Demonstrating Road Improvements In the Napa River Basin:

Implemented Road Treatments to Reduce Erosion in the Carneros Creek and Sulphur Creek Subwatersheds

Shannon Butler, Bill Birmingham, Danny Hagans, and Tara Zuroweste - Pacific Watershed Associates Inc 1150 Industrial Ave, Petaluma, CA 94952
Frances Knapczyk and Leigh Sharp - Napa County Resource Conservation District 1303 Jefferson Street, Suite 500B, Napa, CA 94559-2472

Project Summary

At the request of the Napa County Resource Conservation District (NCRCD), Pacific Watershed Associates Inc. (PWA) completed the project design and layout, and supervised heavy equipment operations, to implement road related erosion control and erosion prevention treatments along approximately 5.17 mi of road in 2 subwatersheds of the Napa River basin: Sulphur Creek and Carneros Creek. The work plan addressed high priority treatment sites previously assessed, as well as all lengths of hydrologically connected road.

Both Sulphur Creek and Carneros Creek subwatersheds are spawning habitat for federally threatened steelhead trout and the State Water Resources Control Board lists the Napa River basin as being impaired by too much fine sediment. PWA estimates that treating the 46 sites and 5.17 mi of road reaches in the 2 subwatersheds will substantially diminish the delivery of coarse and fine sediment to the Napa River system, including approximately 3,650 yd^3 of sediment projected to originate from ***episodic erosion*** at individual sites, and approximately 4,045 yd^3 of fine sediment estimated to originate from the ***chronic erosion*** of road, ditch, and cutbank surfaces during the next decade alone. The total cost to complete implementation in both subwatersheds was approximately $441,600.

The successful completion of this project represents important progress in reducing road related erosion and sediment delivery to Carneros and Sulphur Creeks, and establishing long-term improvements in water quality locally as well as downstream to the Napa River. If employed with responsible future land use practices, the erosion control and erosion prevention treatments completed for this project can be expected to contribute to the recovery of salmonid habitat in the Napa River basin over the next several decades.

Photo gallery

EPISODIC EROSION

Erosion from individual sites is termed *episodic* because it is projected to take place during storm events that may occur over an indeterminate time. Some sites, such as poorly installed culverts or oversteepened fillslopes, may show evidence for imminent failure, erosion, and sediment delivery to watersheds.

Road treatments used to reduce episodic erosion

Trash racks at culvert inlets reduce culvert plugging

Critical dips eliminate stream diversion down roads

Culvert replacements

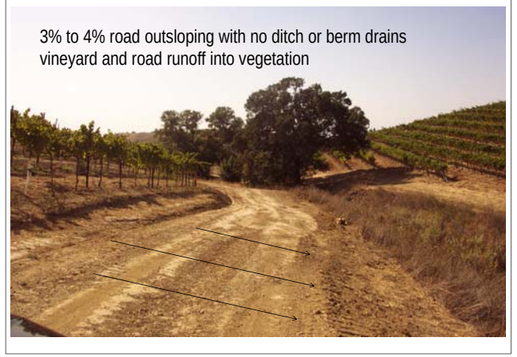
Culverts installed at base of fill and adequately sized

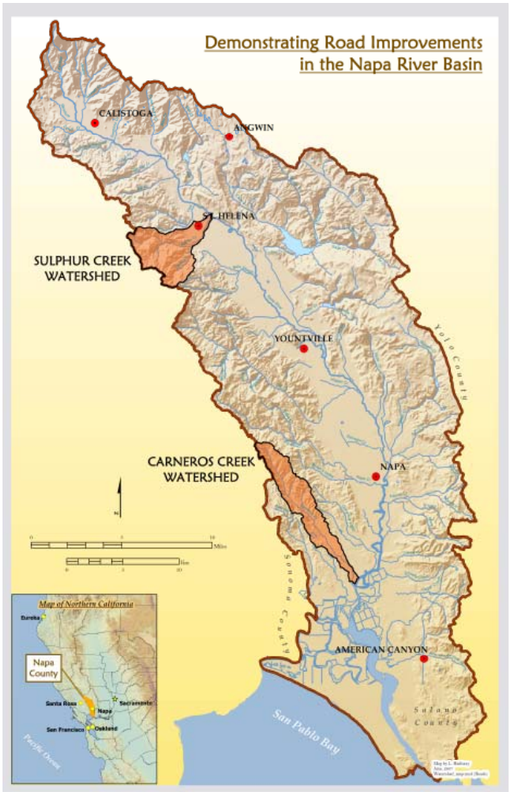
CHRONIC EROSION

Erosion from road surfaces is termed *chronic* because it occurs on an on-going basis, during every rainfall event that results in surface runoff. Chronic road surface erosion is primarily dependent on the level of road usage, the erodibility of the road surface, the steepness of the road, and the amount of surface runoff that is collected, concentrated, and discharged from the road. The amount of fine sediment delivered to stream channels from these eroding road surfaces can be substantial over time, and in many watersheds, including the Napa River basin, may represent the greater detriment to fish habitat and the aquatic ecosystem.

Road treatments used to reduce chronic erosion

Road shaping helps disperse road runoff





Project partners

- State Water Resources Control Board
- The County of Napa
- California Department of Fish and Game
- Artesa Vineyard and Winery
- Cain Vineyard and Winery
- Hudson Vineyards
- Hoffman Institute
- Learned-Perry family
- Saintsbury Vineyards

What's next

More road-related sediment reduction in the Napa River watershed

With funding from DFG and their Fisheries Restoration Grant Program and the US EPA, Napa County RCD and PWA will implement an additional road restoration project near St. Helena, California in Heath Canyon Creek watershed, an important Salmonid habitat. The upcoming project proposes to treat 14 high priority road-related erosion sites as well as over 4 miles of hydrologically connected road segments, ultimately preventing more than 4,000 yd^3 of sediment from being delivered to Heath Canyon Creek watershed.

www.PosterPresentations.com