

Lower Sidney Gulch Urban Stream Restoration: Phase I Final Report

Summary

The Lower Sidney Gulch Urban Stream Restoration Project consisted of initial design work and environmental analysis of proposed sediment reduction and instream habitat work within the section of stream that runs through Lee Fong Park. A conceptual design was completed by Michael Love and Associates (Attachment A) in coordination with a technical team of stakeholders. The technical team was intended to assist in developing and analyzing biological, hydrological, physical, and flow data needs and guide design objectives for the project. This team included representatives from Weaverville Douglas City Parks and Recreation District (WDCPRD), Five Counties Program (5C), US Army Corp of Engineers, Trinity River Restoration Program, National Marine Fisheries Service, CA Department of Fish and Wildlife, North Coast Regional Water Quality Control Board, and Trinity County. It was decided to focus restoration efforts on: creating more complex instream habitat (large wood, boulders); allowing more space for the channel to naturally meander and creating more of a meander in some places; and removing blackberries, scotch broom, mullein, and other invasive species. Detailed conceptual designs are shown in Attachment A. The WDCPRD will be holding public meetings on the proposed concept designs. Development of the final designs will be pursued as funding is available.

Background

Sidney Gulch and the mountain ridge that formed it were hydraulically mined and washed away from the mid 1880's thru the first quarter of the 1900's (photo 1). Over the next 60 years, the first 1.5 miles of the creek were reconstructed, channelized and confined to a series of straight runs. The stream banks were narrowed, simplified, and hardened as follows:

- Confluence to Lee Fong Park: roads parallel and cross the stream with boulder rip-rap lining the fill faces;
- Lee Fong Park: boulder rip-rap for approximately 40% of the streambank;
- Lee Ranch House to USFS: welded wire rock basket walls (Photo 2), rip-rap, and parallel and crossing roads;
- USFS Compound (Photo 3) and Highway 299 bridge: concrete, parallel and crossing roads;
- Highway 299 bridge to Bally View Road (Photo 4): parallel and crossing roads.



Photo 1 (left): Sidney Gulch (Center of photo). A small ridge (~200' high) once separated East Weaver Creek from Sidney Gulch. This mountain was hydraulically mined and washed away in the late 1800's. Photo 2 (right): A welded wire wall at the Joss House State Park confines the natural stream channel. A building and parking lot are located behind the wall.

It is estimated that 40% of the stream banks on Sidney Gulch within Lee Fong Park have been hardened with rip-rap with higher flows scouring away unprotected banks. The banks will continue to slough and fail over time as the stream tries

to establish a more natural sinuosity. Highways, roads, parking lots, and commercial and residential construction have developed within the former riparian area and floodplain of the stream. This infrastructure now defines the stream meander and habitat opportunities upstream of Lee Fong Park. The portion of the stream system within Lee Fong Park, and the private lands downstream and west of the park, represent the only remaining undeveloped areas along the stream and the best opportunity to remove hardened banks, restore stream channel habitat, increase pool and riffle habitat, create channel sinuosity, and restore flood plain area.

While no systematic surveys of the stream have been conducted for fish use, empirical monitoring of the pool at the downstream end of the USFS compound (Photo 5) has occurred since 1988. Sampling of the pool has consistently documented a minimum of two age classes of coho salmon and three age classes of steelhead. Steelhead up to 22" in diameter were observed in the pool during one survey. The 1989 stream assessment reported coho in reaches within Lee Fong Park as well. Between 2000 and 2004, spawning coho were observed upstream of Lorenz Road and in 2001, a few migrating adult coho, under nearly "ideal" flows, were able to migrate above the Forest Service reach (Photo 6) and spawn in the upper portions of the watershed. Most however, could not make it through the concrete lined channel.

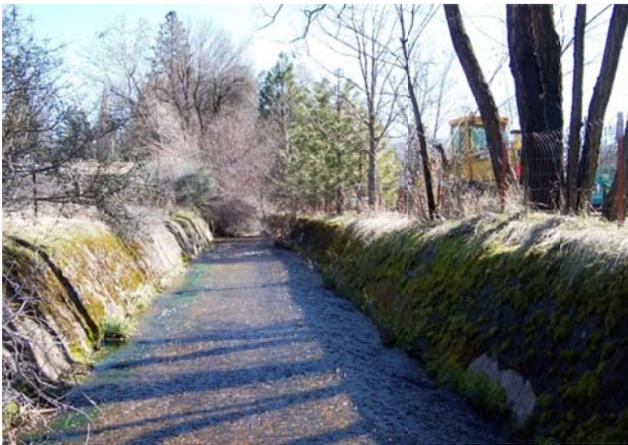


Photo 3 (left): Forest Service compound before installation of fish resting structures (left).

Photo 4 (right): Sidney Gulch between Highway 299 and the Memorial Drive crossing (February, 2004).



Photo 5 (left): Fisheries biologist Patrick Garrison snorkels the pool immediately downstream of the Forest Service compound (note concrete apron at upstream end that scours pool).

Photo 6 (right): Adult coho attempting to migrate through Forest Service compound (2001).

The first steps toward stream restoration began in 1988 when Flood Insurance Rate Map flood studies were completed for Sidney Gulch. At the same time, Trinity County received a CA Department of Water Resources Urban Stream Planning grant to assess and plan for the management of the stream area. In 1989, a stream habitat assessment documented coho, steelhead, dace, lamprey, and other species in the stream (Thrush, 1989). In 1989, the Trinity County Board of Supervisors adopted the FIRM maps, effectively prohibiting new structures from being built in the floodplain. In 1990, the Trinity County Planning Department completed the Sidney Gulch Urban Stream Plan, which was adopted by the Board of Supervisors in January 1991 (Resolution 91-01). The Plan included the following goals:

- Determine baseline (current) in-stream and near stream conditions, such as water quality, turbidity, crown closure/riparian assessment, stream temperature, extent and type of wildlife, fish and insects;
- Establish permanent sample points in Sidney Gulch for periodic stream assessment surveys to determine changes in stream characteristics, flows, habitat, pollution levels;
- Identify limiting in-stream habitat and design habitat improvement projects, their costs and potential funding sources;
- Identify near-stream wildlife habitat and design habitat improvement projects, costs and potential funding sources;
- Identify erosion and pollution sources that could reach streams and develop proposals to reduce stream sediment/erosion and pollution levels and determine costs and potential funding sources;
- Identify existing/potential floodplain retention basins and develop proposals to maintain or improve such basins; and
- Increase public awareness of the value of streams for recreation, wildlife, fisheries and other uses by preparing educational pamphlets for streamside property owners, constructing an interpretive trail, and by developing public awareness and encouraging an ongoing adopt-a-stream effort.

In 1991, the County subcontracted the installation of boulder clusters in the stream at Lee Fong, creating pool habitat (Photo 7). In 2004, storm water retention basins were constructed into parking lot upgrades at both Lee Fong Park and Sam Lee Ranch house properties. In 2006, the Forest Service installed concrete structures in the stream within its compound to create resting habitat to help fish move upstream (Photo 8).



Photo 7 (left): Boulder cluster in Lee Fong Park constructed in 1991 as part of Trinity County's Urban Stream Project (photo taken in 2006). Photo 8 (right): Resting structures within the Forest Service compound.

In 2006, the 5C Program utilized bioengineering techniques to stabilize a stream bank instead of using the traditional boulder rip-rap (Photos 9 and 10).



Photos 9 and 10: A stream bank undercut in the January 2006 storms had been proposed to be rip-rapped, but willow mattress bio-engineering techniques were used instead.

In 2007, the Weaverville Douglas City Park and Recreation District (WDCPRD) purchased the last large tract (4 acres) of creek front property (Photo 11) and made provisions for the future installation of a reclaimed water irrigation system using Proposition 40 bond funds. The parcel which is across the stream from Lee Fong Park and is referred to as the 'Verizon Tract' will be managed for open space recreation. This project proposes stream restoration that will extend onto that parcel.



Photo 11: View of the Verizon Tract purchased by the WDCPRD.
(The stream is the approximate property line.)

Work Completed

The objective of the project were:

- Create and improve in-stream salmon habitat
- Improve flood conveyance
- Increase riparian cover and diversity of native plant species
- Provide for fish passage
- Create off-channel habitat
- Provide interpretive education about the project and the watershed.

Design considerations included:

- Land Use: recreation and community objectives (e.g., orchard)
- Physical: land ownerships and infrastructure within riparian zone
- Permitting/funding: impact to fisheries, scale of restoration

The conceptual design developed by this project features these proposed improvements:

- Creating more complex instream habitat (large wood, boulders)
- Allowing more space for the channel to naturally meander and creating more of a meander in some places
- Removing blackberries, scotch broom, mullein, and other invasive species
- Removing non-native locust trees
- Replanting with suitable native, riparian species
- Preservation of important heritage orchard trees
- Relocating pedestrian path to allow for stream meander in some sections

The existing condition and proposed condition illustrates the locations of the proposed improvements.

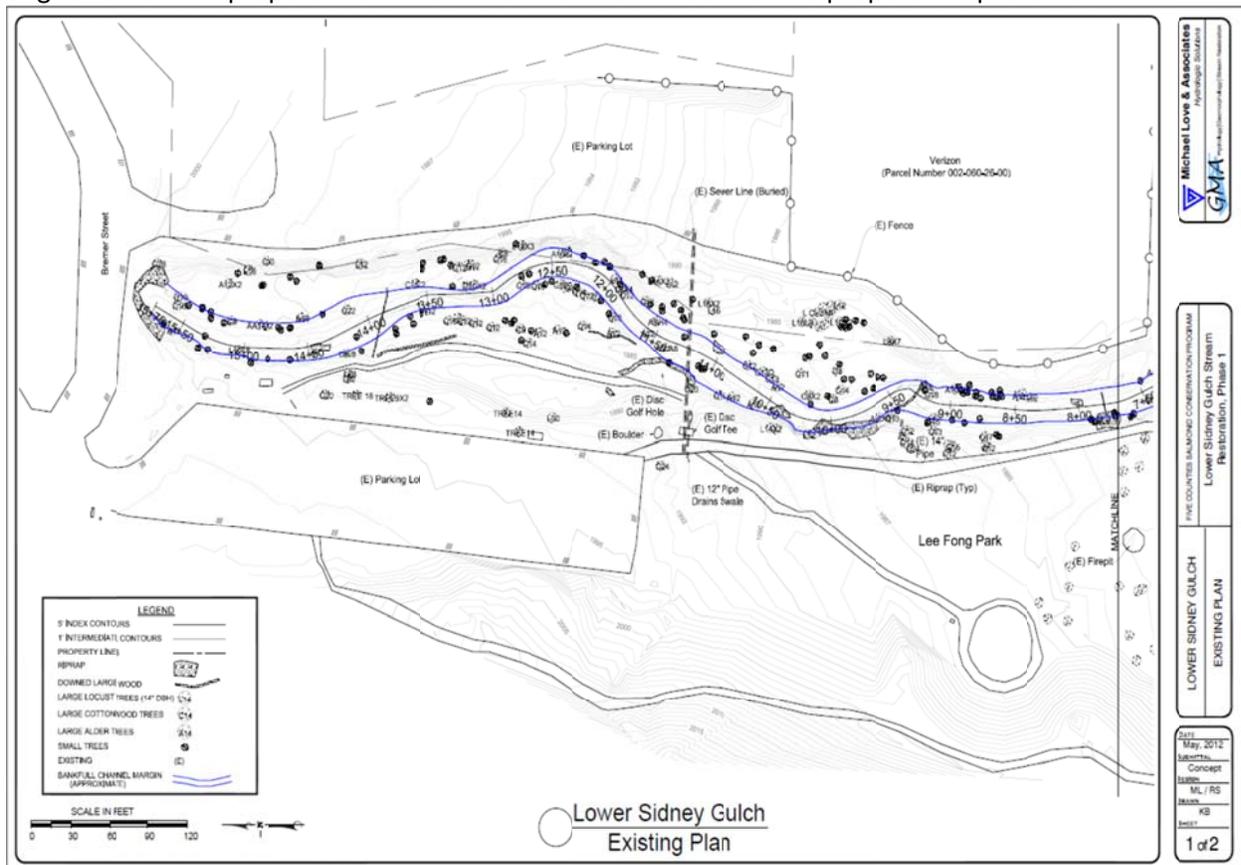
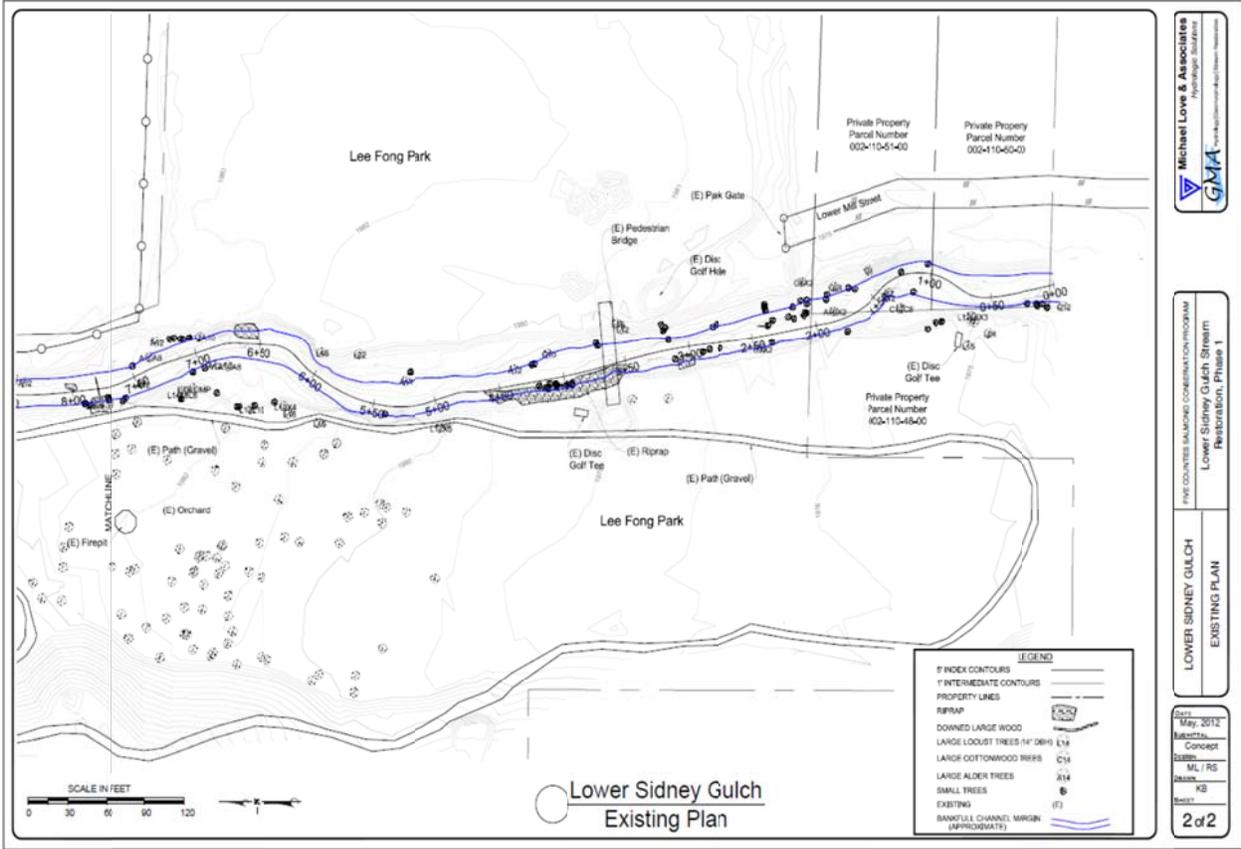
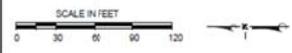


Figure 1 (above): Upper section of stream targeted for restoration.

Figure 2 (below): Lower section of stream targeted for restoration.



LEGEND	
9' INDEX CONTOURS	---
3' INTERMEDIATE CONTOURS	---
PROPERTY LINES	---
RIPPRAP	---(R)---
DOWNED LARGE WOOD	---(D)---
LARGE LOCUST TREES 14" DBH	L14
LARGE COTTONWOOD TREES	C14
LARGE ALDER TREES	A14
SMALL TREES	⊙
EXISTING	(E)
BANKFULL CHANNEL MARGIN (APPROXIMATE)	---



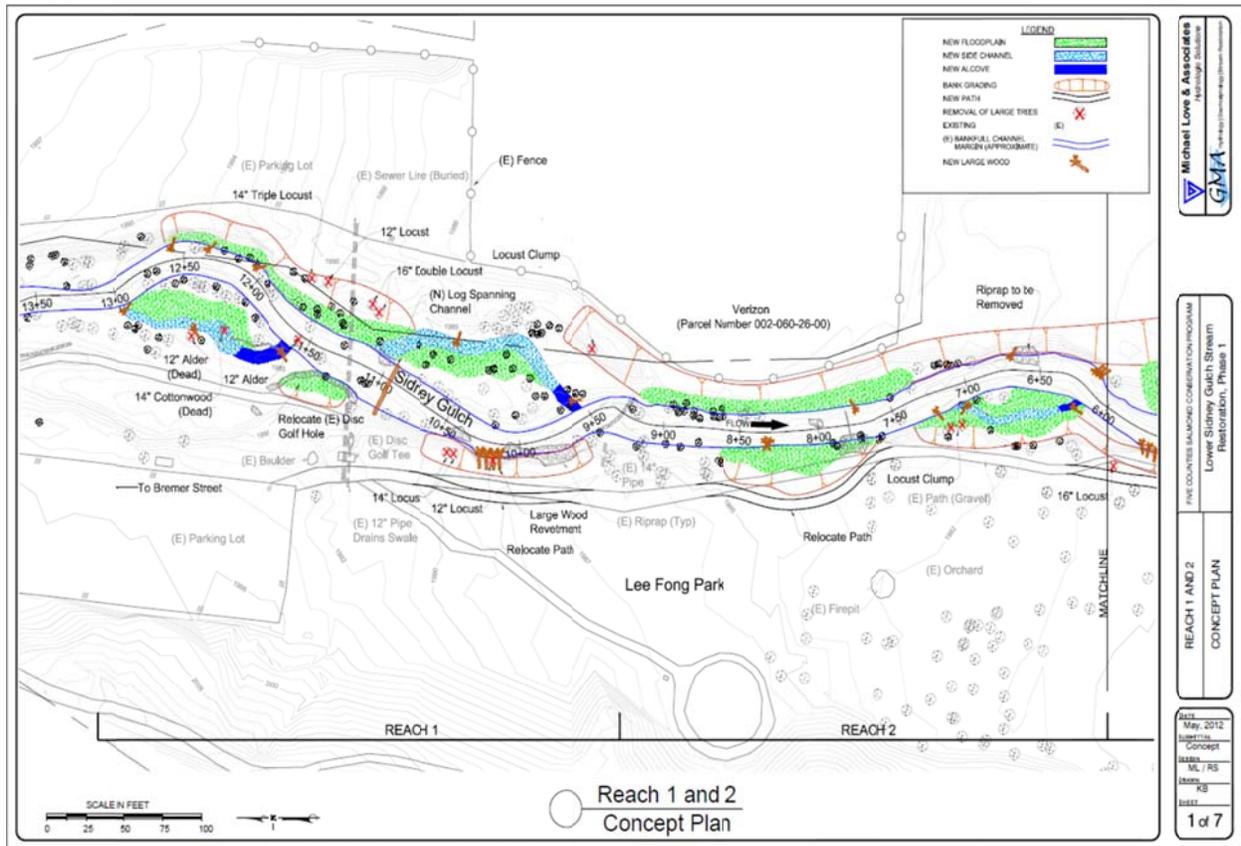
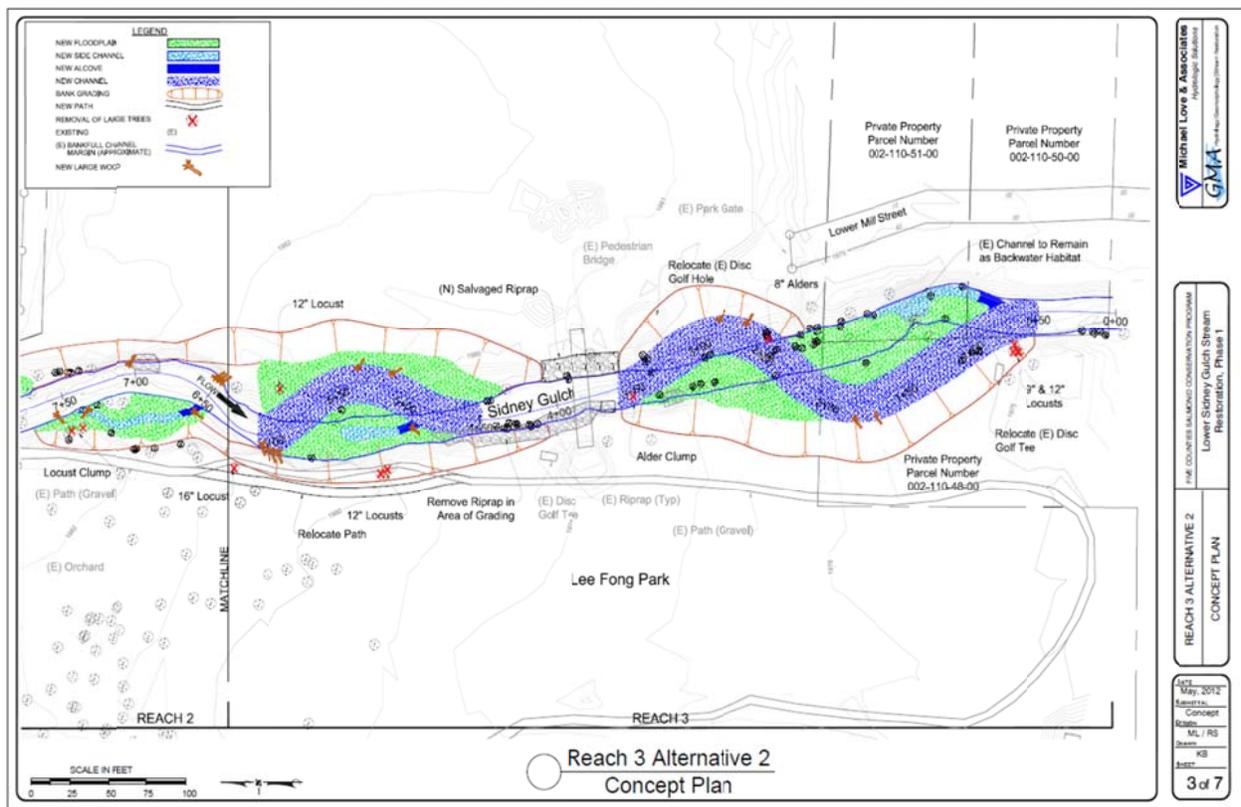


Figure 3 (above): Upper section of stream proposed restoration.
 Figure 4 (below): Lower section of stream proposed restoration.



In addition to the design work, archaeological and botanical studies of the proposed work areas were completed (Attachments B & C). The archaeological survey resulted in no findings of sensitive resources. However, a

recommendation was made to have a tribal monitor from the local Wintu tribe present during ground disturbing activities. The botanical survey did not result in observations of any sensitive plants. This was expected as the proposed work sites have been disturbed for many years with a variety of land uses.

Habitat typing and salmon surveys were also conducted throughout the project period. Consistent with past observations, Coho salmon were observed spawning in the targeted stream sections. Discussions with NOAA Fisheries via the Technical Team and supplemental meetings have already begun to ensure that the project is designed such that it would have minimal impacts to fisheries during construction.

As part of the outreach efforts under this project, the Lee family pasture who owns the adjacent property at the downstream section donated 0.8 of the parcel in fee title to the WDCPRD.

Conclusion

The conceptual design completed under this project will be further pursued as funding opportunities are available. Once a final design is completed, remaining environmental analysis will be completed.