Supplement 04 to

Final Mitigated Negative Declaration

BIG RIVER WATERSHED RESTORATION PROPOSITION 40 – RIVER PARKWAYS GRANT PROJECT State Clearinghouse # 2006072012

California Department of Parks and Recreation
California State Parks
Mendocino District
12301 North Highway 1 - Box 1
Mendocino, CA 95460

SUPPLEMENT TO A MITIGATED NEGATIVE DECLARATION

PROJECT; Big River Watershed Restoration, Proposition 40 – River Parkways Grant Project [Original State Clearinghouse # 2006072012 (October 2006)]

LEAD AGENCY: California Department of Parks & Recreation (California State Parks)

INTRODUCTION AND REGULATORY INFORMATION

This Supplement to the Final Mitigated Negative Declaration (MND) for the Big River Watershed Restoration, Proposition 40 – River Parkways Grant Project (the Project), will be implemented at the Big River unit of Mendocino Headlands State Park, has been prepared by California State Parks (CSP).

This Supplement discloses newly proposed project areas that are within the scope of the MND's final project description and may collectively require preparation of a subsequent MND (California Code of Regulations (CCR) §15162). However, under CCR §15163(a)(1 & 2), the existing MND can be revised and rendered adequate for the altered project, provided minor changes and additions are specified, and none are deemed significant in their potential impacts to the environment. This supplement provides the details of the proposed project changes and an assessment of potential environmental impacts only for new project areas, in order to render the existing Final MND for the Project adequate (CCR §15163(b)).

This document has been prepared to comply with provisions of the California Environmental Quality Act (CEQA), the California Public Resources Code sections §21000 *et seq*., and the CEQA Guidelines (CCR §15000 *et seq*.). This Supplement to the Final MND will be subject to the same public notice and review requirements as a draft MND (CCR §15087 *et seq*.), with filing subsequent to public review and comment period with the State Office of Planning and Research, State Clearinghouse.

LEAD AGENCY

Under CEQA Guidelines §15051(b)(1), "the lead agency will normally be an agency with general governmental powers, such as a city or county, rather than an agency with a single or limited purpose." The lead agency assumes responsibility for and primary approval authority for a proposed project. For this project, the lead agency is California State Parks.

SUMMARY OF FINDINGS

Based on the revisions to the proposed project and the resulting changes and additions to its scope, including project requirements, as addressed in this document, findings have been made for each significant effect included in the previously certified MND as revised in this document. Findings are noted following the descriptions of each revision, where applicable.

AVAILABILITY OF DOCUMENTS

This Supplement to the Mitigated Negative Declaration for the Big River Watershed Restoration, Proposition 40 – River Parkways Grant Project will be available throughout the 30-day public review period at the following locations:

- California State Parks
  Mendocino District
  12301 North Highway One – Box 1
  Mendocino, CA 95460
  (707) 937-5804

- California State Parks website https://www.parks.ca.gov/?page_id=981

- CEQAnet Web Portal https://ceqanet.opr.ca.gov/

The Notice of Determination (NOD) for the originally certified MND on this project was filed on October 31, 2006 (SCH#2006072012). This Supplement will be appended to the originally certified Final MND following the filing of the NOD and will be available by request, along with all supporting materials, at the Sonoma-Mendocino District Headquarters office.

PROJECT DESCRIPTION:

This section includes the original summary project description, with annotations following for project scope elements that have been altered since the certification of the original MND.

ORIGINAL PROJECT DESCRIPTION SUMMARY

California State Parks (CSP) proposes to correct erosion and sedimentation problems, improve stream crossings along roads, remove logging roads that contribute sediment to Big River and tributaries, convert roads to trails, restore pre-disturbance hydrologic processes, delineate parking areas, construct a restroom building, and improve public information within the Big River unit of Mendocino Headlands State Park. Goals of this project include road de-commissioning and conversion into recreational trails, stabilizing or removing skid trails and landings to restore riverine functions, improving fish passage and opening up new habitat for spawning and rearing, resurfacing and delineating parking locations, and constructing public toilets. Work related to these efforts will include:

- Excavation and removal of road fill from stream channels to re-establish historical width, depth, alignment, and gradient;

- Removal of sidecast fill material along roadsides;
- Decompaction of road surfaces to facilitate revegetation by native plants;
- Retrieval and removal of debris (culverts, cable, concrete foundations, etc.) that negatively affect hydrologic processes and natural habitats;
- Restoration of the natural topography and hydrology of the land (ridges, stream valleys, and swales) along roadway corridors;
- Removal of non-native invasive plant species;
- Mulching and implementation of other stabilization techniques in disturbed sites using woody debris recovered from excavations;
- Monitoring and maintenance of disturbed areas to improve conditions for either human-assisted or natural revegetation with native species;
- Delineation of beach parking areas with boulders, logs, or other natural material;
- Resurfacing of the beach parking areas and primary road with compacted road base;
- Installation of a vault restroom facility outside the 100-year floodplain;
- Installing regulatory, informational, and interpretive signs pertaining to restoration efforts.

Specific watershed restoration activities will focus on thirty-three sites scattered throughout the Big River unit.

CORRECTIONS AND ADDITIONS

The following corrections, additions, and deletions supplement, supersede, or otherwise inform applicable sections of the previously certified Final MND for the Project. Additions and corrections are underlined; a strike-through line indicates a deletion. In some cases, in areas where there were many individual changes, an entire paragraph or section was deleted and re-written, even if portions of the narrative remained the same in both versions. This was done for ease of presentation and public review. Minor punctuation, spelling, and grammatical corrections that contribute to ease of understanding, but have no significant impact on the content, have not been included in this document. Throughout this document, references to the lead agency may be either California State Parks (CSP) or California Department of Parks and Recreation (DPR).

Project Description, p. 3 of Final MND
Modify the text on p.3 of Final MND as stated below:

Specific watershed restoration activities will focus on thirty- three project sites scattered throughout the Big River unit.

Summary of change and impact on significance
This insertion clarifies the total number of project sites from the original Final MND, to include Supplement 01, Supplement 02, Supplement 03, and Supplement 04.

Findings

The addition of the Glenbrook Gulch and M9 Spur Decommissioning project activities could result in significant impacts to one or more environmental conditions. All prior mitigation measures, best management practices, permitting requirements, monitoring, and maintenance activities, as specified in the original MND, continue to apply for the entirety of the Project, including the additional sites described in this Supplement. The inclusion of the mitigation summarized in Chapter 5 in the original MND, in conjunction with stipulations included within a streambed alteration agreement by the Department of Fish and Wildlife for these Project activities, will reduce potentially significant impacts to a "less than significant" level. Therefore, this Supplement including two additional locations will not result in any further impacts beyond those identified, and mitigated, in the original MND.

Questions or comments regarding this Supplement to the Final Mitigated Negative Declaration may be addressed to:

California State Parks

Pursuant to Section 21082.1 of the California Environmental Quality Act, California State Parks (CSP) has independently reviewed and analyzed the Initial Study and Negative Declaration for the proposed project and finds that these documents reflect the independent judgment of CSP. CSP, as lead agency, also confirms that the project requirements detailed in these documents are feasible and will be implemented as stated in the Negative Declaration.

ORIGINAL SIGNATURE ON FILE

Date 3/17/2025

Bill Maslach, District Superintendent, Sonoma-Mendocino District
California Department of Parks and Recreation

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William Maslach
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ORIGINAL SIGNATURE ON FILE

Date 3/17/2025

Terra Fuller, Senior Environmental Scientist Sonoma-Mendocino District
California Department of Parks and Recreation

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CHAPTER 2
PROJECT DESCRIPTION

2.1 INTRODUCTION

Supplement 04 is needed to incorporate additional sites to the MND. During the original submittal, the Big River acquisition was new to the Mendocino Headlands State Park and the original scope was limited due to funding, staffing and immediate needs. Follow up road assessments have found high priority and maintenance sites requiring work to prevent sedimentation to Big River and Albion River, restore watershed and wildlife functions and allow for critical ingress and egress into the park. The addition of Glenbrook Gulch and M9 Spur Decommissioning projects adds specific language for upgrading existing road drainage and decommissioning road lengths and removing stream crossings associated with legacy logging roads that are causing sedimentation into Big River and Albion River. Culvert diameters were included in the original MND (See 2.3.1). Supplement 04 adds Site Glenbrook Gulch and M9, restoring thirty-three Class II and Class III streams. All additional sites included in this Supplement are consistent with the purpose and objectives of the original Big River Watershed Restoration MND by replacing failing crossings, restoring historic topography, revegetating and decommissioning former logging roads, and reducing sedimentation to Big River and Albion River.

In addition, this Supplement will include evaluation of recent legislative mandated environmental issues originally not analyzed in the MND for Energy, Greenhouse Gas Emissions, Tribal Cultural Resources and Wildfire.

2.2 PROJECT LOCATION

2.2.1 Glenbrook Gulch

This project will be implemented completely within the boundaries of the Big River unit of the Mendocino Headlands State Park (Appendix A – Map 2). This

project incorporates a total of 12 sub-project sites scattered throughout the unit; these sites occur in Section 6, Township 16N, Range 16W; Section 5 and 8 (Table 1).

2.2.2 M9 Road Decommissioning and Culvert Upgrades

This project will be implemented completely within the boundaries of the Big River unit of the Mendocino Headlands State Park (Appendix A – Map 3).This project incorporates a total of 21 sub-project sites scattered throughout the unit; these sites occur in Township 17N, Range 17W, sections 35 and 36 and Township 16N, Range 16W, sections 5 and 8 (Table 1).

Table 1: site locations based on land grant coordinates for each sub-project.

		Site Number Designations	
Road Number (or Area)	**Mileage from Road Origin**	**Site Designation**	**Township, Range, Section, Quarter-Section**
Glenbrook Gulch	**Comptche-Ukiah Road**		
A6.0	0.11	PT-148	T16N, R16W, Sec. 5, NW¼
A6.0	0.24	PT-133	T16N, R16W, Sec. 5, NW¼
A6.0	0.39	PT-134	T16N, R16W, Sec. 5, NW¼
A6.0	0.48	PT-141	T16N, R16W, Sec. 5, NW¼
A6.0	0.68	PT-138	T16N, R16W, Sec. 5, NW¼
A6.1	0.18	PT-155	T16N, R16W, Sec. 5, NW¼
A7.0	0.29	PT-111	T16N, R16W, Sec. 5, NW¼
A6.1	0.25	PT-145	T16N, R16W, Sec. 5, SW¼
A7.0	0.42	PT-136	T16N, R16W, Sec. 5, SW¼
A7.0	0.46	PT-132	T16N, R16W, Sec. 8, NW¼
A6.0 spur	0.27	PT-154	T16N, R16W, Sec. 5, SW¼
A.1.0	0.39-0.96	A1.0	T16N, R16W, Sec. 5, NW¼, T16N, R16W, Sec. 5, SW¼ , T16N, R16W, Sec. 8, NW¼
M9	**Big River Haul Road**		
M9.0	0.0	1	T17N, R17W, Sec. 35, NE¼
M9.1	0.44	2	T17N, R17W, Sec. 35, NE¼
M9.1	0.56	3	T17N, R17W, Sec. 35, NE¼
M9.1	0.63	4	T17N, R17W, Sec. 35, NE¼
M9.1	0.82	5	T17N, R17W, Sec. 35, NE¼
M9.1	0.84	6	T17N, R17W, Sec. 35, NE¼

M9.1	0.89	7	T17N, R17W, Sec. 35, NE¼
M9.1	1.04	8	T17N, R17W, Sec. 35, NE¼
M9.1	1.23	9	T17N, R17W, Sec. 35, NE¼
M9.11	1.29	9.1	T17N, R17W, Sec. 36, NE¼
M9.1	1.89	10	T17N, R17W, Sec. 35, NE¼
M9.1	2.18	11	T17N, R17W, Sec. 36, NE¼
M9.1	2.54	12	T17N, R17W, Sec. 36, NE¼
M9.3	1.32	15	T17N, R17W, Sec. 35, NW¼
M9.3	1.66	14	T17N, R17W, Sec. 35, NW¼
M9.3	1.26	16	T17N, R17W, Sec. 35, NW¼
M9.3 road	2.44-3.17	M9.3	T17N, R17W, Sec. 36, NE¼
M9.1 road	0.74-2.72	M9.1	T17N, R17W, Sec. 36, NE¼ and Sec 35, NW¼
M9.2 road	0.79-0.84	M9.2	T17N, R17W, Sec. 36, SE¼
M9.4 road	1.14-1.33	M9.4	T17N, R17W, Sec. 36, SE¼
M9.11 road	1.21-1.47	M9.11	T17N, R17W, Sec. 35, NE¼

2.3 BACKGROUND AND NEED FOR PROJECT

2.3.17 Glenbrook Gulch

The A1.0 road is the primary access for personnel and emergency vehicles into the Glenbrook Gulch subwatershed and an important access feature for future prescription fire and forest management in the Albion watershed. The existing road infrastructure was developed when the area was actively logged and is now aging and failing, contributing to erosion and in need of maintenance. The A1.0 is a ridge road with no stream crossings and little drainage features. The A1.0 will be upgraded with the appropriate road structure to convey the 100-year flood flow while reducing erosion and sedimentation to Albion River. Please refer to Appendix B: Conceptual Treatment Data and Plan Sheets, Pacific Watershed Associates, Inc for general treatment specifications.

This project also addresses two high priority legacy logging roads (A6.0 and A7.0) located along the south-eastern section of park unit surrounded on all sides by private property and the Mendocino Redwood Company properties. The primary purpose of these roads was to access a historic homestead and to remove trees from the Glenbrook Gulch subwatershed during logging. These roads do not connect any roads, serve no purpose for ingress or egress and are currently in disrepair. Culverted stream crossings are clogged, undersized, failing and causing landslides and stream erosion. Ten stream crossings on this road

will be restored with remediation activities to include removal of culverts, road fill and any upslope sediment within the stream channel. Historical channel width, depth, alignment and gradient will be restored. The road prism will be recontoured to historic geography, allowing for re-vegetation and reducing any road related surface water run-off and sediment from entering a stream.

- ***Summary of changes and impacts on significance***
  The geographical scope (extent) of the Project is amended to include associated road activities along the A1.0 road from mile 0.39 to 0.96, road decommission along the A6.0 from mile 0.07-0.68 at site numbers PT133-PT145, and road decommissioning activities along the A7.0 from mile 0.22-0.46 at site numbers PT111 – PT136.

- ***Findings***
  The addition of the Glenbrook Gulch work will not individually or in total result in a change in the nature of the remedial actions proposed, nor will it accrue to pose cumulative impacts not specified within the original MND. All prior mitigation measures, best management practices, permitting requirements, monitoring, and maintenance activities, as specified in the original mitigated negative declaration, continue to apply for the entirety of the Project, including the additional sites described in the Supplement.

2.3.18 M9 Spur Road Decommissioning

The M9 road is one of only two accesses for personnel and emergency vehicles from the M1 road to the property boundary and Little Lake Road. The existing road infrastructure included several spur roads that were developed to extract logging resources from the subwatershed and that infrastructure is now aging and failing, contributing to erosion and sedimentation into Big River. The spur roads will be fully decommissioned and a single culvert on the M9 will be upgraded with the appropriate road structure to convey the 100-flood flow while reducing erosion and sedimentation to Big River. Please refer to Appendix B: Conceptual Treatment Data and Plan Sheets, Pacific Watershed Associates, Inc for general treatment specifications.

This project addresses five high priority legacy logging skid roads (M9.1, M9.11, M9.4, M9.2, and M9.3) located along a central sub-watershed in the park unit bordered Jackson Demonstration State Property. The primary purpose of these roads was to remove trees during recent logging efforts in the 1970's. These roads do not connect any roads, serve no purpose for ingress or egress and are currently in disrepair. Culverted stream crossings are clogged, undersized, failing and causing landslides and stream erosion. Fifteen stream crossings on this road will be restored with remediation activities to include removal of culverts, road fill and any upslope sediment within the stream channel. Historical channel width, depth, alignment and gradient will be restored. The road prism will be recontoured to historic geography, allowing for re-vegetation and reducing any

road related surface water run-off and sediment from entering a stream. Please refer to Appendix B: Conceptual Treatment Data and Plan Sheets, Pacific Watershed Associates, Inc.

- ***Summary of changes and impacts on significance***
  The geographical scope (extent) of the Project is amended to include road decommissioning activities along the M9.3 from mile 2.44-3.17 at site numbers 14-16, along the M9.1 from mile 0.74-2.72 at site numbers 2-12, along the M9.11 from mile 1.21-1.47 at site number 9.1, along the M9.2 from mile 0.79-0.84, and road decommissioning activities along the M9.4 from mile 1.14-1.33, hereafter known collectively as "M9 skids."

- ***Findings***
  The addition of the M9 Spur Road Decommissioning project work will not individually or in total result in a change in the nature of the remedial actions proposed, nor will it accrue to pose cumulative impacts not specified within the original MND. All prior mitigation measures, best management practices, permitting requirements, monitoring, and maintenance activities, as specified in the original mitigated negative declaration, continue to apply for the entirety of the Project, including the additional sites described in the Supplement.

2.4 PROJECT OBJECTIVES

2.4.17 Glenbrook Gulch Objectives

Project objectives include the following:

Wherever feasible, based upon existing geology, surface conditions, and drainage regimes;

- excavate fill-slope material below road and place along the cut-bank;
- grade material to match historic topography and provide for surface water sheet flow;
- remove culverts, armored crossings, and associated fill material from natural drainages;
- restore historic stream channels to natural elevation, grade, and sinuosity;
- upgrade failing stream crossings along remaining administrative roads;
- improve overall site drainage on administrative roads with outsloping or other standard road technique;
- treat with appropriate erosion control materials and methods;
- site monitoring and maintenance of erosion controls and invasive plant species;
  - re-vegetation, as necessary, with native plants.
- remove large volumes of stored sediment in stream basins;

- reduce sedimentation to Albion River.

- ***Summary of changes and impacts on significance***
  The objectives articulated for these Project sites are consistent with those articulated in the original mitigated negative declaration and are consistent with the broader management goals for the Big River unit.

- ***Findings***
  Not applicable. The articulation of Project objectives alone does not constitute an environmental impact.

2.4.18 M9 Road Objectives

Project objectives include the following:

Wherever feasible, based upon existing geology, surface conditions, and drainage regimes;

-
- excavate fill-slope material below road and place along the cut-bank;
- grade material to match historic topography and provide for surface water sheet flow;
- remove culverts, armored crossings, and associated fill material from natural drainages;
- restore historic stream channels to natural elevation, grade, and sinuosity;
- upgrade failing stream crossings along remaining administrative roads;
- improve overall site drainage on administrative roads (M9 Road) with outsloping or other standard road technique;
- treat with appropriate erosion control materials and methods;
- site monitoring and maintenance of erosion controls and invasive plant species;
- re-vegetation, as necessary, with native plants.
- remove large volumes of stored sediment in stream basins;
- reduce sedimentation to Big River.

- ***Summary of changes and impacts on significance***
  The objectives articulated for these Project sites are consistent with those articulated in the original mitigated negative declaration and are consistent with the broader management goals for the Big River unit.

- ***Findings***
  Not applicable. The articulation of Project objectives alone does not constitute an environmental impact.

2.5 PROJECT DESCRIPTION

This section provides a site-by-site summary of the proposed activities. Detailed project designs are provided in the Appendices. For the purposes of the Supplement 04, detailed project design information is provided in Appendix B Conceptual Treatment Data and Plan Sheets, Pacific Watershed Associates, Inc for further details on existing conditions and the remedial needs for this proposed project site. In general, these measures are intended to rehabilitate stream corridors, reduce erosive potential of roadbed-stream crossings through the replacement of existing culverts with those of improved design or with bridges, partially restore the historical topographical contours to existing roadbeds, convert existing roads to trails, restore native vegetation to rehabilitated stream corridors and fill-slope failures, partially restore the historical topography to the Big River Rock Quarry pit, improve parking and define vehicular access in the entry area, and provide a restroom facility for the Big River unit of Mendocino Headlands State Park. Site-specific project activity details for project sites M1-0.64, M1-0.7, M1-1.85, M1-2.06, M1-2.08, M1-4.05, M1-4.78, M1-5.63, M1-6.49 - -7.78, M2-0-1.62, M9 skids, M14, A6.0, A7.0, A1.0, and S22 have been based upon technical assessments, rehabilitative measures, and construction designs provided by the California Department of Conservation, California Geological Survey (CGS). The CGS information has been augmented by the California Department of Parks and Recreation to articulate and address site-specific design features, such as bridge construction specifications, and environmental concerns, such as reduction of impacts to a less-than-significant level or elimination of impacts on sensitive wildlife and plant habitats and existing visitor use patterns. Site Glenbrook Gulch and M9 Spur Road conceptual treatment data was based on technical assessments provided by Pacific Watershed Associates, Inc. and Department of Parks and Recreation. DPR has also added information on required or recommended remediation practices, restoration techniques, and monitoring and maintenance protocols.

- ***Summary of changes and impacts on significance***
  The project design information articulated for this Project is consistent with the original mitigated negative declaration for the remediation of culverted stream crossings and is consistent with the broader management goals for the Big River unit. Mitigation measures specified in Chapter 5 of the original mitigated negative declaration, where applicable to additional Project areas described here, shall be implemented as Project requirements.

- ***Findings***
  The description of the Project has not been altered to add new activities that were not addressed in the original mitigated negative declaration.

Mitigation measures and Project requirements applicable under the original description, as summarized in Chapter 5 of the original mitigated negative declaration, shall apply to all Project activities implemented in these additional areas and will reduce potentially significant impacts to a "less than significant" level.

2.5.17 Glenbrook Gulch Project Description

State Parks proposes removing ten existing culverts and road associated fill material along 1.5 miles of road; thereby, restoring watercourse channels to historical width, depth, and alignment. Treatments for decommissioning roads and landings included in the Glenbrook Gulch project description involve: full road decommissioning and incorporation of outsloping, berm removal, cross road drain installation, excavation of unstable sidecast materials, road ripping, and the complete removal of all stream crossing fills. The expected benefit of completing the erosion control and erosion prevention remediation proposed in this project is the reduction of long-term sediment delivery and normalization of hillslope and channel hydrology within the Glenbrook Gulch subwatershed.

State Parks also proposes improving drainage and road conditions by upgrading road outsloping and performing necessary maintenance repairs from mile 0.39-0.96 on the A1.0 road. The A1.0 road is the main access road into the Glenbrook Gulch subunit and provides administrative and emergency access into the Glenbrook Gulch watershed. The A1.0 will be used by State Parks for invasive species control, forest health management, wildlife monitoring, and potential prescription burning, but is not open to public recreation.

Please refer to sites 100-117 in Appendix B: Conceptual Treatment Data and Plan Sheets, Pacific Watershed Associates, Inc.

- ***Summary of changes and impacts on significance***
  The design information articulated for this Project site is consistent with the description provided in the original mitigated negative declaration, other than its application to an additional Project site area, as described Appendix B: Conceptual Treatment Data and Plan Sheets, Pacific Watershed Associates

- ***Findings***
  Addition of Project activities along the A6.0, A7.0, and A1.0 roads could result in potentially significant impacts to one or more environmental conditions. All prior mitigation measures, best management practices, permitting requirements, monitoring, and maintenance activities, as specified in the original mitigated negative declaration, continue to apply for the entirety of the Project, including the additional sites described in the Supplement. Therefore, with the inclusion of the mitigations summarized

in Chapter 5 of the original mitigated negative declaration and Supplement, impacts are “less than significant with mitigation”.

2.5.18 M9 Spur Road Decommissioning Project Description

State Parks proposes removing ten existing culverts and road associated fill material along 0.94 miles of road; thereby restoring watercourse channels to historical width, depth, and alignment. Treatments for decommissioning roads and landings included in the M9 project description involve: full road decommissioning and incorporation of outsloping, berm removal, cross road drain installation, excavation of unstable sidecast materials, road ripping, and the complete removal of all stream crossing fills. The expected benefit of completing the erosion control and erosion prevention remediation proposed in this project is the reduction of long-term sediment delivery and normalization of hillslope and channel hydrology within the M9 subwatershed.

State Parks also proposes improving drainage and road conditions by upgrading a culvert on the M9 road where it intersects with M1 to accommodate the 100year flood potential and upgrade to current standards.

- ***Summary of changes and impacts on significance***
  The design information articulated for this Project site is consistent with the description provided in the original mitigated negative declaration, other than its application to an additional Project site area, as described Appendix B: Conceptual Treatment Data and Plan Sheets, Pacific Watershed Associates

- ***Findings***
  Addition of Project activities along the M9 skid roads could result in potentially significant impacts to one or more environmental conditions. All prior mitigation measures, best management practices, permitting requirements, monitoring, and maintenance activities, as specified in the original mitigated negative declaration, continue to apply for the entirety of the Project, including the additional sites described in the Supplement. Therefore, with the inclusion of the mitigations summarized in Chapter 5 of the original mitigated negative declaration and Supplement, impacts are “less than significant with mitigation”.

2.6 PROJECT IMPLEMENTATION

In general, project implementation will include all the activities performed within the Big River unit that are directly related to the site-specific road, riparian corridor, and public entry work areas described above. Implementation includes on-site preparatory measures, such as delineations of active work zones, staging areas, and travel corridors, the posting of safety or educational information and signs, construction and ground-disturbing activities, erosion-control and

restoration, monitoring, and maintenance necessary to accomplish project objectives.

Section 2.6.3, Site-Specific Construction Activities, provides brief descriptions of the general construction activities pertinent to each of the 33 Project sites. More specific technical information on the various stages of streambed and road remediation is located in Appendix C**,** Standard Specifications & Best Management Practices for Disturbed Lands Remediation ("Specifications"). This appendix provides further detail to explain the work proposed.

- ***Summary of changes and impacts on significance***
  The number of Project sites has been revised to include the A1.0 upgrade and the A6.0, A7.0, and M9 skids decommissioning with information specified in this Supplement added to Appendix B.

- ***Findings***
  Not applicable.

2.6.3 Site-Specific Construction and Ground-Disturbing Activities

2.6.3r Glenbrook Gulch Road Removal
For Glenbrook Gulch road sites PT-111 through 155 please refer to Appendix E: Construction Sheet for Glenbrook Gulch, prepared by Shannon Dempsey, Engineering Geologist, California State Parks.
and to Appendix C, Standard Specifications & Best Management Practices for Disturbed Lands Remediation, for technical information on site remediation.

- ***Summary of changes and impacts on significance***
  The number of Project sites has been revised to include the Glenbrook Gulch road section and watercourse crossings with design details and supplemental information specified in this Supplement added to Appendix B.

- ***Findings***
  Not applicable.

2.6.3s Site M9 Road Decommissioning Project
For M9 road sites please refer to Appendix F: Conceptual Treatment Data and Plan Sheets, Pacific Watershed Associates, Inc. and to Appendix C, Standard Specifications & Best Management Practices for Disturbed Lands Remediation, for technical information on site remediation.

- ***Summary of changes and impacts on significance***
  The number of Project sites has been revised to include the M9 road

section and watercourse crossings with design details and supplemental information specified in this Supplement added to Appendix B.

- ***Findings***
  Not applicable.

CHAPTER 3

1. ENVIRONMENTAL FACTORS POTENTIALLY AFFECTED:

The environmental factors checked below would be potentially affected by this project, involving at least one impact that is a "Potentially Significant Impact", as indicated by the checklist on the following pages.

☐ Aesthetics	☐ Agricultural Resources	☐ Air Quality
☐ Biological Resources	☐ Cultural Resources	☐ Geology/Soils
☐ Hazards & Hazardous Materials	☐ Hydrology/Water Quality	☐ Land Use/Planning
☐ Mineral Resources	☐ Noise	☐ Population/Housing
☐ Energy	☐ Greenhouse Gas Emissions	☐ Transportation/Traffic
☐ Public Services	☐ Recreation	☐ Utilities/Service Systems
☐ Tribal Cultural Resources	☐ Wildfire	
☐ Mandatory Findings of Significance	☒ None	

DETERMINATION

On the basis of this initial evaluation:

I find that the proposed project **COULD NOT** have a significant effect on the environment and a **NEGATIVE DECLARATION** will be prepared. ☐

I find that, although the original scope of the proposed project **COULD** have had a significant effect on the environment, there **WILL NOT** be a significant effect because revisions/mitigations to the project have been made by or agreed to by the applicant. A **MITIGATED NEGATIVE DECLARATION** will be prepared. ☒

I find that the proposed project **MAY** have a significant effect on the environment and an **ENVIRONMENTAL IMPACT REPORT** or its functional equivalent will be prepared. ☐

I find that the proposed project **MAY** have a "potentially significant impact" or "potentially significant unless mitigated impact" on the environment. However, at least one impact has been adequately analyzed in an earlier document, pursuant to applicable legal standards, and has been addressed by mitigation measures based on the earlier analysis, as described in the report's attachments. An **ENVIRONMENTAL IMPACT REPORT** is required, but it must analyze only the impacts not sufficiently addressed in previous documents. ☐

I find that, although the proposed project could have had a significant effect on the environment, because all potentially significant effects have been adequately analyzed in an earlier EIR or Negative Declaration, pursuant to applicable standards, and have been avoided or mitigated, pursuant to an earlier EIR, including revisions or mitigation measures that are imposed upon the proposed project, all impacts have been avoided or mitigated to a less than significant level and no further action is required. ☐

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Terra Fuller
Environmental Coordinator

3/17/2025
Date

ENVIRONMENTAL ISSUES

IV. BIOLOGICAL RESOURCES.

SENSITIVE PLANTS

STANDARD PROJECT REQUIREMENT

In April, May, June, and July 2005, ecologists with DPR, Mendocino District, conducted CNPS protocol-level plant surveys in areas potentially affected by proposed project activities. An initial plant list compiled during these surveys is available in Appendix A. The Big River unit supports several rare plants and a diversity of habitats that are described below. A list of these species potentially occurring within the project area and an assessment of their habitat is presented in Appendix D. An updated rare plant species search will be updated prior to completing surveys.

Prior to implementation, all project areas shall be surveyed for rare plant species using methodology that follows California Department of Fish and Wildlife's "Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Natural Communities" (DFG 2009). Plant surveys will be repeated in all areas where the previous survey was conducted greater than two years prior to project implementation.

V. CULTURAL RESOURCES.

STANDARD PROJECT REQUIREMENT

Far Western Archaeological Research Group, Inc. (Far Western) conducted a pedestrian archaeological survey of the Big River Study area at Mendocino Headlands State Park over four 10-day field rotations between July 12 and September 1, 2023. This effort was led by Far Western Principal Investigator, Jeffrey Rosenthal, assisted by Field Director, Tim Carpenter, and Crew Chiefs, Luci Simpson, Julia Furlong, and Lucas Pettinati, along with field technicians Jake Hurst, Alex Bingham, Brandon Salcedo, Brittany Hill, Nikki Wu, and Kevin Smith. The crew was periodically joined in the field by State Parks Archaeologists, Megan Webb and Chris Kimsey, and Historians Bryan Larson and David Hickman from JRP Historical Consulting. The Big River Study Area surveyed by Far Western included the Glenbrook Gulch and M9 road

decommissioning project areas. In addition to the pedestrian survey, JRP Historical Group completed historic research for the park unit in 2023 and 2024.

To assist the field crew, potential resources appearing on historic-era maps (e.g., roads, buildings, structures) were digitized and uploaded to hand-held Global Positioning System (GPS) devices and portable electronic tablets, along with all previously recorded resources, Study Area boundaries, and steep slopes (those exceeding 30%). LiDAR images of the Study Area were also uploaded to the tablets and proved very helpful in navigating rough terrain and mapping the routes of linear resources.

Glenbrook Gulch
Far Western conducted a pedestrian archaeological survey of the Glenbrook Gulch project area during the 2023 field efforts. Prior to the pedestrian archaeological survey, a whole park unit records search was completed by State Parks on March 3, 2021, at the Northwest Information Center (NWIC) of the California Historical Resource Information System. The records search identified two previously recorded cultural resources within the Glenbrook Gulch project area:

P-23-002371/CA-MEN-2678H: This historic-era resource consists of the Luoma Homestead. Mark Gray originally recorded this resource in 1993 during a Timber Harvest Plan survey. This resource consists of two cement pads of former structures, two wells (1 brick and 1 cement), a scatter of historic debris, an apple orchard, and a dug-out trash pit. Far Western revisited the resource to field verify its location and recorded any additional features. The two wells associated with this site will be removed as part of the project. The main access road, known as A7.0, that leads to the resource has been recorded as a linear feature of the site. The road was historically constructed to access the homestead area.

P-23-002370/CA-MEN-2677H: This historic-era resource consists of the Hoppala Homestead. Mark Gray originally recorded this resource in 1993 during a Timber Harvest Plan survey. This resource consists of a scatter of historic debris, an apple orchard, and a dug-out trash pit. Far Western revisited this resource during the 2023 field survey. This resource is located in the vicinity of the Glenbrook Gulch, but it is located approximately 800 feet northeast of the area and will not be impacted by the project.

The pedestrian survey revisited and updated the two previously recorded cultural resources but did not identify any new cultural resources within the Glenbrook Gulch area. The Glenbrook Gulch project will not cause a substantial adverse change in the significance of these cultural resources:

P-23-002371/CA-MEN-2678H- This resource is located within the Glenbrook Gulch project area. Features near the planned work include fence line segments, water features, and the main area of the homestead. The project work is limited to moderate road removal in the vicinity of this resource. These activities will not

impact the resource. Two wells are associated with this resource. Both wells will be removed as part of this project.

P-23-002370/CA-MEN-2677H- The project work is limited to moderate road removal or road out sloping and winterizing in the vicinity of this resource, however; this resource is located northeast of the planned work. These activities will not impact the resource.

M9

Far Western conducted a pedestrian archaeological survey of the M9 project area during the 2023 field efforts. Prior to the pedestrian archaeological survey, a whole park unit records search was completed by State Parks on March 3, 2021, at the NWIC of the California Historical Resource Information System. The records search identified one previously recorded cultural resource within the vicinity of the M9 project area:

P-23-3434 - This prehistoric resource consists of artifacts present along a 500-foot stretch of haul road on top of High Chutes Ridge. Artifacts include a fragmented pestle, intact mano, half of a metate, two intact hammerstone, ¾ of a hammerstone, and a piece of chert (possible core). This resource was first identified in 1999 by Michael Williams. During the original recording, all whole and fragmented artifacts were relocated to a burnt-out redwood stump adjacent to the archaeological site, approximately 60 feet east of the road. As a result of Far Western's pedestrian survey, the site boundary location was field verified and corrected. A chert core was present on the western side of High Chutes Ridge Road. No road treatment work is planned for this segment of High Chutes Ridge Road. The M9 project will not impact this cultural resource as no road maintenance or removal is proposed for High Chutes Ridge Road. The nearest stream crossing or road decommissioning is located approximately 500 feet southwest of the resource.

As a result of the 2023 field investigation of the M9 project area, Far Western identified three newly recorded cultural resources (isolates). The three isolates have been given temporary field designations pending official site designation numbers from the NWIC. Newly discovered isolates in the M9 project area include MH-TC-8/10-ISO4, MH-TC-8/10-ISO5, and MH-TC-8/10-ISO6.

MH-TC-8/10-ISO4 - This resource was recorded on August 10, 2023, as an isolated logging cable (one inch in diameter). This historic-era logging cable is located approximately 30 feet west of road M9.14. Road M9.14 will be maintained and not removed.

MH-TC-8/10-ISO5 - This resource was recorded on August 10, 2023, as isolated abalone shells. This isolate is located approximately 50 feet south of road M9.12. Road M9.12 will be maintained and not removed.

MH-TC-8/10-ISO6 - This resource was recorded on August 10, 2023, as an isolated logging cable (one inch in diameter). This historic-era logging cable is located between roads M9.1 and M9.11, approximately 45 feet west and 65 feet east, respectively, from the roads. Roads M9.1 and M9.11 will both be removed as part of this project.

The M9 project will not cause a substantial adverse change in the significance of these cultural resources:

P-23-3434 - The project work is limited to moderate road removal in the vicinity of this resource. No road removal activity or road treatment is planned for the portion of High Chute Ridge Road that travels through this resource. The M9 activities will not impact this resource.

MH-TC-8/10-ISO4 - The project work is limited to moderate road removal in the vicinity of this resource. Route M9.14 will be maintained as part of this project. This isolate, logging cable, is located approximately 30 feet west of route M9.14. No road removal activity or road treatment is planned at this isolate location. The M9 road removal activities will not impact this resource.

MH-TC-8/10-ISO5 - The project work is limited to moderate road removal in the vicinity of this resource. Route M9.12 will be maintained as part of this project. This isolate, abalone shells, is located approximately 50 feet south of route M9.12. No road removal activity or road treatment is planned at this isolate location. The M9 road removal activities will not impact this resource.

MH-TC-8/10-ISO6 - The project work is limited to moderate road removal in the vicinity of this resource. Routes M9.1 and M9.11 will be removed as part of this project. The routes are within 45 and 65 feet from this isolate. No road removal activity or road treatment is planned at this isolate location. The M9 road removal activities will not impact this resource.

XVII. ENERGY.

Environmental Setting

The Big River unit contains no infrastructure that uses energy. Only non-motorized multi-use recreation occurs within the park unit. The M1, M9 and High Chute are currently the only accessible roads where emergency and administrative access can occur. This project will not create any new infrastructure requiring future energy consumption. Short-term gas and diesel fuel consumption will occur for equipment use during project implementation.

WOULD THE PROJECT:	POTENTIALLY SIGNIFICANT IMPACT	LESS THAN SIGNIFICANT WITH MITIGATION	LESS THAN SIGNIFICANT IMPACT	NO IMPACT
a) Result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation?	☐	☐	☒	X☐
b) Conflict with or obstruct a state or local plan for renewable energy or energy efficiency?	☐	☐	☐	X☒

DISCUSSION

a) Construction activities are short term 5- 8 months with the minimal amount of necessary fuel consumption occurring to complete the project. This amount will not individually or cumulatively result in wasteful or unnecessary consumption of energy. Less than significant.

b) The plan does not conflict with state or local plan for renewable energy or efficiency. No impact.

XVIII. GREENHOUSE GAS EMISSIONS.

ENVIRONMENTAL SETTING

The Big River unit of the Mendocino Headlands State Park was historically logged for over 150 years. This activity resulted in the harvesting of large trees, installation of roads and landings and extensive soil disturbance. These activities can significantly reduce carbon sequestration. The Big River State Park unit encompasses approximately 6% of the watershed with the remaining area comprised primarily of working landscapes of logging and ranching. The goals of the park are to preserve and protect the estuary, wetlands, wildlife resources and develop late seral forest characteristics. Preservation and restoration of the Big River Park unit over the long-term will increase carbon sequestration by reducing soil disturbance, increasing tree growth and other objectives outlined in the California Forest Carbon Plan, California Natural Resources Agency, May 2018.

WOULD THE PROJECT:	POTENTIALLY SIGNIFICANT IMPACT	LESS THAN SIGNIFICANT WITH MITIGATION	LESS THAN SIGNIFICANT IMPACT	NO IMPACT
a) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?	☐	☐	☒	X☐
b) Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?	☐	☐	☐	X☒

DISCUSSION

a) Construction work will occur on existing roads and landings currently compacted from years of timber hauling with many areas extensively covered by invasive jubata grass inhibiting native shrub and tree growth. Road decommissioning activities result in project-related soil disturbance, resulting in short-term removal of carbon sequestration in the surface soil for these areas. Road rehabilitation by ripping the road surface decreases compaction, promoting tree and shrub growth in the long-term. Road recontouring restores historic runoff patterns and surface/ shallow surface hydrology. Restoring stream banks currently covered by the road prism will restore riparian forbs, shrubs, and tree habitat. Rehabilitation of the roads and streams will increase long-term carbon sequestration in the soil, litter, and vegetation.

The main source of greenhouse gas emission (GHG) associated with the proposed project are short-term combustion of fossil fuels during construction activities from the use of heavy equipment. There are currently no GHG thresholds developed by the Mendocino County Air Quality Management District; however, the State California Air Pollution Control Officers Association (CAPCOA) states a 900-metric ton per year (MT/yr) of CO2e screening threshold for the California Environmental Quality Act. Using the California Emissions Estimator Model (CalEEMod) adjusting for scale, these projects will generate an estimated 110 CO2e MT/yr. for heavy equipment and personal vehicle use. Therefore, the project is significantly under the

CAPCOA threshold and will not result in any long-term operational emissions. Less than significant impact.

b) The project does not conflict with any applicable plan or policy. No impact.

XIX. TRIBAL CULTURAL RESOURCES.

ENVIRONMENTAL SETTING

XIX. TRIBAL CULTURAL RESOURCES.

ENVIRONMENTAL SETTING

Tribal consultation was conducted to identify any potential tribal cultural resources within the project area. CA State Parks contacted the California Native American Heritage Commission (NAHC) on December 19, 2024, to request a search of the Sacred Lands File and a request for the Native American contact list for the Project Areas.

A search of the Sacred Lands File by the NAHC failed to indicate the presence of Native American cultural resources in the Project Area. The results were provided to CA State Parks on December 26, 2024. The NAHC results also noted, however, that absence of specific site information in the Sacred Lands File does not imply absence of Nature American cultural resources on the site. The NAHC also provided contact information for parties who may be interested or may have information regarding tribal cultural resources in the project area. CWPP cultural staff mailed notice letters to 28 individuals and/or groups from the provided list on December 31, 2024.

On January 6, 2025, the Middletown Rancheria of Pomo Indians of California responded via email to CA State Parks stating that the Middletown Rancheria Tribal Historic Preservation Department has determined that this project is outside of Middletown Rancheria's Area of Concern and respectfully decline any comment on this project at this time.

On January 15, 2025, the Sherwood Valley Tribe responded via email to CA State Parks stating about the M9 restoration project to inquire about any recorded sites within the restoration area or just outside the proposed project area. District Archaeologist responded to Sherwood Valley Tribe on January 15, 2025, with information regarding the resources (P-23-002371/CA-MEN-2678H homestead and P-23-3434) in the vicinity and provided the tribe with a draft of the MND section. The Sherwood Valley Tribe responded on January 15, 2025, and requested that no supply area, equipment parking, staff parking, or port-a-pot staging be placed near known cultural resources.

The District Archaeologist conducted follow up phone calls on January 31, 2025, to the 28 individuals and/or groups on the NAHC contact list. Messages were left, but no responses from the phone calls have been received to date.

WOULD THE PROJECT:	POTENTIALLY SIGNIFICANT IMPACT	LESS THAN SIGNIFICANT WITH MITIGATION	LESS THAN SIGNIFICANT IMPACT	NO IMPACT
a) Would the project cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is:	☐	☐	☐	X☒
b.) Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code section 5020.1(k), or	☐	☐	☐	**Error! Bookmark not defined.**
c.) A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1. In applying the criteria set forth in subdivision (c) of Public Resource Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe.	☐	☐	☐	X☒

DISCUSSION

a.) Survey results, record search and tribal consultation found no tribal cultural resources or concerns with project. No Impact.

b.) Survey results, record search and tribal consultation found no tribal cultural resources or concerns with project. No Impact.

c.) Survey results, record search and tribal consultation found no tribal cultural resources or concerns with project. No Impact.

XX. WILDIFIRE.

ENVIRONMENTAL SETTING

The Big River unit of the Mendocino Headlands contains over 94 miles of old logging roads that are failing, unmaintained and were installed for the primary purpose of harvesting timber from the watershed.

The roads in Glenbrook Gulch were primarily used to log trees from the Glenbrook Gulch subwatershed. The roads do not connect to other road networks and serve no purpose for ingress and egress. The A1.0 road that allows access from Comptche-Ukiah road to the ridge at Glenbrook Gulch and could potentially be used as firebreak in prescription burning. The Glenbrook Gulch restoration will remove failing infrastructure, restore stream hydrology, and reduce future landslide potential.

The skid roads off the M9 road were primarily used to log trees from the M9 subwatershed. The roads do not connect to other road networks and serve no purpose for ingress and egress. The M9 restoration will remove failing infrastructure, restore stream hydrology, and reduce future landslide potential.

WOULD THE PROJECT:	POTENTIALLY SIGNIFICANT IMPACT	LES S THAN SIGNIFICANT WITH MITIGATION	LESS THAN SIGNIFICANT IMPACT	NO IMPACT
a) Substantially impair an adopted emergency response plan or emergency evacuation plan?	☐	☐	☐	**Error! Bookmark not defined.**
b) Due to slope, prevailing winds, and other factors, exacerbate wildfire risks, and thereby expose project occupants to, pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire?	☐	☐	☐	**Error! Bookmark not defined.**

c)	Require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment?	☐	☐	☐	**Error! Bookmark not defined.**
d)	Expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes?	☐	☐	☐	**Error! Bookmark not defined.**

DISCUSSION

a) The project does not impair an emergency access or response plan. No impact.

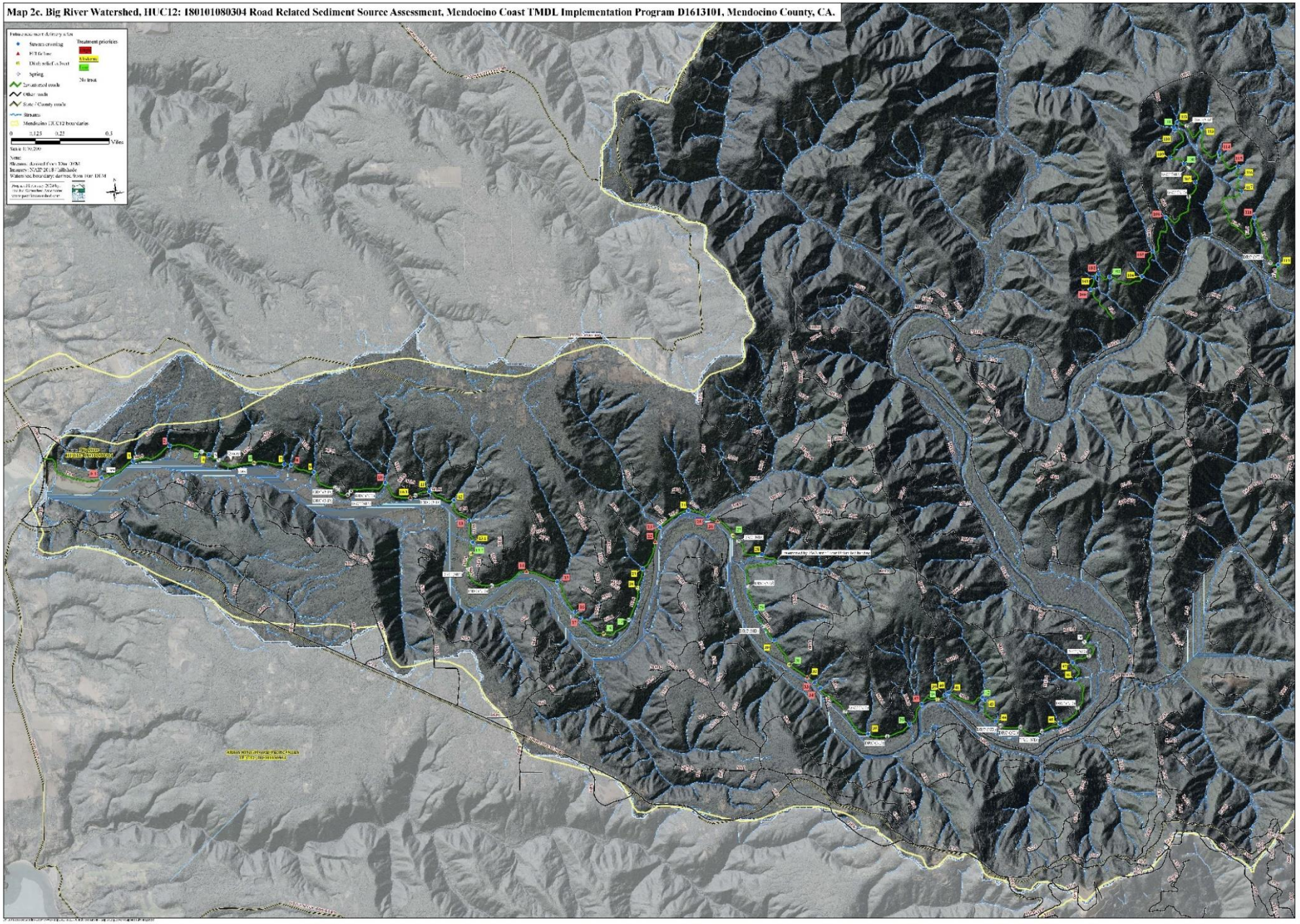
b) The project does not exacerbate wildlife risks. No impact.

c) The project will upgrade critical infrastructure for the main access road into the park. Replacing and storm proofing culverts and road improvements will maintain and enhance emergency access. No Impact.

d) There are no permanent structures or infrastructure downslope or downstream. The project will reduce landslides and drainage impacts associated with a wildfire or other weather-related events by removing road and stream crossings and restoring watercourses. No impact.

Appendix A

Project Location Map



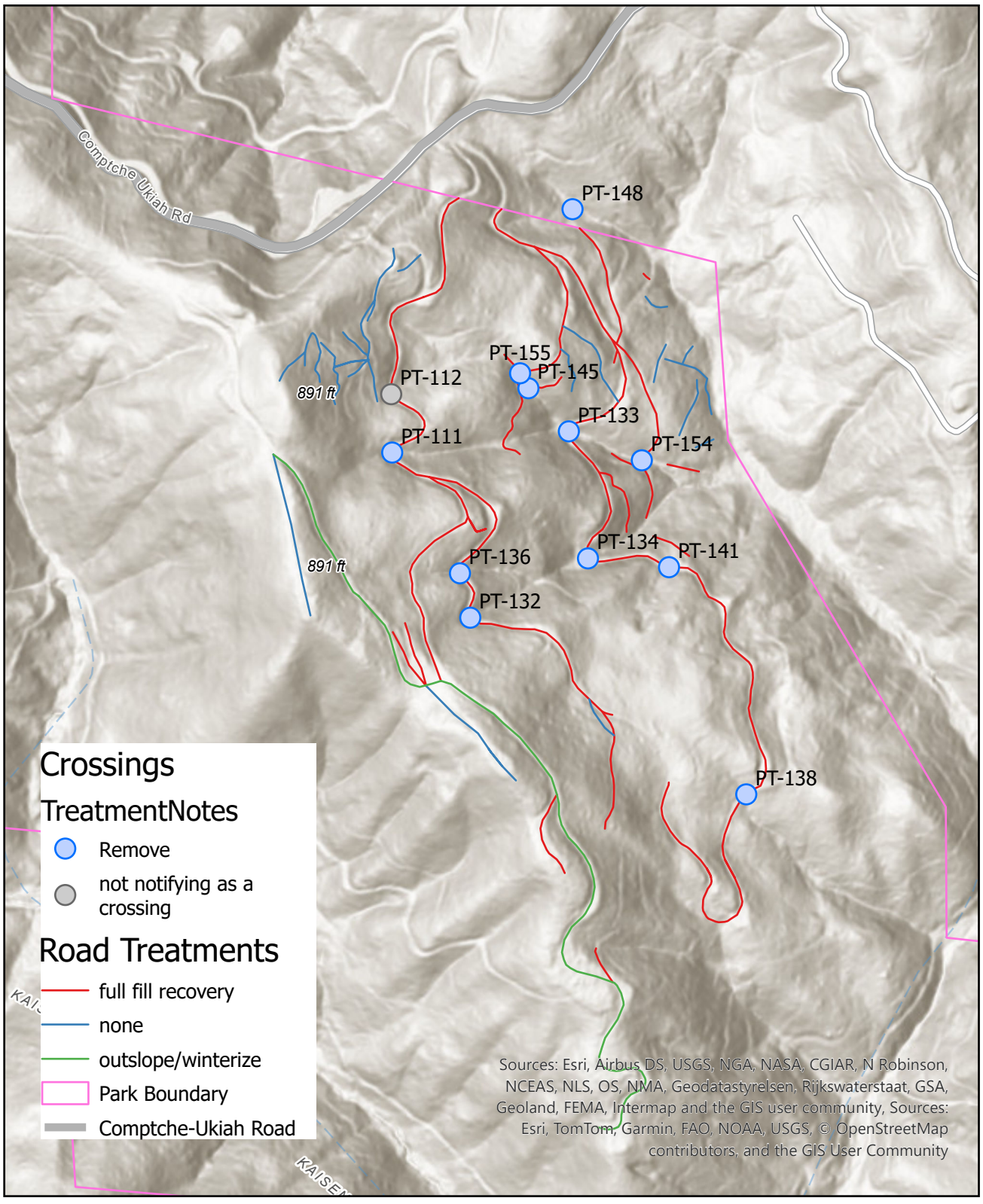
Appendix B

Project Plan Sheets

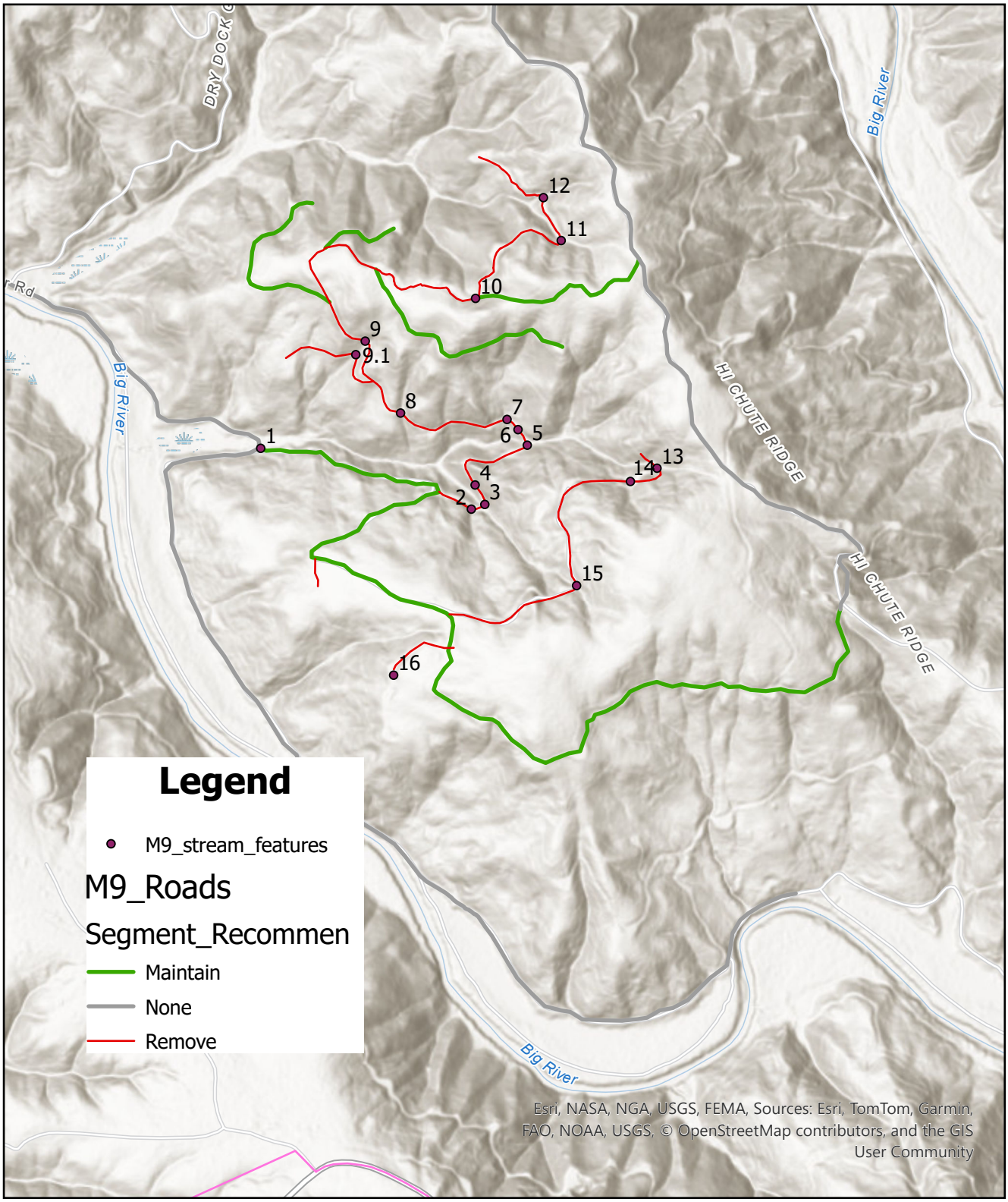
APPENDIX A

PROJECT MAPS

Glenbrook Gulch Road Decomm 2025



M9 Road Decommissioning



APPENDIX B

PROJECT PLAN SHEETS, PACIFIC WATERSHED ASSOCIATES

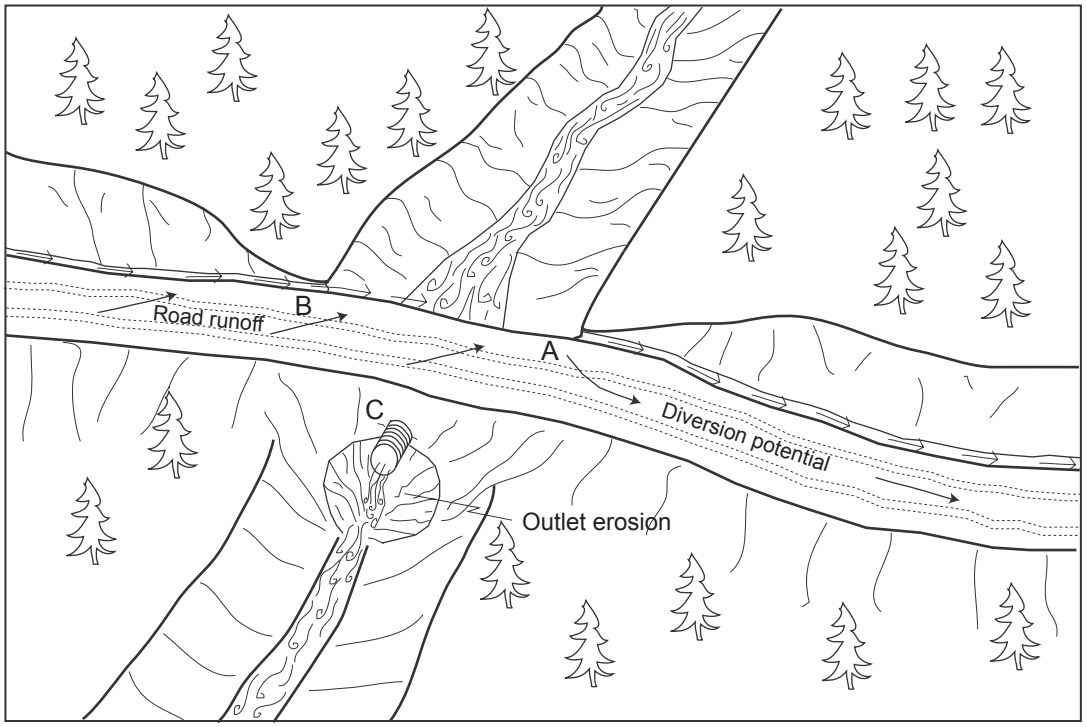
Typical Problems and Applied Treatments for a Non-fish Bearing Upgraded Stream Crossing

Problem condition (before)

A - Diversion potential

B - Road surface and ditch drain to stream

C - Undersized culvert high in fill with outlet erosion

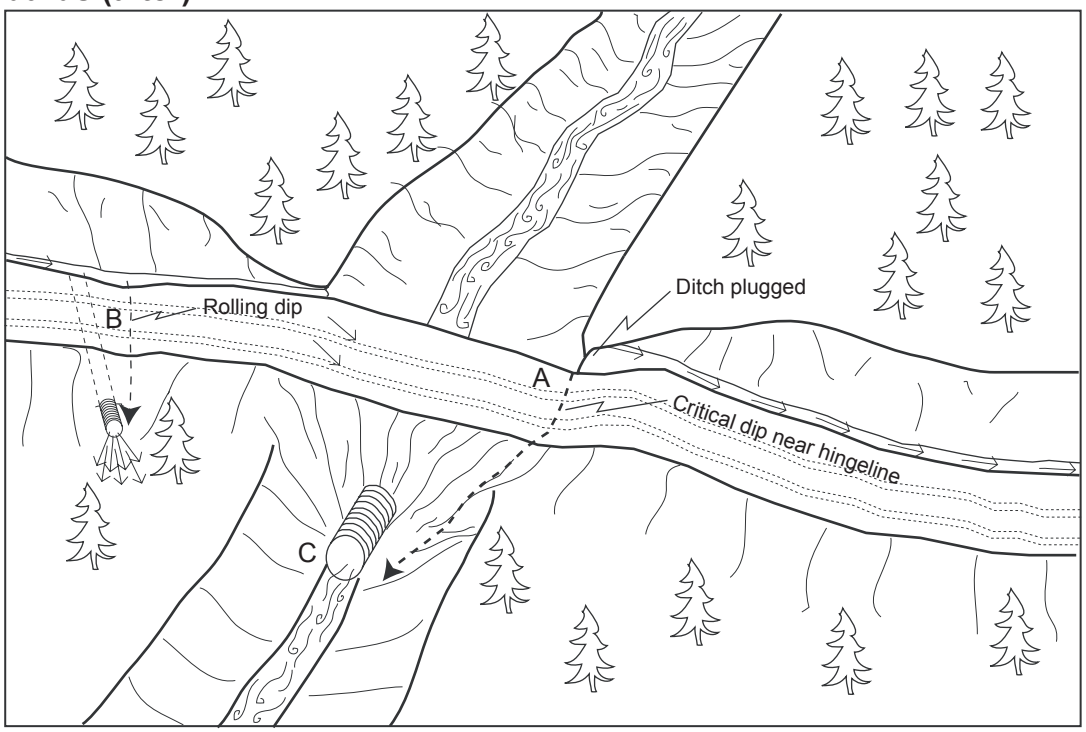


Treatment standards (after)

A - No diversion potential with critical dip installed near hingeline

B - Road surface and ditch disconnected from stream by rolling dip and ditch relief culvert

C - 100-year culvert set at base of fill



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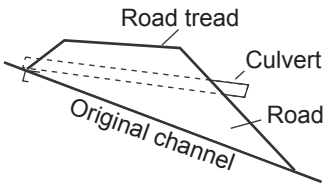
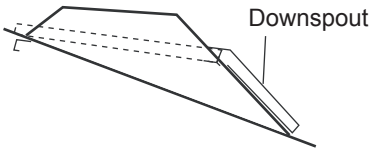
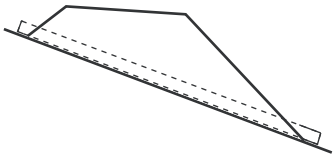
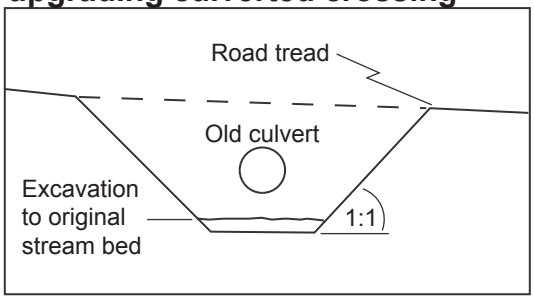
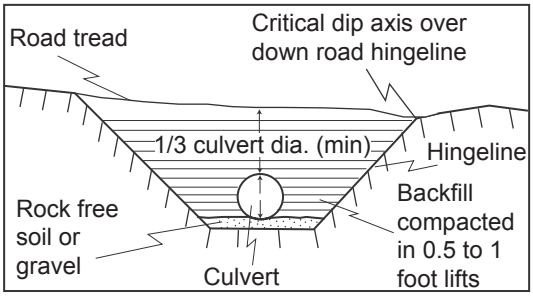
Typical Design of a Non-fish Bearing Culverted Stream Crossing

Existing	Upgraded	Upgraded (preferred)
		
1. Culvert not placed at channel grade. 2. culvert does not extend past base of fill.	1. Culvert not placed at channel grade. 2. Downspout added to extend outlet past road fill.	1. Culvert placed at channel grade. 2. Culvert inlet and outlet rest on, or partially in, the originial streambed.

Excavation in preparation for upgrading culverted crossing



Upgraded stream crossing culvert installation



Note:
Road upgrading tasks typically include upgrading stream crossings by installing larger culverts and inlet protection (trash barriers) to prevent plugging. Culvert sizing for the 100-year peak storm flow should be determined by both field observation and calulations using a procedure such as the Rational Formula.

Stream crossing culvert Installation

1. Culverts shall be aligned with natural stream channels to ensure proper function, and prevent bank erosion and plugging by debris.
2. Culverts shall be placed at the base of the fill and the grade of the original streambed, or downspouted past the base of the fill.
3. Culverts shall be set slightly below the original stream grade so that the water drops several inches as it enters the pipe.
5. To allow for sagging after burial, a camber shall be between 1.5 to 3 incher per 10 feet culvert pipe length.
6. Backfill material shall be free of rocks, limbs or other debris that could dent or puncture the pipe or allow water to seep around pipe.
7. First one end then the other end of the culvert shall be covered and secured. The center is covered last.
8. Backfill material shall be tamped and compacted throughout the entire process:
   - Base and side wall material will be compacted before the pipe is placed in its bed.
   - Backfill compacting will be done in 0.5 - 1 foot lifts until 1/3 of the diameter of the culvert has been covered. A gas powered tamper can be used for this work.
9. Inlets and outlets shall be armored with rock or mulched and seeded with grass as needed.
10. Trash protectors shall be installed just upstream from the culvert where there is a hazard of floating debris plugging the culvert.
11. Layers of fill will be pushed over the crossing until the final designed road grade is achieved, at a minimum of 1/3 to 1/2 the culvert diameter.

Erosion control measures for culvert replacement

Both mechanical and vegetative measures will be employed to minimize accelerated erosion from stream crossing and ditch relief culvert upgrading. Erosion control measures implemented will be evaluated on a site by site basis. Erosion control measures include but are not limited to:

1. Minimizing soil exposure by limiting excavation areas and heavy equipment distrubance.
2. Installing filter windrows of slash at the base of the road fill to minimize the movement of eroded soil to downslope areas and stream channels.
3. Retaining rooted trees and shrubs at the base of the fill as “anchor” for the fill and filter windrows.
4. Bare slopes created by construction operations will be protected until vegetation can stabilize the surface. Surface erosion on exposed cuts and fills will be minimized by mulching, seeding, planting, compacting, armoring, and/or benching prior to the first rains.
5. Excess or unusable soil will be stored in long term spoil disposal locations that are not limited by factors such as excessive moisture, steep slopes greater than 10%, archeology potential, or proximity to a watercourse.
6. On running streams, water will be pumped or diverted past the crossing and into the downstream channel during the construction process.
7. Straw bales and/or silt fencing will be employed where necessary to control runoff within the construction zone.

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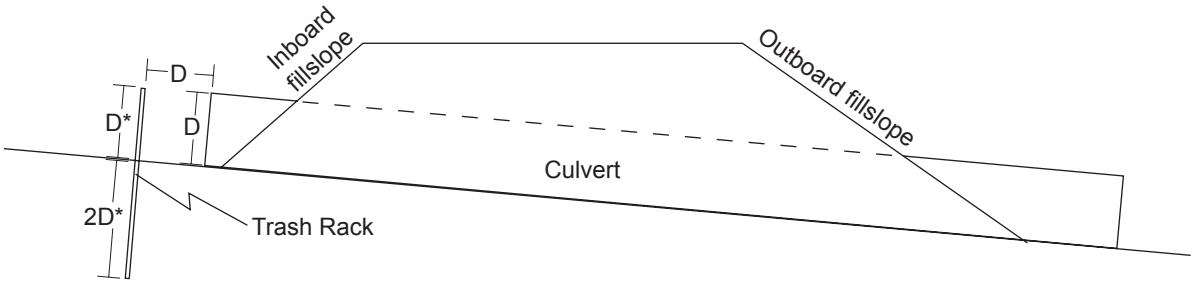
Typical Design of a Single-post Culvert Inlet Trash Rack

Cross section view



D - Culvert diameter

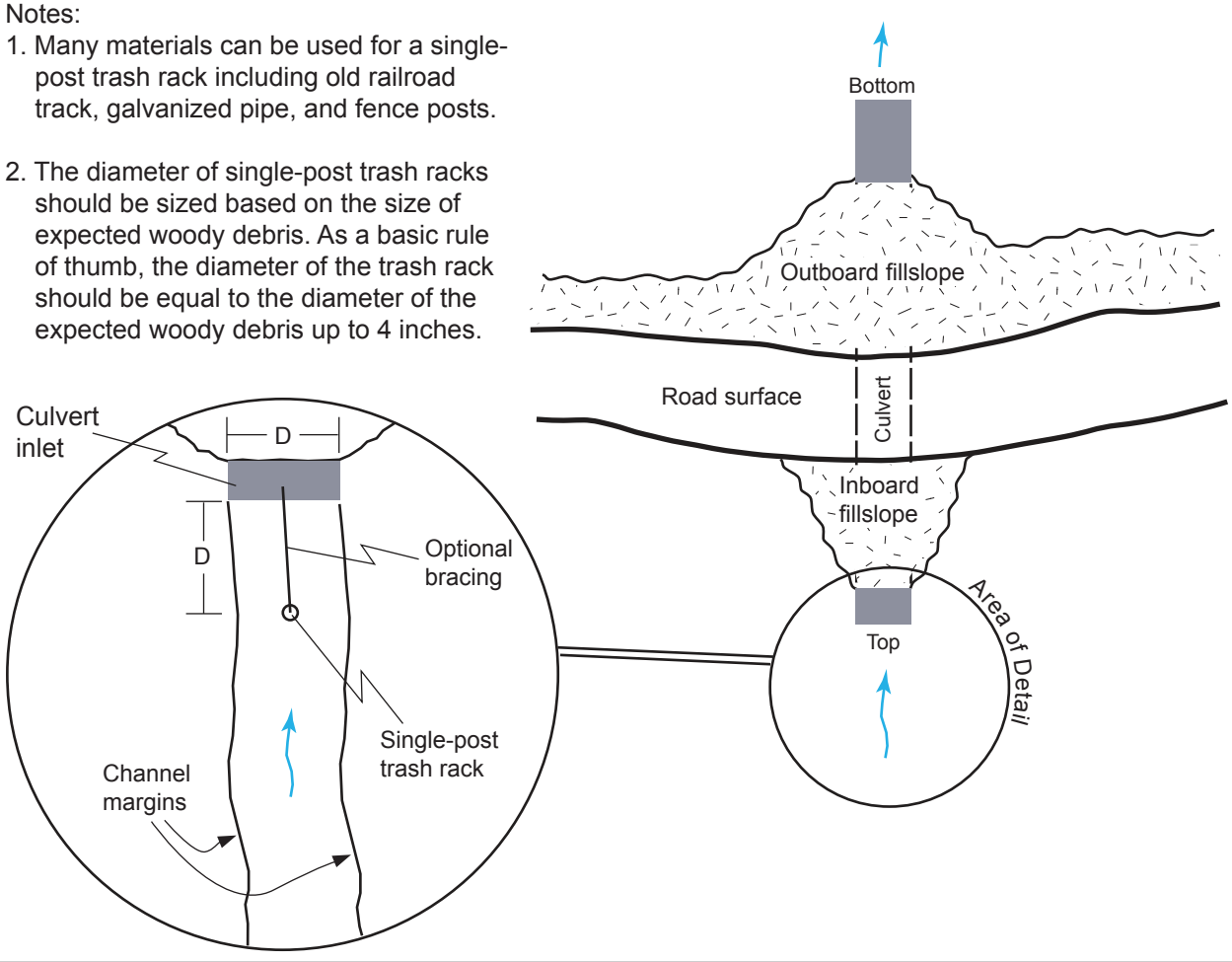
D* - If the culvert is designed for the 100-year peak storm flow, the trash rack height above the streambed should equal D.
If the culvert is undersized, then the trash rack needs to be extended vertically above the streambed to match or exceed the expected headwall height.

Plan view

Notes:

1. Many materials can be used for a single-post trash rack including old railroad track, galvanized pipe, and fence posts.

2. The diameter of single-post trash racks should be sized based on the size of expected woody debris. As a basic rule of thumb, the diameter of the trash rack should be equal to the diameter of the expected woody debris up to 4 inches.



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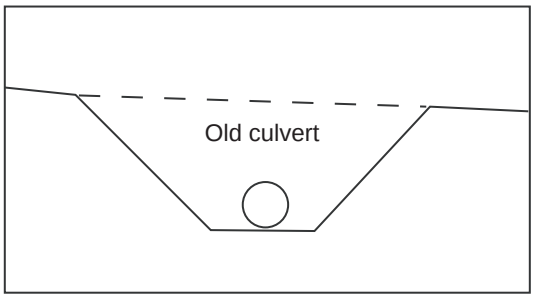
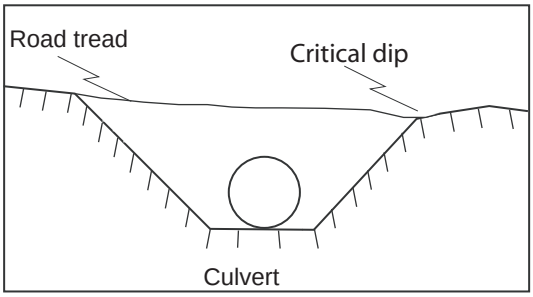
Typical Design of Upgraded Stream Crossings



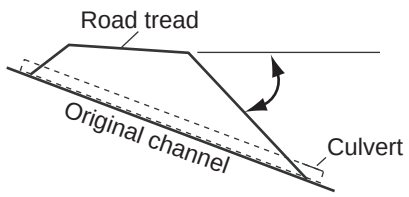
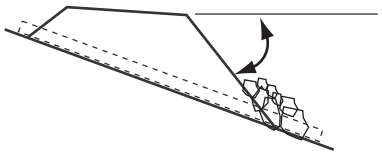
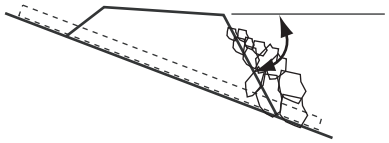


Stream crossing culvert Installation

1. Culverts shall be aligned with natural stream channels to ensure proper function, and prevent bank erosion and plugging by debris.
2. Culverts shall be placed at the base of the fill and the grade of the original streambed or downspouted past the base of the fill.
3. Culverts shall be set slightly below the original stream grade so that the water drops several inches as it enters the pipe.
5. To allow for sagging after burial, a camber shall be between 1.5 to 3 incher per 10 feet culvert pipe length.
6. Backfill material shall be free of rocks, limbs or other debris that could dent or puncture the pipe or allow water to seep around pipe.
7. First one end and then the other end of the culvert shall be covered and secured. The center is covered last.
8. Backfill material shall be tamped and compacted throughout the entire process:
   - Base and side wall material will be compacted before the pipe is placed in its bed.
   - backfill compacting will be done in 0.5 - 1 foot lifts until 1/3 of the diameter of the culvert has been covered. A gas powered tamper can be used for this work.
9. Inlets and outlets shall be armored with rock or mulched and seeded with grass as needed.
10. Trash protectors shall be installed just upstream from the culvert where there is a hazard of floating debris plugging the culvert.
11. Layers of fill will be pushed over the crossing until the final designed road grade is achieved, at a minimum of 1/3 to 1/2 the culvert diameter.

Note:
Road upgrading tasks typically include upgrading stream crossings by installing larger culverts and inlet protection (trash barriers) to prevent plugging. Culvert sizing for the 100-year peak storm flow should be determined by both field observation and calculations using a procedure such as the Rational Formula.

Armoring fill faces

Fill angles ≤ 2:1	Fill angles (between 2:1 & 1.5:1)	Fill angles (between 2:1 & 1.5:1)
 No rock armor needed	 Armor 1/4 up fill face	 Armor 3/4 way up fill face

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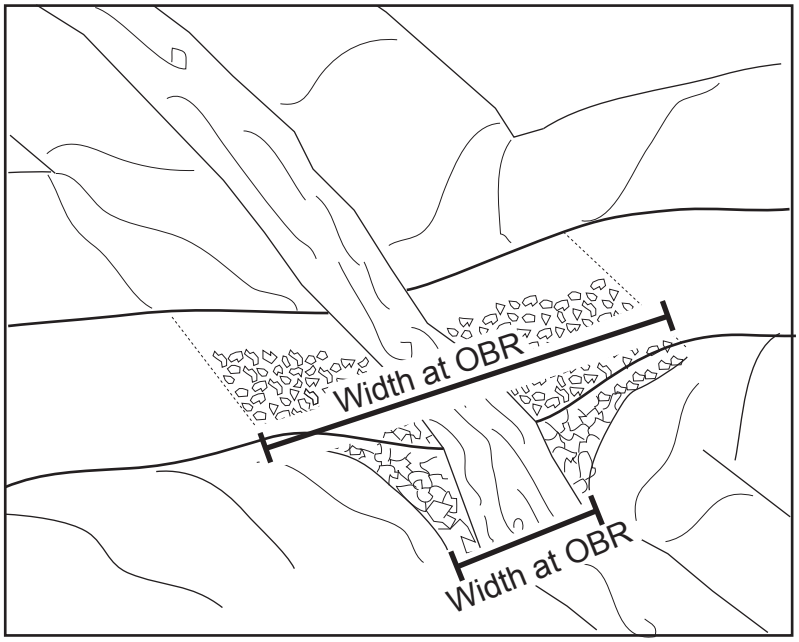
PWA Typical Drawing #4

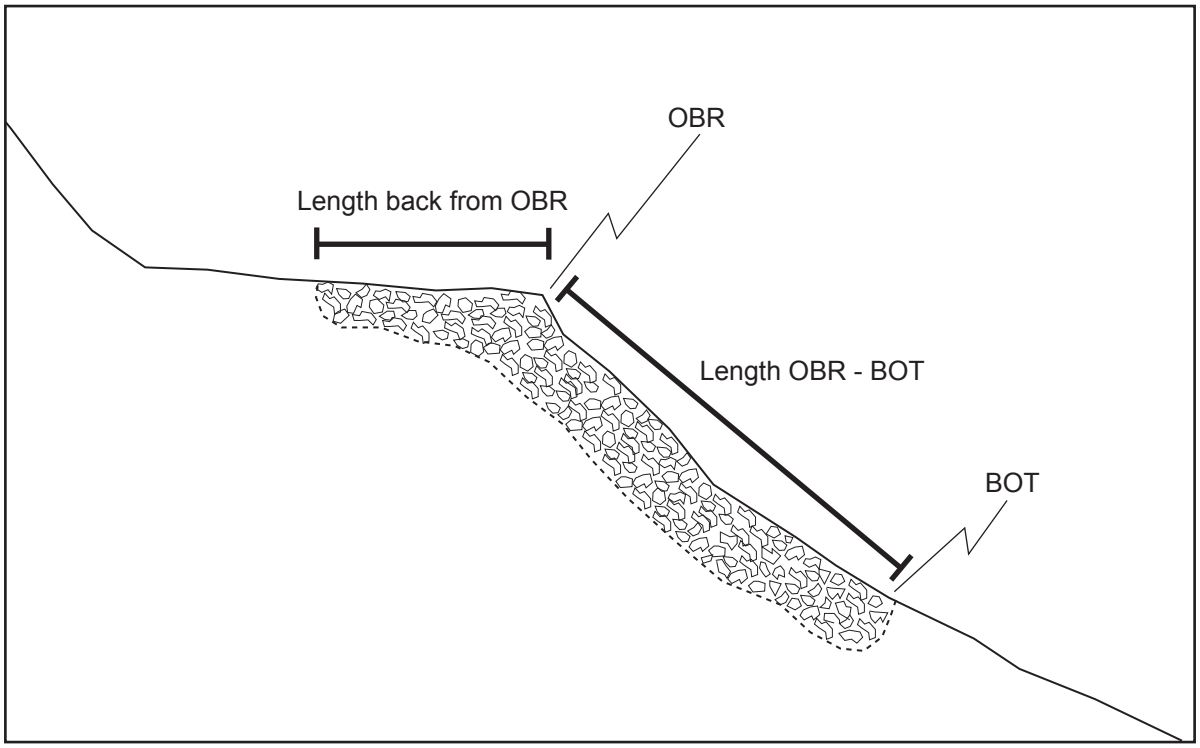
Typical Dimensions Refered to for Armored Fill Crossings

Widths in oblique view



OBR - Outboard edge of road

Lengths in profile view



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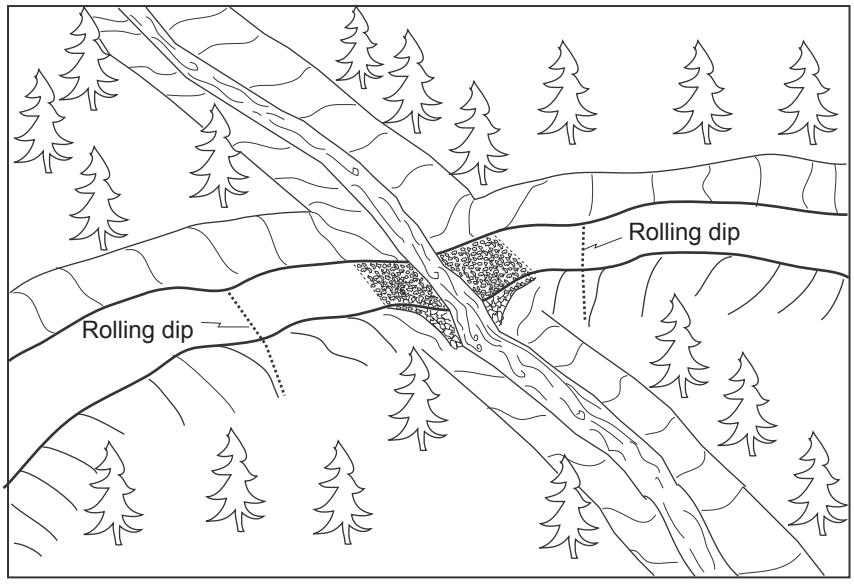
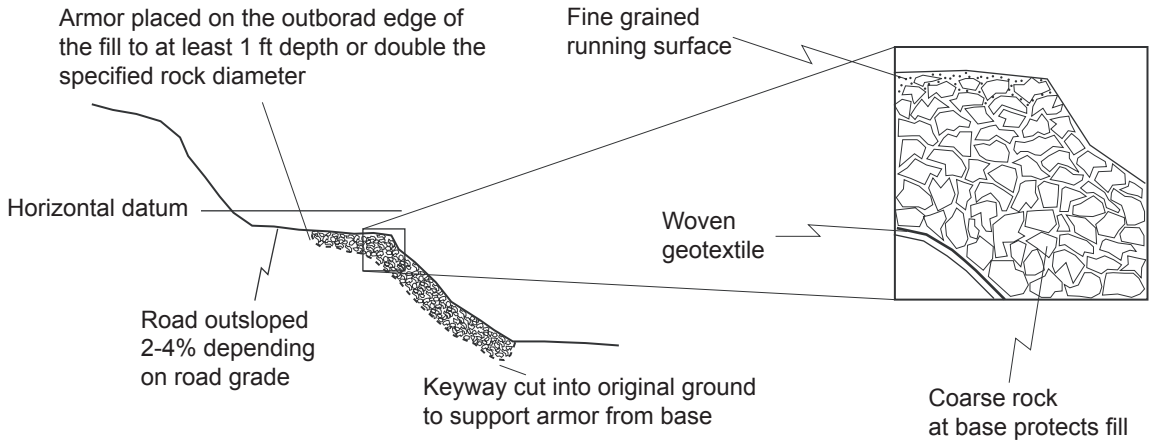
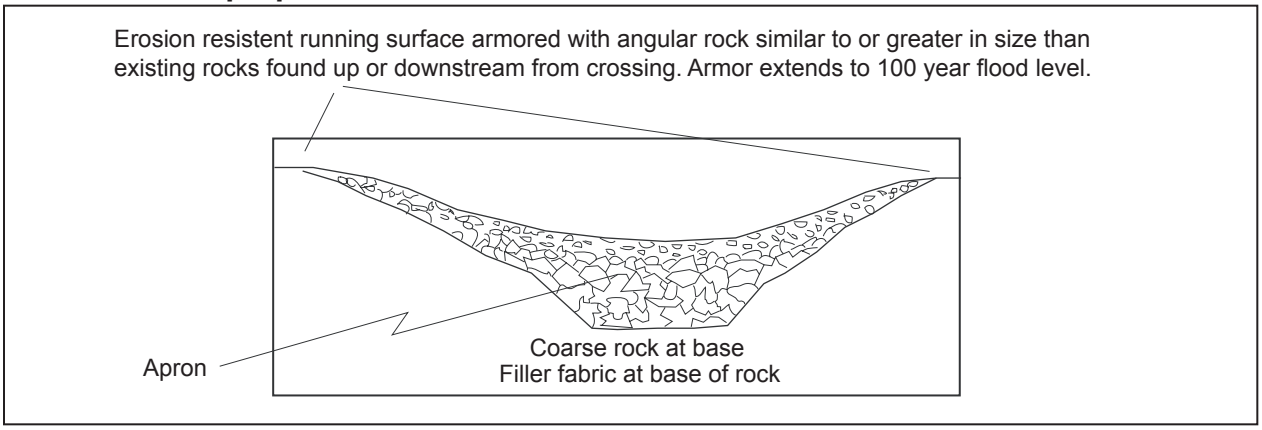
Typical Armored Fill Crossing Installation



Cross section parallel to watercourse



Cross section perpendicular to watercourse



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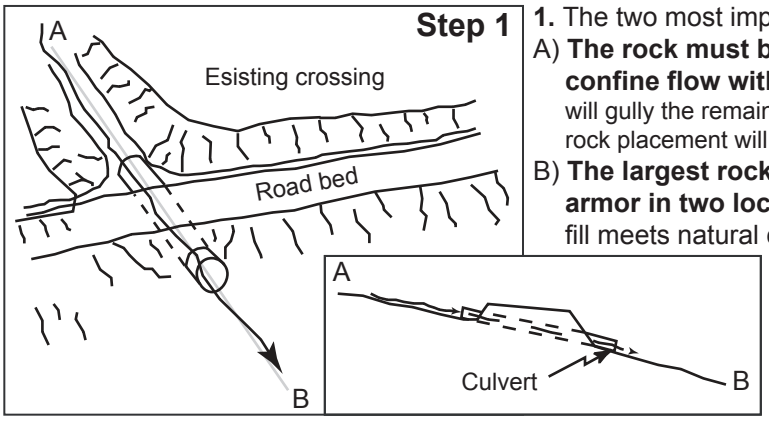
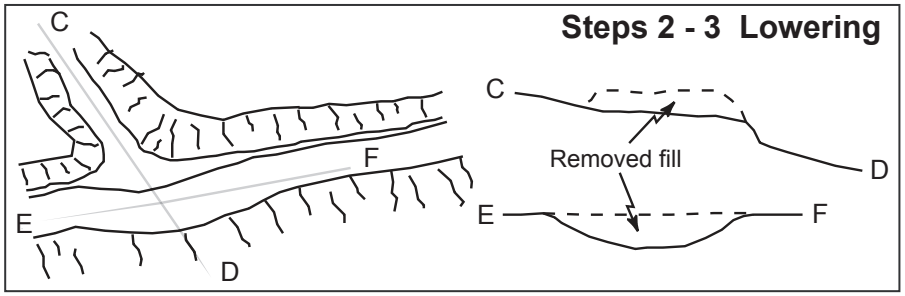
Ten Steps for Constructing a Typical Armored Fill Stream Crossing



1. The two most important points are:

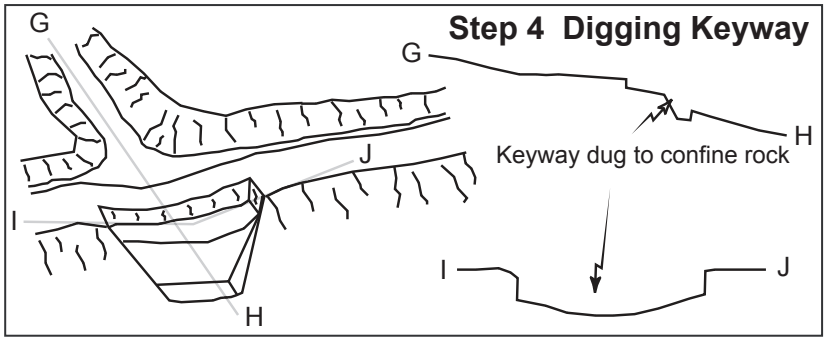
A) **The rock must be placed in a "U" shape across the channel to confine flow within the armored area.** (Flow around the rock armor will gully the remaining fill. Proper shape of surrounding road fill and good rock placement will reduce the likelihood of crossing failure).

B) **The largest rocks must be used to buttress the rest of the armor in two locations:** (i) The base of the armored fill where the fill meets natural channel. (This will butress the armor placed on the outboard fill face and reduce the likelihood of it washing downslope). (ii) The break in slope from the road tread to the outer fill face. (This will butress the fill placed on the outer road tread and will determine the "base level" of the creek as it crosses the road surface).



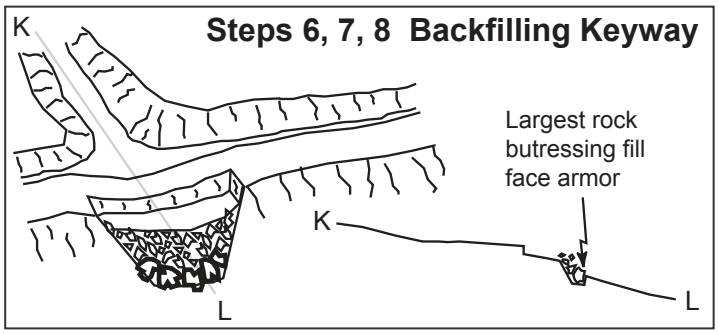
2. Remove any existing drainage structures including culverts and Humboldt logs.

3. Construct a dip centered at the crossing that is large enough to accomodate the 100-year peak storm flow and prevent diversion (C-D, E-F).



4. Dig a keyway (to place rock in) that extends from the outer 1/3 of the road tread down the outboard road fill to the point where outbaord fill meets natural channel (up to 3 feet into the channel bed depending on site specifics) (G-H, I-J).

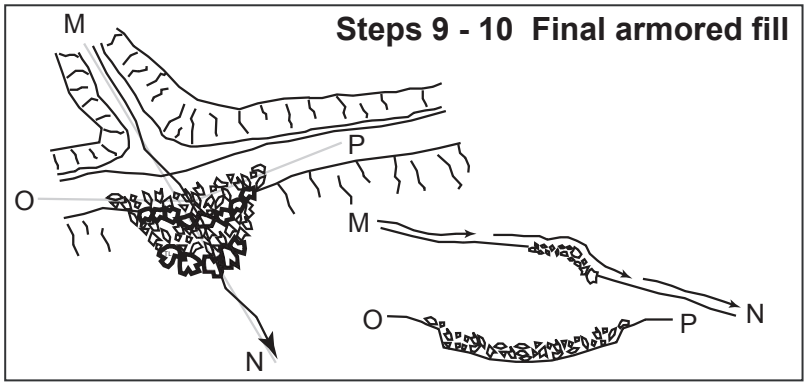
5. Install geofabric (optional) within keyway to support rock in wet areas and to prevent winnowing of the crossing at low flows.



6. Put aside the largest rock armoring to create 2 buttresses in the next step.

7. Create a buttress using the largest rock (as described in the site treatments specifications) at the base of fill. (This should have a "U" shape to it and will define the outlet of the armored fill.)

8. Backfill the fill face with remaining rock armor making sure the final armored area has "U" shape that will accomodate the largest expected flow (K-L).



9. Install a second buttress at the break in slope between the outboard road and the outboard fill face. (This should define the base level of the stream and determine how deep the stream will backfill after construction). (M-N)

10. Back fill the rest of the keyway with the unsorted rock armor making sure the final armored area has a "U" shape that will accommodate the largest expected flow (O-P).

Typical Drawing #7

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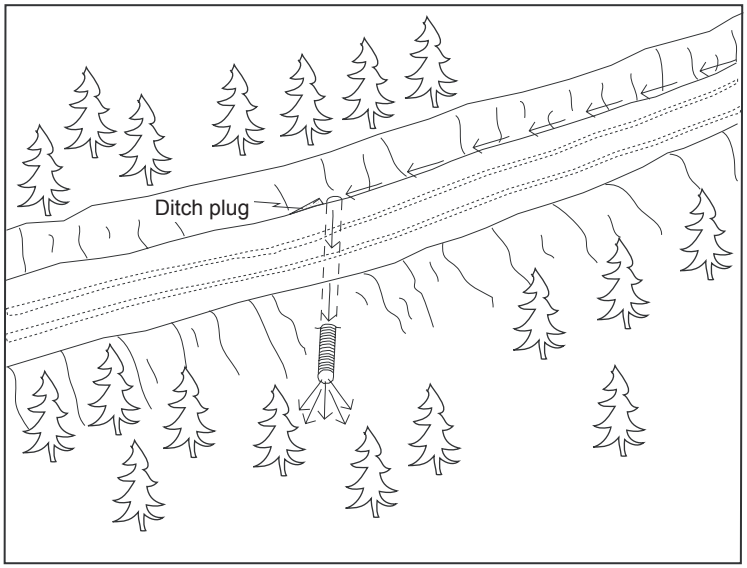
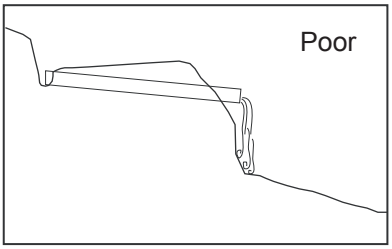
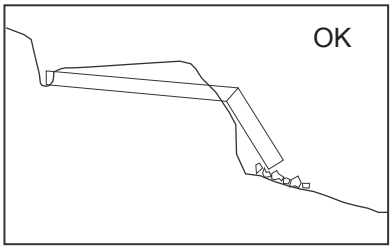
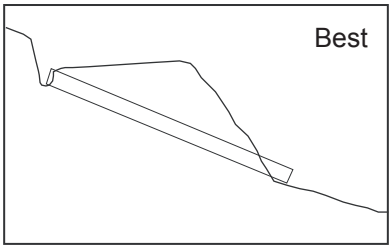
Typical Ditch Relief Culvert Installation









Ditch relief culvert installation

1) The same basic steps followed for stream crossing installation shall be employed.
2) Culverts shall be installed at a 30 degree angle to the ditch to lessen the chance of inlet erosion and plugging.
3) Culverts shall be seated on the natural slope or at a minimum depth of 5 feet at the outside edge of the road, whichever is less.
4) At a minimum, culverts shall be installed at a slope of 2 to 4 percent steeper than the approaching ditch grade, or at least 5 inches every 10 feet.
5) Backfill shall be compacted from the bed to a depth of 1 foot or 1/3 of the culvert diameter, which ever is greater, over the top of the culvert.
6) Culvert outlets shall extend beyond the base of the road fill (or a flume downspout will be used). Culverts will be seated on the natural slope or at a depth of 5 feet at the outside edge of the road, whichever is less.

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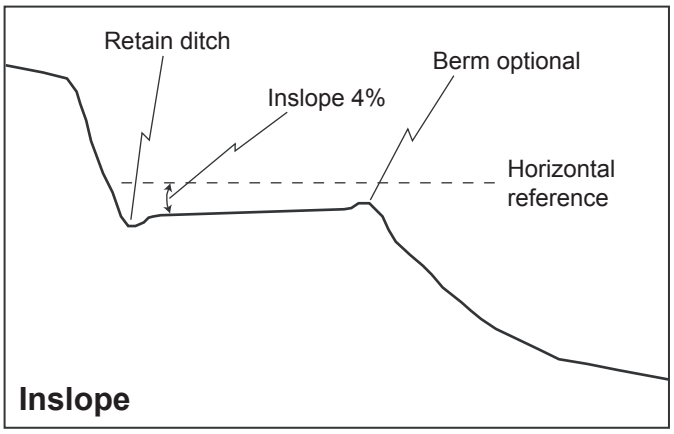
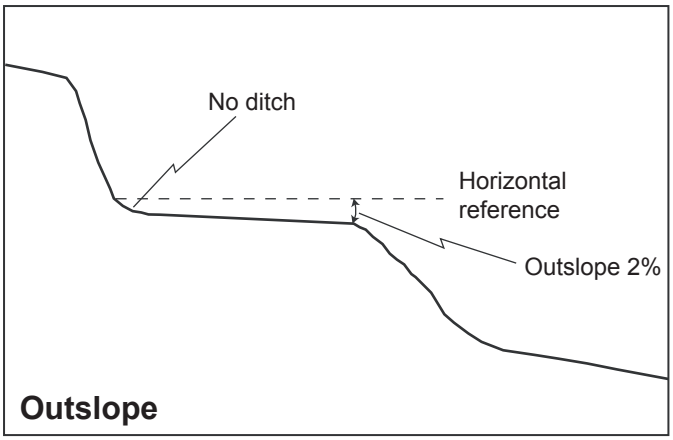
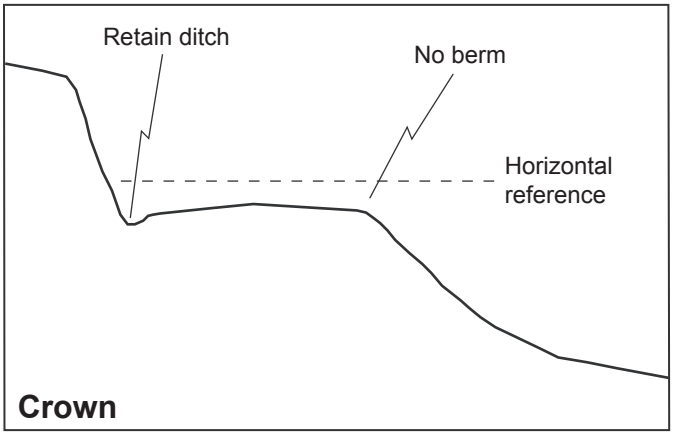
Typical Designs for Using Road Shape to Control Road Runoff







Outsloping Pitch for Roads Up to 8% Grade		
Road grade	**Unsurfaced roads**	**Surfaced roads**
4% or less	3/8" per foot	1/2" per foot
5%	1/2" per foot	5/8" per foot
6%	5/8" per foot	3/4" per foot
7%	3/4" per foot	7/8" per foot
8% or more	1" per foot	1 1/4" per foot

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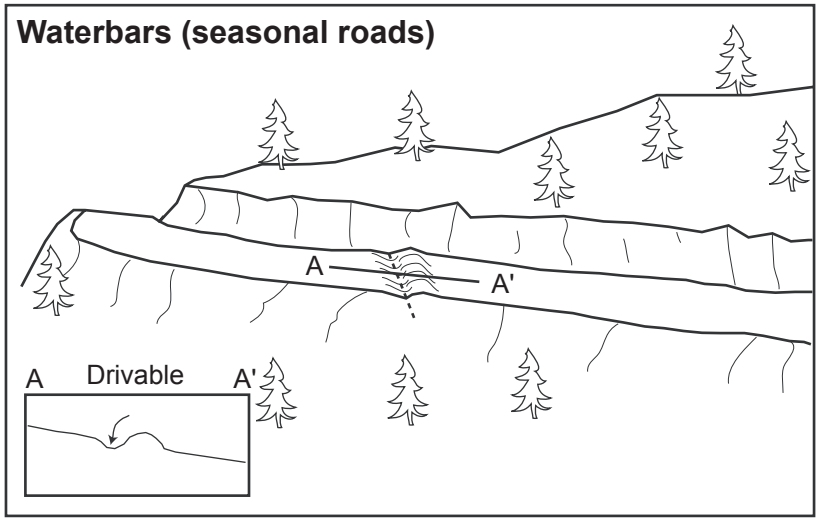
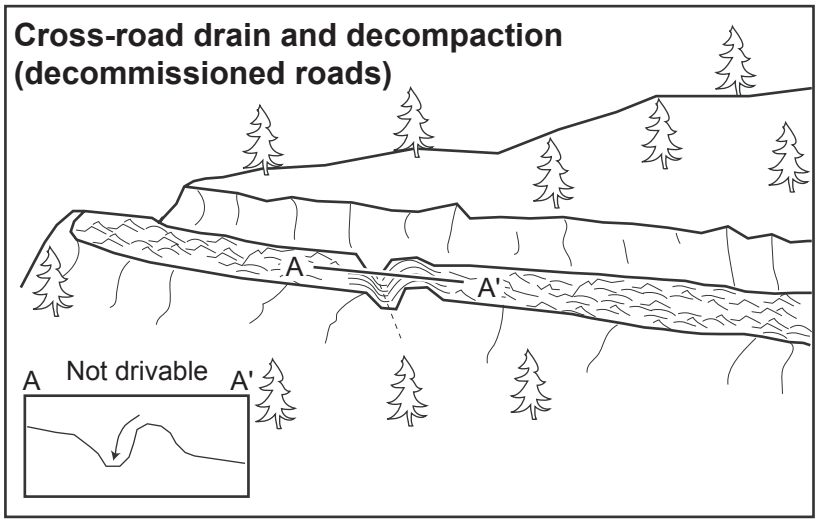
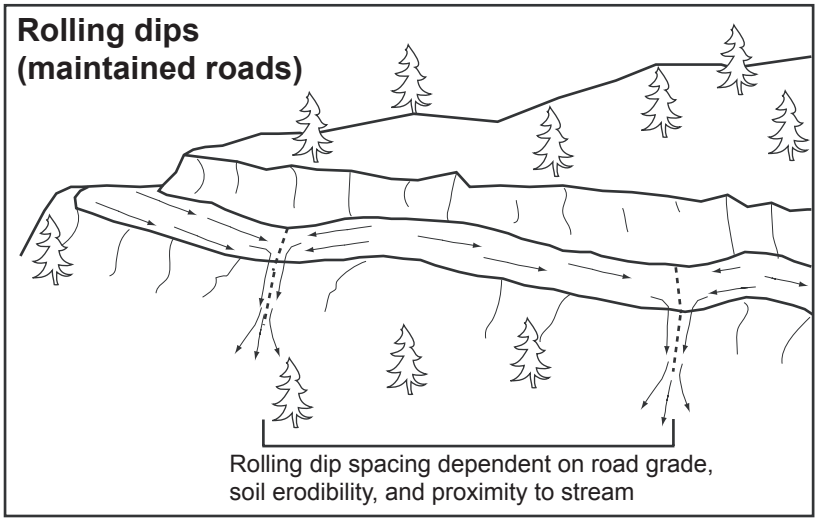
Typical Methods for Dispersing Road Surface Runoff with Waterbars, Cross-road Drains, and Rolling Dips







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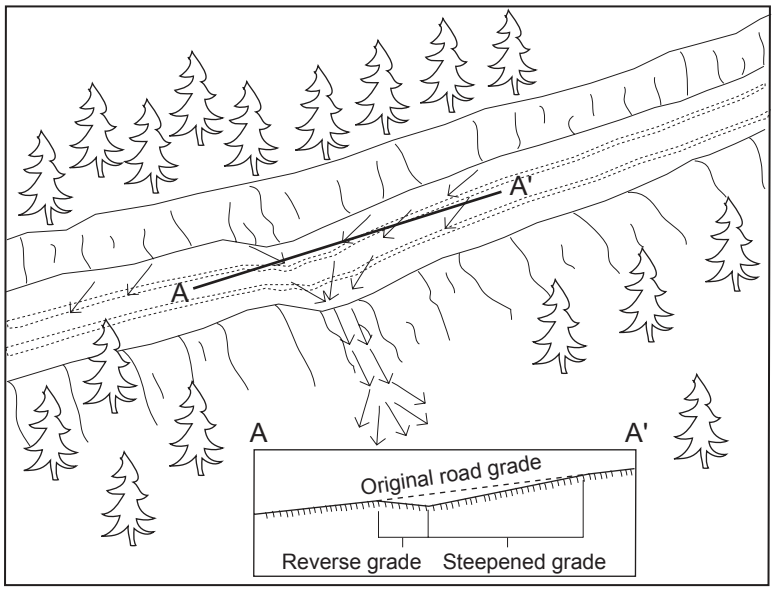
Typical Road Surface Drainage by Rolling Dips



Rolling dip installation:

1. Rolling dips will be installed in the roadbed as needed to drain the road surface.
2. Rolling dips will be sloped either into the ditch or to the outside of the road edge as required to properly drain the road.
3. Rolling dips are usually built at 30 to 45 degree angles to the road alignment with cross road grade of at least 1% greater than the grade of the road.
4. Excavation for the dips will be done with a medium-size bulldozer or similar equipment.
5. Excavation of the dips will begin 50 to 100 feet up road from where the axis of the dip is planned as per guidelines established in the rolling dip dimensions table.
6. Material will be progressively excavated from the roadbed, steepening the grade unitl the axis is reached.
7. The depth of the dip will be determined by the grade of the road (see table below).
8. On the down road side of the rolling dip axis, a grade change will be installed to prevent the runoff from continuing down the road (see figure above).
9. The rise in the reverse grade will be carried for about 10 to 20 feet and then return to the original slope.
10. The transition from axis to bottom, through rising grade to falling grade, will be in a road distance of at least 15 to 30 feet.

Table of rolling dip dimensions by road grade

Road grade %	**Upslope approach distance** (from up road start to trough) ft	**Reverse grade distance** (from trough to crest) ft	**Depth at trough outlet** (below average road grade) ft	**Depth at trough inlet** (below average road grade) ft
<6	55	15 - 20	0.9	0.3
8	65	15 - 20	1.0	0.2
10	75	15 - 20	1.1	0.01
12	85	20 - 25	1.2	0.01
>12	100	20 - 25	1.3	0.01

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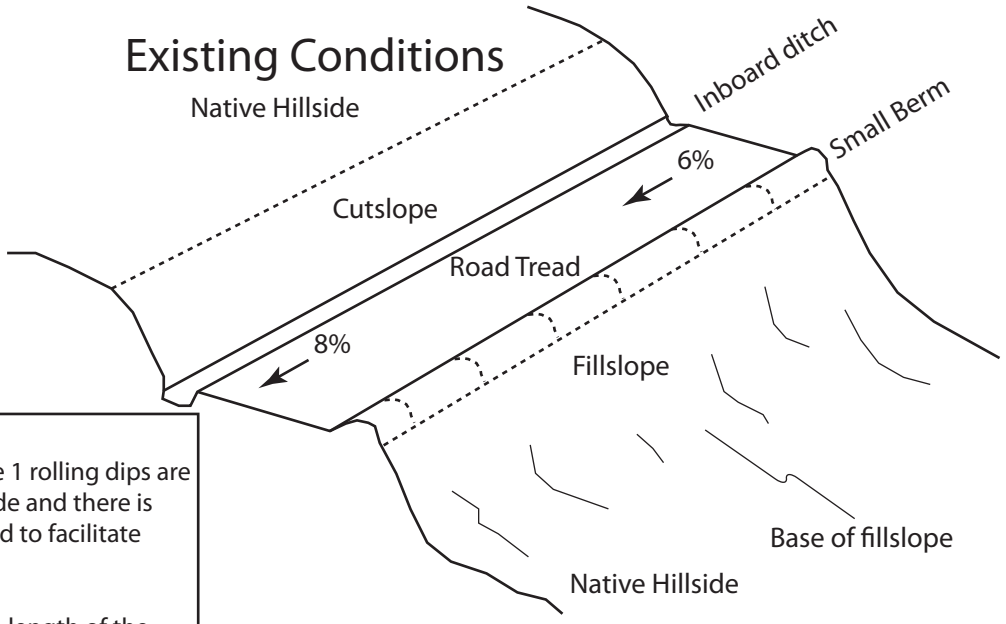
Standard (Type 1) Rolling Dip Construction

Existing Conditions



Notes

Rolling dip type 1 existing conditions: Type 1 rolling dips are utilized when roads are less than 12-14% grade and there is proximal outfall adjacent to the outboard road to facilitate road drainage.

Design Notes:

1) The berm should be removed for the entire length of the dip.

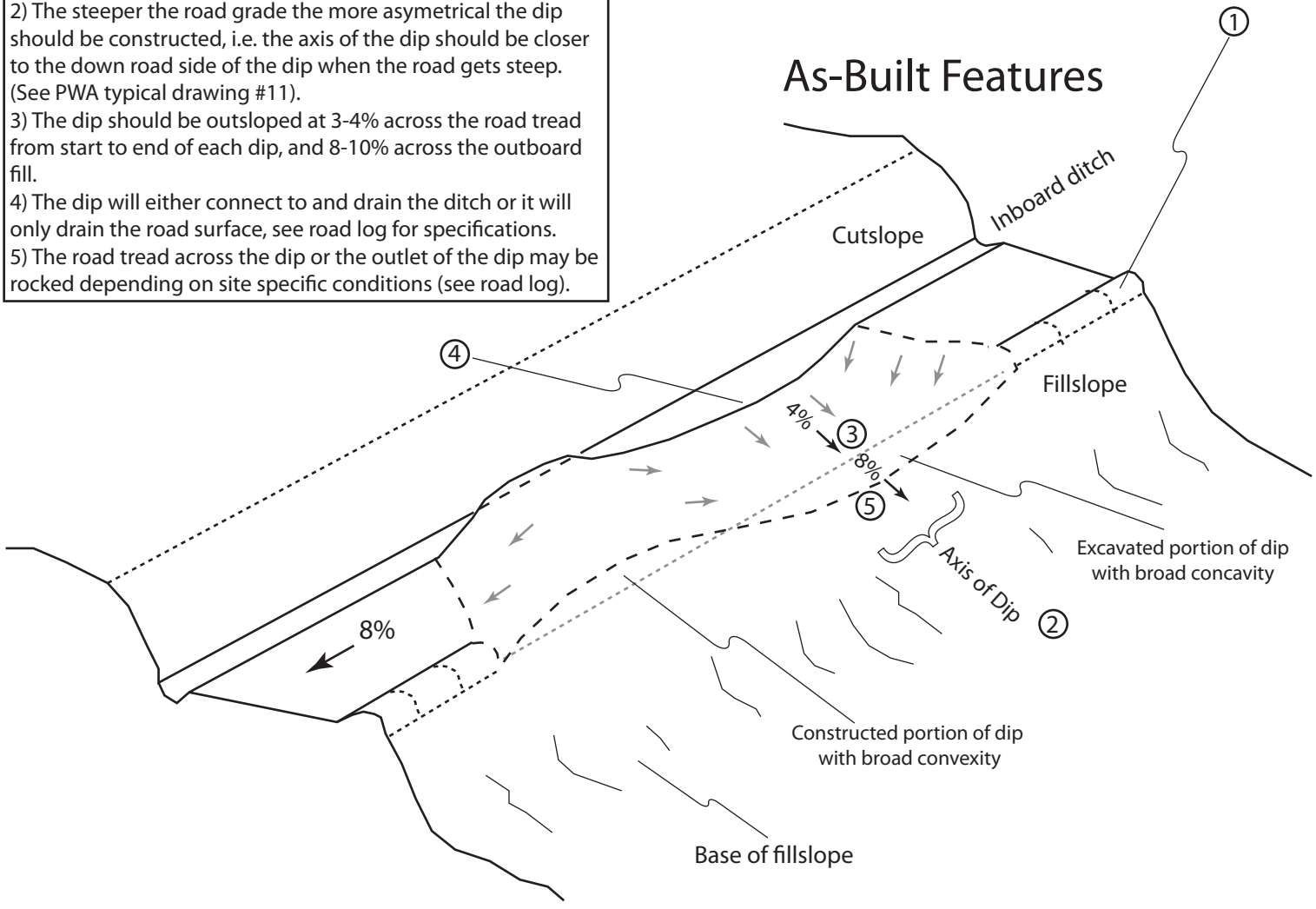
2) The steeper the road grade the more asymetrical the dip should be constructed, i.e. the axis of the dip should be closer to the down road side of the dip when the road gets steep. (See PWA typical drawing #11).

3) The dip should be outsloped at 3-4% across the road tread from start to end of each dip, and 8-10% across the outboard fill.

4) The dip will either connect to and drain the ditch or it will only drain the road surface, see road log for specifications.

5) The road tread across the dip or the outlet of the dip may be rocked depending on site specific conditions (see road log).

As-Built Features



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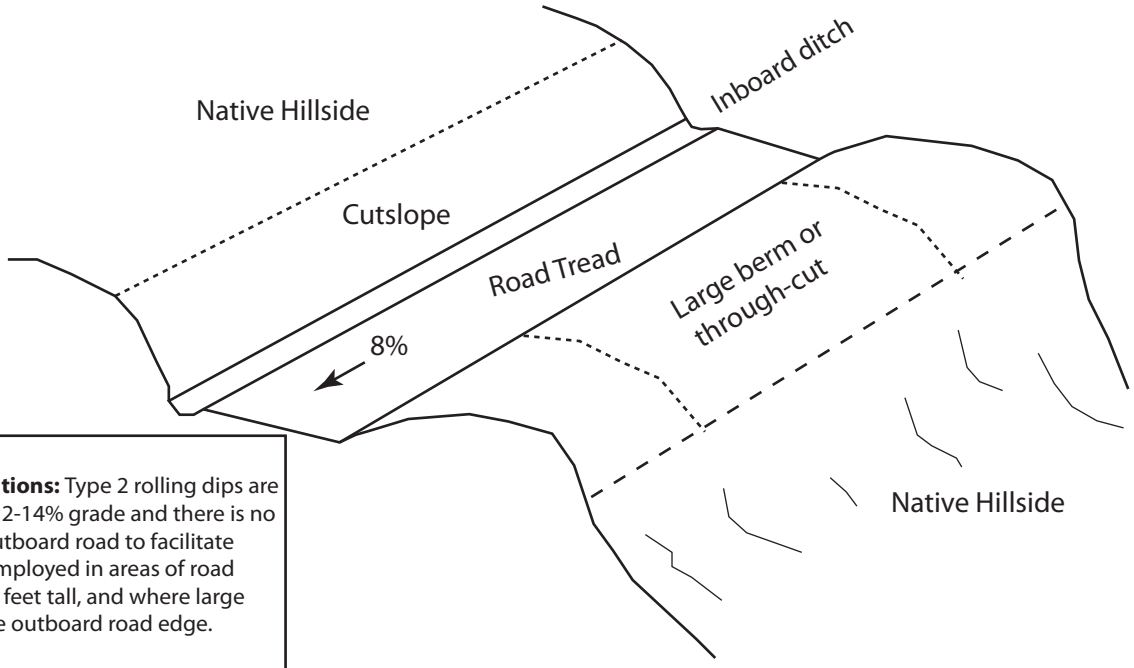
PWA Typical Drawing #19a

Type 2 Rolling Dip Construction

(Through-cut or thick berm road reaches)



Notes

Rolling dip type 2 existing conditions: Type 2 rolling dips are utilized when roads are less than 12-14% grade and there is no proximal outfall adjacent to the outboard road to facilitate road drainage. These should be employed in areas of road through-cuts generally less than 3 feet tall, and where large wide and/or tall berms exist on the outboard road edge.

Design Notes:

1) The berm or native hillside should be removed for the entire length of the excavated portion of the dip, or, at a minimuim through the axis of the dip.

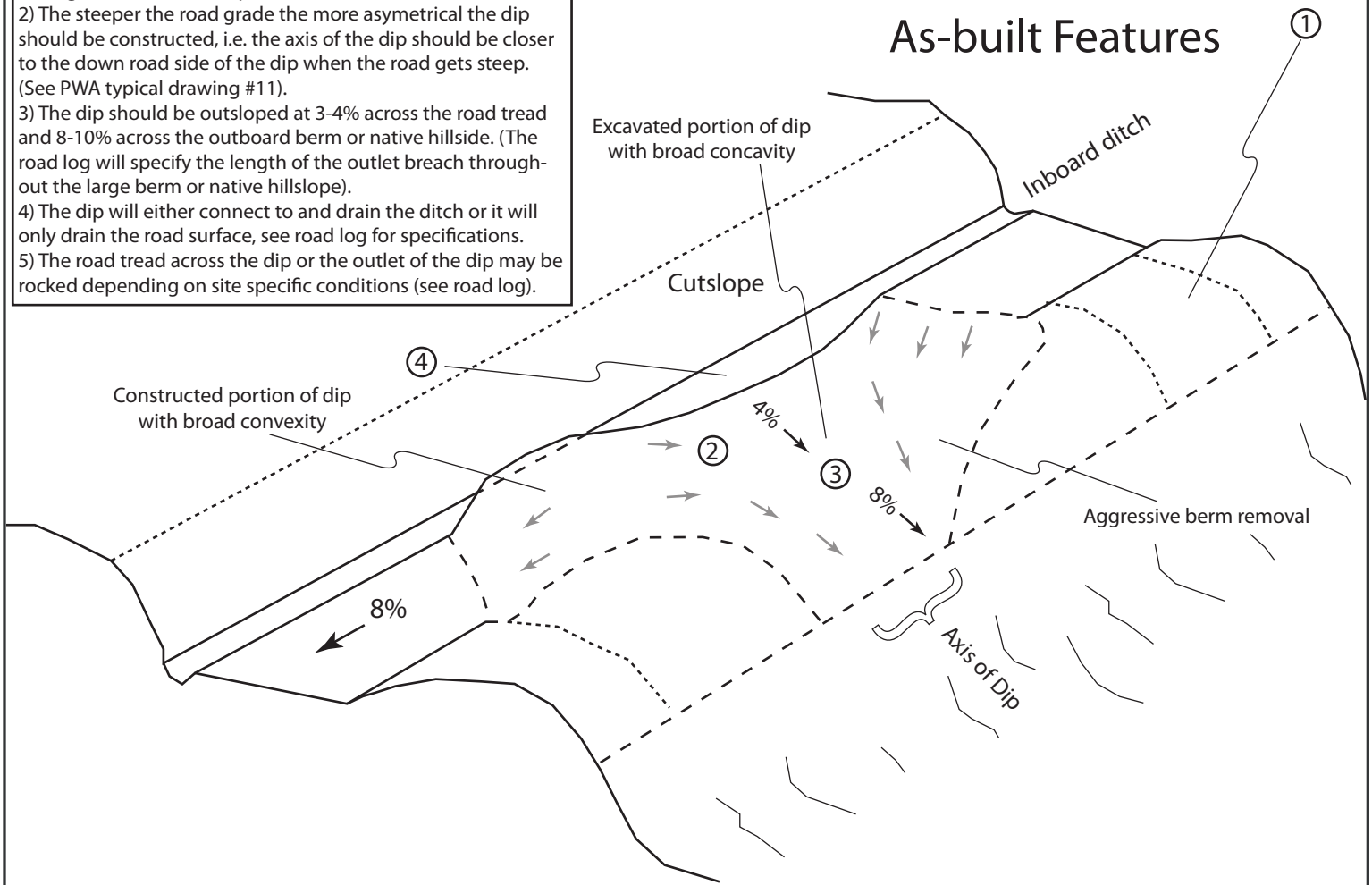
2) The steeper the road grade the more asymetrical the dip should be constructed, i.e. the axis of the dip should be closer to the down road side of the dip when the road gets steep. (See PWA typical drawing #11).

3) The dip should be outsloped at 3-4% across the road tread and 8-10% across the outboard berm or native hillside. (The road log will specify the length of the outlet breach through-out the large berm or native hillslope).

4) The dip will either connect to and drain the ditch or it will only drain the road surface, see road log for specifications.

5) The road tread across the dip or the outlet of the dip may be rocked depending on site specific conditions (see road log).

As-built Features



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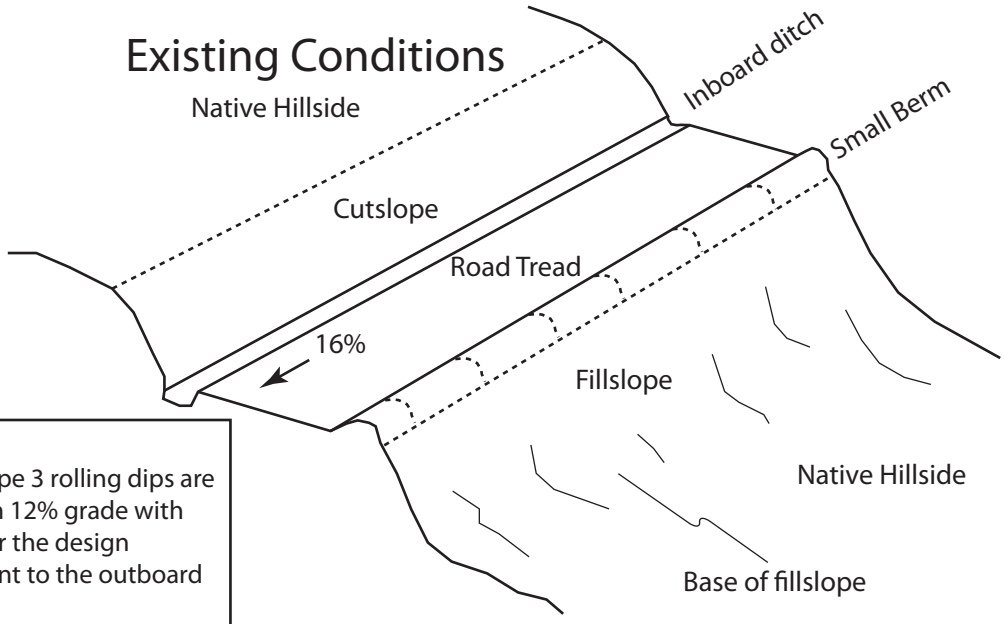
PWA Typical Drawing #19b

Type 3 Rolling Dip Construction
(steep slope outslope)



Notes

Rolling dip type 3 existing conditions: Type 3 rolling dips are utilized when roads grades are steeper than 12% grade with little opportunity to create reverse grade for the design vehicle, and there is proximal outfall adjacent to the outboard road to facilitate road drainage.

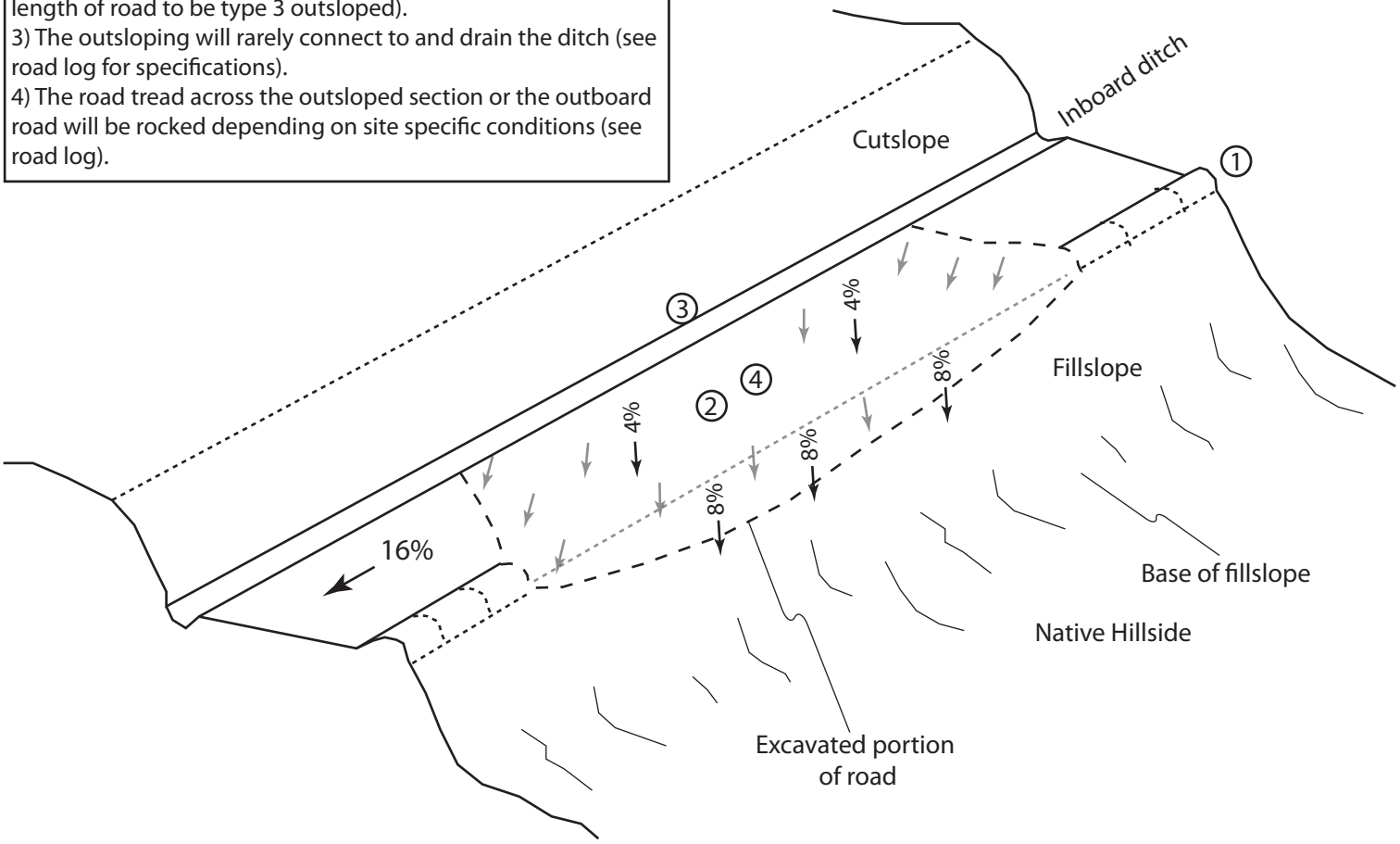
Design Notes:

1) The berm should be removed for the entire length of the outsloped section.

2) The dip should be outsloped at 2-4% across the road tread and 4-8% across the outboard fill. (The road log will specify the length of road to be type 3 outsloped).

3) The outsloping will rarely connect to and drain the ditch (see road log for specifications).

4) The road tread across the outsloped section or the outboard road will be rocked depending on site specific conditions (see road log).



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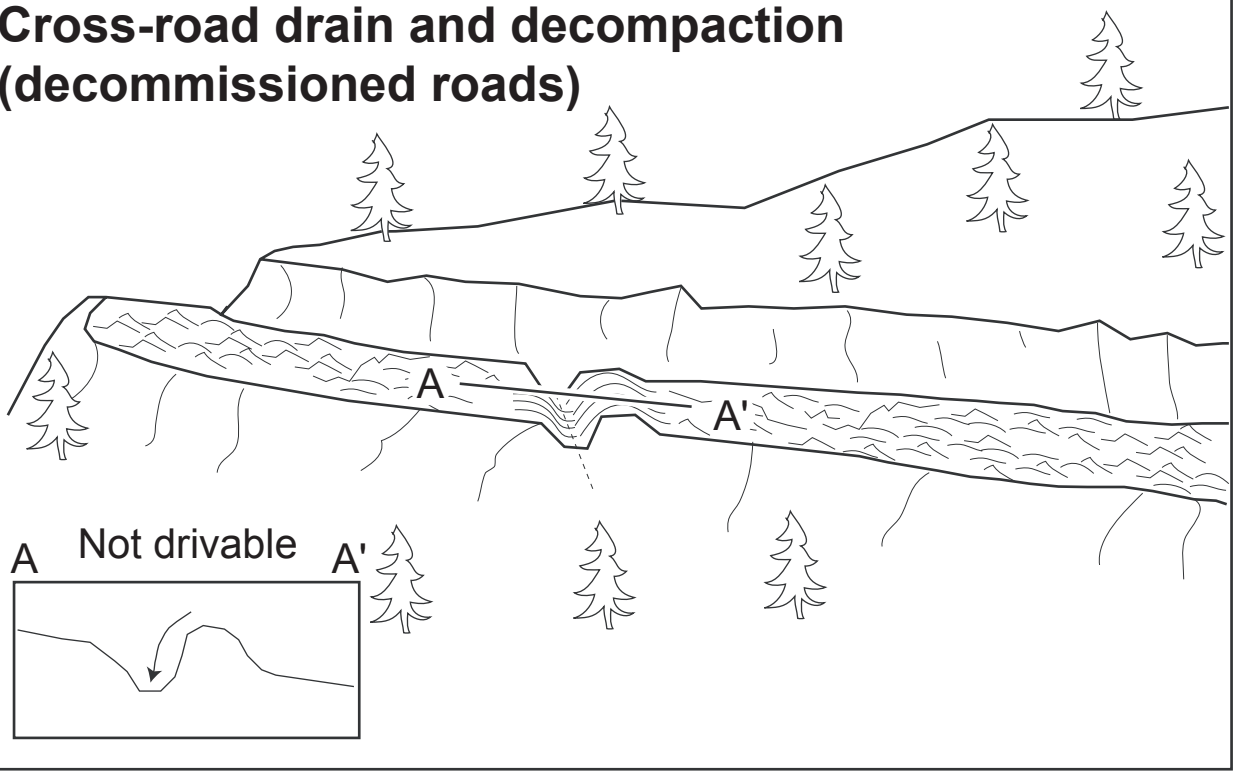
PWA Typical Drawing #19c

Cross-road drain and decompaction (decommissioned roads)



Cross road drain construction will ensure gullies, springs, road runoff and other concentrated flow will no longer collect over long lengths of road causing gully erosion and sediment delivery to streams. Cross road drains will be constructed at approximately 75 ft spacing intervals and these cross road drains will direct road surface runoff off the road onto stable hillslope locations.

Ripping the road surface 16 to 24 inches deep will increase road surface infiltration rates, decompact the road surface, and prevent concentrated runoff. Road ripping will also pulverize the compacted road surface or hardpan and allow for vegetation to establish and recover naturally.

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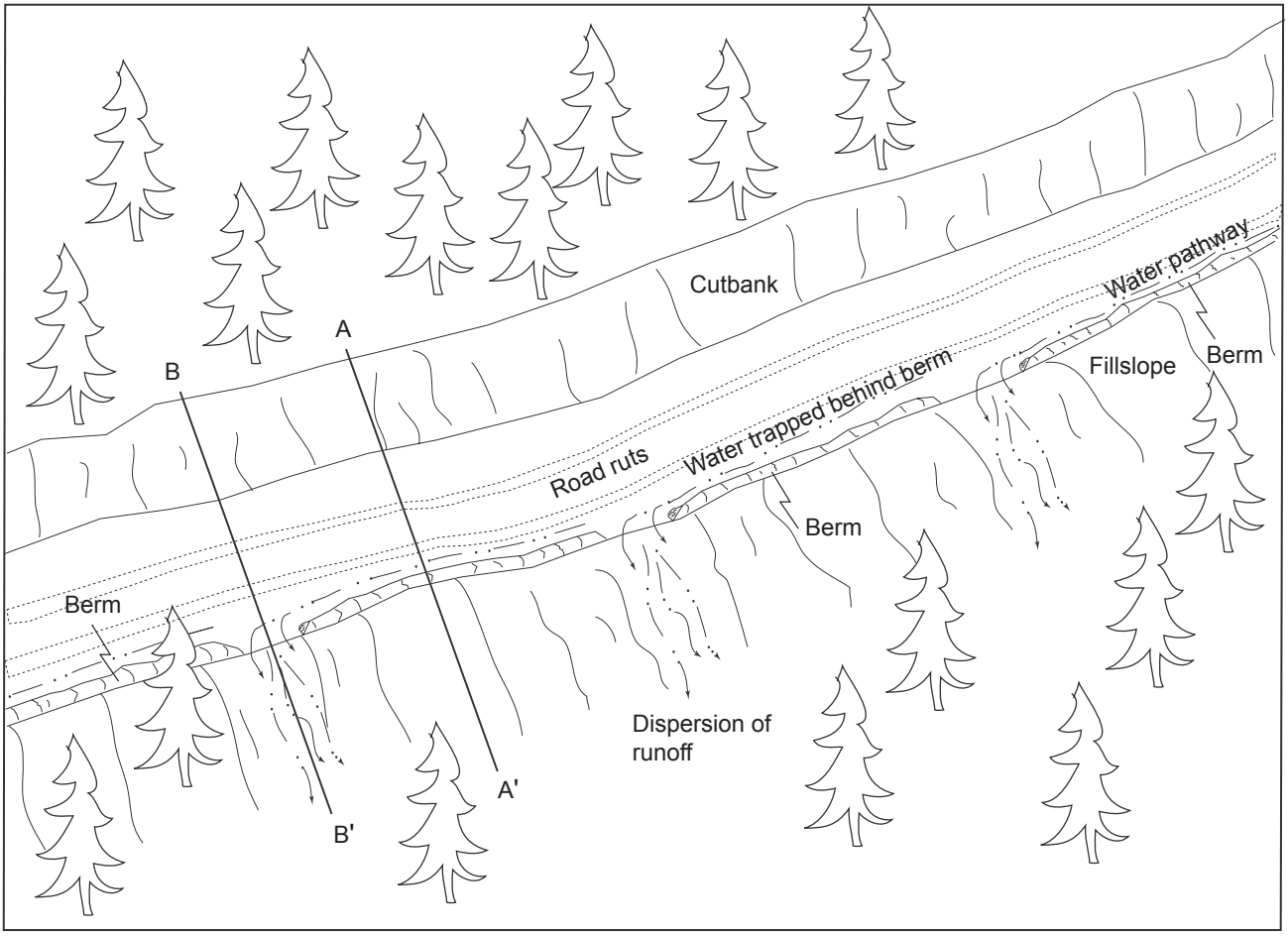
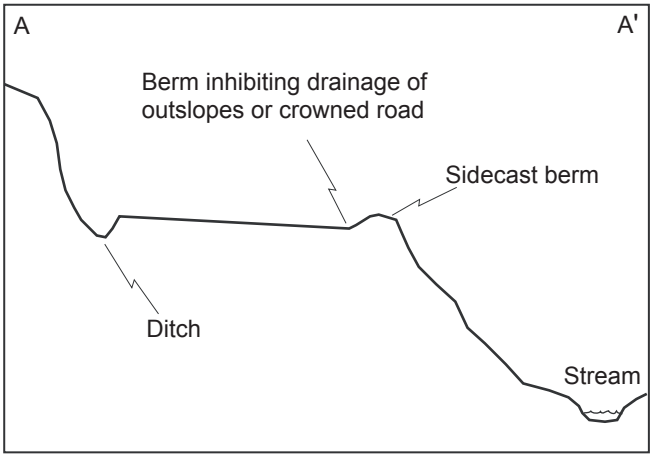
PWA Typical Drawing #17

Typical Sidecast or Excavation Methods for Removing Outboard Berms on a Maintained Road

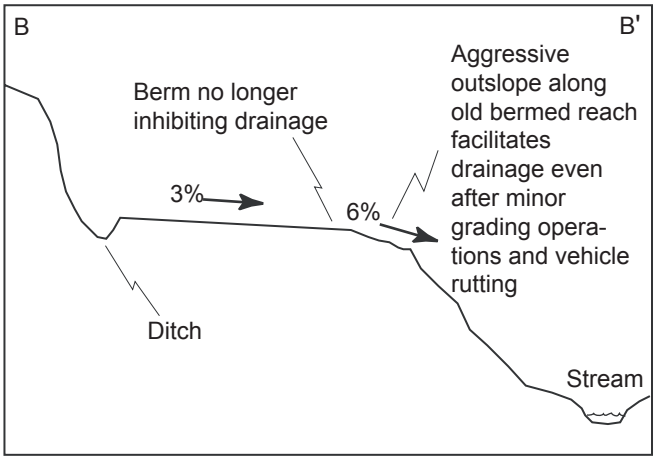
1. On gentle road segments berms can be removed continuously (see B-B').
2. On steep road segments, where safety is a concern, the berm can be frequently breached (see A-A' & B-B') Berm breaches should be spaced every 30 to 100 feet to provide adequate drainage of the road system while maintaining a semi-continuous berm for vehicle safety.



Road cross section between berm breaches



Road cross section at berm breaches



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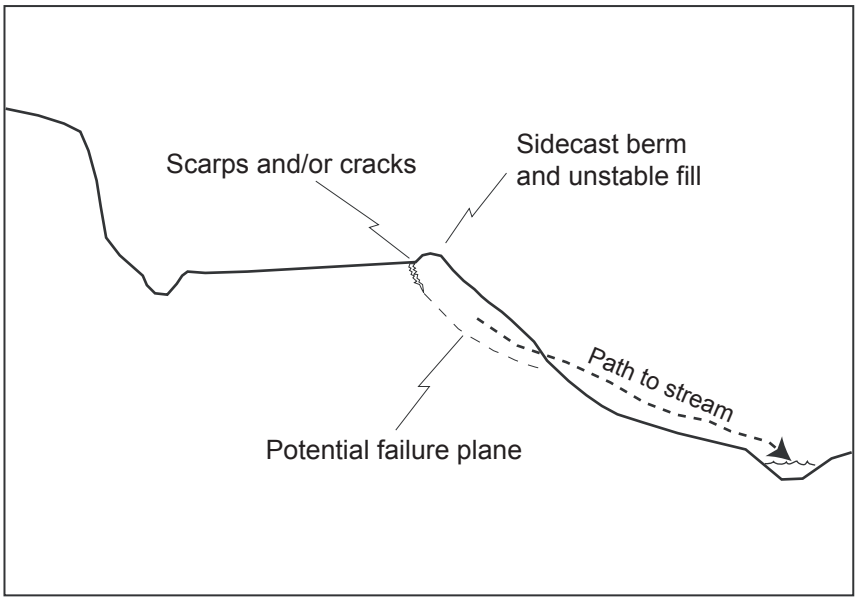
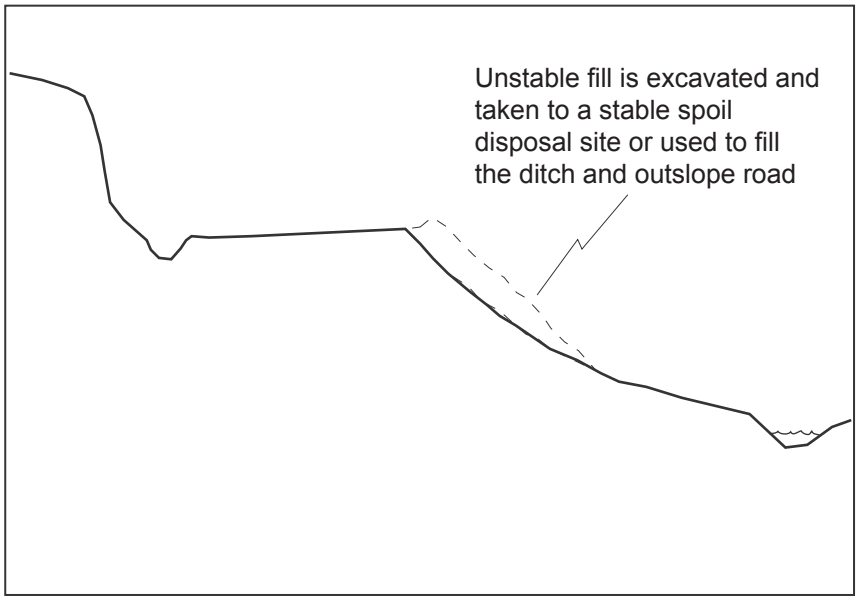
Typical Excavation of Unstable Fillslope on an Upgraded Road

Before



After



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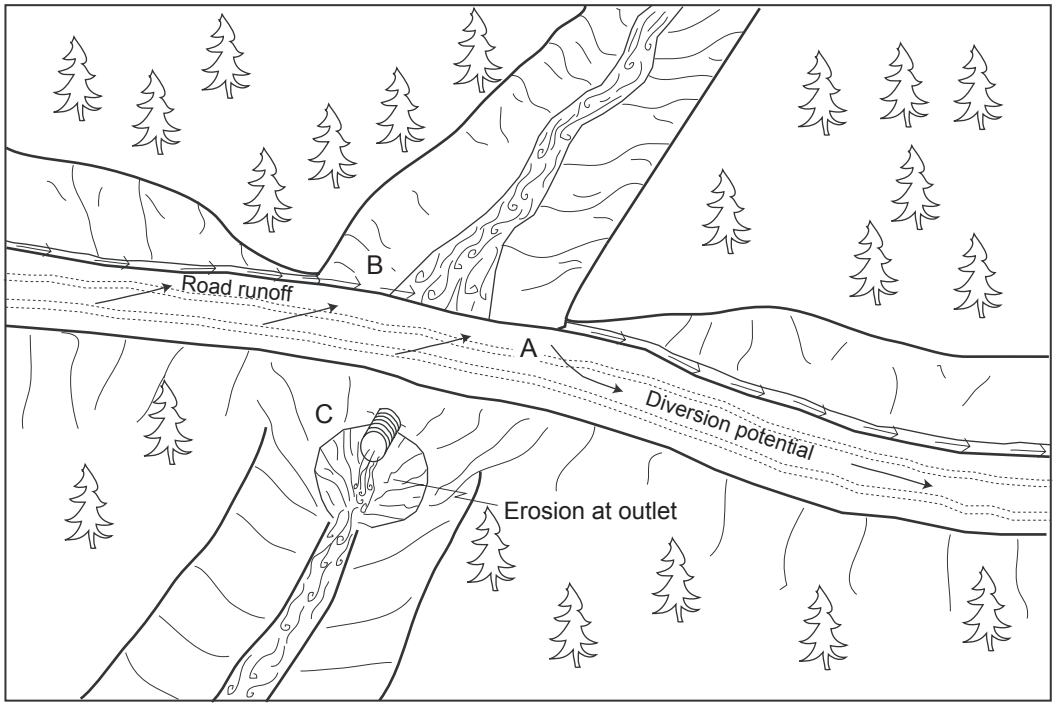
Typical Problems and Applied Treatments for a Decommissioned Stream Crossing

Problem condition (before)

A - Diversion potential

B - Road surface and ditch drain to stream

C - Undersized culvert high in fill with outlet erosion

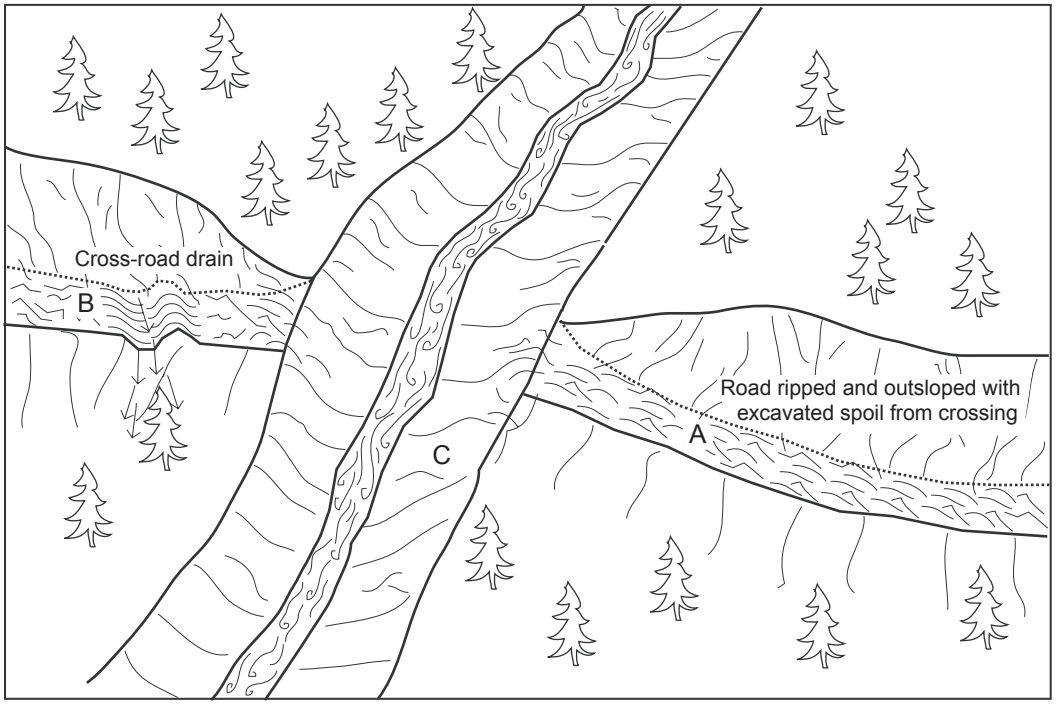


Treatment standards (after)

A - Diversion prevented by road surface ripping and outsloping using excavated spoils

B - Road surface and ditch disconnected from stream by road surface decompaction and cross-road drains

C - Stream crossing fill completely excavated



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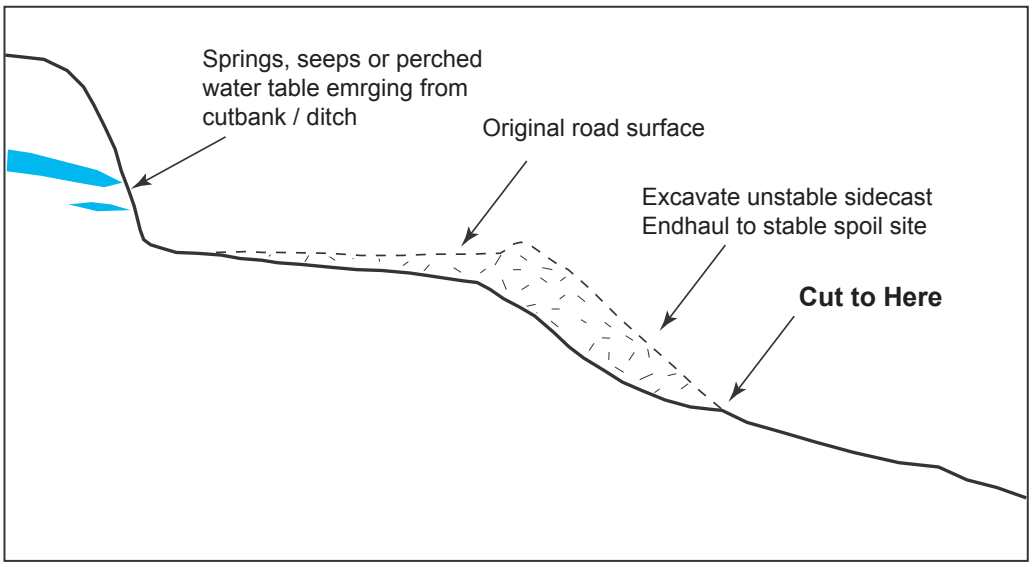
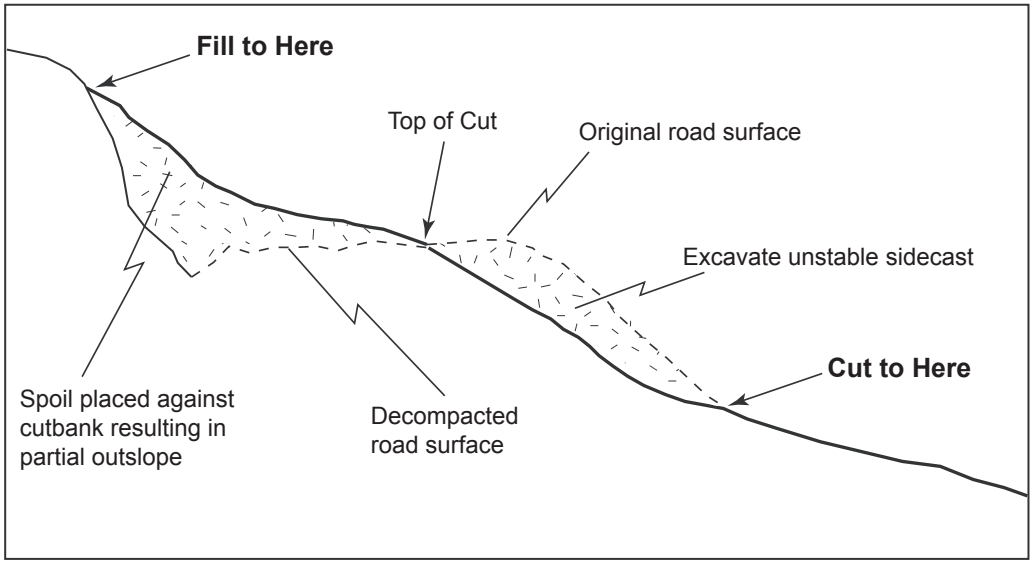
Typical Design for Road Decommisioning Treatments Employing Export and In-Place Outsloping Techniques

Export outslope (EPOS)



In-place outslope (IPOS)



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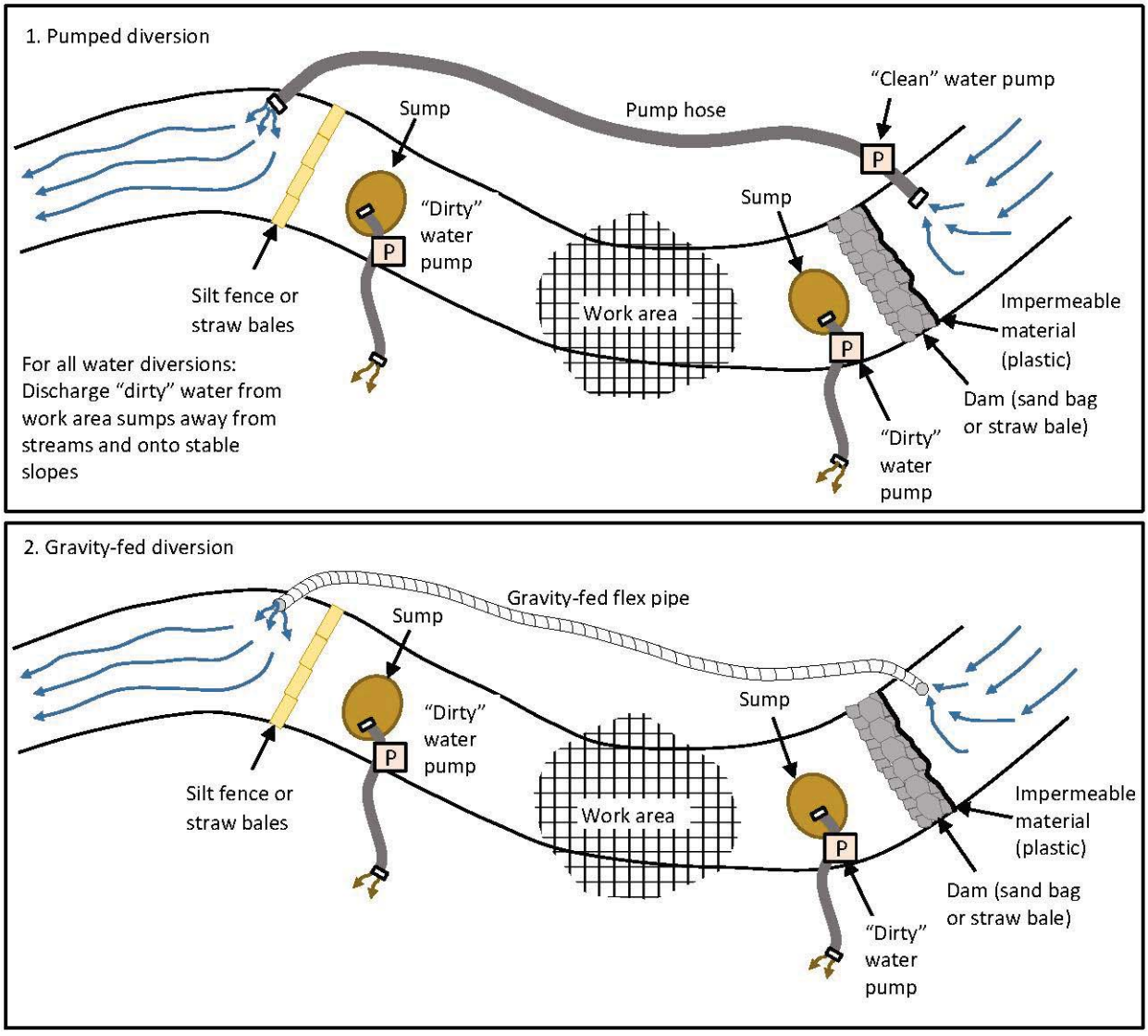
Typical Design for De-watering Streams



Stream crossing de-watering

Prior to working in and around the active stream channel, proper stream dewatering and avoidance of increasing downstream turbidity should be employed. Stream flows will be isolated upstream of the work area using cofferdams and transported downstream / around the work site through either a pumped diversion (Type 1) or by gravity diversion (Type 2) to keep the stream "live" (flowing) below the work area. An additional dam will be installed downstream of the work areas to capture any subsurface flow that might travel through the construction area. Any "dirty" water will be collected at this location and pumped away from the site where it can infiltrate into the ground without the potential to delivery to the stream and/or be used to wet fill being deposited in the spoil disposal areas.

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APPENDIX E

GLENBROOK GULCH CONSTRUCTION WORKSHEET, SHANNON DEMPSEY, CA STATE PARKS, 2022

Road Name	Map ID	Site Type	Crossings & Landings Volume (m^3) or Road Fill Length (m)	Planning Status	Treatment Rx	Excavator hrs	Dozer hrs	Potential Sediment Delivery (m^3)
Kaisen Spur-1	RD-1052	road fill	191	needs treatment	full fill recovery	9.6	9.6	15
Kaisen Spur-1	LN-561	landing	224	needs treatment	full fill recovery	4.5	4.5	72
Kaisen Spur-1	PT-109	stream crossing	219	needs treatment	full fill recovery	4.9	4.9	153
Kaisen Spur-2	RD-1054	road fill	44	needs treatment	full fill recovery	2.2	2.2	4
Kaisen Spur-3	RD-1053	road fill	43	low priority treat if nearby	full fill recovery	2.1	2.1	3
Kaisen Spur-4	RD-1055	road fill	20	low priority treat if nearby	full fill recovery	1.0	1.0	2
Kaisen-1	RD-1049	road fill	720	needs treatment	full fill recovery	36.0	36.0	58
Kaisen-1	PT-101	stream crossing	67	needs treatment	full fill recovery	1.5	1.5	67
Kaisen-1	PT-103	stream crossing	433	needs treatment	full fill recovery	9.6	9.6	217
Kaisen-1	PT-100	swale crossing	327	needs treatment	full fill recovery	7.3	7.3	131
Kaisen-1	PT-102	swale crossing	153	needs treatment	full fill recovery	3.4	3.4	15
Kaisen-2	RD-1050	road fill	300	needs treatment	full fill recovery	15.0	15.0	24
Kaisen-2	RD-1051	road fill	633	needs treatment	full fill recovery	31.7	31.7	51
Kaisen-2	PT-104	stream crossing	310	needs treatment	full fill recovery	6.9	6.9	248
Kaisen-2	PT-105	stream crossing	120	needs treatment	full fill recovery	2.7	2.7	120
Kaisen-2	PT-107	stream crossing	35	needs treatment	full fill recovery	0.8	0.8	5
Kaisen-2	PT-108	stream crossing	20	needs treatment	full fill recovery	0.4	0.4	2
Kaisen-2	PT-106	swale crossing	40	needs treatment	full fill recovery	0.9	0.9	10
Lower Glenbrook	RD-1037	road fill	259	needs treatment	other	12.9	12.9	21
Lower Glenbrook	RD-1038	road fill	62	possible access otherwise no treatment needed	other	3.1	3.1	5
Lower Glenbrook	RD-1039	road fill	132	possible access otherwise no treatment needed	other	6.6	6.6	11
Lower Glenbrook	RD-1115	road fill	168	possible access otherwise no treatment needed	other	8.4	8.4	13
Lower Glenbrook	PT-117	stream crossing	218	needs treatment	full fill recovery	4.8	4.8	174
Lower Glenbrook Cut-1	RD-1047	road fill	26	low priority treat if nearby	full fill recovery	1.3	1.3	2
Lower Glenbrook Cut-1	PT-124	stream crossing	68	needs treatment	full fill recovery	1.5	1.5	54
Lower Glenbrook Cut-3	RD-1048	road fill	20	low priority treat if nearby	full fill recovery	1.0	1.0	2
Lower Glenbrook Cut-3	PT-127	stream crossing	27	needs treatment	full fill recovery	0.6	0.6	22
Lower Glenbrook Spur-1	RD-1043	road fill	75	low priority treat if nearby	full fill recovery	3.7	3.7	6
Lower Glenbrook Spur-2	RD-1041	road fill	64	needs treatment	full fill recovery	3.2	3.2	5
Lower Glenbrook Spur-2	PT-119	stream crossing	65	needs treatment	full fill recovery	1.4	1.4	65
Lower Glenbrook Spur-3	RD-1045	road fill	67	needs treatment	full fill recovery	3.3	3.3	5
Lower Glenbrook Spur-3	PT-126	stream crossing	56	needs treatment	full fill recovery	1.2	1.2	50
Lower Glenbrook Spur-5	RD-1040	road fill	348	needs treatment	full fill recovery	17.4	17.4	28
Lower Glenbrook Spur-5	PT-125	stream crossing	102	needs treatment	full fill recovery	2.3	2.3	102
Lower Glenbrook Spur-5	PT-128	stream crossing	161	needs treatment	full fill recovery	3.6	3.6	129
Lower Glenbrook Spur-5-1	RD-1044	road fill	146	low priority treat if nearby	full fill recovery	7.3	7.3	12
Lower Glenbrook Spur-5-1	PT-121	swale crossing	61	needs treatment	full fill recovery	1.4	1.4	15
Middle Glenbrook	RD-1013	road fill	75	needs treatment	full fill recovery	3.7	3.7	6

Road Name	Map ID	Site Type	Crossings & Landings Volume (m^3) or Road Fill Length (m)	Planning Status	Treatment Rx	Excavator hrs	Dozer hrs	Potential Sediment Delivery (m^3)
Middle Glenbrook	RD-1014	road fill	222	needs treatment	full fill recovery	11.1	11.1	18
Middle Glenbrook	RD-1015	road fill	881	needs treatment	full fill recovery	44.1	44.1	71
Middle Glenbrook	RD-1016	road fill	459	needs treatment	full fill recovery	22.9	22.9	37
Middle Glenbrook	RD-1017	road fill	173	needs treatment	full fill recovery	8.6	8.6	14
Middle Glenbrook	RD-1118	road fill	110	possible access otherwise no treatment needed	other	5.5	5.5	9
Middle Glenbrook	LN-518	landing	240	needs treatment	full fill recovery	4.8	4.8	77
Middle Glenbrook	LN-520	landing	360	needs treatment	full fill recovery	7.2	7.2	115
Middle Glenbrook	LN-521	landing	200	needs treatment	full fill recovery	4.0	4.0	64
Middle Glenbrook	LN-522	landing	280	needs treatment	full fill recovery	5.6	5.6	90
Middle Glenbrook	LN-581	landing	750	needs treatment	full fill recovery	15.0	15.0	240
Middle Glenbrook	PT-133	stream crossing	280	needs treatment	full fill recovery	6.2	6.2	224
Middle Glenbrook	PT-134	stream crossing	266	needs treatment	full fill recovery	5.9	5.9	213
Middle Glenbrook	PT-136	stream crossing	187	needs treatment	full fill recovery	4.2	4.2	187
Middle Glenbrook	PT-132	swale crossing	297	needs treatment	full fill recovery	6.6	6.6	297
Middle Glenbrook	PT-138	swale crossing	84	needs treatment	full fill recovery	1.9	1.9	0
Middle Glenbrook	PT-139	swale crossing	214	needs treatment	full fill recovery	4.8	4.8	21
Middle Glenbrook	PT-141	swale crossing	117	needs treatment	full fill recovery	2.6	2.6	0
Middle Glenbrook Cut-1	RD-1028	road fill	93	needs treatment	full fill recovery	4.7	4.7	7
Middle Glenbrook Cut-1	RD-1032	road fill	55	needs treatment	full fill recovery	2.7	2.7	4
Middle Glenbrook Cut-1-1	RD-1036	road fill	96	needs treatment	full fill recovery	4.8	4.8	8
Middle Glenbrook Cut-1-1	PT-147	stream crossing	77	needs treatment	full fill recovery	1.7	1.7	8
Middle Glenbrook Cut-1-1-1	RD-1031	road fill	10	low priority treat if nearby	full fill recovery	0.5	0.5	1
Middle Glenbrook Cut-1-2	RD-1027	road fill	75	low priority treat if nearby	full fill recovery	3.8	3.8	6
Middle Glenbrook Cut-1-2	PT-157	stream crossing	22	needs treatment	full fill recovery	0.5	0.5	11
Middle Glenbrook Cut-4	RD-1026	road fill	38	low priority treat if nearby	full fill recovery	1.9	1.9	3
Middle Glenbrook Cut-6	RD-1029	road fill	100	needs treatment	full fill recovery	5.0	5.0	8
Middle Glenbrook Cut-6	PT-156	swale crossing	126	needs treatment	full fill recovery	2.8	2.8	126
Middle Glenbrook Cut-7	RD-1025	road fill	48	low priority treat if nearby	full fill recovery	2.4	2.4	4
Middle Glenbrook Cut-8	RD-1033	road fill	44	needs treatment	full fill recovery	2.2	2.2	3
Middle Glenbrook Cut-8	PT-145	stream crossing	39	needs treatment	full fill recovery	0.9	0.9	39
Middle Glenbrook Spur-1	RD-1020	road fill	309	needs treatment	full fill recovery	15.5	15.5	25
Middle Glenbrook Spur-1	LN-538	landing	405	needs treatment	full fill recovery	8.1	8.1	130
Middle Glenbrook Spur-1	PT-155	stream crossing	59	needs treatment	full fill recovery	1.3	1.3	59
Middle Glenbrook Spur-1	PT-150	swale crossing	59	needs treatment	full fill recovery	1.3	1.3	59
Middle Glenbrook Spur-1-1	RD-1024	road fill	28	needs treatment	full fill recovery	1.4	1.4	2
Middle Glenbrook Spur-2	RD-1022	road fill	88	low priority treat if nearby	full fill recovery	4.4	4.4	7
Middle Glenbrook Spur-3	RD-1019	road fill	143	no treatment needed	full fill recovery	7.2	7.2	11
Middle Glenbrook Spur-4	RD-1023	road fill	15	low priority treat if nearby	full fill recovery	0.8	0.8	1

Road Name	Map ID	Site Type	Crossings & Landings Volume (m^3) or Road Fill Length (m)	Planning Status	Treatment Rx	Excavator hrs	Dozer hrs	Potential Sediment Delivery (m^3)
Middle Glenbrook Spur-5	RD-1021	road fill	234	low priority treat if nearby	full fill recovery	11.7	11.7	19
Middle Glenbrook Spur-5	PT-154	stream crossing	18	needs treatment	full fill recovery	0.4	0.4	16
Middle Glenbrook Spur-5-1	RD-1018	road fill	41	low priority treat if nearby	full fill recovery	2.1	2.1	3
Middle Glenbrook-Cut-1	PT-148	stream crossing	68	needs treatment	full fill recovery	1.5	1.5	20
Proposed Access	RD-1113	road fill	109	new construction proposed for access	other	5.4	5.4	9
Upper Glenbrook	RD-1000	road fill	137	needs treatment	full fill recovery	6.9	6.9	11
Upper Glenbrook	RD-1001	road fill	301	needs treatment	full fill recovery	15.0	15.0	24
Upper Glenbrook	RD-1002	road fill	298	needs treatment	full fill recovery	14.9	14.9	24
Upper Glenbrook	RD-1003	road fill	737	needs treatment	full fill recovery	36.8	36.8	59
Upper Glenbrook	LN-502	landing	900	needs treatment	full fill recovery	18.0	18.0	288
Upper Glenbrook	LN-503	landing	750	needs treatment	full fill recovery	15.0	15.0	240
Upper Glenbrook	LN-509	landing	450	needs treatment	full fill recovery	9.0	9.0	144
Upper Glenbrook	PT-111	stream crossing	150	needs treatment	full fill recovery	3.3	3.3	150
Upper Glenbrook	PT-110	swale crossing	72	needs treatment	full fill recovery	1.6	1.6	7
Upper Glenbrook	PT-112	swale crossing	77	needs treatment	full fill recovery	1.7	1.7	0
Upper Glenbrook	PT-113	swale crossing	90	needs treatment	full fill recovery	2.0	2.0	9
Upper Glenbrook Cut-1	PT-114	swale crossing	34	needs treatment	full fill recovery	0.8	0.8	3
Upper Glenbrook Spur-2	RD-1009	road fill	31	needs treatment	full fill recovery	1.5	1.5	2
Upper Glenbrook Spur-2-1	RD-1005	road fill	72	low priority treat if nearby	full fill recovery	3.6	3.6	6
Upper Glenbrook Spur-2-1	RD-1011	road fill	63	low priority treat if nearby	full fill recovery	3.2	3.2	5
Upper Glenbrook Spur-2-1	LN-515	landing	152	needs treatment	full fill recovery	3.0	3.0	49
Upper Glenbrook Spur-2-2	RD-1008	road fill	74	low priority treat if nearby	full fill recovery	3.7	3.7	6
Upper Glenbrook Spur-2-3	RD-1004	road fill	78	low priority treat if nearby	full fill recovery	3.9	3.9	6
Upper Glenbrook Spur-3	RD-1007	road fill	159	needs treatment	full fill recovery	8.0	8.0	13
Upper Glenbrook Spur-3	RD-1010	road fill	196	needs treatment	full fill recovery	9.8	9.8	16
Upper Glenbrook Spur-4	RD-1006	road fill	45	needs treatment	full fill recovery	2.3	2.3	4
					Total Construction hrs	**649**	**649**	**5,254**
					Total Construction weeks	**16.2**		

*Potential Sediment Delivery not included for other site types (gullies, landslide features, and seeps/springs)

APPENDIX F

M9 CONCEPTUAL TREATMENT PLAN, PACIFIC WATERSHED ASSOCIATES, 2022

Table 3. Treatment immediacy ratings for sediment delivery features and associated lengths of hydrologically connected road, No Name Gulch, Big River Forestland Sediment Reduction Project, Mendocino County, California.

Treatment immediacy	Treatment features				Estimated future sediment delivery from inventoried erosion features[b]		Estimated future sediment delivery from road, ditch, and cutbank surfaces[c]	
	Decommission features	Road length (mi)[a]	Upgrade features	Road length (mi)[a]	Volume (yd^3)	Relative percentage	Volume (yd^3)	Relative percentage
High	5 stream crossings [features #: 2, 3, 5, 9, 15]	0.70	-	-	1,407	46%	332	56%
Subtotal	*5 features*	*0.70*	-	-	*1,407*	*46%*	*332*	*56%*
Moderate	5 stream crossings [features #: 7, 9.1, 11, 12, 13] 3 fill failures [features #: 4, 6.1, 8] 1 spring [features #: 10] 1 DRC [features #: 16]	0.51	1 stream crossing [feature #: 1]	0.07	1,596	53%	246	41%
Subtotal	*10 features*	*0.51*	*1 feature*	*0.07*	*1,596*	*53%*	*246*	*41%*
Low	1 stream crossing [feature #: 14]	0.05	-	-	32	1%	15	3%
Subtotal	*1 features*	*0.05*	-	-	*32*	*1%*	*15*	*3%*
Total	**16 decommission features[d]**	**1.26**	**1 upgrade feature[e]**	**0.07**	**3,035**	**100%**	**593**	**100%**

[a]*Road length* refers to hydrologically connected road reaches adjacent to recommended treatment features.
[b]Episodic sediment delivery for road related features (indeterminate time period).
[c]Chronic sediment delivery from adjacent hydrologically connected roads and cutbanks (estimated for a 10 yr period).
[d]Decommission features (16 total): 11 stream crossings, 3 fill failures, 1 spring, and 1 DRC feature.
[e]Upgrade feature (1 total): 1 stream crossing.