

SECTION B

SURFACE AND POINT SOURCE EROSION

INTRODUCTION

This section examines road and skid trail associated surface and point source erosion delivering sediment into watercourses in the Garcia WAU. The past surface and point erosion estimates are based on field observations, aerial photo interpretation, and a surface erosion model used where field observations were not available. The data that is the basis for the road analysis was collected by the landowner during a 100% road inventory of the Garcia WAU, spanning 1997-2001.

Surface erosion is defined as the removal of soil particles from the surface of the soil. Processes such as rill erosion, sheetwash, biogenic transport (animal burrows, treefall, etc.) and ravel are considered surface erosion. Gullies, road crossing wash-outs, and large erosion features created by erosion from overland flow of water are considered point source erosion. In contrast, the largest discrete erosion events, landslides, are considered mass wasting.

Occurrences that Contribute to Surface and Point Source Erosion in the Garcia WAU

Forest management has been the only land use in the Garcia WAU from aerial photo interpretation it appears that little "modern" forest harvest (modern implies current management activities which could affect present day river conditions) occurred prior to 1952. There was some road building and selective harvest of trees, but, no significant evidence of soil disturbance or compaction affecting soil erosion. The majority of the modern forest management in the Garcia WAU, affecting current surface erosion, began after about 1950.

During the period from 1952-1966 the WAU had the majority of road and skid trail construction take place. New road and skid trail construction is probably the greatest source of surface erosion due to forest management. This is especially true the first two years after road and skid trail construction. After 1966 some new road and skid trail construction occurred. From aerial photo interpretation it is estimated that 82% of the WAU was roaded during the 1950's and 1960's. The remaining approximately 20% of the Garcia WAU was roaded after the 1960's.

The dominant yarding process for the forest harvesting in the Garcia WAU was tractor skidding of logs. In the 1950's and 1960's, as observed from aerial photo interpretation, much of this tractor yarding occurred on very steep slopes, much steeper than current Forest Practice Rules allow. Also, much of the tractor yarding occurred next to stream channels and sometimes right in the watercourse. This type of yarding creates increased surface erosion and when near streams increased sedimentation. Much of this type of tractor yarding would not be performed today due to better cable yarding technology and stricter Forest Practice Rules governing use of ground-based yarding.

The topography of the Garcia River is very steep and dissected. The steepness of many of the slopes combined with loose talus and unconsolidated soils, promotes erosion. A natural erosion process known as ravel is prevalent in the Garcia WAU.

There has been little forest harvesting in the WAU in the 1990's. Field observations show most of the area with good vegetation cover and soil litter cover. Roads and skid trails were the only place where erosion was observed due to forest management activities.

SURFACE AND POINT SOURCE EROSION FROM ROADS METHODS

Surface and point source erosion from roads was determined from field observations, photo interpretation, and a surface erosion model. Aerial photographs from 1952, 1966, 1978 and 1996 were used. The photo interpretation provided the time period a road was constructed or first used, locations of roads used in the past but currently abandoned, and helped identify roads not on any of the current area maps. The development of the data for evaluation of the Garcia WAU road network occurred over several field efforts. The first observations in 1997 occurred prior to a complete road inventory, now used by MRC. This initial observations are the basis for the past delivered sediment estimates. Second, in 1997-1998 a road inventory was conducted which inventoried the road infrastructure. Finally an evaluation of controllable erosion sites from roads in the Garcia WAU was conducted during the summer of 2001. The controllable erosion evaluation was conducted separately because at the time the road inventory was performed the North Coast Regional Water Quality Control Board (NCRWQCB) had not developed the controllable erosion standard.

For evaluation of past surface and point source erosion most of the roads in the Garcia WAU had field observations. The field observation consisted of traveling the road, identifying and inventorying all deliverable surface and point source erosion and making a judgment on potential future erosion. Deliverable surface and point source erosion was defined as rill or gully erosion which was observed within 200 feet of a watercourse or which showed evidence of eroding directly into a watercourse. Length, width and depth measurements were made on the deliverable point source erosion of the road. These measurements were used to calculate the volume of point source erosion delivered from the road. The volume of erosion was converted to a weight assuming a soil bulk density of 100 lbs./cubic foot. Sheetwash erosion from roads was not estimated in the field, this was estimated using the predictive equations in the Watershed Analysis Manual (Version 4.0, Washington Forest Practices Board).

Surface erosion from the road surface is influenced by the road type (mainline, active secondary, etc.), amount of traffic, the type of road surface material and the amount of precipitation (Reid, 1981). The Watershed Analysis Manual (Version 4.0, Washington Forest Practices Board) provides relationships based on these factors to estimate the amount of surface erosion from different road types and conditions. Field investigations determined the length of the road delivering sediment to a watercourse, the road surface material and the type of road (mainline, active secondary, abandoned, etc.) to aid in the surface erosion calculations.

The following parameters were used to calculate surface erosion from roads in the Garcia WAU (Table B-1). The highest basic erosion rate of 110 tons/acre/year for roads less than 2 years old and 60 tons/acre/year for roads greater than 2 years old, due to the highly faulted, folded and uplifted sedimentary geology of the WAU was used. The road cutslopes and fillslopes had approximately 50% vegetation cover giving a cover factor of 0.37. The majority of hauling on roads occurs during drier times of year (i.e. late spring, summer and early fall). Only about 15% of the road use occurs during wet

time periods. Because of this a lower traffic precipitation factor was used than a factor based on the annual rainfall at the Garcia River (about 58 in. per year). In this case a factor weighted toward 85% traffic in the less than 1200 mm (47 in.) per year category and 15% traffic in the 1200-3000 mm (47-118 in.) per year category was used.

The roads in the Garcia WAU are natural surface roads. However, there is a considerable rock component in the cut banks of these roads. During cut and fill road building a lot of this rock is placed in the road surface. Therefore most of our estimates of the road surface were based on the mean between a natural and 2-6 in. rock road, unless observed differently. When the length of road delivering sediment to a watercourse was not determined in the field, the average delivery length for each watercourse crossing was used. The average delivery length for each road watercourse crossing from our field observations was determined to be approximately 300 feet.

The estimated amount of surface erosion was calculated for each time period (1952-1966, 1967-1978, and 1979-1997). It is assumed that for main haul roads in each time period the road had heavy use for 5 years, and light use for the remaining time. For the secondary roads it is assumed that in each time period the roads had heavy use for 2 years and were inactive for the remaining time.

Table B-1. Parameters Used for Calculation of Surface Erosion from Roads in the Garcia WAU.

Road Class	Base Erosion Rate (tons/ac/yr)	Cover Factor for Cut and Fill Slopes	Surface Material Factor for Road Tread	Traffic/Precipitation Factor	Time in Heavy Use Factor (yrs.)
Mainline <2 yrs old >2 yrs old	110 60	0.37	0.75*	24.5	5
Secondary <2 yrs old >2 yrs old	110 60	0.37	0.75*	2.3	2
Temporary <2 yrs old >2 yrs old	110 60	0.37	0.75*	1	2
Abandoned	60	0.37	0.75*	0.025	0

* - Most commonly used factor. In some cases this factor based on field observations of road.

The estimated road surface erosion from the model was added to the field measurements for total erosion from each road. The field measurements were assumed to be primarily from the most recent time period (1979-1997). However, in some cases where the field measured erosion appeared to be from old events, the field erosion was averaged out over two time periods (1967-1978 and 1979-1997). The surface erosion totals for each road is used in the sediment budget for the Garcia WAU and to delineate road erosion hazard classes.

The road inventory conducted in 1997-1998 utilized Geographic Positioning System (GPS) to accurately map road location and each individual feature on the roads. On road segments the roads permanent class, surface, and grade have been inventoried. The individual features that were inventoried and mapped using GPS are culverts, watercourse crossings (fords, bridges), landings, gates, erosion sites (eroding side-cast fill, gullies, etc.) and rockpits with site numbers assigned. At each of the individual sites identified a suite of information about the sites was collected.

At each site in the inventory a determination of controllable erosion was made in 2001. Controllable erosion is defined as soil that could potentially deliver to a watercourse in the next 40 years (the duration of a TMDL), is human created, and can be reasonably controlled by human actions. Typically, controllable erosion is a measure of the fill material from a road that could erode if a road feature is left un-maintained or fails in the next 40 years. The controllable erosion amount is the volume of soil that can be controlled with high design standards for a road feature (i.e. watercourse crossing, side-cast fill, etc.).

At each controllable erosion site a determination of the immediacy of treatment was made (low, moderate, high). An evaluation of the relative sediment delivery potential was also made (low, moderate, high). These variables along with a possible water diversion potential for a road feature will be used to make the determination of priority for road erosion control work and describe what erosion will be controlled by treating the site.

Each road in the Garcia WAU is assigned an erosion hazard class. The erosion hazard class is used to classify the roads in the WAU by their current and potential erosion hazard. The erosion hazard class was determined by summing the total amount of erosion and estimated potential erosion from the road, with and without equation calculated amounts, and dividing that amount by the length of the road. This resulted in two erodibility factors for the road. One factor was with erosion strictly from field observations considered (without equation predicted amounts), the other factor from the total erosion estimated considered (with equation predicted erosion amounts). The road's erosion hazard class was determined by ranking the roads from high to low by their erodibility factors. The roads with the highest of both erodibility factors were given a high erosion hazard classification. The roads with medium ranked erodibility factors were given a moderate erosion hazard classification. The roads with low erodibility factors were given a low erosion hazard classification. A description of what each erosion hazard class means is found in the results section.

SURFACE AND POINT SOURCE EROSION FROM ROADS – RESULTS

The results by time period for the road erosion calculations are summarized in Chart B-1 and Table B-2, the road density in the Garcia WAU is summarized in Table B-3. The sediment delivery rate for roads in the planning watersheds shows a slight reduction through time. The higher sediment delivery rates occurring during the 1952-1966 and 1967-1978 time periods. The higher sediment delivery rates occur primarily because most of the road construction in the WAU occurred during these early time periods. New roads have higher sediment delivery rates because the surface and fill have not properly compacted (or "seasoned") making the road prism much more erosive. This higher rate of surface erosion from new roads typically occurs for the first two years after construction.

Chart B-1. Road Sediment Delivery for the Garcia WAU for Three Time Periods during 1952-1997.

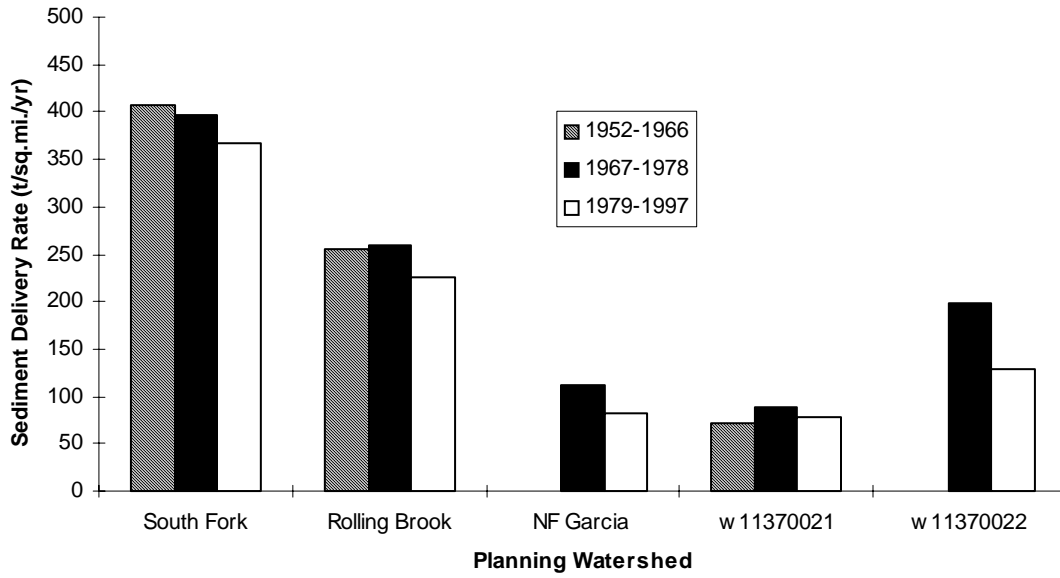


Table B-2. Road Sediment Delivery and Road Sediment Delivery Rates for Three Time Periods in the Garcia River Watershed Analysis Unit.

Road Sediment Delivery

Planning Watershed	Hydrologic Unit	1952-66 (tons)	1966-78 (tons)	1978-96 (tons)	Total (tons)
South Fork	South Fork	24720	21177	30820	76717
	Main Stem Tributaries	20841	16996	24935	62772
	Total PLWS	45561	38173	55755	139489
Rolling Brook	Rolling Brook	6607	5839	7613	20059
	No Name	3123	2861	4133	10117
	Lee Creek	2871	2657	3331	8859
	Hutton Gulch	1881	1298	2077	5255
	Main Stem Tributaries	11169	9570	13635	34375
	Total PLWS	25651	22225	30789	78665
NF Garcia	Total PLWS	0	809	930	1739
w11370021	Total PLWS	1623	1737	2417	5777
w11370022	Total PLWS	0	1053	930	1983

Road Sediment Delivery Rate (Tons/Sq.Mile/Yr.)

Planning Watershed	Hydrologic Unit	1952-1966 (t/sq mi/yr)	1966-1978 (t/sq mi/yr)	1978-1997 (t/sq mi/yr)	Total (t/sq mi/yr)
South Fork	South Fork	458	449	416	437
	Main Stem Tributaries	382	332	320	340
	Total SF PLWS	407	398	367	387
Rolling Brook	Rolling Brook	225	214	182	203
	No Name	150	142	136	141
	Lee Creek	293	316	250	281
	Hutton Gulch	261	154	182	195
	Main Stem Tributaries	383	378	342	371
	Total RB PLWS	256	259	226	244
NF Garcia	Total PLWS	0	112	82	64
w11370021	Total PLWS	71	88	78	78
w11370022	Total PLWS	0	198	129	116

Table B-3. Road Density for MRC Ownership in Select Planning Watershed for the Garcia WAU.

Planning Watershed	Rolling Brook	South Fork Garcia River	Unnamed 113.70021	Unnamed 113.70022
Road Density (mi./sq. mi.)	6.9	6.7	4.3	5.8

The field observation of erosion in most cases only shows recent erosion on roads. Road grading, maintenance and time often removes erosion evidence which can be seen in the field. Because of this the field observations of surface erosion on the roads in the WAU were included in the recent time period (1979-1997). In a few instances the field observed erosion was included in the both the 1966-1978 and 1979-1997 time periods, but only if the erosion sources were very large and were judged to have occurred over a long time frame. Because the majority of the field measured erosion could only be assumed delivered during the recent time period, this component of the erosion totals is missing from the first two time periods 1952-1966 and 1967-1978. The field observed erosion increased the total erosion amounts substantially in the recent time period, sometimes over 100 percent. If field measurements were available for the 1952-1966 and 1967-1978 time periods the erosion totals presented would probably be much higher. This would further contrast the difference between the road related sediment delivery of the early time periods and the recent time period. The early time periods would have a much larger surface erosion total.

The erosion hazard classification for each road in the WAU is presented on Map B-1. The following are the definitions for each road erosion hazard class.

High Road Erosion Hazard Class - These roads have the highest amount of recent deliverable surface erosion to watercourses and a high potential for future deliverable erosion. These roads can be either active, abandoned or closed. Often roads in this class are close to watercourses creating a high sediment delivery potential. Erosion is typically from problem areas such as road watercrossing wash-outs, poor road drainage, plugged road watercrossings, water diverted down the road surface, culverts not fitted with downspouts, etc. Active roads in this class should get the highest priority for maintenance or improvements. Closed roads in this class will need improvements before opening again. Opening abandoned roads in this class should be avoided.

Moderate Road Erosion Hazard Class - These roads have moderate amounts of recent deliverable surface erosion to watercourses and potential for future deliverable erosion. These roads can be either active, abandoned or closed. Erosion problems on roads in this class can usually be handled with good road maintenance. Erosion is typically from problem areas such as poor road drainage, water diverted down the road surface, culverts not fitted with downspouts, and an occasional plugged culvert or watercrossing wash-out. Active roads in this class should be a priority for maintenance. Closed or abandoned roads in this class will need some improvements before opening again.

Low Road Erosion Hazard Class - These roads have low amounts of recent deliverable surface erosion to watercourses and low potential for future deliverable erosion. These roads can be either active, abandoned or closed. Active roads in this class do not need to be a priority for maintenance. Closed or abandoned roads in this class will need only some improvements before opening again.

Controllable (point source) erosion sites were identified and prioritized in the Garcia WAU. In the Garcia WAU 49 controllable erosion sites have high treatment immediacy and 63 controllable erosion

sites have moderate treatment immediacy. In addition to these controllable erosion sites 79 culverts in the Garcia WAU have a diversion potential. These diversion potential sites need to be considered a high priority for road improvement as they can represent a significant potential point source erosion hazard. The site identification, treatment immediacy and amount of controllable erosion estimated are found in Appendix B of this report. Total controllable erosion for road point sources in the Garcia WAU is estimated to be 128,000 cubic yards. This controllable erosion is represented by 29,400 cubic yards in high treatment immediacy sites, 13,200 cubic yards in moderate treatment immediacy sites, and 85,400 in low treatment immediacy sites.

Since completion of the road inventory considerable road erosion control work has been conducted in the Garcia WAU. In some cases road segments have been decommissioned such that they will not be used again. A summary of this work from 1998-2001 and the amount of erosion controlled are presented in Tables B-4 and B-5.

Table B-4. Erosion Controlled by Road Number and Year for the Garcia WAU, 1998-2002.

Road Number	Year	Controlled Erosion (cu yds)	Road Number	Year	Controlled Erosion (cu yds)
L-002	1998	730	J-018	2000	535
L002-02	1998	3055	J	2000	188
L-002-04	1998	3365	L	2000	956
H	1998	810	T	2000	167
G-005-03*	1998	465	B	2000	10337
M-004	1999	1240	G-006	2000	3975
M-004-01	1999	110	G-008	2000	2623
M-030	1999	150	G-005-01*	2000	7713
M	1999	130	G-003*	2001	2349
G*	1999, 2001	1080, 3700			

* - portion of road abandoned

Total Amount of Potential Erosion Controlled in 1998 = 8,425 cubic yards
 Total Amount of Potential Erosion Controlled in 1999 = 2,760 cubic yards
 Total Amount of Potential Erosion Controlled in 2000 = 28,842 cubic yards
 Total Amount of Potential Erosion Controlled in 2001 = 3,700 cubic yards

Total Amount of Potential Erosion Controlled 1998-2001 = 43,734 cubic yards

Table B-5. Summary of Treatments for the Road Associated Erosion Control Work Performed in the Garcia WAU, 1998-2002.

Treatment Type	Sites
Rolling dips installed.	122
Removed road diversion potential.	10
Replaced culvert to upgrade or increase size.	11
Culvert removal to install bridge.	3
Removed culvert and installed rocked ford.	9
Removed culvert and restored natural channel grade.	12
Out-slope landing or road to improve drainage.	19
Removed dipped crossing and restored channel to natural grade.	4
Remove fish passage barrier.	1
Upgraded dipped crossing to rocked ford.	15
Rocked inboard ditch.	2
Removed perched fill material.	37
Miles of road tread rocked.	2.0 miles
Miles of road abandoned.	2.3 miles

A considerable amount of the erosion controlled in the Garcia WAU was in the South Fork Garcia River (roads H, G, B, G-006, G-008, G-005-01, G-003). Most of these roads were associated with a cooperative restoration project initiated by Trout Unlimited. This project involved the cooperation and funding of the California Department of Fish and Game, United States Fish and Wildlife Service, the Mendocino County Resource Conservation District, and Mendocino Redwood Company.

SURFACE AND POINT SOURCE EROSION FROM SKID TRAILS METHODS

Surface erosion from skid trails was determined from field observations, photo interpretation, and a surface erosion model. Aerial photographs from 1952, 1966, 1978, 1987 and 1996 were used to identify skid trail activity. To determine the surface erosion delivering sediment from skid trails estimates were based on the density of skid trail watercourse crossings per unit area. From aerial photographs the average density of skid trail watercourse crossings per unit area was determined. An average skid trail delivery length of 300 feet per watercrossing, determined from field observations of the average road delivery length, was multiplied by the number of crossings per unit area. The harvest area which utilized skid trails was then determined from aerial photographs and conversations with area foresters. The percentage of harvest area utilizing skid trails (Table B-6) was then multiplied times the deliverable length of skid trails per unit area to yield the total deliverable length of skid trails per time period.

Table B-6. Percent Area Yarded by Skid Trails for the Garcia WAU by Time Period.

<u>1952-1966</u>	<u>1967-1978</u>	<u>1979-1997</u>
80%	25%	80%

The skid trail practices were observed to be different in the 1966 aerial photographs due to an old style practice of utilizing skid trails next to or directly in stream channels. From field observations we

estimated that in areas with skid trails next to or directly in stream channels the sediment delivery rate is 0.92 tons per channel foot. From photo interpretation it was determined that the South Fork planning watershed had 4.1 miles of skid trails next to or directly within the channel. For Rolling Brook we estimated 3.6 miles of skid trails next to or directly within the channel. This accelerated rate of skid trail sediment delivery was added to the sediment delivery estimated by the predictive equations for the early time period (1952-1966). Better forest harvesting practices after this time period eliminated the use of stream channels for skid trail placement.

The Watershed Analysis Manual (Version 4.0, Washington Forest Practices Board) provides relationships to estimate the amount of sediment delivery from different road types and conditions. For a complete description of all of the parameters used in calculating surface erosion from roads see the Watershed Analysis Manual (Version 4.0, Washington Forest Practices Board). The temporary road parameters shown in Table B-1 were used for estimating skid trail sediment delivery with the exception that skid trails have a narrower width in the erosion calculations.

An inventory of controllable erosion sites from skid trails in the Garcia WAU was conducted in 2003. MRC utilized a combination of aerial photograph interpretation and field observations for the inventory. Aerial photographs taken in 1978 (scale 1:15840), 1987 (1:12000) and 2000 (1:13000) were utilized. A substantial portion of the skid trails in the Garcia WAU were opened and used in the 1980s. Therefore, the best view of the skid trail network in the Garcia WAU was found in the 1987 aerial photographs. The majority of the aerial photograph interpretation for the skid trail inventory was performed with the 1987 photographs. The 1978 and 2000 aerial photographs were used when the 1987 aerial photographs did not show recent skid trail activity. The 2000 aerial photographs showed the least amount of skid trail activity however they were useful for confirming some of the actively eroding controllable erosion sites. Typically chronic erosion problems are observed in the 2000 aerial photographs due to the inability of vegetation to establish on the sites.

The process for interpretation of the aerial photographs for skid trail controllable erosion was determined through a trial survey of aerial photographs combined with field visits. In this initial trial effort skid trail watercourse crossings or skid trails adjacent to watercourses were mapped from aerial photographs for a variety of locations, several hillslope morphologies (swales, planar slopes, open canyons, incised canyons), and varying watershed areas above skid trail watercourse crossings. Based on this initial field and aerial photograph interpretation it was learned that in swales, planar slopes and open canyons skid trail controllable erosion sites were not found. Where skid trails were directly adjacent to or crossed incised canyons with a moderate watershed area controllable erosion sites were often found. This defined the process for the skid trail inventory for the Garcia WAU.

Where the likelihood for a controllable erosion site from skid trails was identified from an aerial photograph it was mapped and then visited in the field. The field visit determined if the site was indeed a controllable erosion site. If the site was found to be a controllable erosion site where feasible a treatment was suggested and the controllable erosion volume was determined.

SURFACE AND POINT SOURCE EROSION FROM SKID TRAILS RESULTS

The results by time period for the skid trail sediment delivery estimates are summarized in Table B-7 and Chart B-2. The sediment delivery rate for skid trails in the planning watersheds shows the highest sediment delivery rate occurring during 1952-1966. The higher sediment delivery rate occurs because the majority of the skid trail construction in the WAU occurred during this early time period, there was

more area harvested and some of the skid trails were next to or directly in watercourses. Future skid trail sediment delivery rates will be much lower than any of the current rates because current Forest Practice Rules require cable yarding on steep ground. Much of the skid trail erosion in the WAU came from skid trail use on steep terrain before the current Forest Practice Rule restrictions. Furthermore, skid trail operation next to or directly in watercourses is restricted.

Chart B-2. Skid Trail Sediment Delivery for L-P Ownership in each Planning Watershed of the Garcia WAU for Different Time Periods.

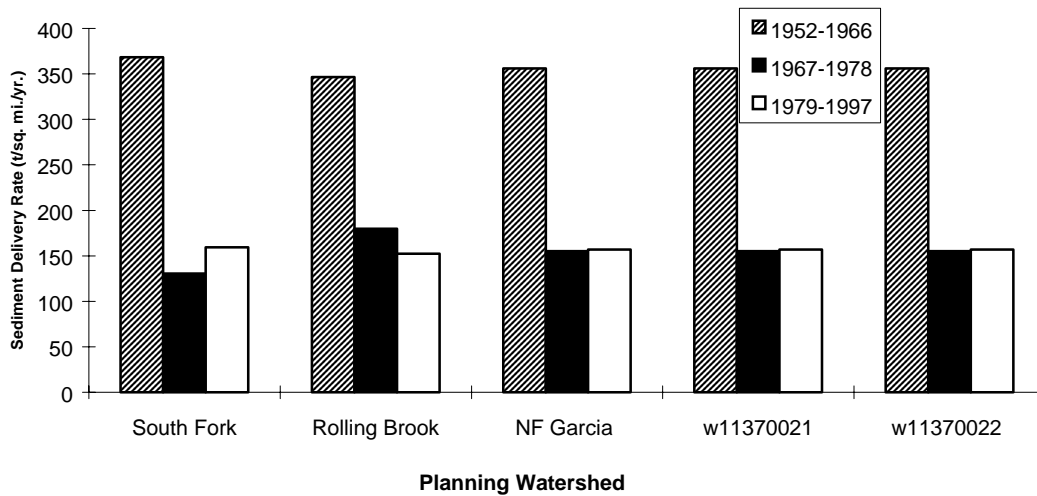


Table B-7. Skid Trail Sediment Delivery and Skid Trail Sediment Delivery Rates for Different Time Periods in the Garcia River Watershed Analysis Unit.

Skid Trail Sediment Delivery (tons)

Planning Watershed	Hydrologic Unit	1952-1966 (tons)	1966-1978 (tons)	1978-1997 (tons)	Total (tons)
South Fork	South Fork	20208	6132	11863	38203
	Main Stem Tributaries	21033	6382	12347	39762
	Total PLWS	41240	12514	24211	77965
Rolling Brook	Rolling Brook	10771	4785	6425	21982
	No Name	3475	1544	2073	7091
	Lee Creek	7992	3550	4767	16309
	Hutton Gulch	2780	1235	1658	5673
	Main Stem Tributaries	9729	4322	5804	19855
	Total PLWS	34747	15436	20727	70910
NF Garcia	Total PLWS	3090	1153	1849	6093
w11370021	Total PLWS	8174	3050	4892	16116
w11370022	Total PLWS	1894	707	1134	3734

Table B-7 continued.

Skid Trail Sediment Delivery Rate (Tons/Sq.Mile L-P Owned/Yr.)

Planning Watershed	Hydrologic Unit	1952-1966 (t/sq mi/yr)	1966-1978 (t/sq mi/yr)	1978-1997 (t/sq mi/yr)	Total (t/sq mi/yr)
South Fork	South Fork	370	131	160	218
	Main Stem Tributaries	366	130	159	216
	Total PLWS	368	130	159	217
Rolling Brook	Rolling Brook	350	181	154	222
	No Name	155	80	68	98
	Lee Creek	815	423	358	518
	Hutton Gulch	331	172	145	210
	Main Stem Tributaries	337	175	148	214
	Total PLWS	347	180	152	220
NF Garcia	Total PLWS	356	155	157	220
w11370021	Total PLWS	356	155	157	220
w11370022	Total PLWS	356	155	157	220

From the inventory of controllable erosion sites for skid trails 18 controllable erosion sites were identified representing a total of 515 cubic yards (Table B-8).

Table B-8. Controllable Erosion Sites on Skid Trails in the Garcia WAU
(see Map Plate 3 for locations).

Site ID #	Controllable Volume (yd3)	Longitude	Latitude
1	18	-123.585	38.9062
2	36	-123.583	38.9065
3	30	-123.568	38.89531
4	25	-123.568	38.89475
5	15	-123.551	38.89592
6	20	-123.569	38.88742
7	15	-123.56	38.88394
8	32	-123.561	38.88509
9	40	-123.557	38.87708
10	22	-123.551	38.86758
11	30	-123.545	38.87091
12	12	-123.544	38.85547
13	100	-123.543	38.85442
15	20	-123.537	38.84341
14	50	-123.538	38.84391
17	10	-123.526	38.84097
16	30	-123.527	38.84156
18	10	-123.54	38.83397

Surface Erosion of Mass Wasting Scarps

One other component of surface erosion which was identified in the Garcia WAU was the surface erosion of the soil exposed from mass wasting. The scarps of mass wasting events leaves exposed soil which easily erodes. This secondary erosion following the mass wasting event will continue to occur until the scarp gets ground cover from vegetation growth.

The mass wasting inventory from the mass wasting module was used as a database. From this inventory the surface area of each landslide was determined. Only landslides delivering sediment to watercourses were included. Surface erosion from the mass wasting event scarps was calculated assuming the same rate as that which a cutslope on a road is subject to. The cutslope erosion rate was determined from the Watershed Analysis Manual to be 60 tons/acre/yr (Version 3.0, Washington Forest Practices Board). The amount of surface erosion from mass wasting scarps was estimated by multiplying the erosion rate by the surface area of each landslide. This was done for each of our analyzed time periods (pre- 1952, 1952-1966, 1967-1978, 1979-1997). Mass wasting scarps were assumed to re-vegetate in 10 years, based on field observations in the Garcia WAU. This re-vegetation was assumed to be gradual, so the rate of erosion would gradually decrease over the 10 years. To compensate for this the erosion amount calculated in each time period for the mass wasting scarps was decreased by 10 percent for 10 ten years. The sum of the ten year estimate became the total surface erosion from the mass wasting scarps in each time period. The total amount and rate of surface erosion from mass wasting scarps is presented in Table B-9.

Table B-9. Surface Erosion from Mass Wasting Scarps in the Garcia WAU by Time Period.

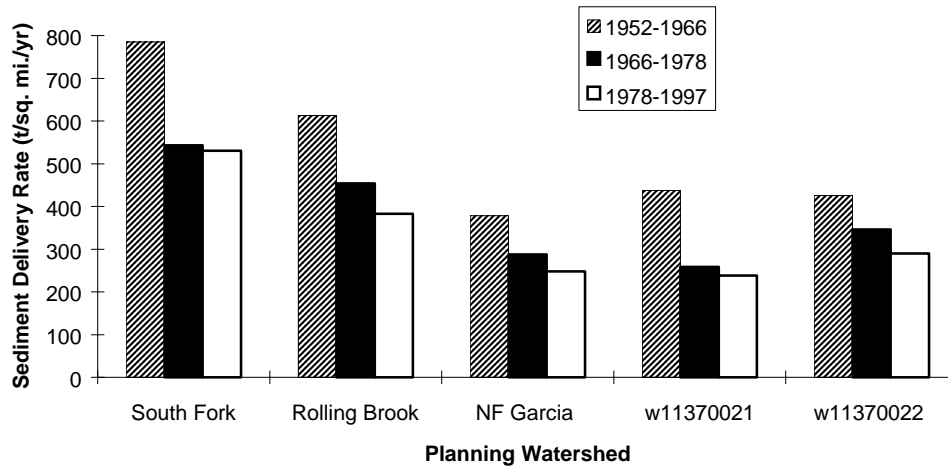
Time Period	Pre-1952	1952-1966	1967-1978	1979-1997
Total Scarp Erosion (tons)	957	2035	2222	1359
Erosion Rate (T/sq.mi./yr)	10	10	15	4

The rate of surface erosion from mass wasting scarps is a component of the deliverable sediment in the Garcia WAU. However, it is found to be one of the smallest components (4-15 tons/sq. mi./yr.) when compared to background sediment rates (63-479 tons/sq. mi./yr.) and sediment from road sources (64-387 tons/sq. mi./yr.). Though a minor component in the overall amount of sediment delivered it represents a component of deliverable sediment which must be considered when allocating the source of sediment in the WAU.

Total Surface Erosion

The total rate of sediment delivered from road, skid trail and mass wasting scarp surface erosion by planning watershed is presented in Chart B-3.

Chart B-3. Rate of Total Sediment Delivered Surface Erosion Sediment Yield by Planning Watershed of the Garcia WAU.



The surface erosion rate delivered to watercourses shows a reduction through time (Chart B-3), with the lowest rate of sediment delivery in the current time period 1979-1997. The South Fork of the Garcia River and the Rolling Brook planning watersheds have the highest amount of sediment delivery in the Garcia WAU. In 1973 the state of California enacted Forest Practice Rules which regulated forest harvesting. These Forest Practice Rules exclude tractor yarding on steep slopes, which was a common practice in the Garcia WAU in the 1950s and 1960s. Furthermore, much of the road construction in the Garcia WAU occurred during the 1950s and the 1960s. The first couple of years following road construction the surface erosion rates from the roads are the highest. The lower amount of current road construction and more cable yarding in the Garcia WAU are the primary reasons for the lowering of the surface erosion rates over time.

Most of the roads in the Garcia WAU are providing a significant amount of surface erosion. The roads in the Garcia WAU were constructed before the enactment of the California Forest Practice Rules with standards of design and construction at a lower level than would be currently acceptable. These road constructed with lower standards are still creating surface erosion problems today.

CONCLUSIONS

Road related sediment delivery was a high component of sediment delivered to watercourses with rates of delivery ranging from 64-387 tons/sq. mi./yr. Skid trail sediment delivery was high as well, particularly during the period 1952-1966. Skid trail related sediment delivery ranged from 70-370 tons/sq. mi./yr. The skid trail sediment delivery in the future will be much lower than the past amounts because of stricter Forest Practice Rules and better forest management practices. Surface erosion from mass wasting scarps is a minor component in the overall amount of sediment delivered with sediment delivery rates from 4-15 tons/sq. mi./yr. However, it represents a component of deliverable sediment which needed to be considered when allocating the source of sediment in the WAU.

The rate of total sediment delivered by surface erosion shows a reduction through time. The lowest rate of sediment delivery is during the current time period 1979-1997.

The Garcia WAU was found to have approximately 128,000 cubic yards of controllable erosion associated with roads and approximately 515 cubic yards associated with skid trails. Roads had 49 controllable erosion sites with high treatment immediacy and 63 controllable erosion sites have moderate treatment immediacy. In addition to these controllable erosion sites 79 culverts in the Garcia WAU have a diversion potential. The skid trail controllable erosion was associated with 18 sites.

Literature Cited

Reid, L. 1981. Sediment production from gravel-surfaced forest roads, Clearwater Basin, Washington. M.S. Thesis, University of Washington. 247 pp.

Washington Forest Practice Board. 1995. Standard methodology for conducting watershed analysis. Version 3.0. WA-DNR Seattle, WA.

Appendix B
Surface Erosion Module Appendix

Garcia River Watershed Analysis Unit

Map B-1 Road Erosion Hazard Classifications

This map presents an erosion hazard rating for the MRC roads. High erosion hazard roads have the highest amount of recent deliverable surface erosion to watercourses and a high potential for future deliverable erosion. Active roads in this class should get the highest priority for maintenance or improvements. Closed roads in this class will need improvements before opening again. Opening abandoned roads in this class should be avoided. Moderate erosion hazard roads have moderate amounts of recent deliverable surface erosion to watercourses and potential for future deliverable erosion. Active roads in this class should be a priority for maintenance. Closed or abandoned roads in this class will need some improvements before opening again. Low Erosion Hazard roads have low amounts of recent deliverable surface erosion to watercourses and low potential for future deliverable erosion. These roads can be active, abandoned or closed. Active roads in this class do not need to be a priority for maintenance. Closed or abandoned roads in this class will need only some improvements before opening again.

Erosion Hazard Rating

- Low
- Moderate
- High

Transportation

- Paved Road
- Rocked Road
- Native Road
- Jeep Trail

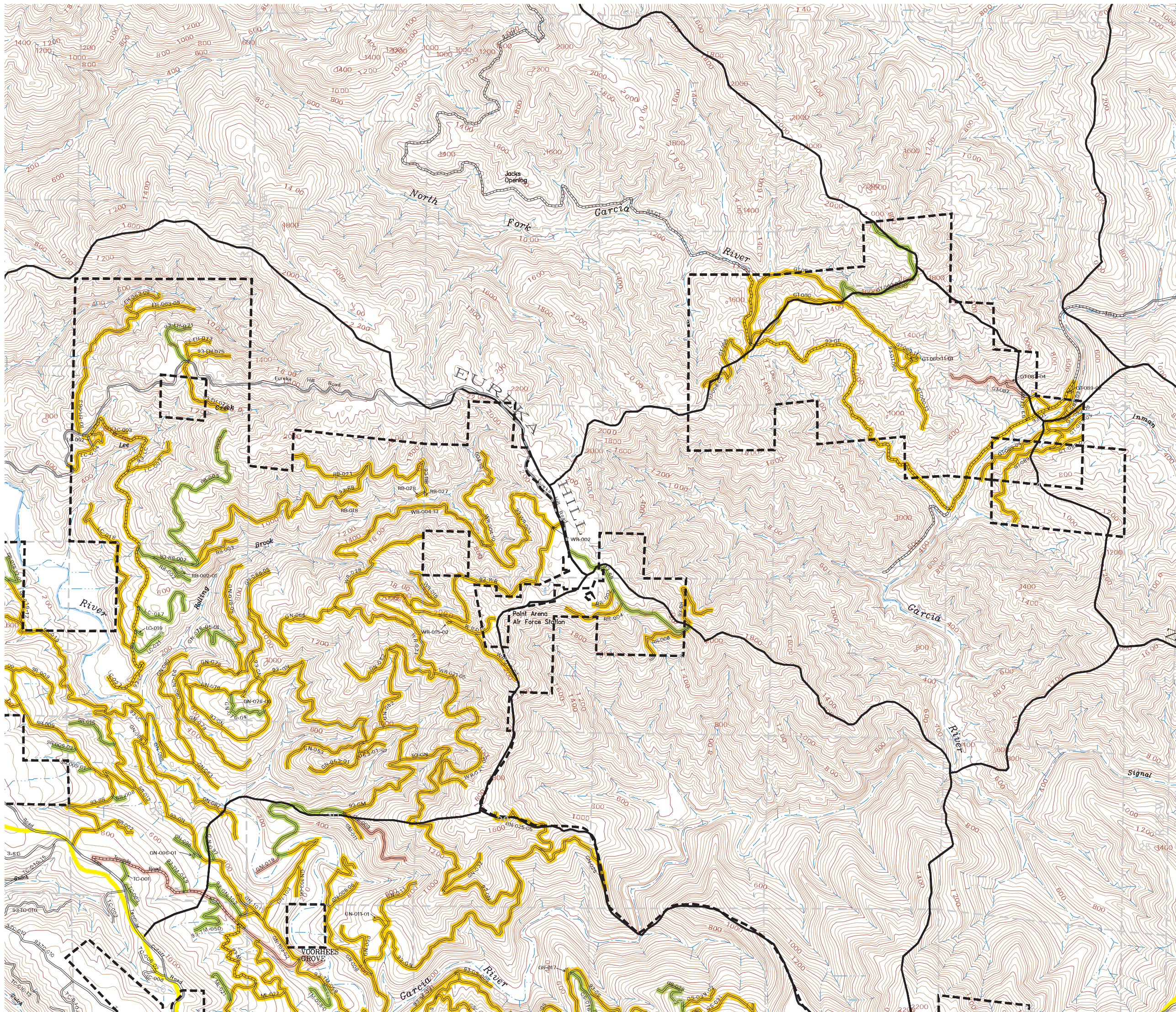
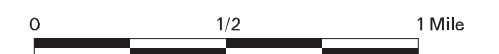
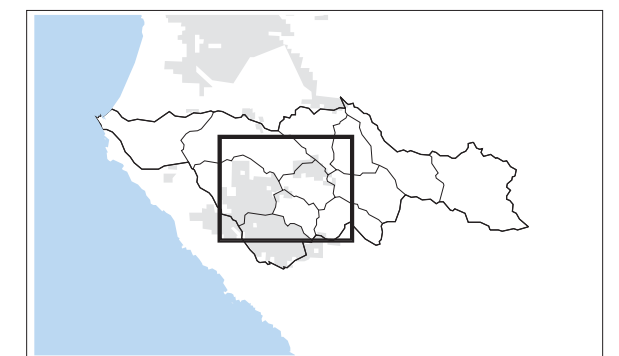
MRC Ownership

- MRC Ownership
- Planning Watershed Boundary
- Garcia River Watershed Boundary

Flow Class

- Class I
- Class II
- Class III

Sheet 1



Garcia River Watershed Analysis Unit

Map B-1 Road Erosion Hazard Classifications

This map presents an erosion hazard rating for the MRC roads. High erosion hazard roads have the highest amount of recent deliverable surface erosion to watercourses and a high potential for future deliverable erosion. Active roads in this class should get the highest priority for maintenance or improvements. Closed roads in this class will need improvements before opening again. Opening abandoned roads in this class should be avoided. Moderate erosion hazard roads have moderate amounts of recent deliverable surface erosion to watercourses and potential for future deliverable erosion. Active roads in this class should be a priority for maintenance. Closed or abandoned roads in this class will need some improvements before opening again. Low Erosion Hazard roads have low amounts of recent deliverable surface erosion to watercourses and low potential for future deliverable erosion. These roads can be active, abandoned or closed. Active roads in this class do not need to be a priority for maintenance. Closed or abandoned roads in this class will need only some improvements before opening again.

Erosion Hazard Rating

- Low
- Moderate
- High

Transportation

- Paved Road
- Rocked Road
- Native Road
- Jeep Trail

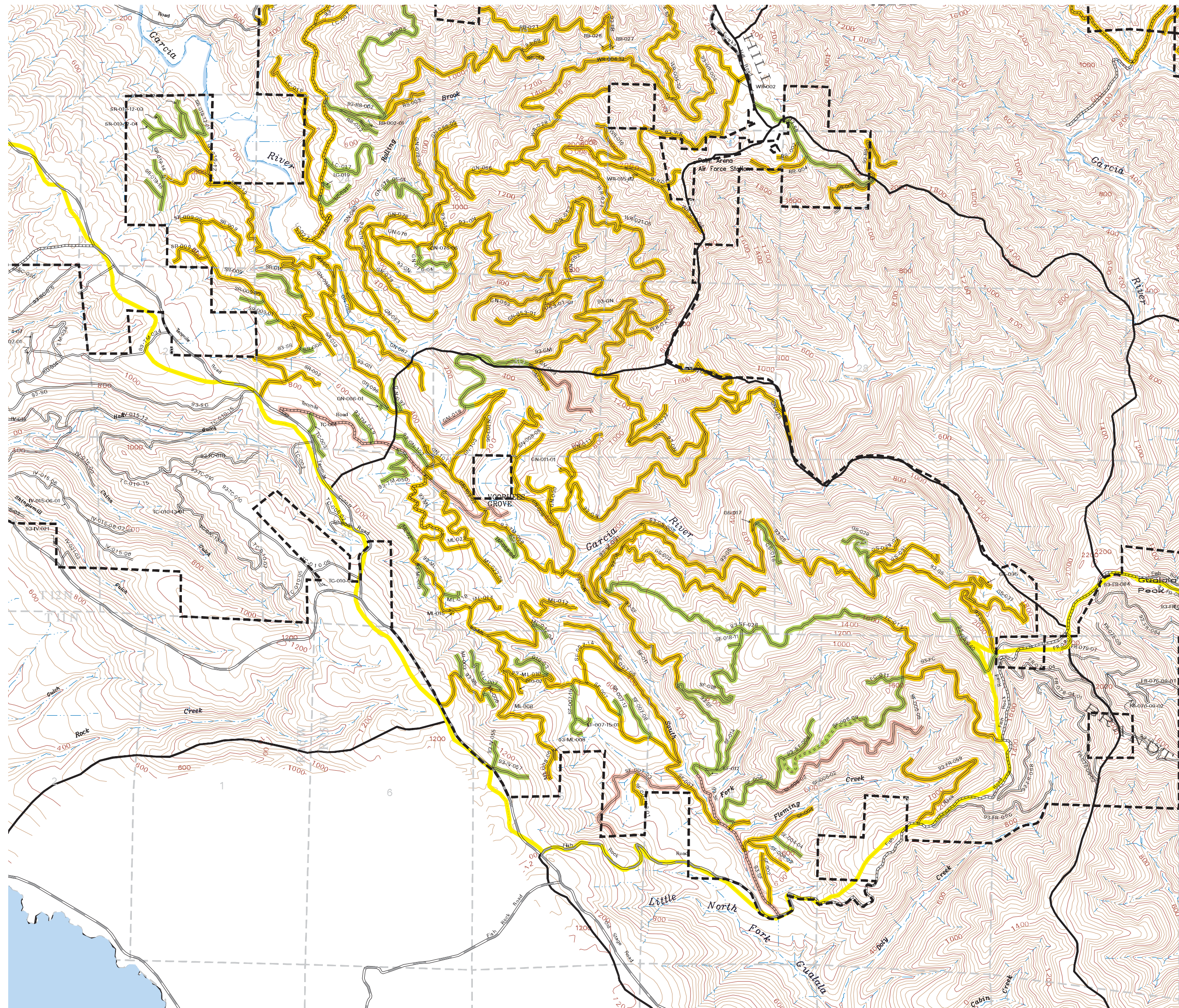
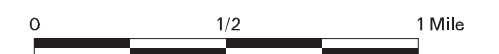
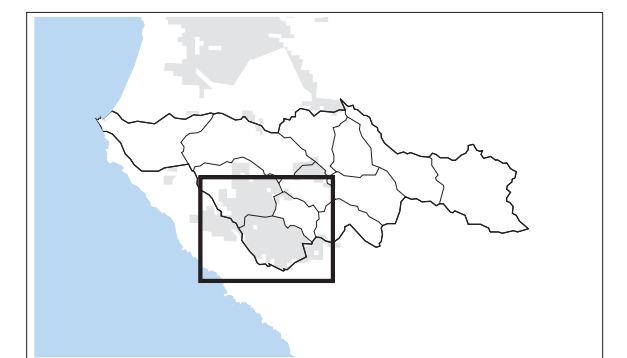
MRC Ownership

- MRC Ownership
- Planning Watershed Boundary
- Garcia River Watershed Boundary

Flow Class

- Class I
- Class II
- Class III

Sheet 2



Garcia River Watershed Analysis Unit

Map B-2 Road Feature Treatment Immediacy

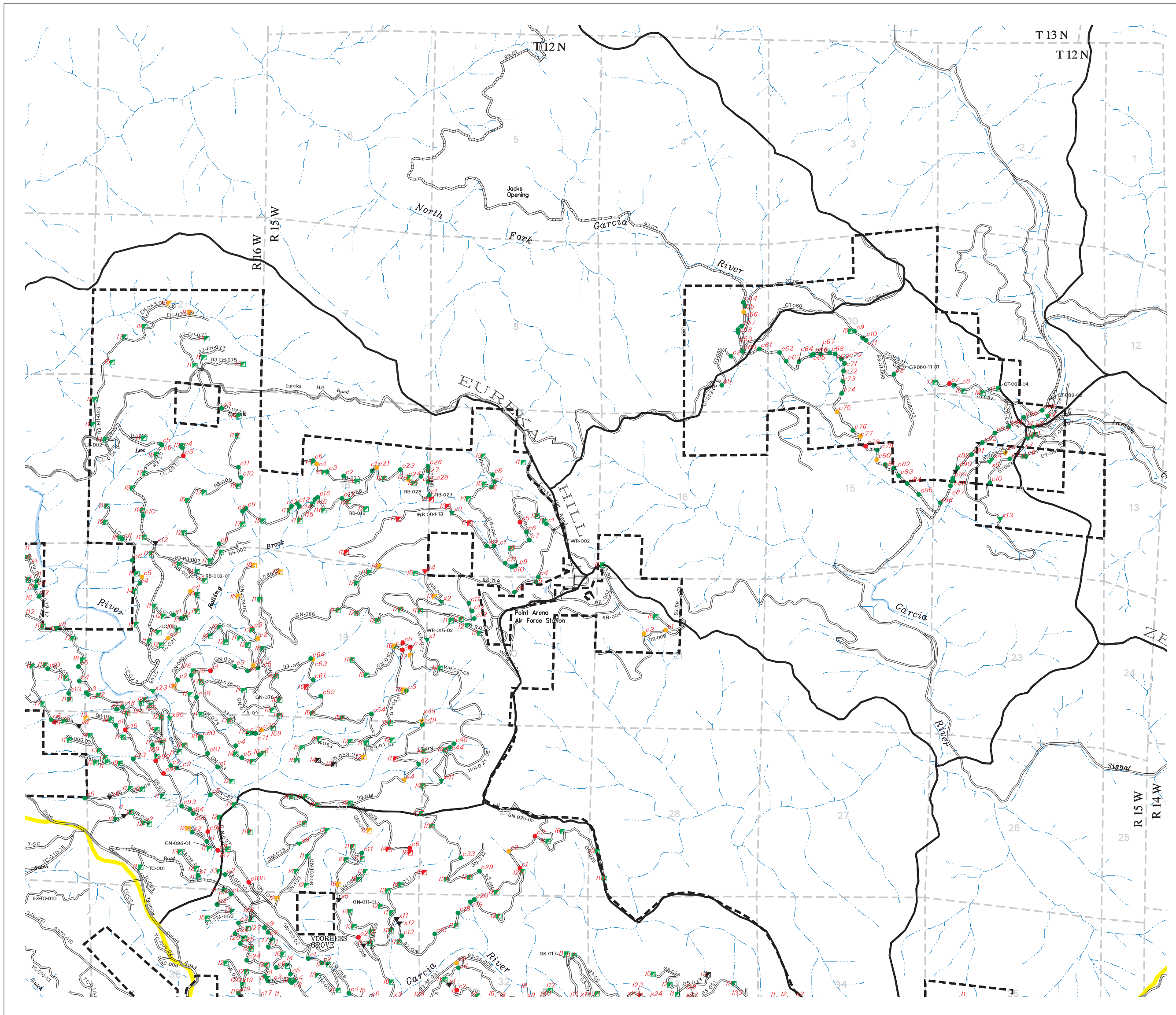
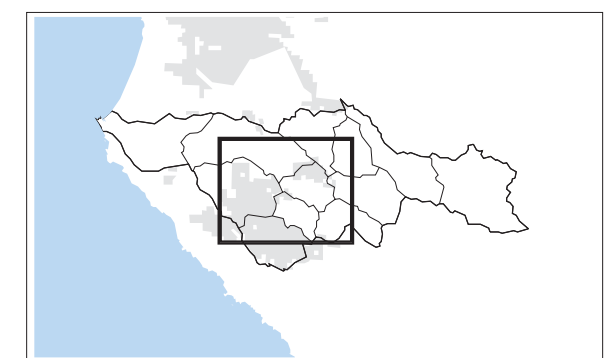
This map presents select results from MRC's road inventory. The entire road network and road features were mapped in 1998 using geographic positioning system (GPS). For each feature with the potential to create erosion (culverts, landings, crossings) the treatment immediacy for the feature was assigned. The treatment immediacy represents the level of concern for either upgrading or maintenance to the feature.

Culverts	Crossings	Landings
● High	▼ High	■ High
● Moderate	▼ Moderate	■ Moderate
● Low	▼ Low	■ Low
● None	▼ None	■ None
● Undetermined	▼ Undetermined	■ Undetermined

Transportation
— Paved Road
--- Rocked Road
— Native Road
==== Jeep Trail
- - - MRC Ownership
— Planning Watershed Boundary
— Garcia River Watershed Boundary

Flow Class
— Class I
— Class II
— Class III

Sheet 1



Garcia River Watershed Analysis Unit

Map B-2 Road Feature Treatment Immediacy

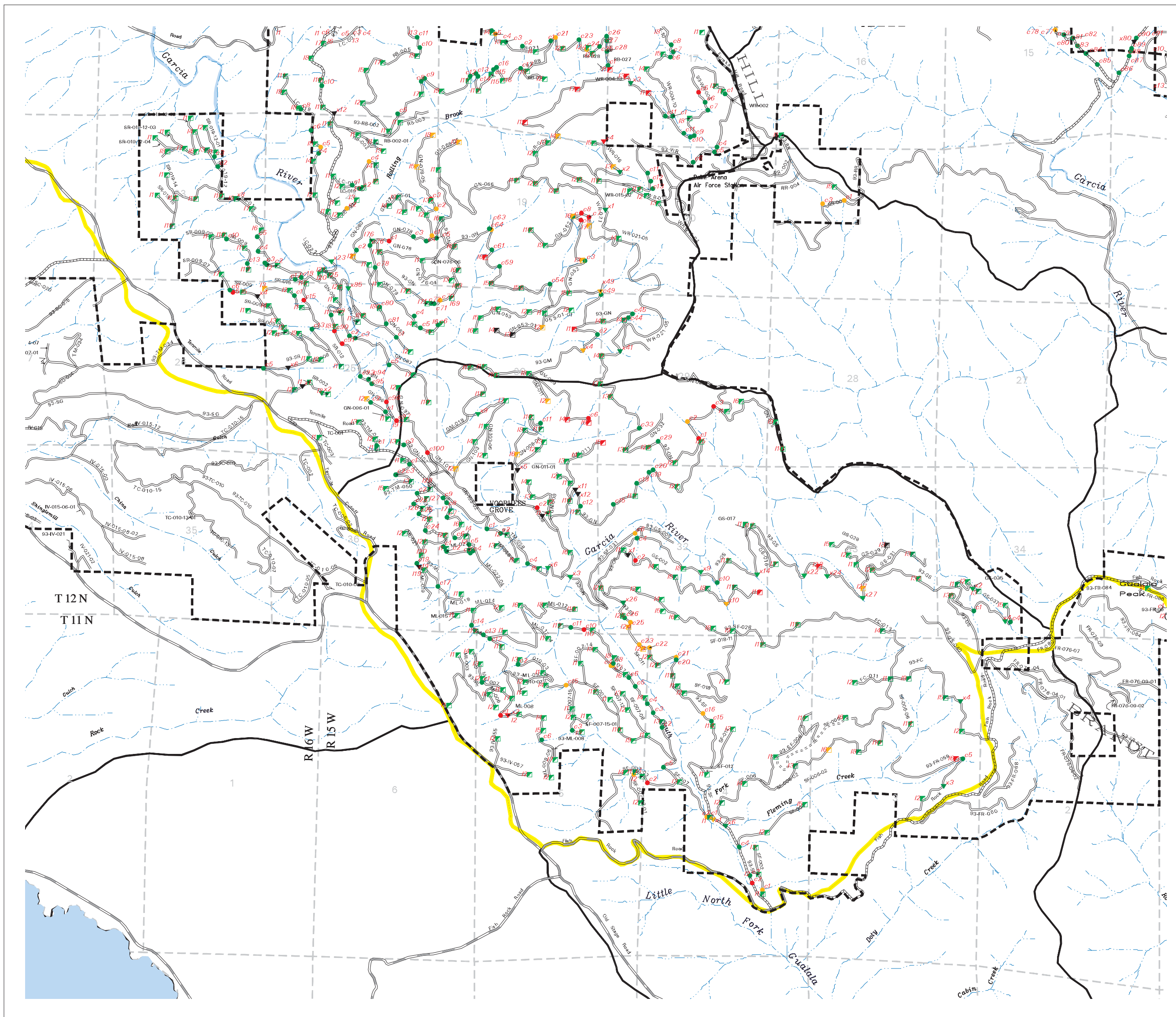
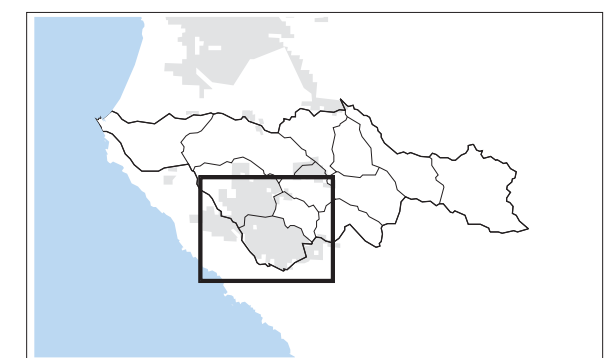
This map presents select results from MRC's road inventory. The entire road network and road features were mapped in 1998 using geographic positioning system (GPS). For each feature with the potential to create erosion (culverts, landings, crossings) the treatment immediacy for the feature was assigned. The treatment immediacy represents the level of concern for either upgrading or maintenance to the feature.

Culverts	Crossings	Landings
● High	▼ High	■ High
● Moderate	▼ Moderate	■ Moderate
● Low	▼ Low	■ Low
● None	▼ None	■ None
● Undetermined	▼ Undetermined	■ Undetermined

Transportation
— Paved Road
--- Rocked Road
— Native Road
=== Jeep Trail
- - - MRC Ownership
— Planning Watershed Boundary
— Garcia River Watershed Boundary

Flow Class
— Class I
— Class II
— Class III

Sheet 2



Culverts

Mile Post	Culvert Type	Treatment Immediacy	Controllable Volume (cu yds)	Current Permanent Class	Future Permanent Class
0.46	watercourse	low	150	seasonal	temporary
1.29	watercourse	low	216	seasonal	temporary
1.53	watercourse	high	65	seasonal	temporary
1.70	watercourse	none	210	seasonal	temporary
1.80	watercourse	none	238	seasonal	temporary
0.55	watercourse	high	745	seasonal	temporary
0.56	watercourse	none	675	seasonal	temporary
1.02	watercourse	low	130	seasonal	temporary
1.25	watercourse	low	570	seasonal	temporary
0.15	undetermined	undetermined	70	seasonal	temporary
0.25	watercourse	none	0	seasonal	temporary
0.26	watercourse	none	0	seasonal	temporary
0.40	watercourse	none	0	seasonal	temporary
0.51	watercourse	none	0	seasonal	temporary
0.19	watercourse	none	272	seasonal	temporary
0.25	watercourse	none	310	seasonal	temporary
0.11	watercourse	none	222	seasonal	seasonal
0.20	watercourse	none	293	seasonal	seasonal
0.30	watercourse	low	220	seasonal	seasonal
0.44	watercourse	none	222	seasonal	seasonal
0.87	watercourse	none	194	seasonal	seasonal
1.07	watercourse	none	130	seasonal	seasonal
1.51	watercourse	none	0	seasonal	seasonal
1.61	watercourse	none	0	seasonal	seasonal
1.66	watercourse	none	0	seasonal	seasonal
0.05	watercourse	none	178	seasonal	temporary
0.09	watercourse	none	68	seasonal	temporary
0.23	watercourse	none	0	seasonal	temporary
0.25	watercourse	none	494	seasonal	temporary
0.31	watercourse	none	432	seasonal	temporary
0.46	watercourse	none	93	seasonal	temporary
0.69	watercourse	low	31	seasonal	temporary
0.80	watercourse	none	125	seasonal	temporary
0.82	watercourse	none	333	seasonal	temporary
0.26	watercourse	high	126	seasonal	seasonal
2.21	ditch relief	none	275	seasonal	seasonal
2.48	ditch relief	none	114	seasonal	seasonal
2.62	ditch relief	none	47	seasonal	seasonal
3.20	ditch relief	none	211	seasonal	seasonal
3.22	watercourse	none	52	seasonal	seasonal
3.27	ditch relief	moderate	194	seasonal	seasonal
3.97	watercourse	low	72	seasonal	seasonal
3.98	watercourse	moderate	111	seasonal	seasonal
4.12	watercourse	none	134	seasonal	seasonal
4.30	watercourse	low	129	seasonal	seasonal
0.58	watercourse	high	23	seasonal	seasonal
4.82	watercourse	none	556	seasonal	seasonal
5.31	watercourse	none	20	seasonal	seasonal
5.84	watercourse	none	155	seasonal	seasonal
5.88	watercourse	none	75	seasonal	seasonal
1.38	undetermined	undetermined	23	seasonal	seasonal
0.71	ditch relief	high	9	seasonal	seasonal
0.87	watercourse	none	140	seasonal	seasonal
0.89	ditch relief	low	0	seasonal	seasonal
0.95	watercourse	none	389	seasonal	seasonal
1.19	ditch relief	high	14	seasonal	seasonal
1.28	watercourse	high	21	seasonal	seasonal
2.10	ditch relief	none	487	seasonal	seasonal
0.25	watercourse	none	155	seasonal	temporary
0.06	ditch relief	none	128	seasonal	seasonal
0.16	watercourse	none	82	seasonal	seasonal
0.19	watercourse	low	67	seasonal	temporary
0.23	ditch relief	low	62	seasonal	temporary
0.54	watercourse	low	37	seasonal	temporary
0.09	watercourse	low	90	seasonal	temporary
0.23	watercourse	none	238	seasonal	temporary
0.39	watercourse	low	128	seasonal	temporary
0.47	watercourse	none	250	seasonal	temporary
0.60	watercourse	none	100	seasonal	temporary
0.10	watercourse	high	67	seasonal	temporary
0.28	ditch relief	none	86	seasonal	temporary
0.38	watercourse	low	119	seasonal	temporary
0.45	watercourse	none	18	seasonal	temporary
0.05	watercourse	moderate	160	seasonal	temporary
0.25	watercourse	moderate	122	seasonal	temporary
0.31	watercourse	high	11	seasonal	temporary
0.27	watercourse	low	7	seasonal	temporary

Culverts

Mile Post	Culvert Type	Treatment Immediacy	Controllable Volume (cu yds)	Current Permanent Class	Future Permanent Class
0.57	watercourse	high	45	seasonal	temporary
0.62	watercourse	low	0	seasonal	temporary
0.22	watercourse	none	960	seasonal	temporary
0.57	watercourse	high	600	seasonal	temporary
0.62	watercourse	none	494	seasonal	temporary
4.16	watercourse	none	212	seasonal	temporary
0.71	watercourse	none	43	seasonal	temporary
0.97	watercourse	none	148	seasonal	temporary
2.09	watercourse	none	114	seasonal	temporary
2.44	watercourse	none	98	seasonal	temporary
2.66	watercourse	none	130	seasonal	temporary
2.76	watercourse	none	139	seasonal	temporary
2.79	watercourse	low	276	seasonal	temporary
3.78	ditch relief	none	93	seasonal	temporary
0.19	watercourse	high	65	seasonal	temporary
1.05	watercourse	none	380	seasonal	temporary
0.02	ditch relief	high	90	seasonal	temporary
0.14	watercourse	moderate	730	seasonal	temporary
0.33	watercourse	high	133	seasonal	temporary
0.14	watercourse	none	0	seasonal	temporary
0.12	watercourse	high	0	seasonal	temporary
0.56	watercourse	low	0	seasonal	temporary
0.24	watercourse	none	0	seasonal	temporary
0.00	ditch relief	low	0	seasonal	temporary
0.20	watercourse	high	0	permanent	permanent
2.01	ditch relief	none	132	abandoned	abandoned
2.04	watercourse	high	81	abandoned	abandoned
2.14	watercourse	moderate	104	abandoned	abandoned
2.74	watercourse	low	213	seasonal	seasonal
3.36	watercourse	none	300	seasonal	seasonal
1.49	watercourse	moderate	0	seasonal	seasonal
1.26	undetermined	undetermined	293	seasonal	seasonal
0.25	ditch relief	low	0	permanent	permanent
0.43	watercourse	none	0	permanent	permanent
0.84	watercourse	low	0	permanent	permanent
1.20	watercourse	high	586	abandoned	abandoned
1.37	watercourse	high	277	abandoned	abandoned
1.62	watercourse	none	205	abandoned	abandoned
1.66	ditch relief	none	78	abandoned	abandoned
1.78	watercourse	none	54	abandoned	abandoned
0.05	watercourse	moderate	0	seasonal	temporary
0.64	watercourse	low	0	abandoned	abandoned
0.84	watercourse	low	0	abandoned	abandoned
0.63	watercourse	high	0	seasonal	temporary
0.78	watercourse	none	0	seasonal	temporary
1.03	watercourse	high	0	seasonal	temporary
1.51	watercourse	none	0	seasonal	temporary
1.64	watercourse	none	0	seasonal	temporary
1.68	watercourse	low	0	seasonal	temporary
0.03	watercourse	moderate	0	seasonal	seasonal
0.05	watercourse	moderate	0	seasonal	seasonal
0.45	watercourse	low	0	seasonal	seasonal
1.47	watercourse	moderate	0	seasonal	seasonal
0.19	watercourse	high	0	seasonal	temporary
0.02	watercourse	moderate	0	seasonal	temporary
0.02	watercourse	moderate	0	seasonal	temporary
0.22	watercourse	none	0	seasonal	temporary
0.33	ditch relief	low	0	seasonal	temporary
0.40	ditch relief	none	0	seasonal	temporary
0.53	ditch relief	low	0	seasonal	temporary
0.60	ditch relief	none	0	seasonal	temporary
0.72	watercourse	moderate	0	seasonal	temporary
0.73	ditch relief	low	0	seasonal	temporary
1.03	ditch relief	high	0	seasonal	temporary
1.11	ditch relief	none	0	seasonal	temporary
0.44	watercourse	moderate	0	seasonal	temporary
0.28	watercourse	none	0	seasonal	temporary
0.49	watercourse	none	0	seasonal	seasonal
0.57	watercourse	moderate	0	seasonal	seasonal
0.99	watercourse	none	0	seasonal	seasonal
1.00	watercourse	moderate	0	seasonal	seasonal
1.24	watercourse	moderate	0	seasonal	seasonal
1.32	ditch relief	moderate	0	seasonal	seasonal
1.47	watercourse	moderate	0	seasonal	seasonal
1.52	ditch relief	low	0	seasonal	seasonal
0.60	watercourse	moderate	79	seasonal	seasonal
0.16	watercourse	high	370	seasonal	temporary

Culverts

Mile Post	Culvert Type	Treatment Immediacy	Controllable Volume (cu yds)	Current Permanent Class	Future Permanent Class
0.09	watercourse	none	148	seasonal	temporary
0.41	watercourse	none	101	seasonal	temporary
0.48	ditch relief	none	150	seasonal	seasonal
0.49	watercourse	none	0	seasonal	seasonal
1.01	ditch relief	none	370	seasonal	seasonal
0.28	watercourse	high	590	seasonal	temporary
0.33	watercourse	none	150	seasonal	temporary
0.51	watercourse	none	128	seasonal	temporary
0.79	watercourse	low	200	seasonal	temporary
0.82	watercourse	low	370	seasonal	temporary
1.18	watercourse	none	735	seasonal	temporary
1.21	watercourse	low	1300	seasonal	temporary
1.23	watercourse	none	2180	seasonal	temporary
1.49	watercourse	none	756	seasonal	temporary
1.51	watercourse	none	236	seasonal	temporary
1.72	watercourse	none	150	seasonal	temporary
0.95	watercourse	none	160	seasonal	temporary
1.02	watercourse	none	890	seasonal	temporary
0.51	watercourse	none	450	seasonal	temporary
0.51	watercourse	none	450	seasonal	temporary
0.54	ditch relief	low	130	seasonal	temporary
0.69	watercourse	none	1755	seasonal	temporary
0.69	watercourse	none	1755	seasonal	temporary
0.60	undetermined	undetermined	75	seasonal	temporary
0.02	watercourse	moderate	485	seasonal	temporary
0.24	watercourse	none	455	seasonal	temporary
0.33	ditch relief	moderate	77	seasonal	temporary
0.43	ditch relief	low	75	seasonal	temporary
0.46	watercourse	none	134	seasonal	temporary
0.43	watercourse	moderate	124	seasonal	temporary
0.33	watercourse	none	355	seasonal	temporary
0.21	watercourse	none	200	seasonal	temporary
0.01	watercourse	low	36	seasonal	temporary
0.15	watercourse	low	90	seasonal	temporary
0.19	watercourse	none	580	seasonal	temporary
0.40	watercourse	moderate	120	seasonal	temporary
0.17	watercourse	moderate	0	seasonal	temporary
0.42	watercourse	low	0	seasonal	temporary
0.46	watercourse	moderate	0	seasonal	temporary
0.58	watercourse	none	0	seasonal	temporary
0.77	watercourse	none	0	seasonal	temporary
0.39	watercourse	low	200	seasonal	seasonal
0.43	watercourse	low	310	seasonal	seasonal
0.58	ditch relief	low	27	seasonal	seasonal
1.14	watercourse	none	330	seasonal	seasonal
1.19	watercourse	none	175	seasonal	seasonal
1.24	watercourse	low	0	seasonal	seasonal
0.06	ditch relief	none	7	seasonal	seasonal
0.52	ditch relief	high	187	seasonal	seasonal
0.60	watercourse	low	104	seasonal	seasonal
0.65	watercourse	low	481	seasonal	seasonal
0.89	watercourse	none	0	seasonal	seasonal
0.92	watercourse	none	0	seasonal	seasonal
0.97	watercourse	none	0	seasonal	seasonal
0.04	watercourse	none	0	seasonal	seasonal
0.22	watercourse	none	0	seasonal	seasonal
0.59	watercourse	none	0	seasonal	seasonal
0.63	watercourse	none	0	seasonal	seasonal
0.69	watercourse	none	0	seasonal	seasonal
0.19	watercourse	none	0	seasonal	seasonal
0.73	watercourse	high	15	seasonal	temporary
0.78	watercourse	high	49	seasonal	temporary
5.31	ditch relief	none	180	seasonal	temporary
5.93	ditch relief	none	1212	seasonal	temporary
6.07	ditch relief	none	206	seasonal	temporary
6.15	ditch relief	none	2141	seasonal	temporary
6.16	watercourse	none	79	seasonal	temporary
6.21	watercourse	none	220	seasonal	temporary
6.26	watercourse	none	477	seasonal	temporary
6.29	watercourse	none	538	seasonal	temporary
6.34	watercourse	low	1949	seasonal	temporary
6.37	watercourse	none	1850	seasonal	temporary
6.42	watercourse	none	1670	seasonal	temporary
5.34	ditch relief	none	2472	seasonal	temporary
6.48	ditch relief	low	1830	seasonal	temporary
6.55	ditch relief	none	87	seasonal	temporary
6.69	ditch relief	moderate	1336	seasonal	temporary

Culverts

Mile Post	Culvert Type	Treatment Immediacy	Controllable Volume (cu yds)	Current Permanent Class	Future Permanent Class
6.84	watercourse	none	587	seasonal	temporary
6.90	watercourse	moderate	1876	seasonal	temporary
6.99	ditch relief	high	109	seasonal	temporary
7.07	watercourse	low	370	seasonal	temporary
7.13	ditch relief	moderate	66	seasonal	temporary
7.20	ditch relief	low	80	seasonal	temporary
7.26	watercourse	none	811	seasonal	temporary
5.37	ditch relief	moderate	133	seasonal	temporary
7.32	ditch relief	none	1183	seasonal	temporary
7.39	ditch relief	none	767	seasonal	temporary
7.48	ditch relief	none	194	seasonal	temporary
7.69	watercourse	none	667	seasonal	temporary
7.81	ditch relief	none	361	seasonal	temporary
7.84	ditch relief	none	160	seasonal	temporary
7.86	ditch relief	none	257	seasonal	temporary
7.93	watercourse	none	52	seasonal	temporary
8.04	watercourse	none	89	seasonal	temporary
8.14	ditch relief	none	27	seasonal	temporary
5.46	ditch relief	low	812	seasonal	temporary
8.23	watercourse	none	2420	seasonal	temporary
8.32	watercourse	none	370	seasonal	temporary
8.43	watercourse	none	519	seasonal	temporary
8.55	watercourse	none	89	seasonal	temporary
5.49	watercourse	none	417	seasonal	temporary
5.51	watercourse	none	269	seasonal	temporary
5.63	watercourse	low	36	seasonal	temporary
5.74	watercourse	none	263	seasonal	temporary
5.87	watercourse	none	511	seasonal	temporary
0.15	ditch relief	none	325	seasonal	temporary
0.46	ditch relief	low	1292	seasonal	temporary
0.14	ditch relief	low	0	seasonal	temporary
0.77	watercourse	moderate	0	seasonal	temporary
0.88	watercourse	none	0	seasonal	temporary
0.94	watercourse	none	0	seasonal	temporary
0.97	watercourse	none	0	seasonal	temporary
0.24	watercourse	low	0	seasonal	temporary
0.32	watercourse	high	0	seasonal	temporary
0.42	watercourse	high	0	seasonal	temporary
0.58	ditch relief	low	0	seasonal	temporary
0.61	watercourse	high	0	seasonal	temporary
0.63	watercourse	none	640	seasonal	temporary
0.73	watercourse	none	220	seasonal	temporary
0.95	watercourse	none	240	seasonal	temporary
0.04	watercourse	none	0	seasonal	temporary
0.07	watercourse	none	230	seasonal	temporary
0.18	watercourse	none	175	seasonal	temporary
0.18	watercourse	none	175	seasonal	temporary
0.55	watercourse	low	0	seasonal	temporary
0.33	watercourse	none	0	seasonal	temporary
0.14	watercourse	moderate	1140	seasonal	temporary
0.29	watercourse	moderate	178	seasonal	temporary

Landings

Road Number	Landing Site ID#	Mile Post	Treatment Immediacy	Controllable Volume (cu yds)	Current Permanent Class	Future Permanent Class
93-A	93A0000000001	0.21	none	140	seasonal	temporary
93-A	93A0000000002	0.75	none	0	seasonal	temporary
93-A	93A0000000003	0.91	none	0	seasonal	temporary
93-A	93A0000000004	1.63	none	0	seasonal	temporary
93-A	93A0000000005	1.97	none	0	seasonal	temporary
93-A-001	93A0010000001	0.10	none	0	temporary	temporary
93-A-001	93A0010000002	0.25	none	0	temporary	temporary
93-A-003	93A0030000001	0.09	none	0	temporary	temporary
93-A-004	93A00400000010	1.29	none	975	seasonal	temporary
93-A-004	93A0040000002	0.14	none	0	seasonal	temporary
93-A-004	93A0040000003	0.19	none	0	seasonal	temporary
93-A-004	93A0040000004	0.30	none	0	seasonal	temporary
93-A-004	93A0040000005	0.49	none	0	seasonal	temporary
93-A-004	93A0040000006	0.67	none	0	seasonal	temporary
93-A-004	93A0040000007	0.01	none	0	seasonal	temporary
93-A-004	93A0040000008	1.00	none	0	seasonal	temporary
93-A-004	93A0040000009	1.14	none	0	seasonal	temporary
93-A-004-02	93A0040200001	0.01	none	0	temporary	temporary
93-A-004-02	93A0040200002	0.07	none	0	temporary	temporary
93-A-004-04	93A0040400001	0.15	none	0	temporary	temporary
93-A-005	93A0050000001	0.12	none	0	temporary	temporary
93-A-012	93A0120000001	0.05	none	0	seasonal	temporary
93-A-012	93A0120000002	0.19	none	0	seasonal	temporary
93-A-012	93A0120000003	0.34	moderate	80	seasonal	temporary
93-A-014	93A0140000001	0.18	none	0	seasonal	temporary
93-A-014	93A0140000002	0.56	none	0	seasonal	temporary
93-A-014	93A0140000003	0.71	none	0	seasonal	temporary
93-A-014	93A0140000004	0.82	none	0	seasonal	temporary
93-A-014	93A0140000005	0.96	none	0	seasonal	temporary
93-A-014	93A0140000006	1.19	none	0	seasonal	temporary
93-A-014	93A0140000007	1.37	none	0	seasonal	temporary
93-A-014	93A0140000008	1.54	none	0	seasonal	temporary
93-A-014-02	93A0140200001	0.31	none	666	seasonal	temporary
93-A-014-02	93A0140200002	0.45	none	0	seasonal	temporary
93-A-014-02	93A0140200003	0.59	none	0	seasonal	temporary
93-A-014-02	93A0140200004	0.68	none	0	seasonal	temporary
93-A-014-02	93A0140200005	0.79	none	0	seasonal	temporary
93-A-014-02-02	93A0140202002	0.22	none	0	temporary	temporary
93-A-014-02-02	93A0140202003	0.06	none	0	temporary	temporary
93-A-014-02-04	93A0140204001	0.08	none	0	temporary	temporary
93-A-014-02-06	93A0140206001	0.14	none	0	temporary	temporary
93-A-014-02-08	93A0140208001	0.14	none	0	temporary	temporary
93-A-014-04	93A0140400001	0.12	none	0	temporary	temporary
93-A-014-06	93A0140600001	0.15	none	0	temporary	temporary
93-B	93B0000000001	0.03	none	0	seasonal	seasonal
93-B	93B00000000010	1.56	none	0	seasonal	seasonal
93-B	93B00000000011	1.74	none	0	seasonal	seasonal
93-B	93B0000000002	0.07	none	2730	seasonal	seasonal
93-B	93B0000000003	0.26	none	0	seasonal	seasonal
93-B	93B0000000004	0.37	none	0	seasonal	seasonal
93-B	93B0000000005	0.58	none	0	seasonal	seasonal
93-B	93B0000000006	0.73	none	0	seasonal	seasonal
93-B	93B0000000007	0.81	none	0	seasonal	seasonal
93-B	93B0000000008	0.94	none	0	seasonal	seasonal
93-B-001	93B0010000001	0.07	none	324	seasonal	temporary
93-B-001	93B0010000002	0.23	none	93	seasonal	temporary
93-B-001	93B0010000003	0.39	none	0	seasonal	temporary
93-B-001	93B0010000004	0.57	none	0	seasonal	temporary
93-B-001	93B0010000005	0.74	none	113	seasonal	temporary
93-B-002	93B0020000001	0.21	none	0	temporary	temporary
93-B-011	93B0110000001	0.11	none	0	temporary	temporary
93-B-013	93B0130000001	0.04	none	0	temporary	temporary
93-B-015	93B0150000001	0.24	none	0	seasonal	temporary
93-B-015	93B0150000009	0.02	none	0	seasonal	temporary
93-B-017	93B0170000001	0.09	none	0	seasonal	temporary
93-B-017	93B0170000002	0.57	none	0	seasonal	temporary
93-B-017	93B0170000003	0.84	none	0	seasonal	temporary
93-B-017	93B0170000004	1.03	none	0	seasonal	temporary
93-B-017-01	93B0170100001	0.12	none	0	temporary	temporary
93-C	93C0000000001	0.52	none	0	seasonal	seasonal
93-C	93C00000000010	3.41	low	0	seasonal	seasonal
93-C	93C00000000011	3.53	low	0	seasonal	seasonal
93-C	93C00000000012	3.71	low	0	seasonal	seasonal
93-C	93C00000000013	4.18	high	0	seasonal	seasonal
93-C	93C00000000014	4.43	low	0	seasonal	seasonal
93-C	93C00000000015	4.61	low	0	seasonal	seasonal

Landings

Road Number	Landing Site ID#	Mile Post	Treatment Immediacy	Controllable Volume (cu yds)	Current Permanent Class	Future Permanent Class
93-C	93C000000000116	5.10	none	0	seasonal	seasonal
93-C	93C000000000117	5.65	none	0	seasonal	seasonal
93-C	93C000000000118	5.91	none	4200	seasonal	seasonal
93-C	93C000000000119	6.26	none	0	seasonal	seasonal
93-C	93C00000000012	1.30	none	0	seasonal	seasonal
93-C	93C00000000013	1.93	none	0	seasonal	seasonal
93-C	93C00000000014	2.20	none	264	seasonal	seasonal
93-C	93C00000000015	2.64	none	0	seasonal	seasonal
93-C	93C00000000016	2.74	none	0	seasonal	seasonal
93-C	93C00000000017	3.04	none	0	seasonal	seasonal
93-C	93C00000000018	3.18	none	0	seasonal	seasonal
93-C	93C00000000019	3.33	low	0	seasonal	seasonal
93-C-002	93C0020000001	0.28	none	0	seasonal	temporary
93-C-004	93C0040000001	0.21	none	0	seasonal	temporary
93-C-006	93C0060000001	0.19	moderate	0	seasonal	seasonal
93-C-006-01	93C0060100001	0.03	none	0	temporary	temporary
93-C-011	93C0110000001	0.04	none	0	seasonal	temporary
93-C-011	93C0110000002	0.73	none	0	seasonal	temporary
93-C-011	93C0110000003	0.95	none	0	seasonal	temporary
93-C-012	93C0120000001	0.04	none	0	temporary	temporary
93-C-014	93C0140000001	0.02	none	0	seasonal	temporary
93-C-014	93C0140000002	0.12	none	140	seasonal	temporary
93-C-015	93C0150000001	0.10	none	550	temporary	temporary
93-C-017	93C0170000001	0.21	none	0	seasonal	temporary
93-C-022	93C0220000001	0.07	none	0	seasonal	temporary
93-C-022	93C0220000002	0.19	moderate	0	seasonal	temporary
93-C-023	93C0230000001	0.10	none	0	seasonal	temporary
93-C-023	93C0230000002	0.43	none	0	seasonal	temporary
93-C-023	93C0230000003	0.54	none	0	seasonal	temporary
93-C-023	93C0230000004	0.62	none	0	seasonal	temporary
93-C-025	93C0250000001	0.57	low	0	seasonal	temporary
93-C-025-02	93C0250200001	0.18	none	0	seasonal	temporary
93-C-025-02	93C0250200002	0.30	none	0	seasonal	temporary
93-C-025-02	93C0250200003	0.54	moderate	0	seasonal	temporary
93-C-025-02	93C0250200004	0.77	moderate	0	seasonal	temporary
93-C-025-02-02	93C0250202001	0.06	none	0	seasonal	temporary
93-C-025-02-02	93C0250202002	0.22	none	0	seasonal	temporary
93-C-025-02-02	93C0250202003	0.32	low	0	seasonal	temporary
93-C-025-02-02	93C0250202004	0.39	low	0	seasonal	temporary
93-C-027-01	93C0270100001	0.00	none	0	seasonal	temporary
93-C-027-01	93C0270100002	0.30	none	0	seasonal	temporary
93-C-032	93C0320000001	1.34	none	0	seasonal	temporary
93-C-032-02	93C0320200001	0.04	none	0	seasonal	temporary
93-C-032-02	93C0320200002	0.27	moderate	0	seasonal	temporary
93-C-042	93C0420000001	0.15	none	0	seasonal	temporary
93-C-042	93C0420000002	0.37	none	0	seasonal	temporary
93-C-042	93C0420000003	0.49	none	0	seasonal	temporary
93-C-042	93C0420000004	0.58	none	0	seasonal	temporary
93-C-042-02	93C0420200001	0.05	none	0	seasonal	temporary
93-C-042-02	93C0420200002	0.14	moderate	0	seasonal	temporary
93-C-042-02	93C0420200003	0.35	undetermined	0	seasonal	temporary
93-C-042-02	93C0420200004	0.45	undetermined	0	seasonal	temporary
93-C-042-02-01	93C0420201001	0.18	none	0	temporary	temporary
93-C-044	93C0440000001	0.28	moderate	0	seasonal	temporary
93-C-044	93C0440000002	0.62	moderate	0	seasonal	temporary
93-C-044	93C0440000003	0.90	none	0	seasonal	temporary
93-C-044	93C0440000004	1.02	none	0	seasonal	temporary
93-C-052	93C0520000001	0.07	high	2600	seasonal	temporary
93-C-052	93C0520000002	0.78	none	0	seasonal	temporary
93-C-052	93C0520000003	0.98	none	0	seasonal	temporary
93-C-052	93C0520000004	1.06	none	0	seasonal	temporary
93-C-052	93C0520000005	1.15	none	0	seasonal	temporary
93-C-052	93C0520000006	1.47	none	0	seasonal	temporary
93-C-052-01	93C0520100001	0.44	high	0	seasonal	temporary
93-C-052-01	93C0520100002	0.59	high	0	seasonal	temporary
93-C-052-01-01	93C0520101001	0.19	moderate	0	temporary	temporary
93-E	93E0000000001	0.75	none	0	seasonal	temporary
93-E	93E000000000110	3.84	none	0	seasonal	temporary
93-E	93E000000000111	3.99	none	0	seasonal	temporary
93-E	93E000000000112	4.46	none	0	seasonal	temporary
93-E	93E000000000113	4.61	none	0	seasonal	temporary
93-E	93E00000000012	1.05	none	0	seasonal	temporary
93-E	93E00000000013	1.47	none	0	seasonal	temporary
93-E	93E00000000014	1.90	none	0	seasonal	temporary
93-E	93E00000000015	2.13	none	0	seasonal	temporary
93-E	93E00000000016	2.58	none	0	seasonal	temporary

Landings

Road Number	Landing Site ID#	Mile Post	Treatment Immediacy	Controllable Volume (cu yds)	Current Permanent Class	Future Permanent Class
93-E	93E00000000017	2.97	none	0	seasonal	temporary
93-E	93E00000000018	3.36	none	0	seasonal	temporary
93-E	93E00000000019	3.61	none	0	seasonal	temporary
93-E-004	93E00400000001	0.06	moderate	0	seasonal	temporary
93-E-004	93E00400000002	0.26	none	0	seasonal	temporary
93-E-004	93E00400000003	0.37	none	0	seasonal	temporary
93-E-004	93E00400000004	0.57	none	0	seasonal	temporary
93-E-004-01	93E00401000001	0.18	none	0	temporary	temporary
93-E-005	93E00500000001	0.13	none	0	seasonal	temporary
93-E-005	93E00500000002	0.30	low	0	seasonal	temporary
93-E-012	93E01200000001	0.61	moderate	0	seasonal	temporary
93-E-012	93E01200000002	0.78	low	0	seasonal	temporary
93-E-012	93E01200000003	0.97	none	0	seasonal	temporary
93-E-012	93E01200000004	1.08	none	1600	seasonal	temporary
93-E-012-01	93E01201000001	0.15	low	0	seasonal	temporary
93-E-012-01	93E01201000002	0.22	none	0	seasonal	temporary
93-E-014	93E01400000001	0.04	none	0	seasonal	temporary
93-E-014	93E01400000002	0.11	none	0	seasonal	temporary
93-E-014	93E01400000003	0.27	none	0	seasonal	temporary
93-E-014	93E01400000004	0.37	none	0	seasonal	temporary
93-E-016	93E01600000002	0.26	none	0	seasonal	temporary
93-E-016	93E01600000003	0.34	none	0	seasonal	temporary
93-E-016	93E01600000004	0.50	high	0	seasonal	temporary
93-E-016-02	93E01602000001	0.01	none	0	temporary	temporary
93-E-016-02	93E01602000002	0.09	none	0	temporary	temporary
93-E-031	93E03100000001	0.61	none	0	seasonal	temporary
93-E-031	93E03100000002	0.88	none	0	seasonal	temporary
93-E-031	93E03100000003	1.05	none	0	seasonal	temporary
93-E-031-01	93E03101000001	0.05	none	0	temporary	temporary
93-EH-058	93EH05800000001	0.04	none	0	undetermined	temporary
93-F	93F00000000001	0.03	none	0	seasonal	seasonal
93-F	93F00000000002	0.64	none	0	seasonal	seasonal
93-F	93F00000000003	0.71	none	0	seasonal	seasonal
93-F	93F00000000004	1.05	none	0	seasonal	seasonal
93-F	93F00000000005	1.34	none	0	seasonal	seasonal
93-F-002	93F00200000001	0.14	none	0	temporary	temporary
93-F-003	93F00300000001	0.03	none	0	temporary	temporary
93-F-003	93F00300000002	0.11	none	0	temporary	temporary
93-F-004	93F00400000001	0.15	none	0	seasonal	temporary
93-F-004	93F00400000002	0.24	none	0	seasonal	temporary
93-F-004	93F00400000003	0.38	none	0	seasonal	temporary
93-F-005	93F00500000001	0.24	none	0	seasonal	temporary
93-F-005	93F00500000002	0.40	none	0	seasonal	temporary
93-F-005	93F00500000003	0.47	none	0	seasonal	temporary
93-F-005	93F00500000004	0.71	none	0	seasonal	temporary
93-F-005-01	93F00501000001	0.19	none	0	temporary	temporary
93-F-007	93F00700000001	0.10	none	0	temporary	temporary
93-F-008	93F00800000001	0.04	none	0	seasonal	temporary
93-F-008	93F00800000002	0.27	none	0	seasonal	temporary
93-FR-086	93FR08600000001	0.14	none	0	seasonal	temporary
93-FR-090	93FR09000000001	0.25	none	0	seasonal	temporary
93-FR-092	93FR09200000001	0.03	none	0	seasonal	temporary
93-G	93G00000000001	3.12	none	0	seasonal	seasonal
93-G	93G00000000002	3.52	none	0	seasonal	seasonal
93-G	93G00000000003	4.03	none	0	seasonal	seasonal
93-G	93G00000000004	4.66	high	0	seasonal	seasonal
93-G	93G00000000005	5.10	moderate	0	seasonal	seasonal
93-G	93G00000000006	5.30	none	0	seasonal	seasonal
93-G	93G00000000007	5.61	none	0	seasonal	seasonal
93-G	93G00000000008	6.16	none	0	seasonal	seasonal
93-G-002	93G00200000001	0.02	none	0	seasonal	temporary
93-G-002	93G00200000002	0.15	none	0	seasonal	temporary
93-G-002	93G00200000003	0.31	none	0	seasonal	temporary
93-G-003	93G00300000001	0.22	none	0	seasonal	seasonal
93-G-003	93G00300000002	0.51	none	0	seasonal	seasonal
93-G-003	93G00300000003	0.73	none	0	abandoned	abandoned
93-G-003	93G00300000004	0.84	none	0	abandoned	abandoned
93-G-005	93G00500000001	0.18	low	0	seasonal	seasonal
93-G-005	93G00500000002	0.45	none	0	seasonal	seasonal
93-G-005	93G00500000004	1.14	none	0	seasonal	seasonal
93-G-005-01	93G00501000001	0.32	low	0	seasonal	temporary
93-G-005-01	93G00501000002	0.52	low	0	seasonal	temporary
93-G-005-01	93G00501000003	1.09	high	0	seasonal	temporary
93-G-005-03	93G00503000001	0.31	low	0	seasonal	temporary
93-G-005-03	93G00503000002	0.57	moderate	0	seasonal	temporary
93-G-005-03	93G00503000003	0.84	low	0	seasonal	temporary

Landings

Road Number	Landing Site ID#	Mile Post	Treatment Immediacy	Controllable Volume (cu yds)	Current Permanent Class	Future Permanent Class
93-G-005-03	93G0050300004	1.01	none	0	seasonal	temporary
93-G-005-03	93G0050300005	1.35	none	0	seasonal	temporary
93-G-005-03	93G0050300006	1.81	none	0	seasonal	temporary
93-G-005-05	93G0050500003	0.00	none	0	seasonal	seasonal
93-G-005-05	93G0050500005	0.61	none	0	seasonal	seasonal
93-G-006	93G0060000001	0.03	low	0	seasonal	seasonal
93-G-006	93G0060000002	0.32	none	0	seasonal	seasonal
93-G-006	93G0060000004	0.85	none	0	seasonal	seasonal
93-G-006	93G0060000005	0.96	none	0	seasonal	seasonal
93-G-006	93G0060000006	1.24	none	0	seasonal	seasonal
93-G-006-04	93G0060400001	0.24	none	0	seasonal	temporary
93-G-006-04	93G0060400003	0.36	none	0	seasonal	temporary
93-G-006-04-01	93G0060401001	0.21	none	0	seasonal	temporary
93-G-006-04-01	93G0060401002	0.00	none	0	seasonal	temporary
93-G-006-06	93G0060600001	0.25	low	0	seasonal	temporary
93-G-006-06	93G0060600002	0.43	none	0	seasonal	temporary
93-G-006-06	93G0060600003	0.62	none	0	seasonal	temporary
93-G-006-06	93G0060600004	0.76	none	0	seasonal	temporary
93-G-006-06	93G0060600005	0.98	none	0	seasonal	temporary
93-G-006-06	93G0060600006	1.16	none	0	seasonal	temporary
93-G-006-10	93G0061000001	0.20	none	0	seasonal	temporary
93-G-006-10	93G0061000002	0.30	none	0	seasonal	temporary
93-G-006-10	93G0061000003	0.01	none	0	seasonal	temporary
93-G-006-14	93G0061400001	0.10	none	0	temporary	temporary
93-G-006-16	93G0061600001	0.13	none	0	seasonal	temporary
93-G-006-16	93G0061600002	0.30	none	0	seasonal	temporary
93-G-006-17	93G0061700001	0.14	none	0	seasonal	temporary
93-G-006-17	93G0061700002	0.19	none	0	seasonal	temporary
93-G-006-17	93G0061700003	0.34	none	0	seasonal	temporary
93-G-006-17-01	93G0061701001	0.11	none	0	temporary	temporary
93-G-008	93G0080000001	0.46	none	0	seasonal	seasonal
93-G-008	93G0080000002	0.88	low	0	seasonal	seasonal
93-G-008	93G0080000003	1.12	low	0	seasonal	seasonal
93-G-008	93G0080000004	1.18	none	0	seasonal	seasonal
93-G-008	93G0080000005	1.28	moderate	0	seasonal	seasonal
93-G-008	93G0080000006	1.44	moderate	0	seasonal	seasonal
93-G-008	93G0080000007	1.53	none	0	seasonal	seasonal
93-G-008-01	93G0080100001	0.05	none	0	temporary	temporary
93-G-008-03	93G0080300001	0.29	none	0	seasonal	temporary
93-G-008-05	93G0080500001	0.05	none	0	seasonal	temporary
93-G-008-05	93G0080500002	0.11	none	0	seasonal	temporary
93-G-008-05	93G0080500003	0.74	none	0	seasonal	temporary
93-G-025	93G0250000001	0.05	none	0	seasonal	seasonal
93-G-025	93G0250000002	0.47	none	0	seasonal	seasonal
93-G-025	93G0250000003	0.52	none	0	seasonal	seasonal
93-G-025	93G0250000004	0.61	none	0	seasonal	seasonal
93-G-025	93G0250000005	0.87	none	0	seasonal	seasonal
93-G-025	93G0250000006	1.01	none	0	seasonal	seasonal
93-G-025	93G0250000007	1.26	none	0	seasonal	seasonal
93-G-025	93G0250000008	1.55	none	0	seasonal	seasonal
93-G-025	93G0250000009	0.31	none	0	seasonal	seasonal
93-G-027	93G0270000001	0.04	none	0	seasonal	temporary
93-G-027	93G0270000002	0.38	none	0	seasonal	temporary
93-G-027	93G0270000003	0.51	low	0	seasonal	temporary
93-G-027	93G0270000004	0.83	low	0	seasonal	temporary
93-G-027	93G0270000005	1.11	low	0	seasonal	temporary
93-G-027	93G0270000006	1.29	high	0	seasonal	temporary
93-G-030	93G0300000001	0.07	none	0	temporary	temporary
93-G-031	93G0310000001	0.31	none	0	seasonal	temporary
93-G-040	93G0400000001	0.12	none	0	seasonal	temporary
93-G-040	93G0400000002	0.23	none	0	seasonal	temporary
93-G-040	93G0400000003	0.49	none	0	seasonal	temporary
93-G-041	93G0410000001	0.33	none	0	temporary	temporary
93-G-051	93G0510000001	0.01	none	67	seasonal	temporary
93-G-051	93G0510000002	0.17	none	0	seasonal	temporary
93-G-051	93G0510000003	0.25	none	0	seasonal	temporary
93-G-053	93G0530000001	0.52	none	0	seasonal	temporary
93-H	93H0000000001	0.18	none	0	seasonal	seasonal
93-H	93H0000000002	0.48	low	0	seasonal	seasonal
93-H	93H0000000003	0.88	low	0	seasonal	seasonal
93-H-002	93H0020000001	0.40	low	0	seasonal	seasonal
93-H-004	93H0040000001	0.24	none	0	temporary	temporary
93-H-004	93H0040000004	0.01	low	0	temporary	temporary
93-I	93I0000000001	0.09	none	0	seasonal	temporary
93-I	93I0000000002	0.24	none	0	seasonal	temporary
93-I	93I0000000003	0.51	none	0	seasonal	temporary

Landings

Road Number	Landing Site ID#	Mile Post	Treatment Immediacy	Controllable Volume (cu yds)	Current Permanent Class	Future Permanent Class
93-I	93I0000000004	0.68	low	0	seasonal	temporary
93-I	93I0000000005	0.87	none	0	seasonal	temporary
93-I	93I0000000006	1.17	moderate	0	seasonal	temporary
93-I-002	93I0020000001	0.33	moderate	0	seasonal	temporary
93-J	93J0000000001	0.04	none	0	seasonal	seasonal
93-J	93J0000000002	0.55	none	0	seasonal	seasonal
93-J	93J0000000003	0.69	none	0	seasonal	seasonal
93-J	93J0000000004	0.81	none	0	seasonal	seasonal
93-J	93J0000000005	0.98	none	0	seasonal	seasonal
93-J	93J0000000006	1.14	none	0	seasonal	seasonal
93-J	93J0000000007	1.28	none	0	seasonal	seasonal
93-J	93J0000000008	2.42	none	0	seasonal	seasonal
93-J-003	93J0030000001	0.09	none	0	temporary	temporary
93-J-005	93J0050000001	0.34	none	300	seasonal	temporary
93-J-011	93J0110000001	0.01	none	0	seasonal	temporary
93-J-011	93J0110000002	0.71	none	0	seasonal	temporary
93-J-011	93J0110000003	0.95	none	0	seasonal	temporary
93-J-011	93J0110000004	1.14	none	0	seasonal	temporary
93-J-011	93J0110000005	1.33	none	0	seasonal	temporary
93-J-011	93J0110000006	1.45	none	0	seasonal	temporary
93-J-011	93J0110000007	1.59	none	0	seasonal	temporary
93-J-011	93J0110000008	1.76	none	0	seasonal	temporary
93-J-011-01	93J0110100001	0.09	none	0	seasonal	temporary
93-J-011-01	93J0110100002	0.28	none	0	seasonal	temporary
93-J-011-01-01	93J0110101001	0.08	none	0	temporary	temporary
93-J-011-03	93J0110300001	0.15	none	0	temporary	temporary
93-J-011-04	93J0110400001	0.24	none	0	seasonal	temporary
93-J-011-04	93J0110400002	0.51	none	0	seasonal	temporary
93-J-011-04	93J0110400003	0.66	none	0	seasonal	temporary
93-J-011-04	93J0110400004	0.89	low	0	seasonal	temporary
93-J-011-04	93J0110400005	1.26	low	0	seasonal	temporary
93-J-011-05	93J0110500001	0.18	none	0	temporary	temporary
93-J-011-07	93J0110700001	0.45	none	1250	seasonal	temporary
93-J-011-07	93J0110700002	0.34	none	0	seasonal	temporary
93-J-011-07	93J0110700003	0.13	none	0	seasonal	temporary
93-J-011-07	93J0110700004	0.12	none	0	seasonal	temporary
93-J-011-07	93J0110700005	0.33	none	0	seasonal	temporary
93-J-011-07	93J0110700006	0.37	none	0	seasonal	temporary
93-J-011-07	93J0110700007	0.03	high	22000	seasonal	temporary
93-J-011-13	93J0111300001	0.09	none	0	seasonal	temporary
93-J-011-13	93J0111300002	0.23	none	0	seasonal	temporary
93-J-011-13	93J0111300003	0.44	none	0	seasonal	temporary
93-J-011-13	93J0111300004	0.54	none	0	seasonal	temporary
93-J-011-13	93J0111300008	0.01	none	0	seasonal	temporary
93-J-011-15	93J0111500001	0.05	none	0	temporary	temporary
93-J-011-17	93J0111700001	0.01	none	0	seasonal	temporary
93-J-011-17	93J0111700002	0.12	none	0	seasonal	temporary
93-J-011-17	93J0111700003	0.25	none	0	seasonal	temporary
93-J-018	93J0180000001	0.15	none	0	seasonal	temporary
93-J-018	93J0180000002	0.36	none	0	seasonal	temporary
93-J-018	93J0180000003	0.50	none	0	seasonal	temporary
93-J-018	93J0180000004	0.78	none	0	seasonal	temporary
93-J-018	93J0180000005	0.92	none	0	seasonal	temporary
93-J-018	93J0180000006	1.06	none	0	seasonal	temporary
93-L	93L0000000001	1.30	none	0	seasonal	seasonal
93-L	93L0000000002	1.56	none	0	seasonal	seasonal
93-L	93L0000000003	1.98	none	0	seasonal	seasonal
93-L	93L0000000004	2.41	none	0	seasonal	seasonal
93-L	93L0000000005	2.60	none	0	seasonal	seasonal
93-L-002	93L0020000001	0.08	none	0	seasonal	seasonal
93-L-002	93L0020000002	0.14	low	0	seasonal	seasonal
93-L-002	93L0020000003	0.77	none	0	seasonal	seasonal
93-L-002-02	93L0020200001	0.41	none	0	seasonal	temporary
93-L-002-02	93L0020200002	0.55	none	0	seasonal	temporary
93-L-002-02	93L0020200003	0.82	none	0	seasonal	temporary
93-L-002-04	93L0020400001	0.15	high	0	seasonal	seasonal
93-L-002-04	93L0020400002	0.33	high	0	seasonal	seasonal
93-L-002-04	93L0020400003	0.67	high	0	seasonal	seasonal
93-L-002-04	93L0020400004	1.08	high	0	seasonal	seasonal
93-L-011	93L0110000001	0.16	none	0	seasonal	temporary
93-L-011	93L0110000002	0.25	none	0	seasonal	temporary
93-L-011-02	93L0110200001	0.03	none	0	temporary	temporary
93-L-014	93L0140000001	0.26	moderate	0	seasonal	temporary
93-L-014	93L0140000002	0.47	none	0	seasonal	temporary
93-L-015	93L0150000001	0.36	none	0	seasonal	temporary
93-L-015	93L0150000002	0.68	moderate	0	seasonal	temporary

Landings

Road Number	Landing Site ID#	Mile Post	Treatment Immediacy	Controllable Volume (cu yds)	Current Permanent Class	Future Permanent Class
93-L-016	93L0160000001	0.20	none	0	seasonal	temporary
93-L-016	93L0160000002	0.30	none	0	seasonal	temporary
93-L-016	93L0160000003	0.38	moderate	0	seasonal	temporary
93-M-004	93M0040000001	0.86	none	0	seasonal	temporary
93-M-032	93M0320000001	0.36	none	0	seasonal	temporary
93-M-032	93M0320000002	0.51	low	0	seasonal	temporary
93-M-032	93M0320000003	0.70	none	0	seasonal	temporary
93-M-032-01	93M0320100001	0.06	none	0	temporary	temporary
93-M-033	93M0330000001	0.40	none	8300	seasonal	temporary
93-M-033	93M0330000002	0.64	low	1850	seasonal	temporary
93-N	93N0000000001	0.02	none	0	seasonal	temporary
93-N	93N0000000002	0.07	none	0	seasonal	temporary
93-N	93N0000000003	0.21	none	0	seasonal	temporary
93-O	93O0000000001	0.02	none	0	seasonal	temporary
93-O	93O0000000002	0.29	none	0	seasonal	temporary
93-O	93O0000000003	0.45	none	0	seasonal	temporary
93-P	93P0000000001	0.22	none	0	temporary	temporary
93-P-002	93P0020000001	0.17	none	0	temporary	temporary
93-Q	93Q0000000001	0.18	none	0	seasonal	temporary
93-Q	93Q0000000002	0.59	high	0	seasonal	temporary
93-R	93R0000000001	0.45	none	0	seasonal	temporary
93-S	93S0000000001	0.04	none	0	seasonal	temporary
93-S	93S0000000002	0.37	low	0	seasonal	temporary
93-S-001	93S0010000002	0.27	none	0	temporary	temporary
93-S-003	93S0030000001	0.07	none	0	temporary	temporary
93-T	93T0000000001	0.23	none	0	seasonal	temporary
93-T	93T0000000002	0.71	none	0	seasonal	temporary
93-TC-001	93TC0010000001	0.03	none	0	seasonal	temporary

Crossings

Road Number	Crossing Site ID#	Mile Post	Crossing Type	Treatment Immediacy	Controllable Volume (cu yds)	Current Permanent Class	Future Permanent Class
93-A	93A000000000x1	0.61299998	undetermined	undetermined	20	seasonal	temporary
93-A-001	93A001000000x1	0.20299999	dipped	none	80	temporary	temporary
93-A-001	93A001000000x1	0.20299999	dipped	undetermined	80	temporary	temporary
93-A-001	93A001000000x1	0.052	undetermined	none	80	temporary	temporary
93-A-001	93A001000000x1	0.052	undetermined	undetermined	80	temporary	temporary
93-A-004	93A004000000x1	0.39500001	undetermined	undetermined	110	seasonal	temporary
93-A-014	93A014000000x1	0.82700002	low water (temp)	none	0	seasonal	temporary
93-B	93B000000000x1	0.89899999	undetermined	undetermined	1	seasonal	seasonal
93-C	93C000000000x1	1.74600005	low water (temp)	none	0	seasonal	seasonal
93-C	93C000000000x2	5.296	dipped	moderate	245	seasonal	seasonal
93-C	93C000000000x3	6.13399982	undetermined	low	430	seasonal	seasonal
93-C-052	93C052000000x1	0.361	dipped	moderate	730	seasonal	temporary
93-E	93E000000000x1	1.14600003	low water (temp)	none	0	seasonal	temporary
93-E	93E000000000x1	1.14600003	low water (temp)	undetermined	0	seasonal	temporary
93-E	93E000000000x1	1.98399997	undetermined	none	0	seasonal	temporary
93-E	93E000000000x1	1.98399997	undetermined	undetermined	0	seasonal	temporary
93-E	93E000000000x2	2.01200008	undetermined	undetermined	7	seasonal	temporary
93-E-004	93E004000000x1	0.75199997	low water (temp)	none	0	seasonal	temporary
93-E-012	93E012000000x1	0.132	undetermined	undetermined	12	seasonal	temporary
93-E-012	93E012000000x2	0.50800002	undetermined	undetermined	170	seasonal	temporary
93-F-005	93F005000000x1	0.17	undetermined	high	0	seasonal	temporary
93-G	93G000000000x1	0.57599998	bridge	low	0	seasonal	seasonal
93-G	93G000000000x2	3.227	undetermined	none	5	seasonal	seasonal
93-G	93G000000000x3	3.71399999	dipped	none	26	seasonal	seasonal
93-G	93G000000000x4	4.51800013	dipped	none	9	seasonal	seasonal
93-G	93G000000000x5	4.74499989	undetermined	none	40	seasonal	seasonal
93-G	93G000000000x6	5.03200006	undetermined	none	0	abandoned	abandoned
93-G-005-01	93G005010000x1	0.54699999	undetermined	high	0	seasonal	temporary
93-G-006	93G006000000x1	0.65899998	bridge	moderate	0	seasonal	seasonal
93-G-008	93G008000000x1	1.62399995	undetermined	low	0	seasonal	seasonal
93-G-022	93G022000000x1	0.32300001	low water (temp)	none	0	seasonal	temporary
93-G-027	93G027000000x1	0.99199998	dipped	moderate	155	seasonal	temporary
93-G-027	93G027000000x1	0.99199998	dipped	undetermined	155	seasonal	temporary
93-G-027	93G027000000x1	0.085	undetermined	moderate	155	seasonal	temporary
93-G-027	93G027000000x1	0.085	undetermined	undetermined	155	seasonal	temporary
93-G-051	93G051000000x1	0.22400001	bridge	none	106	seasonal	temporary
93-G-053	93G053000000x1	0.36700001	undetermined	none	32	seasonal	temporary
93-H	93H000000000x1	0.37799999	undetermined	low	0	seasonal	seasonal
93-IV-015	93IV01500000x1	1.051	bridge	moderate	0	seasonal	temporary
93-IV-015	93IV01500000x2	0.84399998	bridge	moderate	0	seasonal	temporary
93-J	93J000000000x1	2.29399991	low water (temp)	none	77	seasonal	seasonal
93-J	93J000000000x1	2.29399991	low water (temp)	undetermined	77	seasonal	seasonal
93-J	93J000000000x1	1.21500003	undetermined	none	77	seasonal	seasonal
93-J	93J000000000x1	1.21500003	undetermined	undetermined	77	seasonal	seasonal
93-L-002-04	93L002040000x1	0.287	undetermined	low	0	seasonal	seasonal
93-L-014	93L014000000x1	0.211	dipped	low	0	seasonal	temporary
93-L-014	93L014000000x2	0.421	dipped	high	510	seasonal	temporary
93-L-015	93L015000000x1	0.119	undetermined	low	36	seasonal	temporary
93-M	93M000000000x1	8.00199986	undetermined	undetermined	233	seasonal	temporary
93-M-033	93M033000000x1	0.186	low water (temp)	none	13	seasonal	temporary
93-M-033	93M033000000x1	0.186	low water (temp)	undetermined	13	seasonal	temporary
93-M-033	93M033000000x1	0.68300003	undetermined	none	13	seasonal	temporary
93-M-033	93M033000000x1	0.68300003	undetermined	undetermined	13	seasonal	temporary
93-M-033	93M033000000x2	0.29499999	low water (temp)	none	0	seasonal	temporary
93-M-033	93M033000000x3	1.28100002	dipped	none	14	seasonal	temporary
93-M-033-03	93M033030000x1	0.007	dipped	none	300	seasonal	temporary
93-M-033-03	93M033030000x2	0.035	dipped	low	535	seasonal	temporary
93-M-033-03	93M033030000x3	0.214	dipped	moderate	100	seasonal	temporary
93-M-033-03	93M033030000x4	0.31200001	dipped	none	33	seasonal	temporary
93-M-033-03	93M033030000x5	0.331	dipped	none	39	seasonal	temporary
93-Q	93Q000000000x1	0.33899999	undetermined	low	0	seasonal	temporary

Erosion Sites

Road Number	Site ID#	Treatment Immediacy	Controllable Volume (cu yds)
93-E-012	93E012000000e1	undetermined	555
93-G	93G000000000e1	undetermined	7
93-G	93G000000000e2	undetermined	1680
93-G	93G000000000e3	undetermined	370
93-G	93G000000000e4	undetermined	178
93-G	93G000000000e5	undetermined	89
93-L-015	93L015000000e1	undetermined	111
93-M-033-03	93M033030000e1	undetermined	110