



PUBLIC NOTICE

U.S. ARMY CORPS OF ENGINEERS
LOS ANGELES DISTRICT

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APPLICATION FOR REAUTHORIZATION
OF REGIONAL GENERAL PERMIT 78 FOR THE
CALIFORNIA DEPARTMENT OF FISH AND WILDLIFE
FISHERIES RESTORATION GRANT PROGRAM

Public Notice/Application No.: SPL-2019-00120-CLH

Project: Regional General Permit (RGP) No. 78 Reauthorization for the California Department of the Fish and Wildlife (CDFW) Fisheries Restoration Grant Program (FRGP)

Comment Period: March 27, 2019-April 27, 2019

Project Manager: Crystal L.M. Huerta; (805) 585-2143; crystal.huerta@usace.army.mil

Applicant

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Location: CDFW proposes under the FRGP to implement salmonid habitat restoration activities typically occurring in watersheds that have been subjected to significant levels of logging, road building, urbanization, mining, grazing, and other activities that have reduced the quality and quantity of stream habitat available for native anadromous fish. The location of these restoration activities would take place in coastal watersheds in the following counties within the Los Angeles District: Los Angeles, Orange, Riverside, San Bernardino, San Diego, San Luis Obispo, Santa Barbara, and Ventura. Please see map included as Figure 1.

Activity: To reauthorize RGP 78, which would provide programmatic authorization for discharges of fill material into waters of the U.S. associated with various activities to restore anadromous fish habitat in non-tidal reaches of rivers and streams, improve watershed conditions impacting salmonid streams, and improve the reproduction, growth, migration, and survival of anadromous fish. For more information, see page 5 of this notice.

Interested parties are hereby notified an application has been received for a Department of the Army permit for the activity described herein and shown on the attached drawing(s). We invite you to review today's public notice and provide views on the proposed work. By providing substantive, site-specific comments to the Corps Regulatory Division, you provide information that supports the Corps' decision-making process. All comments received during the comment period become part of the record and will be considered in the decision. This permit will be issued, issued with special conditions, or denied under Section 404 of the Clean Water Act. Comments should be mailed to:

DEPARTMENT OF THE ARMY
LOS ANGELES DISTRICT, U.S. ARMY CORPS OF ENGINEERS
REGULATORY DIVISION
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Alternatively, comments can be sent electronically to: crystal.huerta@usace.army.mil

The mission of the U.S. Army Corps of Engineers Regulatory Program is to protect the Nation's aquatic resources, while allowing reasonable development through fair, flexible and balanced permit decisions. The Corps evaluates permit applications for essentially all construction activities that occur in the Nation's waters, including wetlands. The Regulatory Program in the Los Angeles District is executed to protect aquatic resources by developing and implementing short- and long-term initiatives to improve regulatory products, processes, program transparency, and customer feedback considering current staffing levels and historical funding trends.

Corps permits are necessary for any work, including construction and dredging, in the Nation's navigable water and their tributary waters. The Corps balances the reasonably foreseeable benefits and detriments of proposed projects, and makes permit decisions that recognize the essential values of the Nation's aquatic ecosystems to the general public, as well as the property rights of private citizens who want to use their land. The Corps strives to make its permit decisions in a timely manner that minimizes impacts to the regulated public.

During the permit process, the Corps considers the views of other Federal, state and local agencies, interest groups, and the general public. The results of this careful public interest review are fair and equitable decisions that allow reasonable use of private property, infrastructure development, and growth of the economy, while offsetting the authorized impacts to the waters of the United States. The permit review process serves to first avoid and then minimize adverse effects of projects on aquatic resources to the maximum practicable extent. Any remaining unavoidable adverse impacts to the aquatic environment are offset by compensatory mitigation requirements, which may include restoration, enhancement, establishment, and/or preservation of aquatic ecosystem system functions and services.

Evaluation Factors

The decision whether to issue a permit will be based on an evaluation of the probable impact including cumulative impacts of the proposed activity on the public interest. That decision will reflect the national concern for both protection and utilization of important resources. The benefit, which reasonably may be expected to accrue from the proposal must be balanced against its reasonably foreseeable detriments. All factors which may be relevant to the proposal will be considered including the cumulative effects thereof. Factors that will be considered include conservation, economics, aesthetics, general environmental concerns, wetlands, cultural values, fish and wildlife values, flood hazards, flood plain values, land use, navigation, shoreline erosion and accretion, recreation, water supply and conservation, water quality, energy needs, safety, food production and, in general, the needs and welfare of the people. In addition, if the proposal would discharge dredged or fill material, the evaluation of the activity will include application of the EPA Guidelines (40 CFR Part 230) as required by Section 404 (b)(1) of the Clean Water Act.

The Corps of Engineers is soliciting comments from the public; Federal, state, and local agencies and officials; Indian tribes; and other interested parties in order to consider and evaluate the impacts of this proposed activity. Any comments received will be considered by the Corps of Engineers to determine whether to issue, modify, condition or deny a permit for this proposal. To make this decision, comments are used to assess impacts on endangered species, historic properties, water quality, general environmental effects, and the other public interest factors listed above. Comments are used in the preparation of an Environmental Assessment and/or an Environmental Impact Statement pursuant to the National Environmental Policy Act. Comments are also used to determine the need for a public hearing and to determine the overall public interest of the proposed activity.

Preliminary Review of Selected Factors

EIS Determination- A preliminary determination has been made an environmental impact statement is not required for the proposed work.

Water Quality- The applicant is required to obtain water quality certification, under Section 401 of the Clean Water Act, from the California Regional Water Quality Control Board. Section 401 requires any applicant for an individual Section 404 permit provide proof of water quality certification to the Corps of Engineers prior to permit issuance. For any proposed activity on Tribal land that is subject to Section 404 jurisdiction, the applicant would be required to obtain water quality certification from the U.S. Environmental Protection Agency. The California Department of Fish and Wildlife annually applies to the State Water Resources Control Board (SWRCB) for a conditional water quality certification for projects funded through its Fisheries Restoration Grant Program. The Department has received a 401 WQ Certification every fiscal year for each year's implementation projects, including those authorized under RGP 78. The most recent certification was July 2018 and the identification number was SB180022IN.

Coastal Zone Management- For projects in or affecting the coastal zone, the Federal Coastal Zone Management Act requires that prior to issuing the Corps authorization for the project, the applicant must obtain concurrence from the California Coastal Commission that the project is consistent with the State's Coastal Zone Management Plan. For the previously authorized RGP 78, the applicant certified that proposed activities conducted under RGP 78 complied with and would be conducted in a manner consistent with the approved State Coastal Zone Management Program. The District Engineer hereby requests the California Coastal Commission's concurrence or non-concurrence for consistency with the CZMA for this revised regional general permit.

Essential Fish Habitat- Preliminary determinations indicate the proposed activity would not adversely affect essential Fish Habitat because the projects to date have all been small and often a moderate distance up in the watershed. Ground disturbance could facilitate sediment transport, but within a short distance, most of the sediment would resettle and become part of the background transport. Material reaching estuaries or the ocean from these projects would likely be immeasurable, and justifying a determination of no adverse effect on EFH. Therefore, formal consultation under Section 305(b)(2) of the Magnuson-Stevens Fishery Conservation and Management Act (MSA) is not required at this time.

Cultural Resources- The latest version of the National Register of Historic Places will be consulted along with other site-specific information to determine if any of the identified proposed projects may affect a cultural resource listed or potentially eligible for listing on the National Register of Historic Places. If such a resource is determined to be potentially affected by a particular project,

the Corps shall enter into consultation with the State Historic Preservation Office pursuant to Section 106 of the National Historic Preservation Act.

Endangered Species- Activities likely to be conducted under the regional general permit are anticipated to affect one or more federally listed endangered or threatened species, or their designated critical habitat. For the original establishment of RGP 78, the Corps initiated formal consultation with the U.S. Fish and Wildlife Service (USFWS) and National Marine Fisheries Service (NMFS). In addition to the consultation with NMFS regarding steelhead (*Oncorhynchus mykiss*) and its critical habitat, consultation with the Service addressed potential effects on tidewater goby (*Eucyclogobius newberryi*), unarmored threespine stickleback (*Gasterosteus aculeatus williamsoni*), California red-legged frog (*Rana draytonii*), arroyo toad (*Anaxyrus californicus*), California tiger salamander (*Ambystoma californiense*), least Bell's vireo (*Vireo bellii pusillus*), southwestern willow flycatcher (*Empidonax traillii extimus*), Gambel's watercress (*Rorippa gambellii*), marsh sandwort (*Arenaria paludicola*), and Chorro Creek bog thistle (*Cirsium fontinale* var. *obispoense*).

NMFS previously in its biological opinion (BO, SWR/2007/06563), dated May 23, 2008, concluded activities conducted under RGP 78 would not jeopardize the continued existence of the South-Central California Steelhead Distinct Population Segment (DPS) or the Southern California Steelhead DPS, and are not likely to destroy or adversely modify designated critical habitat for these populations. The Corps reinitiated consultation in a letter dated December 3, 2014 due to a modification of work types and has been working with NMFS to obtain an updated BO for RGP 78.

USFWS, in its biological opinion 1-8-08-F-17, dated December 9, 2008, concluded activities conducted under RGP 78 would not affect tiger salamander and Chorro Creek bog thistle, or designated critical habitat the vireo and arroyo toad. After reviewing the current status of the other species and their critical habitat, the environmental baseline for the action area (coastal southern California drainages potentially supporting steelhead), the effects of the proposed activities within the action area, and the cumulative effects of these activities, the USFWS concluded issuance of the proposed RGP would not likely jeopardize the continued existence of tidewater goby, unarmored threespine stickleback, arroyo toad, California red-legged frog, least Bell's vireo or southwestern willow flycatcher, nor destroy or adversely modify critical habitat for the goby, frog or flycatcher.

During the consultation, USFWS also concluded that activities proposed under RGP 78 could jeopardize the continued existence of marsh sandwort and Gambel's watercress. When informed of this conclusion, the Corps coordinated with CDFW, which confirmed to the Service's satisfaction that CDFW would not conduct restoration activities under the Fisheries Restoration Grant Program through RGP 78 in any area potentially harboring the listed sandwort or watercress. With that avoidance measure incorporated into the project description, the USFWS did not further include these species in their biological opinion. Consultation with USFWS would be reinitiated if additional measures to avoid and minimize adverse impacts on listed species or critical habitat is appropriate.

Public Hearing- Any person may request, in writing, within the comment period specified in this notice, that a public hearing be held to consider this application. Requests for public hearing shall state with particularity the reasons for holding a public hearing.

Proposed Activity for Which a Permit is Required

Basic Project Purpose- The basic project purpose comprises the fundamental, essential, or irreducible purpose of the proposed project, and is used by the Corps to determine whether the applicant's project is water dependent (i.e., requires access or proximity to or siting within the special aquatic site to fulfill its basic purpose). Establishment of the basic project purpose is necessary only

when the proposed activity would discharge dredged or fill material into a special aquatic site (e.g., sanctuaries and refuges, wetlands, mud flats, vegetated shallows, coral reefs, and pool-and-riffle complexes). The basic project purpose for the proposed project is in-stream habitat restoration. Because such actions often require siting in or in close proximity to special aquatic sites including wetlands and riffle-and-pool complexes to achieve the basic project purpose, they are considered water dependent.

Overall Project Purpose- The overall project purpose serves as the basis for the Corps' 404(b)(1) alternatives analysis and is determined by further defining the basic project purpose in a manner that more specifically describes the applicant's goals for the project, and which allows a reasonable range of alternatives to be analyzed. The overall project purpose is to provide a programmatic authorization for discharges of fill material for salmonid habitat restoration associated with the FRGP.

Additional Project Information

The FRGP manages an annual grant cycle initiated in the spring of each year supporting a variety of projects from sediment reduction to watershed education throughout coastal California. Projects selected for funding have two years to be implemented, and most of the habitat restoration activities take place during the dry summer season. The majority of this funding is awarded for habitat restoration projects that improve overhead cover, spawning gravels, and pool habitat; reduce or eliminate erosion and sedimentation impacts; screen diversions; and remove barriers to fish passage. These habitat restoration activities conform to mandates of the California Legislature in the Fish and Game Code and Public Resources Code. Proposed activities are designed to restore salmon and steelhead habitat with the goal of increasing populations of wild anadromous fish in coastal streams and watersheds. Habitat restoration activities and practices include fish passage projects, bank stabilization treatments, upslope road decommissioning or repair, and replacement or modification of culverts that are barriers to fish passage. Estimating the number of projects per year depends on the amount of funding the Fisheries Restoration Grant Program (FRGP) receives and the number of qualifying proposals submitted, but is not expected to exceed 10 projects per grant cycle. The attached spreadsheet (Attachment C) displays all projects covered under the previous iterations of RGP-78 and their dewatering and relocation activities. Please note that due to the drought during the 2015 RGP-78 project cycle there was no need for dewatering and relocation activities due to dry creek beds.

The activities proposed under the use of this Regional General Permit are designed to restore South-Central California Coast and Southern California DPS steelhead habitat with the goal of increasing populations of wild anadromous fish in coastal streams and watersheds. Instream restoration activities would be implemented annually during the summer low-flow period, typically between July 1 and November 1.

Proposed structures would provide predator escape and resting cover, increase spawning habitat, improve upstream and downstream migration corridors, improve pool to riffle ratios, and add habitat complexity and diversity. Some structures would be designed to reduce sedimentation, protect unstable banks, stabilize existing slides, provide shade, and create scour pools. Drawings are included in Attachment B. Figure numbers in Attachment B refer to the figures in the *California Salmonid Stream Habitat Restoration Manual* (CDFW Manual).

Most stream and river fish habitat devices would be located out of the minimum flow channel (thalweg). Navigation would not be affected since most sites would be in headwater areas. None would be in lower river sections or within sections of rivers that are considered navigable either legally or within the common meaning of the term.

The CDFW Manual provides information, guidance, and techniques for proper implementation of various types of salmonid restoration projects. The most current version of the manual is available at the following website: <http://www.dfg.ca.gov/fish/Resources/HabitatManual.asp>. The following habitat restoration activities conform with state law and are implemented consistent with the CDFW Manual. The referenced chapters of the CDFW Manual provide a more detailed description of restoration projects.

- In-stream habitat improvements, including cover structures (divide logs, digger logs, spider logs, and log/root wad/boulder combinations), boulder structures (boulder weirs, vortex boulder weirs, boulder clusters, and single- and opposing-boulder wing-deflectors), log structures (log weirs, upsurge weirs, single- and opposing-log wing-deflectors, and Hewitt ramps) and placement of imported spawning gravel may be utilized in certain locations. Techniques and practices are identified in part VII of the Manual. Techniques for placement of spawning gravel are identified on page VII-46 of the Manual.
- Unanchored large woody debris may be used to enhance pool formation and improve stream reaches, particularly on first- through third-order streams. Logs selected for placement would generally have a minimum diameter of 12 inches and a minimum length 1.5 times the mean stream channel type bankfull width at the deployment site. A root wad should have a minimum root bole diameter of 5 feet and a minimum length of 15 feet, and should be at least half the channel type bankfull width. More information can be found on page VII-23 of the Manual.
- Fish screens may be used to prevent entrainment of juvenile salmonids in water diverted for agriculture, power generation, or domestic use, and are necessary on both gravity flow and pump diversion systems. Guidelines for functional designs of downstream migrant fish passage facilities at water withdrawal projects are found in Appendix S of the Manual. The appendix covers structure placement, approach velocity, sweeping velocity, screen openings, and screen construction.
- Fish passage at stream crossings includes activities that provide fish-friendly crossings where the crossing width is at least as wide as the active channel. Culvert passes are designed to withstand a 100-year storm flow and crossing bottoms are buried below the streambed. Examples include replacement of barrier stream crossings with bridges, bottomless arch culverts, embedded culverts, or fords. Guidelines for fish passage practices are covered in Part IX of the Manual. Baffled culverts (Washington baffles and steel ramp baffles,), fishways (step-and-pool, Denil fishway, Alaskan steeppass and back-flooding weirs), and fish ladders are described in Part XII of the Manual.

Fish passage improvements may include removal of obstructions such as log jams, beaver dams, waterfalls and chutes, and landslides. Suitable large woody debris removed from fish passage barriers that are not used by the project for habitat enhancement would be left within the riparian zone so as to provide a source for future recruitment of wood into the stream system. Guidelines for fish passage improvements are covered in Part VII of the Manual.

- Upslope restoration activities reduce sediment delivery to anadromous streams, and may include road decommissioning, road upgrading, and stormproofing roads by replacing high risk culverts with bridges, installing culverts to withstand the 100-year flood flow, installing critical dips, installing armored crossings, and removing unstable sidecast and fill materials from steep slopes. Guidelines for upslope restoration practices are covered in Part X of the Manual.
- Watershed and stream bank stability activities serve to reduce sediment input from erosive areas within the watershed. Examples include slide stabilization, stream bank stabilization, boulder stream bank stabilization structures, log stream bank stabilization structures, tree revetment, native material revetment, mulching, revegetation, willow wall revetment, brush

mattress installation, checkdams, brush checkdams, waterbars, and exclusionary fencing. Guidelines for watershed and stream bank stability are covered in Part VII of the Manual.

Proposed Mitigation

The overall goal of the FRGP is anticipated to result in net long-term benefits to the aquatic environment, therefore compensatory mitigation is not anticipated in most cases. Discharges of dredged or fill material into Waters of the U.S. must be avoided or minimized to the maximum extent practicable at each project site and any adverse impacts to waters of the U.S. associated with this RGP are expected to be short-term and localized in most if not all cases. Factors the Corps would consider when determining the need for compensatory mitigation would include, but not be limited to:

- 1) The approximate functions and values of the aquatic resource being impacted, such as habitat value, aquifer recharge, sediment conveyance or retention, flood storage, etc.;
- 2) The permanence of the project's impacts on the resource; and
- 3) The potential long-term effects of the action on remaining functions and values of the impacted aquatic resource.

Proposed Special Conditions

The applicant proposed various measures implemented with the previous period of authorization since May 2009, including:

- full consistency with the CDFW Manual;
- implementing projects to coincide with the summer dry season (generally between July 1 and November 1 or first rainfall);
- locating staging and storage areas for equipment, materials, fuels, lubricants and solvents outside of a stream's high water channel and associated riparian habitats;
- minimization of number of access routes and staging areas;
- containment of trash and debris throughout the project duration;
- working outside of flowing water by avoidance, use of cofferdams and diversion of flows;
- fitment of fish screens meeting CDFW and NMFS criteria for all intakes;
- disposal of turbid water pumped from the work site such that it will not drain back to any stream channel;
- downstream capture of suspended sediments for actions where construction of cofferdams would be more intrusive than the actions to complete the project;
- minimization of spread or introduction of non-native aquatic or plant species;
- minimization of any disturbance of wildlife encountered at a project site;
- use of exclusion measures at work sites that may harbor sensitive aquatic organisms;
- avoidance of ground disturbances that may adversely affect cultural resources and full compliance with existing state and federal statutes if such resources are found; and
- implementation of specific measures to avoid and minimize impacts to endangered, threatened or rare species that could occur at a particular project site.

These measures would continue to apply to any reauthorized RGP 78.

For additional information please call Crystal Huerta of my staff at (805) 585-2143 or via e-mail at crystal.huerta@usace.army.mil. This public notice is issued by the Chief, Regulatory Division.



Regulatory Program Goals:

- To provide strong protection of the nation's aquatic environment, including wetlands.
- To ensure the Corps provides the regulated public with fair and reasonable decisions.
- To enhance the efficiency of the Corps' administration of its regulatory program.

DEPARTMENT OF THE ARMY
LOS ANGELES DISTRICT, U.S. ARMY CORPS OF ENGINEERS
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Figure 1: Map depicting the location of restoration activities that will take place in coastal watersheds in the following counties within the Los Angeles District of the US Army Corps of Engineers: Los Angeles, Orange, Riverside, San Bernardino, San Diego, San Luis Obispo, Santa Barbara, and Ventura.

Attachment B

Figures are from the California Salmonid Stream Restoration Manual
(<http://www.dfg.ca.gov/fish/Resources/HabitatManual.asp>)

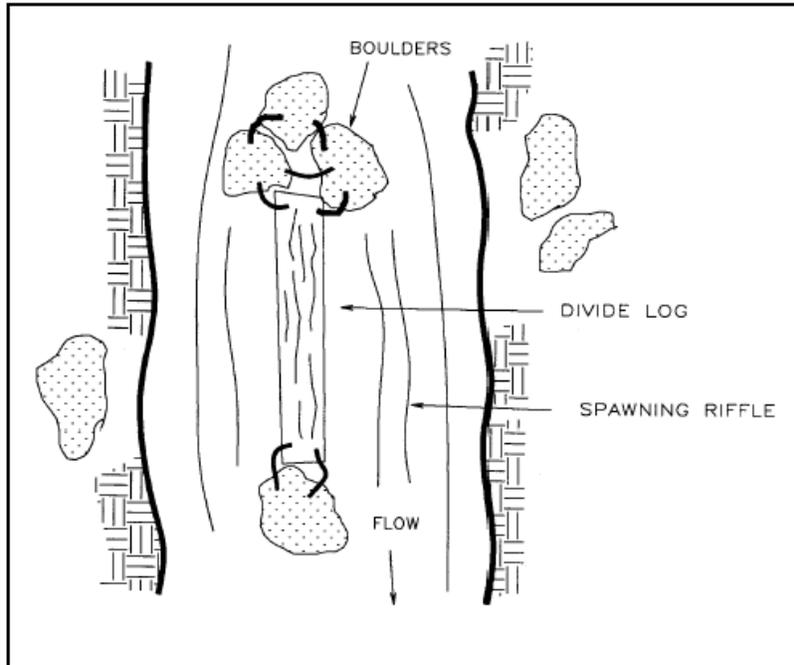


Figure VII-17. Divide log.

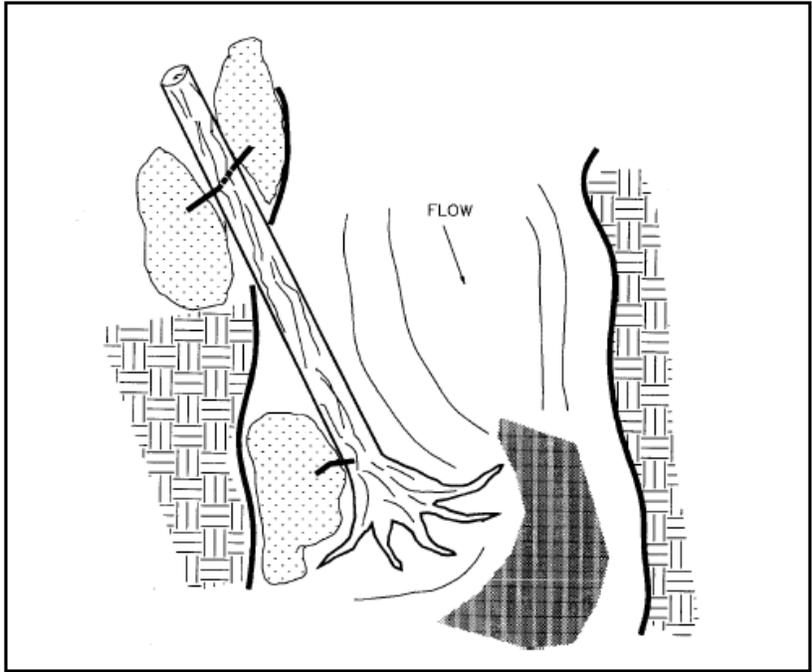


Figure VII-18. Digger log.

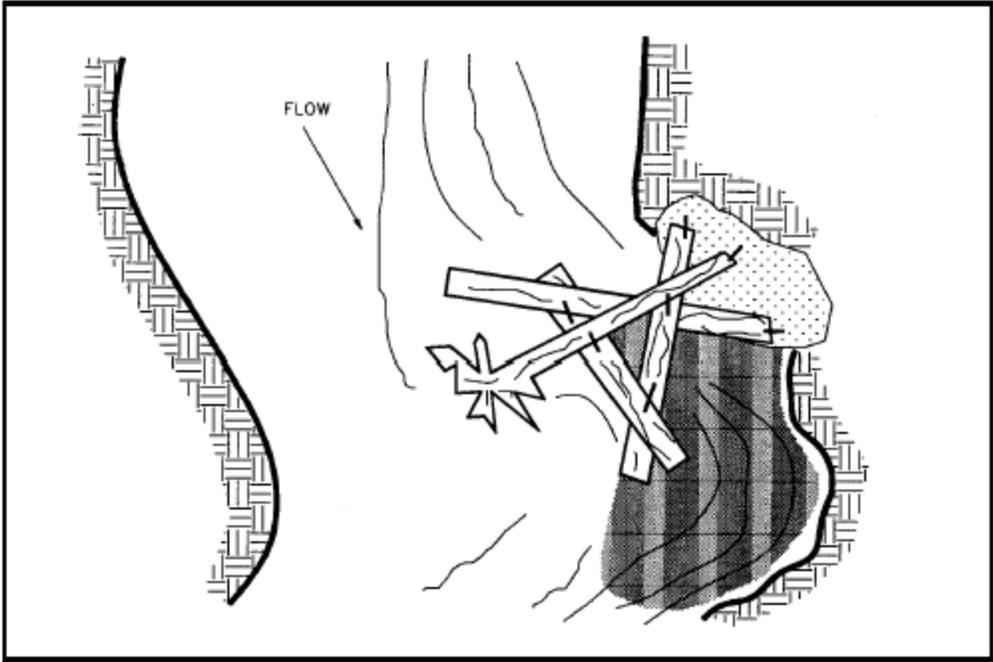


Figure VII-19. Spider logs.

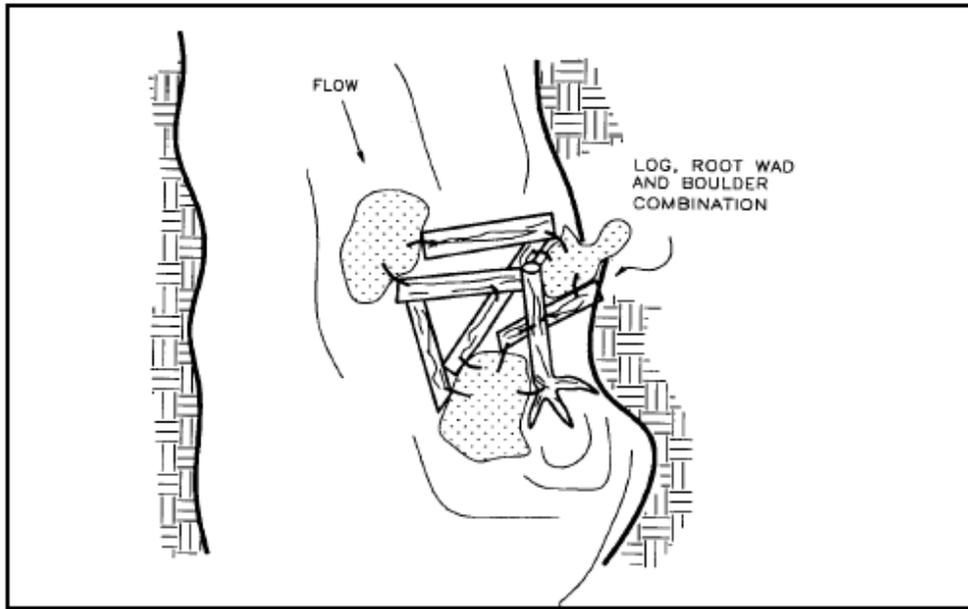


Figure VII-20. Log, root wad, and boulder combination.

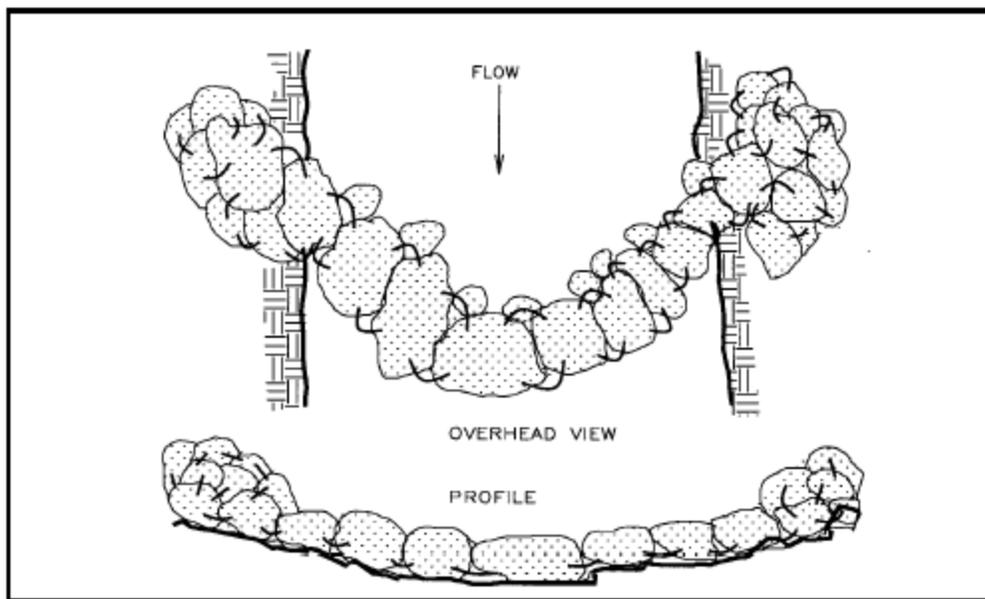


Figure VII-21. Downstream-V boulder weir.

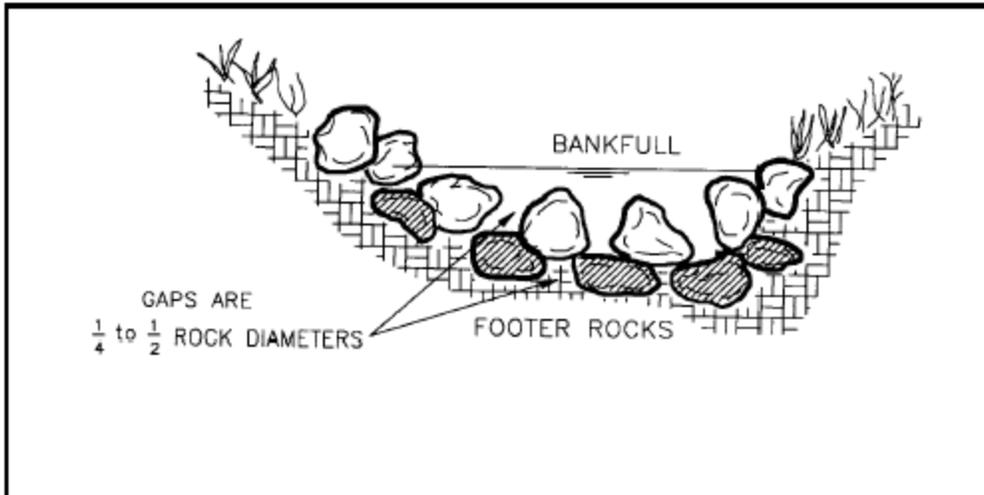


Figure VII-22. Vortex boulder weir, cross section view (Rosgen, 1993).

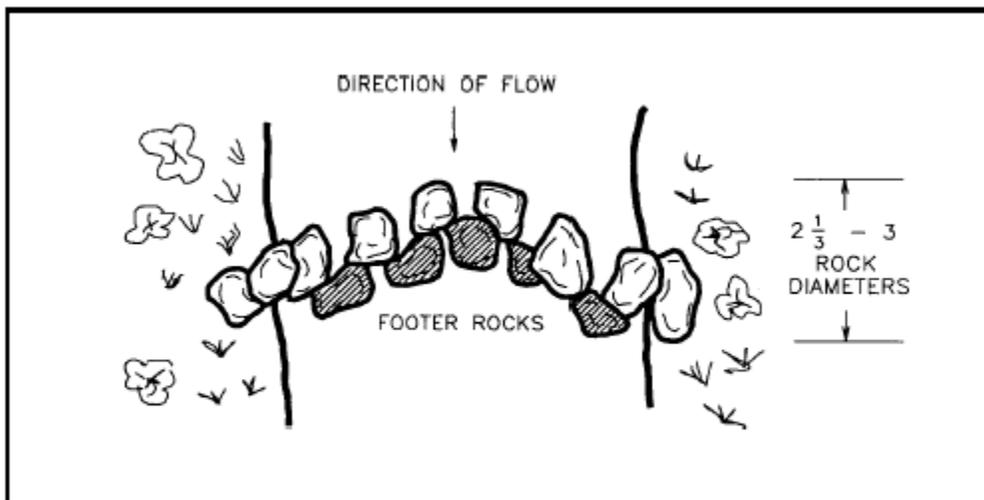


Figure VII-23. Vortex boulder weir, plan view (Rosgen, 1993).

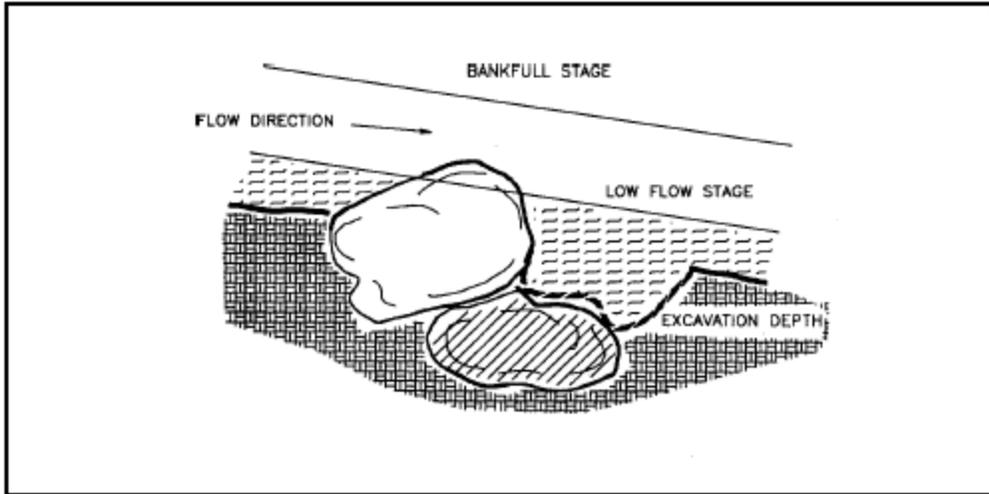


Figure VII-24. Vortex boulder weir, profile view (Rosgen, 1993).

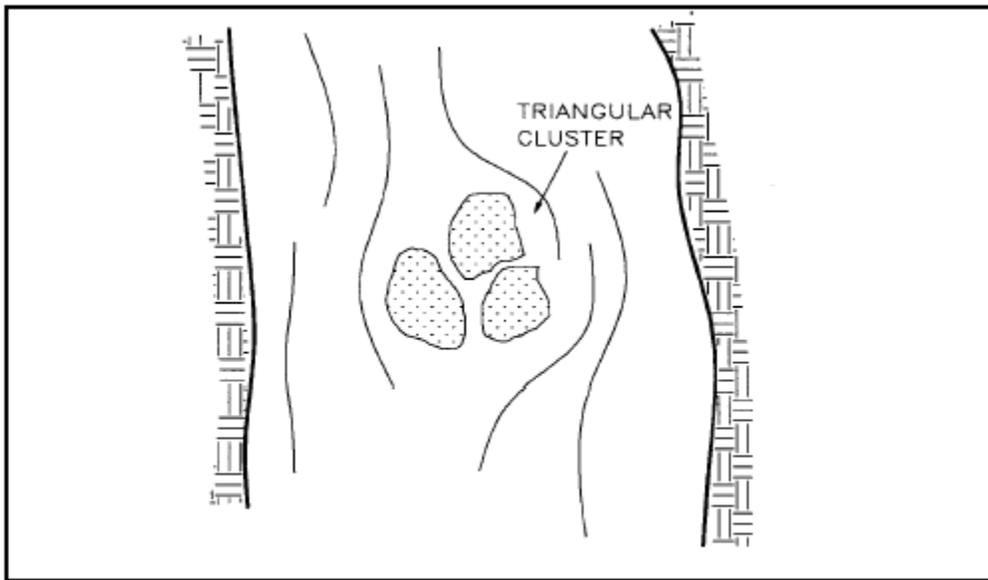


Figure VII-25. Boulder cluster.

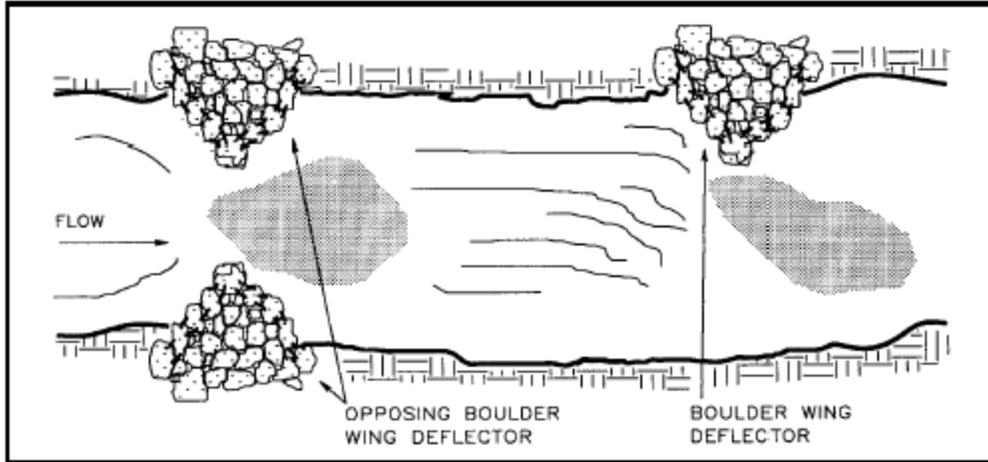


Figure VII-26. Single and opposing boulder wing-deflectors.

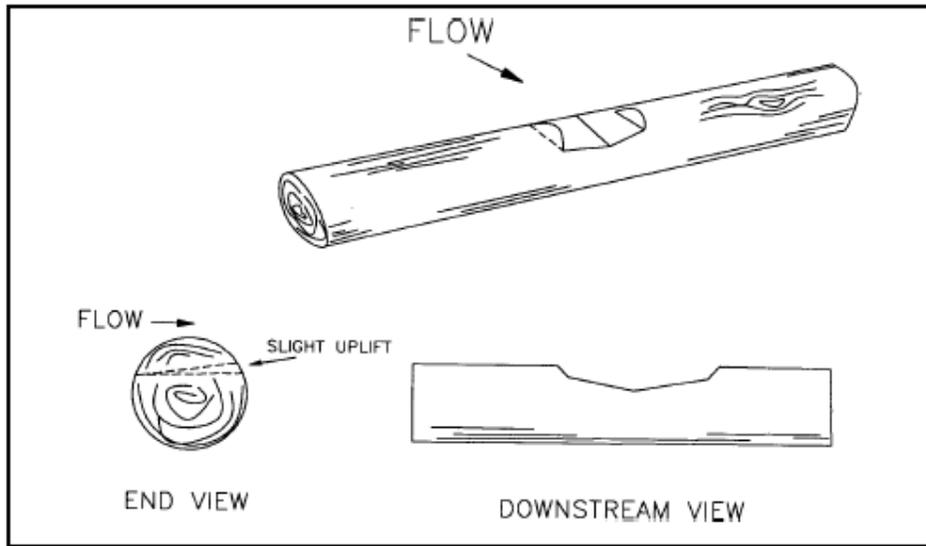


Figure VII-27. Straight log weir with low-flow notch.

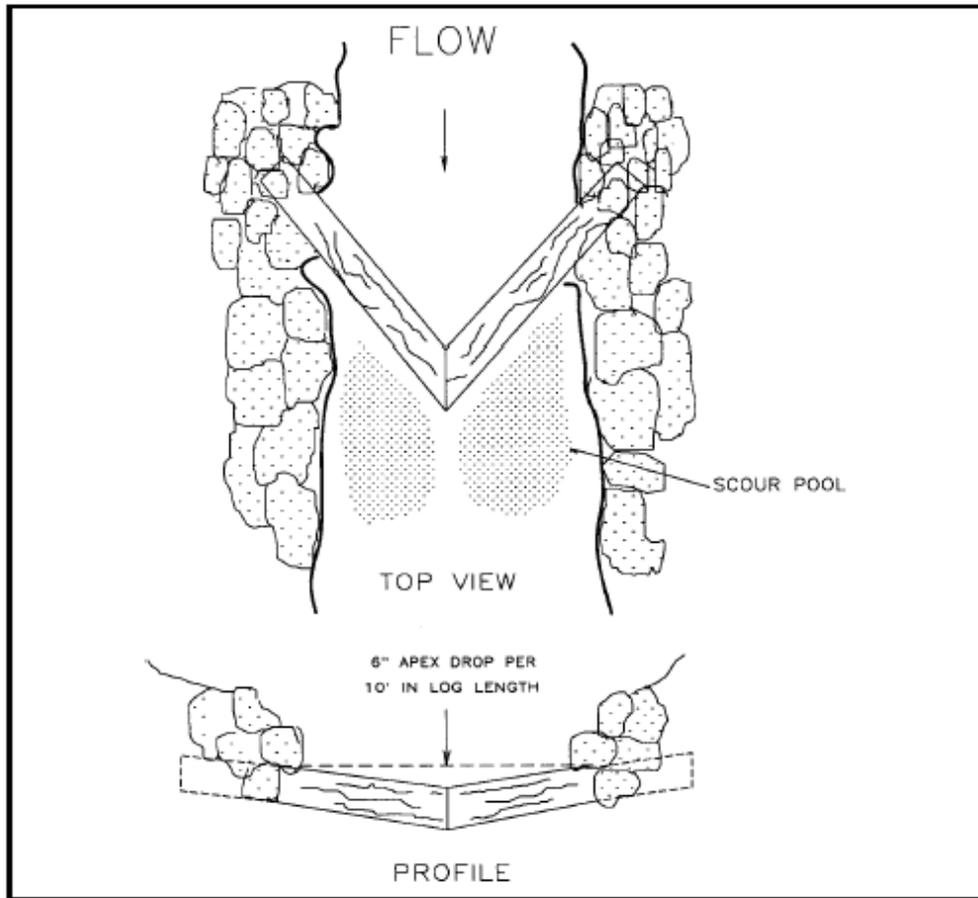


Figure VII-28. Downstream-V log weir.

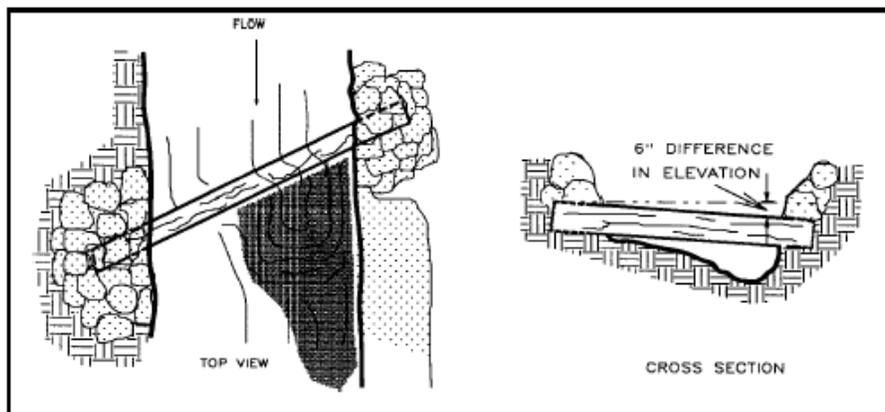


Figure VII-29. Diagonal log weir.

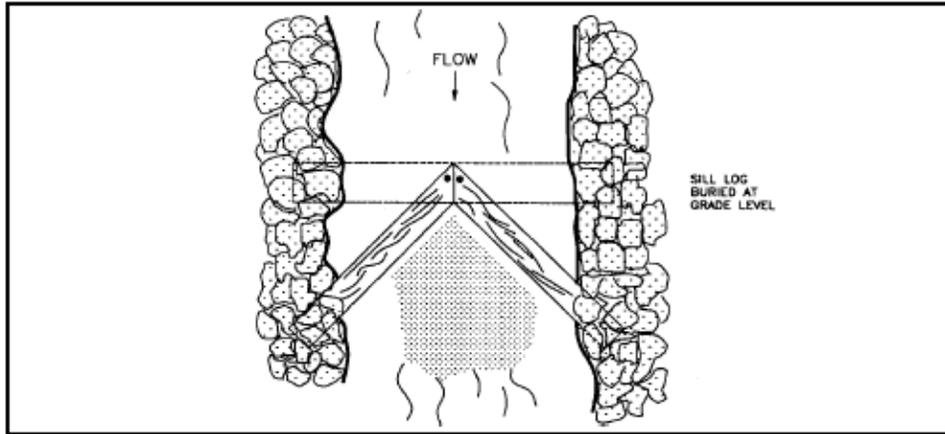


Figure VII-30. Upstream-V log weir.

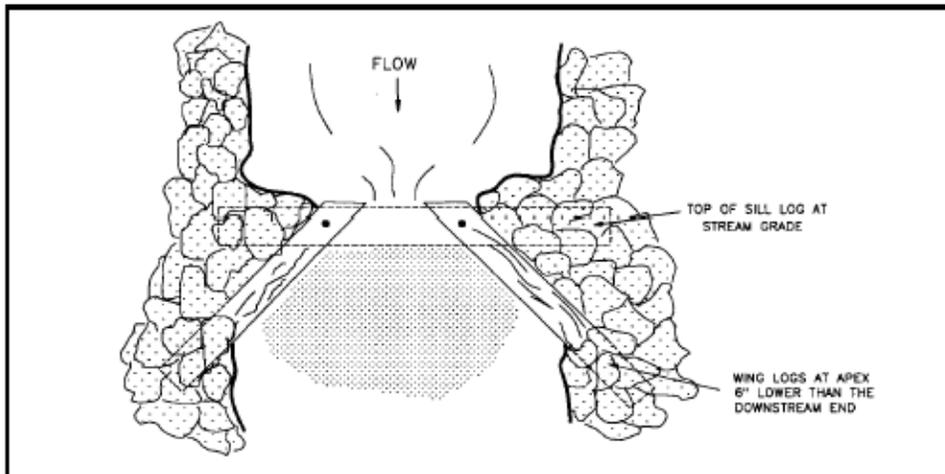


Figure VII-31. Upstream-V log weir with a low-flow notch.

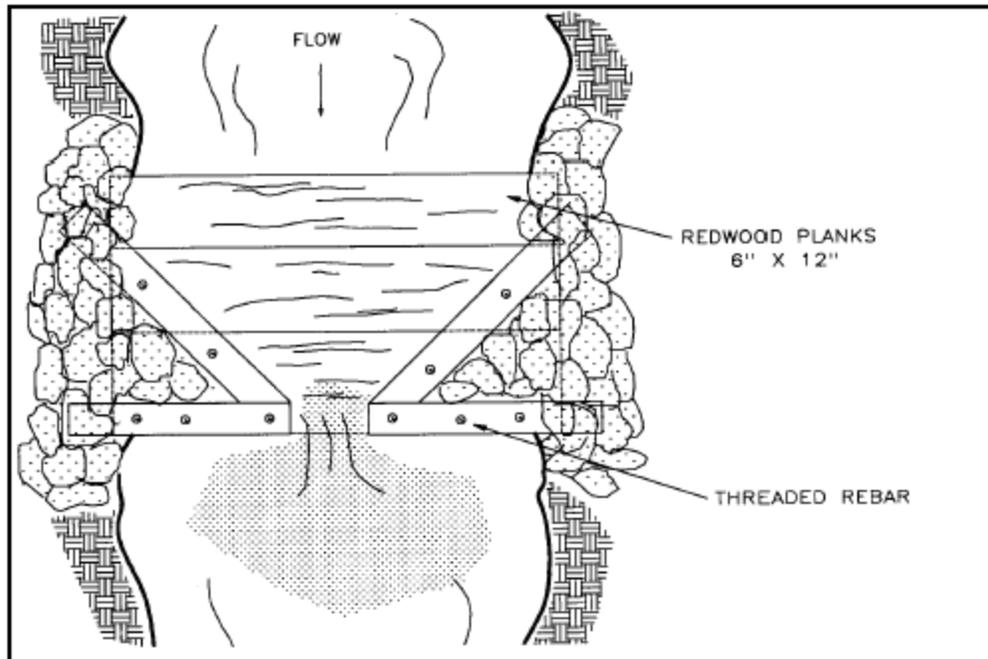


Figure VII-33. Log constrictors over planks.

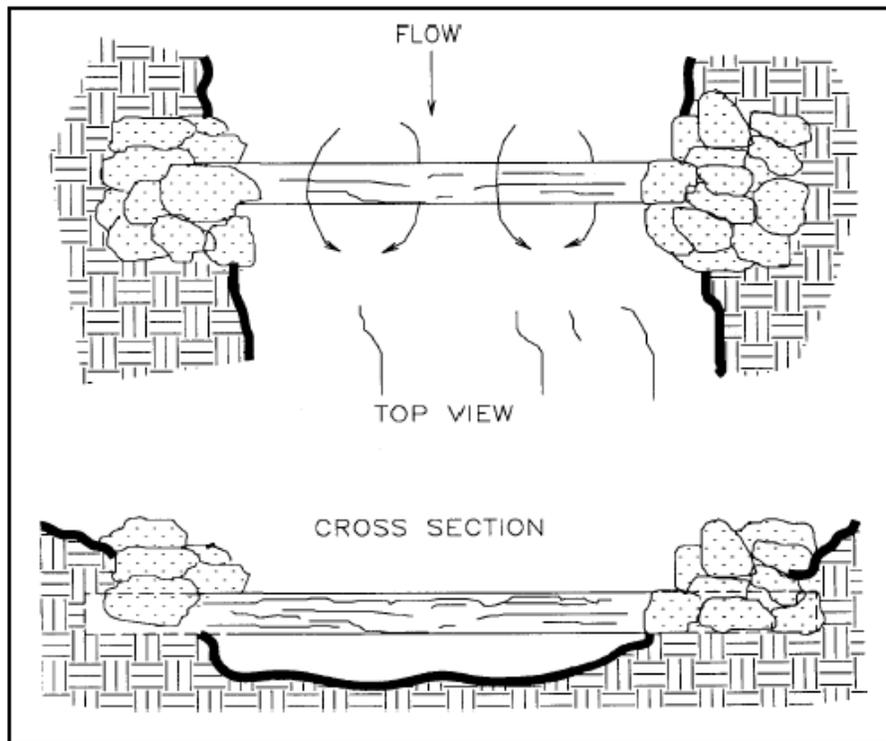


Figure VII-34. Upsurge weir.

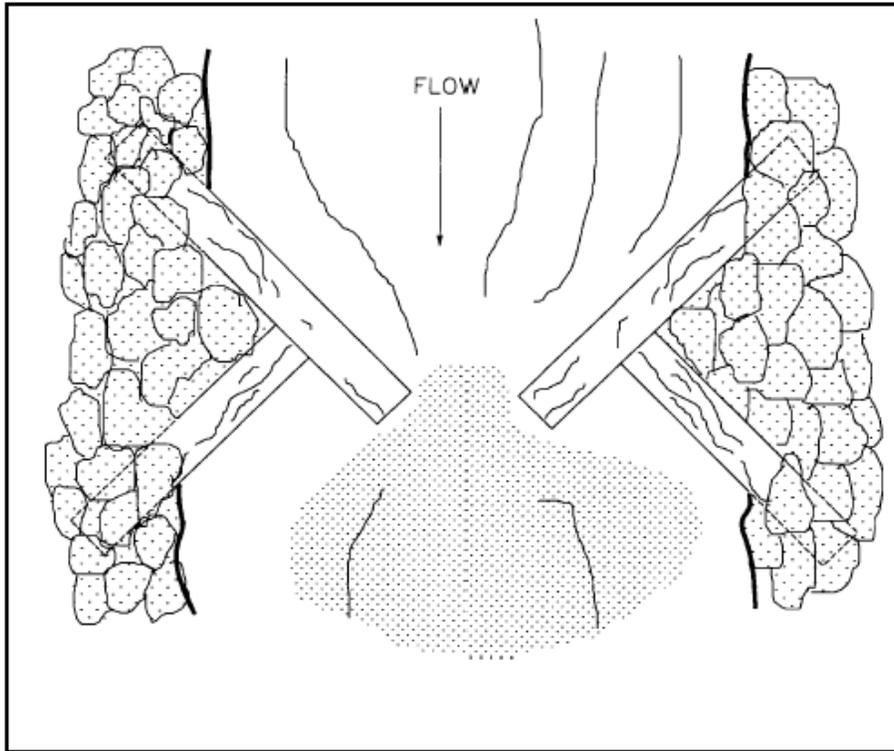


Figure VII-35. Opposing log wing-deflector.

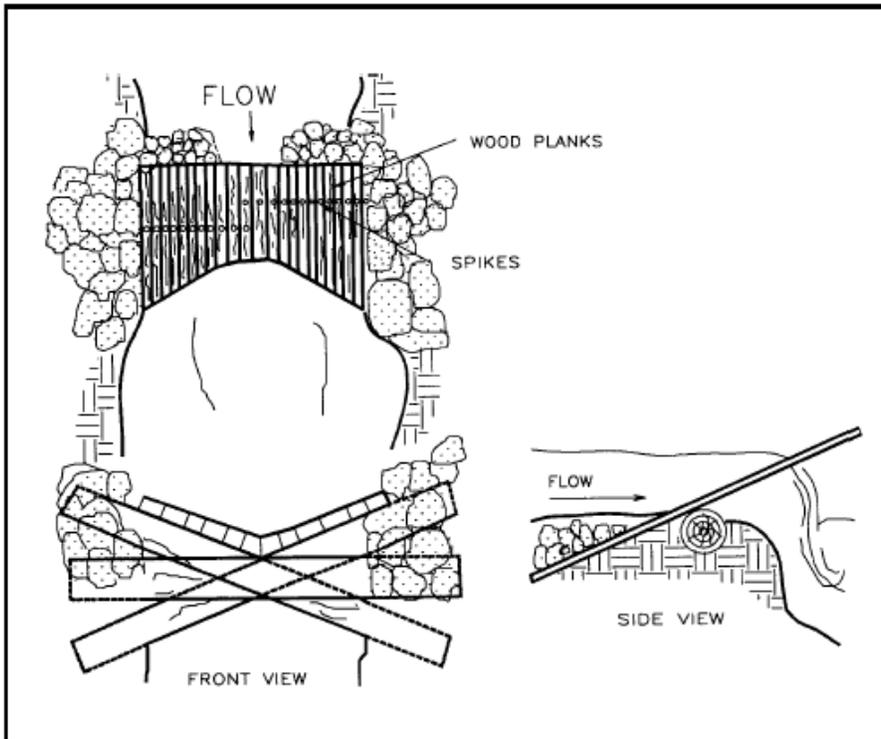


Figure VII-36. Hewitt ramp.

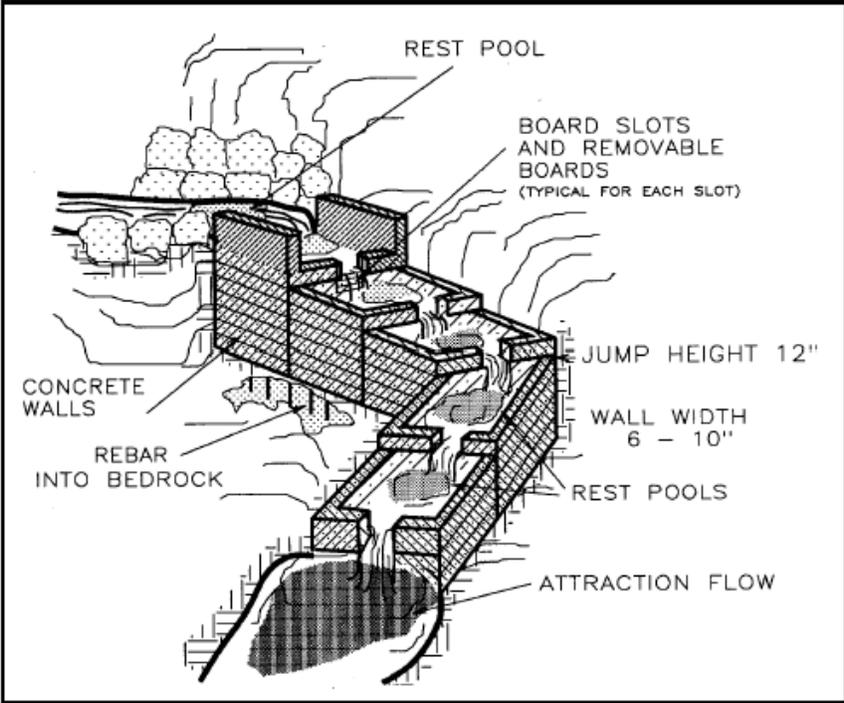


Figure VII-39. Step-and-pool fishway.

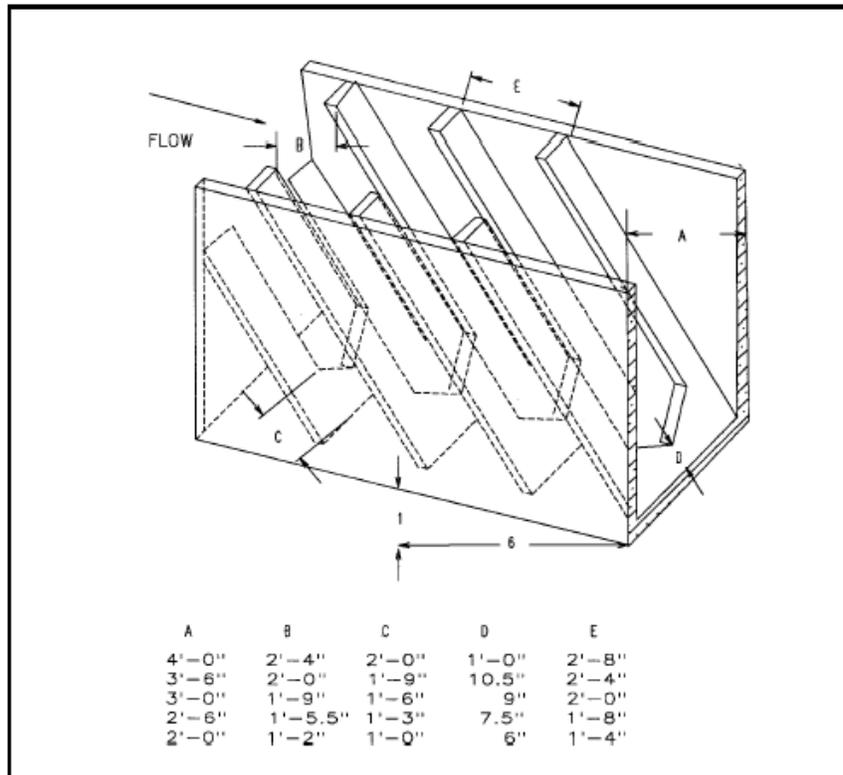


Figure VII-40. Denil fishway.

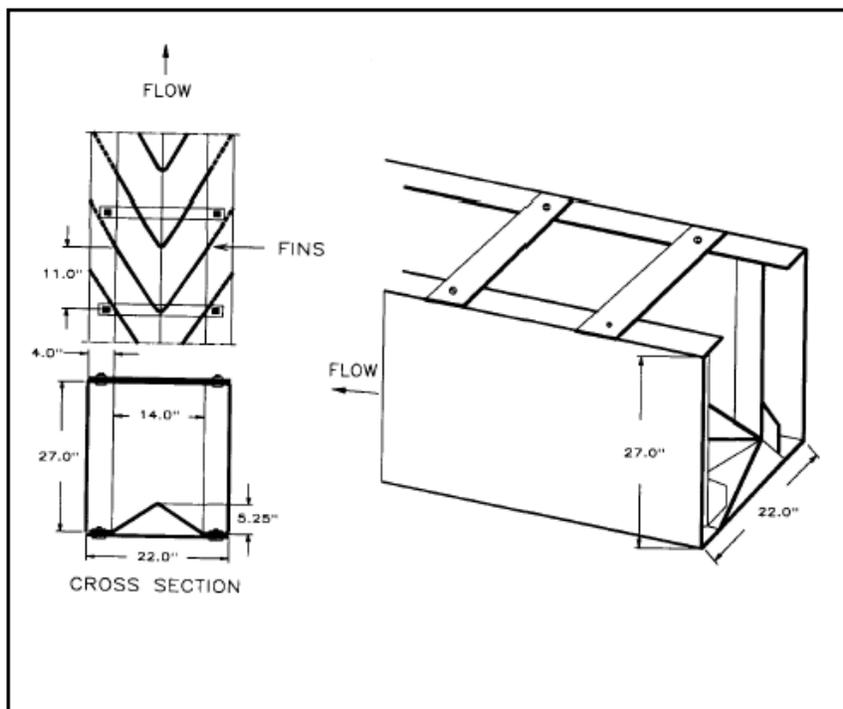


Figure VII-41. Alaskan steep-pass.

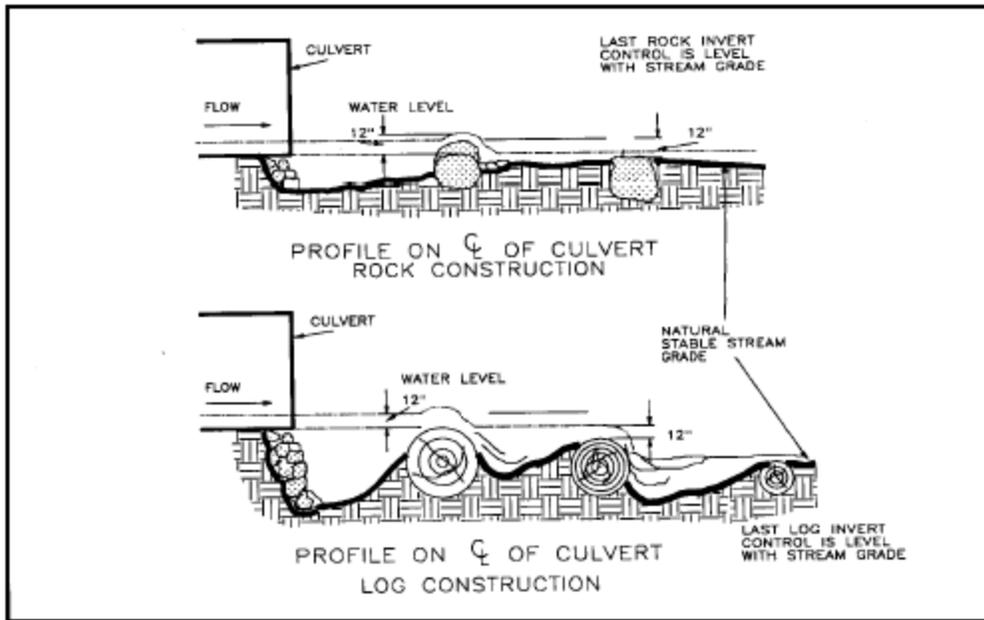


Figure VII-42. Back-flooding weirs.

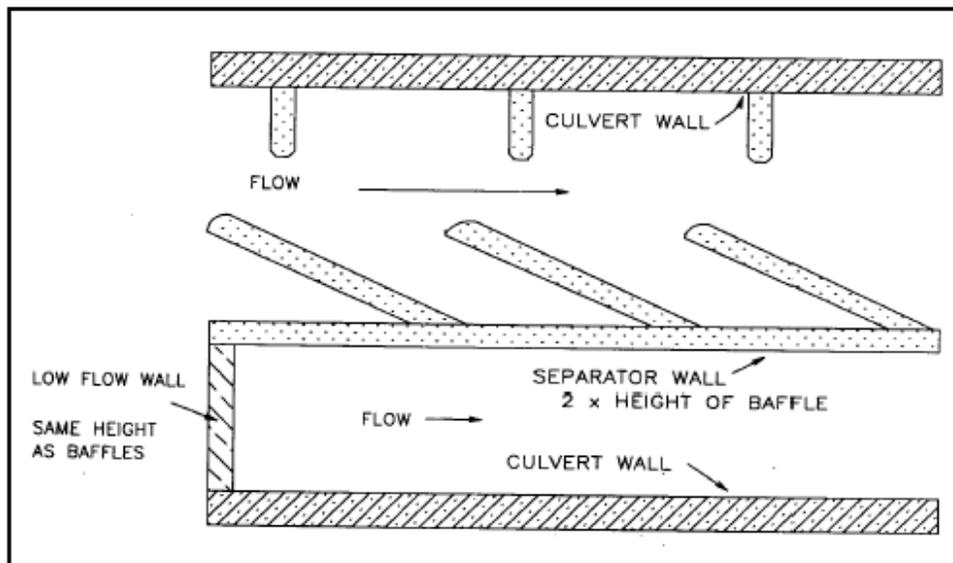


Figure VII-43. Washington baffles with a separator wall. (*Stream Enhancement Guide*, British Columbia Ministry of Environment, 1980, p. 42).

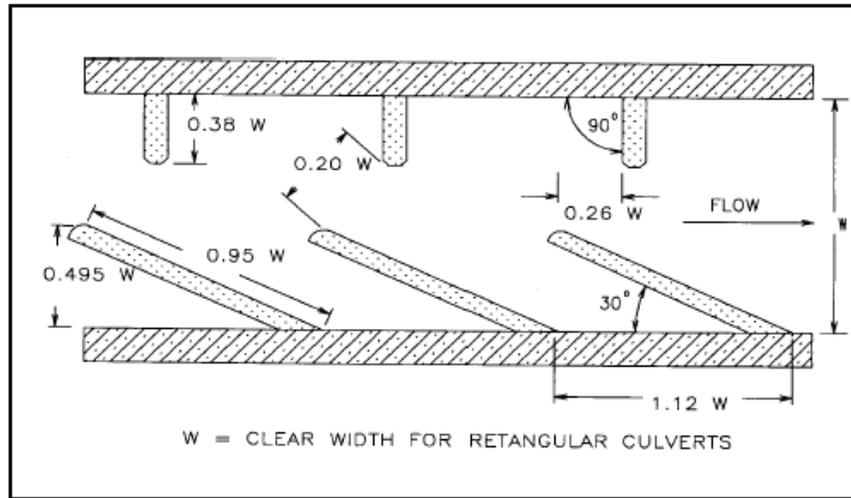


Figure VII-44. Washington baffles. (*Stream Enhancement Guide*, British Columbia Ministry of Environment, 1980, p.42).

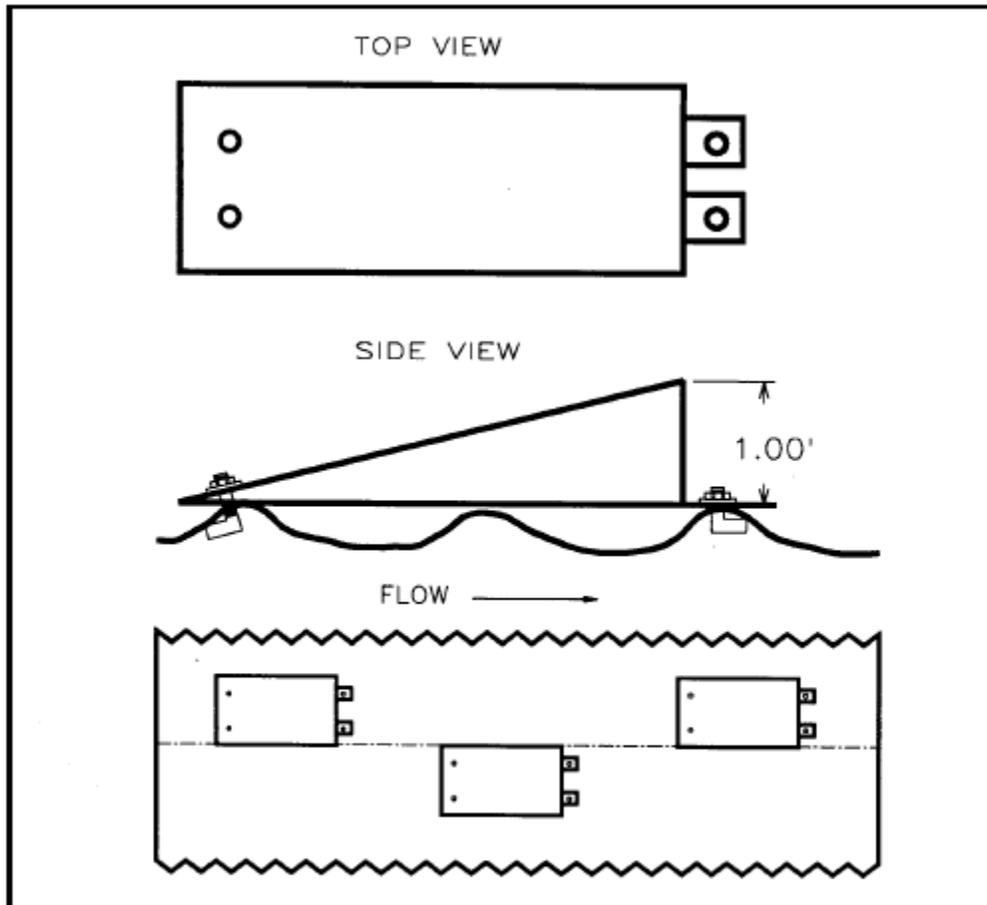


Figure VII-47. Corrugated metal pipe steel ramp baffles.

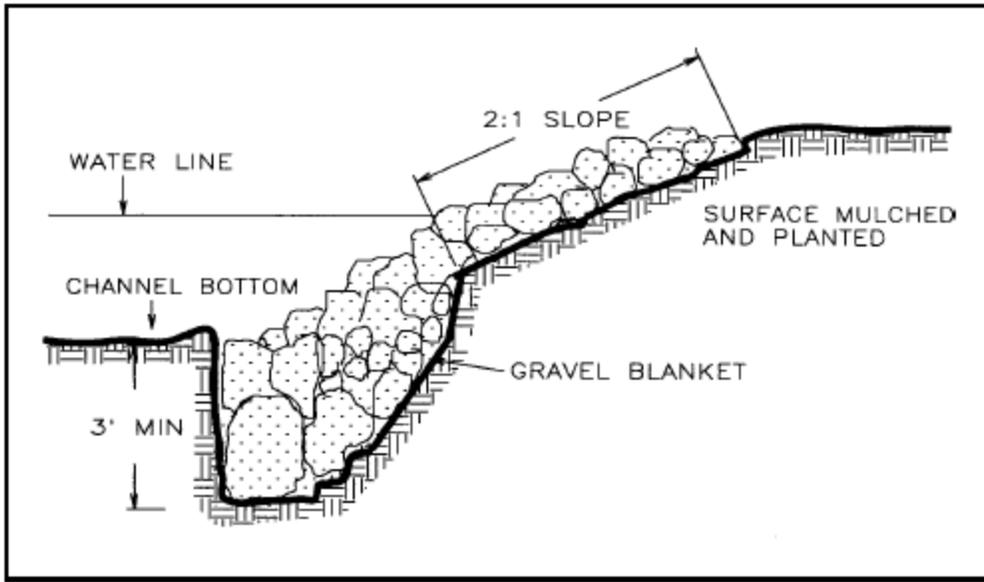


Figure VII-48. Riprap.

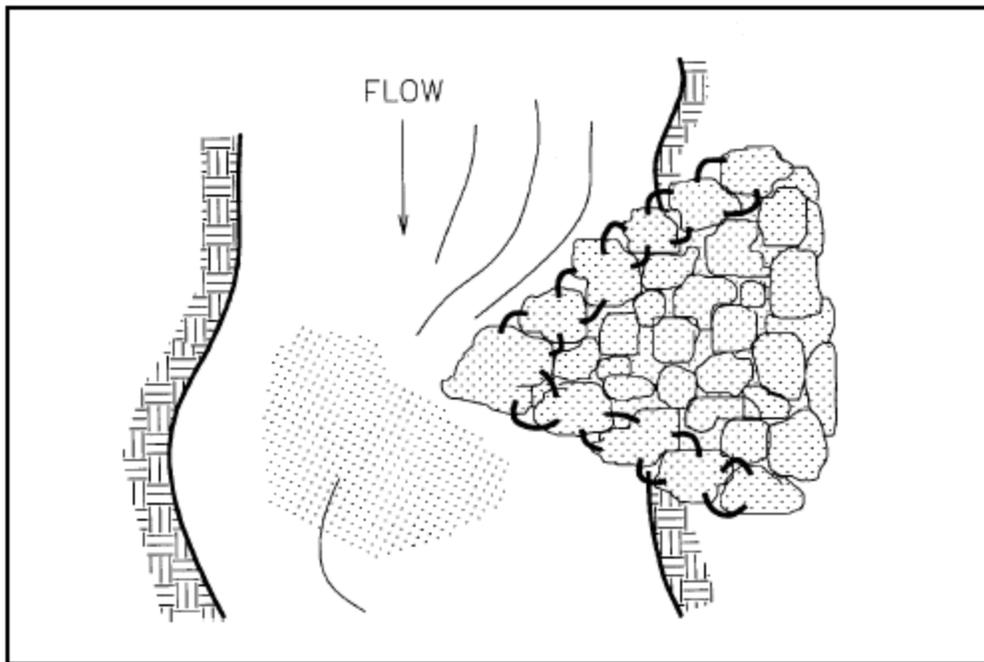


Figure VII-49. Boulder wing-deflector.

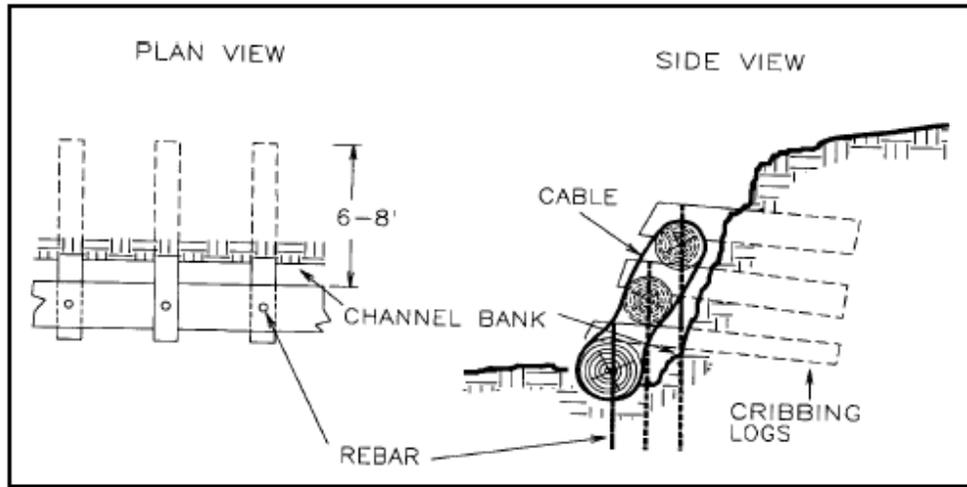
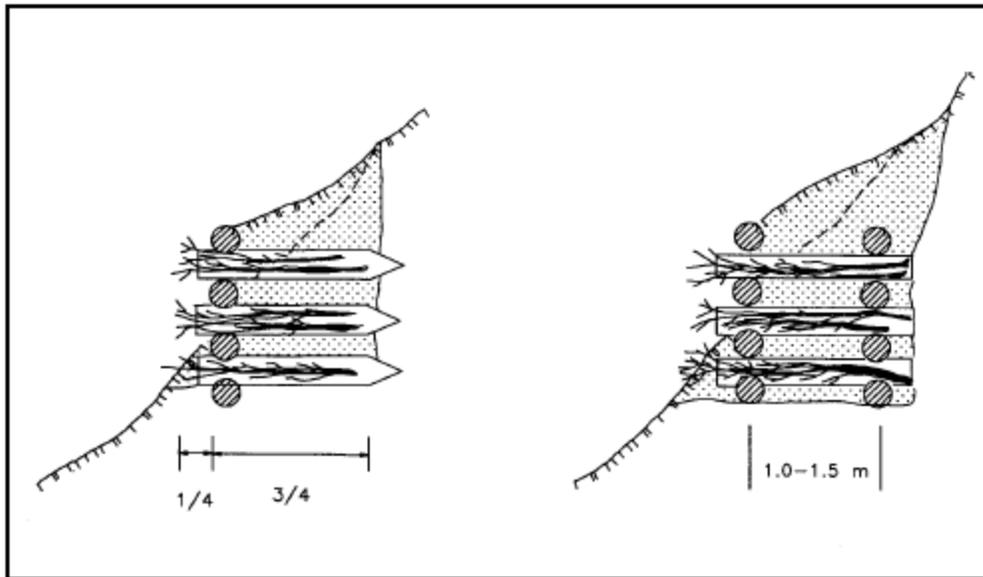


Figure VII-50. Log cribbing.



FigureVII-51. Live Vegetated Crib Wall (Schiechl and Stern, 1996)

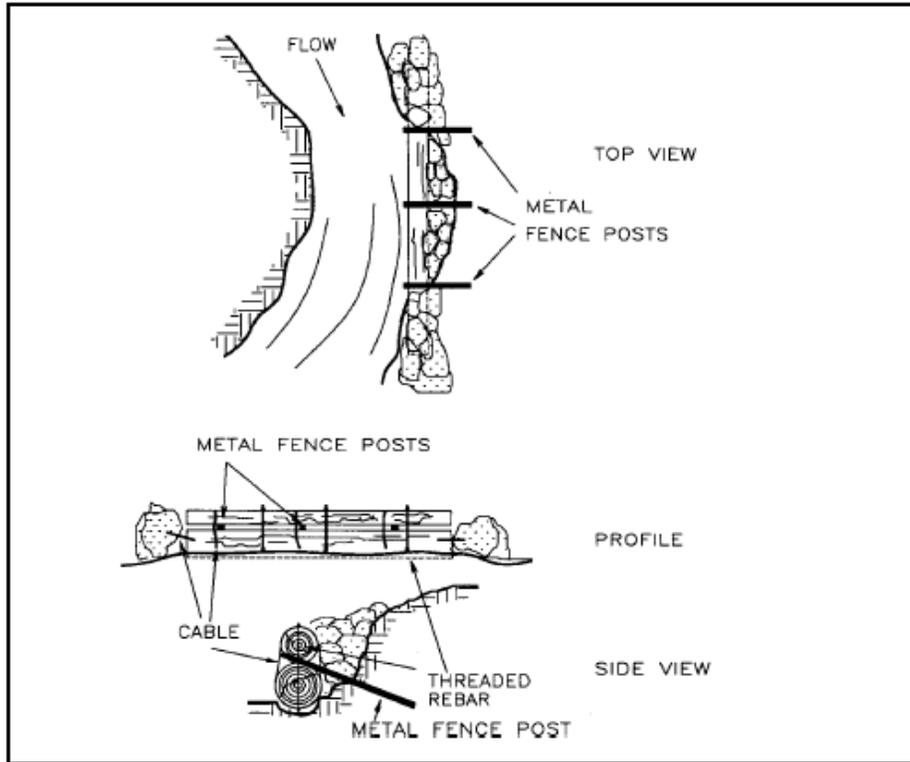


Figure VII-52. Log bank armor.

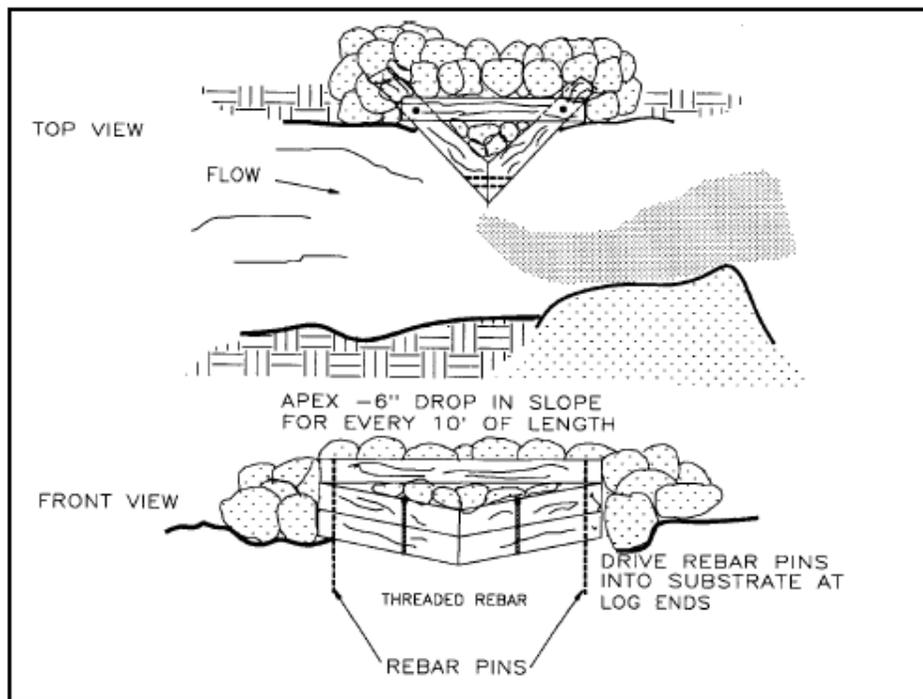


Figure VII-53. Log wing-deflector.

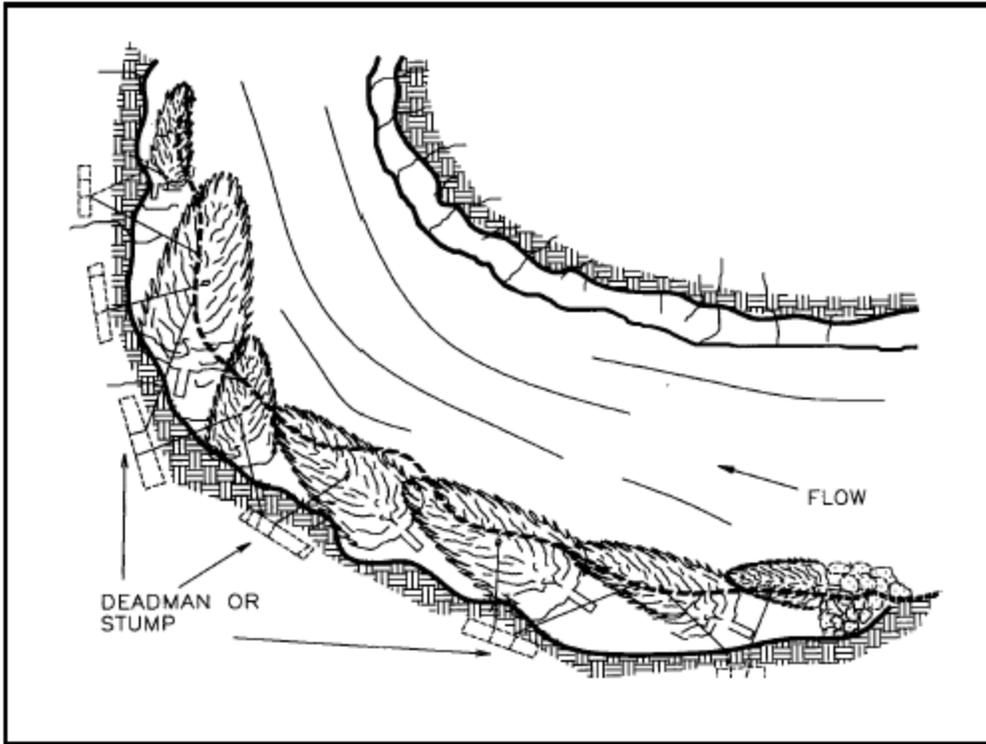


Figure VII-54. Tree revetment.

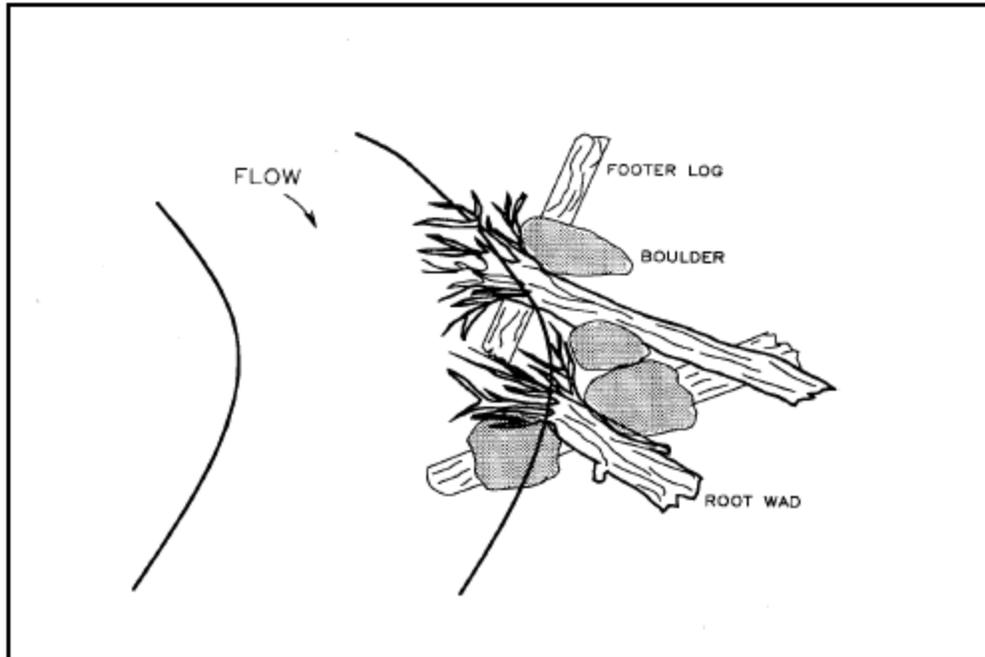


Figure VII-55. Plan view of native material revetment (Rosgen, 1993)

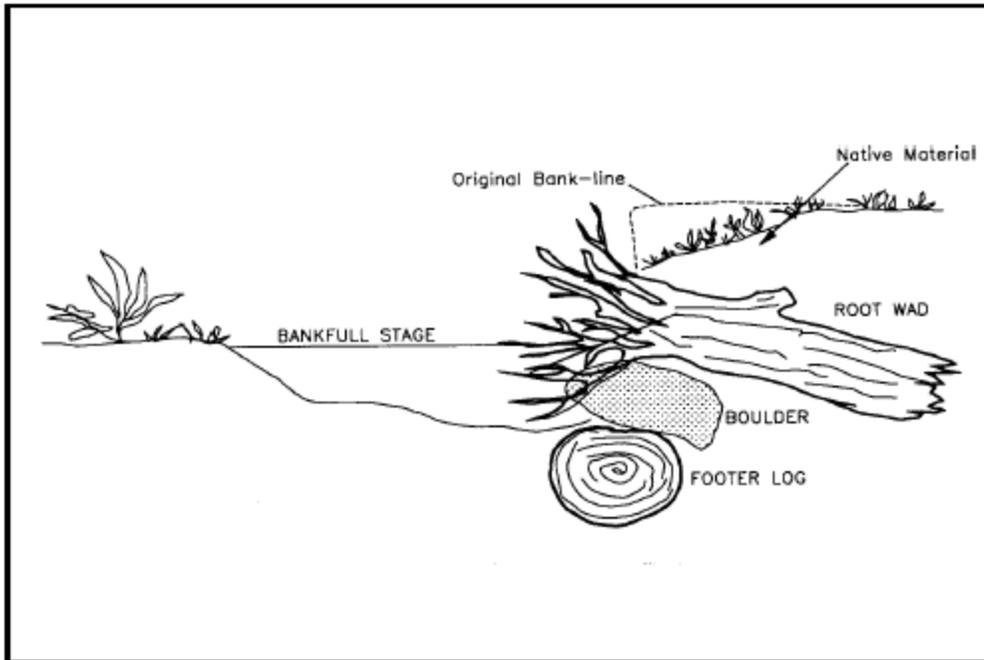


Figure VII-56. Native material revetment (Rosgen, 1993).

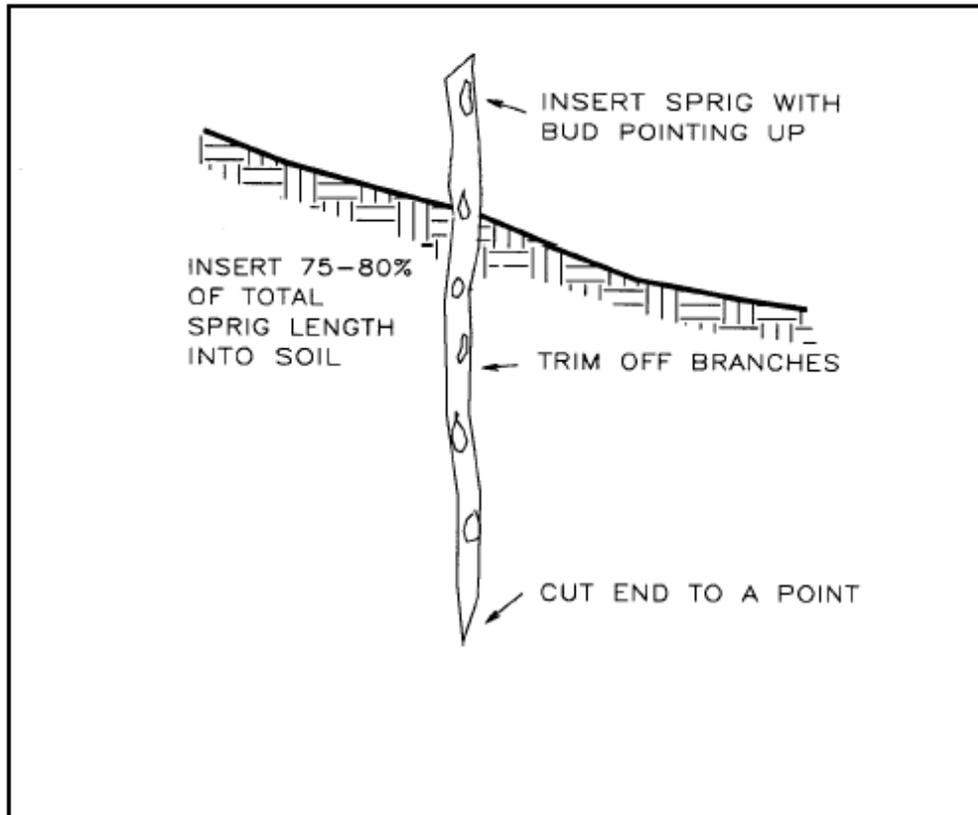


Figure VII-57. Willow sprigging. (Prunuske, 1987).

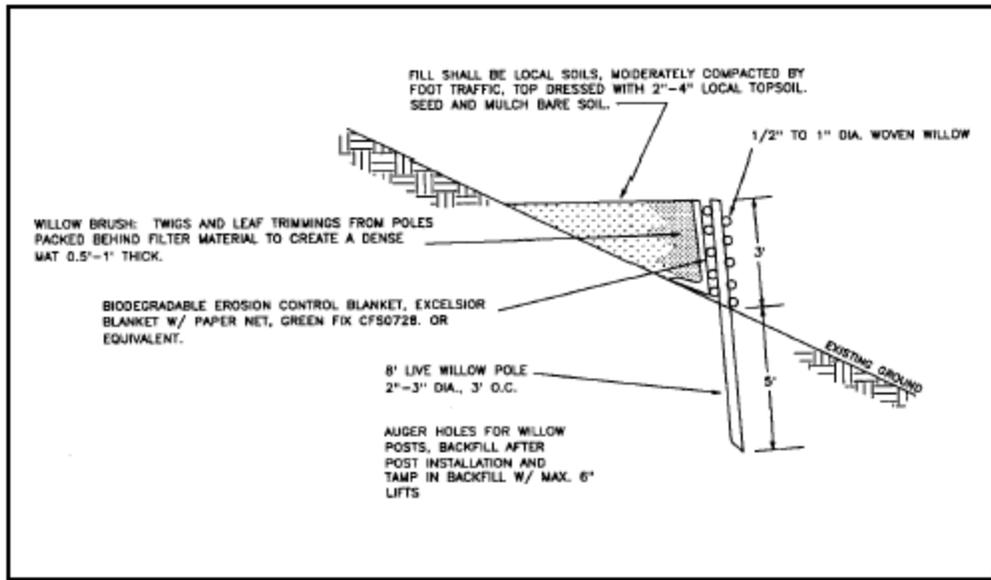


Figure VII-58. Willow Wall Revetment (L. Prunuske, 1997)

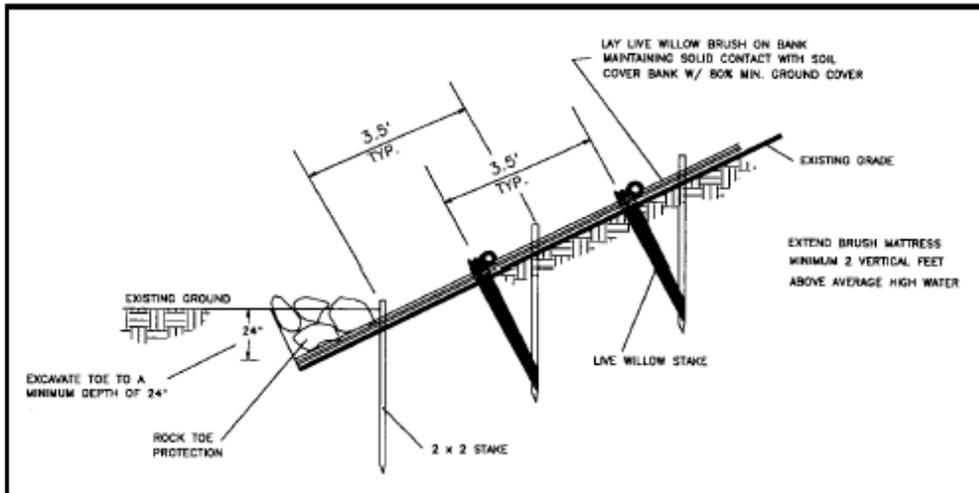


Figure VII-60. Brush Mattress Cross Section (L. Prunuske, 1997)

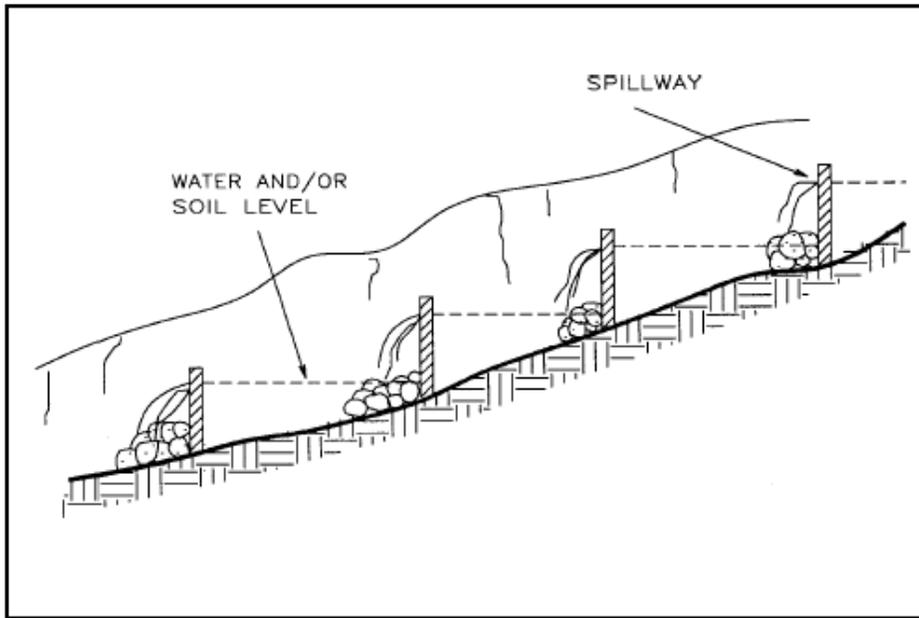


Figure VII-67. Checkdam placement. (Prunuske, 1987).

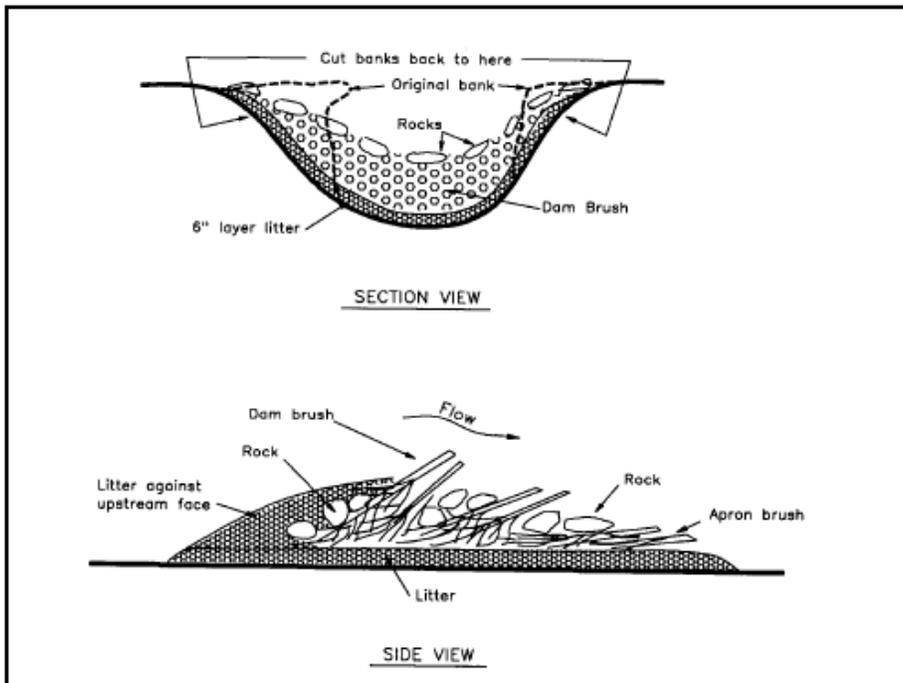


Figure VII-69. Brush and Rock Checkdam (Kraebel and Pillsbury, 1934)

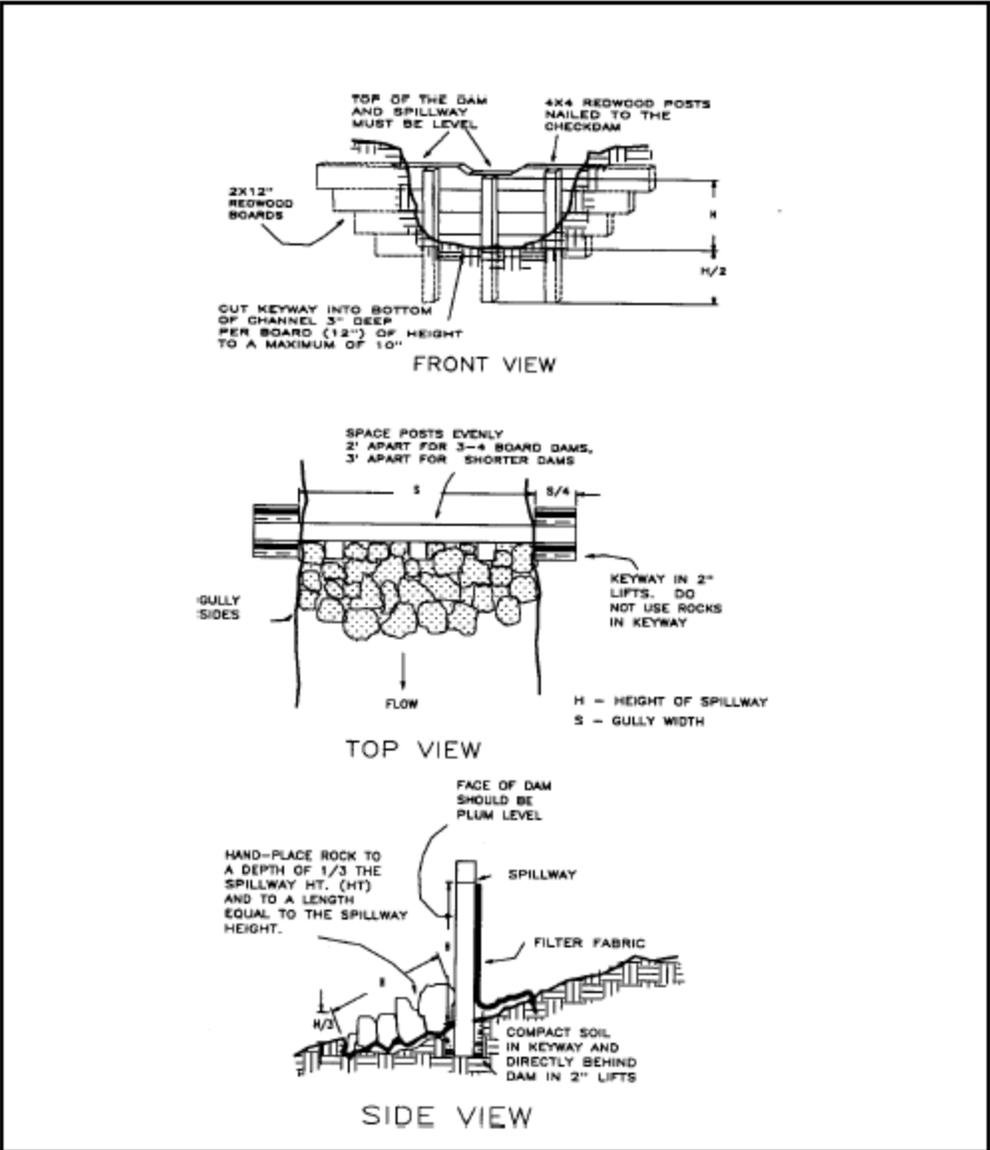


Figure VII-68. Redwood board checkdam. (Prunuske, 1987)

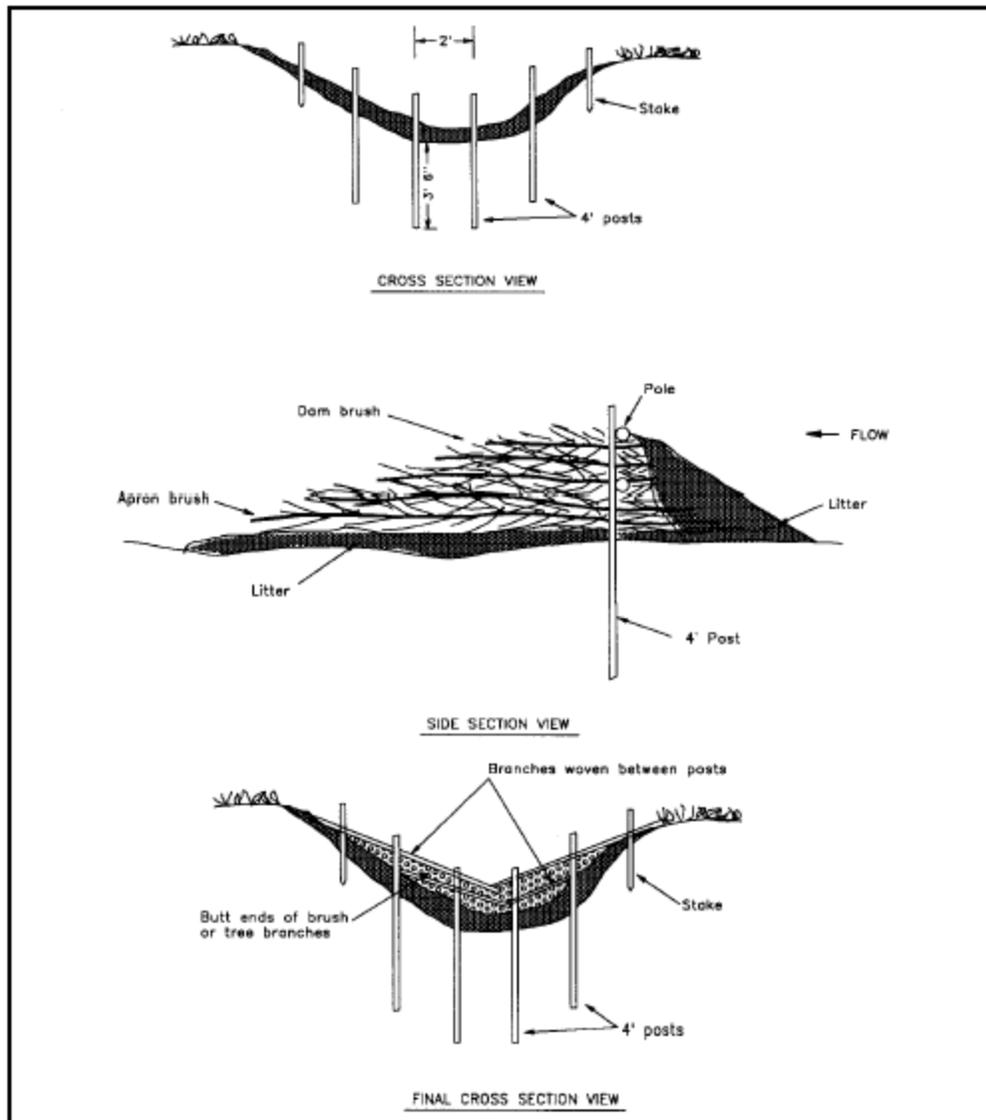


Figure VII-70. Post Checkdam (Kraebel and Pillsbury, 1934)

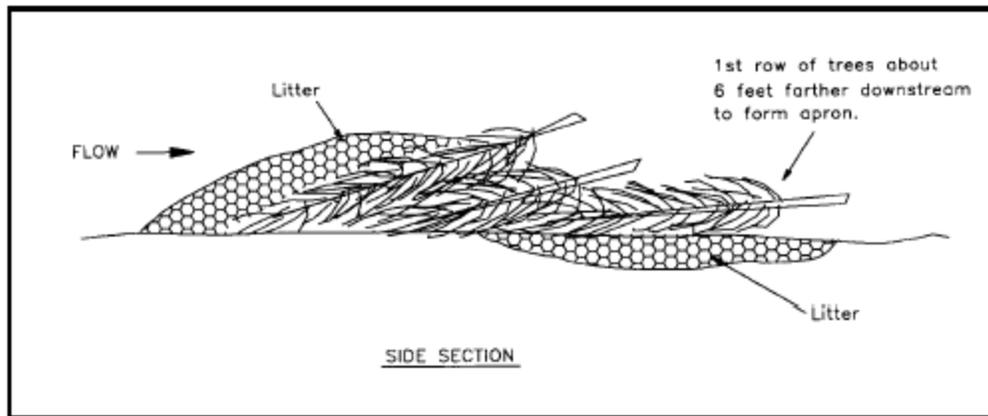


Figure VII-71. Tree Checkdam (Kraebel and Pillsbury, 1934)

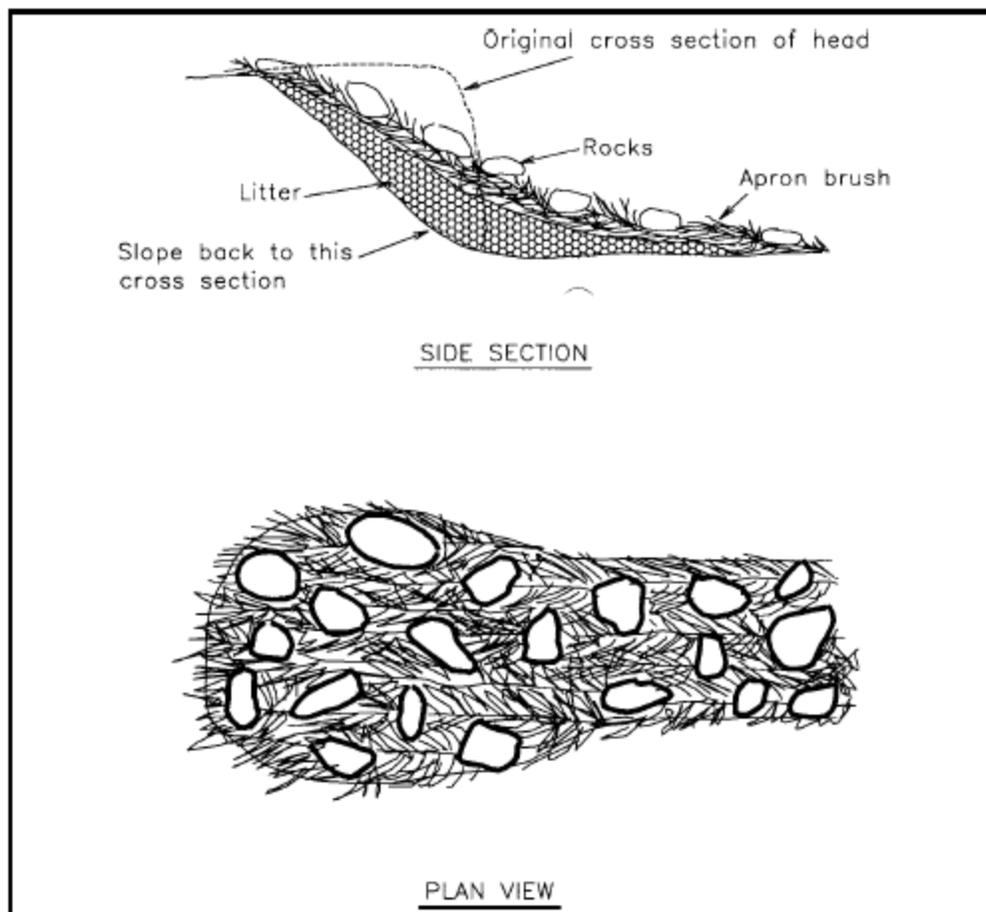


Figure VII-72. Brush and Rock Mattress (Kraebel and Pillsbury, 1934)

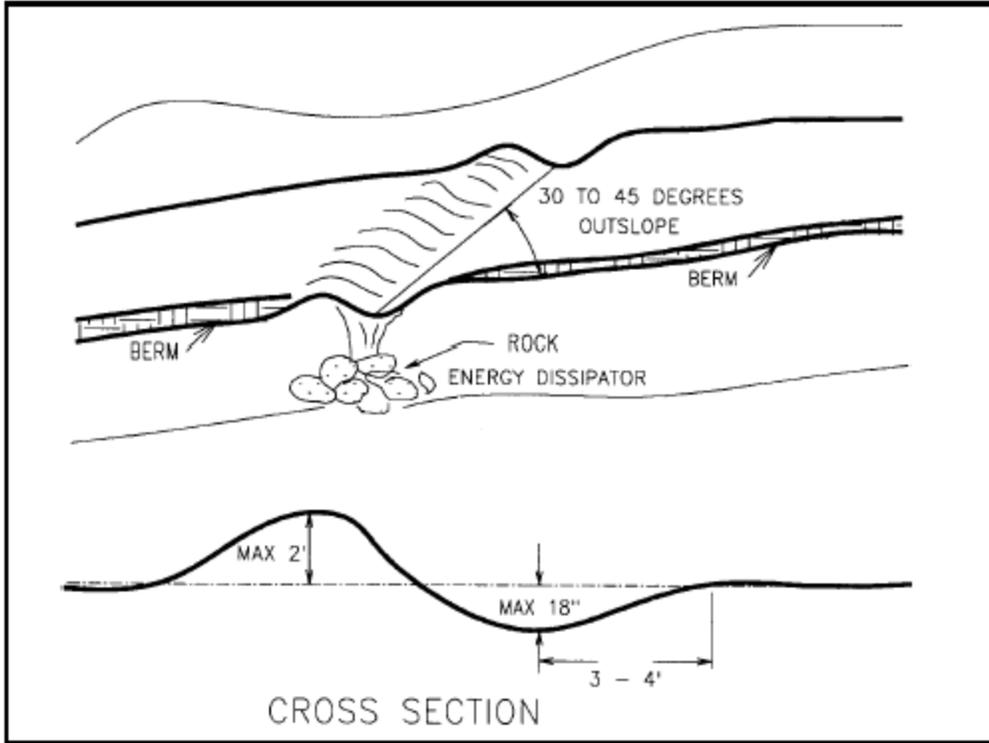


Figure VII-73. Waterbar.

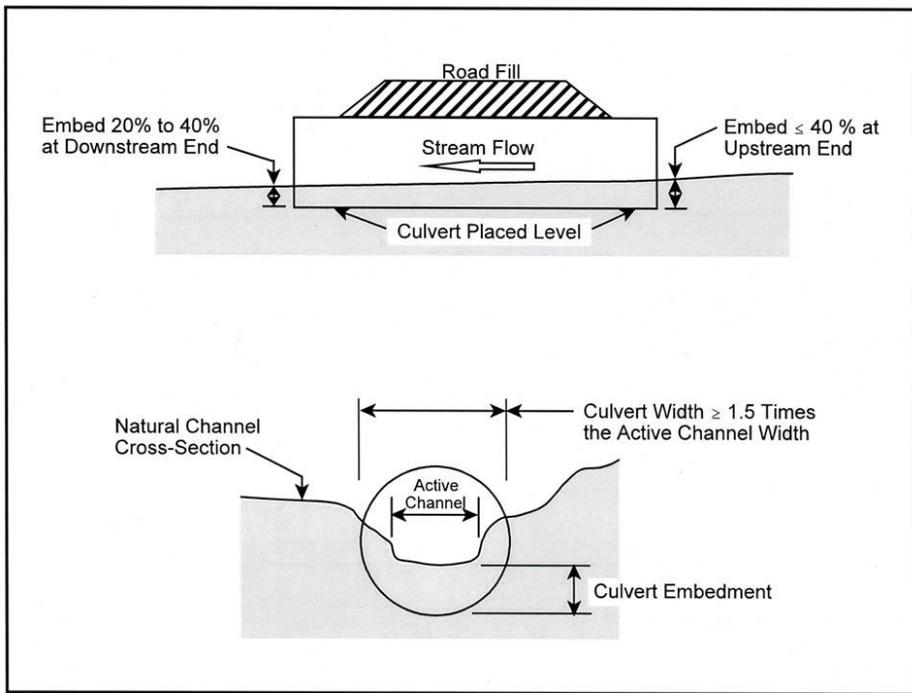


Figure IX-A-1. Active channel design option.

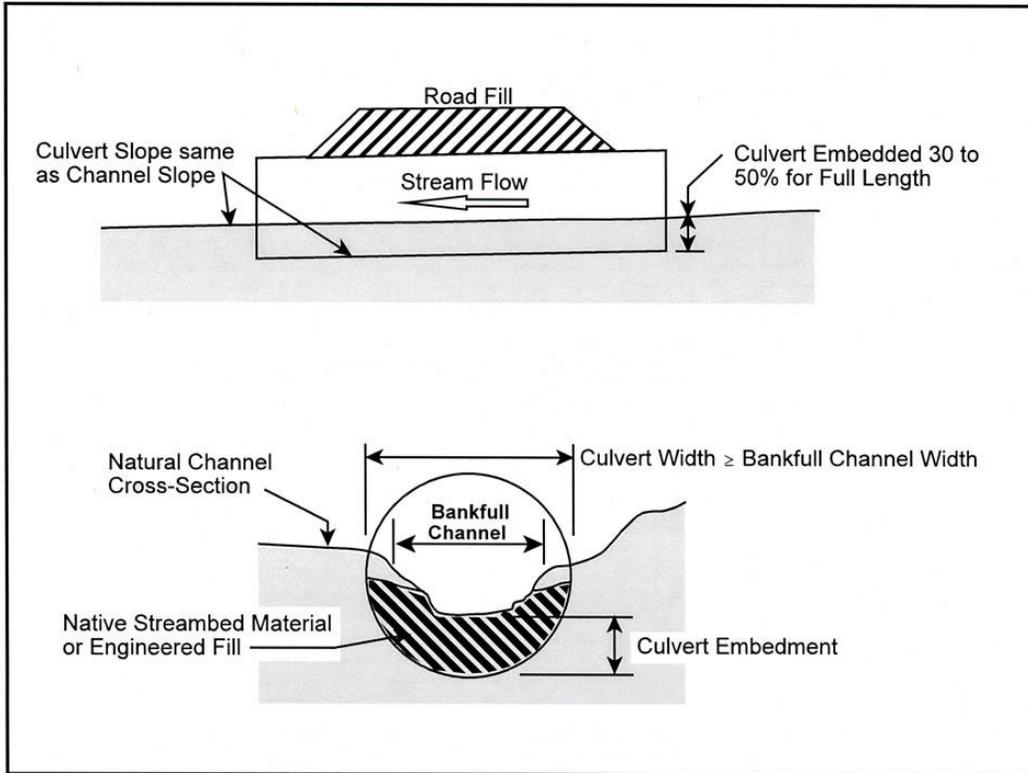


Figure IX-A- 2 Stream simulation design option.

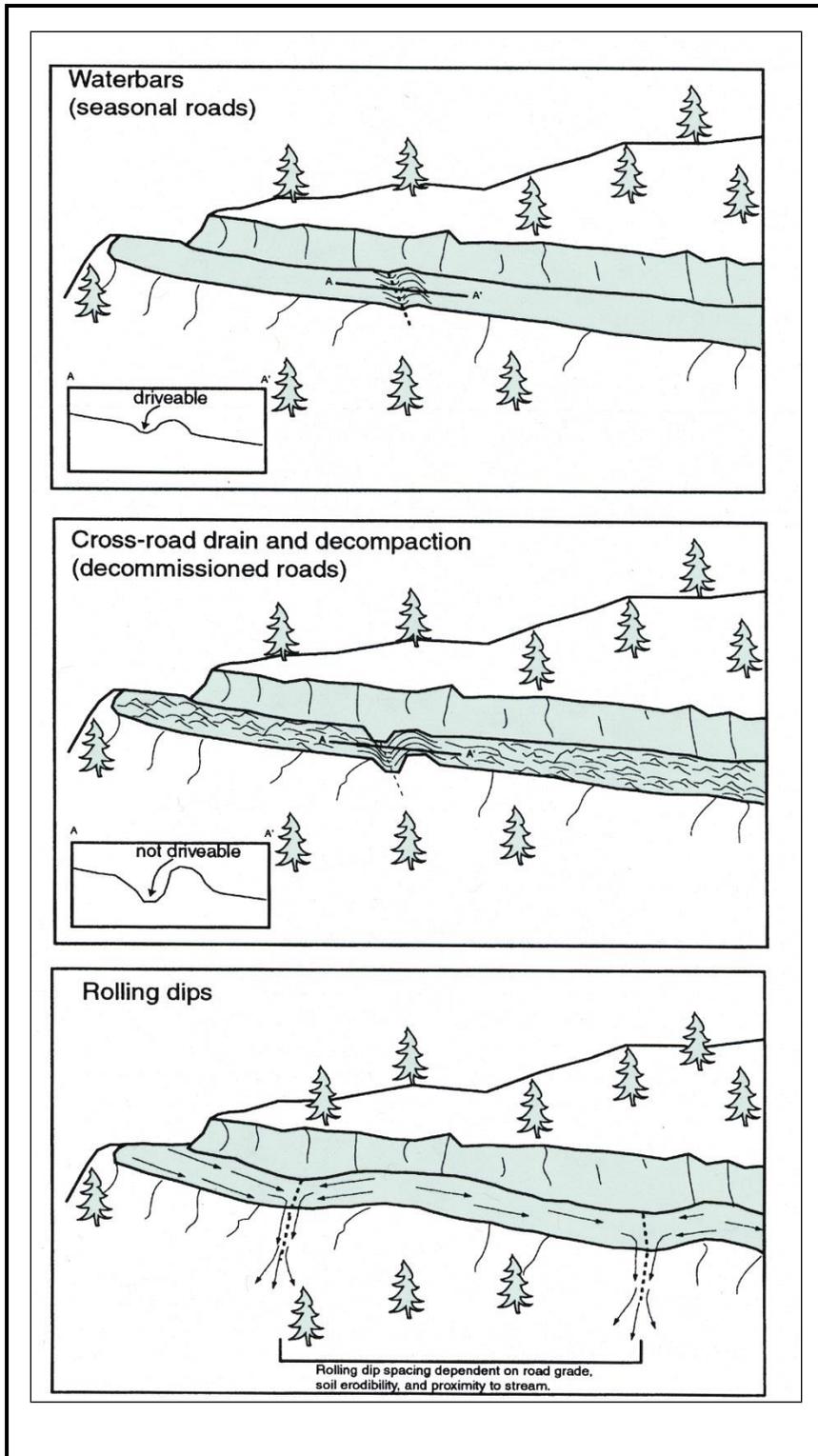


Figure X- 10. Techniques for dispersing road runoff.

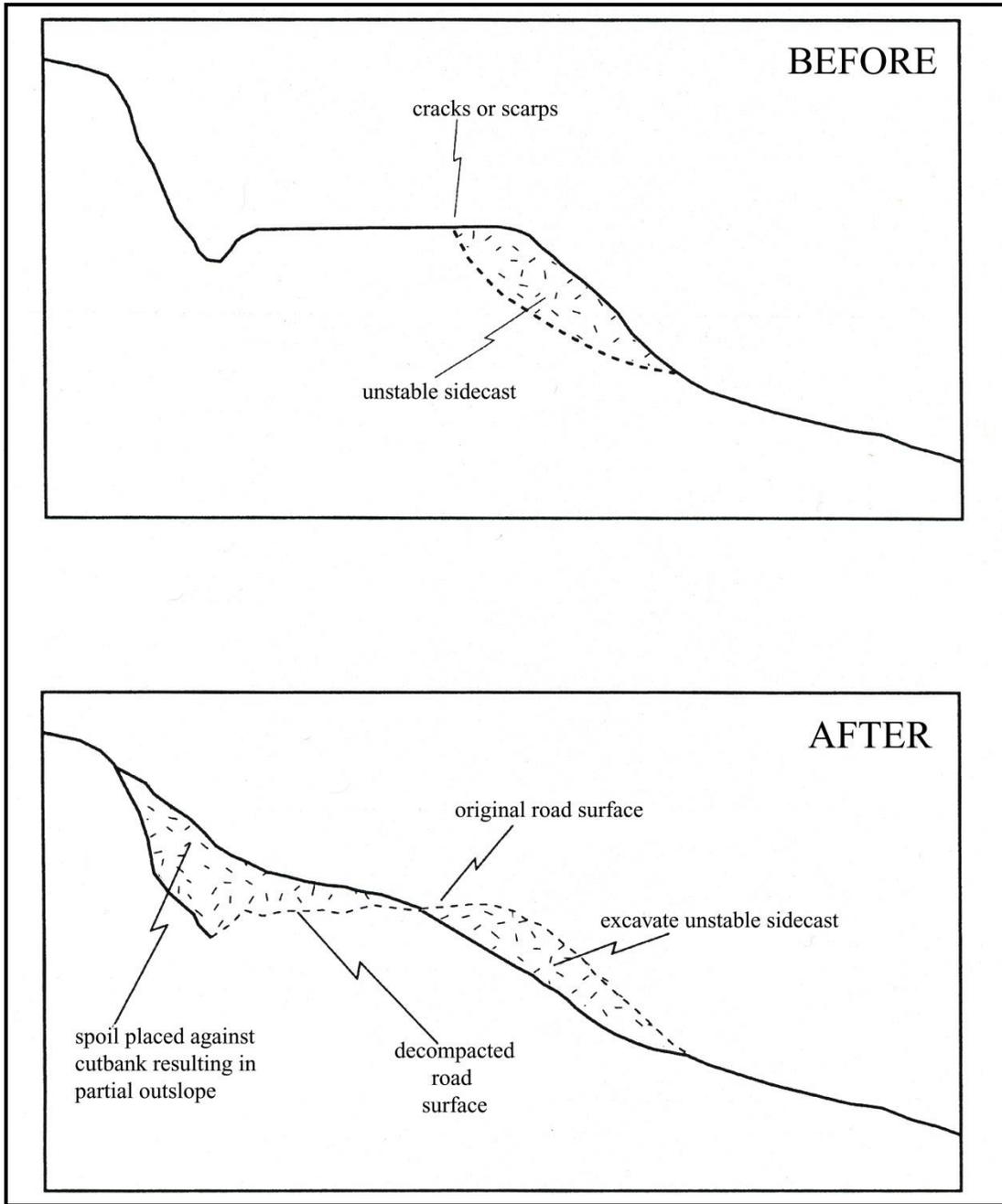


Figure X- 11. Partial outsloping for road decommissioning.

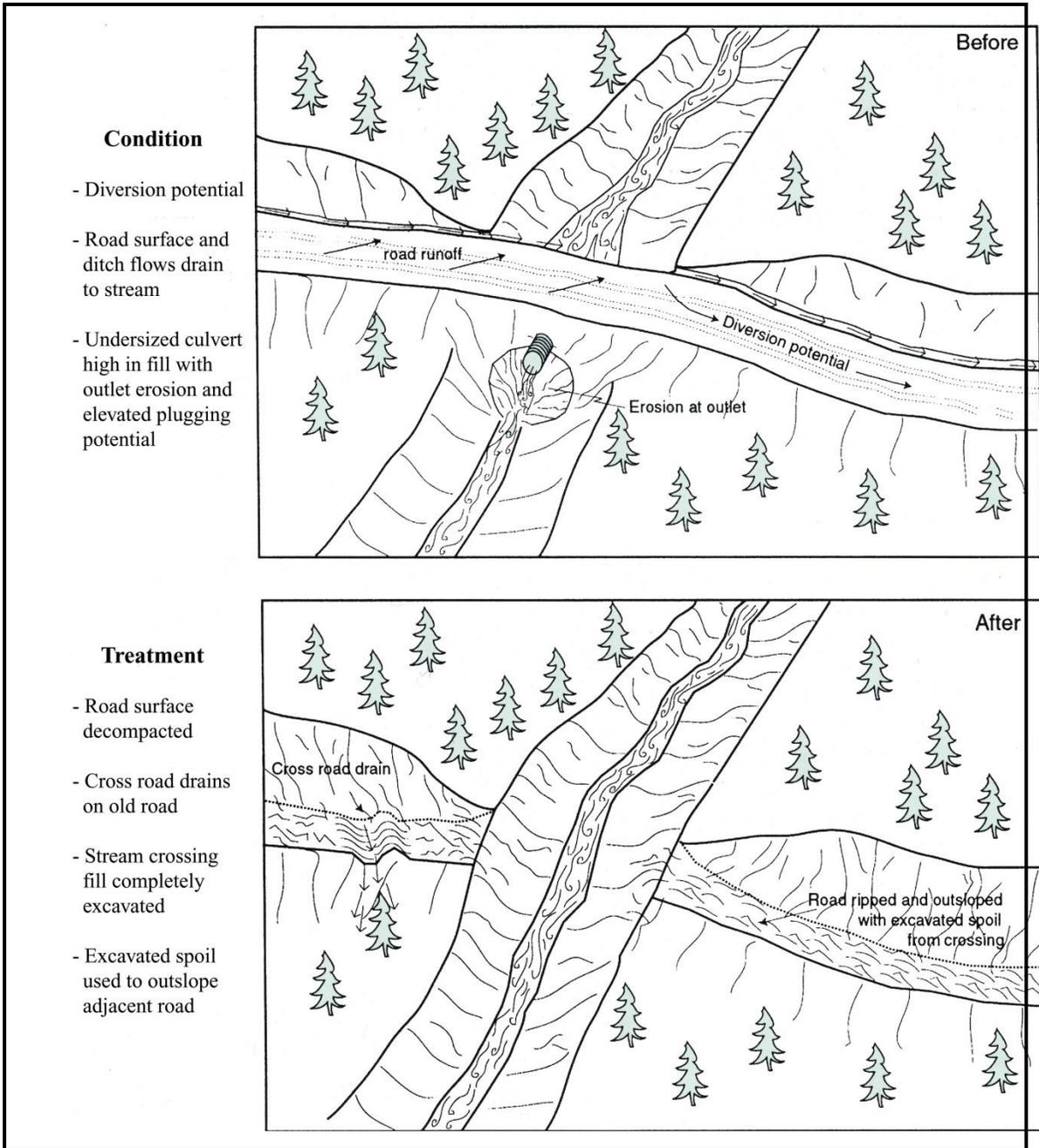
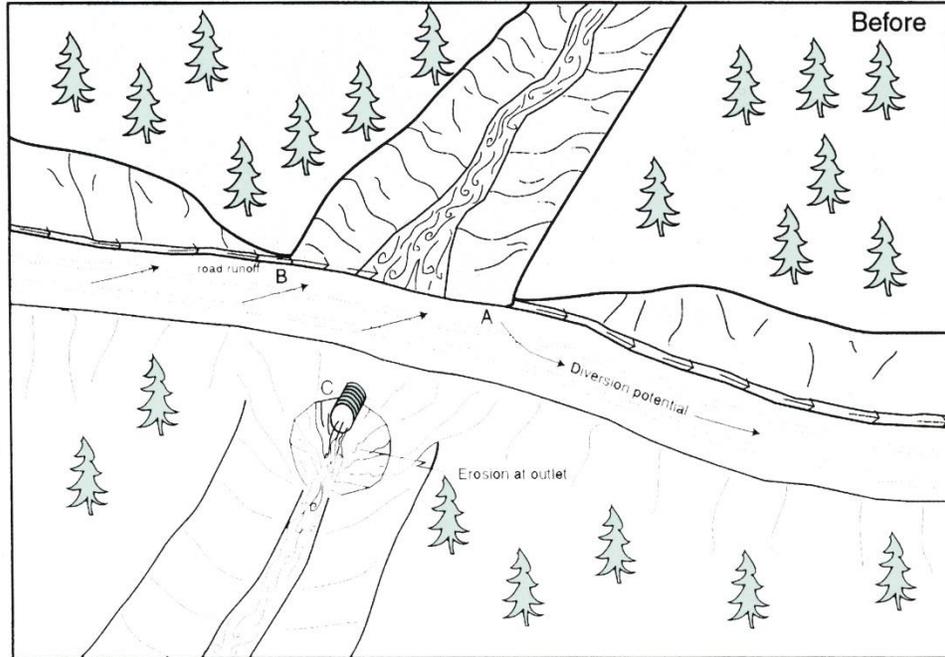


Figure X- 12. Typical stream crossing excavation on a decommissioned road.

Common Problems

- A - Diversion potential
- B - Road surface and ditch flows drain to stream
- C - Undersized culvert high in fill with outlet erosion



General Standards

- A - Road surface and ditch "disconnected" from stream
- B - No diversion potential
- C - 100 year culvert set at base of fill

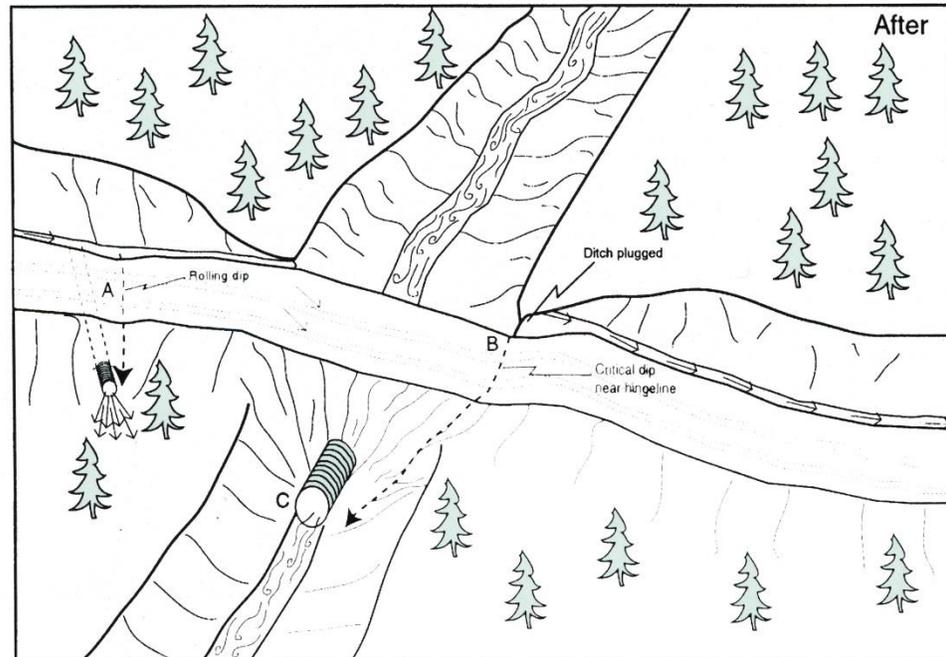


Figure X- 13. Typical upgraded stream crossing.

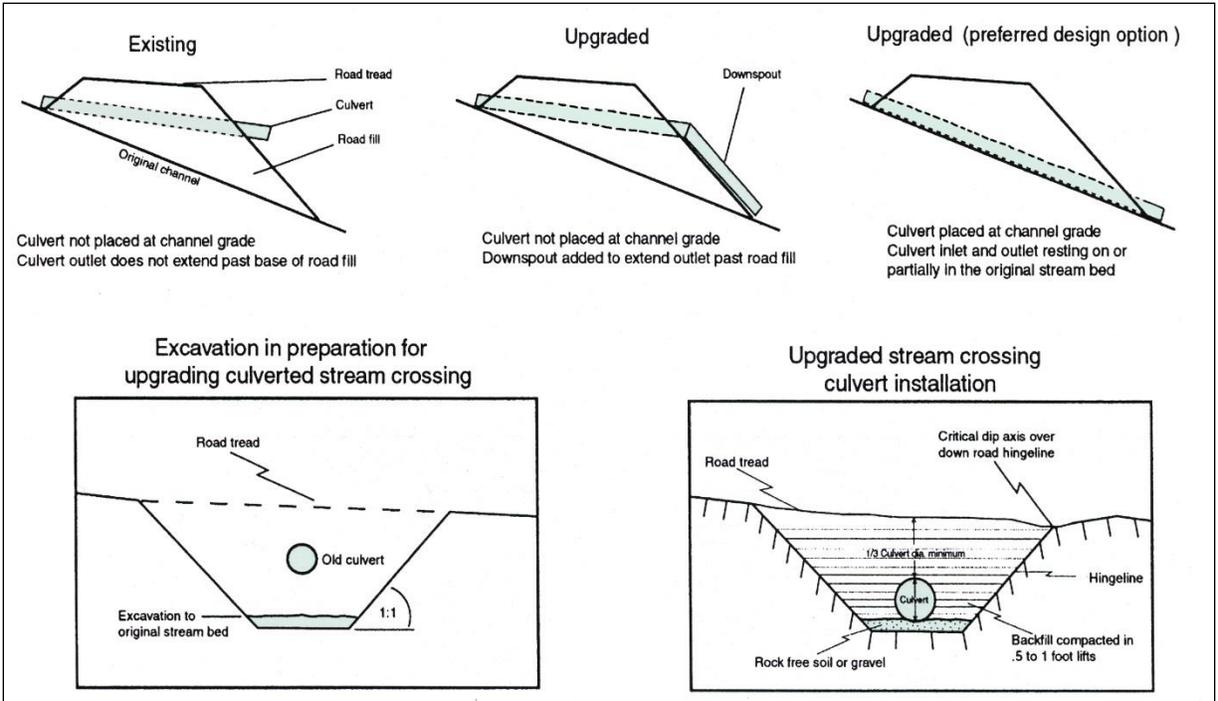


Figure X- 14. Typical culvert installation on non fish-bearing streams.

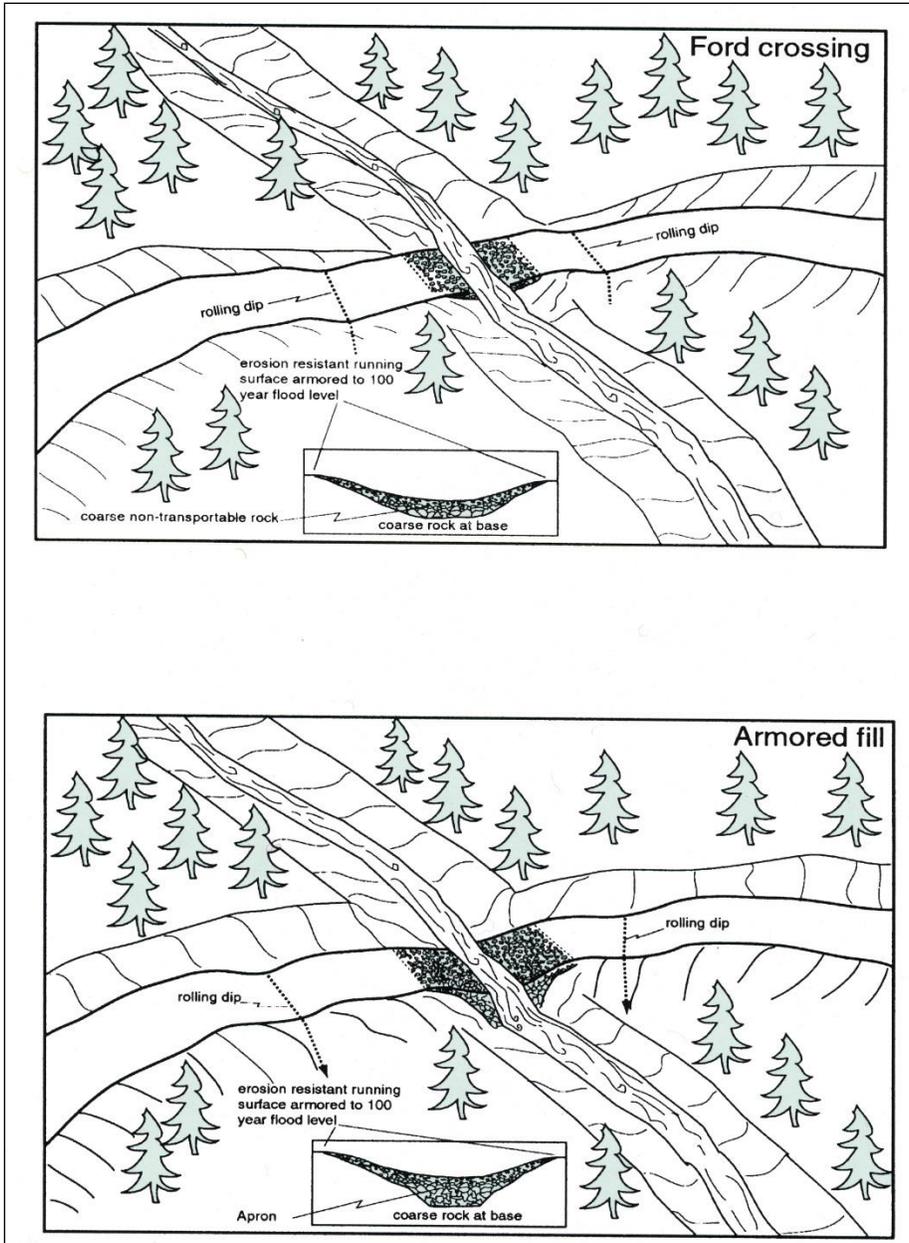


Figure X-15. Typical armored fill stream crossing.

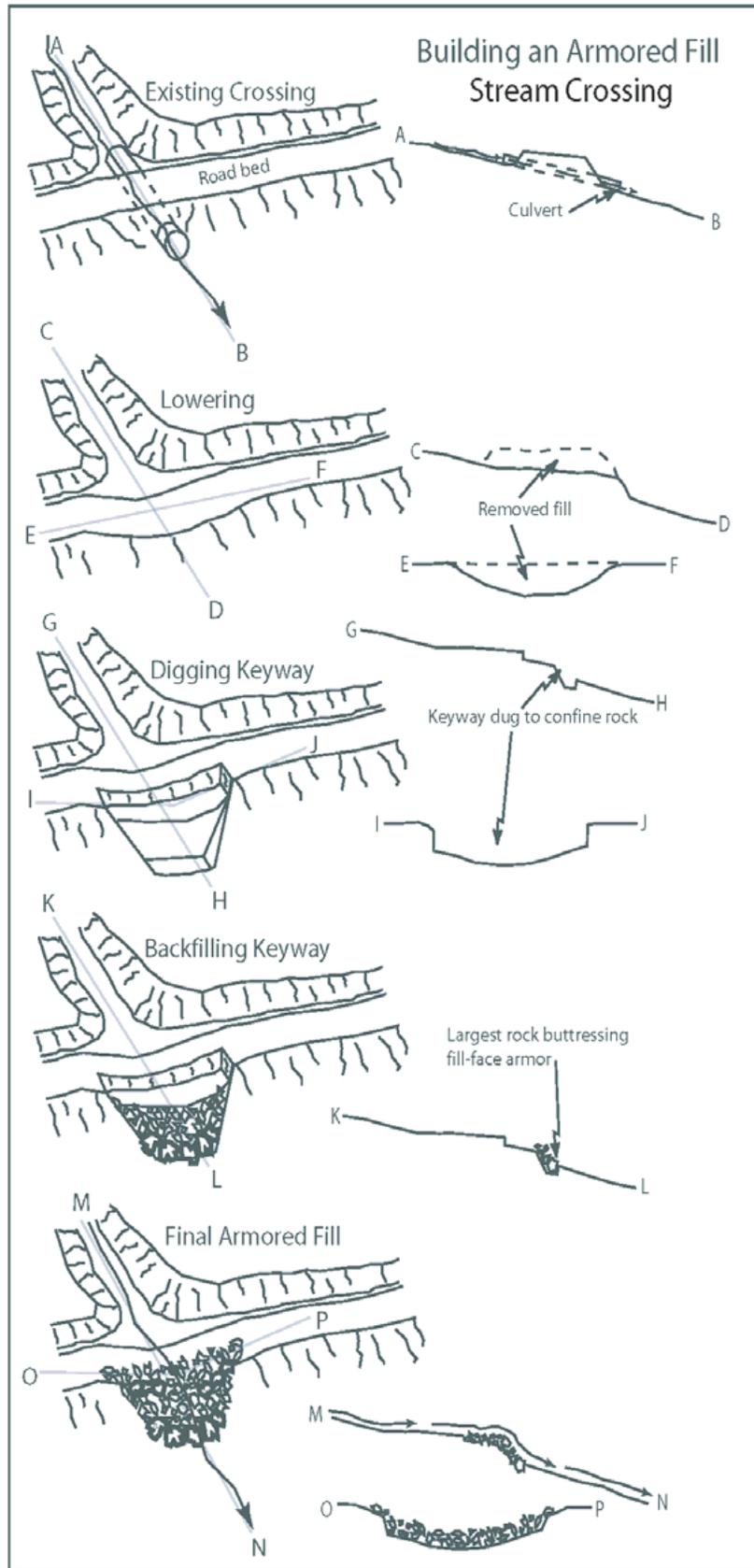


Figure X-16. Design elements of a typical armored fill crossing.

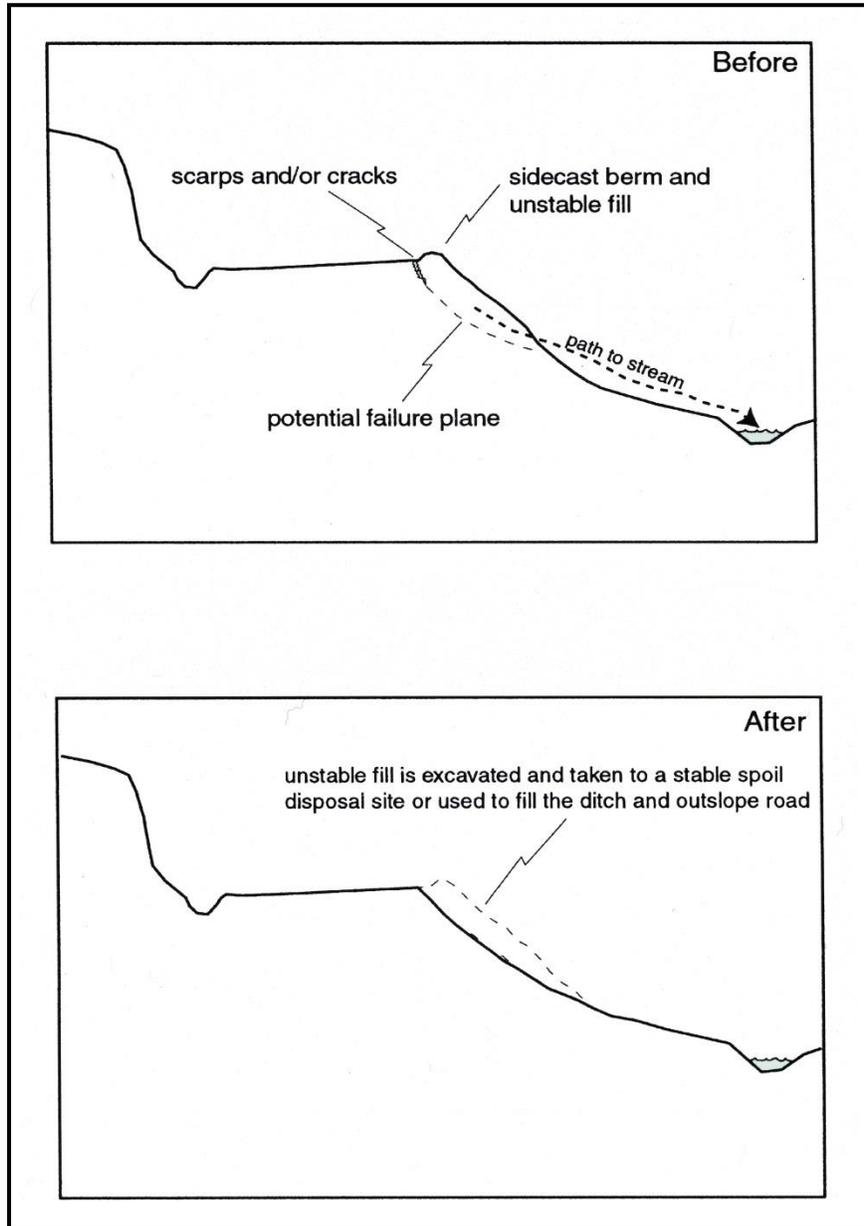


Figure X- 17. Removal of unstable sidecast materials.

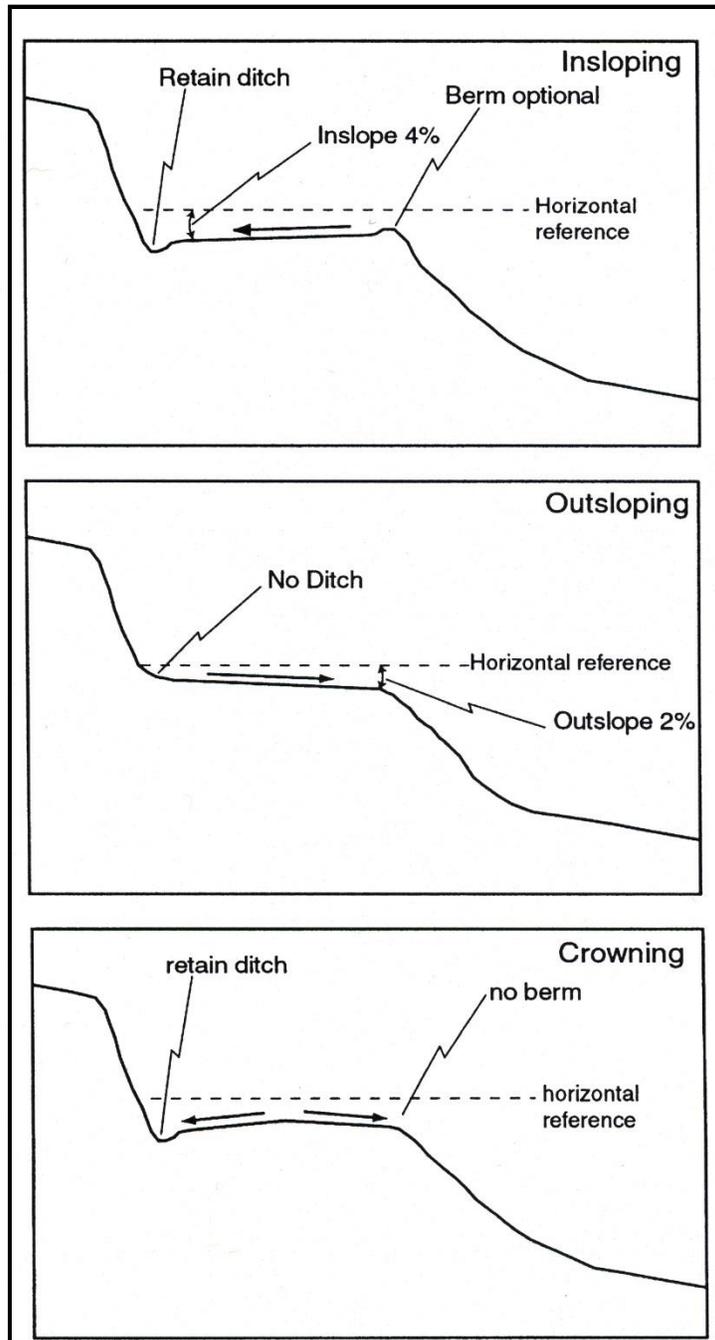


Figure X- 18. Utilizing road shape to reduce surface runoff rates.

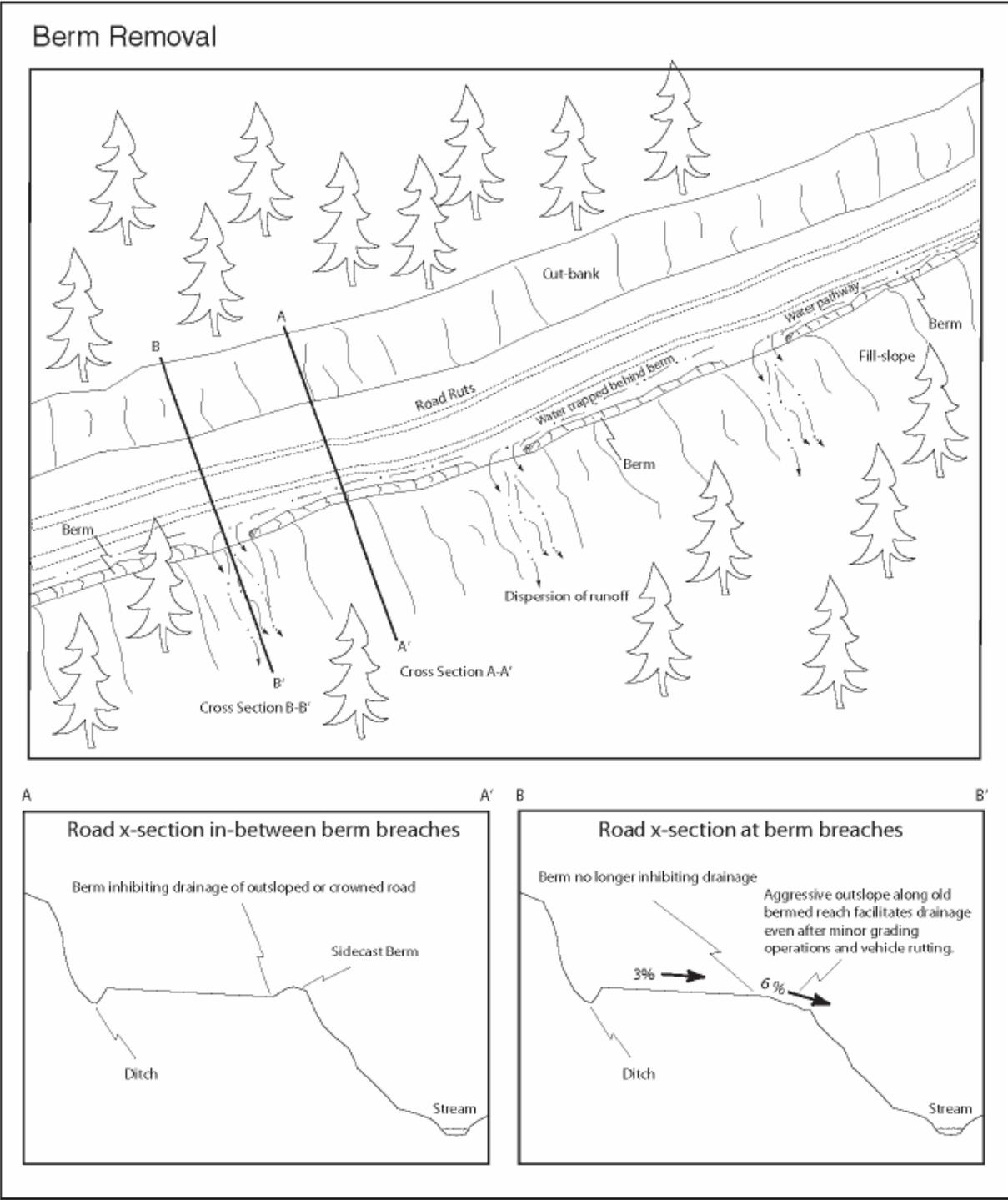


Figure X19. Berm removal for improved drainage on outsloped and crowned roads.

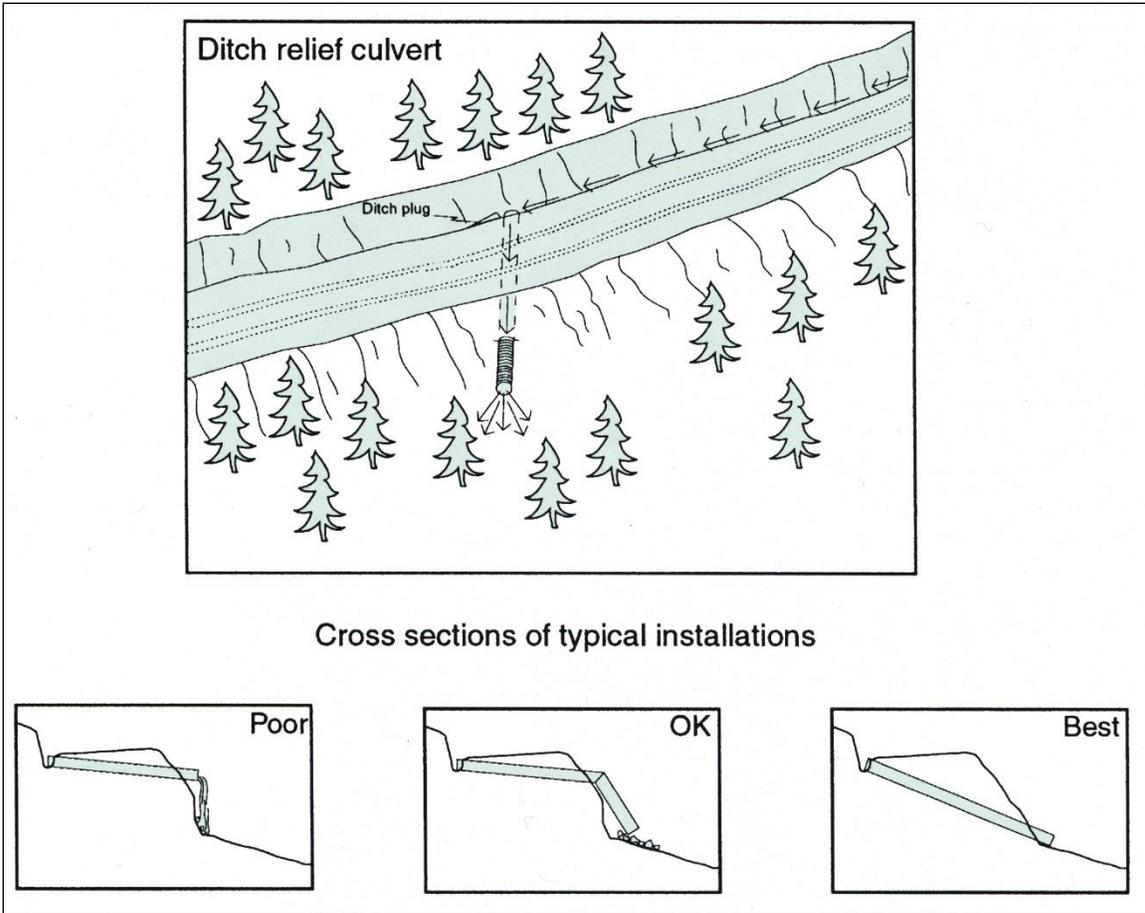


Figure X- 20. Typical ditch relief culvert installation.

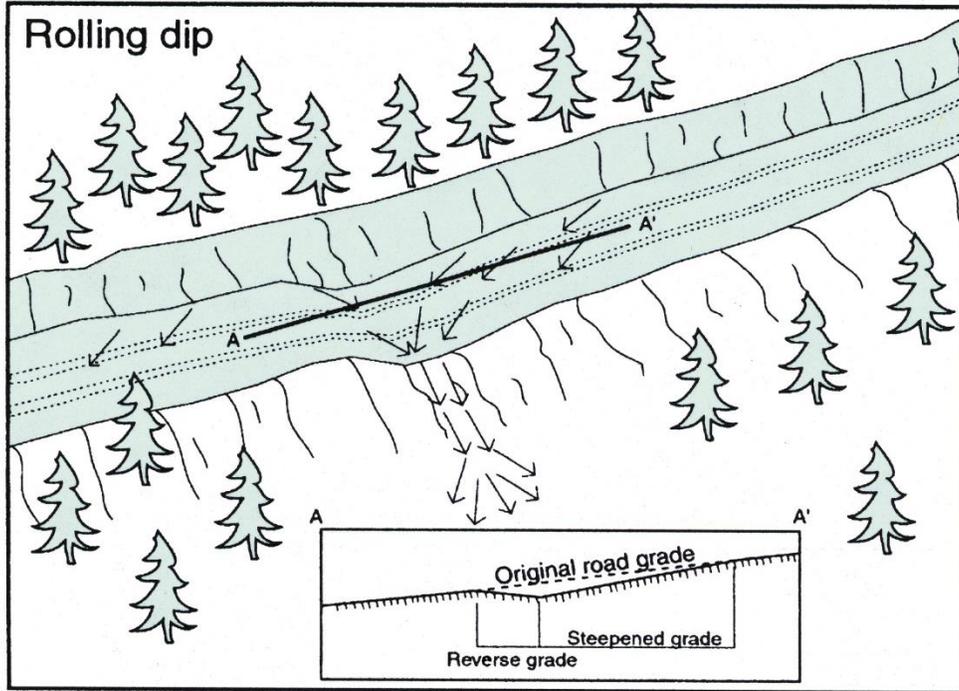


Figure X-21. Use of rolling dips to reduce ditch erosion and surface runoff.

Project ID	Fiscal Year	FRGP Contract #	Work status	County	Project Type	Project Name	Recipient	Proposed Description	Stream	Tributary to	District/Region	Latitude	Longitude	Relocation needed	Relocation Date	Species relocated	Year Class	Total captured	# injured	# killed	# relocated	Comments
724431	14/15	P1450010	Completed	Santa Barbara	FP	Circle G Ranch Fish Passage Restoration	Earth Island Institute/Southern Coast Habitat Restoration	Project will remove the last major barrier (undersized bridge with underlying concrete channel) in the Carpinteria Creek Watershed providing access to 1.27 miles of habitat up to a natural bedrock waterfall, which	Carpinteria Creek	Pacific Ocean	5	34.409	-119.48	No	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Due to the extreme drought conditions during this time, streambeds were dry which require no dewatering or relocation efforts for the projects.
724457	14/15	P1450011	Completed; project maintenance	Santa Barbara	FP	Fish Passage Improvement at Crossing 3, Quiota Creek	Cachuma Operation and Maintenance Board	Provide access to 3.38 miles of spawning and rearing habitat for southern steelhead (Oncorhynchus mykiss) by removing the passage migration barrier at Crossing 3 (man-made low-flow crossing) and replacing	Quiota Creek	Santa Ynez River	5	34.562	-120.09	No	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Due to the extreme drought conditions during this time, streambeds were dry which require no dewatering or relocation efforts for the projects.
724456	14/15	P1450014	Completed	Santa Barbara	FP	Fish Passage Improvements at Crossing 0a and 0b, Quiota Creek	Cachuma Operation and Maintenance Board	Provide access to 5.95 miles of spawning and rearing habitat for the endangered southern steelhead (Oncorhynchus mykiss, O. mykiss) by removing two recently discovered fish passage migration barriers (low	Quiota Creek	Santa Ynez River	5	34.581	-120.11	No	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Due to the extreme drought conditions during this time, streambeds were dry which require no dewatering or relocation efforts for the projects.
724622	14/15	D1450006	Completed	Los Angeles	FP	Leo Carrillo State Park, Arroyo Sequit Steelhead Trout Barrier Removal	California Department of Parks and Recreation, Angeles District	Enhance/increase steelhead habitat for drought/related environmental stochasticity resilience by removing three instream barriers, treating one mile of creek to reconnect 4.5 creek miles and restoring 1300sf	Arroyo Sequit Creek	Pacific Ocean	5	34.056	-118.93	No	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Due to the extreme drought conditions during this time, streambeds were dry which require no dewatering or relocation efforts for the projects.
724654	15/16	P1550010	Completed	Santa Barbara	FP	Fish Passage Improvement at Crossing 4, Quiota Creek	Cachuma Operation and Maintenance Board	Provide 3.3 miles of spawning and rearing habitat for southern steelhead (Oncorhynchus mykiss) by removing the Arizona-type low flow concrete crossing at Crossing 4 and replacing it with a 53 foot long by 20 foot	Quiota Creek	Santa Ynez River	5	34.562	-120.09	No	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Due to the extreme drought conditions during this time, streambeds were dry which require no dewatering or relocation efforts for the projects.
725178	16/17	P1650901	Ongoing	Ventura	HR	Lower San Antonio Creek Arundo Eradication	Ojai Valley Land Conservancy	The project will achieve the removal and ongoing herbicide treatments of 16 acres of invasive Arundo donax and subsequent revegetation of 10 acres of riparian habitat along lower San Antonio Creek,	San Antonio Creek	Ventura River	5	34.425	-119.26	No	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Due to the extreme drought conditions during this time, streambeds were dry which require no dewatering or relocation efforts for the projects.
725147	16/17	P1650902	Completed	Santa Barbara	FP	Fish Passage Improvement at Crossing 5, Quiota Creek	Cachuma Operation and Maintenance Board	Provide 3.17 miles of spawning and rearing habitat for southern steelhead (Oncorhynchus mykiss) by removing the passage migration barrier at Crossing 5 and replacing it with a 59 foot-span concrete	Quiota Creek	Santa Ynez River	5	34.56	-120.09	No	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Due to the extreme drought conditions during this time, streambeds were dry which require no dewatering or relocation efforts for the projects.

