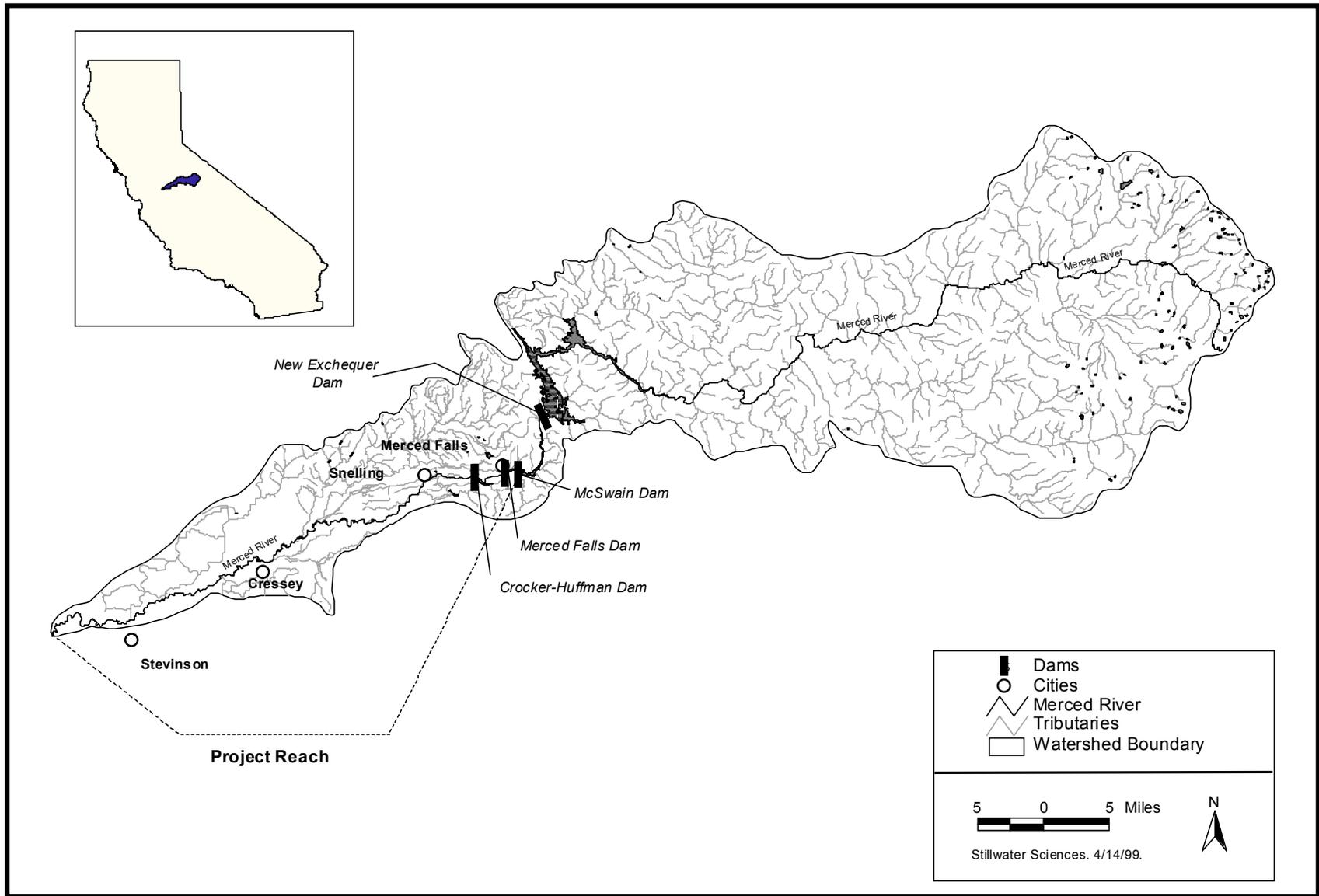


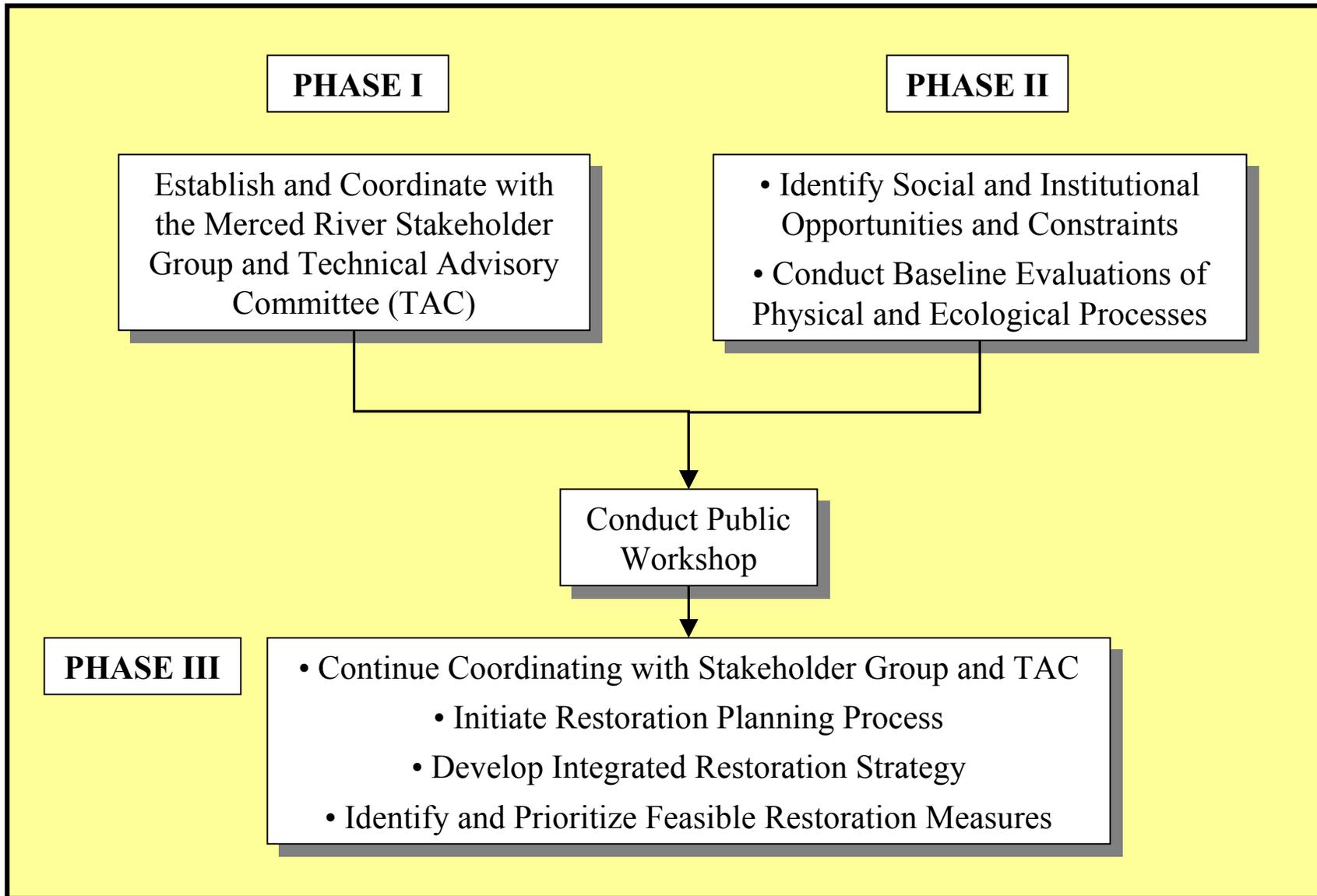
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## FIGURES

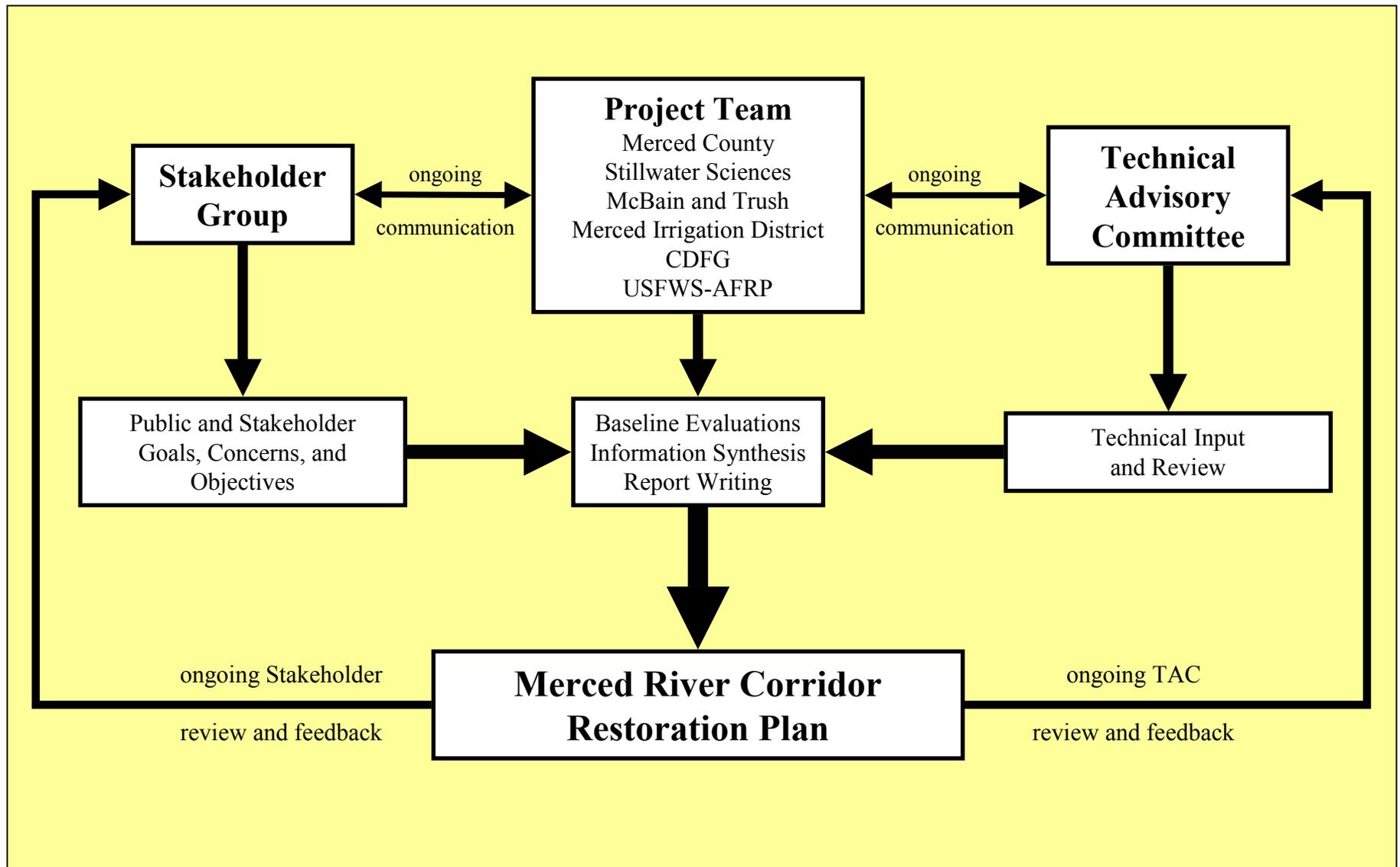
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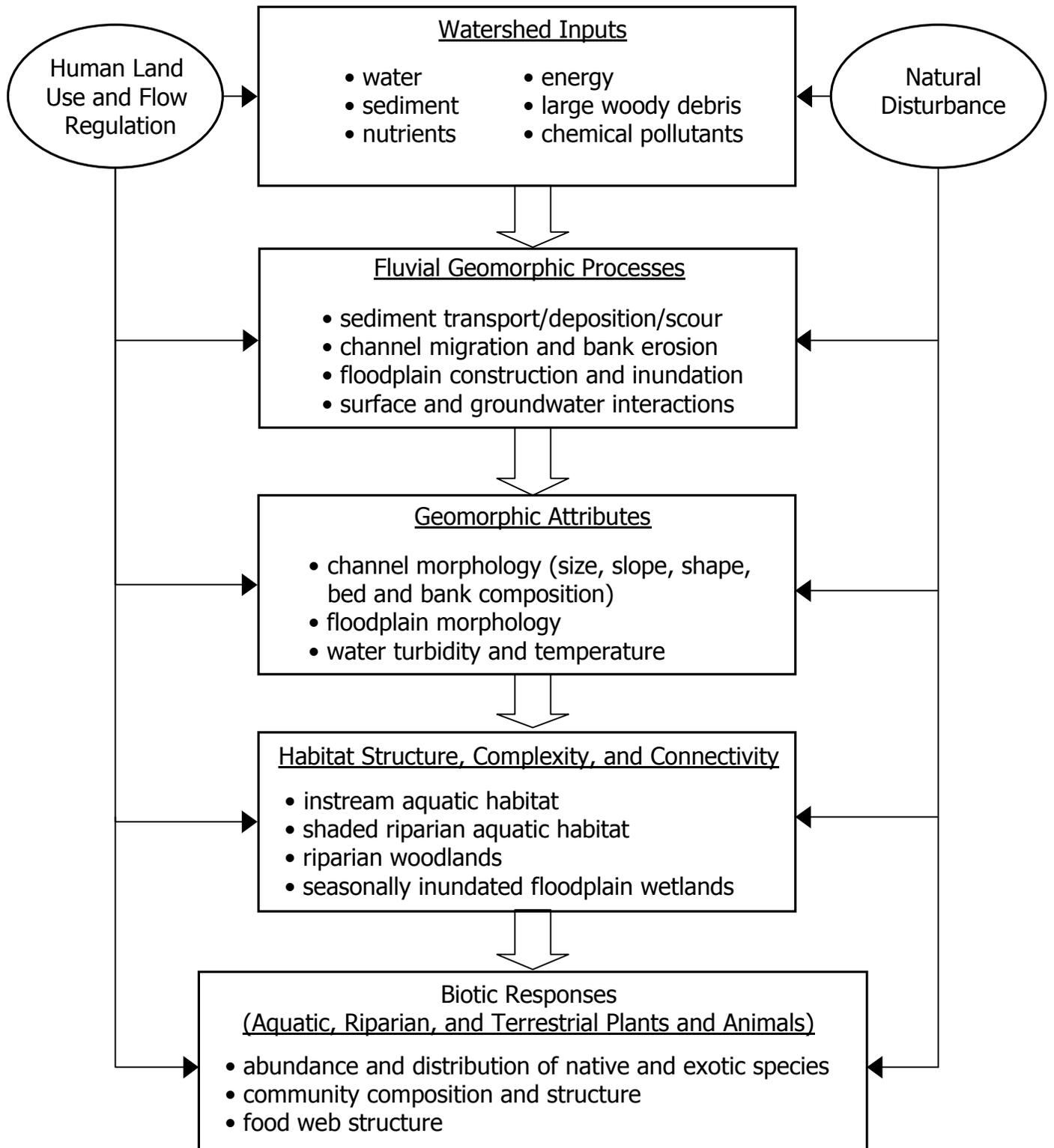
**Figure 1.1-1. The Merced River watershed and project reach.**



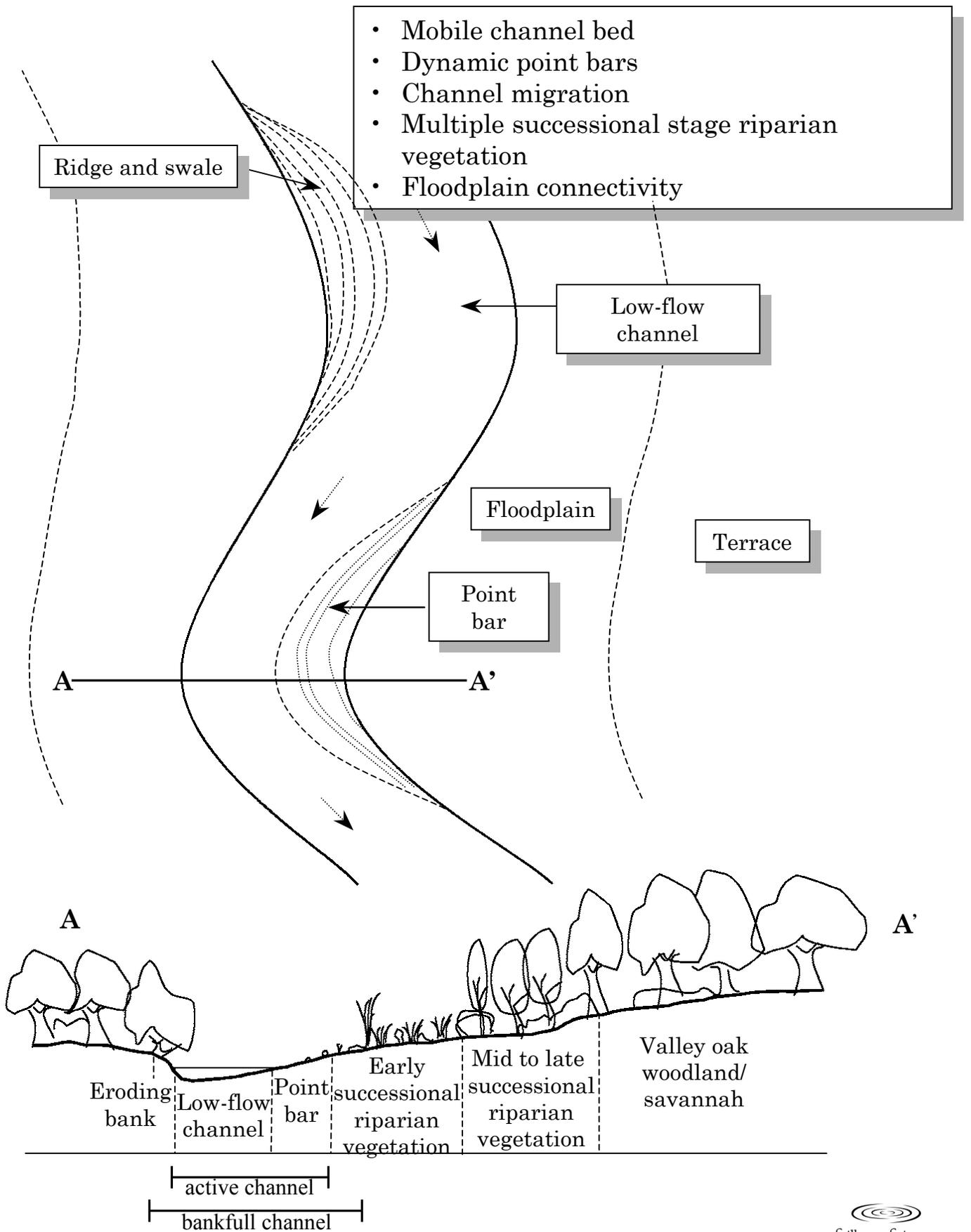
**Figure 1.1-2. Merced River project phases.**



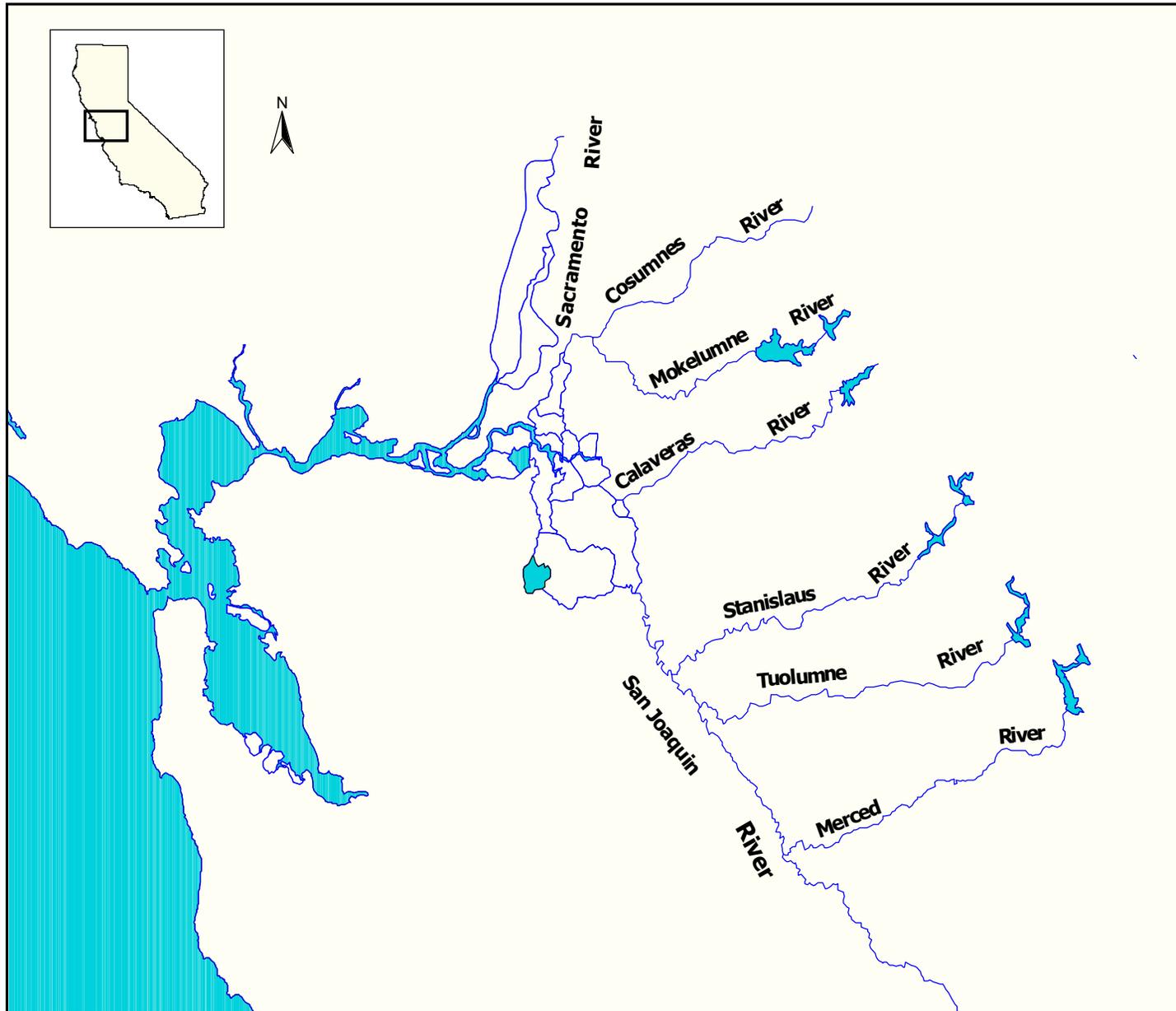
**Figure 1.1-3. Merced River corridor restoration plan participants and roles.**



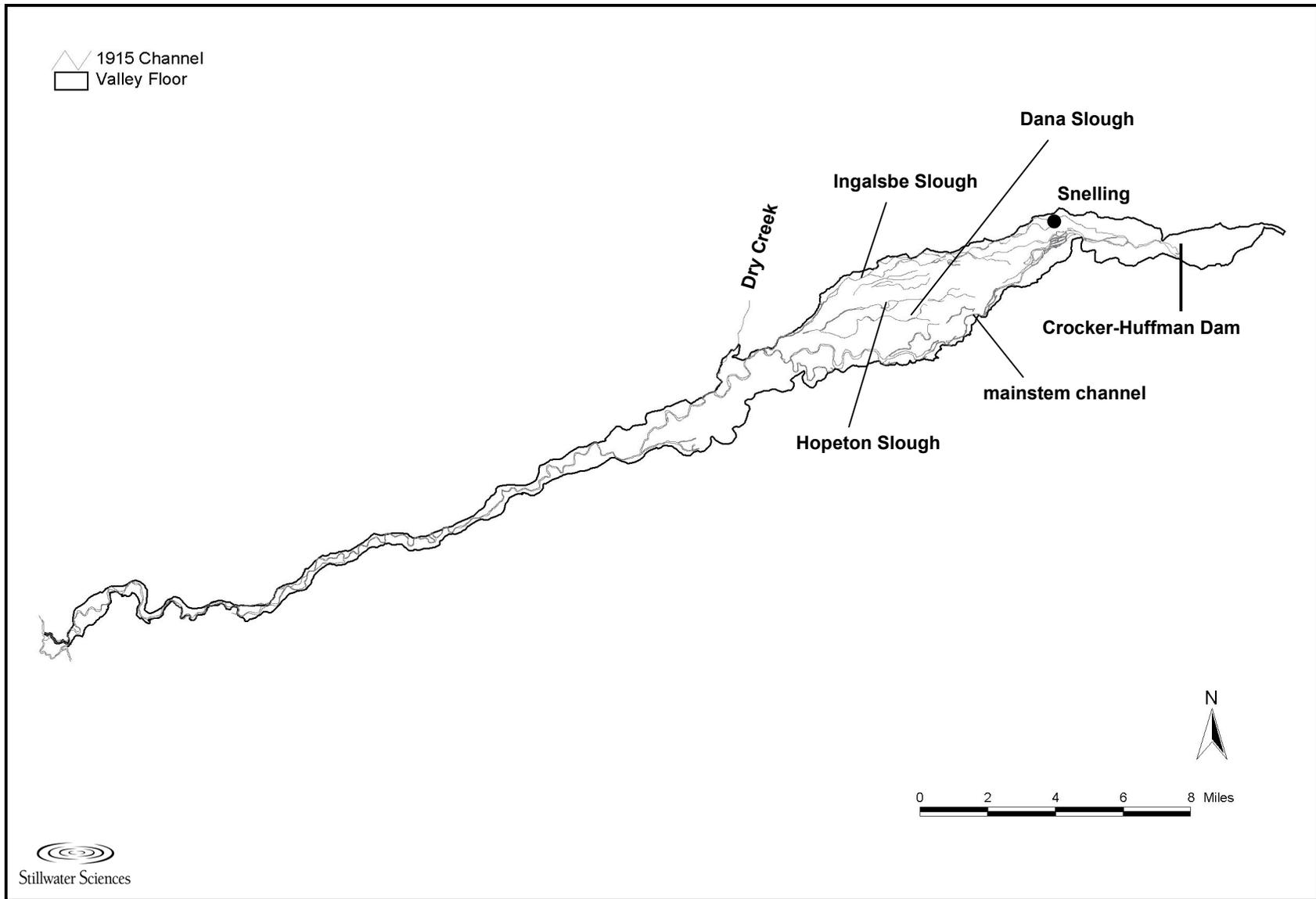
**Figure 2-1. A simplified conceptual model of the physical and ecological linkages in alluvial river-floodplain systems.**



**Figure 2-2. Conceptual diagram of a "healthy" alluvial river system.**

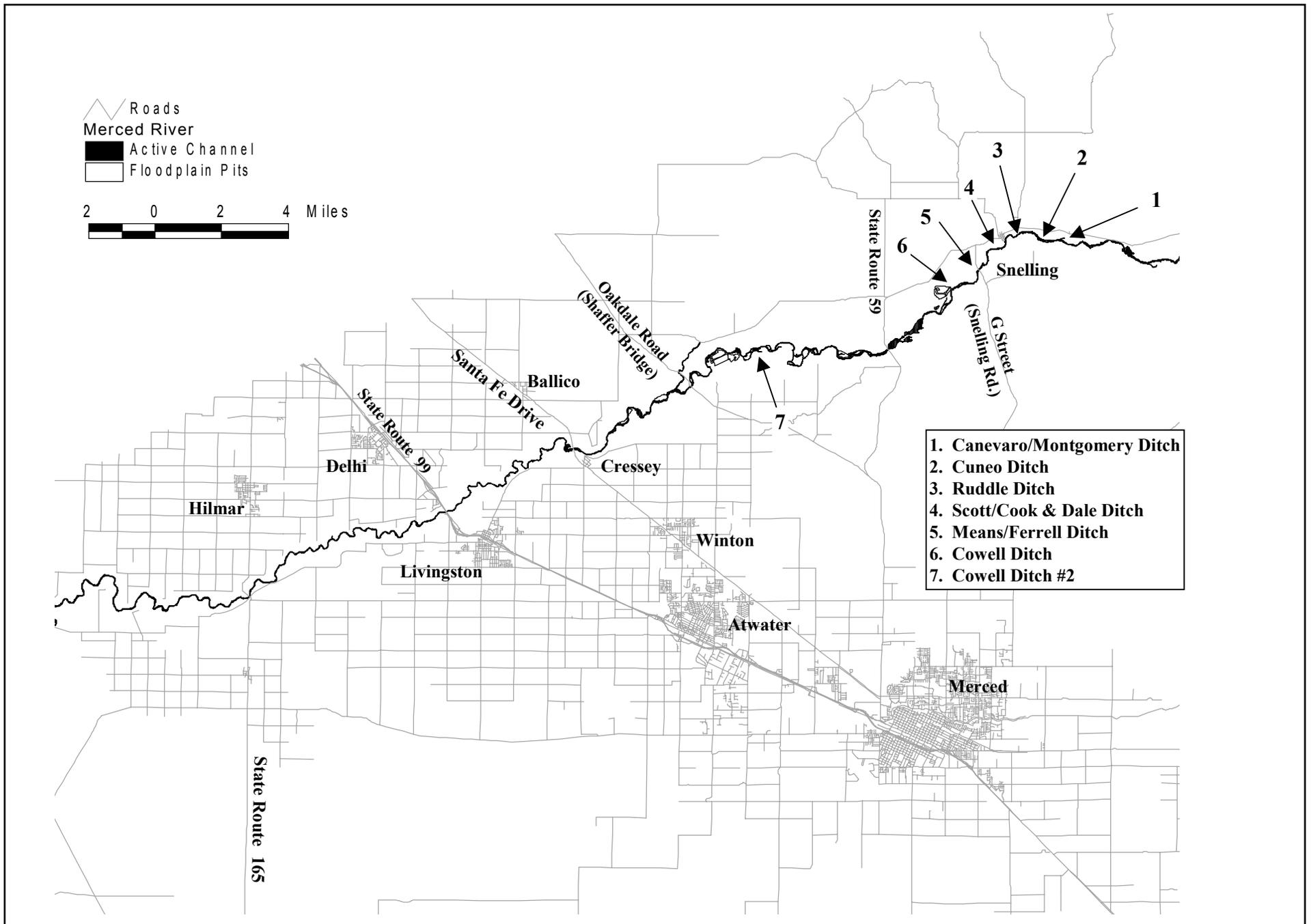


**Figure 3.1-1. San Joaquin River tributaries vicinity map.**

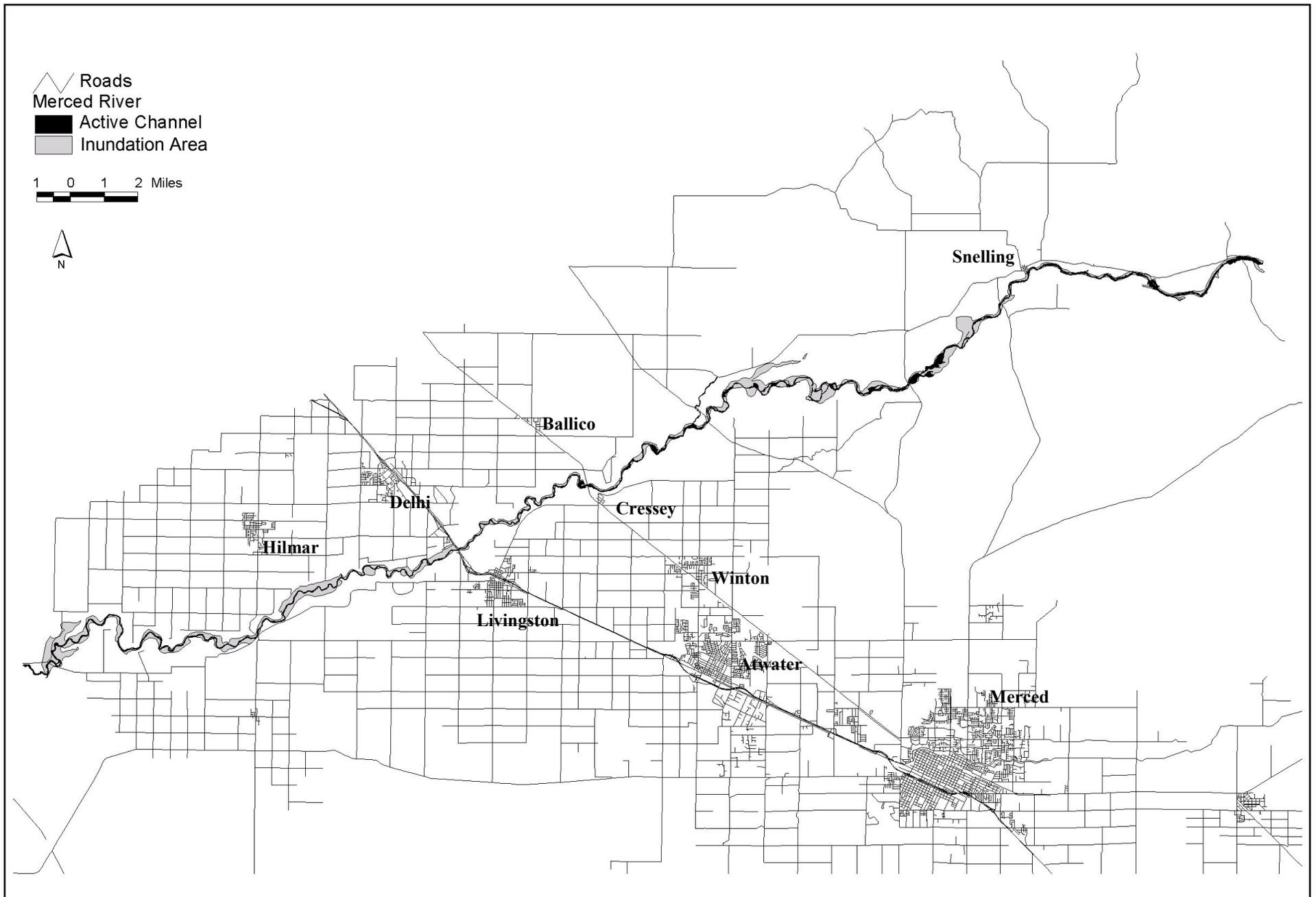


**Figure 3.1-2. Merced River alluvial valley floor boundary and 1915 channel alignment.**

(The alluvial valley floor was identified and digitized using geologic maps and 1:24,000-scale topographic maps. The 1915 channel alignment was digitized from historical 1:31,680-scale topographic maps.)

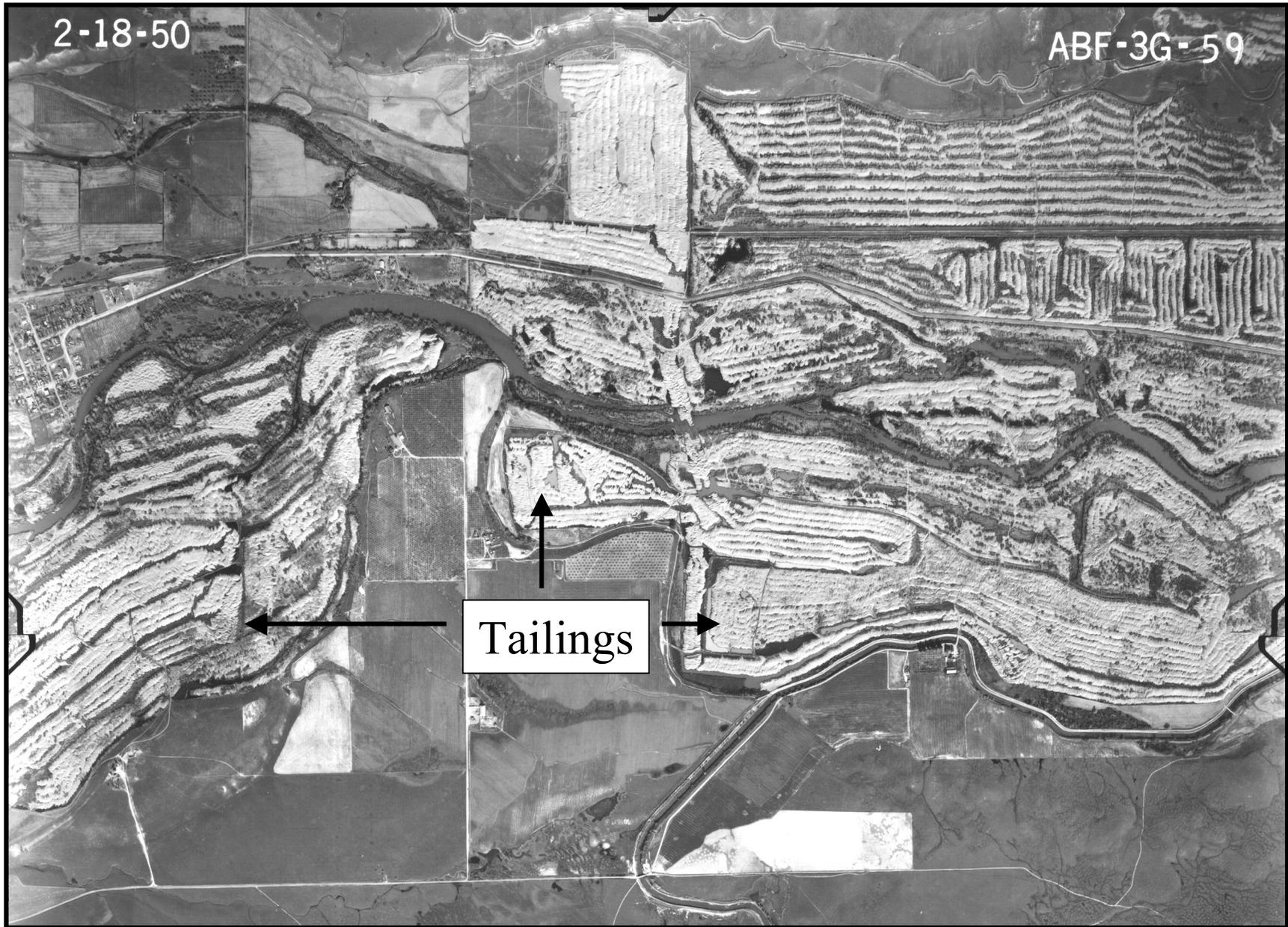


**Figure 3.1-3. Merced River riparian water diversions.**



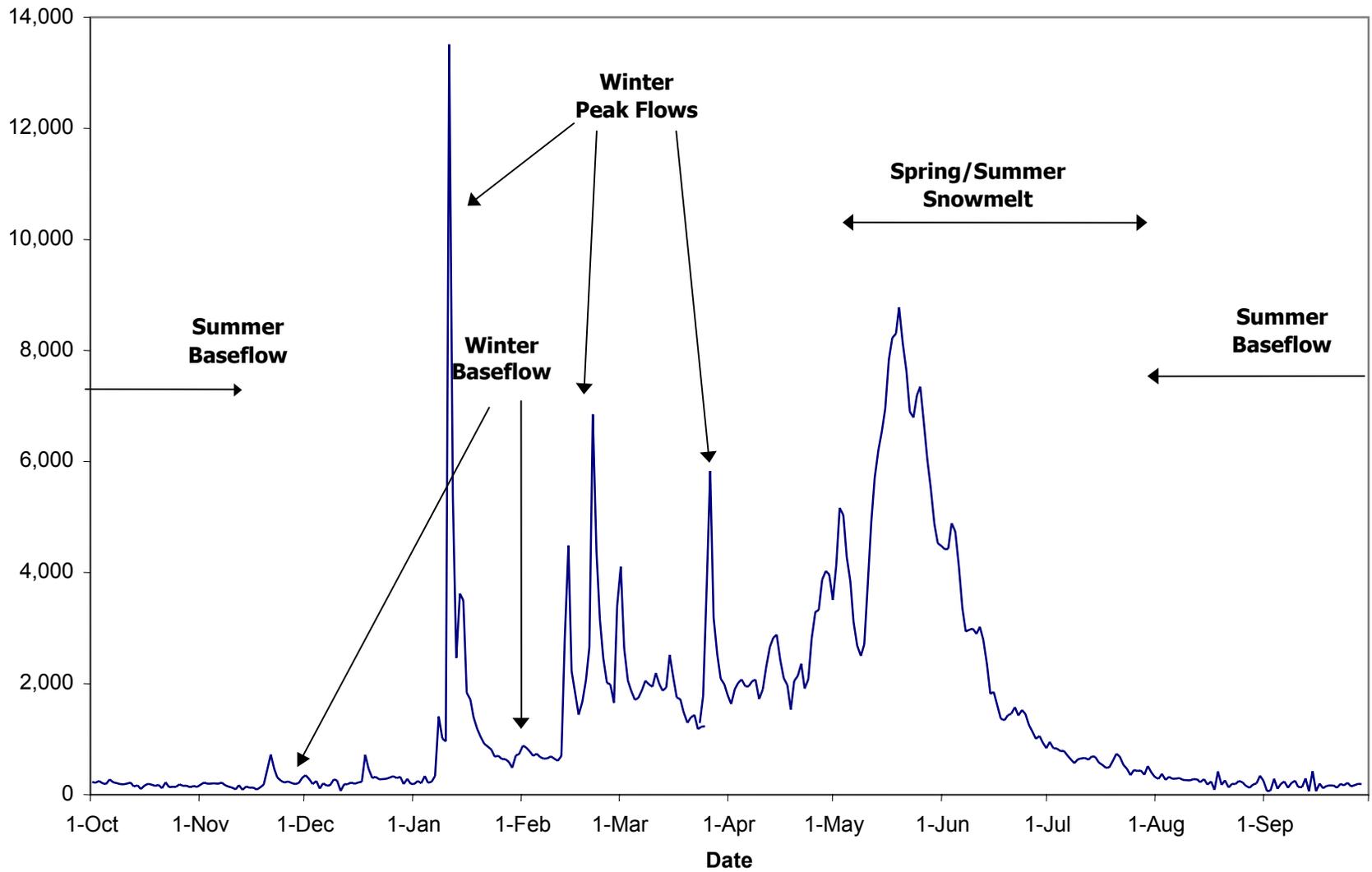
**Figure 3.2-1. Area inundated by January 1997 flood.**

(Source: Corps of Engineers, unpublished data)

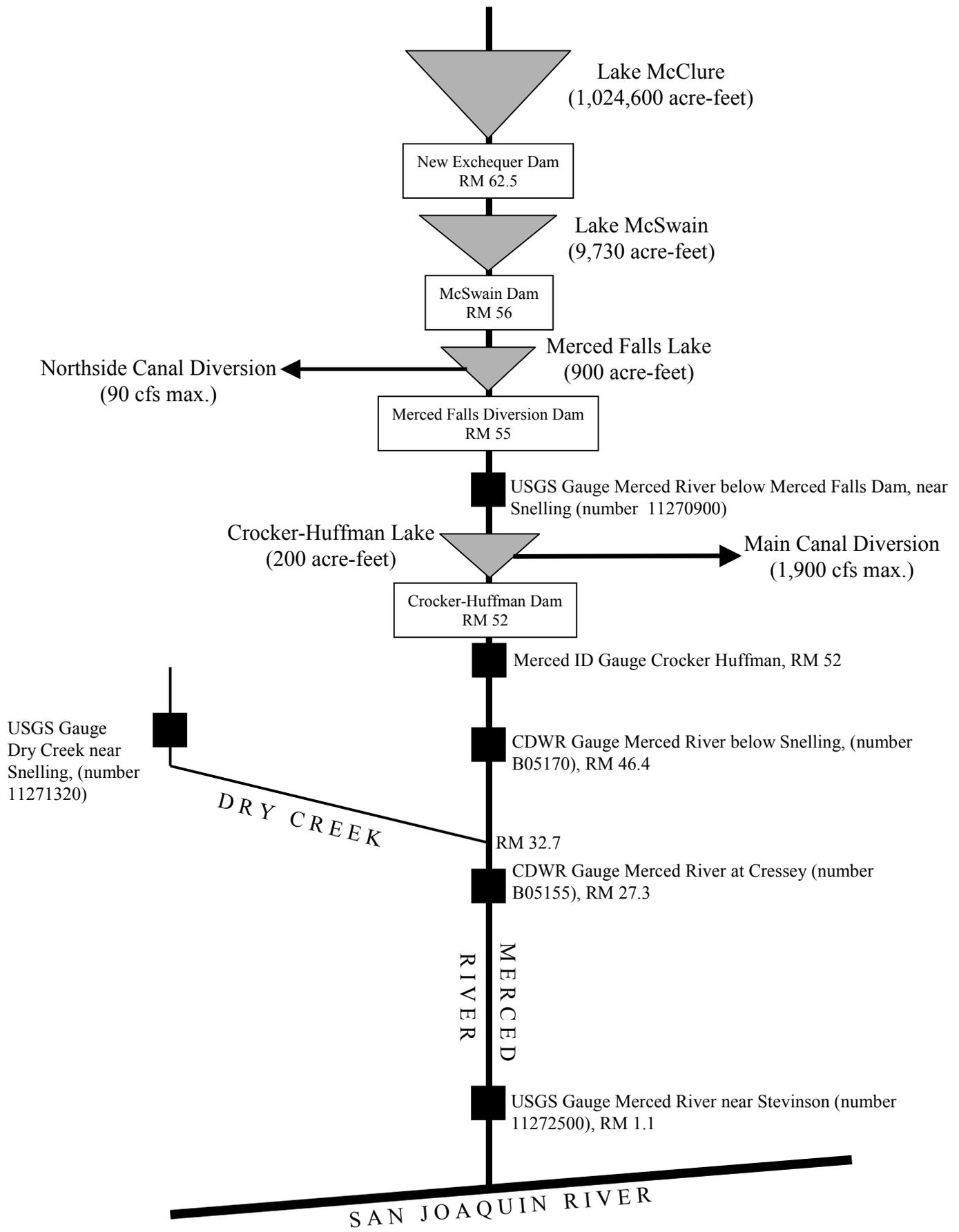


**Figure 3.2-2. Dredger tailings in the Snelling vicinity.**

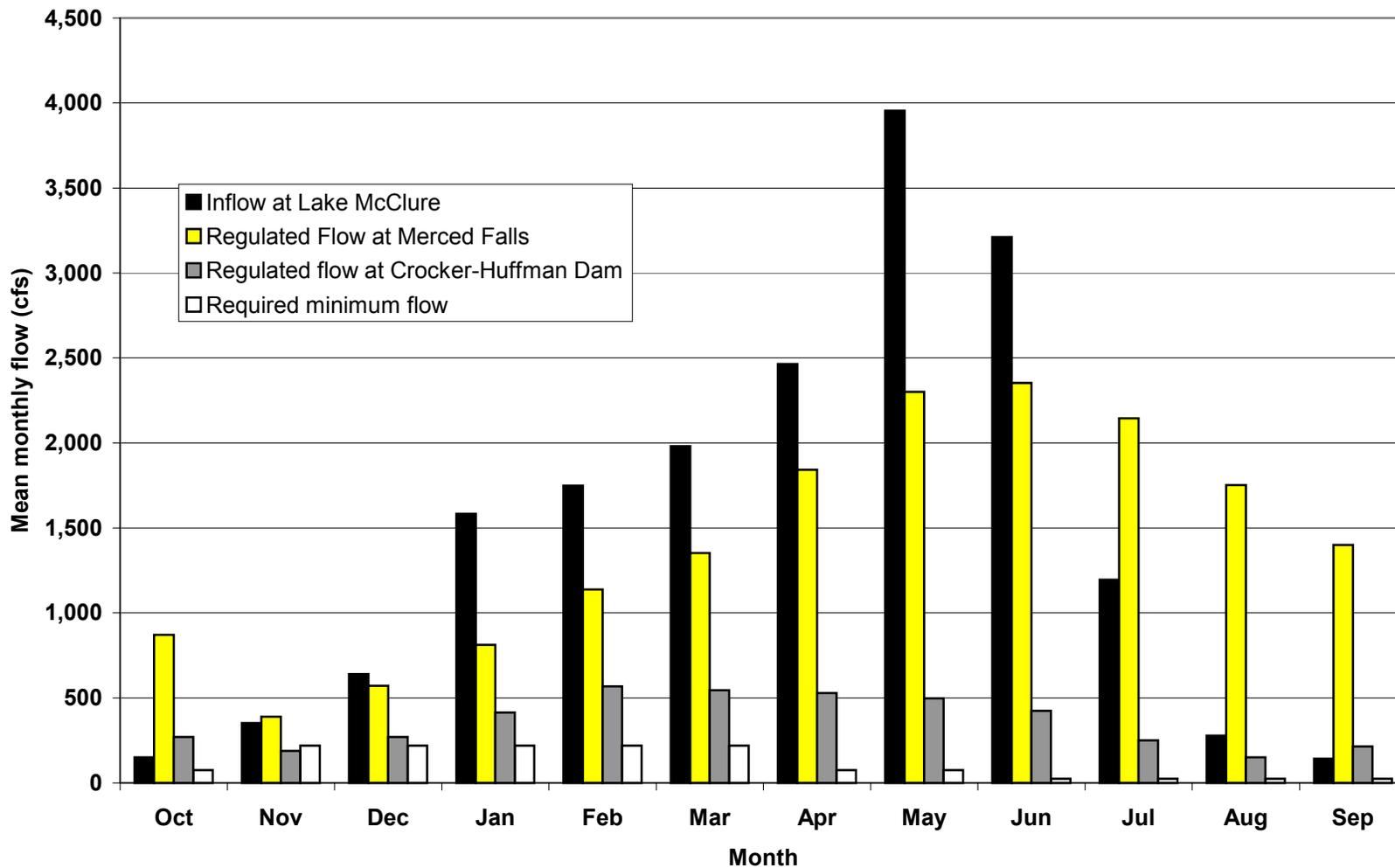
(photograph: Agricultural Stabilization and Conservation Service 1950)



**Figure 4.1-1. Hydrograph components for unregulated flow conditions in the Merced River.**  
 (Hydrograph shown is estimated inflow to Lake McClure for water year 1979, representative of a median water year.)  
 (source: Merced Irrigation District)

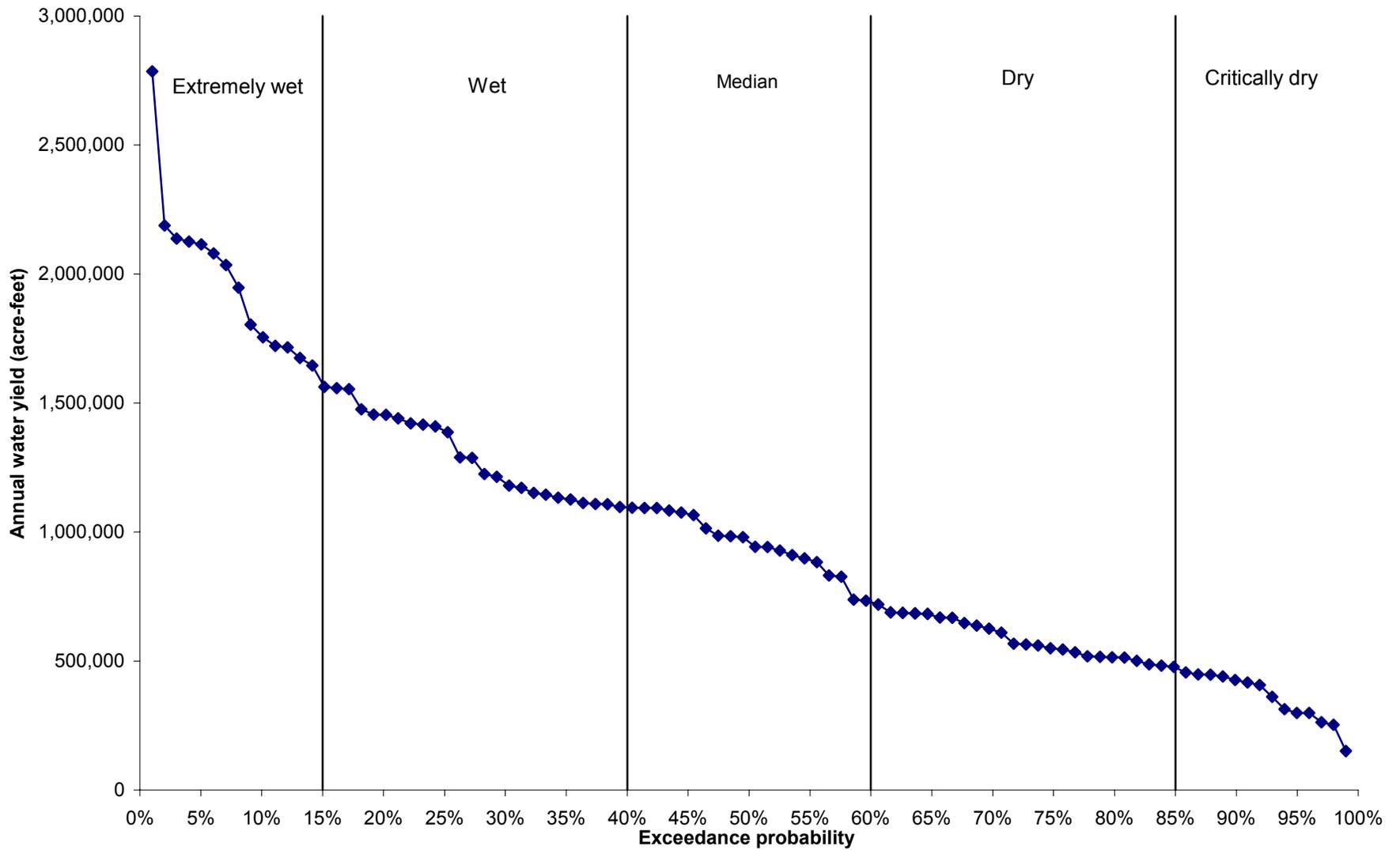


**Figure 4.2-1. Schematic diagram of Merced River dams, reservoirs, diversions and flow gauges.**



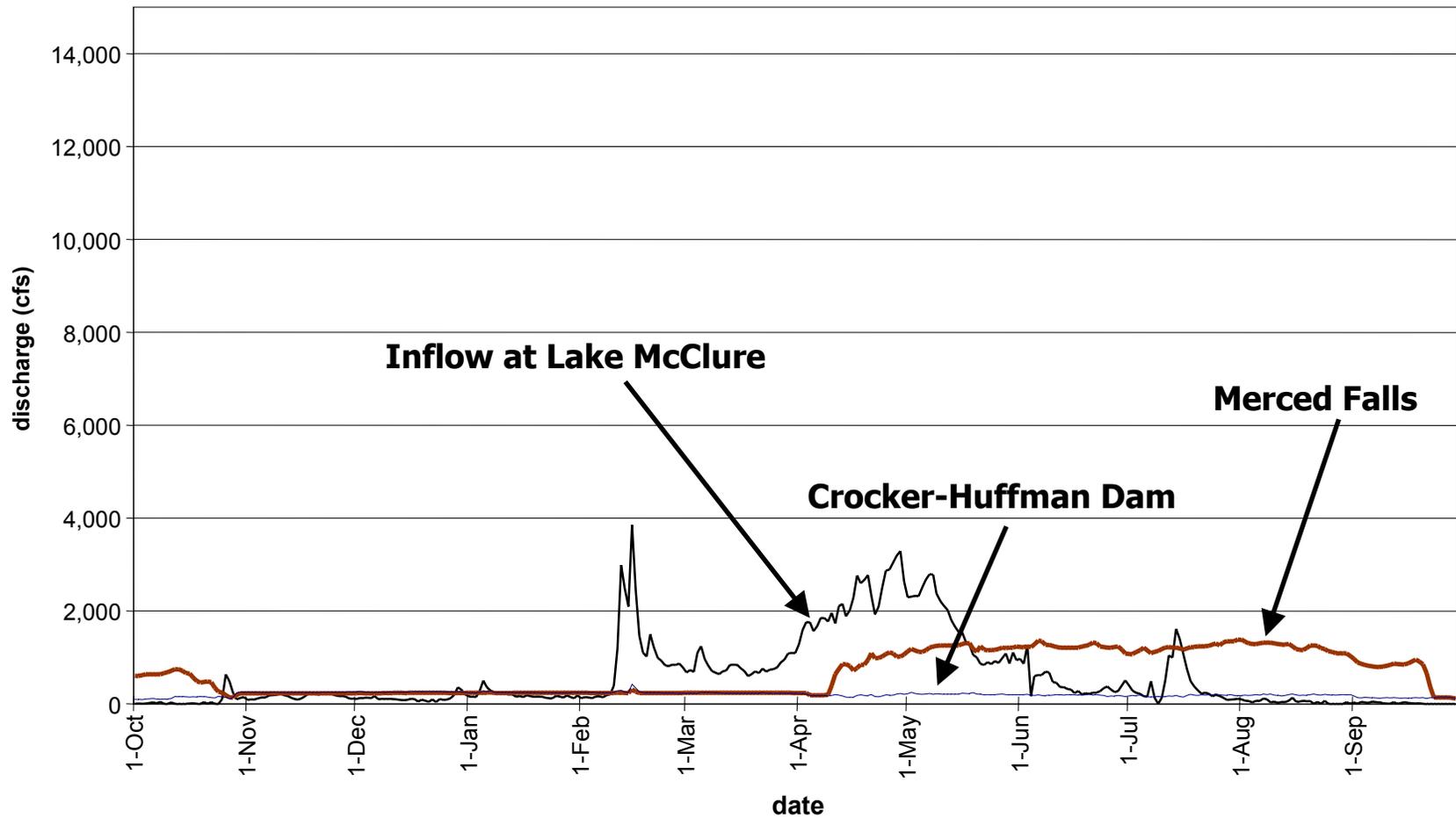
**Figure 4.2-2. Unregulated and regulated monthly average flow in the lower Merced River (1968–1998).**

Note: Minimum flow requirements represent FERC requirements for normal water years between April and October, and higher minimum flows required by the Davis-Grunsky contract from November through March.

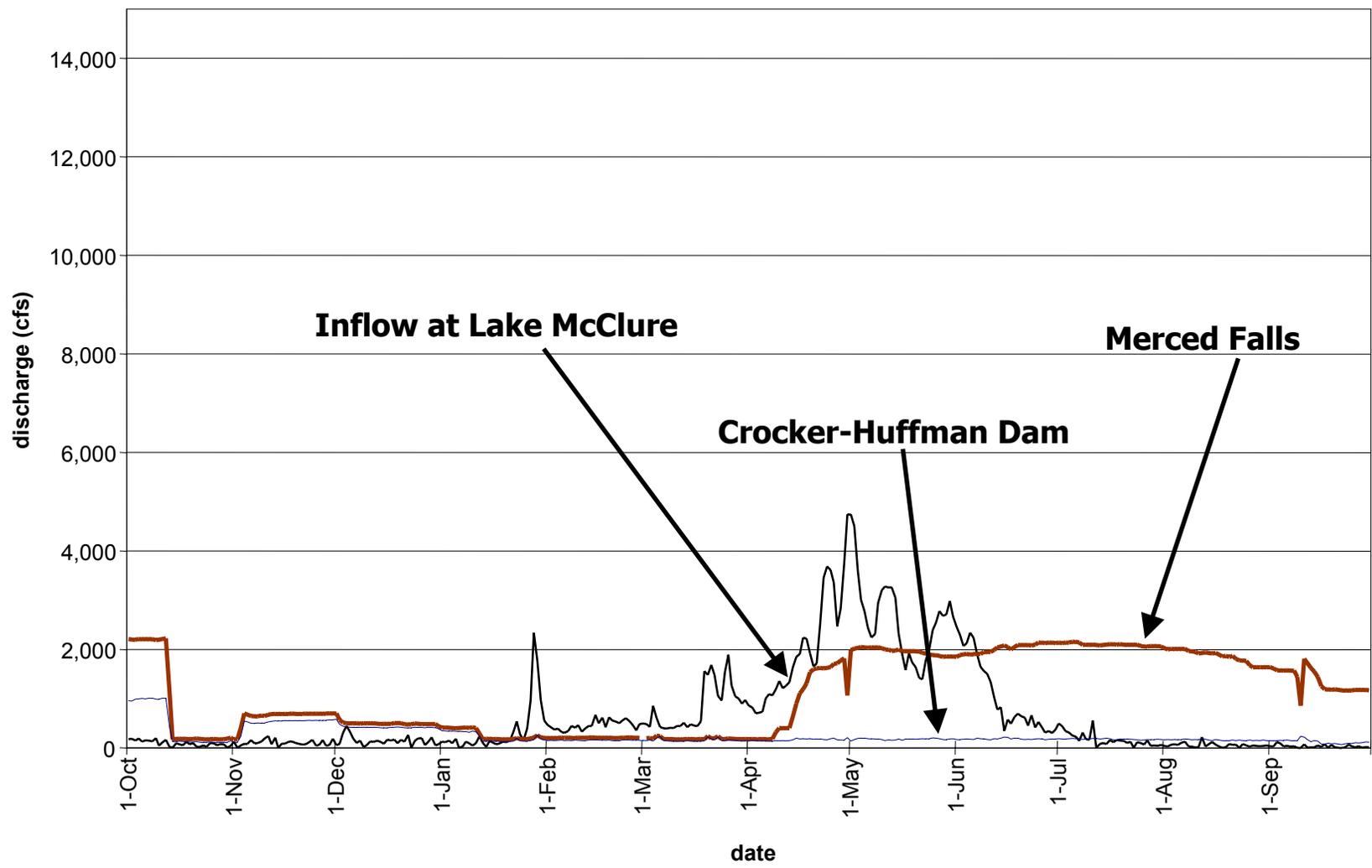


**Figure 4.2-3. Cumulative plot of ranked annual water yields from the Merced River (1902–1998).**

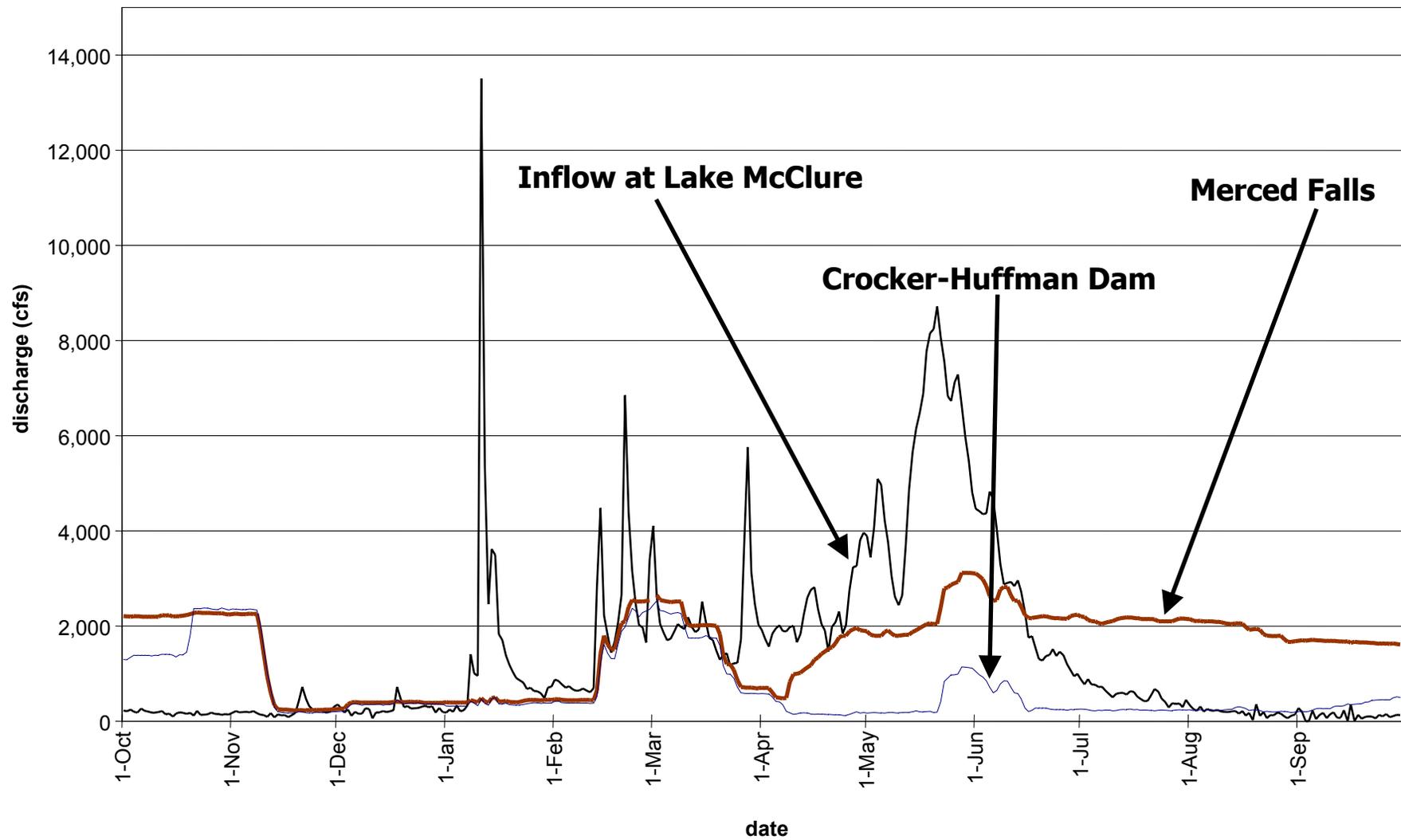
(source: Merced Irrigation District)



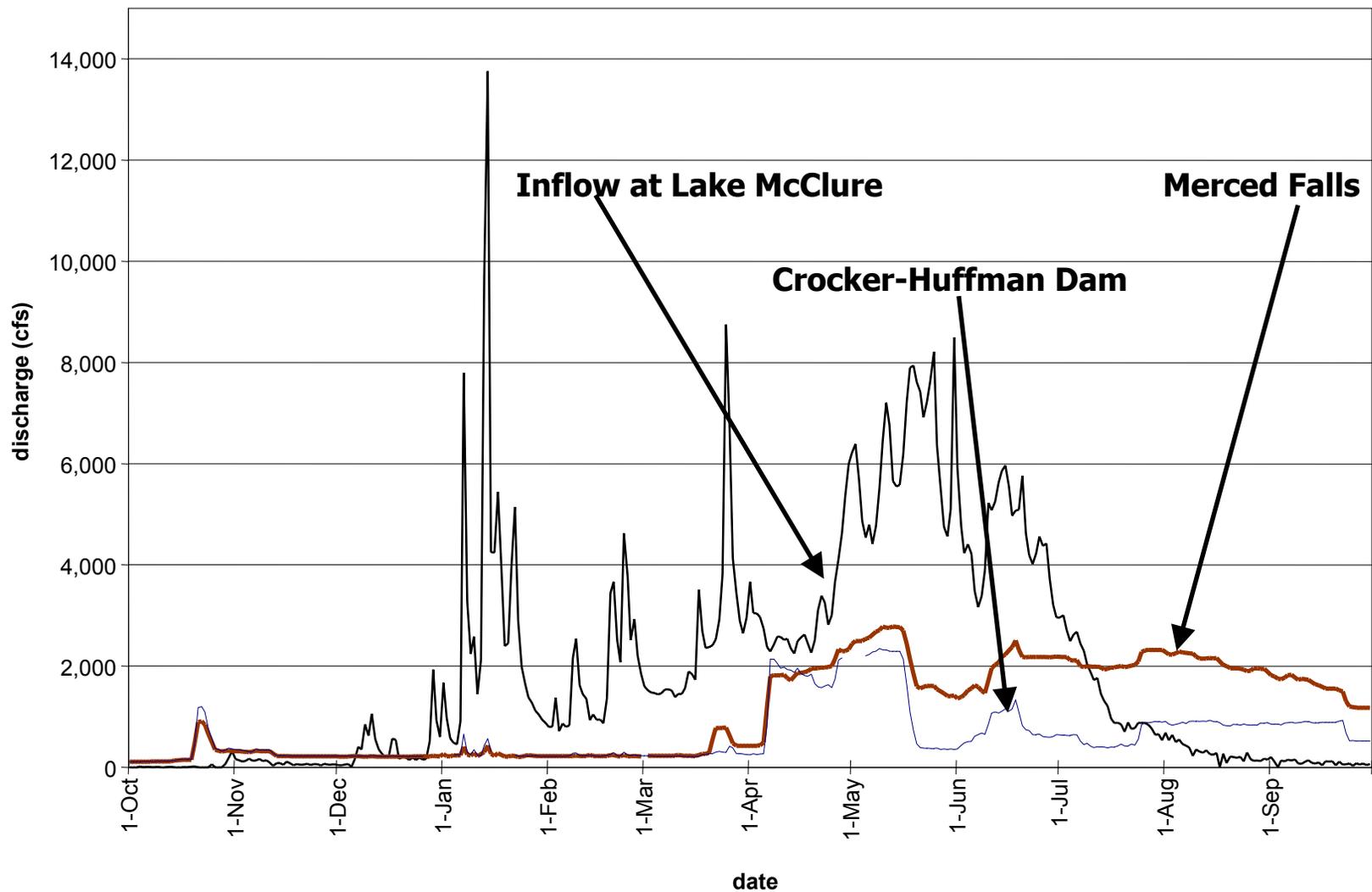
**Figure 4.2-4A. Annual hydrographs of inflow to Lake McClure and flow at Merced Falls and Crocker-Huffman Dam for a critically dry year (water year 1992).**



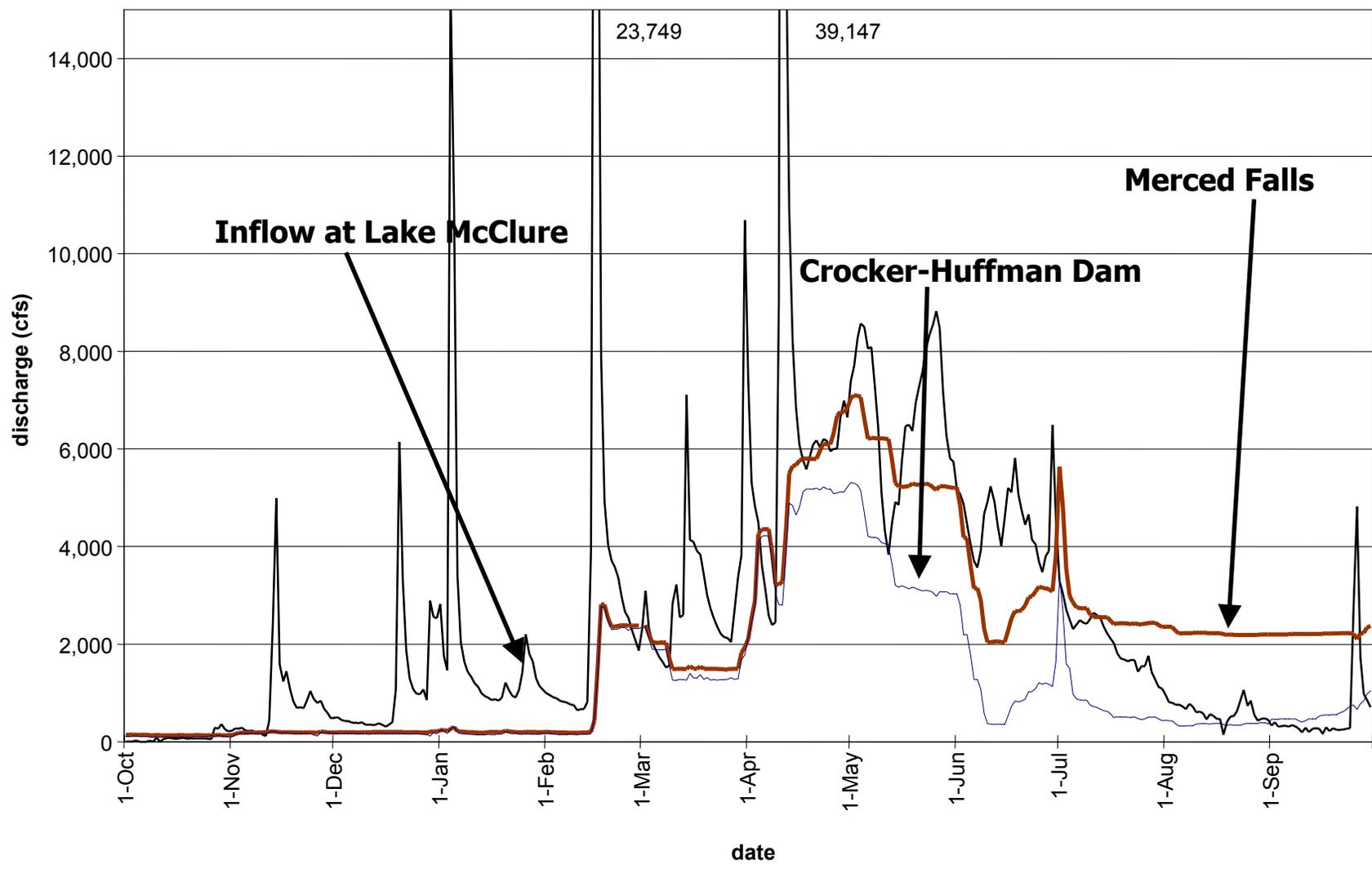
**Figure 4.2-4B. Annual hydrographs of inflow to Lake McClure and flow at Merced Falls and Crocker-Huffman Dam for a dry year (water year 1981).**



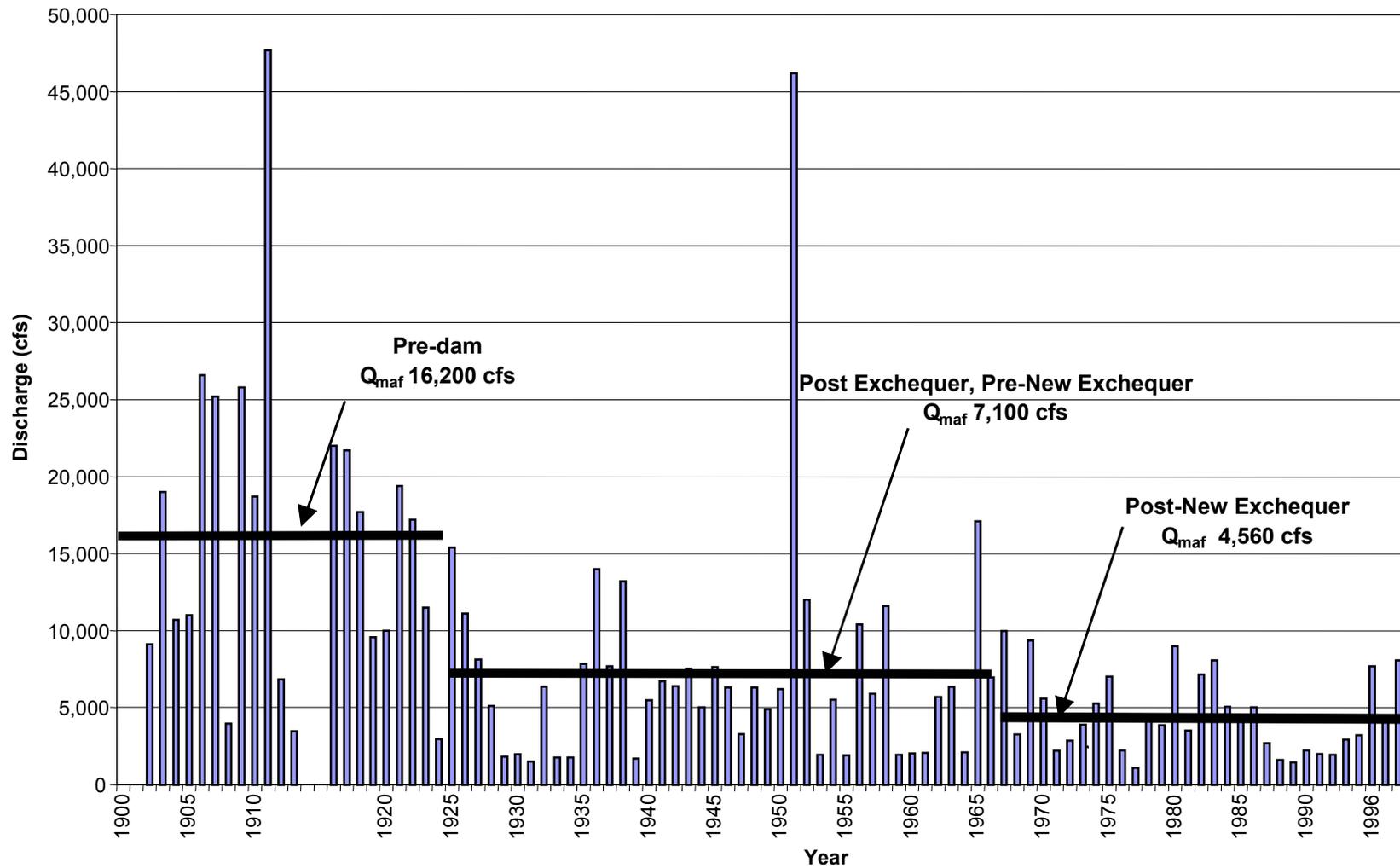
**Figure 4.2-4C. Annual hydrographs of inflow to Lake McClure and flow at Merced Falls and Crocker-Huffman Dam for a median year (water year 1979).**



**Figure 4.2-4D. Annual hydrographs of inflow to Lake McClure and flow at Merced Falls and Crocker-Huffman Dam for a wet year (water year 1993).**

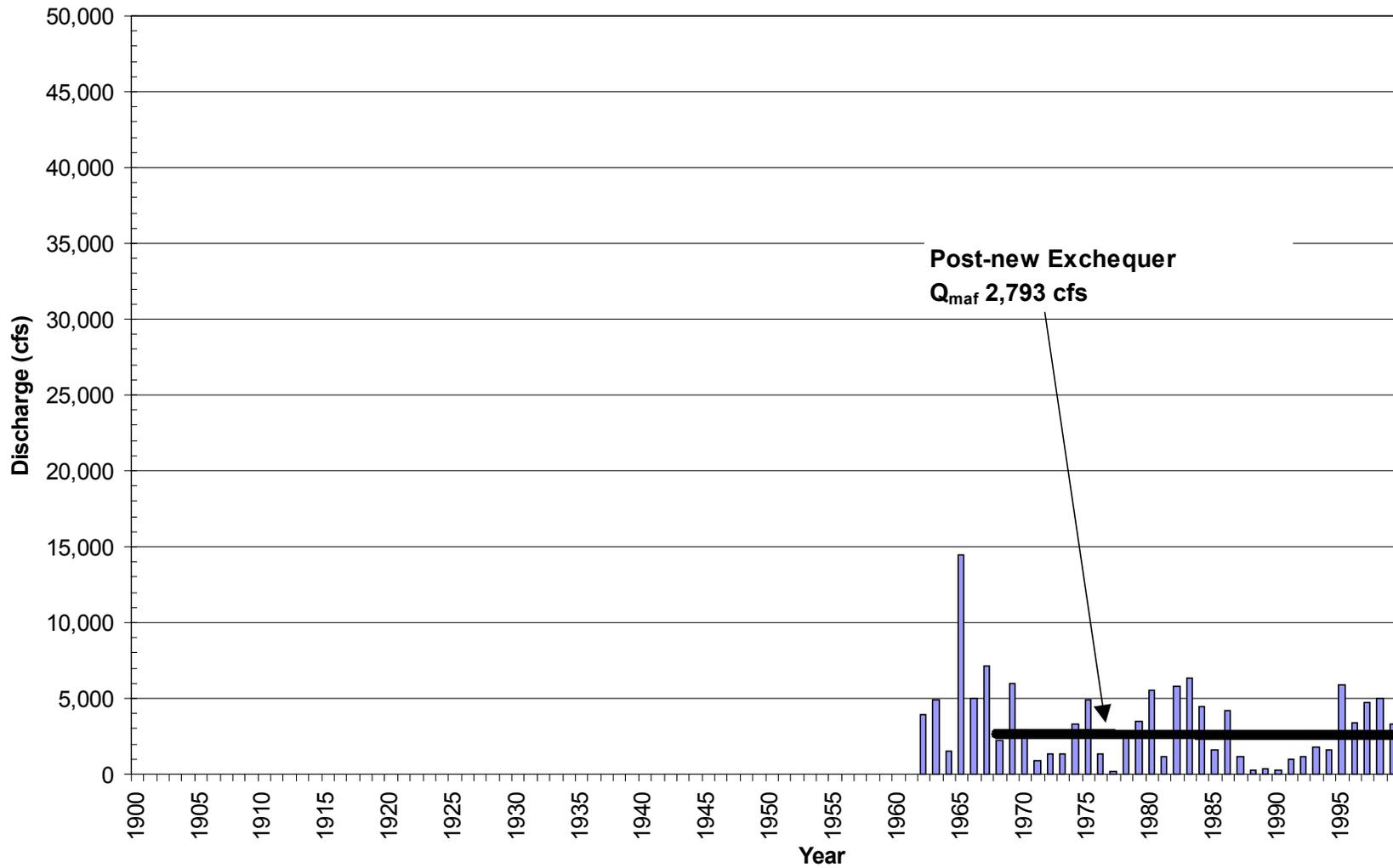


**Figure 4.2-4E. Annual hydrographs of inflow to Lake McClure and flow at Merced Falls and Crocker-Huffman Dam for an extremely wet year (water year 1982).**

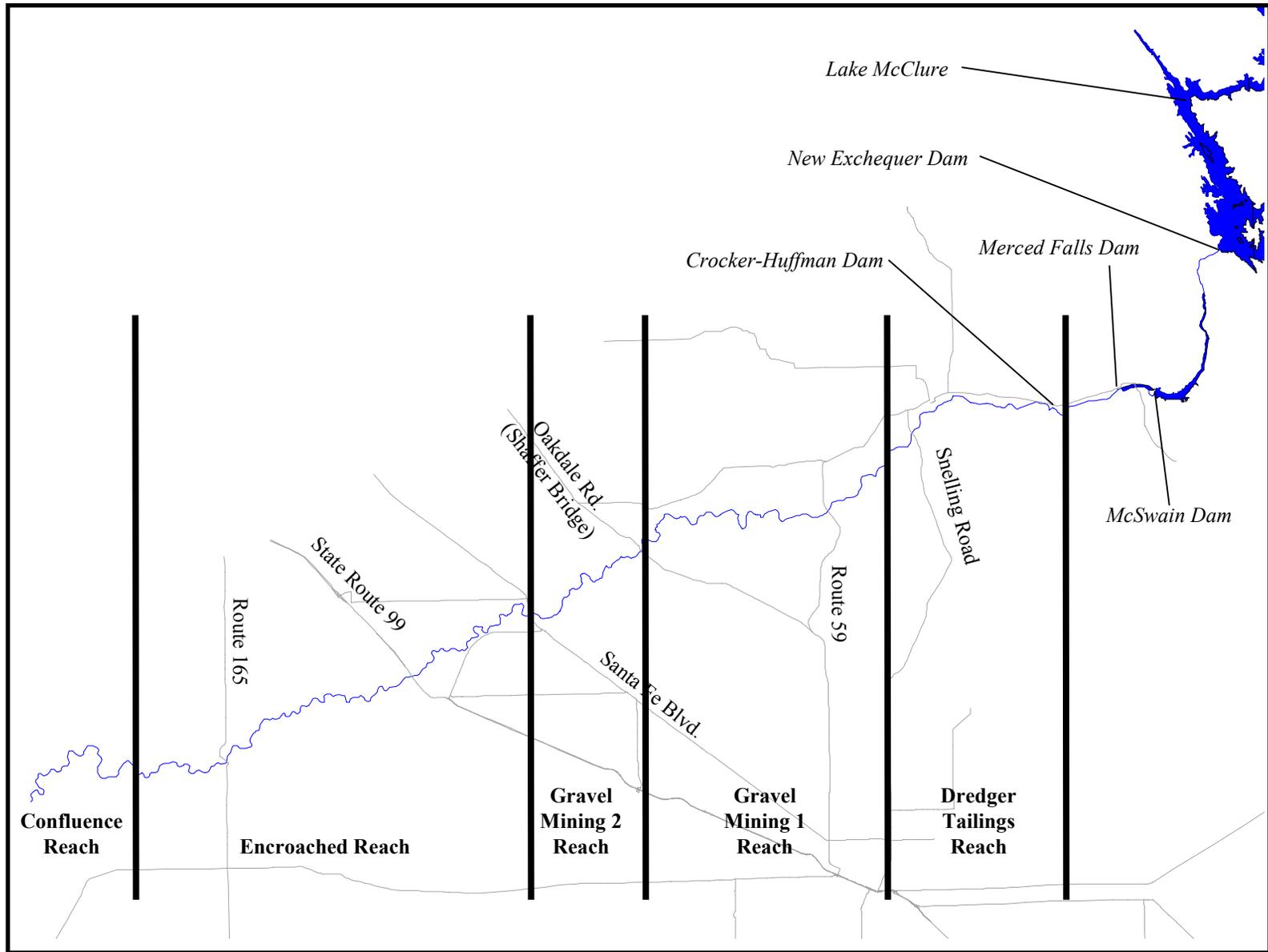


**Figure 4.3-1. Maximum instantaneous flows at the Exchequer (1902–1967) and Merced Falls (1968–1998) gauges.**

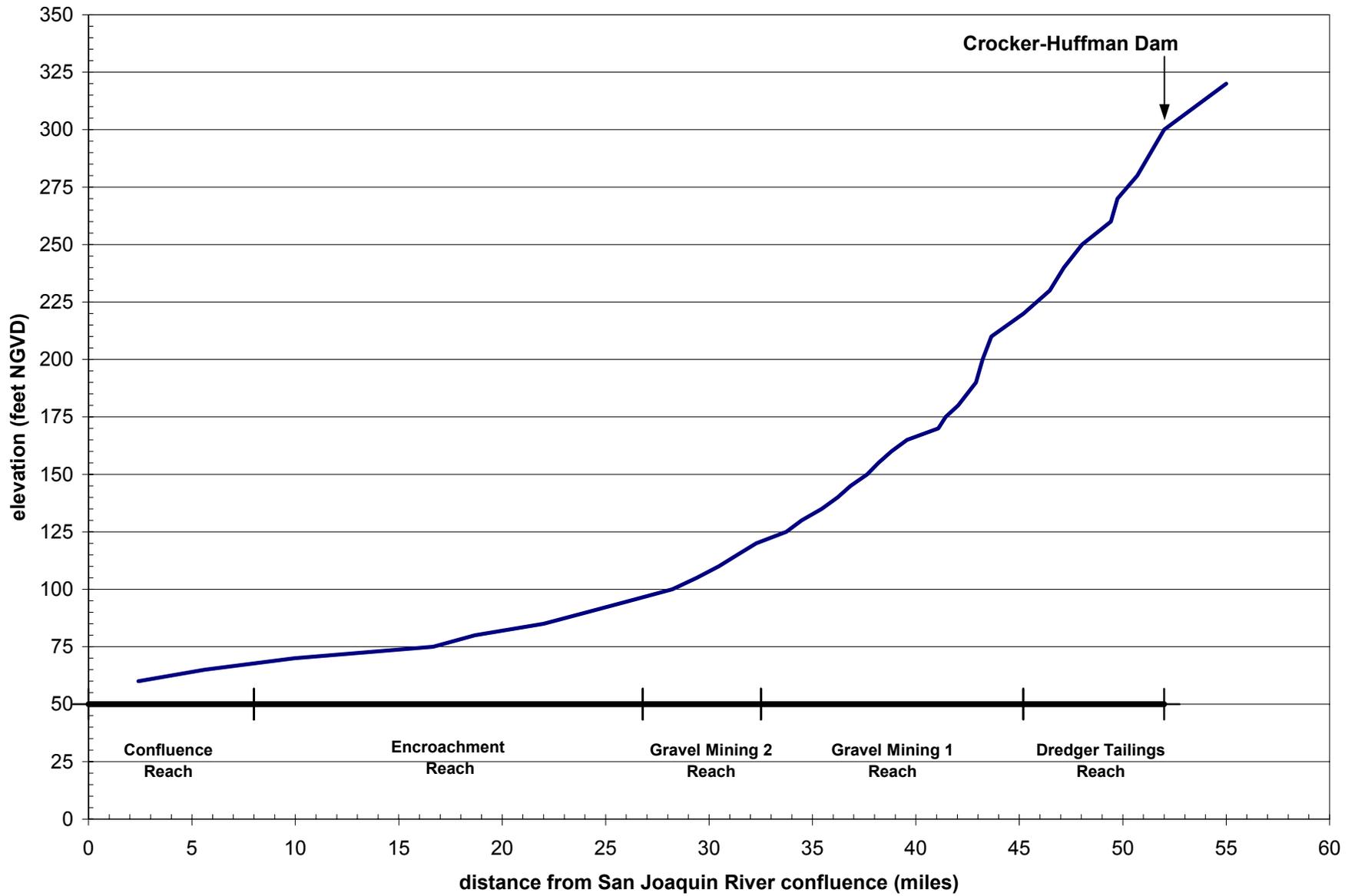
(source: USGS gauge numbers 11270000 and 11270900, respectively)



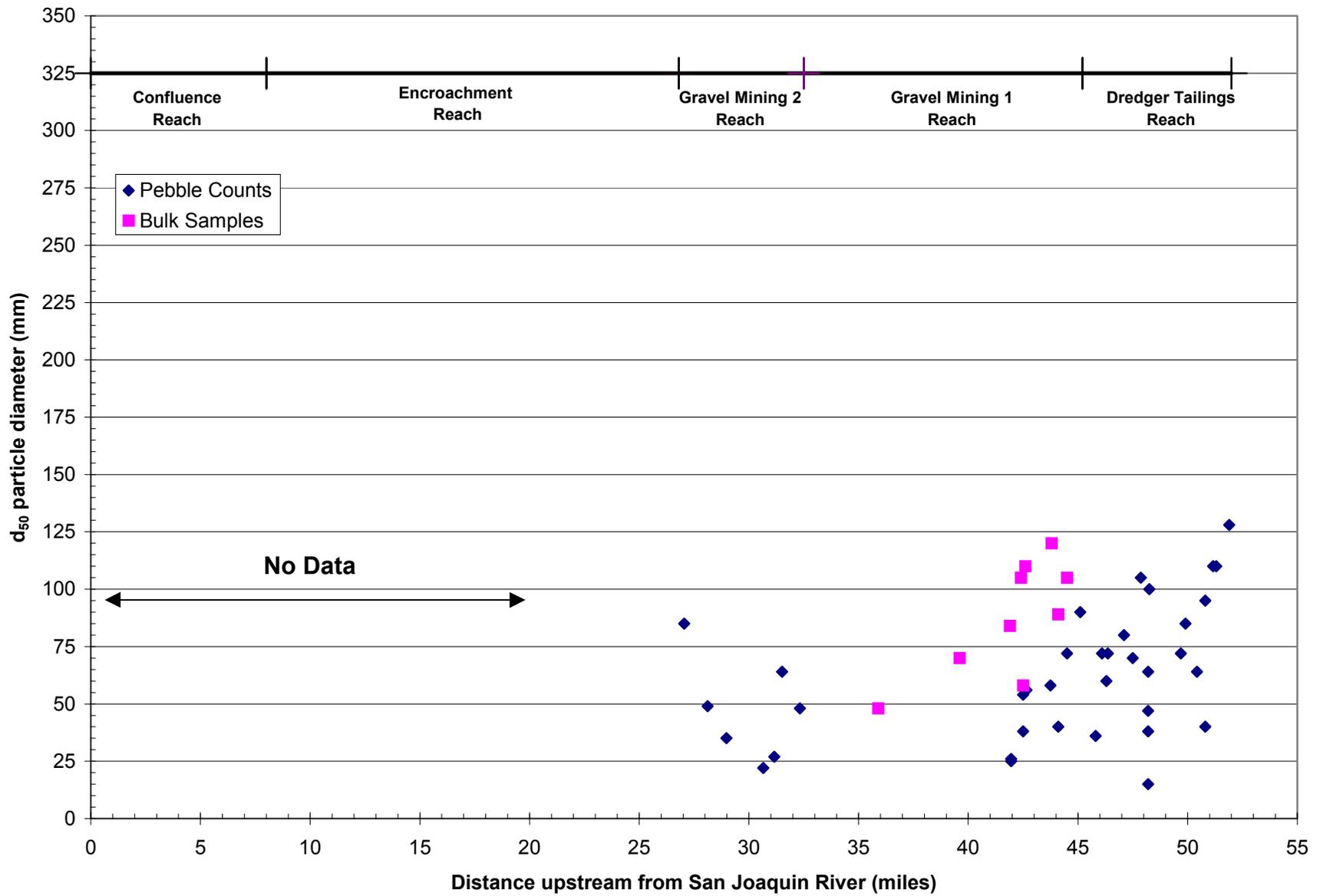
**Figure 4.3-2. Maximum instantaneous flows at the Snelling gauge (1962–1998).**  
 (source: CDWR Gauge Merced River below Snelling, B05170)



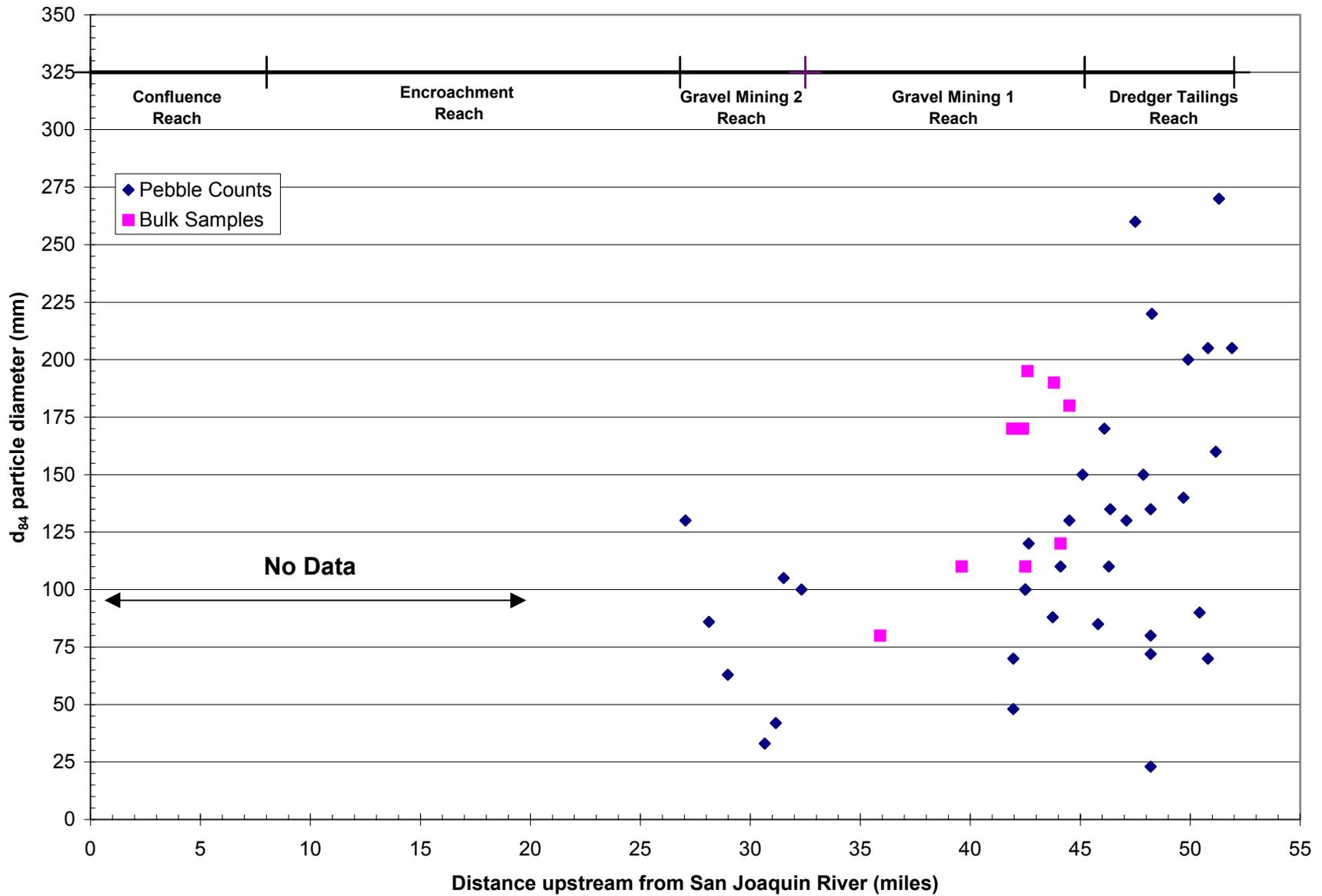
**Figure 5.1-1. Merced River reaches delineation.**



**Figure 5.1-2. Merced River longitudinal profile.**  
 (from U. S. Geological Survey 1:24,000-scale topographic maps)



**Figure 5.1-3. Merced River surface particle size -  $D_{50}$ .**  
 (sources: CDWR 1994b, Vick 1995)

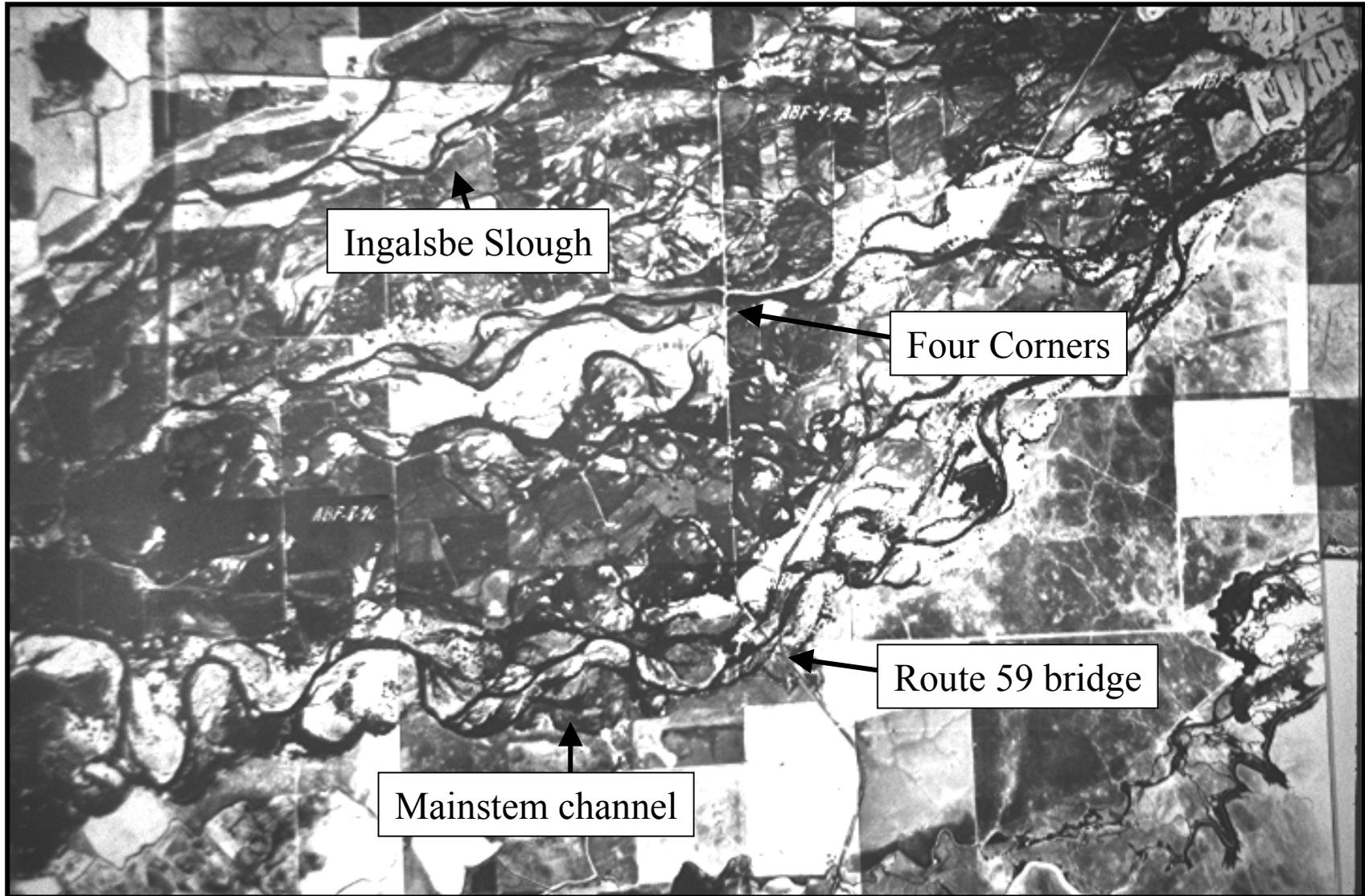


**Figure 5.1-4. Merced River surface particle size -  $D_{84}$ .**  
 (sources: CDWR 1994b, Vick 1995)

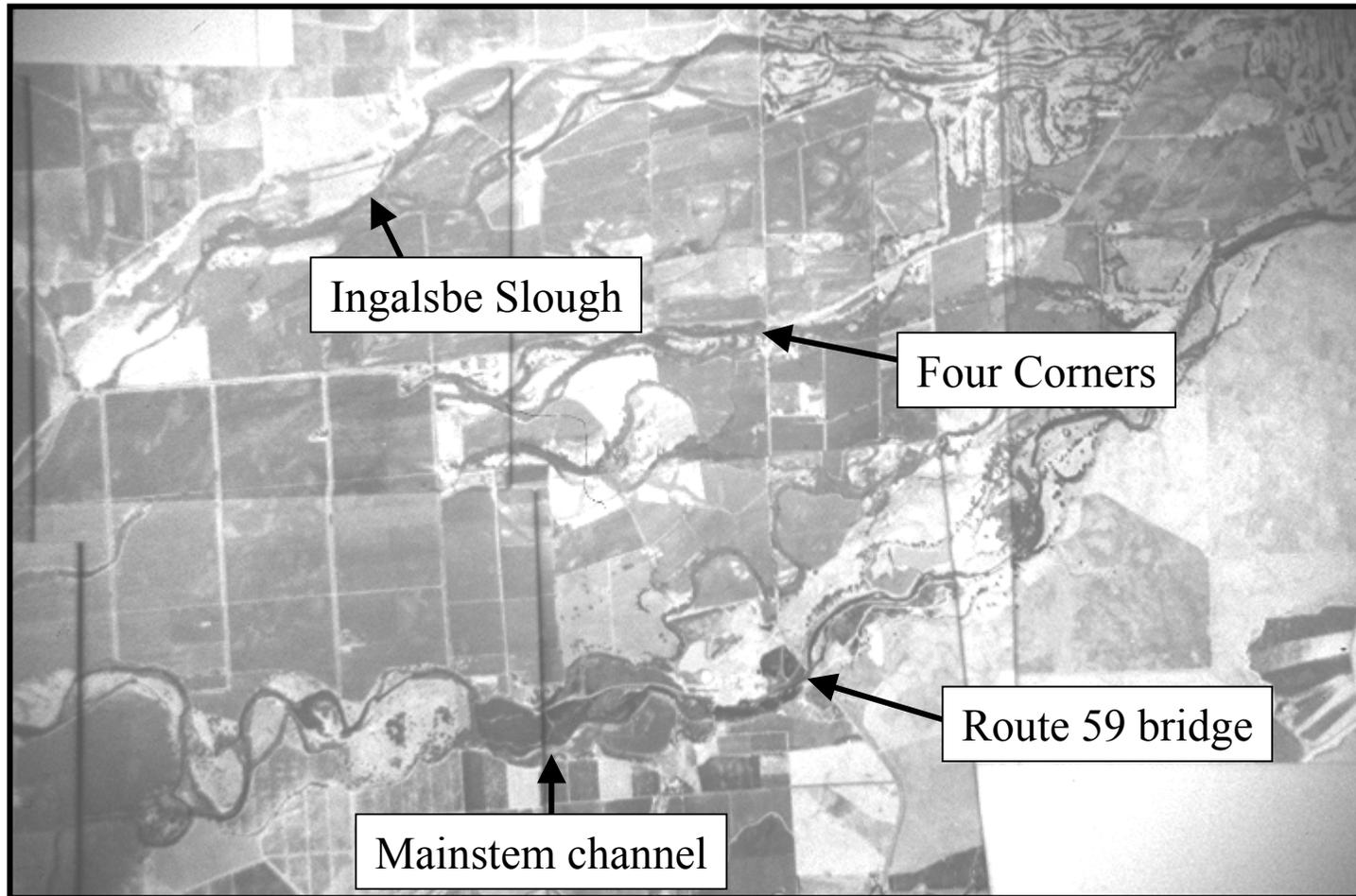


**Figure 5.1-5. Aerial photograph showing conditions in the Merced River Dredger Tailings Reach.**

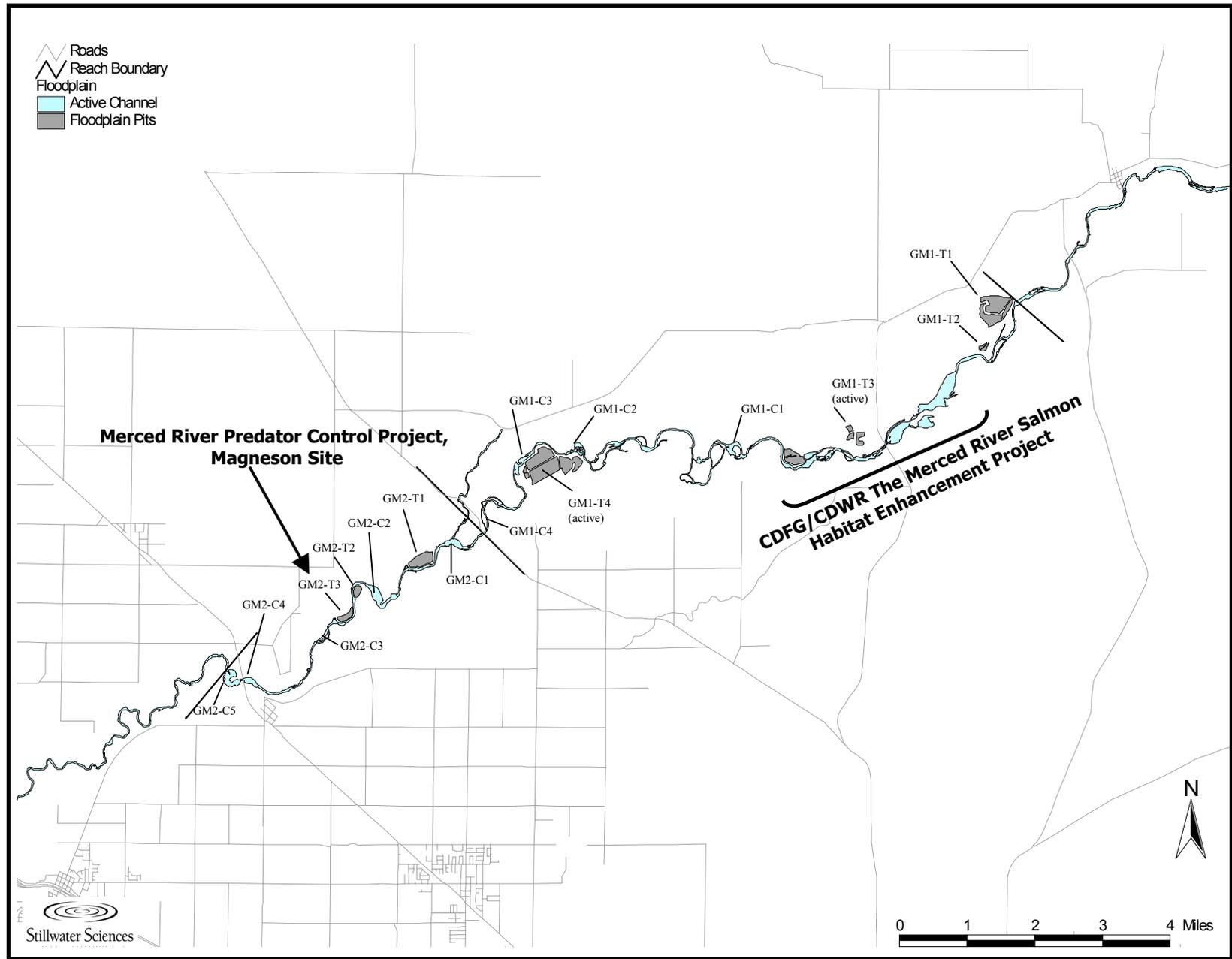
(photo: U.S. Bureau of Reclamation 1993)



**Figure 5.1-6. Merced River multiple-channel system as shown in 1937 aerial photographs.**  
(photo: Agricultural Stabilization and Conservation Service 1937)



**Figure 5.1-7. Merced River remnant slough system as shown in 1979 aerial photographs.**  
(photo: Agricultural Stabilization and Conservation Service 1979)



**Figure 5.1-8. Terrace and in-channel aggregate mines in the Gravel Mining 1 and Gravel Mining 2 reaches.**



**Figure 5.1-9. Merced River Predator Control Project, Magneson Site.**

(photo: Merced County Planning and Community Development Department 1998)



**Figure 5.1-10. Aerial photograph showing conditions in the Encroachment Reach.**  
(photo: U. S. Bureau of Reclamation 1993)



**Figure 5.1-11. Aerial photograph showing conditions in the Confluence Reach.**  
(photo: U. S. Bureau of Reclamation 1993)

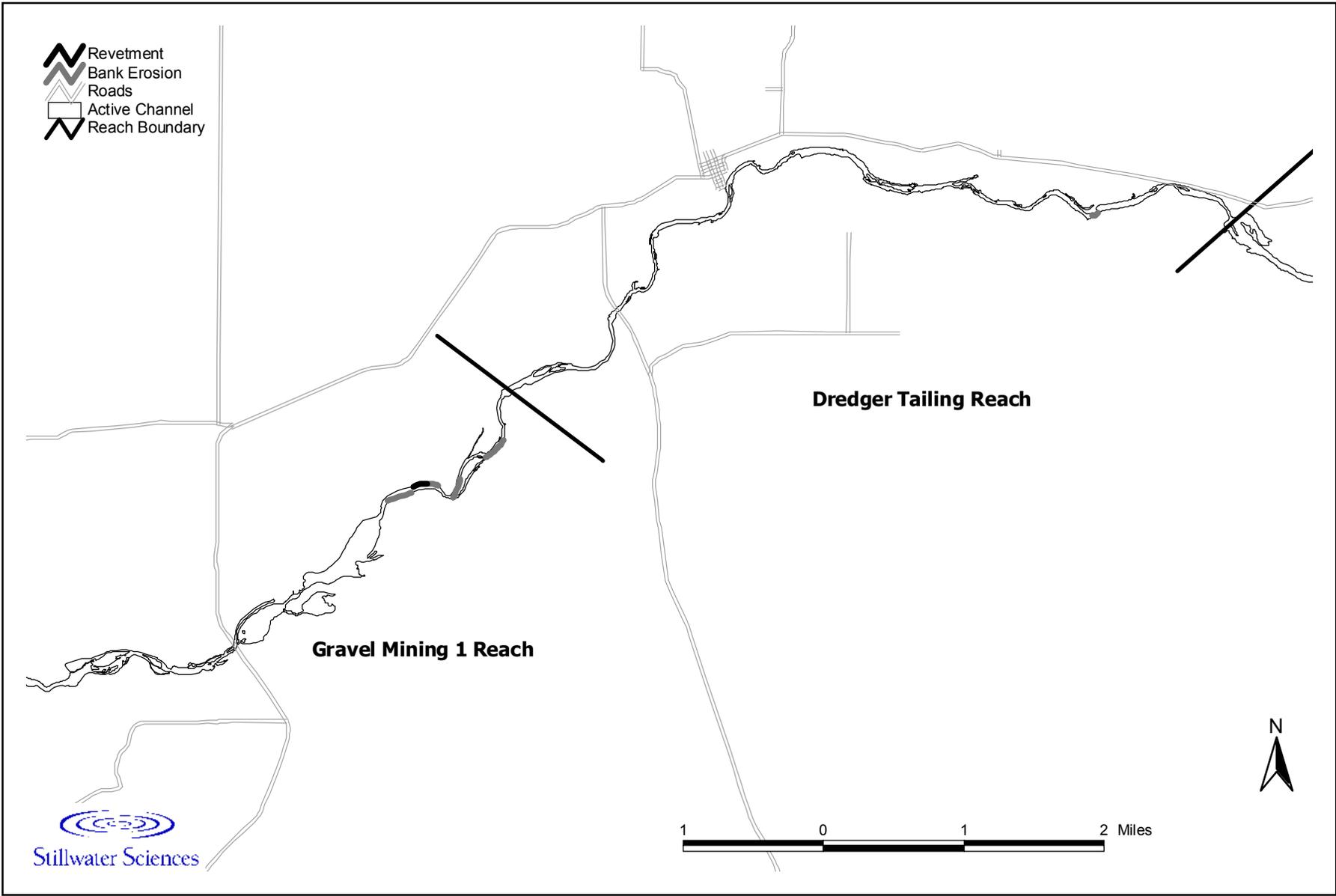
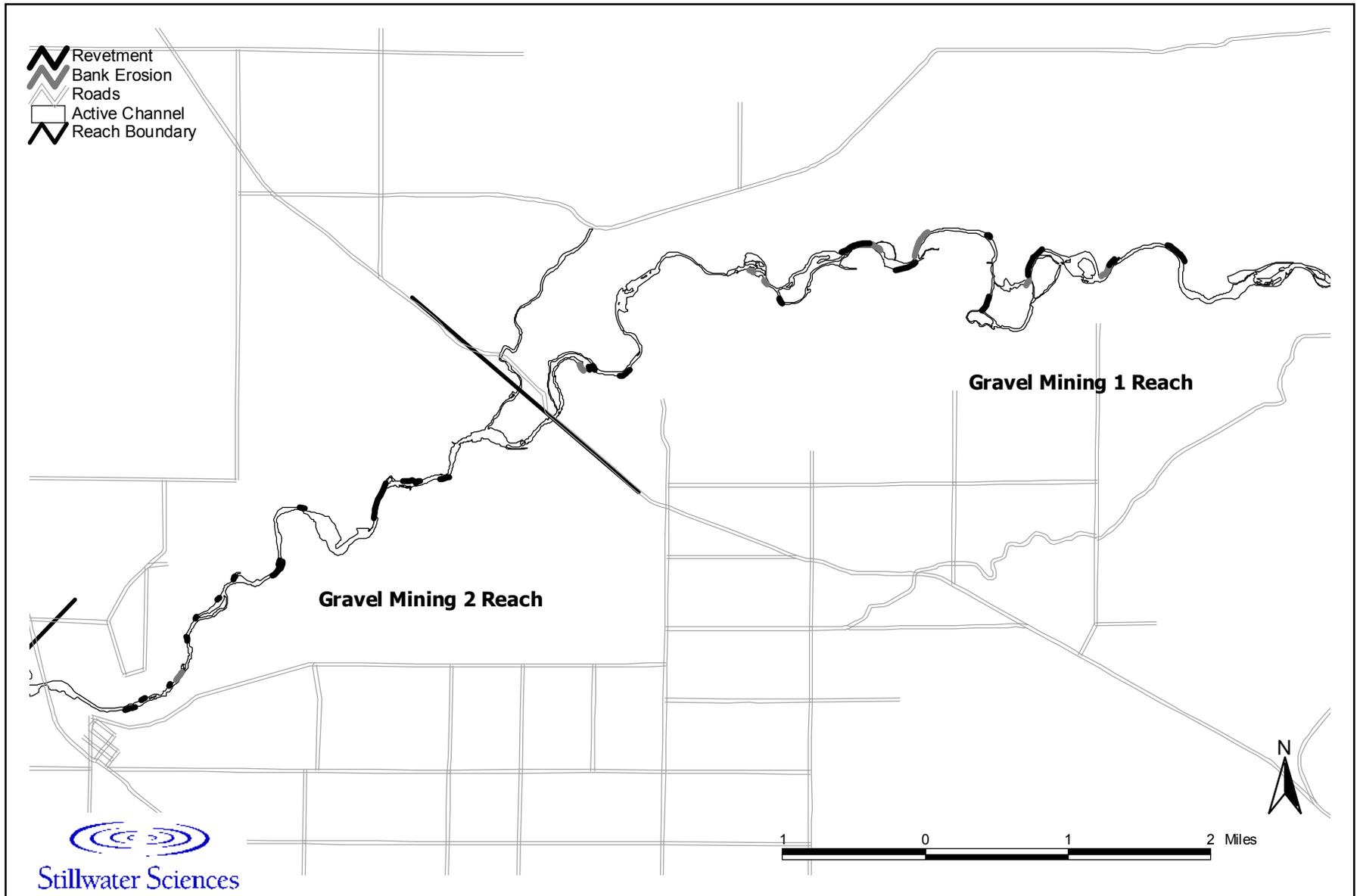


Figure 5.2-1A. Bank erosion and revetment in the Merced River.



**Figure 5.2-1B. Bank erosion and revetment in the Merced River.**

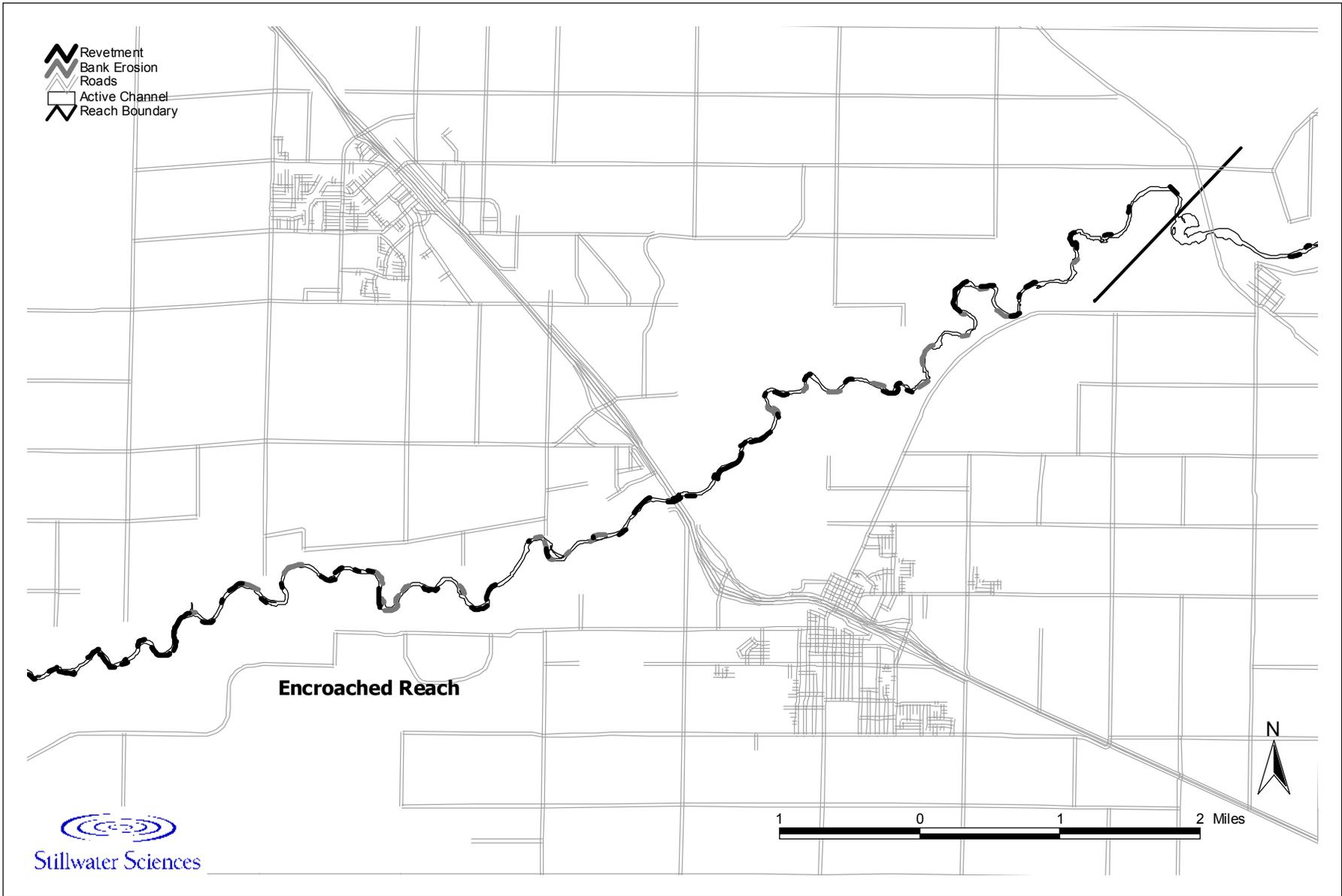
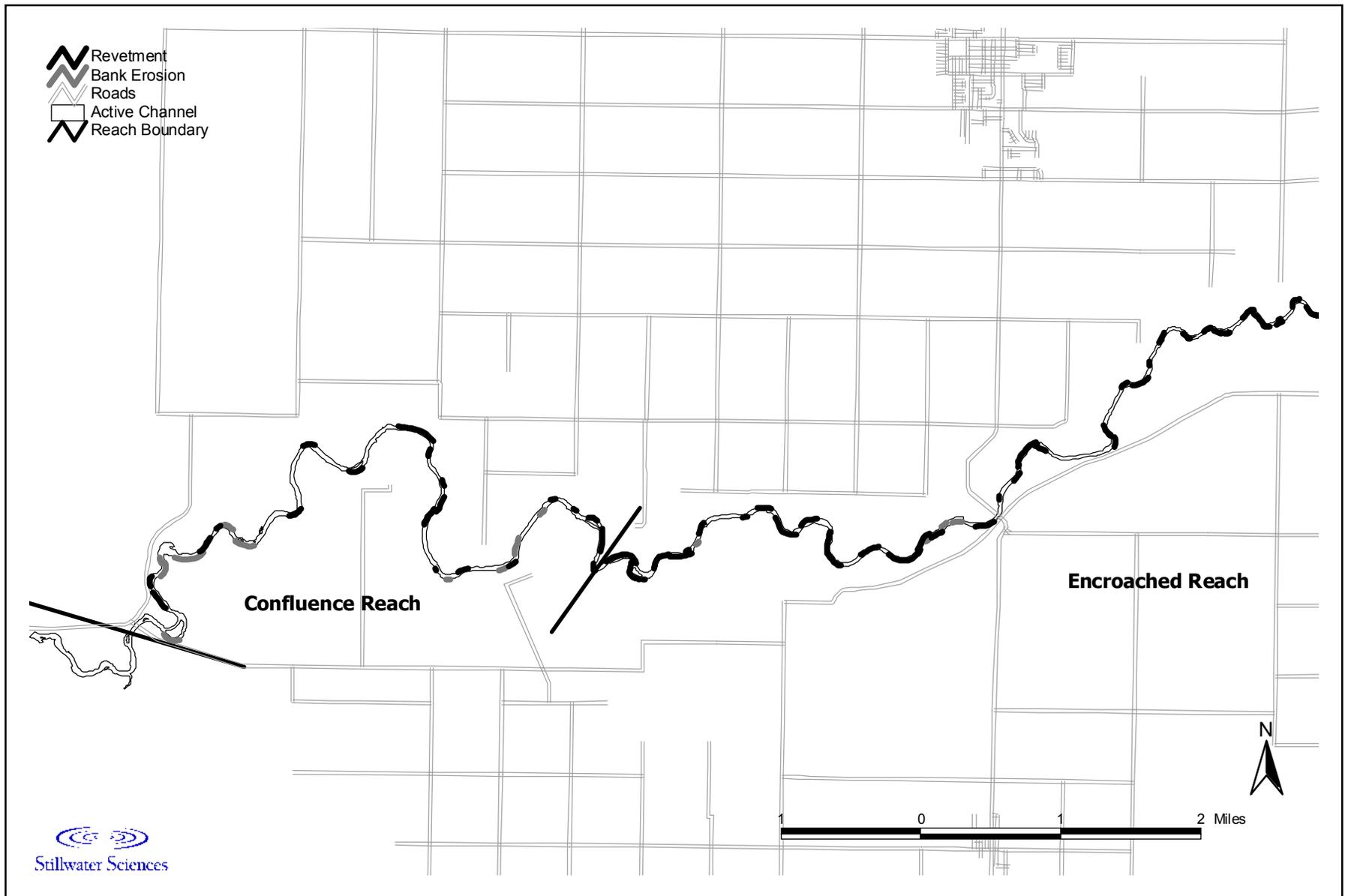
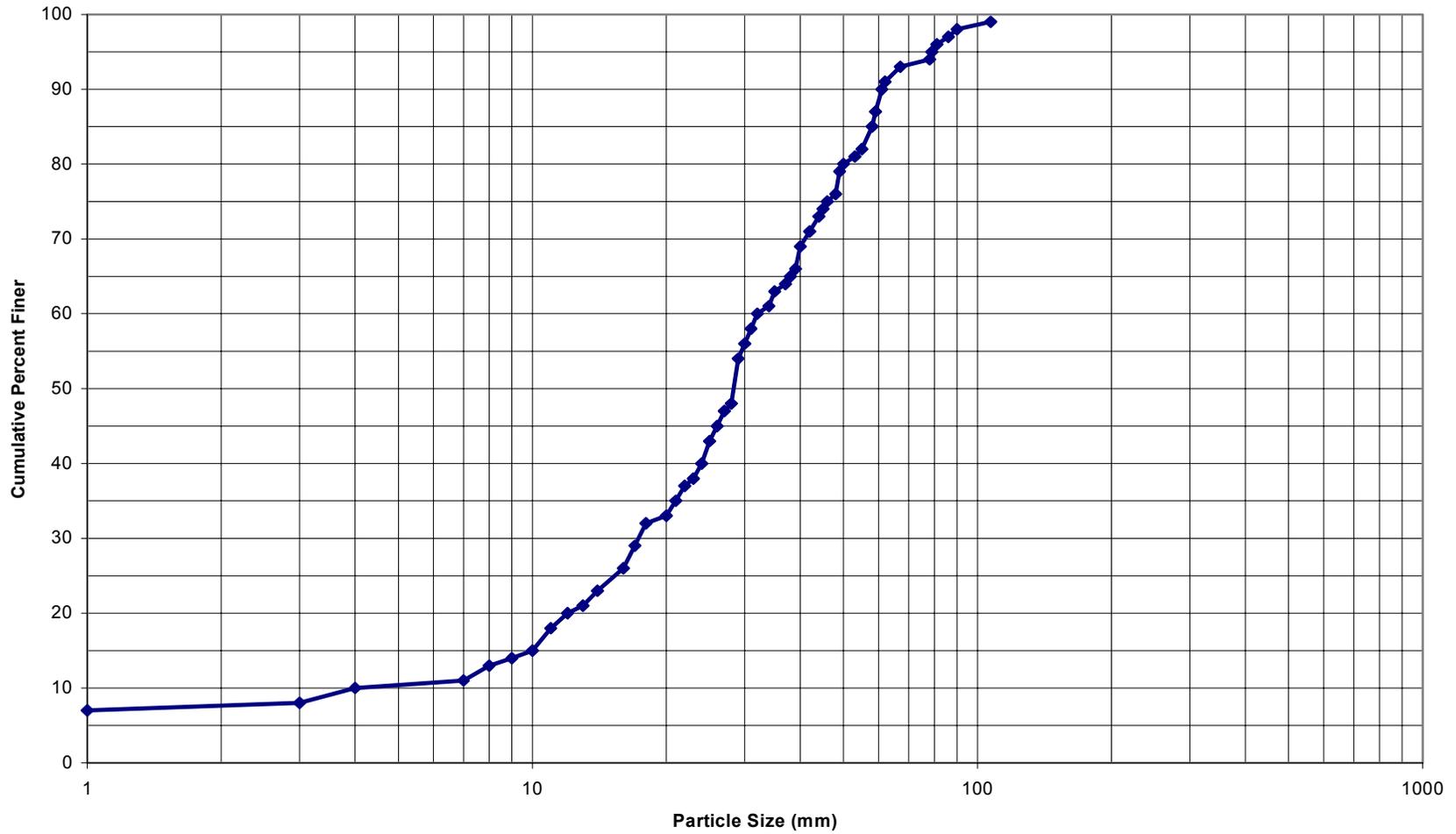
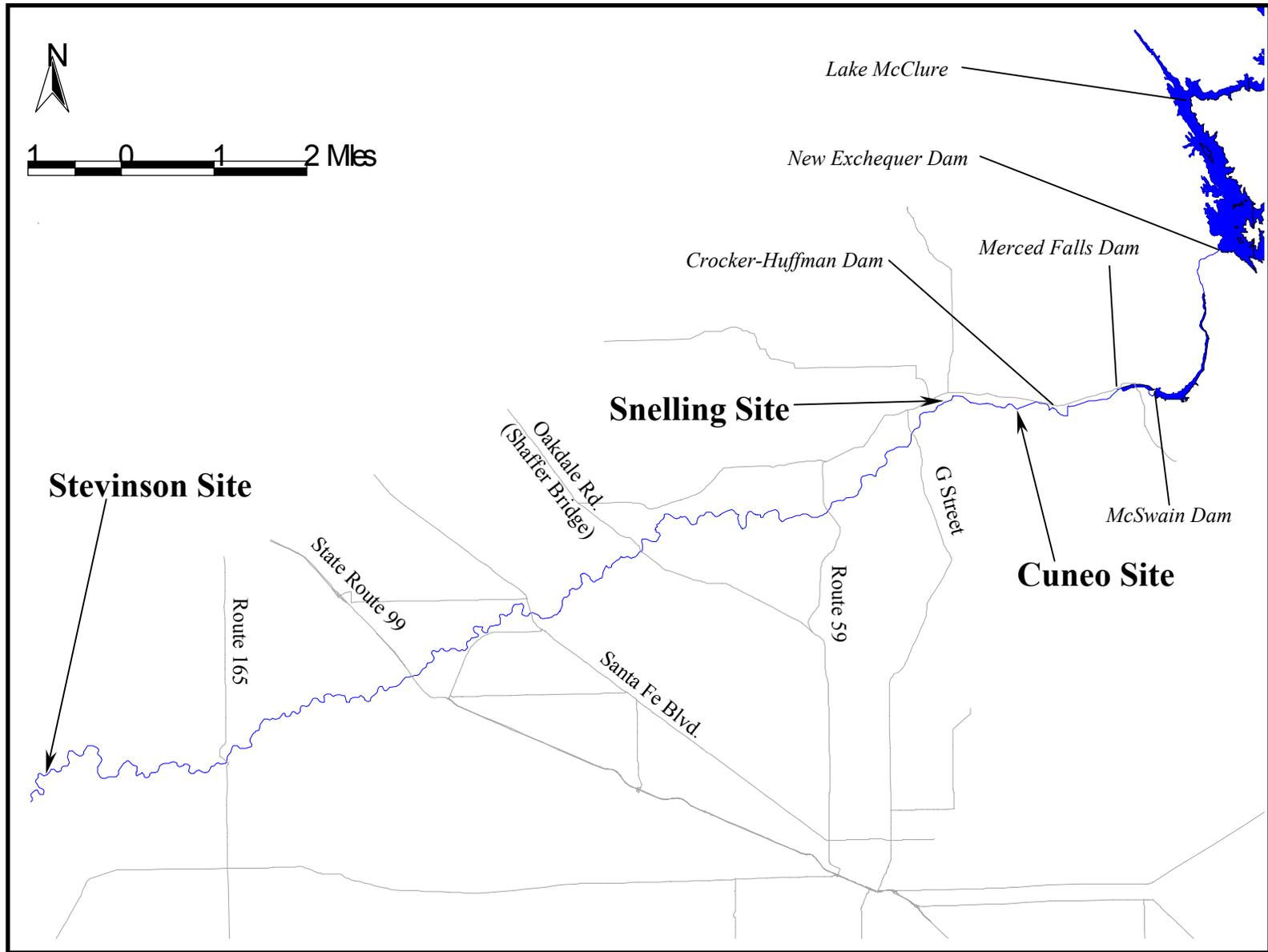


Figure 5.2-1C. Bank erosion and revetment in the Merced River

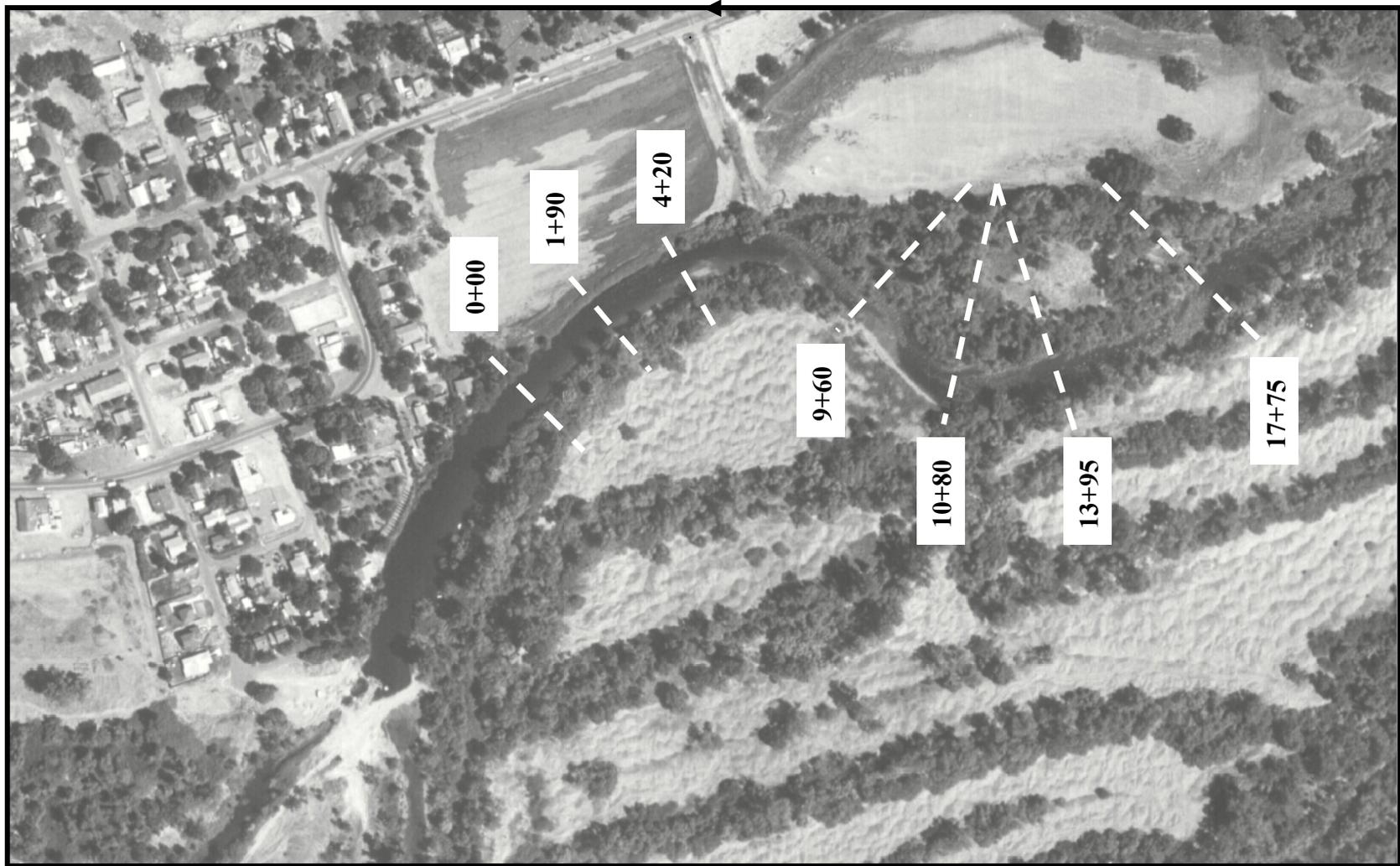


**Figure 5.2-1D. Bank Erosion and revetment in the Merced River.**

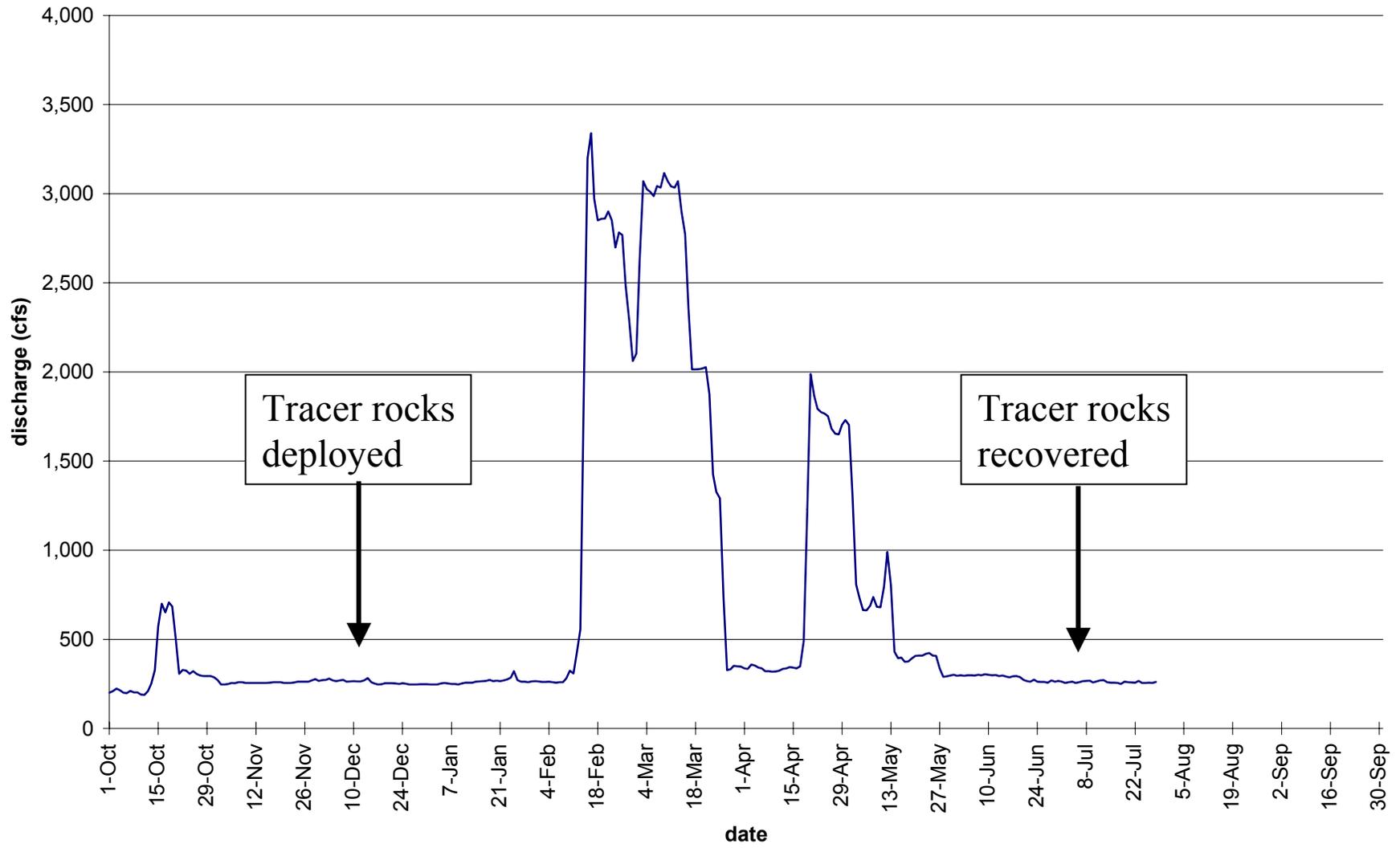




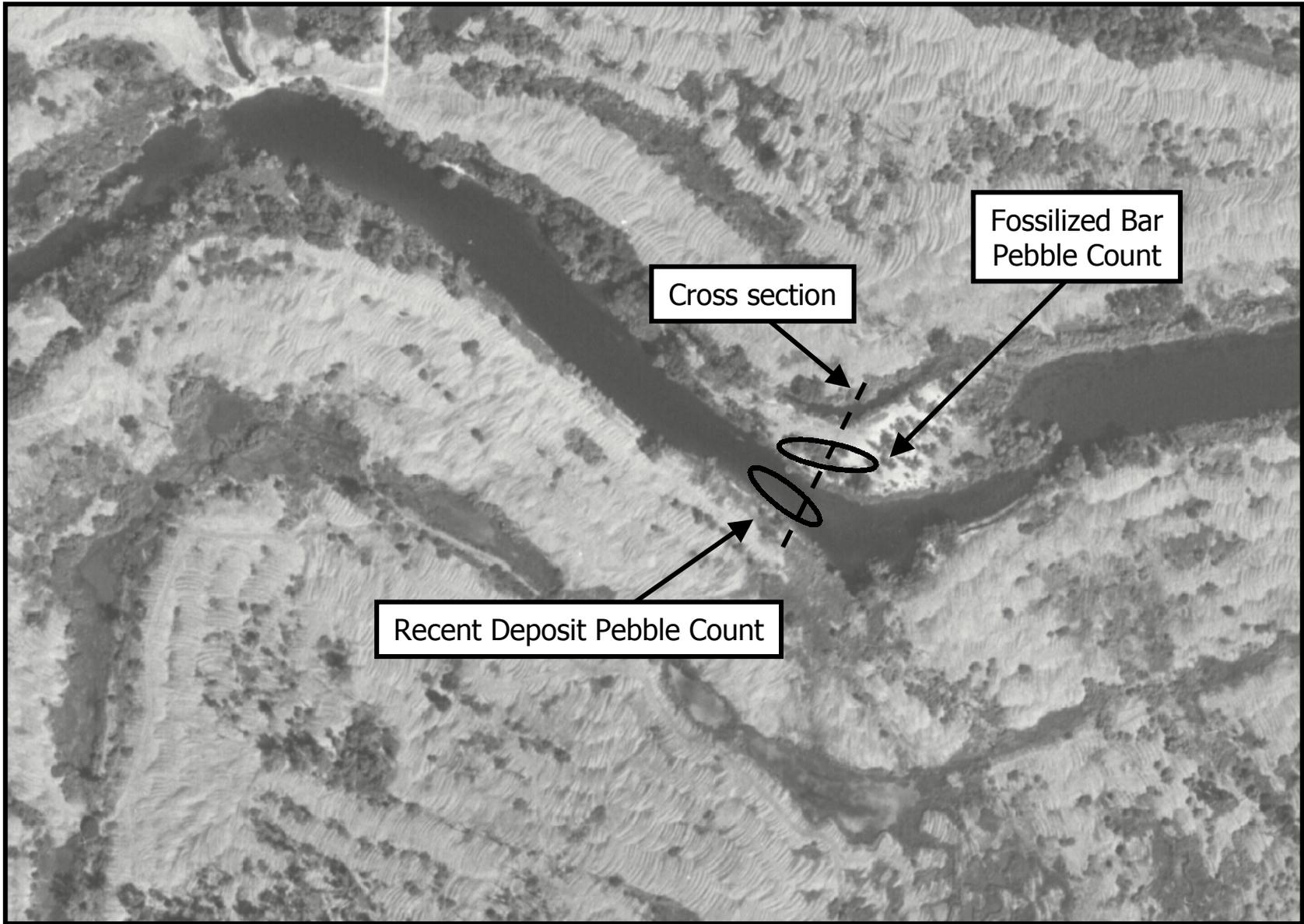
**Figure 5.3-1. Location of Phase II study sites on the Merced River.**



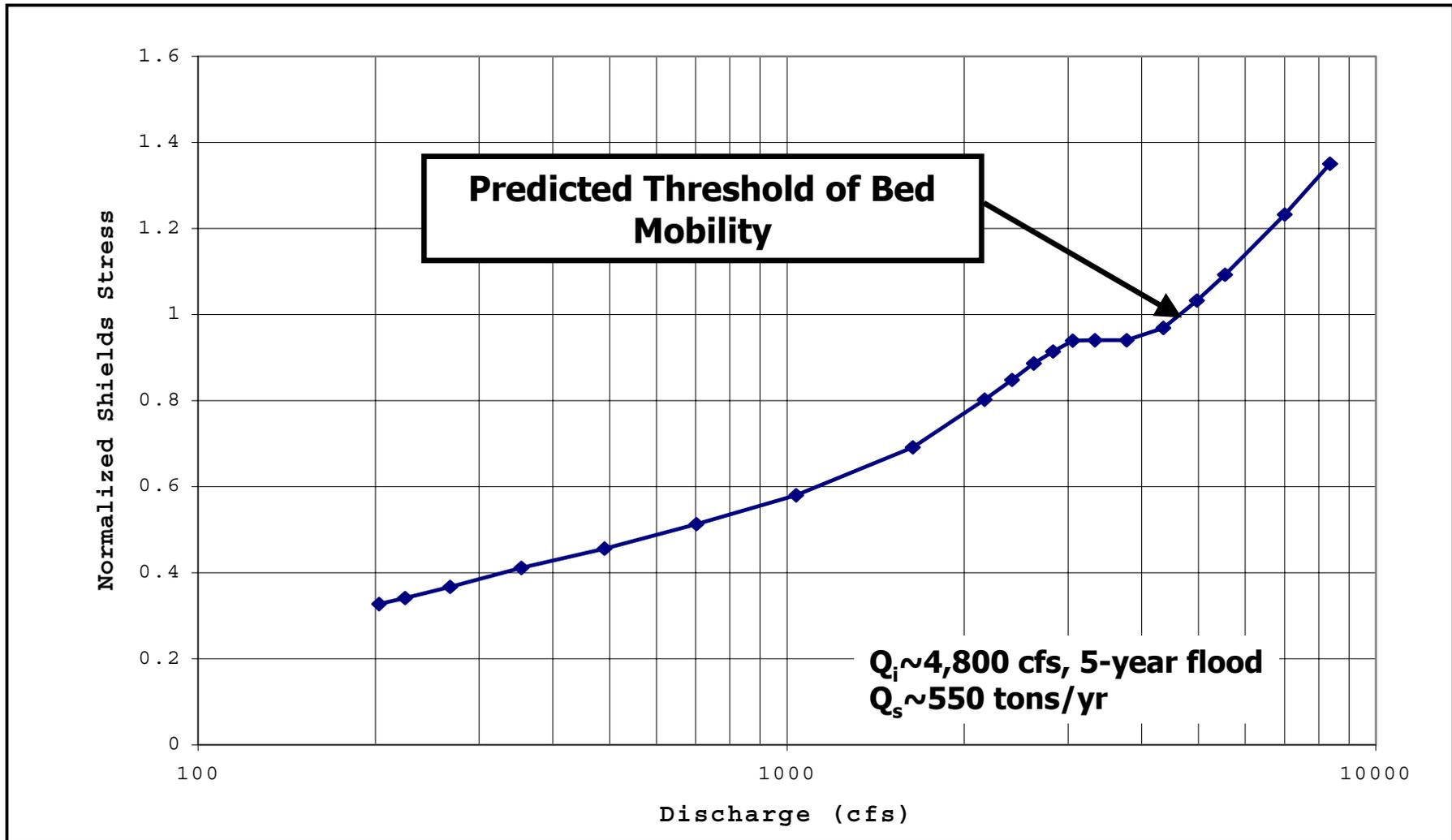
**Figure 5.3-2. Cross section survey locations at the Snelling Site.**  
(photo: Merced County Planning and Community Development Department 1998)



**Figure 5.3-3. Flows at the Snelling Site between tracer rock deployment and recovery.**  
 (source: Merced Irrigation District Crocker-Huffman gauge)

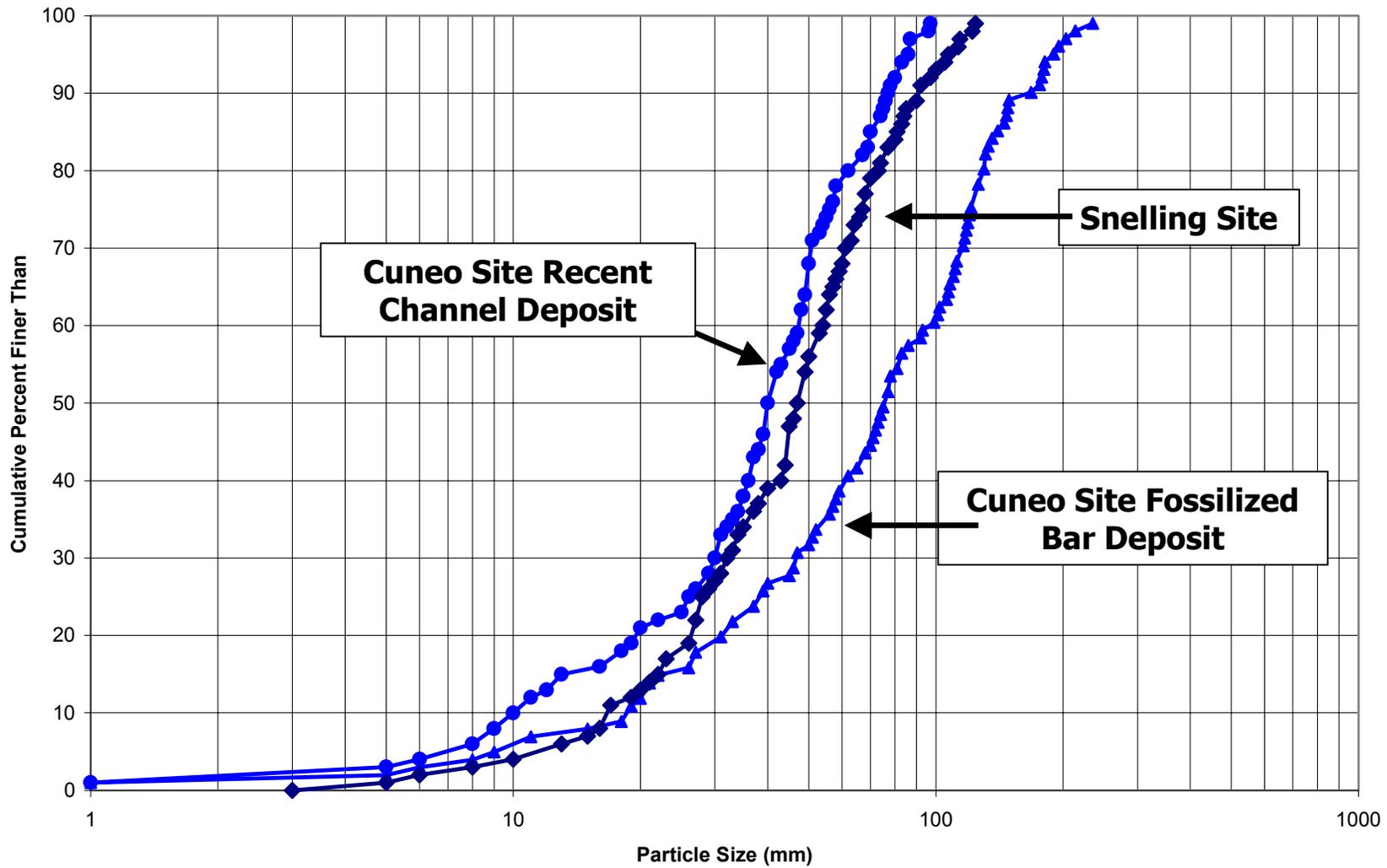


**Figure 5.3-4. Cross section and pebble count locations at the Cuneo Site.**  
(photo: Merced County Planning and Community Development Department 1998)

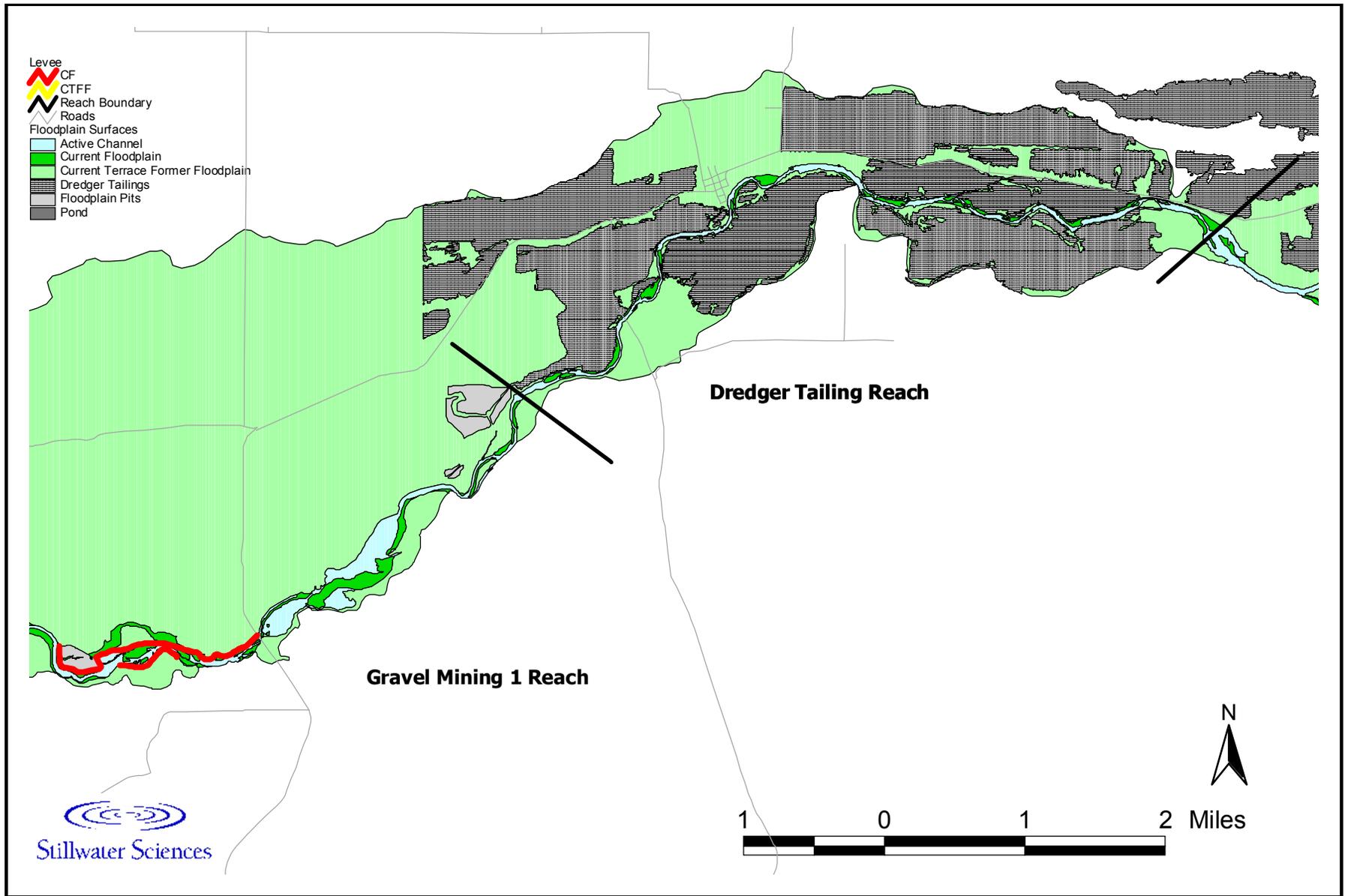


**Figure 5.3-5. Normalized Shields stress versus discharge for the Snelling Site.**

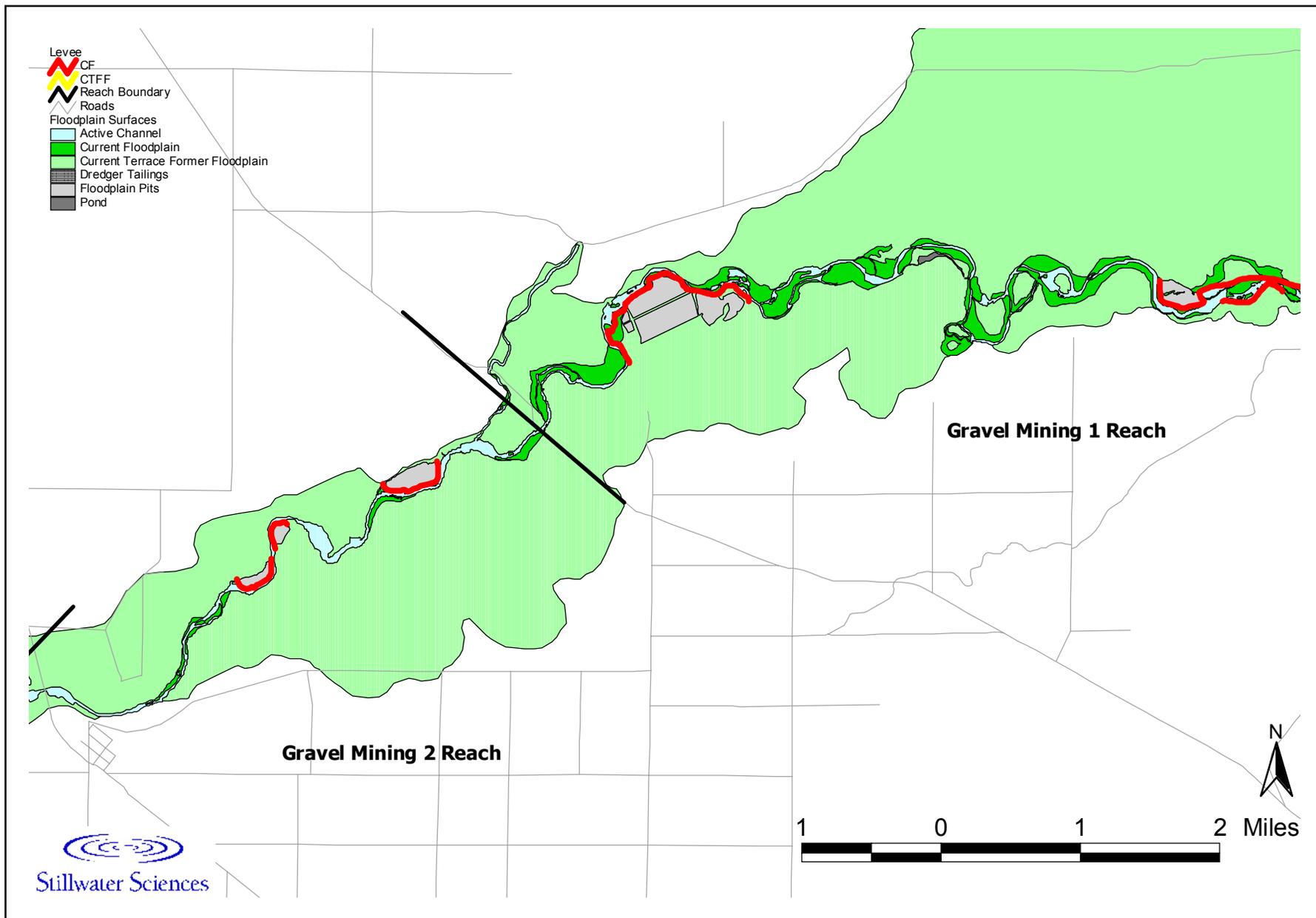
(The channel bed is predicted to be in motion when the normalized Shields stress is  $\geq 1$ .)



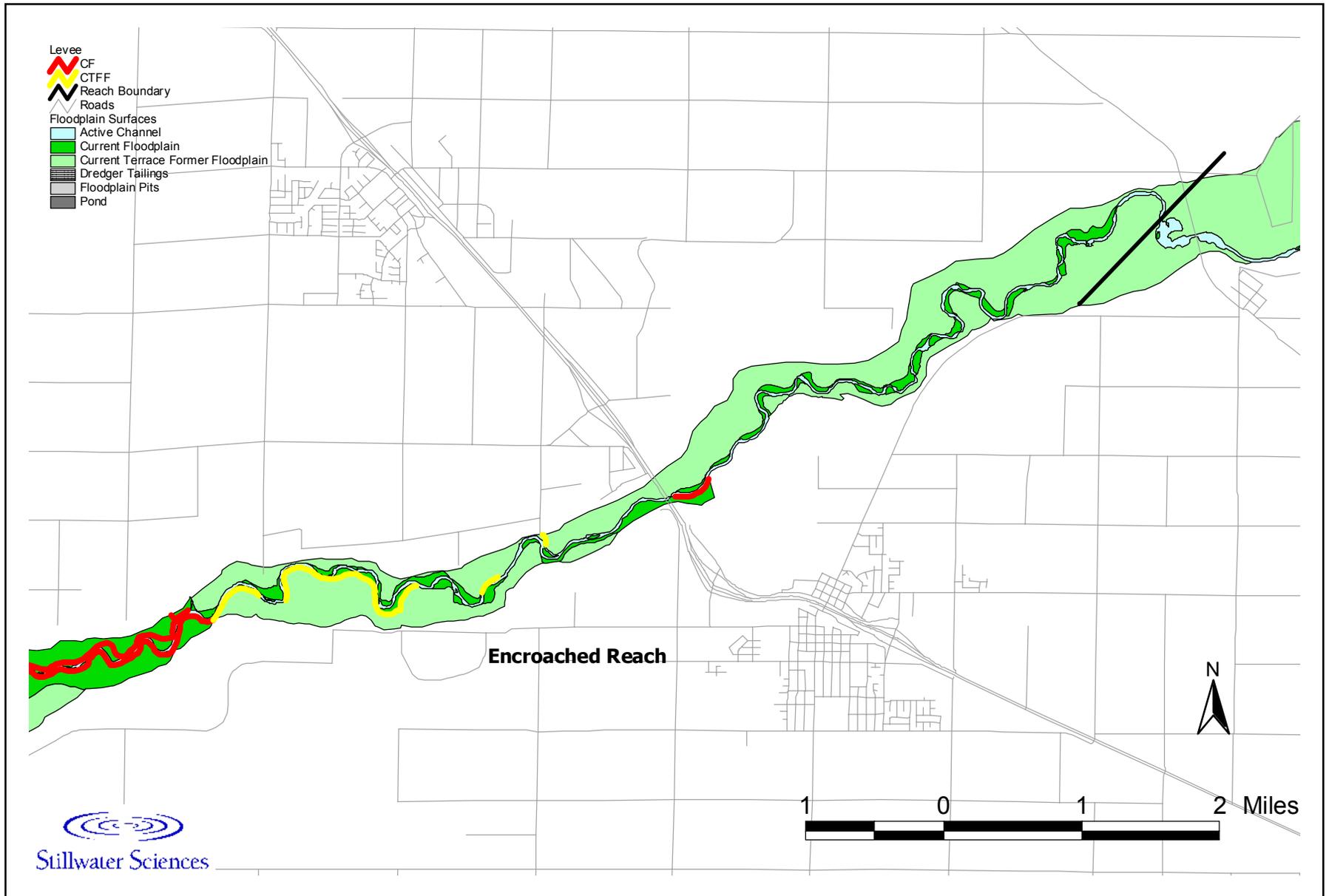
**Figure 5.3-6. Cumulative particles size distribution for the fossilized bar and recent channel deposits at the Cuneo Site.**



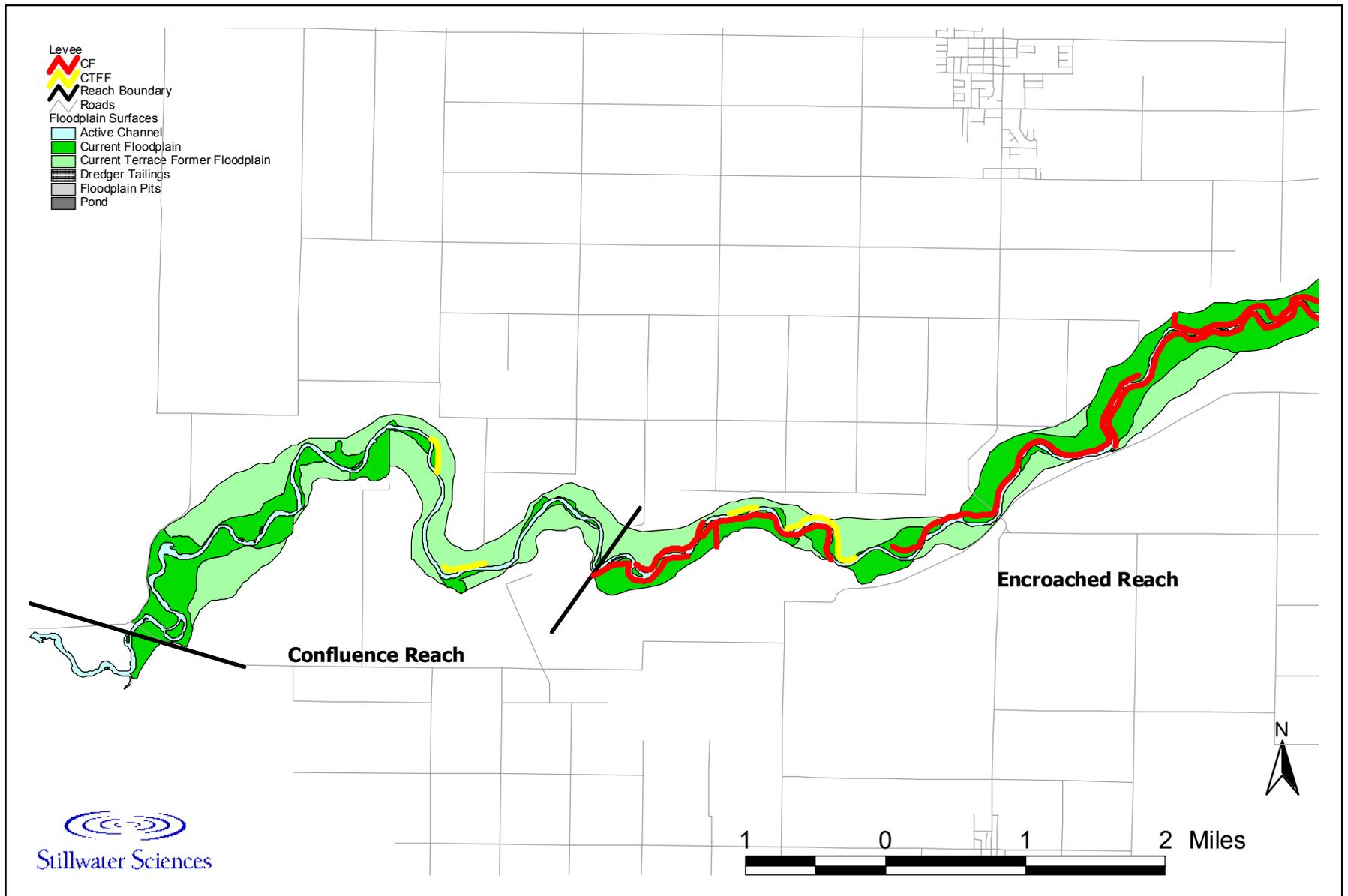
**Figure 5.5-1A. Merced River current and historic floodplain and levees**



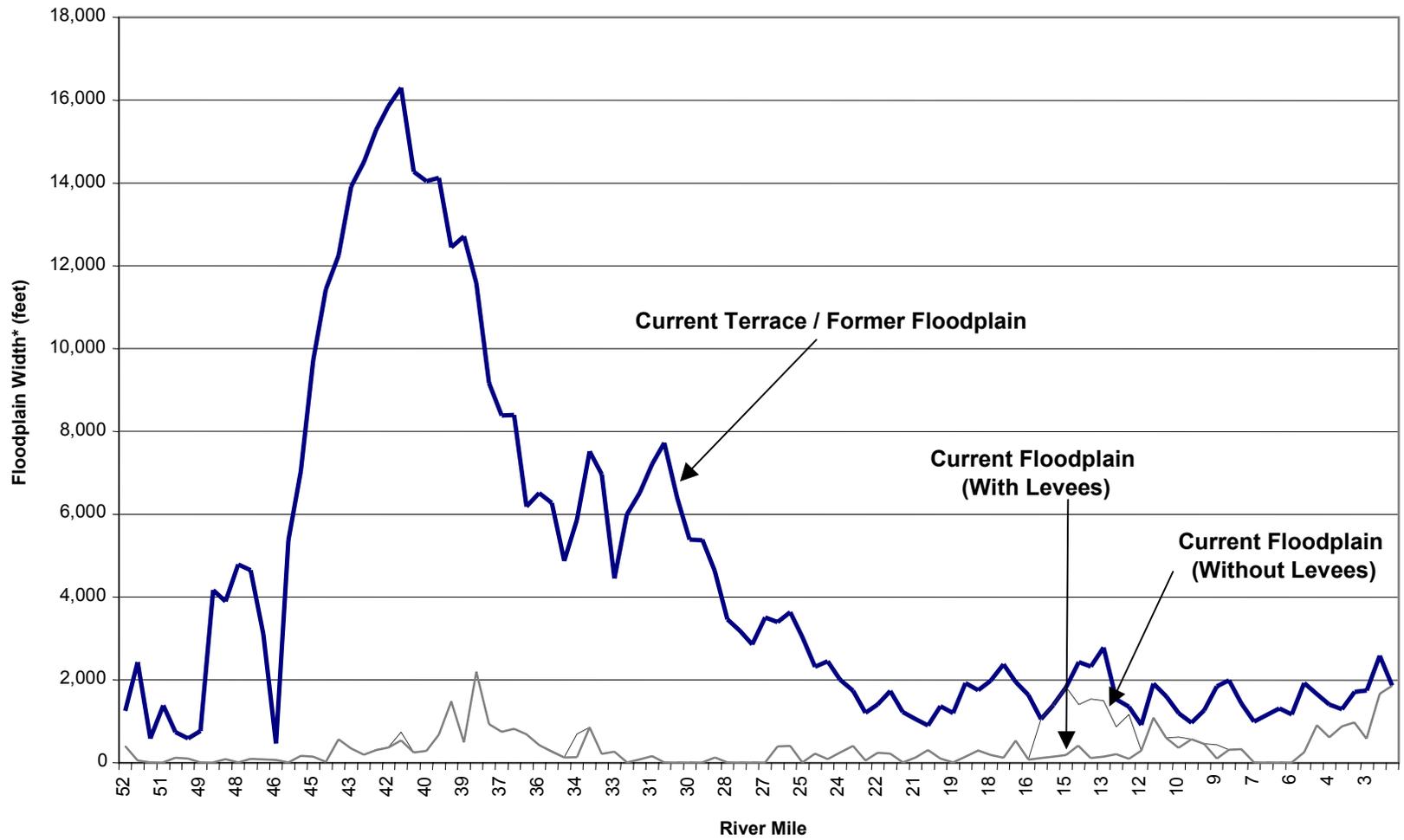
**Figure 5.5-1B. Merced River current and historic floodplain and levees.**



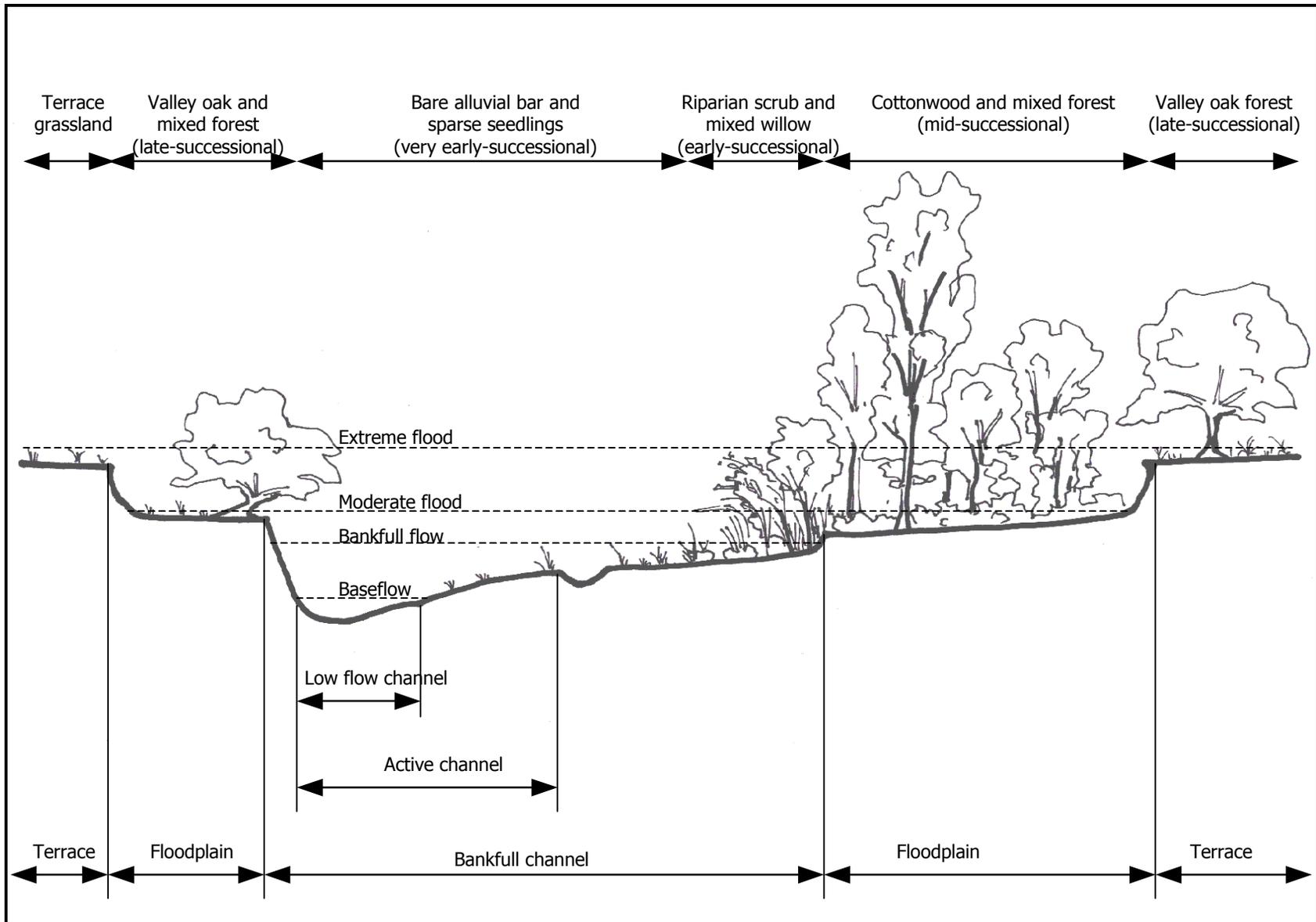
**Figure 5.5-1C. Merced River current and historic floodplain and levees.**



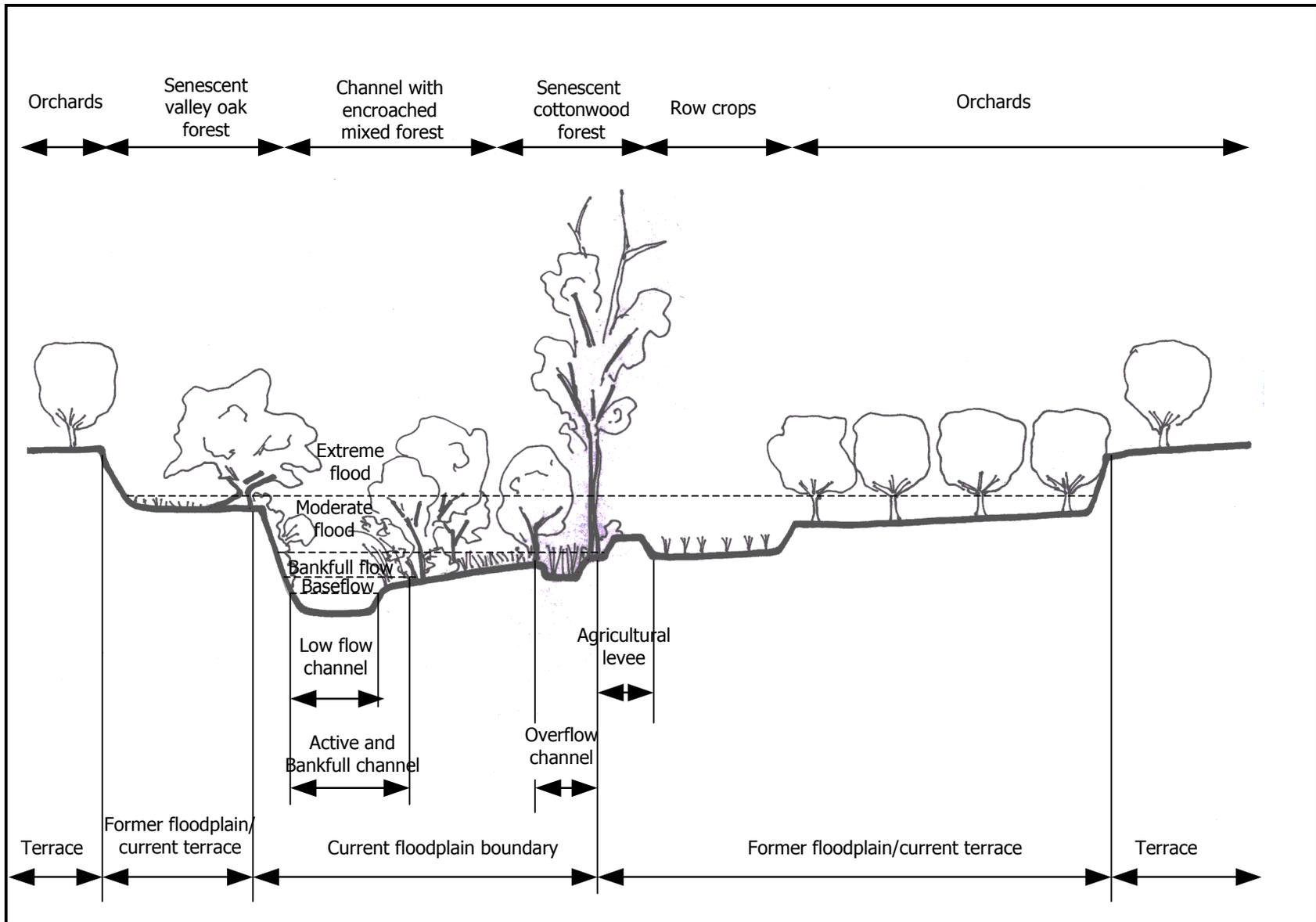
**Figure 5.5-1D. Merced River current historic floodplain and levees.**



**Figure 5.5-2. Historic and current floodplain width (with and without levees) in the Merced River corridor.**



**Figure 5.6-1. Schematic cross section of the "healthy" alluvial river.**



**Figure 5.6-2. Schematic cross section of a river channel with encroached riparian vegetation.**

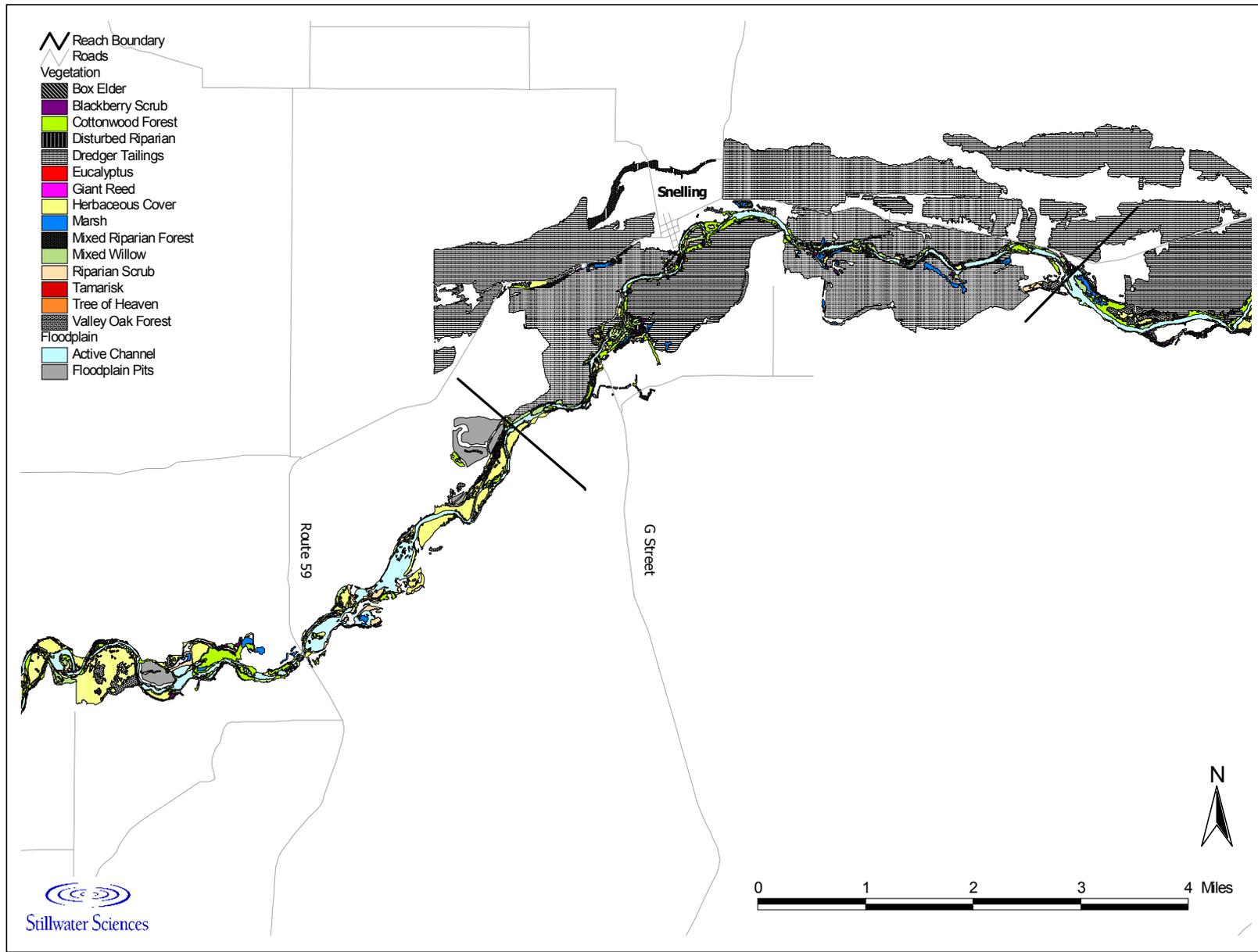


Figure 6.1-1A. Merced River vegetation distribution.

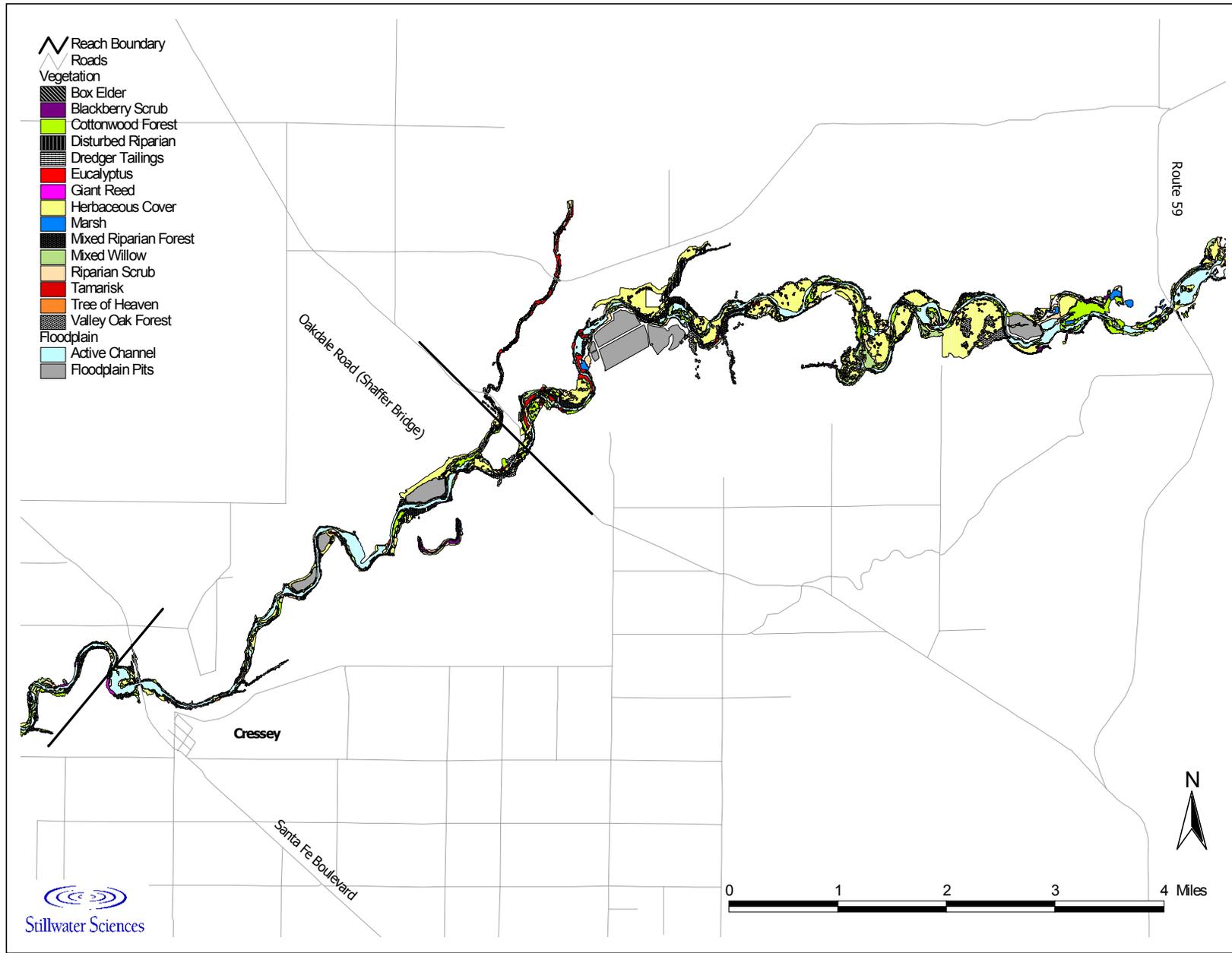


Figure 6.1-1B. Merced River vegetation distribution.

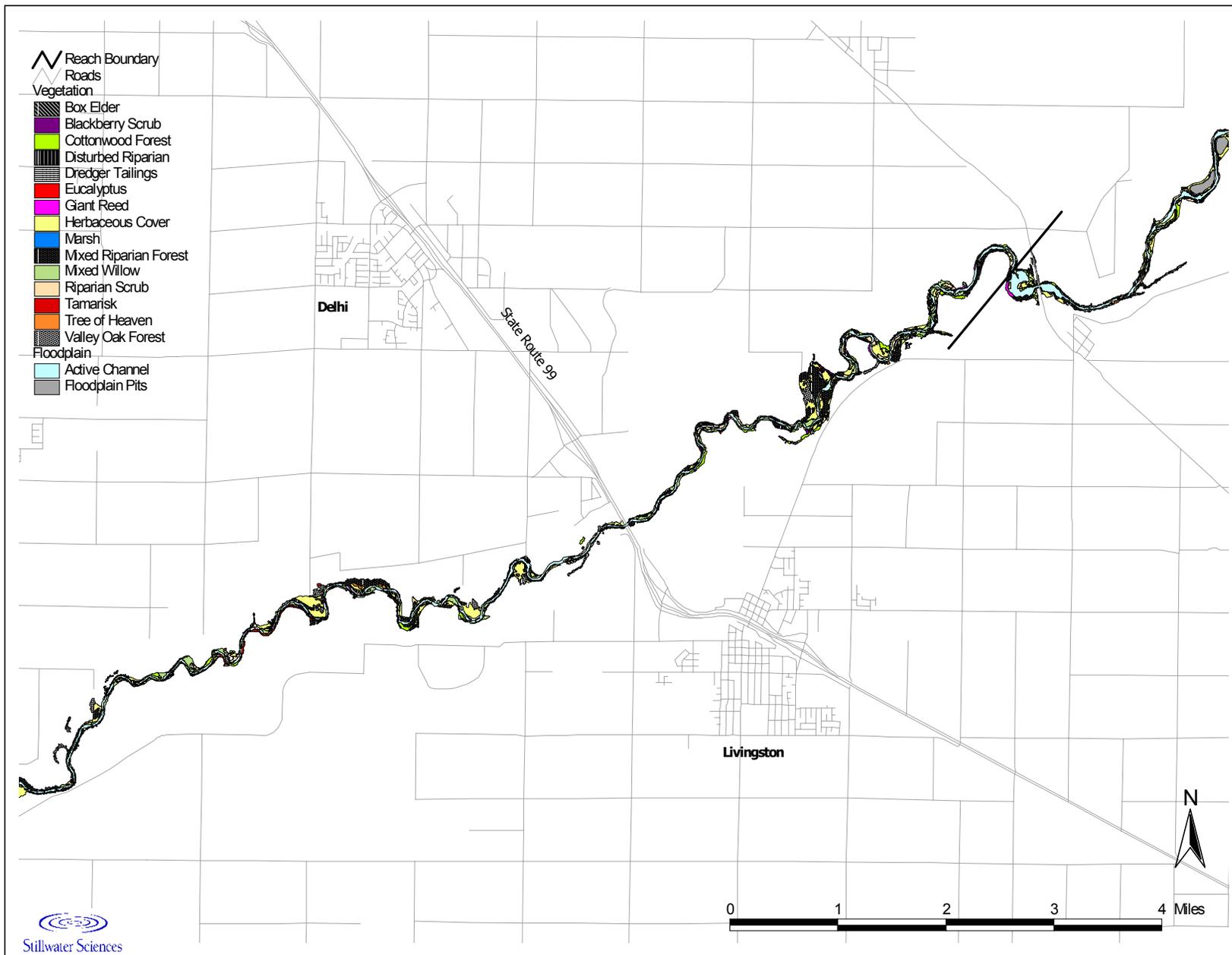


Figure 6.1-1C. Merced River vegetation distribution.

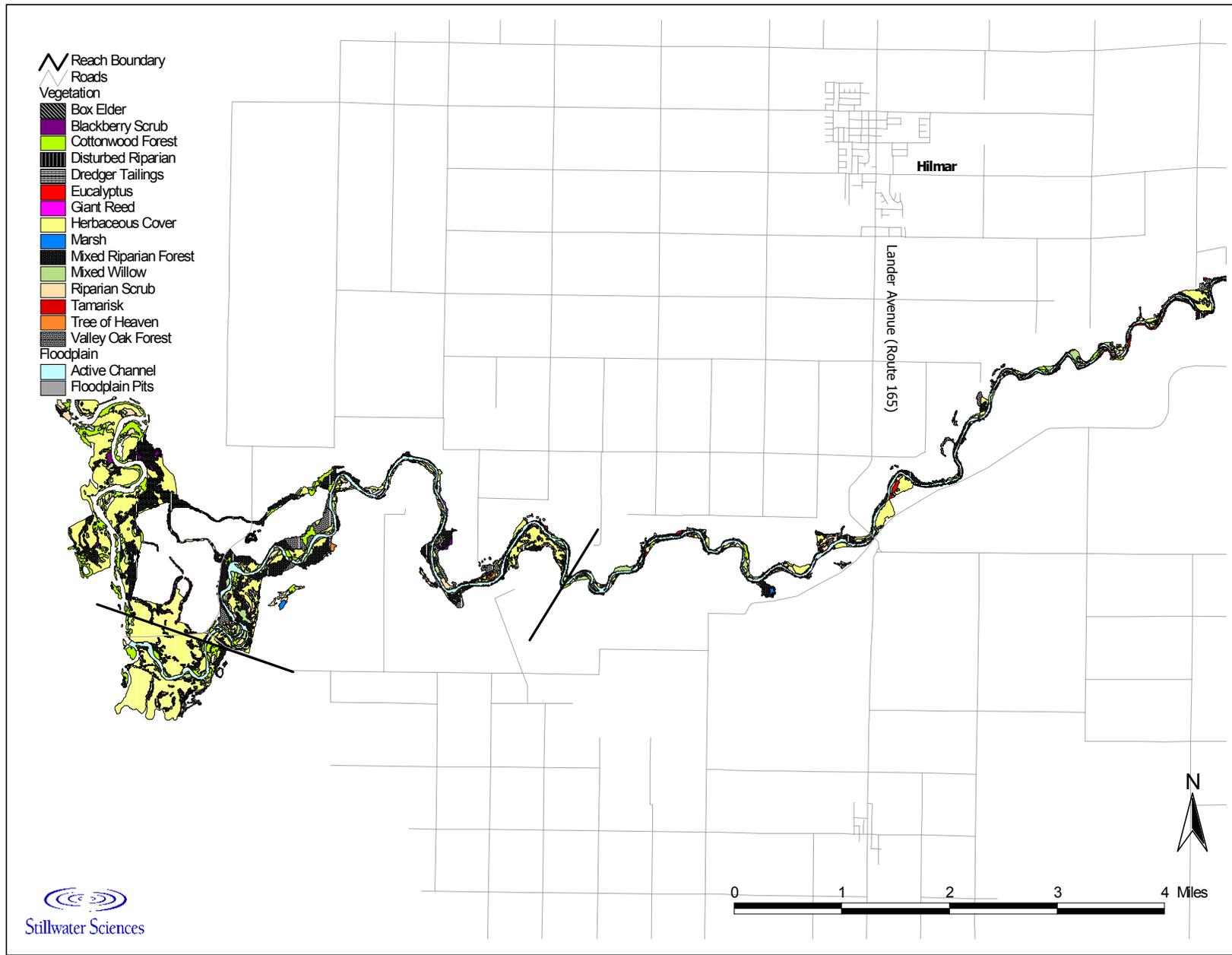
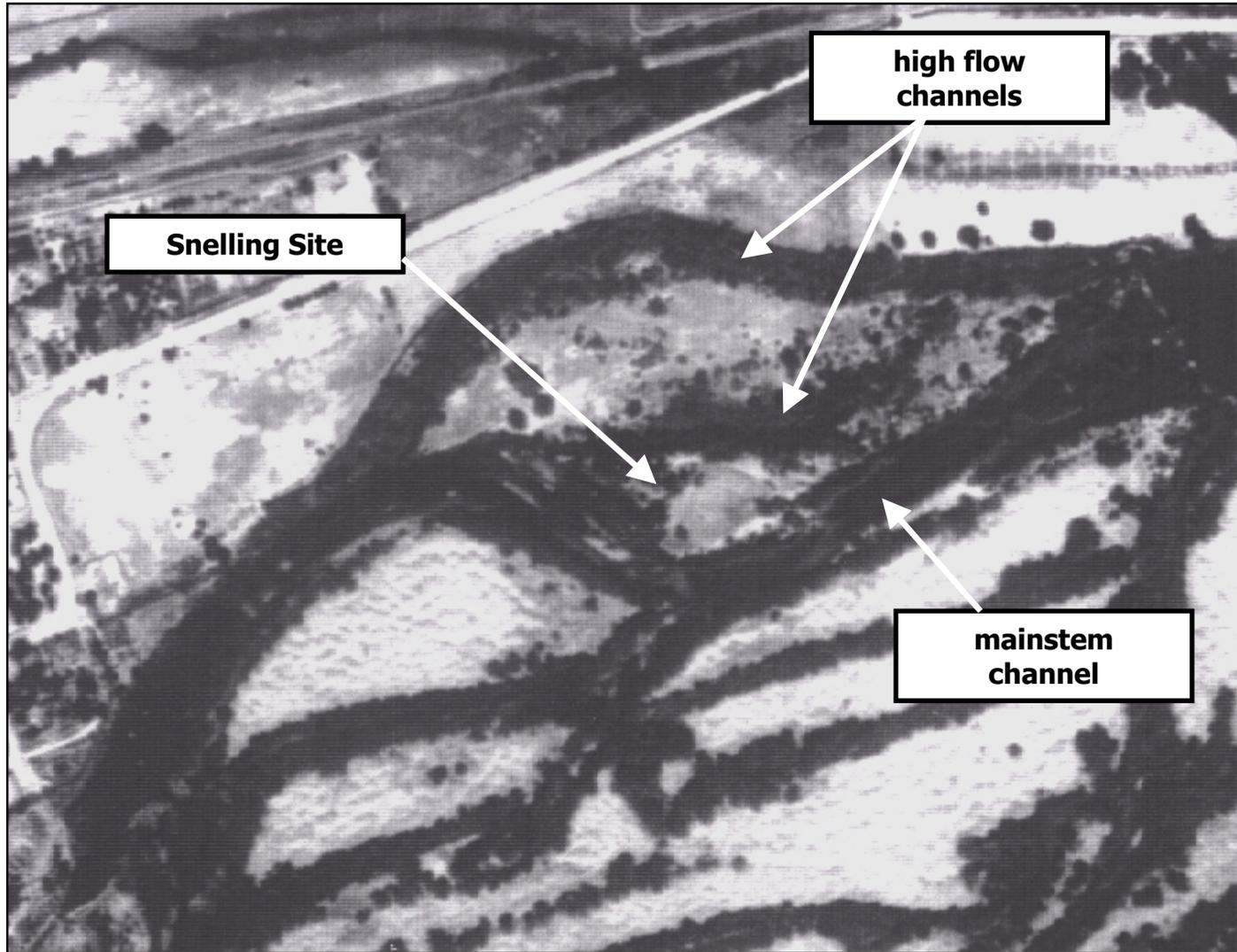


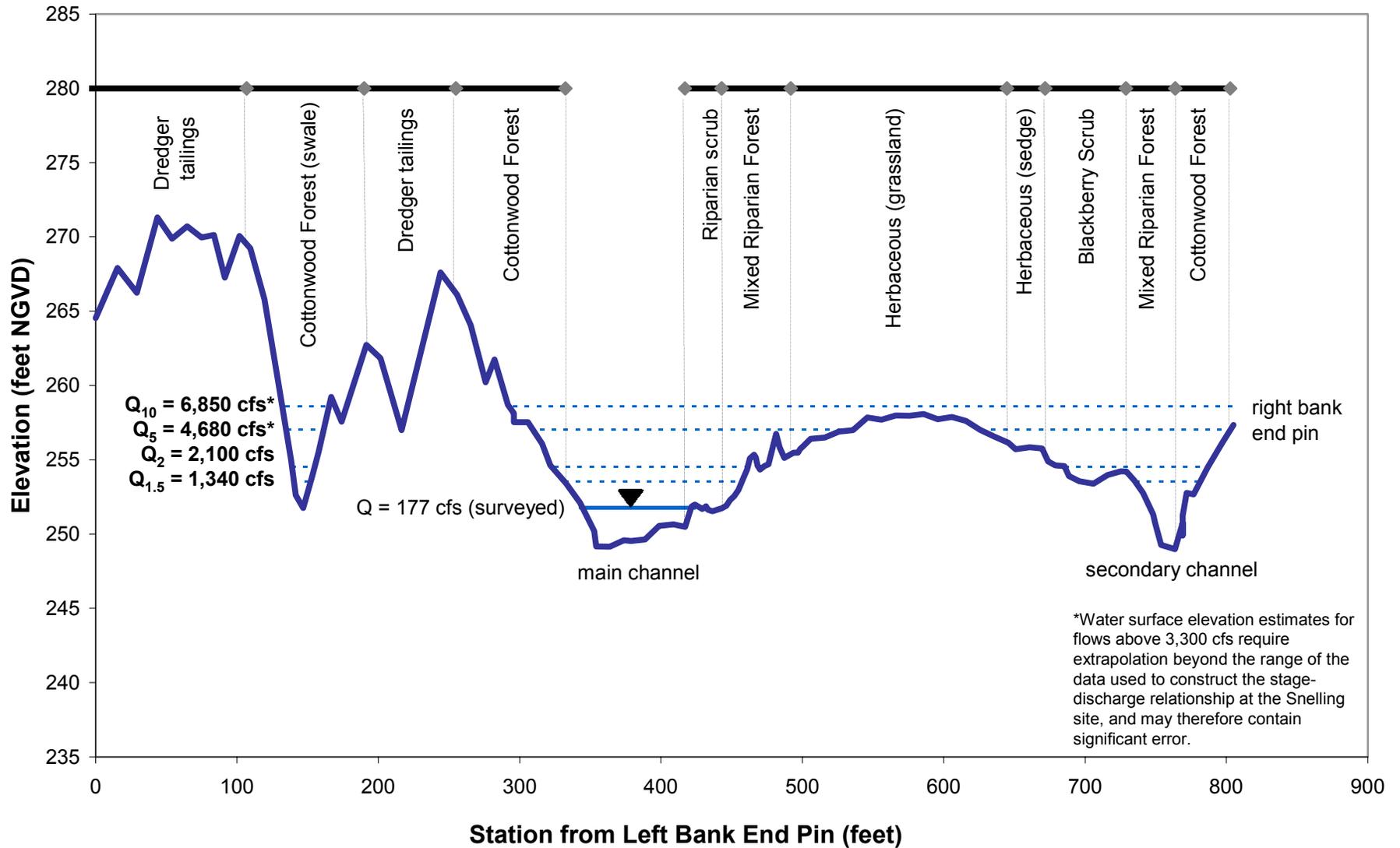
Figure 6.1-1D. Merced River vegetation distribution



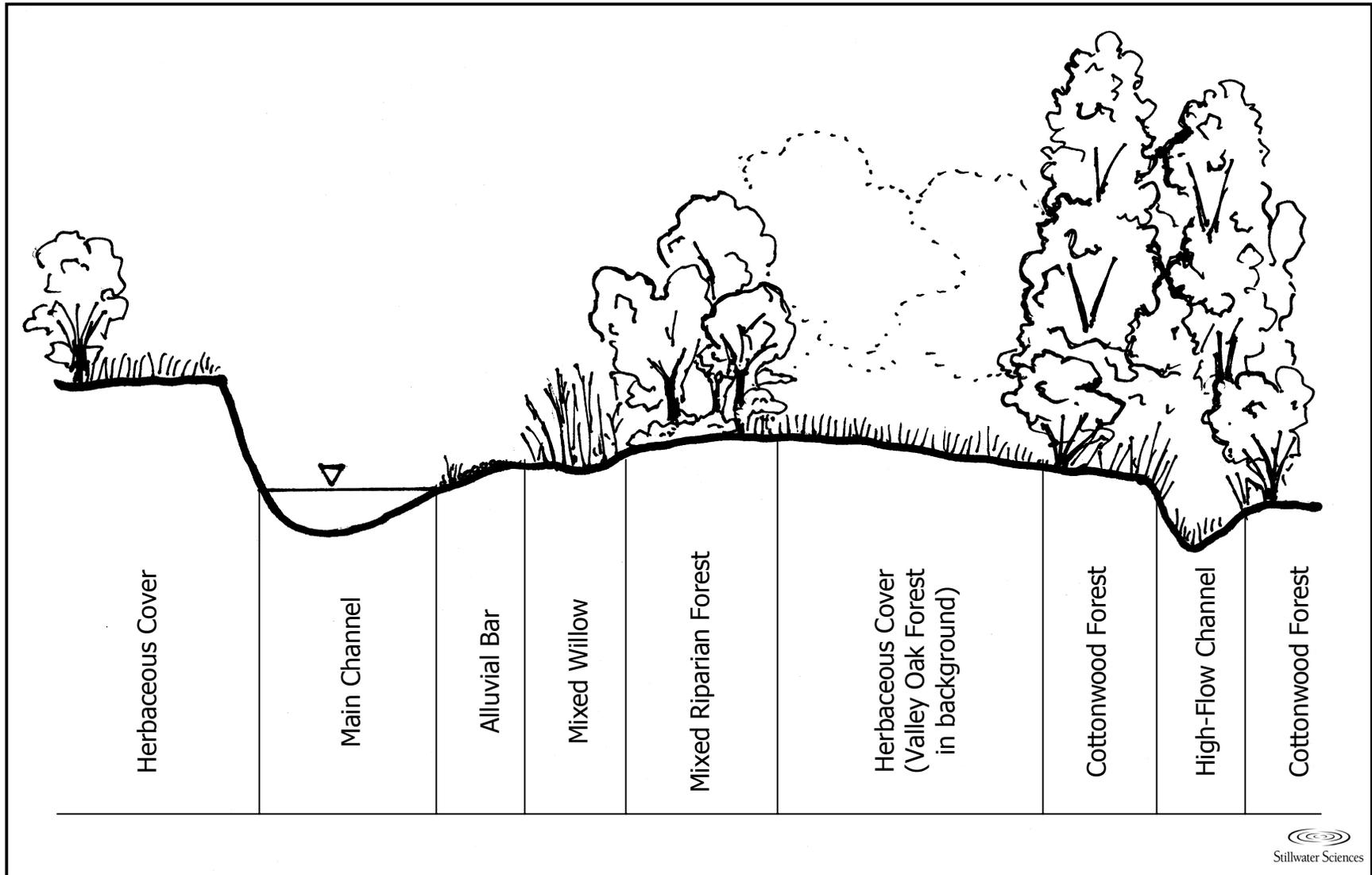
**Figure 6.2-1. Aerial photograph of the Stevinson Site showing vegetation transect location.**  
(photo: Merced County Planning and Community Development Department 1998)



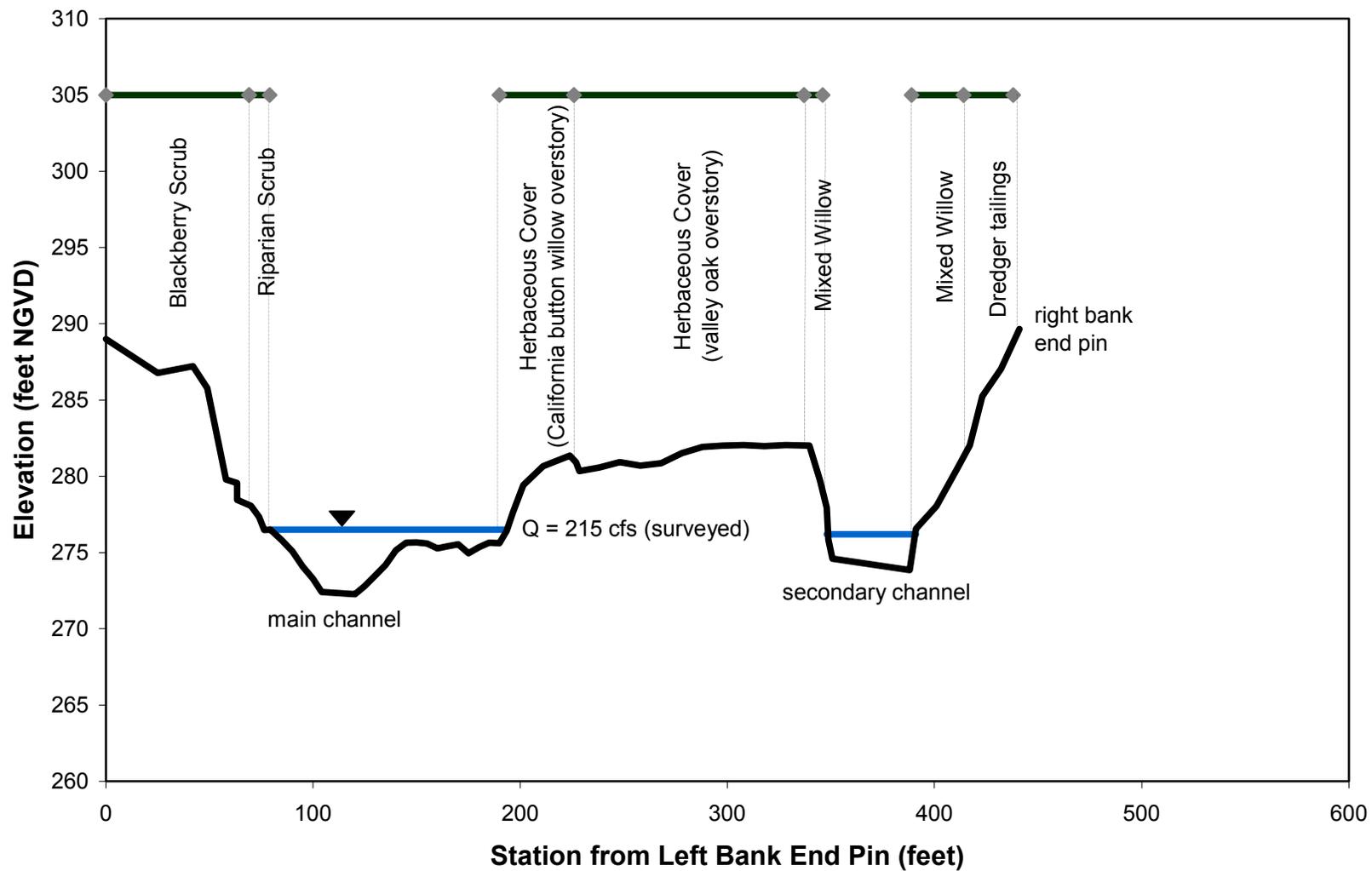
**Figure 6.3-1. Aerial photograph of the Snelling Site - 1937.**  
(photo: Agricultural Stabilization and Conservation Service 1937)



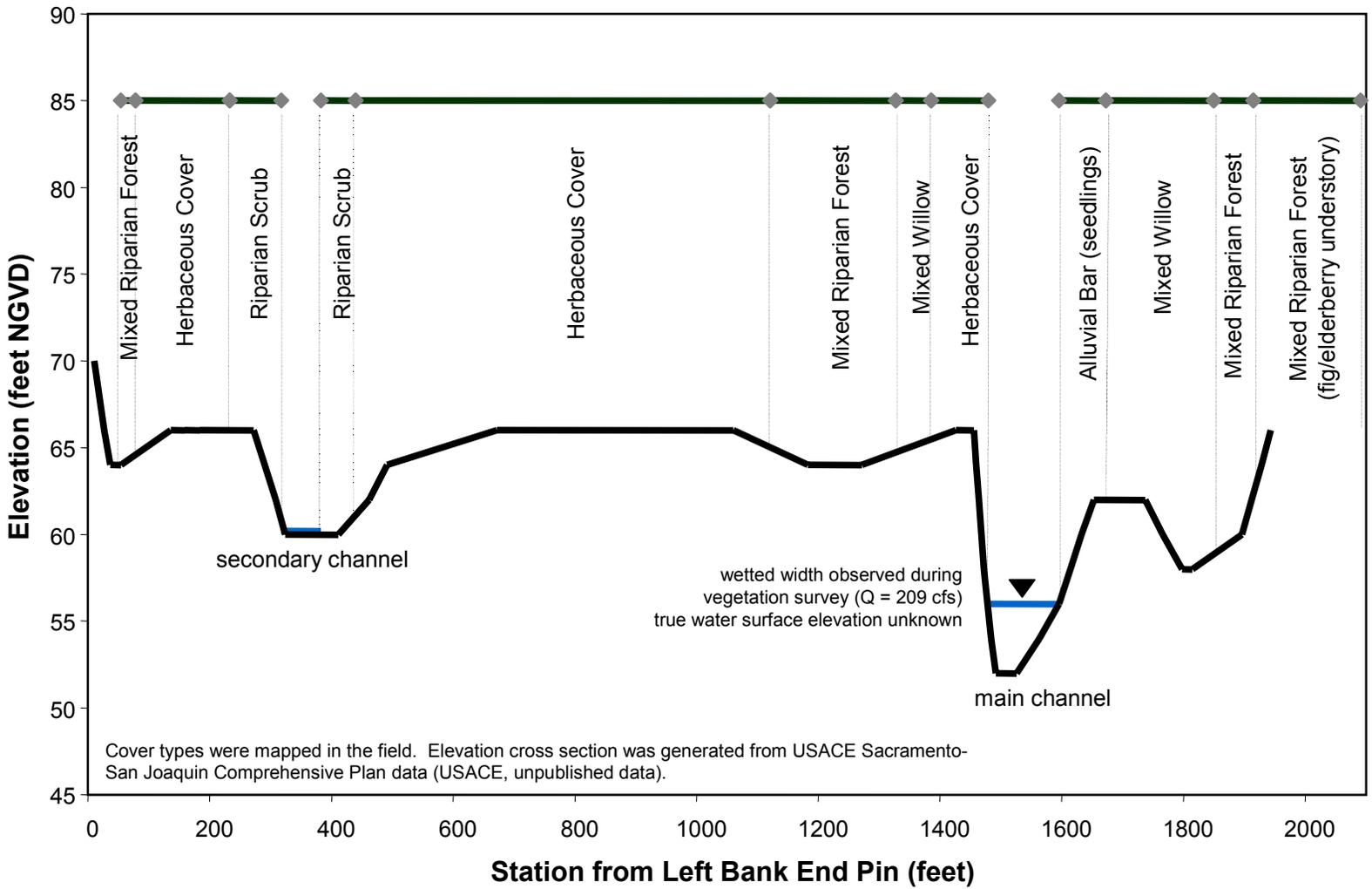
**Figure 6.3-2. Snelling Site vegetation cover and topographic cross section 13+95.**



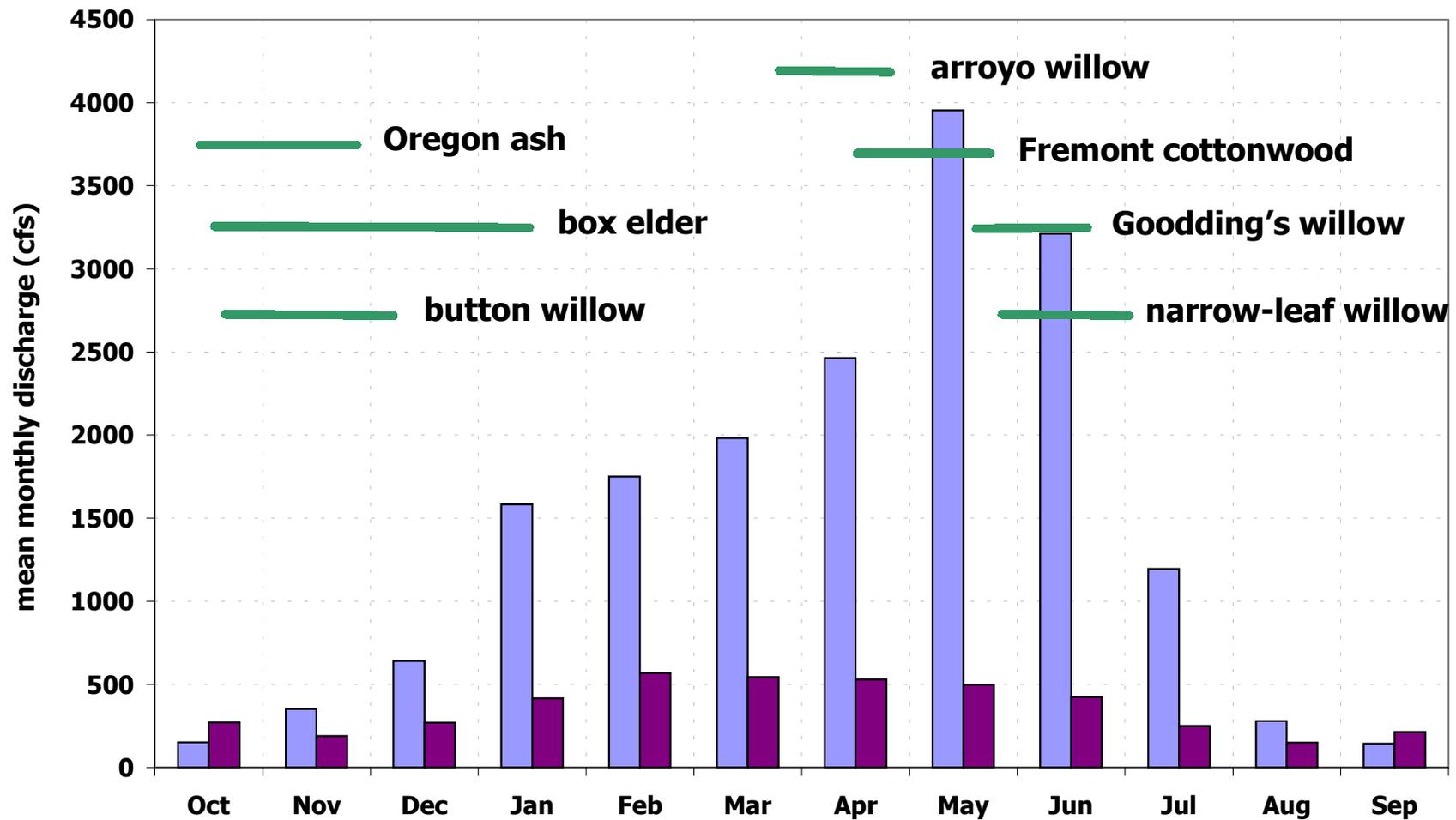
**Figure 6.4-1. Generalized vegetation toposequence for least disturbed sites on the Merced River.**



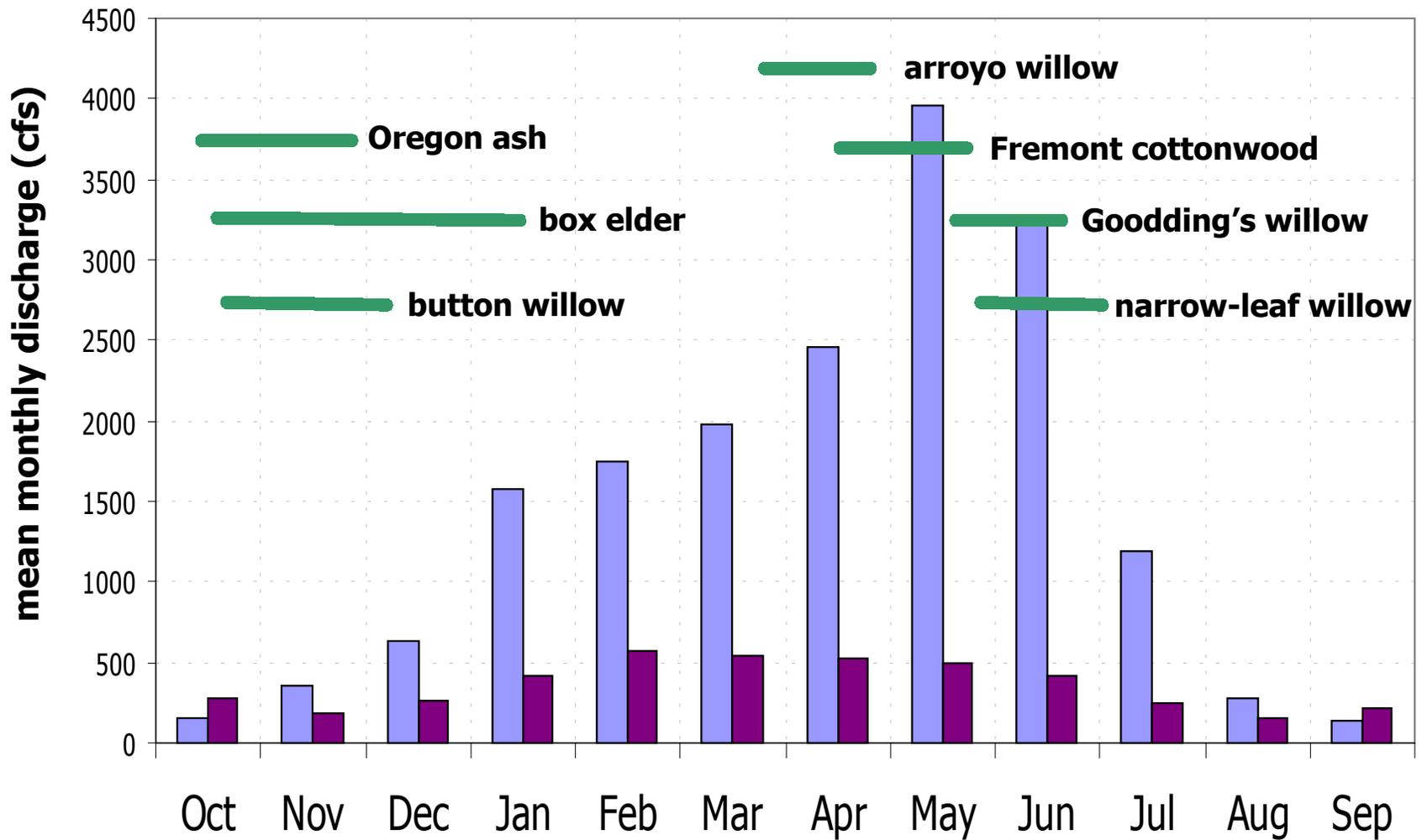
**Figure 6.4-2. Cuneo Site vegetation cover and topographic cross section.**



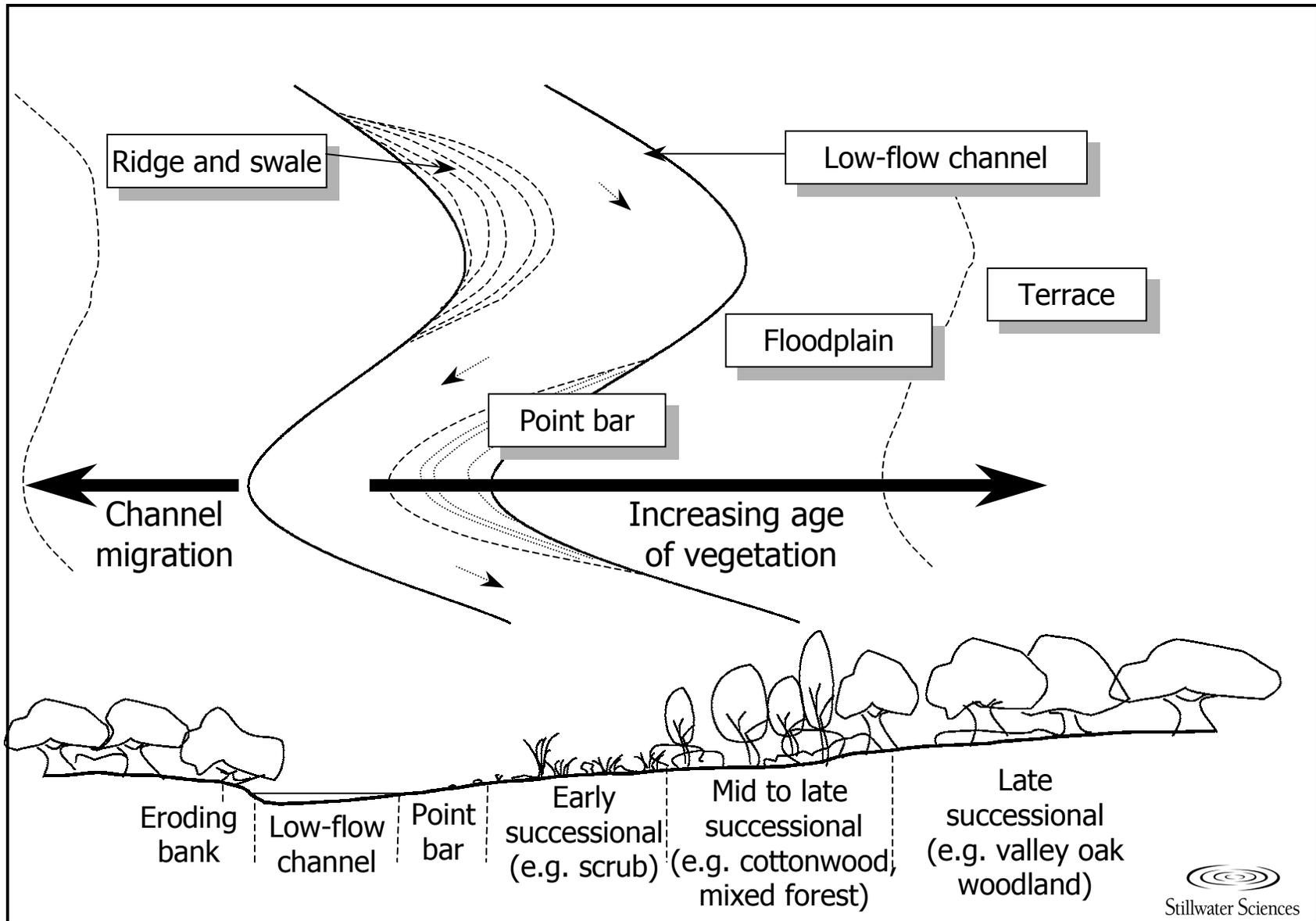
**Figure 6.4-3. Stevenson Site vegetation cover and topographic cross section.**



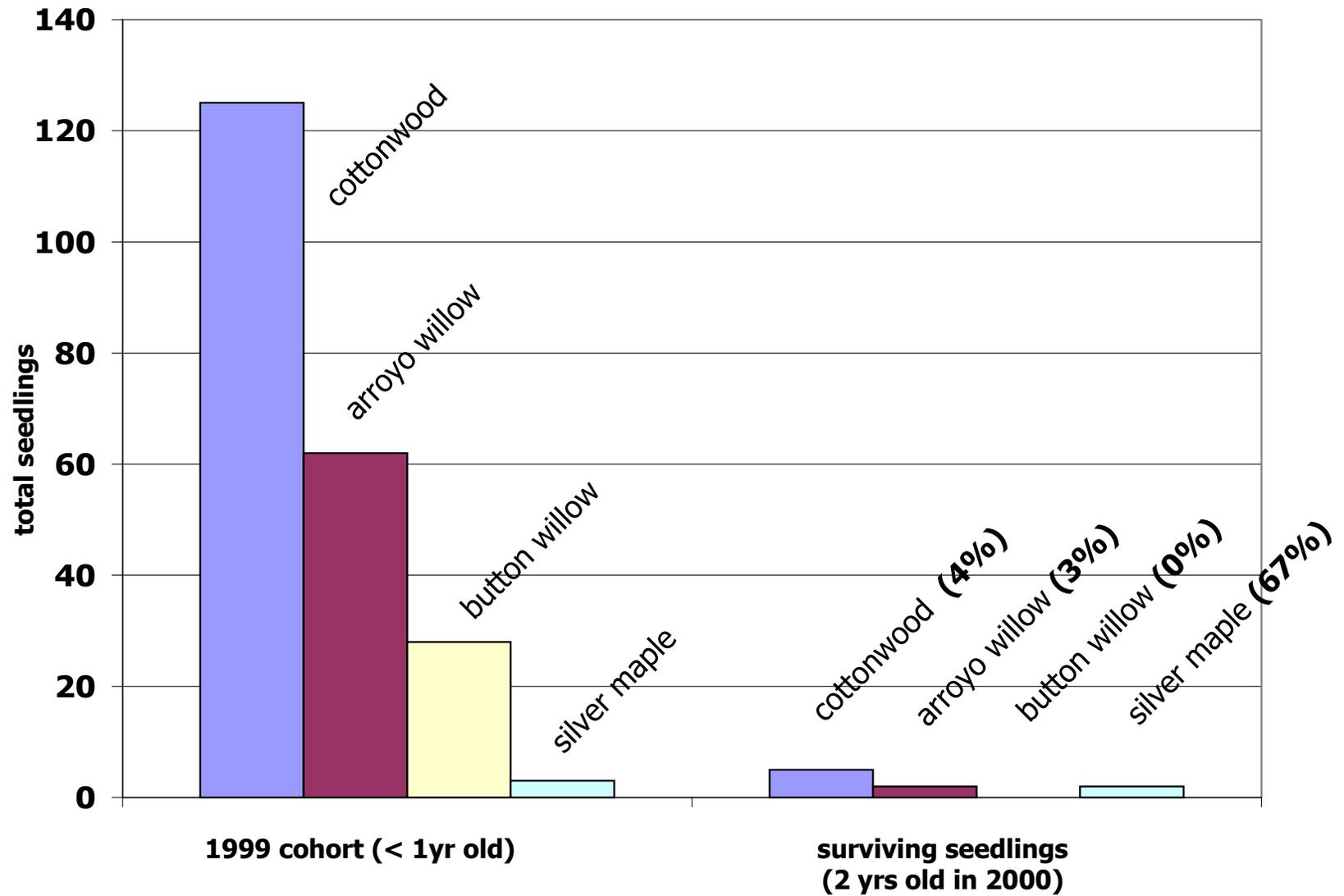
**Figure 6.5-1. Riparian tree seed release periods compared to Merced River unimpaired and regulated mean monthly flow, 1968-1998.** Unregulated flow (lighter bars) is estimated by CDWR (1994a). Regulated flow (dark bars) is measured at Crocker-Huffman Dam (Merced ID), downstream of all major dams and diversions. Seed release data are approximate and are taken from CALFED (2000).



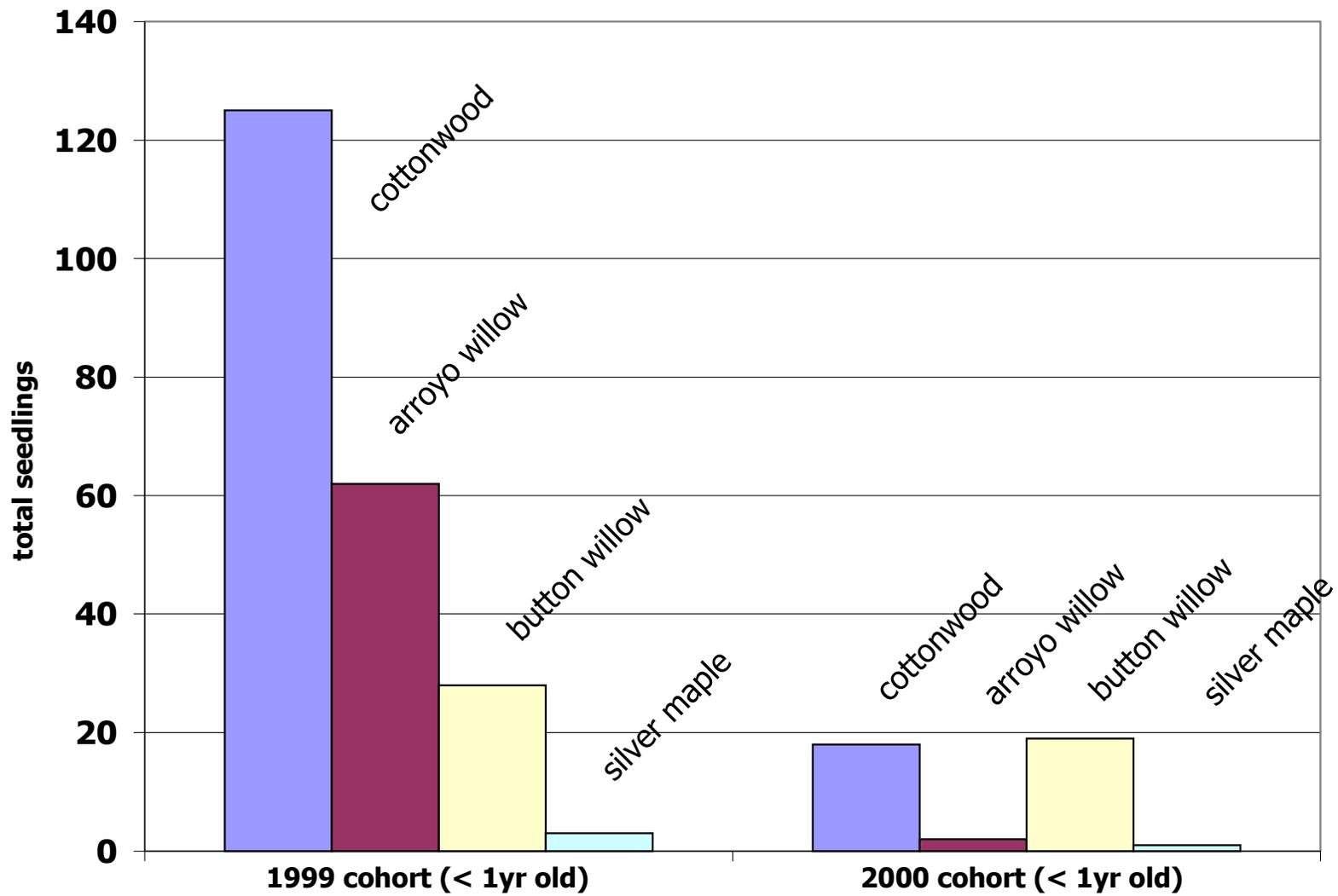
**Figure 6.5-1. Riparian tree seed release periods compared to Merced River unimpaired and regulated mean monthly flow, 1968-1998.** Unregulated flow (lighter bars) is estimated by CDWR (1994a). Regulated flow (dark bars) is measured at Crocker-Huffman Dam (Merced ID), downstream of all major dams and diversions. Seed release data are approximate and are taken from CALFED (2000).



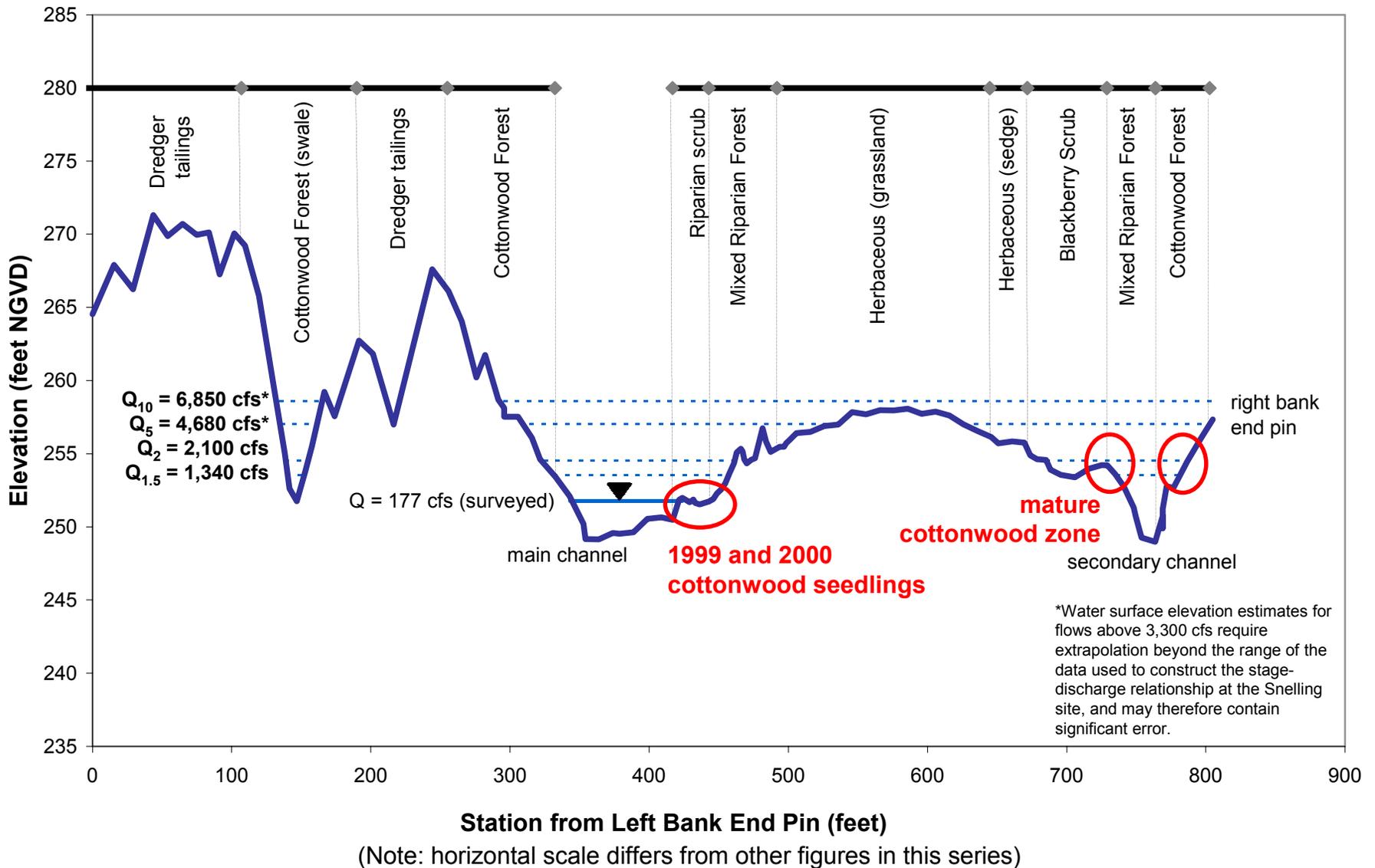
**Figure 6.5-2. Schematic diagram of riparian succession.**



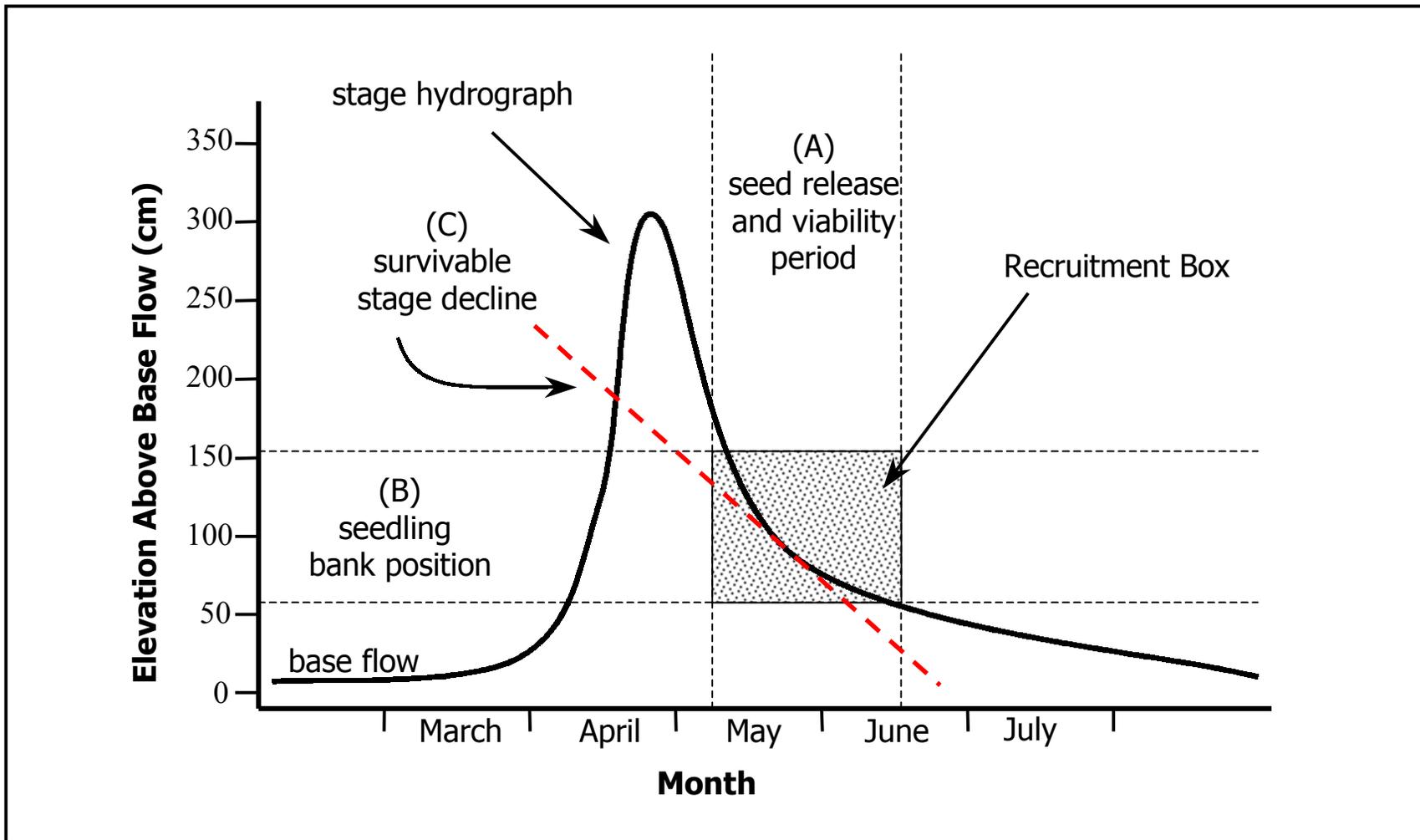
**Figure 6.5-3. Seedling survival between October 1999 and June 2000, Snelling cross section 13+95.**  
 Percent survival for each species is in parentheses.



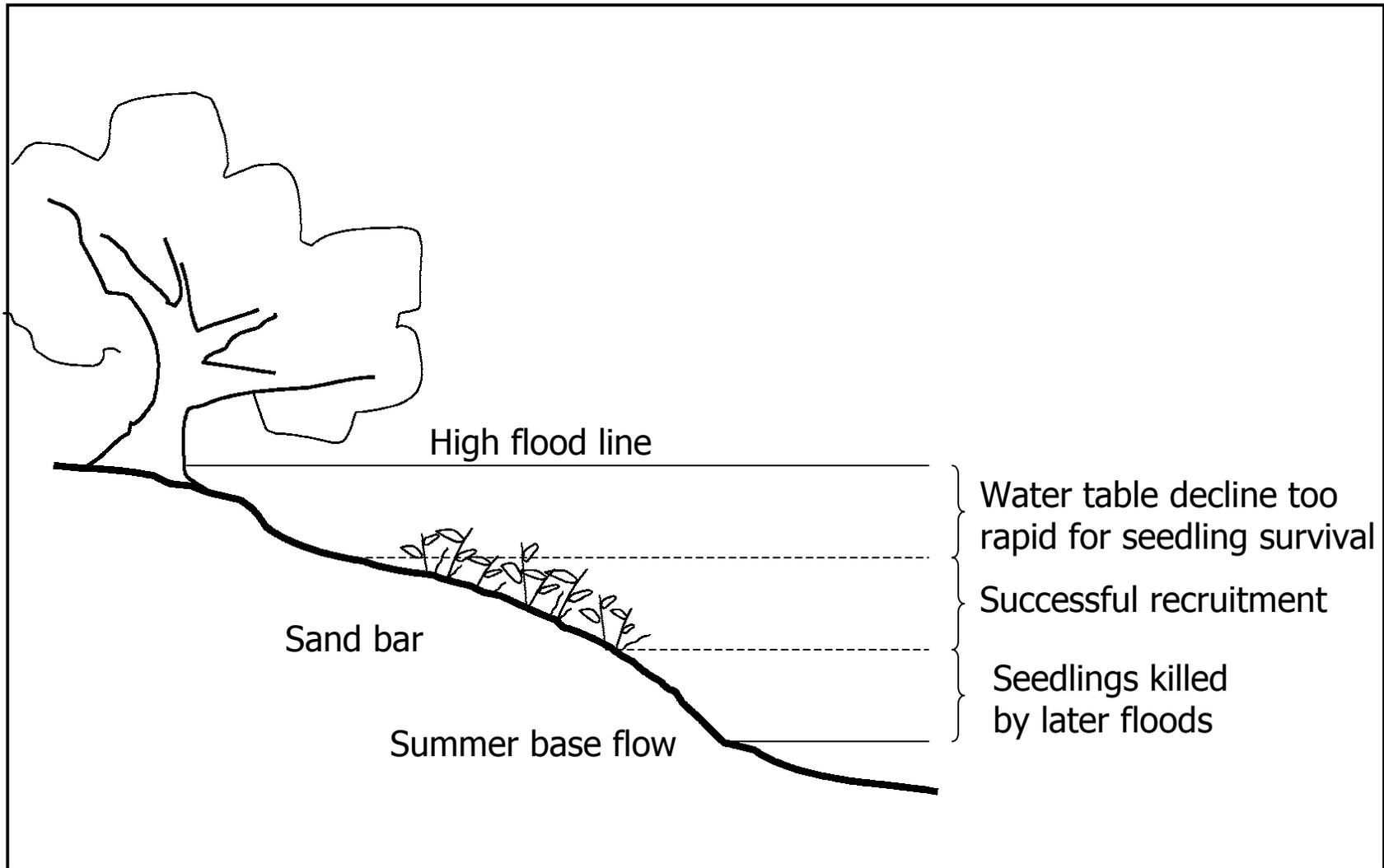
**Figure 6.5-4. Annual variability in recruitment between the 1999 and 2000 cohorts at Snelling cross section 13+95.**



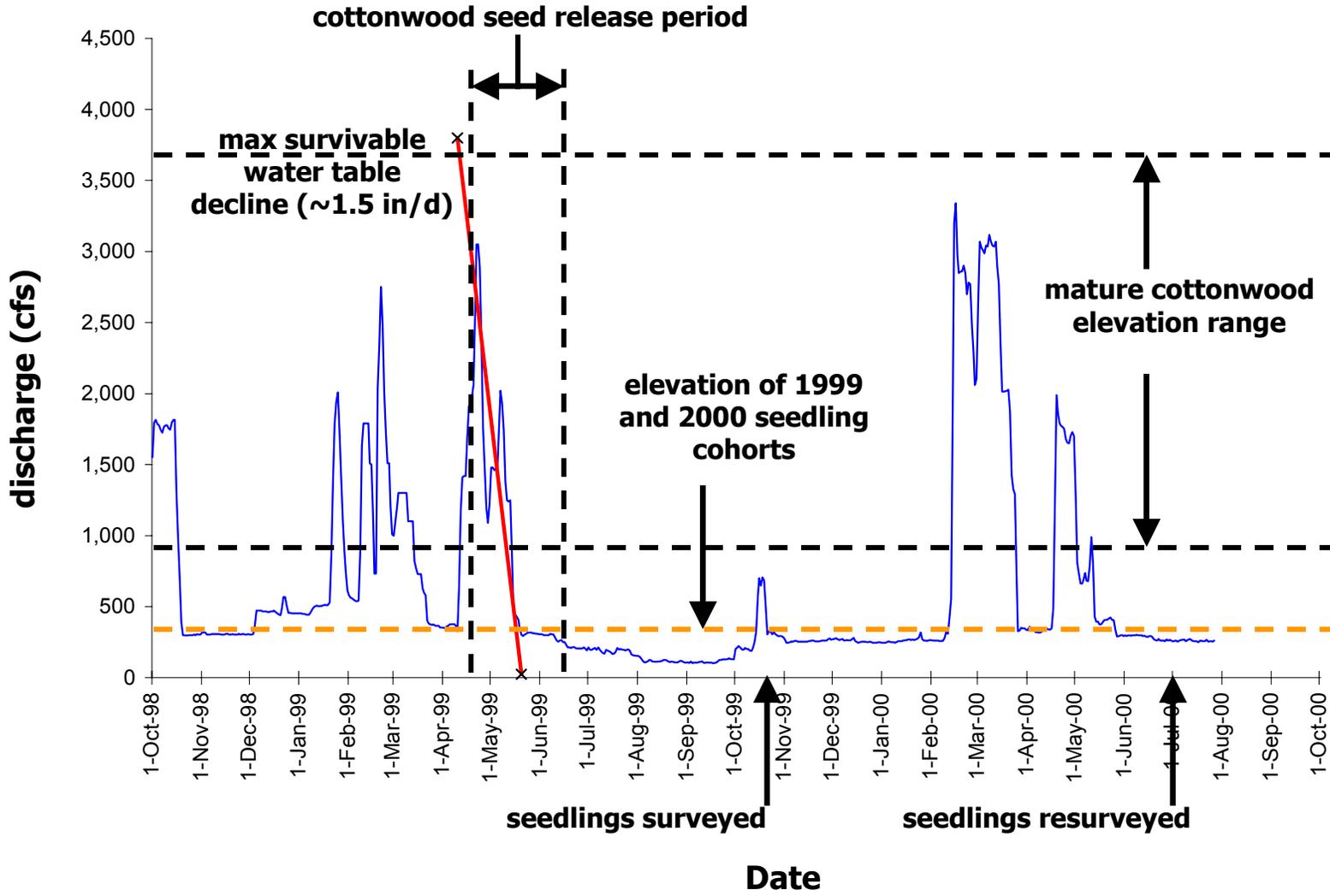
**Figure 6.5-5. Snelling cross section 13+95, showing elevation and inundation frequency of current cottonwood germination zone and root crown elevation of mature cottonwoods.** Current seedlings germinate within the bankfull channel. Mature trees are inundated at flows corresponding to the post-dam 1.5 to 5-year recurrence intervals.



**Figure 6.5-6. The 'Recruitment Box' concept** (adapted from Mahoney and Rood, 1998). The recruitment box is a space defined in elevation and time in which seedlings of riparian plant species are likely to become successfully established based on stream flow conditions. The graph represents the relationship between the stream hydrograph and the timing of (A) the seed release and viability period for a particular riparian plant species; (B) the range of bank elevations (or stream stages) at which successful seedling recruitment is likely to occur for that species; and (C) the survivable rate of stream stage decline determined by the seedling's ability to maintain functional contact with the receding water table through root elongation.



**Figure 6.5-7. Cottonwood and willow recruitment patterns.**



**Figure 6.5-8. 'Recruitment Box' Analysis of Snelling Site.**

Flow data are from the Merced ID Merced River at Crocker-Huffman gauge.