



Learn the Concepts of Streambank Restoration

Streambank Restoration for Non-Engineer Practitioners and Students

A SERCAL Webinar, December 1 & 3, 2020 (6 hours)

1. Course Introduction

- a. Instructors
- b. Course Overview

2. Historic Changes to River Channels & Floodplains

- a. Channel Modification & Floodplain Disconnection
- b. Dams & Diversions
- c. Streambank Stabilization
- d. Water Quality Impairment

3. Diagnosing and Assessing the Problem

- a. Stream Assessment
 - i. Historic Imagery and Maps
 - ii. Field Assessment
 - iii. Watershed Hydrology Changes
 - iv. Sediment Type and Availability
 - v. Hydraulic and Sediment Transport Modeling
 - vi. Predict change – Channel Evolution Models
- b. Restoration Approaches
 - i. Natural Stream Recovery
 - ii. Reference Reach/Empirical/Analytical

4. Streambank Restoration Assessment

- a. Objectives
- b. Typical Bank Failure Mechanisms & Causes
- c. Determining the Appropriate Technique
 - i. Risks and uncertainties
 - ii. Site characteristics
 1. Channel geometry
 2. Bank length, height, and steepness
 3. Flow velocities and shear stress
 4. Soil texture and horizons
 5. Depth to groundwater
 6. Vegetation
 7. Pore-water pressure
 - iii. Adjacent land use
 - iv. Environmental and regulatory compliance

5. Streambank Restoration Techniques

- a. Toe protection
- b. Bank protection
- c. Flow redirection
- d. Excavation (e.g., laying back the bank)
- e. Increase floodplain connectivity

6. Case Studies

- a. Guadalupe Creek
- b. Napa River
- c. Upper Santa Ana River – Anza Creek
- d. Presidio Quartermaster Reach
- e. Sheep Camp Creek