



Mill Creek Dam Removal Implementation and Monitoring Project *(amended)*

Recipient: Sempervirens Fund.

Project Period: 05/01/2021 – 4/30/2022

Award Amount: \$25,000

Matching Funds: \$425,000

Project Number: #8006.21.072171

Summary of Accomplishments

As reported in the Interim Report for this grant, Sempervirens Fund (Sempervirens) successfully removed the lower Mill Creek Dam in 2021. This dam removal opens up a stretch of Mill Creek to support Central California Coast coho salmon and Central California Coast steelhead populations in San Vicente Creek that had been blocked for over 110 years. Mill Creek is flowing into the historic floodplain which was a longer-term goal for the project, and now connects into San Vicente Creek at two locations. To date, the site is responding as anticipated and no site modifications have been deemed necessary.

Project Activities

- During the grant period, Sempervirens staff led the process in collaboration with the Santa Cruz Resources Conservation District (RCD) to complete permitting, construction, engineering, revegetation, and site closeout associated with the Mill Creek Dam removal.
- Following the engineering and construction plans developed for the project, Sempervirens Fund provided oversight for the entire project which was completed in 10 total work days.
- The project included a wetland mitigation requirement which called for transplanting roughly 350 wetland plants to a suitable location in Mill Creek just downstream at the confluence of Mill Creek and San Vicente Creek.

Project Outcomes

- This dam removal opens up a stretch of Mill Creek to support Central California Coast coho salmon and Central California Coast steelhead populations in San Vicente Creek that had been blocked for over 110 years.
- An unexpected outcome for this project was the permit requirement to implement wetland mitigation measures for the wetland vegetation that occurred within the project area.
- The vegetation formed on the sediment bank unnaturally trapped behind the dam and was deemed critical wetland habitat by permitting agencies.

- Through our collaboration with the RCD, we identified a transplanting site where two past restoration projects had been implemented by Sempervirens and the RCD – a large woody debris project and a 30-acre riparian invasive species removal project. Both projects helped form a channel through the historic floodplain at the confluence that offered a viable transplanting location for the mitigation project and allowed for the plants to live off the same water source, Mill Creek, which will enhance the survival rate of this critical wetland vegetation.

Lessons Learned

Since the dam removal, Sempervirens has monitored the site regularly to document changing site conditions, assess adaptive management needs, conduct permit compliance monitoring, and initiate affiliated research. Sempervirens staff, project biologists and engineers conducted adaptive management visits to observe site changes, and identify issues that required future actions. To date, the site is responding as anticipated and no site modifications have been deemed necessary. Permit compliance monitoring includes photo monitoring and time lapse camera work to document shifting site conditions.

Since the dam removal project ended, two major storm events at the site occurred in October and December 2021 that provided an opportunity to observe the viability of the dam removal and stream restoration goals for the project. The storms accelerated sediment movement that was anticipated to occur over several years and instead took place over just a few months. A new gravel bar has formed from the sediment that had accumulated behind the dam, creating important spawning habitat for both fish species in the watershed. Mill Creek is flowing into the historic floodplain which was a longer-term goal for the project, and now connects into San Vicente Creek at two locations.

Dissemination

Two research projects have begun at the site: 1) Amah Mutsun/UCLA eDNA project – UCLA graduate students are working with members of the Amah Mustun tribal band to collect water samples from locations above and below the dam site to collect the DNA of targeted species from the water, with a focus on steelhead and coho. This research is comparing pre- and post-dam removal conditions and fish populations that will allow analysis of species composition changes over time; 2) San Jose State University is conducting geomorphic research to evaluate how sediment is moving and how the stream is shifting post dam removal

Photos of this project can be found at this Dropbox link: [Photos & Captions](#)

As-built Surveys and Monitoring Point Photos post-dam removal of this project can be found at this Dropbox link: [Monitoring Data](#)

Press Releases:

- <https://sempervirens.org/news/cemex-agrees-to-removal-of-dam-at-mill-creek-in-santa-cruz-mountains/>
- <https://sempervirens.org/news/news-mill-creek-dam-removed-in-santa-cruz-mountains/>

Content/Stories:

- <https://sempervirens.org/#Restoring-Mill-Creek>

- <https://sempervirens.org/news/san-vicente-creek-restoring-a-stronghold/>
- <https://sempervirens.org/news/mill-creek-dam-and-the-san-vicente-watershed/>

POSTING OF FINAL REPORT: *This report and attached project documents may be shared by the Foundation and any Funding Source for the Project via their respective websites. In the event that the Recipient intends to claim that its final report or project documents contains material that does not have to be posted on such websites because it is protected from disclosure by statutory or regulatory provisions, the Recipient shall clearly mark all such potentially protected materials as “PROTECTED” and provide an explanation and complete citation to the statutory or regulatory source for such protection.*

Project Photos



Image 1: Below lower Mill Creek Dam, look upstream prior to dam removal.



Image 2: Above former lower Mill Creek Dam, looking upstream in mid-November after removal, showing sediment mobilization from significant early season storms reaching above limit of construction disturbance.