SOUTH FORK MANAGEMENT UNIT WATERSHED RESTORATION

SOUTH FORK TRINITY RIVER BASIN FINAL REPORT AGREEMENT 00-AA-20-0143

Introduction

This report provides a summary of implementation of the Trinity River Restoration Program Agreement #00-AA-20-0143. The South Fork Management Unit proposed three projects to the Trinity River Restoration Program Committee in 2000. The proposals were accepted for funding and grouped under Agreement #00-AA-20-0143 totaling $100,000. In the agreement each proposal was given a task letter with a funded cost. *See Table 1 for a list of each project and associated costs.*

Table 1. Specific projects and costs included in Agreement #00-AA-20-0143.

Task	Project Title Action Item	Project Title Line Item	Cost
A	#6 - Rehabilitate South Fork Trinity River Basin	#4 – Upper South Fork, Happy Camp Creek Road Restoration	$50,000
C	#6 - Rehabilitate South Fork Trinity River Basin	#13 – Lower Hayfork-Olsen, Eltapom Road Restoration	$25,000
B	#6 - Rehabilitate South Fork Trinity River Basin	#13 – Middle Hayfork Creek, Salt Creek Road Restoration	$25,000
		Total	$100,000

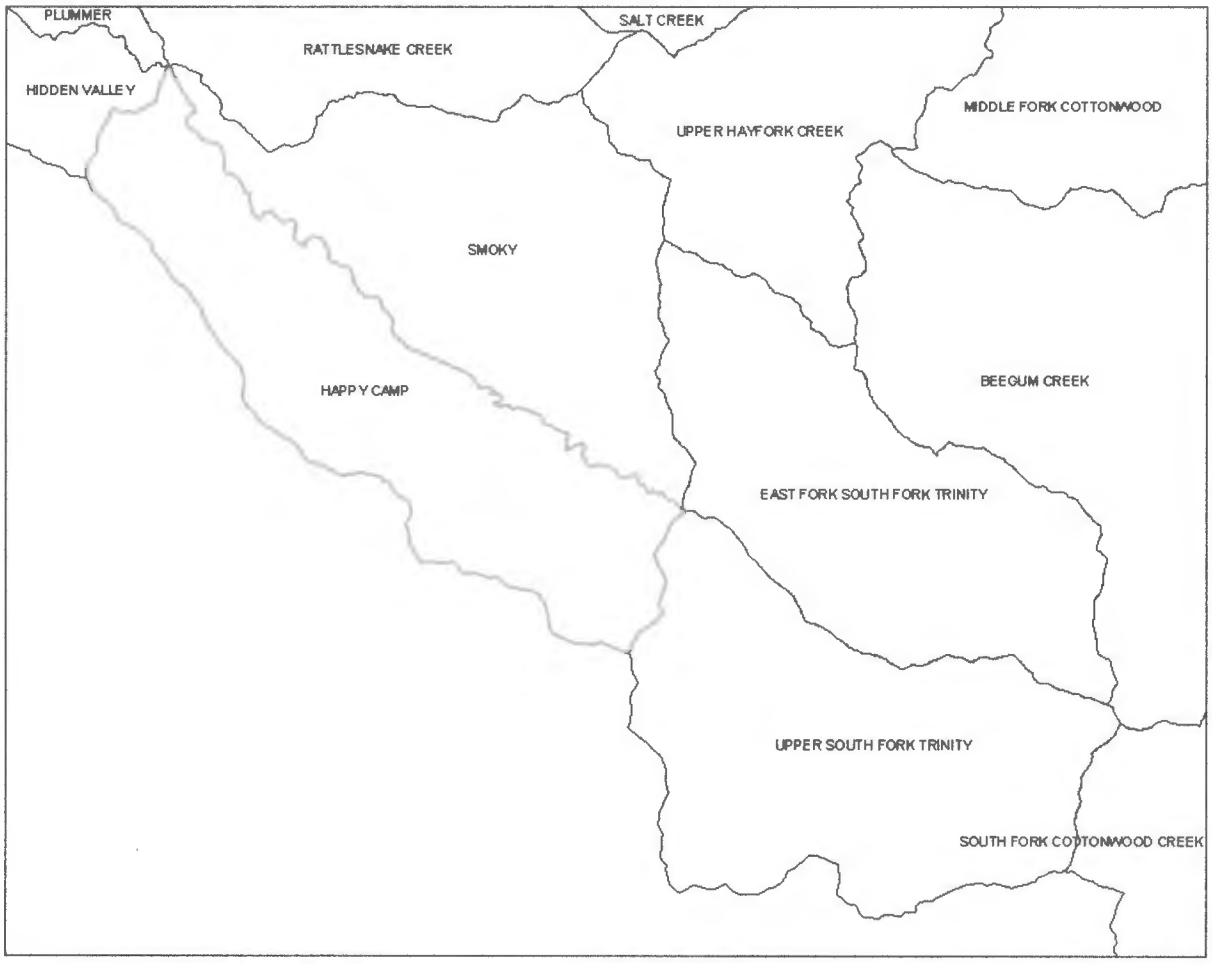
This report will summarize each Task items project location, background status, goals, objectives, project work accomplished, costs and measurable benefits. The report will also document any monitoring of effectiveness and implementation of road restoration prescriptions to provide further knowledge of sediment reduction in the watersheds.

Task A - Upper South Fork, Happy Camp Road Restoration

Location

The Happy Camp watershed is located in southeastern Trinity County, California at the southernmost extent of the South Fork Management Unit of the Shasta-Trinity National Forests. The watershed is located approximately 12 air miles south-southwest of Wildwood, California. The area encompasses approximately 24,205 acres including: 2,317 acres of private land and 21,888 of federal lands. *See Figure A for a location map.*

Figure A. Map showing the location of the Happy Camp 5th order watershed.



Background Status

The purpose of the project was to prevent road related effects and risks to downstream anadromous fish habitat within the Happy Camp watershed through road decommission, hydrologic road closure, road upgrade treatments, and transportation system maintenance needed to meet other resource opportunities.

The current high value aquatic habitat conditions within the South Fork Trinity River prioritized the need for project implementation. The watershed area has been identified in the Upper South Fork/Happy Camp Watershed Analysis (WA) as an important watershed for maintenance of summer steelhead and spring Chinook salmon. The South Fork Trinity above Forest Glen is considered refugia for adult and juvenile salmonids. The area is listed as a tier 1 Key Watershed that is highest priority for watershed restoration activities in the Northwest Record of Decision (NW ROD B-19). The WA also addressed the need to conduct restoration activities that prevent impacts of open road densities on downstream anadromous fish habitat.

Additionally, a need was identified to retain a transportation system which allows for the current and future needs of other resource opportunities including; timber harvest within Matrix lands, Late Successional Reserve (LSR) plantation treatments, access to private land holdings, recreation opportunities, fire suppression and fuel treatment activities.

Goals and Objectives

The goal of the project was to provide specific site design and administration for partnership agreements with the Trinity County Resource Conservation District that implemented work in the Upper South Fork and Happy Camp areas. Also, to prevent the introduction of approximately 11,000 cubic yards of sediment to Happy Camp Creek and the South Fork Trinity River during future storm events. Effectiveness and implementation monitoring was conducted to gain further knowledge of sediment reduction in the watersheds and immediate information on how different types of road prescriptions worked.

Work Accomplished

Road maintenance and upgrade activities are intended to prevent potential sediment input to streams on specific roads that are needed to be kept open to meet numerous land management resource objectives. Existing road inventories identified Forest Service system road 1S23 as high priority for road maintenance activities.

The decision was made to complete the work with a Road Maintenance Contract. Field preparation included; creating road logs, site-specific design specifications and staking all sites for work. The project implemented 12.10 miles of drainage improvement and erosion control on the1S23. Work included haul and placement of 6 cubic yards riprap, shaping and blading, drainage rolling and critical dip construction. The contract also included installation of rock dissipaters at culvert outlets, culvert cleaning, the furnishing and installation of two culverts, and installation of 3 inlet assemblies with 20 feet of flume. *See Appendix I to view the road log for the 1S23 road.* The Forest Service (South Fork Management Unit) provided the culvert bands, inlet assemblies and flume for the contract. Work began September 2002 and was completed in late fall of 2002.

The South Fork Management Unit has been a partner with the Trinity County Resource Conservation District (RCD) in accomplishing watershed restoration activities in the South Fork Trinity River basin since 1996. RCD coordinates site designs, road logs and the administration of project work with the Hydrologist and Engineering groups on the Unit and Forest. This agreement helped to fund the South Fork Management Units specialists' working with RCD. *See Table 2 to view the list of roads and specific information for each road that RCD accomplished in 2002.*

Table 2. Summary of work completed by Trinity County Resource Conservation District the summer of 2001.

Road	Treatment	Miles Treated	Cubic Yards Excavated	Estimated Costs
28N43D	Maintenance/Upgrade	0.85		$5,000
29N30D	Decommission	2.00	31,000	$150,000
28N40F	Decommission	1.02	4,280	$12,000
28N83	Decommission	Last 1.05	550	$60,000
	TOTALS	4.92	35,830	$227,000

Cost

The agreement funded $25,000 for the Happy Camp Road Maintenance Contract. However, the contract exceeded the amount funded by the agreement. The contract cost was over $27,000. Forest Service funds were allocated to cover the cost difference for contract payment and also funded the Unit's specialists to perform the contract preparation, design, administration and culvert, flume, inlet and band assemblies. *See Table 3 to view*

Forest Service contributed costs and Table 2 to view RCD contributed costs to implement the Happy Camp Road Maintenance Contract.

Table 3. Forest Service Contributed costs.

ITEM	COST
Contract	$ 2,803
Prep, Design and Administration	$ 9,731
Culvert, Flume, Inlet and Band assemblies	$ 651
TOTAL	**$13,185**

The agreement also funded $25,000 for South Fork Management Unit (SFMU) specialists to coordinate work being completed in the South Fork River basin by RCD. The Units specialists' used the agreements funds in 2002 for contract prep, design and administration of the roads implemented by RCD. *Roads are listed in Table 2.*

Measurable Benefits

The main objective was to prevent the introduction of approximately 11,000 cubic yards of sediment to Happy Camp Creek and the South Fork Trinity River during future storm events. The project work accomplished for Task A; 1S23, 28N43D, 29N30D, 28N40F and the 28N83 roads prevented the introduction of over 35,000 cubic yards of sediment. This exceeded the objective amount of sediment reduction by 24,000 cubic yards. The cost per cubic yard is $6.20.

Monitoring

Figure B. Blading/shaping that was performed on road 1S23.

Onsite evaluations are used to assess both implementation and effectiveness. Implementation evaluations determine the extent to which planned and/or prescribed measures were actually put in place on project road sites. Effectiveness evaluations gauge the extent to which the practices met their sediment reduction objectives.

The Happy Camp 1S23 Forest Service Road Maintenance Contract was implemented as designed. The installation and maintenance of drainage dips greatly increased the improvement of water drainage on the road. The upgrade of two pipes increased the water capacity of both pipes therefore decreasing the chance of crossing failure due to diversion or culvert plugging.

Trinity County Resource Conservation District implemented decommission activities on roads 28N43D, 29N30D, 28N40F and the first mile of 28N83. The work included removing culverts and associated fill at stream crossings to designated spoils areas, seeding and mulching disturbed stream banks at culvert removal sites and ripping and outsloping roadbeds. Earthen barriers were constructed at the beginning of roads to prevent access to the decommissioned road. The roads are then removed from the Forest Service system roads. The road decommissioning activities have been improved in the last couple years through monitoring efforts. Previously, seeding and mulching was prescribed for the ripped and outsloped roadbed. Monitoring has shown that only the stream channel banks need the seed and mulch. Newly ripped roadbeds permit rain penetration and lessen the chance of soil movement and/or erosion.

Figure C. This set of 4 photos shows typical decommission activities including; removing a CMP and fill at a stream crossing and ripping/outsloping a road.

Task C - Lower Hayfork-Olsen, Eltapom Road Restoration

Location

The Lower Hayfork-Olsen and Eltapom watersheds are located in northwestern Trinity County, California at the northernmost extent of the South Fork Management Unit of the Shasta-Trinity National Forests. Lower Hayfork-Olsen Creek area encompasses approximately 5,000 acres. The Eltapom area encompasses approximately 19,308 acres. *See Figure D to view an Eltapom watershed location map.*

Figure D. Map showing the location of the Olsen and Eltapom areas within the upper Hayfork 5th order watershed.

Background Status

Eltapom Creek is located in northern California, 45 miles west of Redding, 60 miles east of Eureka and approximately 3.5 miles north of Hyampom. Eltapom Creek is a small perennial stream that flows through mountainess terrain in a westerly direction, Eltapom supports an anadromous fish run mainly composed of steelhead trout, although Coho salmon may use the drainage. The anadromous run is restricted to the lower ½ mile of stream course but it is an important contributor of steelhead to the South Fork Trinity River Basin. Small stretches of stream support an excellent population of resident rainbow trout.

Olsen Creek is a small perennial stream and tributary to Hayfork Creek. The stream supports anadromous runs of fall/winter steelhead within the lower 1.5 miles and resident rainbow trout within the upper reach. Speckled dace, salmon, and Pacific lamprey are found within the area of the mouth of Olsen Creek.

The need for this project was due to the present risk to high value aquatic habitat conditions within the Eltapom and Olsen Creek areas. The best way to prevent this risk is to focus restoration activities on erosion control, particularly the road system.

Additionally, a need was identified to retain a transportation system which allows for the current and future needs of other resource opportunities including; timber harvest within Matrix lands, fire suppression activities, dispersed recreation, wilderness access and access to private land holdings.

Goals and Objectives

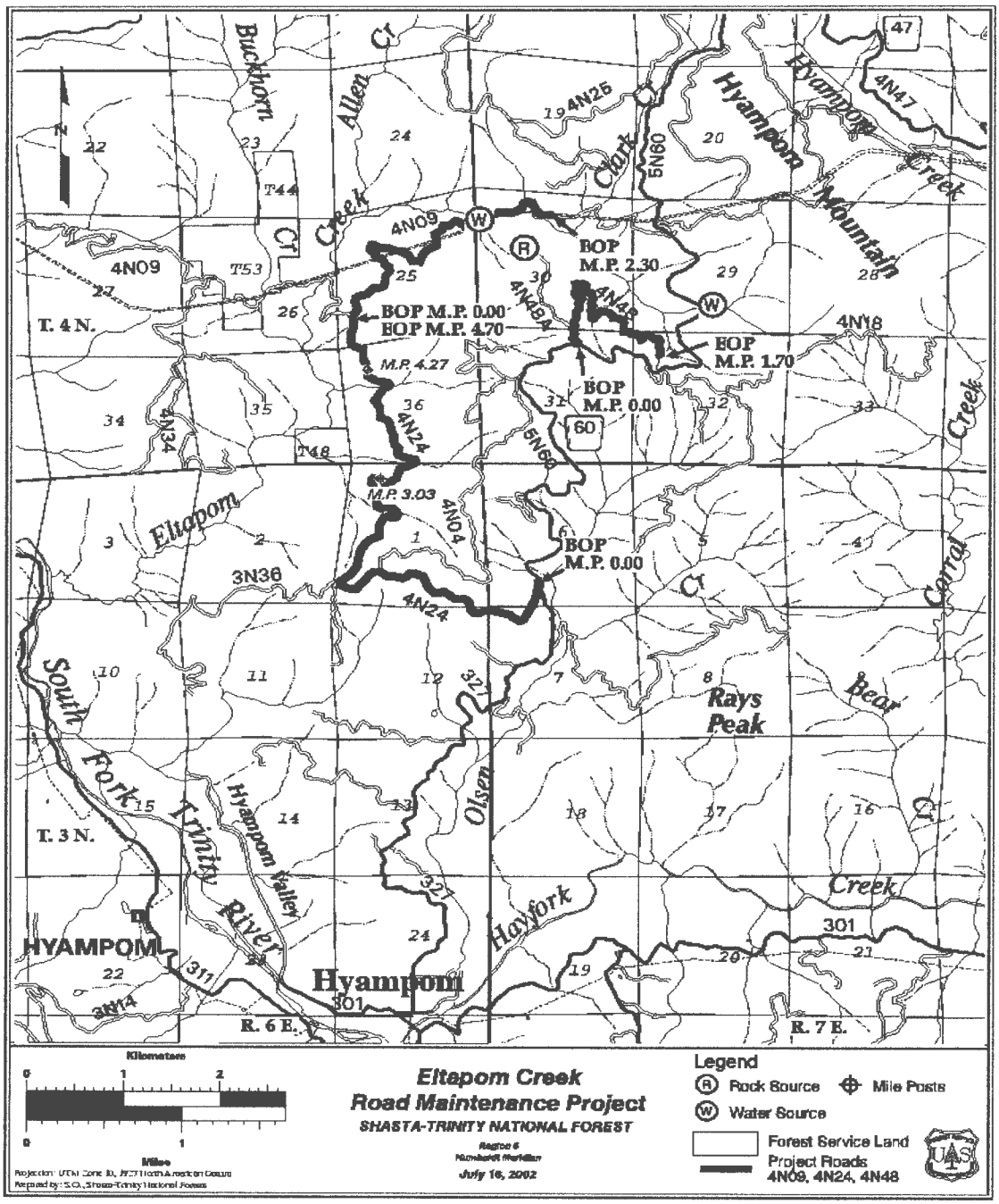
The purpose of this project was to prevent road related effects and risks to downstream anadromous and resident fish habitat within the Eltapom and Olsen Creek watersheds through road upgrade treatments and maintain a transportation system required to meet other resource and recreational needs. Also, to prevent the introduction of approximately 4,072 cubic yards of sediment to Eltapom and Olsen Creek during future storm events. In addition, effectiveness and implementation monitoring was conducted to gain further knowledge of sediment reduction in the watersheds and immediate information on how different types of road prescriptions worked.

Work Accomplished

Road maintenance and upgrade activities are intended to prevent potential sediment input to streams on specific roads that are needed to be kept open to meet numerous land management resource objectives. Existing road inventories identified three Forest Service system roads 4N09, 4N24 and 4N48, *(see Figure E for a map of road locations)* as high priority.

The decision was made to complete the work with a Road Maintenance Contract. Field preparation included; creating road logs, site-specific design specifications and staking all sites for work. The project rehabilitated the three identified roads for drainage improvement and erosion control for a total of 8.7 miles. Work included rock pit development, haul and placement of 100 cubic yards grid-rolled aggregate and 38 cubic yards riprap. It also includes shaping and blading, clearing of vegetation, drainage rolling and critical dip construction, culvert cleaning, the furnishing and installation of one culvert, and installation of 13 inlet assemblies with 135 feet of flume. During contract administration, additional work items were added to the contract. Contract work began early August 2003 and was completed in late fall of 2003. *See a copy of the contract road logs and specific design drawings in Appendix II.*

Figure E. Eltapom Road Maintenance contract map that shows locations of each of the roads included in the maintenance contract.



Cost

The Eltapom Road Maintenance contract cost exceeded the $25,000 funded by the agreement. The Forest Service allocated funds for the cost difference to complete the contract payment. The total cost of the contract was over $42,000. The Forest Service also provided the contract preparation, design and administration personnel for the contract. *See Table 5 for Forest Service contributed costs for the Eltapom Road Maintenance contract.*

Table 5. Forest Service Contributed costs.

ITEM	COST
Contract	$17,157
Prep, Design and Administration	$14,700
TOTAL	**$31,857**

Measurable Benefits

The main objective was to prevent the introduction of 4,072 cubic yards of sediment to Eltapom Creek and South Fork Trinity River. The project work accomplished for Task C; 4N09, 4N24 and 4N48 roads preventd the introduction of over 5,000 cubic yards of sediment. This exceeded the objective amount of sediment reduction. The cost per cubic yard is $8.40.

Monitoring

Onsite evaluations are used to assess both implementation and effectiveness. Implementation evaluations determine the extent to which planned and/or prescribed measures were actually put in place on project road sites. Effectiveness evaluations gauge the extent to which the practices met their sediment reduction objectives.

The Eltapom 4N09 Forest Service Road Maintenance Contract was implemented with 3 changes. A total of three rolling dips were added to improve road drainage. Previous to the implementation this road was severely gullied and no maintenance had been done on the road for over 10 years. The prescription for the new rolling and critical dips and maintenance of existing was designed deeper to accommodate the amount of water running on the road. All rolling dips are now rocked, including ingress and egress to harden the dip and prevent further erosion and wear from traffic.

On road 4N24 a rusted pipe that drained onto was removed and a larger pipe installed at MP 3.03. Fill slopes were armored and several culvert dissipaters were added to prevent erosion at culvert outlets. On maintenance projects it has been found that cleaning ditches and culvert inlets (including enlarging culvert inlet catch basins where needed) increases capacity to carry more water and decreases the chance of culvert and ditch failure. Road 4N48 was implemented as designed with no changes.

Figures F and G. MP 3.03 pre and post photos of pipe installation on Road 4N24.

Figures H and I. . Pre and post implementation photos showing re-shaping unstable road fill slope on Road 4N24, MP 3.03

Task B - Middle Hayfork Creek, Salt Creek Road Restoration

Location

The Middle Hayfork and Salt Creek watersheds are located in the southeastern portion of Trinity County, California at the southern end of the South Fork Management Unit of the Shasta-Trinity National Forests. Middle Hayfork Creek watershed encompasses approximately 76,019 acres. The Salt Creek watershed encompasses approximately 36,328 acres. *See Figure J for a location map.*

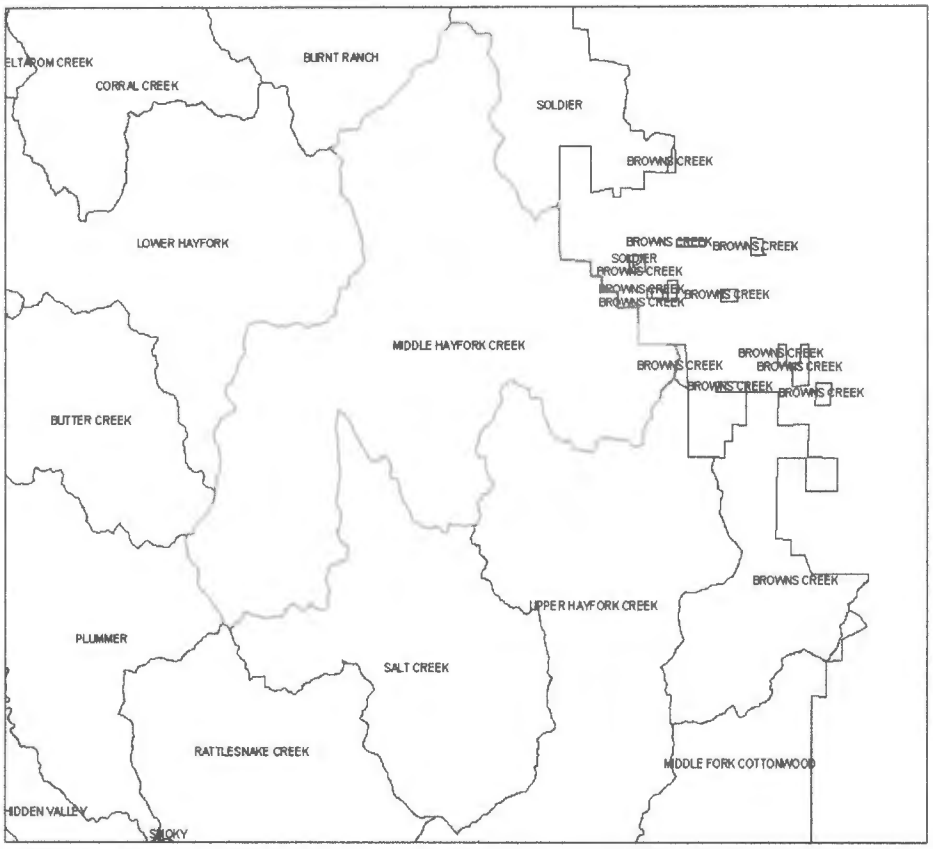
Background Status

The Hayfork Creek watershed is located in central Trinity County, approximately 40 miles west of Redding, California. Hayfork Creek is part of the lower Klamath River drainage. Hayfork Creek has six major tributaries above Hayfork Valley, they include: Big Creek, Barker Creek, Carr Creek, Tule Creek, Salt Creek, and East Fork Hayfork Creek.

Within Hayfork Creek and its tributaries are approximately 100 miles of anadromous fish habitat. The dominant anadromous salmonid is the winter-run steelhead. The Hayfork Creek watershed is a significant producer of winter steelhead in the South fork Trinity River basin.

Salt Creek is a perennial tributary to Hayfork Creek. This stream supports anadromous runs of fall run steelhead. This stream also supports resident rainbow trout, speckled dace, and Klamath small scale suckers. Steelhead trout are known to spawn within Salt Creek, however, steelhead population is low due to the lack of rearing habitat for juvenile fish.

Figure J. Map showing the location of the Middle Hayfork 5th order watersheds.



The need for this project was due to the present risk to high value aquatic habitat conditions within the Hayfork and Salt Creek areas. The best way to prevent this risk is to focus restoration activities on erosion control, particularly the road system.

Additionally, a need was identified to retain a transportation system which prevents the cost of annual road maintenance, and allows for the current and future access needs of; timber harvest within Matrix lands, fire suppression activities, dispersed recreation, wilderness access and access to private land holdings.

Goals and Objectives

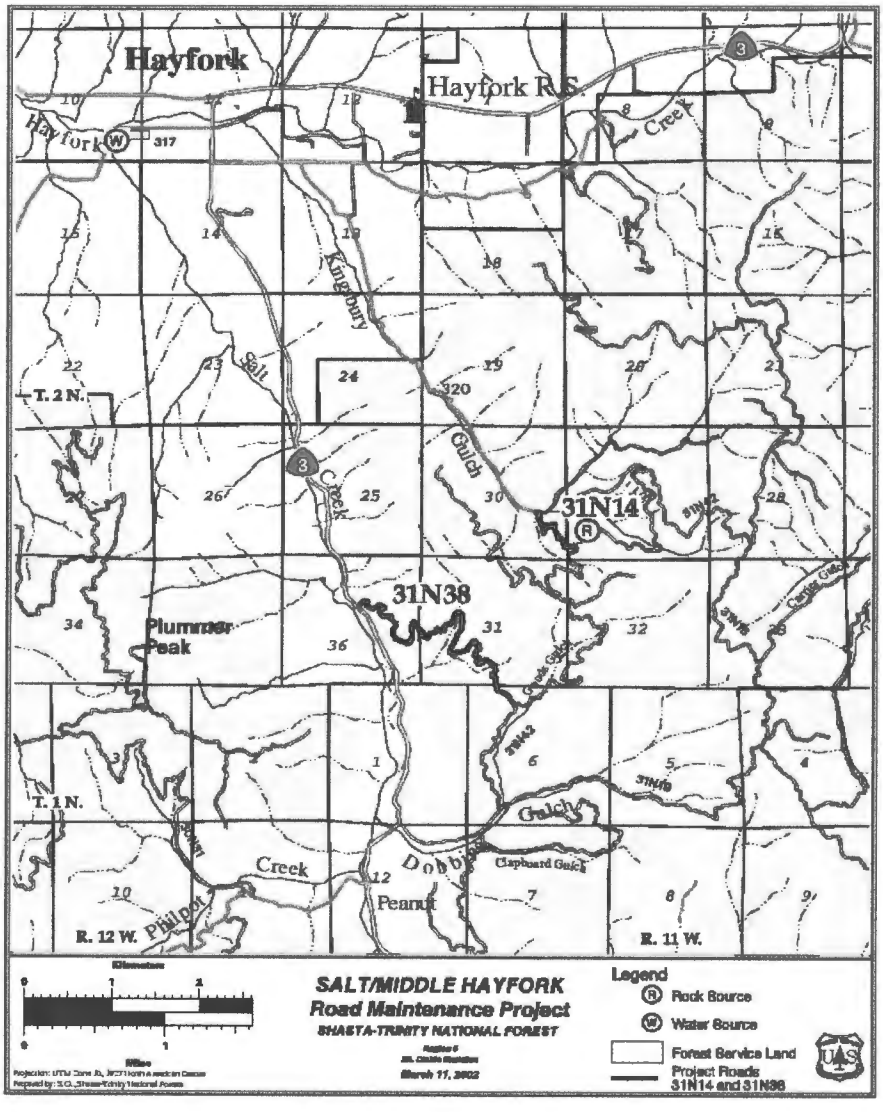
The purpose of this project was to prevent road related effects and risks to downstream anadromous and resident fish habitat within the Hayfork Creek and Salt Creek watersheds through road upgrade treatments and maintain a transportation system required to meet other resource and recreational needs. Also, to prevent the introduction of approximately 16,143 cubic yards of sediment to Hayfork Creek and Salt Creek during future storm events. In addition, effectiveness and implementation monitoring was conducted to gain further knowledge of sediment reduction in the watersheds and immediate information on how different types of road prescriptions worked.

Work Accomplished

Road maintenance and upgrade activities are intended to prevent potential sediment input to streams on specific roads that are needed to be kept open to meet numerous land management resource objectives. Existing road inventories identified two Forest Service system roads 31N14 and 31N38 as high priority. *See Figure K for a map of road locations.*

The decision was made to complete the work with a Road Maintenance Contract. Field preparation included; creating road logs, site-specific design specifications and staking all sites for work. The project rehabilitated the two identified roads for drainage improvement and erosion control for a total of 3.69 miles. Work included rock pit development, haul and placement of 485 cubic yards pit run and 96 cubic yards riprap. It also includes shaping and blading, drainage rolling and critical dip construction, culvert cleaning and repair, the installation of one culvert with a drop inlet, and installation of 17 inlet assemblies with 290 feet of flume. The government provided the culvert, bands, inlet assemblies and flumes. During contract administration, additional work items were added to the contract. Contract work began early July 2002 and was completed in the fall of 2002. *See a copy of the contract road logs in Appendix 3 for specific work items on each road.*

Figure K. Salt/Middle Hayfork Road Maintenance contract map that shows locations of each of the roads included in the contract.



Cost

The Salt/Middle Hayfork Road Maintenance contract cost exceeded the $25,000 funded by the agreement. The contract cost was over $36,000.The Forest Service allocated funds for the cost difference to complete the contract payment. They also provided the contract preparation, design and administration personnel for the contract. *See Table 6 to view Forest Service contributed costs to the Salt/Middle Hayfork Road Maintenance contract.*

Table 6. Forest Service Contributed costs.

ITEM	COST
Contract	$11,820
Prep, Design and Administration	$12,887
TOTAL	**$24,707**

Measurable Benefits

The main objective was to prevent the introduction of approximately 16,143 cubic yards of sediment to Hayfork Creek and Salt Creek during future storm events. The project work accomplished for Task B; 31N38 and 31N14 roads prevented the introduction of over 8,000 cubic yards of sediment. Other roads were identified in road inventories for decommission activities but could not be implemented till NEPA is completed. Decommission activities would have increased the reduction of sediment for the project and prevented the amount of work available for immediate implementation. The cost per cubic yard was $4.50.

Monitoring

Onsite evaluations are used to assess both implementation and effectiveness. Implementation evaluations determine the extent to which planned and/or prescribed measures were actually put in place on project road sites. Effectiveness evaluations gauge the extent to which the practices met their sediment reduction objectives.

Pre-existing conditions of both roads included severe gullying of roadbed. Critical and rolling dips were installed or existing maintained, roadbed was bladed, shaped and rocked where needed and ditches and culvert inlets were cleaned to help prevent further erosion. Both roads were implemented as designed in the contract.

Figures L and M. Pre implementation conditions on road 31N38 included failed overside drains.

Monitoring efforts conducted 1 year after the implementation shows the results of two treatments. Rolling dips along with rocking soft eroded and gullied areas improved road drainage as seen in the photos below.

Figure N. Photo of rolling dip on road 31N38.

Figure O. Photo of rocked roadway on road 31N38.

APPENDICES

Appendix 1. TASK A

Road logs from the Happy Camp Road Maintenance contract shows the work completed at each specific site on the 1S23 road.

Milepost	ROAD LOG, 1S23:
0.00	Intersection with 29N30 Road - Wildwood-Mad River Road
0.00-13.10	Blade and shape existing roadbed.
0.53	Remove 8-inch culvert. Enlarge catch basin and install 18-inch x 30 LF CMP. Construct riprap dissipater measuring 4' X 6' X 1' deep at outlet. Work to enlarge catch basin is included in 833(3) Culvert Replacement.
0.68	Construct drainage dip. Install inlet assembly and 10' rectangular flume and riprap dissipater measuring 4' X 6' X 1' deep.
0.70	Remove 12" culvert. Install 18" x 30 LF CMP. Construct riprap dissipater.
1.30	Construct drainage dip.
1.40	Water source at Happy Camp Spring. Blade and shape Happy Camp Spring Rd. (28N59) (.10 miles total length; Construct drainage dips at MP 0.05 and MP 0.07)
1.45	Construct drainage dip.
1.99	Construct drainage dip.
2.24	Construct drainage dip.
2.30	Intersection with 28N56. Construct drainage dip on 28N56 at stake approximately 100-feet from 1S23 intersection.
2.69	Construct drainage dip.
3.35	Construct drainage dip.
4.55	Construct riprap dissipater at culvert outlet.
4.59	Reset inlet assembly. Repair fill at outlet end of culvert by placing riprap in fill to form dissipater measuring 10' X 3' X 2' deep. Payment for fill repair is included in 819(6) Riprap.
5.35	Remove 8-inch culvert. Payment for culvert removal is included in 833(3) Culvert Replacement.
10.40	Construct drainage dip. Install inlet assembly and 10-foot rectangular flume. Construct riprap dissipater.

10.50	Construct drainage dip.
10.60	Construct drainage dip.
11.10	Construct drainage dip with 50' leadoff ditch. Leadoff ditch construction is included in Pay Item 833(8).
11.50	Construct drainage dip.
11.90	Construct drainage dip.
12.00	Construct drainage dip with 10' leadoff ditch.
12.10	Water Source. Blade and shape Fern Camp Road (1S03) (.10 miles length).
13.10	End of Project.

Appendix 2. TASK C

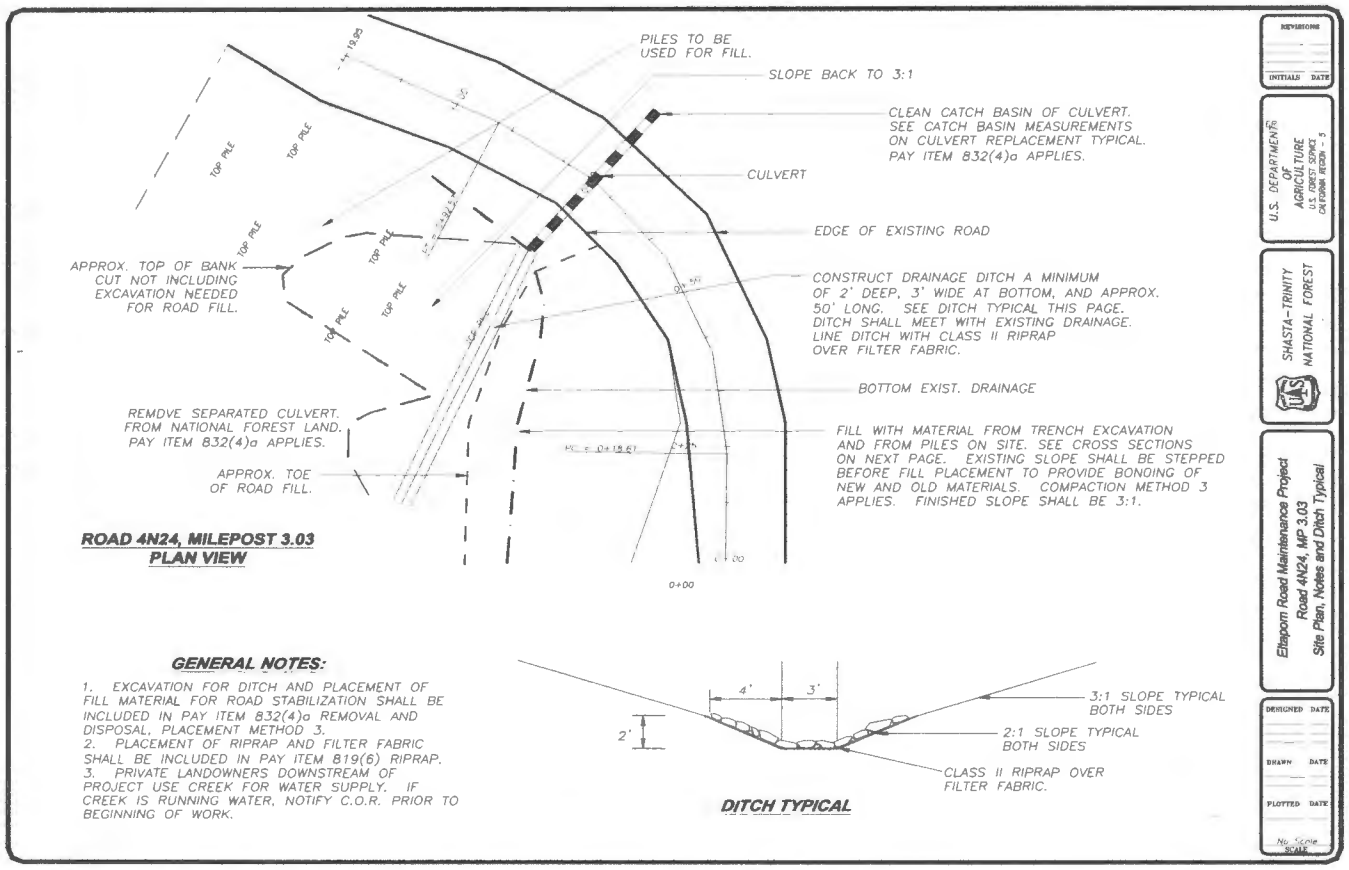
Road logs from the Eltapom Road Maintenance contract that shows the work completed at each specific site on roads 4N09, 4N24 and the 4N48.

MILEPOST	4N09 ROAD LOG - POWERLINE ROAD
0.00	Intersection with 4N24. Proceed East.
0.00 – 2.30	Blade and shape roadbed.
0.05	Construct drainage dip with 10' lead–off ditch.
	Armor bank at culvert outlet with 3 cubic yards Class II Riprap. Remove and dispose of 6' length of pipe (on ground) and 10' length (at band) of existing culvert off National Forest Land. Payment for removal and disposal will be included in 819(6).
0.06	Riprap is available on site.
0.12	Construct drainage dip. Install inlet assembly and 10' flume. Construct riprap dissipater at outlet of flume.
0.18	Construct drainage dip.
0.24	Construct riprap dissipater at culvert outlet measuring 4' X 6' X 1'. Riprap available at MP 0.25.
0.30	Construct drainage dip.
0.40	*Added 2 rolling dips at time of contract administration.*
0.50	Construct drainage dip. Install inlet assembly and 10' flume. Construct riprap dissipater at outlet of flume.
0.60	Construct drainage dip.
0.65	Construct drainage dip. Install inlet assembly and 10' flume. Construct riprap dissipater at outlet of flume.
0.75	Construct drainage dip. Install inlet assembly and 10' flume. Construct riprap dissipater at outlet of flume.
0.90	Construct drainage dip with 10' lead–off ditch. Construct riprap dissipater measuring 4' X 4' X 1' at outlet of dip. Riprap is available on site.
1.00	Construct drainage dip. Install inlet assembly and 10' flume. Construct riprap dissipater at outlet of flume.
1.10	Construct riprap dissipater at culvert outlet. Clean rack and drop inlet. Payment is included in 834(1) Clean Culverts.
1.12	Construct drainage dip.

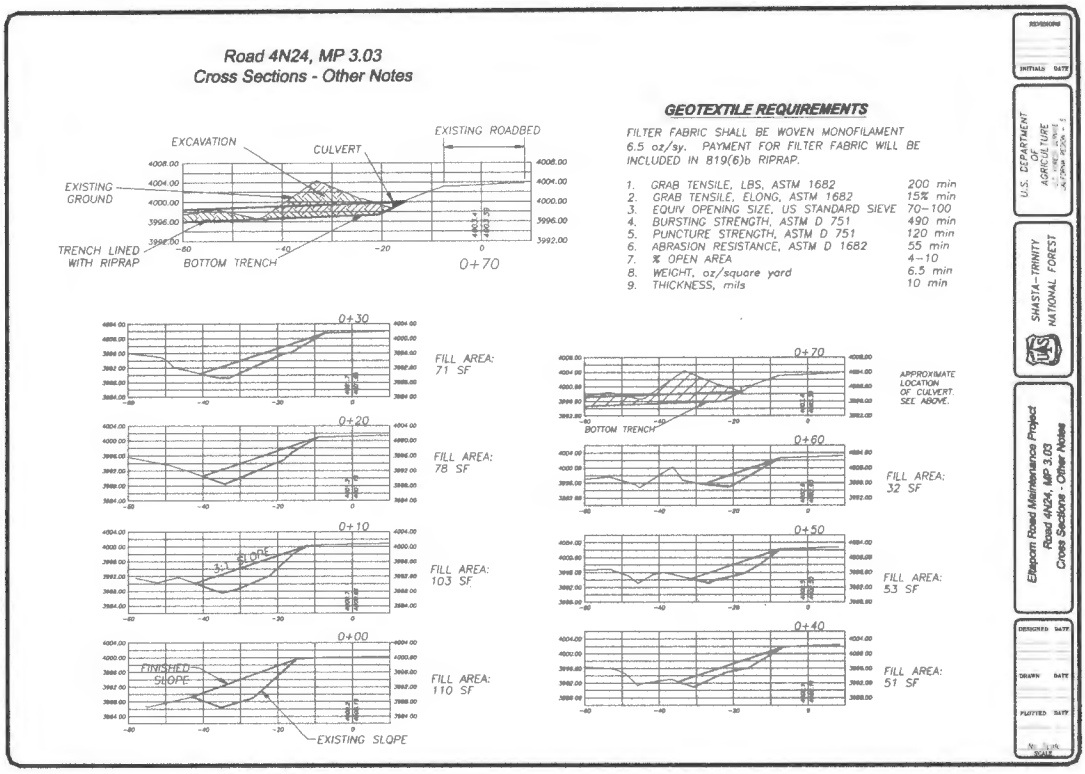
MILEPOST	4N09 ROAD LOG - POWERLINE ROAD
1.15	Construct large rocked dip to allow intermittent stream crossing. Rock with Grid-rolled Spot Surfacing. Finished rocked area shall measure 20' X 20' X 8" deep. Pay Items 813(07)a and 813(04)a apply.
1.25	Construct drainage dip. Install inlet assembly and 20' flume. Construct riprap dissipater at outlet of flume.
1.30	Construct riprap dissipater at culvert outlet.
1.35	Construct drainage dip. Install inlet assembly and 10' flume. Construct riprap dissipater at outlet of flume.
1.55	Construct drainage dip. Install inlet assembly and 10' flume. Construct riprap dissipater at outlet of flume.
1.69 to 1.75	Place 6" depth of Grid-rolled spot surfacing to a finished width of 14'. (80 CY in-place) 813(07)a and 813(04)a apply.
1.70	Remove sediment from culvert inlet, reconstructing catch basin. Use suitable material to construct 12" high berm along inside edge of roadbed. Payment is included in Pay Item 834(1) Clean Culverts. Other material may be sidecast off travelway and away from creek. Repair fill slope with 10 CY Rock. Existing slope shall be stepped before fill placement. Payment for fill slope repair is included in 813(07)a and 813(04)a Spot Surfacing. Construct drainage dip. Install inlet assembly with 10' flume with riprap dissipater. Construct two dips beyond as staked to allow water to cross road at intermittent streams.
1.75	Construct drainage dip. Install inlet assembly and 10' flume. Construct riprap dissipater at outlet of flume.
1.80	Existing ditch on right. Riprap roadside edge of ditch at three flagged locations. See summary sheet for sizes. Move four large rocks from ditch to area away from travel way and ditch. May be used at MP 1.70 at toe of fill slope.
1.90	Construct drainage dip. Install inlet assembly and 10' flume. Construct riprap dissipater at outlet of flume. *Inboard ditch was redesigned at time of contract administration.*
1.95	*Added rolling dip at time of contract administration.*
2.00	Construct drainage dip. Install inlet assembly and 10' flume. Construct riprap dissipater at outlet of flume.
2.30	End of Project

MILEPOST	4N24 ROAD LOG – ELTAPOM ROAD
0.00	Intersection with 5N60
0.00 to 4.70	Blade and shape roadbed. 811(2)a
0.05	Add debris rack to existing 18" drop pipe.
0.49	Construct riprap dissipater at culvert outlet.
3.03	See drawings, Figure X, *During contract administration it was noticed that the existing pipe at the stream crossing was rusted out and water was Flowing through the fill. An upgraded pipe was installed*
4.27	See drawings, Figure X
4.35	Construct drainage dip w/20' lead-off ditch.
4.45	Install inlet assembly and 5' flume.
4.70	End Project at intersection with 4N09.

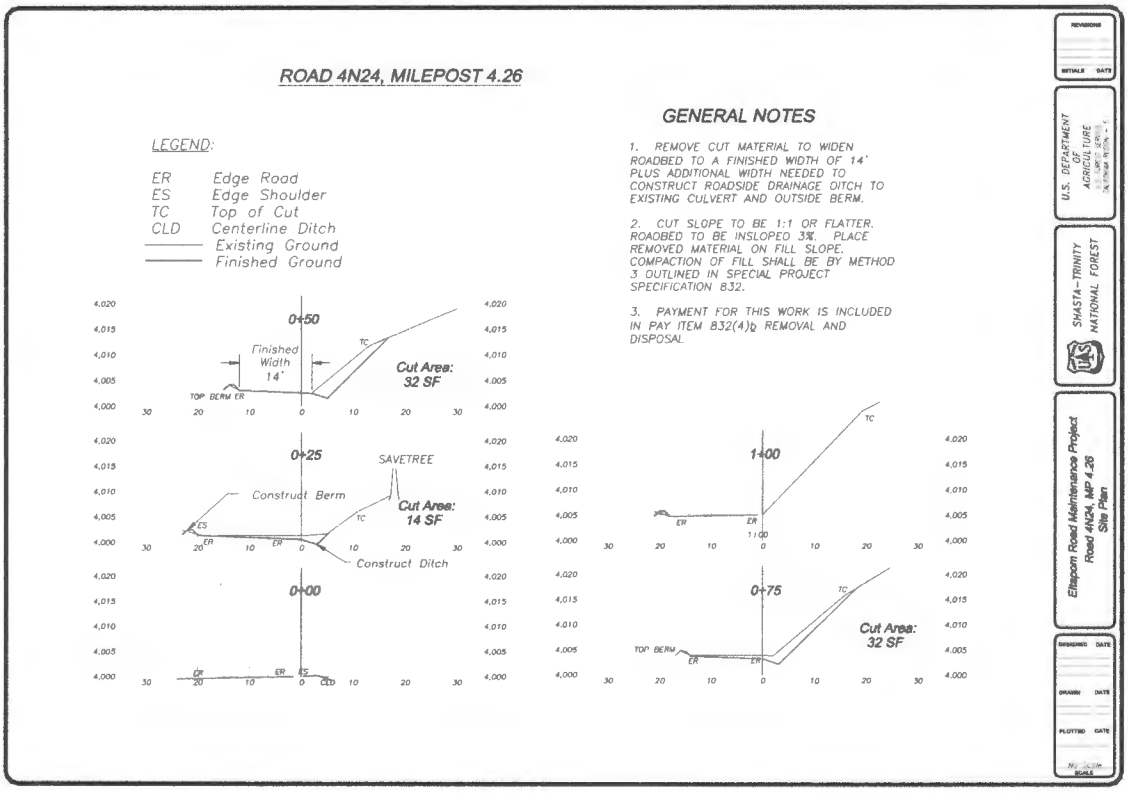
Specific design from Eltapom Road Maintenance contract for road 4N24, milepost 3.03.



Cross section design from Eltapom Road Maintenance contract for road 4N24, milepost 3.03.



Cross section design from Eltapom Road Maintenance contract for road 4N24, milepost 4.26.



MILEPOST	4N48 ROAD LOG - SOUTH CLARK CREEK ROAD
0.00	Intersection with 5N60.
0.00 – 1.70	Blade and shape existing roadbed. Cut roadside vegetation to a finished width of 18' (Roadbed width of 14' plus 2' on each side).
0.10	Intersection with 4N48A (Road to Saddle Rock Pit). Clean culvert.
0.22	Remove and replace 40-foot section of culvert that has separated. Attach to existing down drain.
0.30	Clean culvert.
0.40	Clean culvert.
0.50	Clean culvert.
0.70	Clean culvert.
0.78	Clean culvert
0.81	Clean culvert.
0.85	Clean culvert.
0.90	Clean culvert.
1.00	Clean culvert. Widen roadbed by removing slough material in immediate area. Material to be placed on roadbed in adjacent area.
1.20	Clean culvert.
1.30	Clean culvert.
1.50	Clean culvert.
1.70	End of project.

Appendix 2. TASK B

Road logs from the Salt/Middle Hayfork Road Maintenance contract that shows the work completed at each specific site.

MILEPOST	31N14 ROAD LOG – STAR MINE ROAD
0.00	Intersection with County Road 320, Kingsbury Road. Construct drain dip with rock dissipater to prevent sediment input to Kingsbury Gulch. In addition, construct drain dip with rock dissipater on Kingsbury Road 100-feet past junction with 31N14. Both Dissipaters shall be 10' X 15' X 2'.
0.00 – 0.78	Blade and shape existing roadbed.
0.05	Spur road left. Landing disposal area.
0.09	Construct channel 1' deep x 16' wide x 6' long across roadbed to accommodate rock and retain channel depth. Road grade shall be 6% to 10%. Channel construction is included in Pay Item 819(6). The channel shall be rocked with 1' deep x 16' wide x 6' long Class II riprap (6 to12-inch size). Place 6" depth of pit run material 25' in each direction of channel and over riprap. The high side of dip must be high enough to prevent high creek flows from diverting down the road. Material removed shall be spread uniformly on roadbed in immediate area or as designated by inspector. Clear and clean channel of debris and vegetation, to natural channel depth, downstream of the road crossing
0.10	Spur road right.
0.13	Construct drain dip.
0.21	Construct drain dip. Spur road right.
0.26	Remove fill at outlet and realign draw to the depth of the natural stream depth. Material removed shall be placed uniformly on roadbed in adjacent area or as designated by inspector. Payment for channel construction is included in Pay Item 819(6) Riprap. The channel shall be rocked with 1' deep x 16' wide x 6' long Class II riprap (6 to12-inch size). Place 6" depth of pitrun material 25' in each direction of channel and over riprap.
0.30	Construct drain dip.

MILEPOST	31N14 ROAD LOG – STAR MINE ROAD
0.40	Bike trail right.
0.55	Reshape existing drain dip.
0.55- 0.60	Place 6" depth of pit run material a minimum of 14' wide.
0.57	Construct rock dissipater 4 X 4 X 1-foot at outlet of existing lead off ditch. Reshape leadoff ditch.
0.59	Construct drain dip with leadoff ditch.
0.60	End Rock.
0.70	Construct dissipater at outlet of existing leadoff ditch. Reshape leadoff ditch.
0.72	Spur roads left and right.
0.78	**End of project** at junction of 31N42.

MILEPOST	31N38 ROAD LOG – GOODS GULCH
0.00	Intersection with State Highway 3.
0.00 – 2.91	Blade and shape existing roadbed.
0.04	Construct drain dip.
0.13	Construct drain dip. Install inlet assembly with 20-foot flume. Construct riprap dissipater.
0.27	Repair inlet of 18-inch C.M.P by replacing 5-feet of inlet end with new culvert.

MILEPOST	31N38 ROAD LOG – GOODS GULCH
0.33	Construct drain dip. Install inlet assembly with 20-foot flume. Construct riprap dissipater.
0.40	Construct drain dip to drain into existing inlet assembly and flume.
0.45	Reshape existing drain dip.
0.50	Repair inlet of 18-inch C.M.P by replacing 5-feet of inlet end with new culvert.
0.60	Construct drain dip. Install inlet assembly with 20-foot flume. Construct riprap dissipater.
0.67	Reshape existing drain dip. Install inlet assembly with 20-foot flume. Construct riprap dissipater.
0.70	Construct riprap dissipater at existing flume outlet.
0.72	Construct drain dip with riprap dissipater measuring 4 X 6 X 1.
0.74	Reshape existing drain dip. Construct riprap dissipater at existing flume outlet.
0.79	Construct drain dip. Install inlet assembly with 20-foot flume. Construct riprap dissipater.
0.84	Remove hazard tree to site designated by inspector.
0.86	Construct riprap dissipater at existing flume outlet.
1.05	Reshape existing drain dip.
1.19	Construct drain dip. Install inlet assembly with 20-foot flume. Construct riprap dissipater.
1.43	Reset flume on existing inlet assembly. Construct riprap dissipater at flume outlet measuring 2 X 2 X 2-feet with a 1-foot step at bottom. Spur road

MILEPOST	31N38 ROAD LOG – GOODS GULCH
	intersection.
1.46	Remove inlet assembly and flume. Construct riprap dissipater at culvert outlet. Spur road intersection.
1.60	Repair inlet of 18-inch C.M.P by replacing 5-feet of inlet end with new culvert.
1.69	Construct drain dip. Install inlet assembly with 20-foot flume. Construct riprap dissipater.
1.75	Spot Rock with 6-inch deep pitrun material for a 20-foot length. Finished width shall be 14'.
1.81	Reshape existing drain dip. Construct riprap dissipater at flume outlet.
1.89	Reshape existing drain dip. Construct riprap dissipater at flume outlet. Clean inlet assembly. Cleaning is included in Pay Item 837(1).
1.93	Construct drain dip. Install inlet assembly with 10-foot flume. Construct riprap dissipater.
2.00	Reshape existing drain dip. Clean inlet assembly. Cleaning is included in 837(1).
2.06	Reshape existing drain dip. Remove inlet assembly and berm. Berm removal is included in Pay Item 837(1). Add riprap dissipater at culvert outlet.
2.07	Reshape existing drain dip. Reset inlet assembly. Construct riprap dissipater at flume outlet. Spur road intersection.
2.10	Install inlet assembly with 20-foot flume. Construct riprap dissipater.
2.12	Reset inlet assembly and 20-foot flume. Construct riprap dissipater.
2.13	Construct drain dip. Install inlet assembly and 10-foot flume at culvert. Construct riprap dissipater.

MILEPOST	31N38 ROAD LOG – GOODS GULCH
2.20	Construct drain dip. Install inlet assembly with 20-foot flume. Construct riprap dissipater.
2.28	Reshape existing drain dip. Reset existing inlet assembly and flume.
2.30	Reshape existing drain dip. Construct riprap dissipater at flume outlet.
2.35	Construct drain dip. Install inlet assembly with 10-foot flume. Construct riprap dissipater.
2.45	Reshape roadbed to drain into existing inlet assembly. Payment is included in Pay Item 811 Blading.
2.55	Construct riprap dissipaters on flume and culvert outlets.
2.56	Construct drain dip. Install inlet assembly with 10-foot flume. Construct riprap dissipater.
2.56 to 2.84	Place 6-inches pit run aggregate. Finished width shall be 14'.
2.57	Construct drain dip (no inlet assembly required).
2.63	Construct riprap dissipater at flume outlet.
2.65	Construct drain dip. Install inlet assembly with 20-foot flume.
2.66 to 2.69	Remove berm and outslope roadbed. Payment in included in Pay Item 811 – Blading. Material generated from outsloping will be placed on roadbed in immediate area. Spur road intersection at MP 2.66.
2.69	Construct drain dip at existing inlet assembly. Reset inlet assembly.
2.71	Reshape dip. Reset inlet assembly. Install 10-foot flume and riprap dissipater.

MILEPOST	31N38 ROAD LOG – GOODS GULCH
2.75	Construct drain dip. Install inlet assembly and 10-foot flume. Construct riprap dissipater at outlet of flume and place Class II riprap 2' X 2' X 2' in ditch to intercept drain from ditch.
2.80	Construct drain dip. Install inlet assembly and 10-foot flume.
2.84	Reshape drain dip. Reset inlet assembly.
2.85	Construct drain dip. Install inlet assembly and 20-foot flume. Construct riprap dissipater.
2.89	Construct riprap dissipater at flume outlet. Clean inlet.
2.90	Stabilize cut bank, 170 feet long, 3 feet deep and 3 feet wide with Class II riprap. Construct drain ditch in front of wall.
2.91	Install 18-inch X 40 LF culvert with catch basin across 31N42 with drop inlet. Place riprap 2' X 2' X 2' in ditch to intercept drain from ditch. **End of Project**.