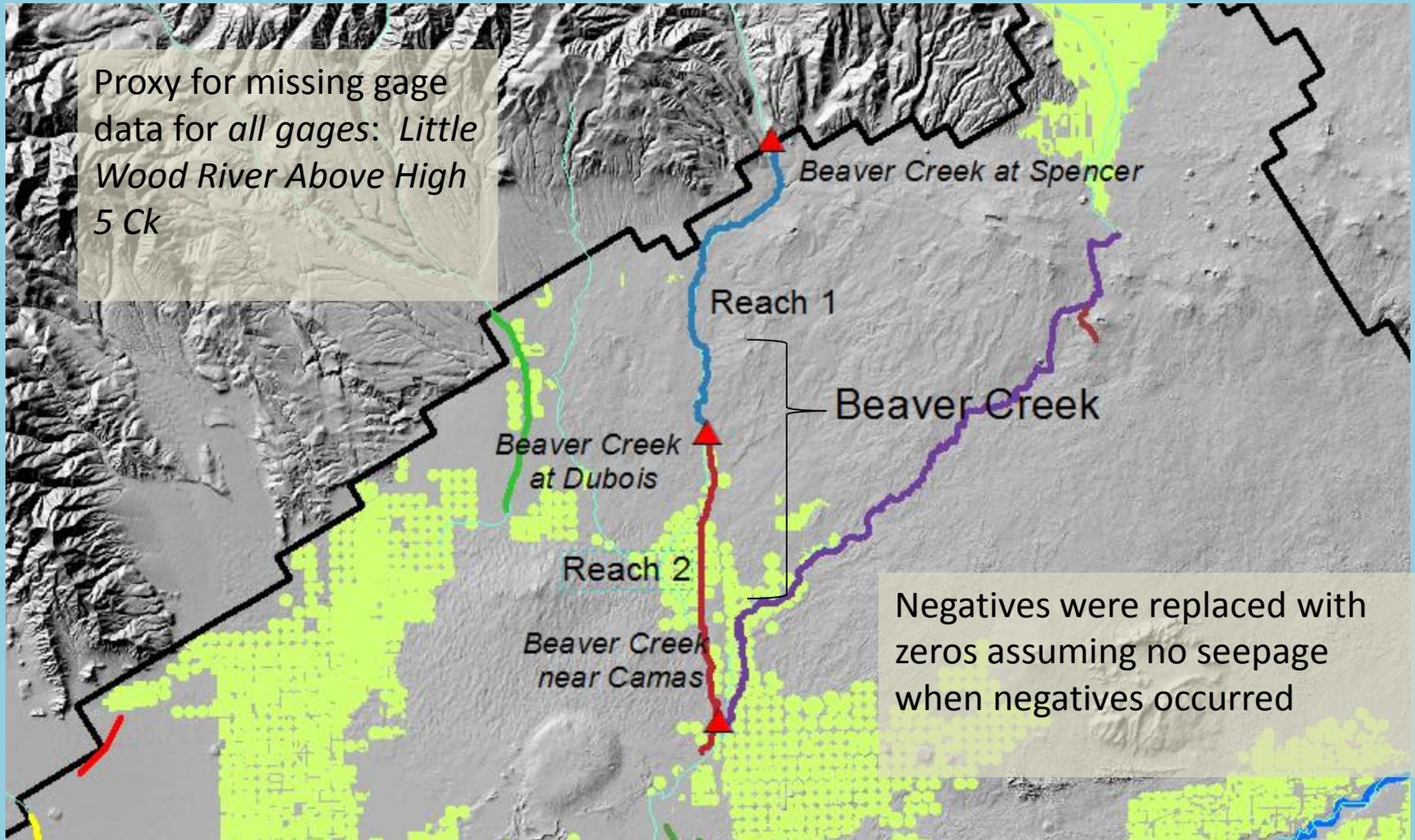
No outflow since 1999



# Beaver Creek

Seepage in Reach 1= *At Spencer – At Dubois – Diversions*

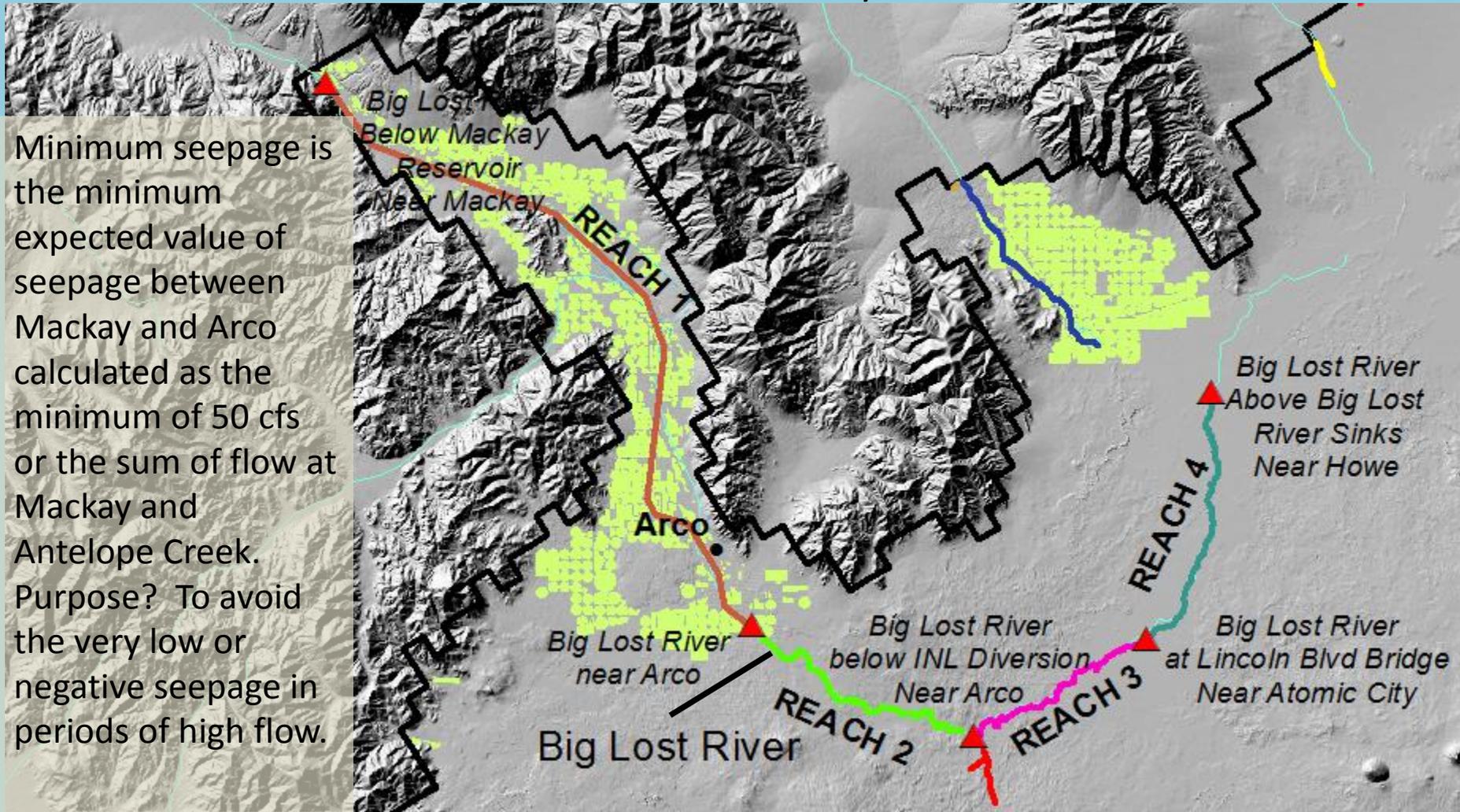
Seepage in Reach 2 = *At Dubois – Near Camas - Diversions*



# Big Lost River

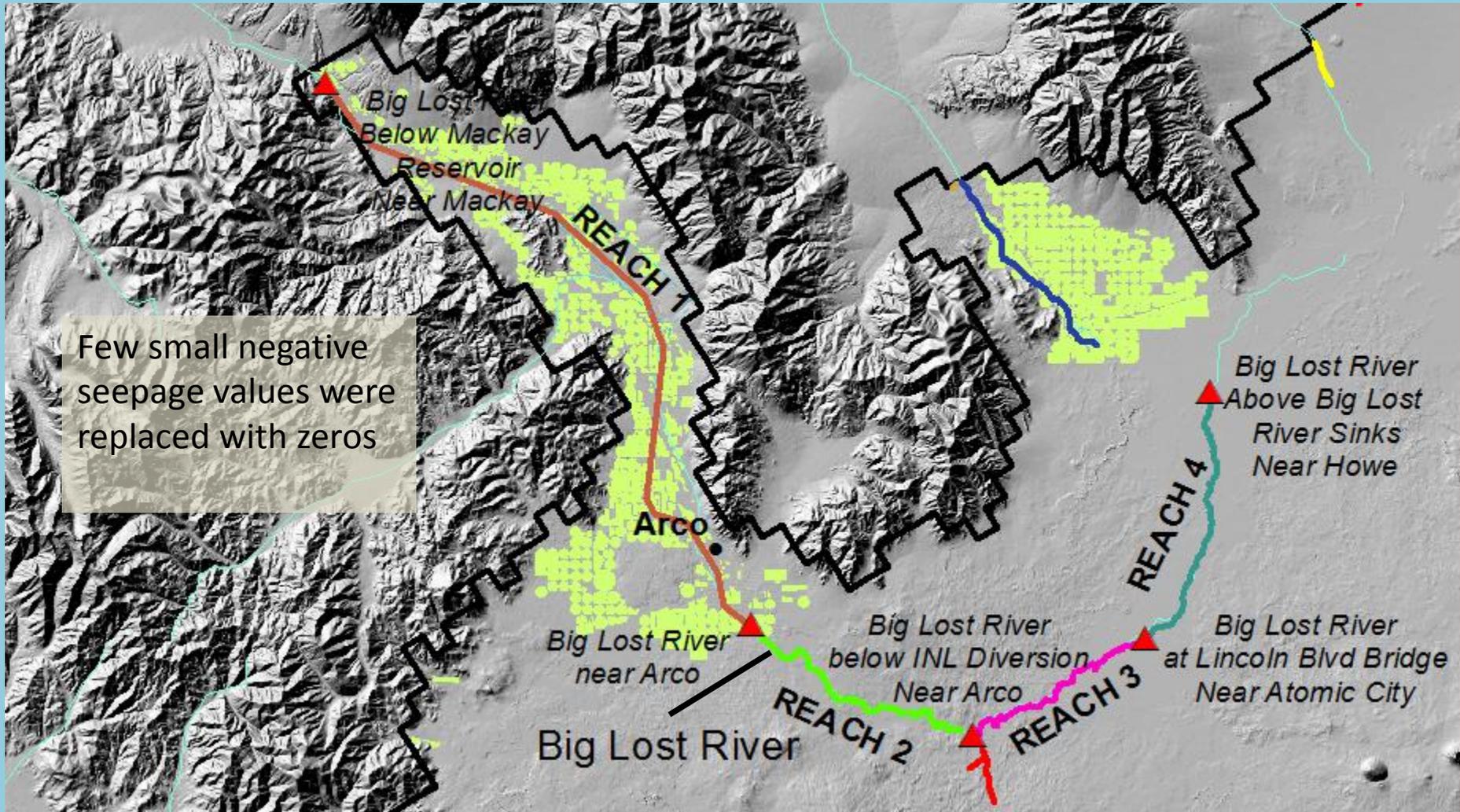
Seepage in Reach 1 = MAX(minimum seepage, *Near Mackay* + Antelope Ck estimates – *Big Lost Near Arco* – IESW005 Diversions)

Minimum seepage is the minimum expected value of seepage between Mackay and Arco calculated as the minimum of 50 cfs or the sum of flow at Mackay and Antelope Creek. Purpose? To avoid the very low or negative seepage in periods of high flow.



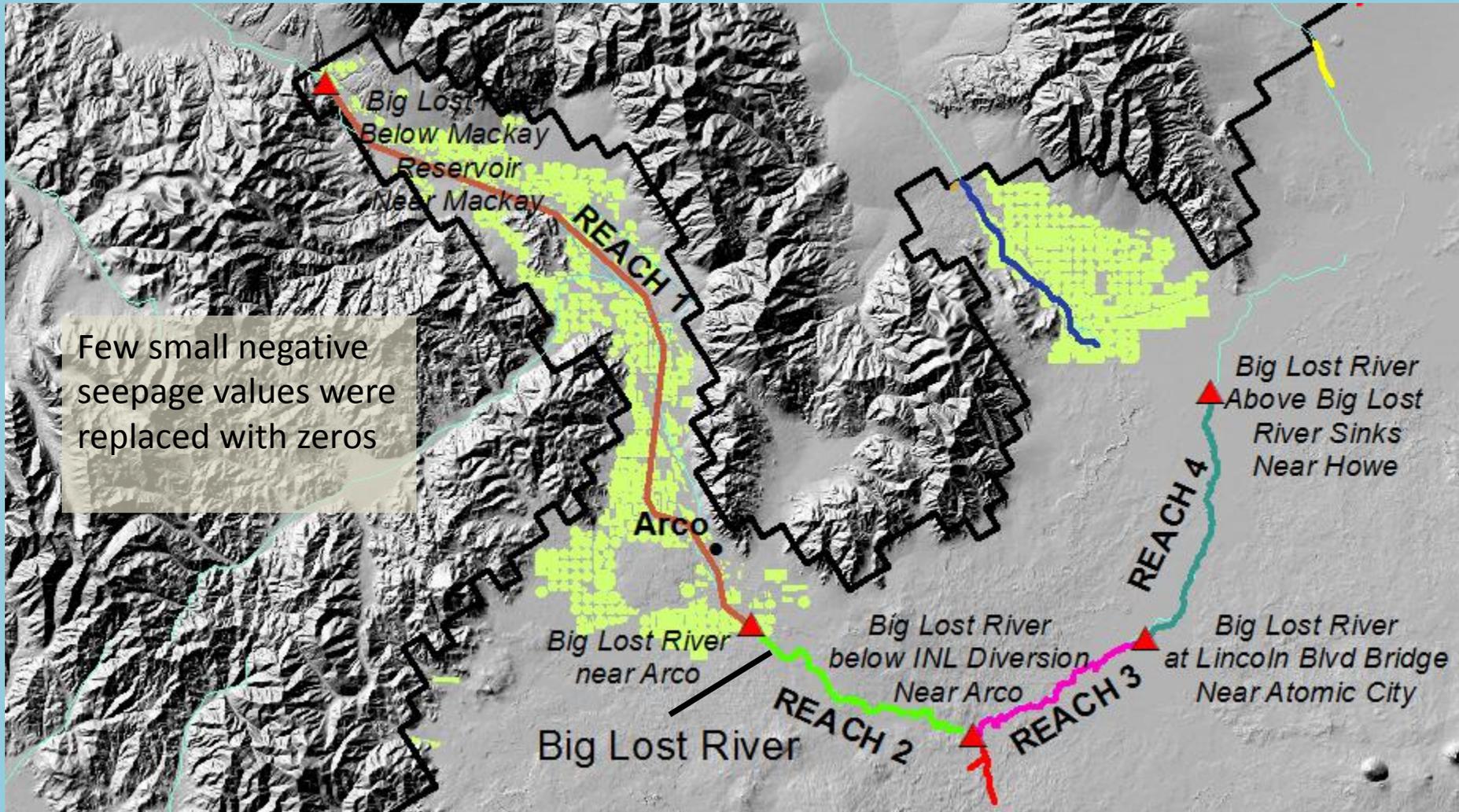
# Big Lost River (cont)

Seepage in Reach 2 = Near Arco – (INL Diversion + Flow below INL Diversion)



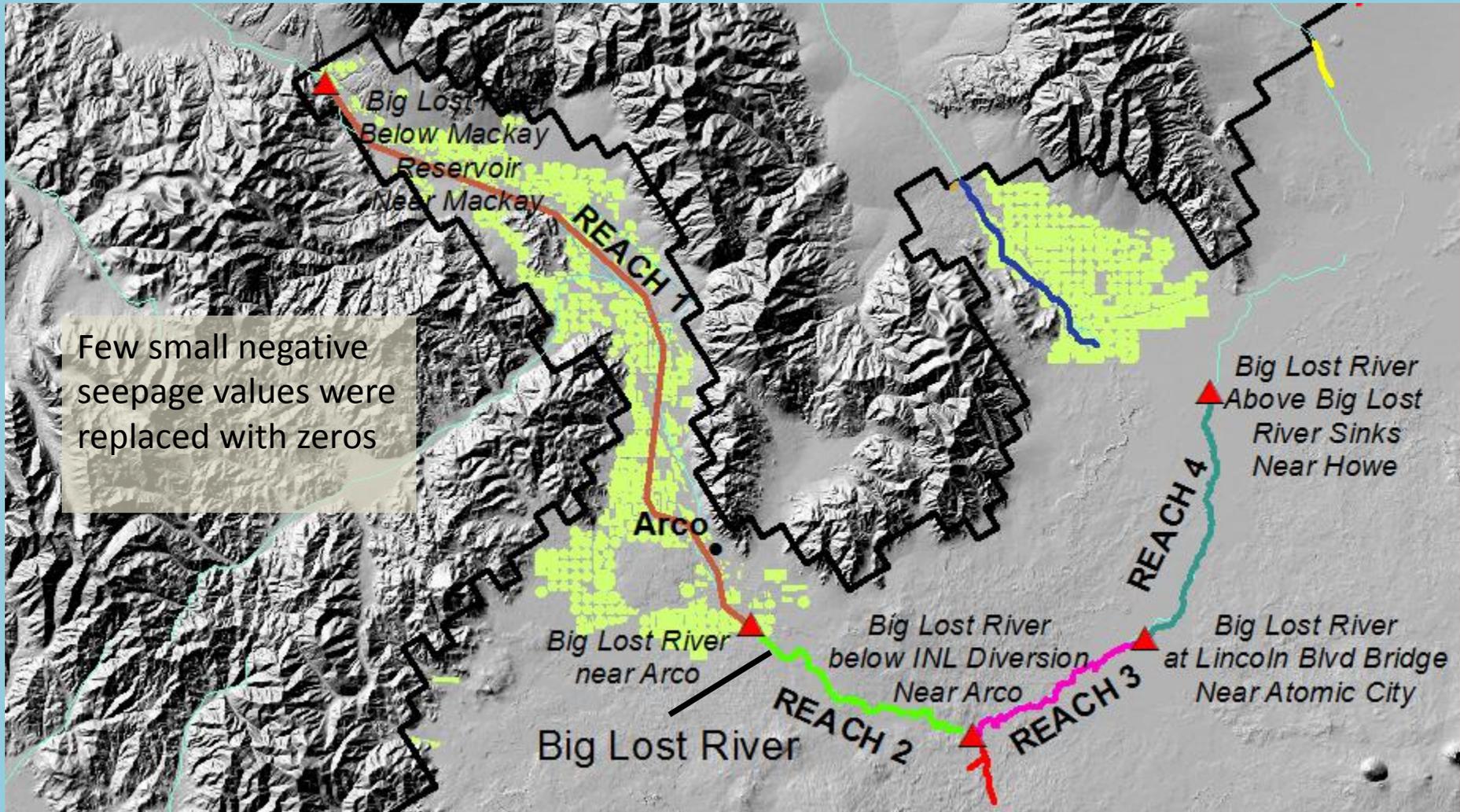
# Big Lost River (cont)

Seepage in Reach 3 = *Below INL Div – Lincoln Bridge*



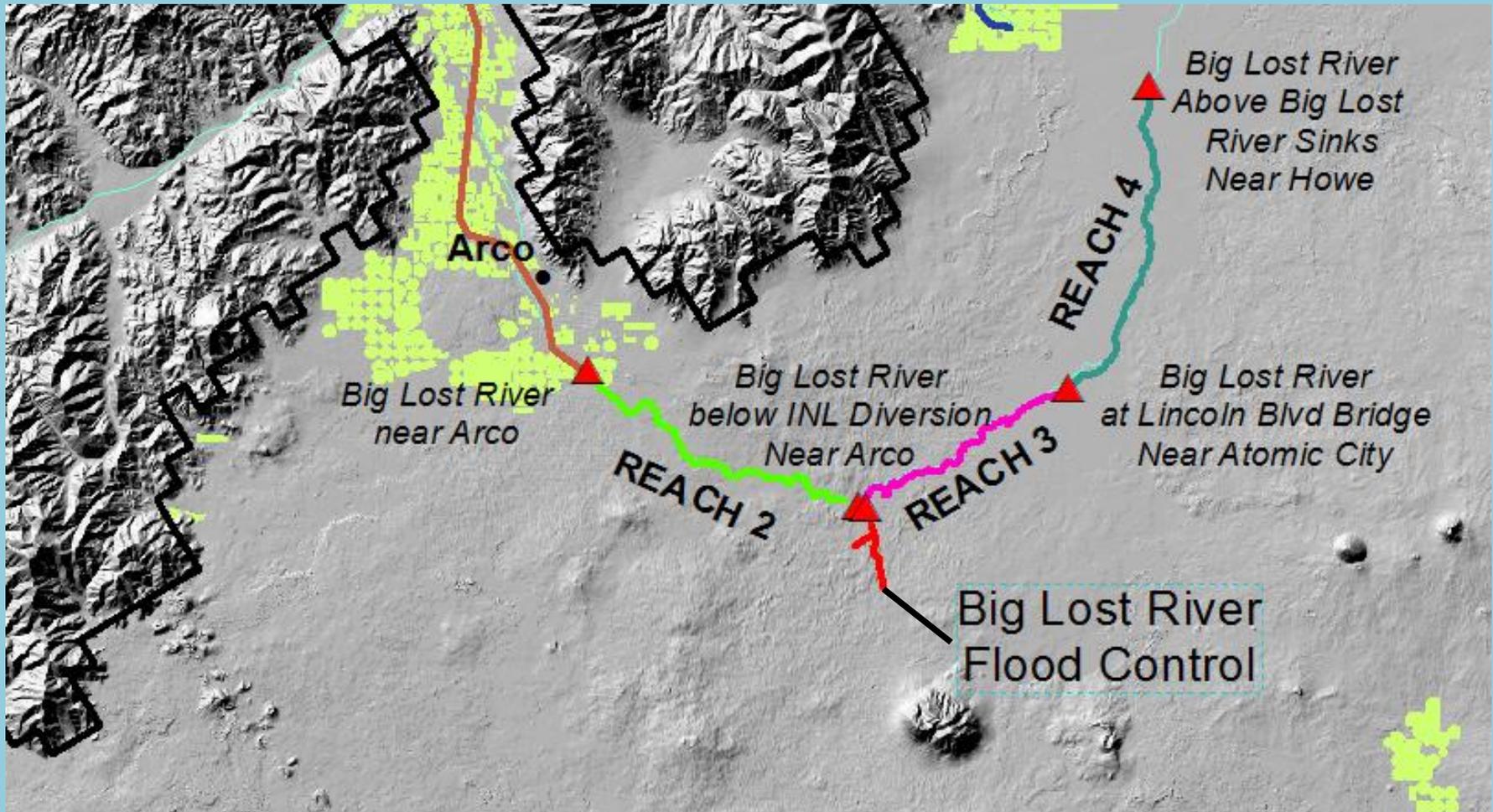
# Big Lost River (cont)

Seepage in Reach 4 = *Lincoln Bridge – Sinks Near Howe*



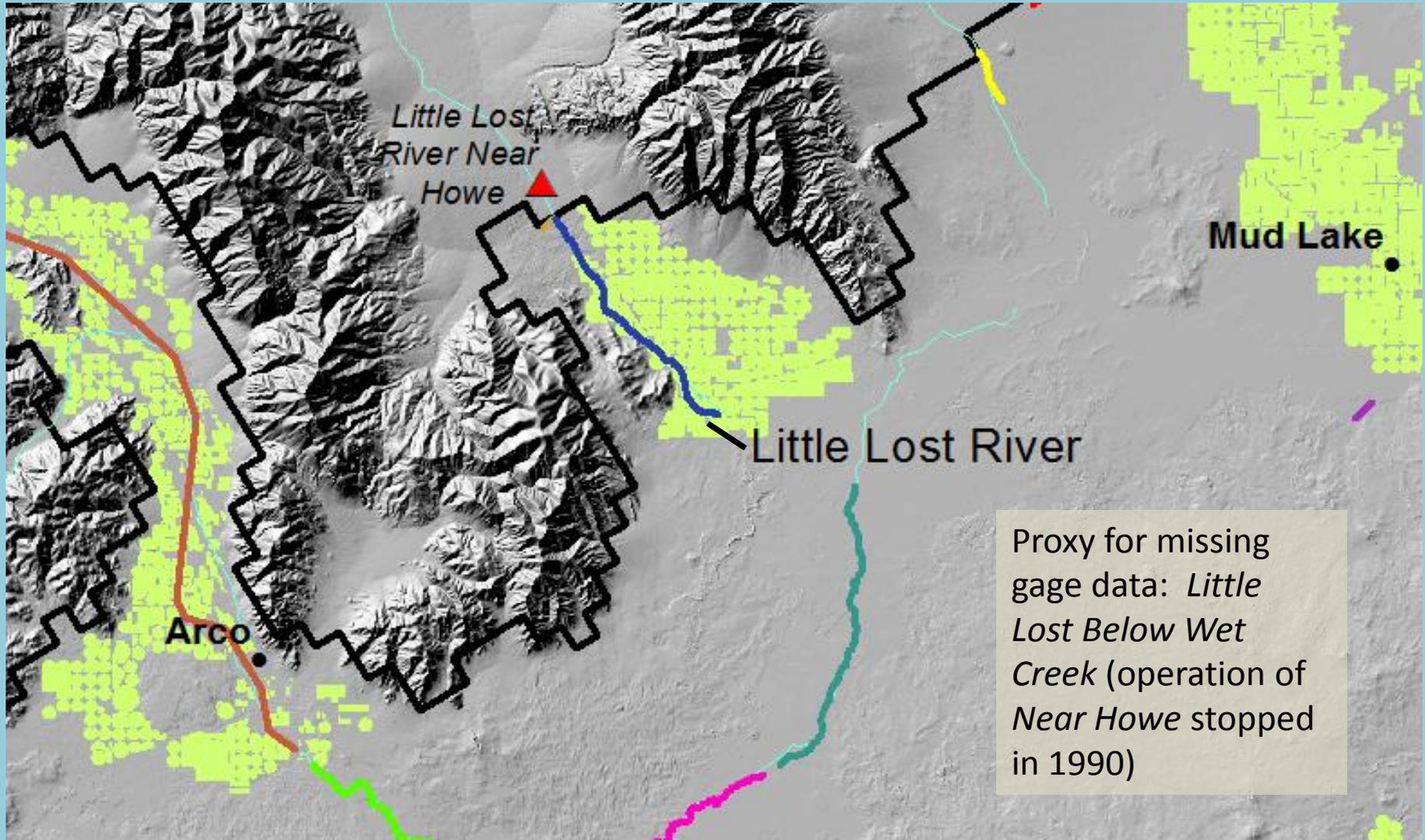
# Big Lost Flood Control

Seepage = *INL Diversion at Head Near Arco*



# Little Lost River

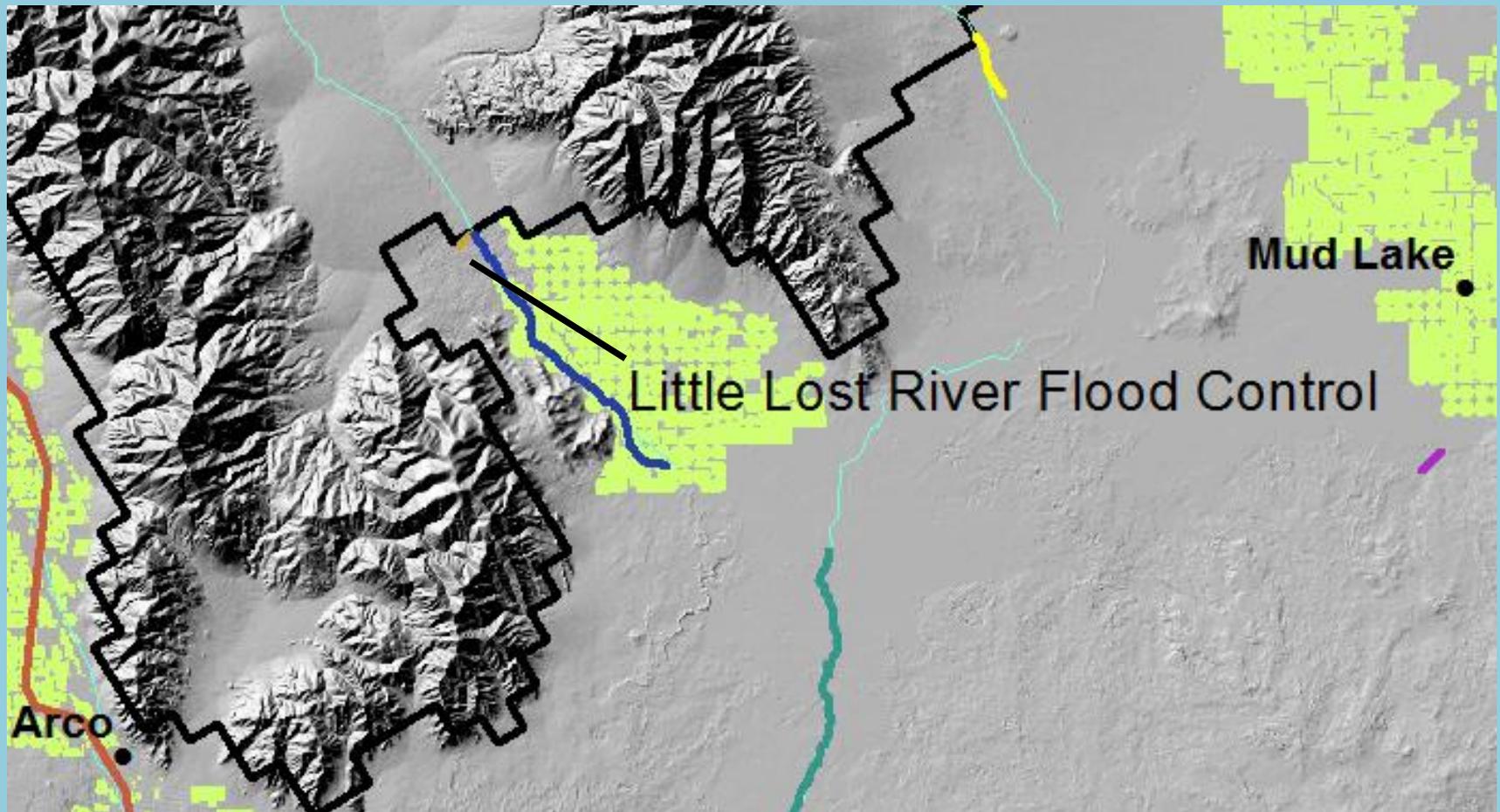
Seepage = *Near Howe* – (IESW008 + IESW053 diversions)



# Little Lost River Flood Control

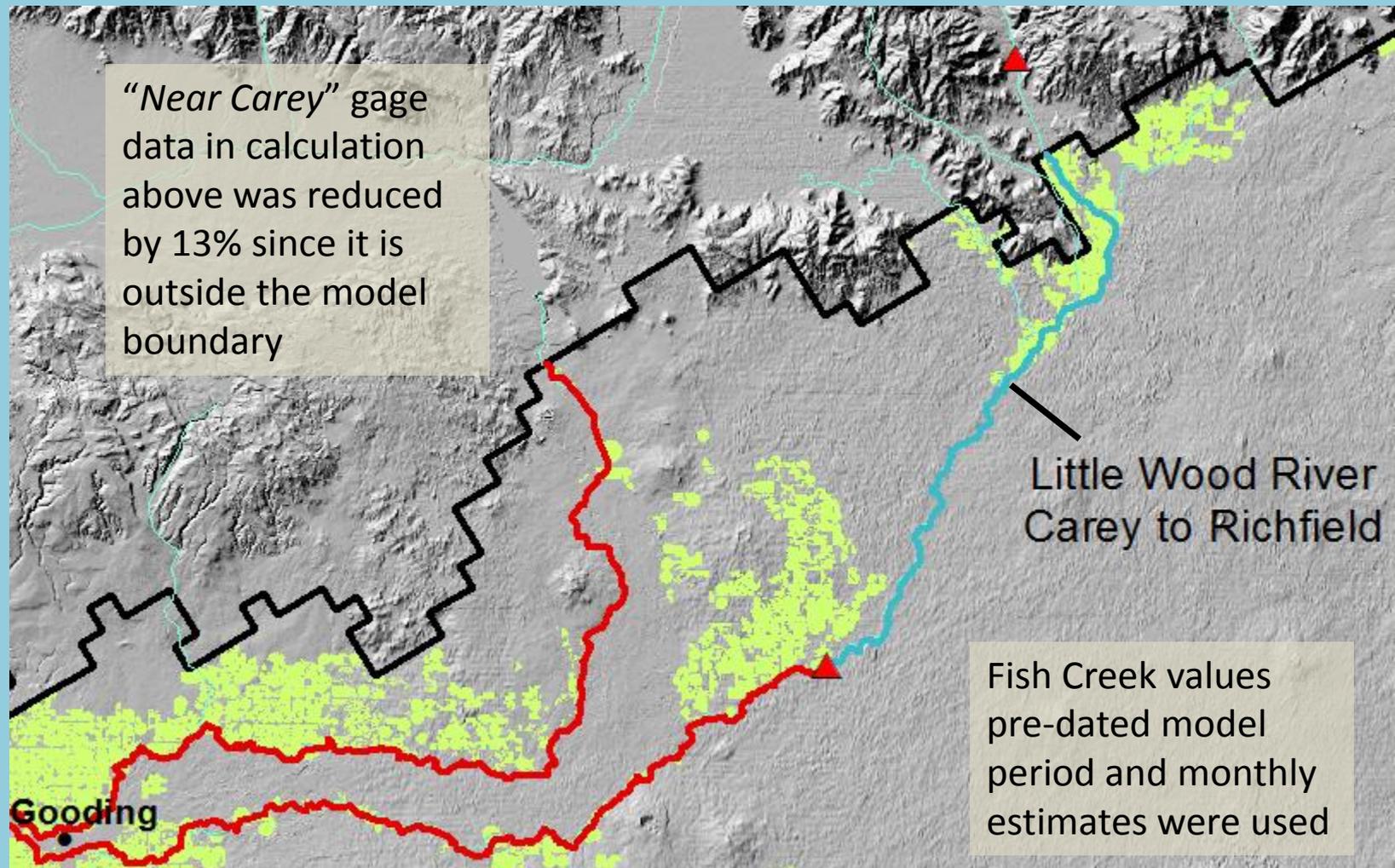
Prior to 1985, winter seepage estimates occur in Little Lost River channel

Seepage after 1985 = Little Lost River seepage estimates during the winter (Nov – Mar)



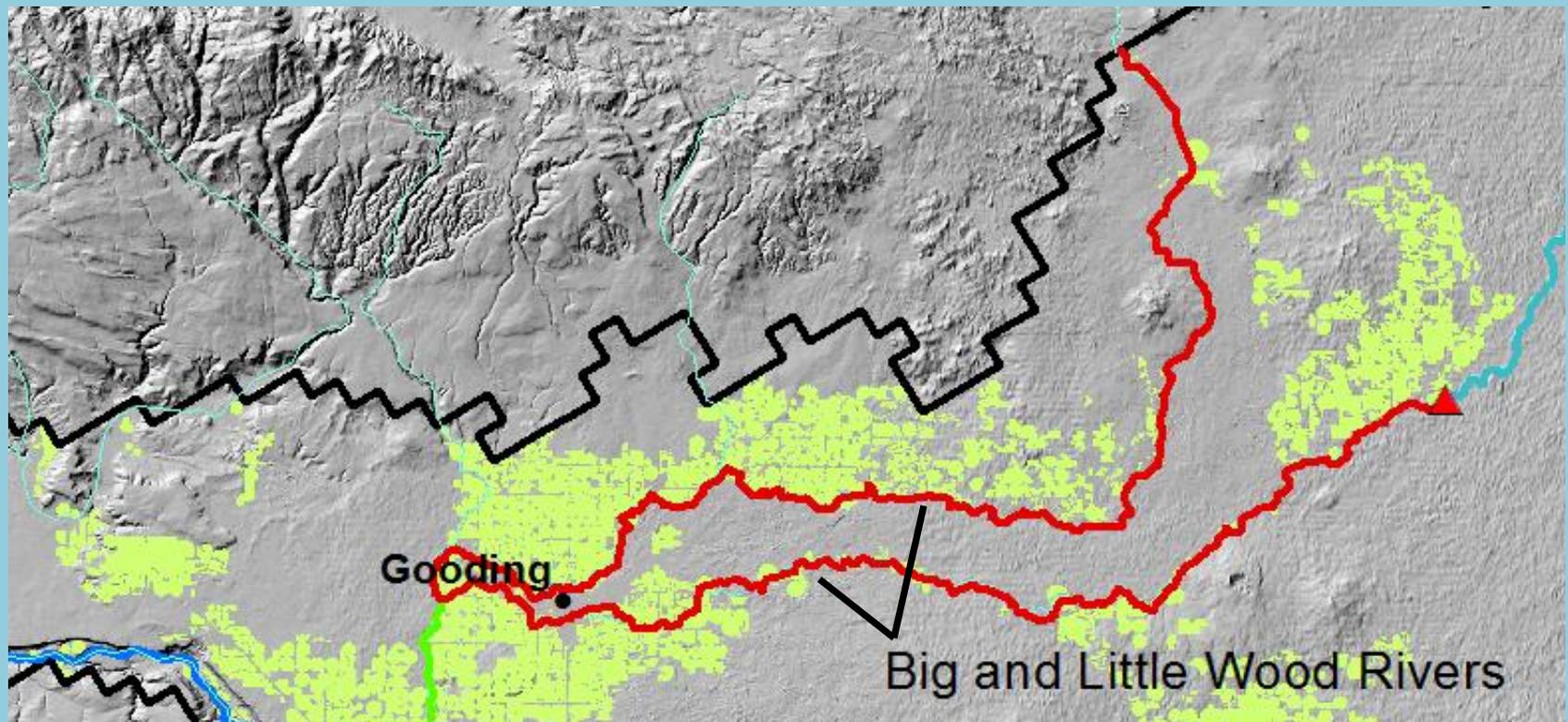
# Little Wood River – Carey to Richfield

Seepage = *Near Carey* + *Silver Ck Near Picabo* +  
*Fish Ck estimates* – *Near Richfield*



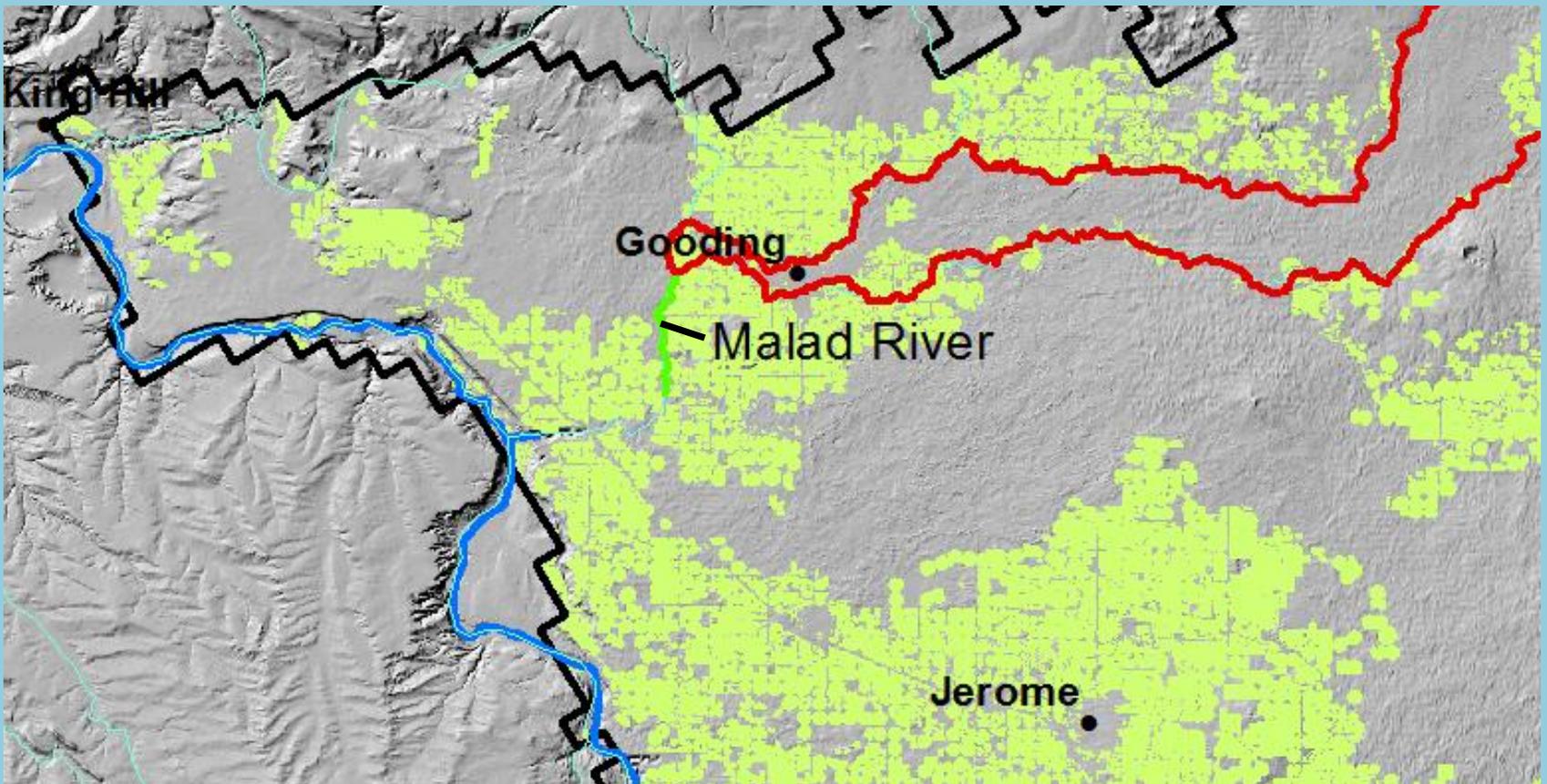
# Big Wood and Little Wood Rivers

- Consistency with mass balance important
- During the irrigation season, average of winter seepage values was assigned to perched seepage; remainder was assigned to diversions



# Malad River

Seepage = Average seepage rate per mile (calculated on the Little Wood River between Shoshone and Gooding) + Milner-Gooding canal into the Little Wood River canal into the Little Wood River



# Milner-Picketts/Twin Falls Canal and Lake Murtaugh

Seepage estimates based on Twin Falls Canal Company Records

