



SCR-6. A small tributary to Sullivan Creek. Passes through an upland valley a few miles downstream of the Sullivan Creek headwaters.



TWH-1. Small reach of Twain Harte Creek parallel to Epscol Park. Upstream end (top) is fed by two large culverts; downstream end (bottom) is backed-up by another culvert under the footpath. Morphology is highly altered, significant accumulation of sand within this reach and evidence of recent bank erosion and channel incision.





SCR-5. Looking downstream, cascade/step-pool morphology typical of the headwater channels draining the northern half of the upper Sullivan Creek watershed. Channel is heavily vegetated and is likely a transitional form between a colluvial and alluvial channel. Much storage of fine (clays and silts) sediment, likely a net storage of sediment over short time scales but flushed periodically by large flows.



SCR-7. Small tributary to Sullivan Cr., this particular reach passes through the Lazy Z Resort property. Highly entrenched channel, severe bank and bed erosion and bank stability issues (note all the relatively young trees falling into the channel). Channel has cut down into highly erodible valley-fill, or terrace material, and a large amount of sediment has been scoured from this channel over time.





SCR-3. Fairly non-typical, headwater channel, in that this upper reach falls within the MEDIUM slope (2-8%) category (vs. HIGH slope category). Morphology is more typical of the lower gradient, mainstem Sullivan Cr. However, much more clay, silt, and organic material accumulation.



SCR-2. Looking downstream, low gradient reach of mainstem Sullivan Creek. Bar formation and sand accumulation suggests channel is generally more transport (vs. supply) limited. Poorly sorted bar material, note delineation between the gravels and sands. A pebble-count was conducted at this station.



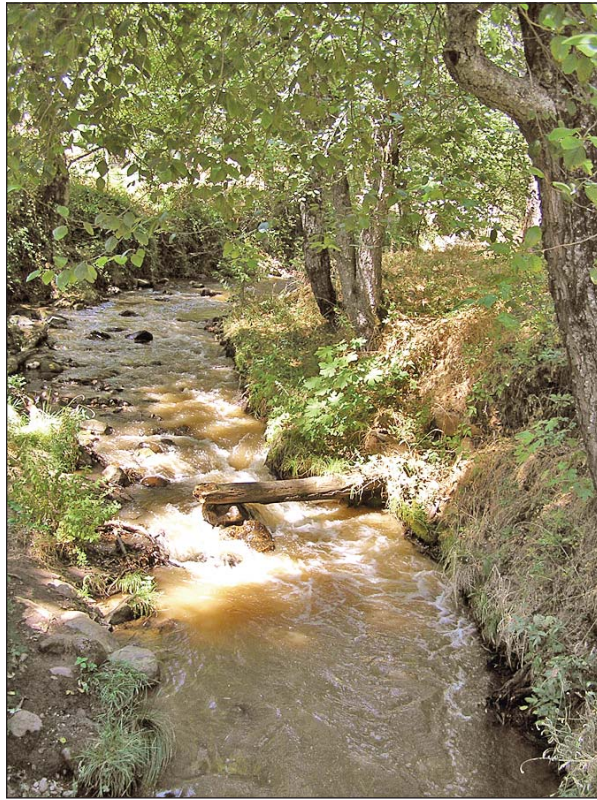


SCR-1. Looking upstream toward eventual benchmark. Low gradient and morphology is pool-riffle. Mobile, sandy bed-forms form layer over relatively immobile cobble bed, suggests reach is transport-limited. A cross-section was surveyed and a pebble-count was conducted at this station.



SCR-18. Small tributary to Powerhouse Creek (which drains to Phoenix Lake and then to lower Sullivan Creek). Looking upstream (top), small cascading (could be colluvial) channel typical of the steep headwater streams draining the northern half of the Upper Sullivan (or Phoenix Lake in this case) watershed. Roadside ditch (bottom) delivering weathered material (likely mostly clays, silts, and fine sands) to the hillslope and channel.





SCR-9. Looking upstream (top) from road, much more flow relative to other tributaries. Morphology appears to be plane-bed, or gentle cascade. Note the turbid nature of the water. Large culvert (bottom) is just upstream of reach in the top photo, it drains a tributary that comes in from the northwest and passes just to the west of the power station. The power station is likely using the water from the Penstock ditch (canal, etc.) and the effluent is diverted back into this tributary.



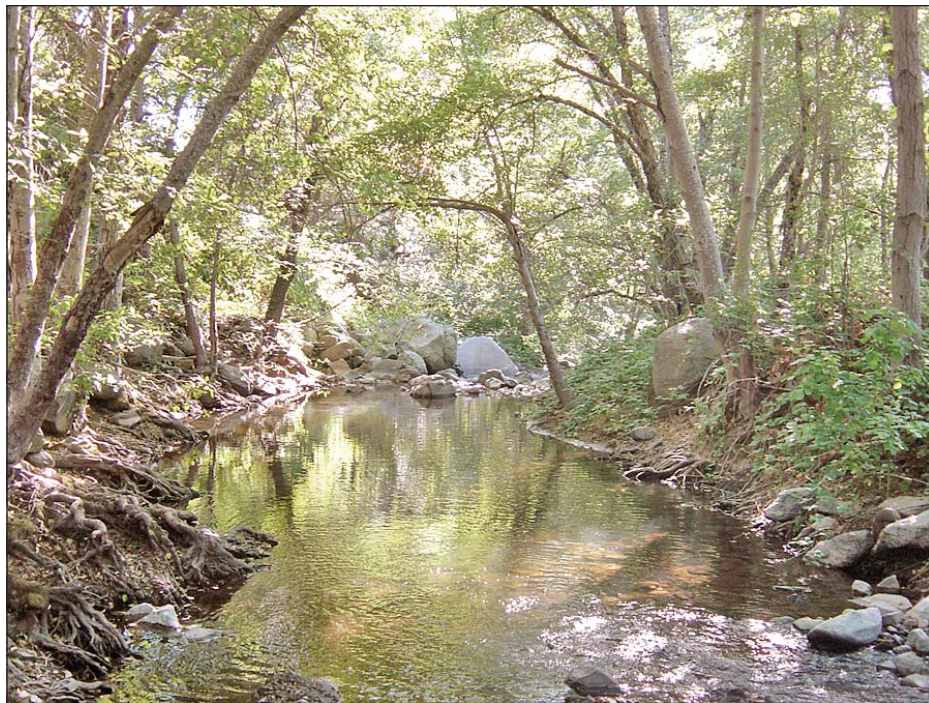
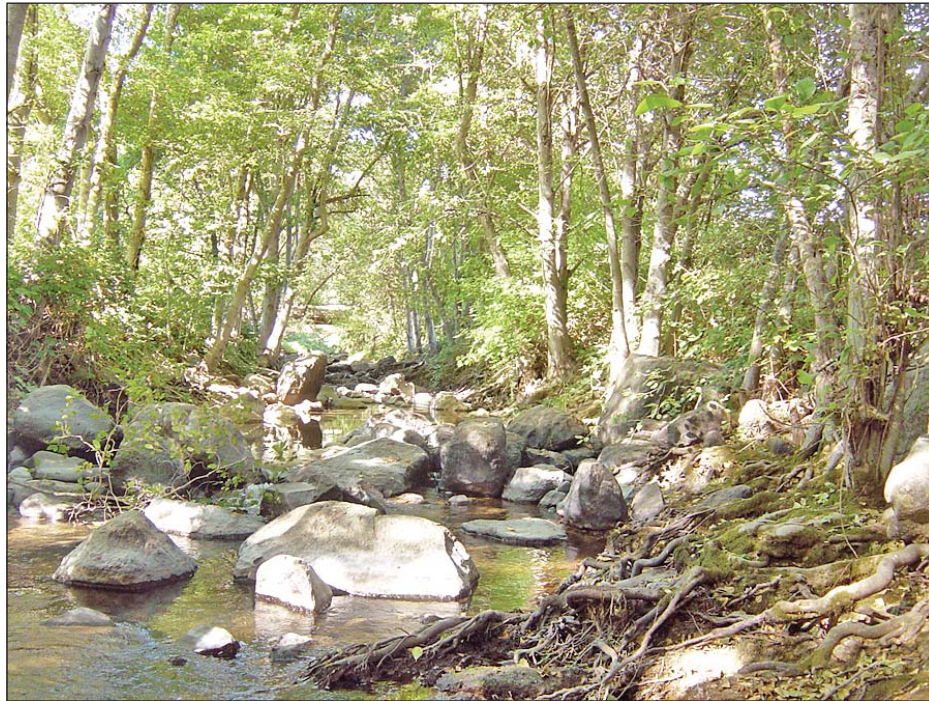
SCR-10 (the Outdoor School property). Looking downstream, morphology is cascade/step-pool and the channel cuts through a narrow valley of large remnant boulders. Large amounts of sediment stored behind channel obstructions (i.e., boulders).





SCR-10 (the Outdoor School property). Close-up view of silt and sand (top) and sand and small gravel (bottom) accumulation within the channel (upstream of local obstructions). Such accumulations were fairly typical of the headwater streams draining the northern half of the upper Sullivan and Phoenix Lake watershed. The residence time of such sediments in the entire system is unclear, yet these are likely flushed out of local storage every year or so.





SCR-11. Sullivan Creek just over two miles downstream of Phoenix Lake, looking upstream (top) and downstream (bottom) from the same point. Morphology is step-pool and pool-rifle, substrate is much larger at this point (i.e., predominantly cobbles and boulders). Not much sediment accumulation or storage in this reach, even in the slower-moving pool sections. Not much floodplain development, though the channel has become much wider and storing relatively less sand-sized sediment compared to upstream of Phoenix Lake (i.e., SCR-1).





SCR-12. Looking upstream. Sullivan Creek has incised deeply into the canyon at this point, exposing the rock of the Calaveras Complex, and is highly confined. This is essentially a bedrock reach in terms of morphology.



SCR-15. Low-order tributary to Sullivan Creek in the lower watershed. Compare to the steeper low-order tributaries observed in the northern half of the upper watershed and note the difference in morphology and condition. Distinct floodplain (active or relic) and terrace features are evident. Channel has incised slightly into the valley and is likely a source of fine sediments and sand, but the cobbles and small boulders are rarely moved.





SCR-16. Another example of a low-order tributary to Sullivan Creek in the lower watershed (just south of SCR-15).