Greenwood Creek Watershed Project

1996 Road Survey Summary Report

Photo by Dave Gurney

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For:
United States Department of Agriculture
US Forest Service
Mendocino National Forest
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Executive Summary

Beginning on August 22, 1996, a crew of trained field workers began an intensive erosion survey of roads within the boundaries of the Greenwood Creek watershed. This study was funded by a grant from the US Forest Service and was complimentary to an instream survey conducted in 1995 on the mainstem of Greenwood Creek. Both of these studies were planned and carried out by the Greenwood Creek Watershed Project as part of an overall assessment of water quality and salmonid habitat within the creek and sources of sediment and erosion upslope from the creek. The road survey project encompasses 25 miles of the watershed road system, approximately 25% of total roaded area within the watershed, and involved 26 landowners. The consulting firm Forest, Soil & Water, inc. (FSW) was employed by the Greenwood Creek Watershed Project to design the road survey and oversee the gathering of field data, the entering of data into a computerized database and the final analysis of the data. These data now serve as both as a template for restoration work and as a baseline dataset for the Greenwood Creek Watershed. The road system was mapped from aerial photos and topographic maps and landowners were contacted to obtain permission for the survey. Crew members walked and biked all roads where permission was granted, stopping at all sites of apparent erosion to evaluate the situation and fill out data sheets accordingly.

Results from the survey identified both sources of erosion and magnitude of sediment yield. A range of road conditions prevailed throughout the watershed. Of the total road sites evaluated, 31% were on roads judged as well maintained, 35% were moderately well maintained, 11% were poorly maintained, and 23% of the sites were poorly maintained sites on abandoned roads. A total of 74 sites were noted on abandoned roads and 68% of all sites evaluated as "poorly maintained" occurred on these abandoned roads.

The nature of the erosion problem was classified as either:

- landslides,
- stream crossings,
- gully,
- road bed (road surface, ditch, cutbank), and
- ditch relief/culvert.

The largest source of problems were stream crossings (34% of all sites), followed by landslides (18%), road bed surface (14%), ditch relief-culverts (13%), gullies (11%), road bed ditches (7%) and road bed cutbanks (3%). Within each of these categories, more detailed information was collected, such as type of landslide or road failure or size of culvert recommended, requiring measurement of channel dimensions and channel gradient.

Each site was also evaluated for the size and magnitude of the problem, the erosion potential, and the actual historical and future sediment yield. These parameters were both estimated and measured:

- erosion potential (high, medium or low),
- past erosion (% delivery and dimensions of width, depth and length),
- future volume (% delivery and dimensions of width, depth and length).

These data are found in Table 1-Sites of High Erosion, in Appendix B. Sites were included on this list if they had an estimated high or medium potential for erosion, had high volumes of sediment delivery, either in the past or in the future (typically >10 cubic yards) or had high % delivery rates either in the past or the future (typically 50-100%). These data were then used in the prioritization of high erosion sites for future restoration during Phase III of the Greenwood Creek Watershed Project.

General recommendations for landowners were made to improve road drainage at 442 sites, to improve road surface at 113 sites and to close 10 short sections of roads which included 86 sites. Specific prescriptions addressed problems associated with waterbars and dips, culverts, road grading, stream crossings, fill and need for revegetation. It is important to note that on many road segments, several of these sites are closely linked, meaning that a number of problems can be solved with one action, such as re-grading the road or installing additional waterbars which would improve several sites all at once. These initial prescriptions were summarized and are being included in a letter to individual landowners, outlining the general assessment of the problems on their stretch of road and recommendations for fixing them (Recommendations to Landowners-Appendix C). Landowners have also been meeting with field crew to discuss options and plans for fixing current problems and maintaining better roads for the future.

Table of Contents

Greenwood Creek Watershed Project
Summary Report of the 1996 Road Survey

Introduction

Greenwood Creek Watershed, approximately 16,000 acres in area, is located on the southern Mendocino coast between the towns of Elk and Philo and between Greenwood Ridge (north), Clift Ridge (south) and Signal Ridge (east). Most of this 16,000 acre coastal watershed is privately owned, with 60% owned by Louisiana Pacific Corporation as TPZ land, and the rest owned by approximately 50 smaller landowners. The only public land in or adjacent to Greenwood Creek is Greenwood State Beach which contains the Greenwood Creek estuary and a very small parcel owned by the Elk County Water District. The watershed is used primarily for timber production, viticulture, fruit orchards, residences, and limited cattle ranching. Greenwood Creek, a Class I coastal stream, flows 16 miles from its headwaters high in the watershed, downstream into the Pacific Ocean at the town of Elk. The creek itself supports many beneficial uses of water, including municipal supplies to the town of Elk, cold water and migratory/spawning habitat for anadromous fisheries (Coho salmon and steelhead), wildlife habitat, recreation, and agriculture (NCRWQCB 1992).

The Greenwood Creek Watershed Project (GCWP) is a community-based watershed restoration program with special focus on the Coho salmon and steelhead fishery, and water quality. Reports on activities of this Project are provided to the 11-member Greenwood Watershed Association Steering Committee, the 10-member Redwood Coast Watershed Alliance Board of Directors, the 16-member Watershed Natural Resources Planning Committee, the 5-member Elk County Water District Board of Directors, and to cooperating landowners, in addition to quarterly reports to the U.S. Forest Service.

Phase I of the Greenwood Creek Watershed Project, funded by the U.S. Forest Service and private donations, included training and employment of local workers to conduct instream channel and fish habitat surveys and community outreach to inform and involve residents living within the watershed. Results of the stream survey combined with the Elk Water District turbidity data indicated that sedimentation in Greenwood Creek was the major limiting factor for fisheries and water quality. Thus, Phase I focused on instream fish habitat and water quality while Phase II focused on upslope erosion from roads as a causal link to increased sedimentation in the creek. Phase II focused on sources of sediment into the creek and included stream sedimentation surveys, development of local watershed mapping technology, outreach to stakeholders, and community education. The final report for the Phase I stream survey was submitted to the USFS on May 15, 1996. This is part of the final report to the USFS for Phase II.

Scope of the Project

Studies have indicated that sedimentation is one of the primary factors limiting anadromous habitat in the watershed (Bjornn and Reiser, 1991). Sedimentation of the stream also degrades water quality, an important issue for the residents of Elk, since the town draws its water supply from Greenwood Creek (NCWQCB, 1992). One of the main sources of the degraded condition is upslope road erosion and road failures, due to poorly functioning drainage structures, damaged or plugged culverts, major and minor landslides, gullying, rilling and other road maintenance problems.

Beginning on August 22, 1996, a crew of trained field workers began an intensive erosion survey of roads within the boundaries of the Greenwood Creek watershed. This study was funded by a grant from the US Forest Service and was complimentary to an instream survey conducted in 1995 on the mainstem of Greenwood Creek. Both of these studies were planned and carried out by the Greenwood Creek Watershed Project as part of an overall assessment of water quality and salmonid habitat within the creek and sources of sediment and erosion upslope from the creek. The road survey project encompasses 25 miles of the watershed road system, approximately 25% of total roaded area within the watershed. This included roads in several areas located between the mainstem of Greenwood Creek upslope in a northerly direction toward Greenwood Ridge (Greenwood-Philo Road) and including the north and south fork headwaters near Signal Ridge where the road and stream systems coincide. The road survey covered 25 miles of roads and involved 26 landowners. The consulting firm Forest, Soil & Water, inc. (FSW) was employed by the Greenwood Creek Watershed Project to design and oversee the gathering of field data, the entering of data into a computerized database and the final analysis of the data both as a template for restoration work and for this report.

Creating Road Network Maps

The road survey began with an intensive mapping effort using a stereoscope and aerial photos and county assessor's maps to determine landownership and to plot out an often undocumented road network. This process, conducted by project personnel was incredibly important in setting up a strategy for covering the road system and as a template for requesting permission and cooperation from landowners. Later in the project, Trimble Navigation, ltd, in Sunnyvale, California donated a GPS unit to the project and sponsored two crew members for an important 4-day training session in the use of the Trimble Pro X-L Pathfinder data collection system. The technical team of Greenwood Watershed Project immediately began using their training to create more accurate maps of the watershed road system. During the fourth quarter, road survey sites of high erosion were revisited to obtain photo documentation of critical sites and to write prescriptions for restoration. The GPS system was tested out in these site visits.

Permission From Landowners

All of the private landowners within the watershed were contacted (approximately 50), and written permission for access across private roads was solicited before beginning the survey. Twenty six landowners agreed to cooperate with the road survey, including the Sky Ranch Estates Association, representing a multitude of individual landowners. In an informal agreement between Louisiana Pacific (L-P) and the Greenwood Creek Watershed Project, L-P planned to survey their own roads (60% of total roaded area within the watershed) completed by December 1996, as stated in their recently released Sustained Yield Plan. L-P spokesmen now say that they will begin their road surveys within the Greenwood Creek watershed on September 15, 1997.

Field Crew and Data Entry

The road survey was completed by a crew of local residents, including commercial fishermen retrained as field workers through a federal program partially funded by the Option 9-Pacific Northwest Economic Adjustment Initiative. Training was conducted under the supervision of Dr. Fred Euphrat from FSW with periodic revisits to assure quality control and consistency in the gathering of field data. Later in the project, field crew members had the opportunity to attend a GPS training course and began to work with a GPS unit that was donated to the Greenwood Creek Watershed Project.

Data entry was done by a local member of the Greenwood Creek Association, adept at computerized data entry and familiar with both the survey and the road conditions. We found that this local knowledge of the road system and familiarity with local erosion problems was invaluable in the sorting and categorizing of the multitude of maps and data that the survey generated. The Greenwood Creek Watershed Project personnel also spent many, many hours, organizing the datasets in comprehensible road sections in order to present the results to individual landowners in preparation for the next phase of restoration.

Protocols

Road survey protocols were established by the consulting firm FSW and represent a combination of procedures designed by FSW and methods adapted from the road survey protocols designed by Pacific Watershed Associates (PWA) in Arcata. In choosing a methodology for road assessment, Dr. Euphrat from FSW and the Greenwood Creek Watershed Project (GCWP) felt that it was important to use similar protocols to those that Louisiana Pacific (L-P) would use in the assessment of their 60% portion of the Greenwood Creek watershed, the ultimate goal being a cooperative sharing of data between the two parties.

The final choice of protocols included the following two site assessment protocols designed by FSW and two site assessment data sheets from PWA. Examples of these data sheets and explanations of methodology are found in Appendix A.

1) Road Location Sheet with mileage location, narrative description and categorization of the problem along with an initial prescription and recommended possible solution (FSW),

2) Road Inventory Data Form (PWA),

3) Sediment Delivery From Roads, Cutbanks, and Ditches (PWA),

4) STC's - Sediment Transport Corridors (FSW).

Methodology

Field crew workers, traveling down each road section, came upon sites of obvious or apparent erosion and filled out a Road Location form (FSW). The first task was to locate the site in terms of road name and mileage (to the nearest tenth of a mile) as noted from a documented starting point for each road section. Each site location and problem was then described in written narrative (e.g. culvert xing and road junction) followed by a general assessment (needs surface, needs drainage, close road). This general assessment was then followed by initial prescriptions for the site in question (i.e install culvert, break berm, rock ford etc...). The general assessments and initial prescriptions have proven to be invaluable in summing up the numbers and types of problems for any given section of road. These summaries have been used in the first phase of community outreach, to communicate the nature and extent of road problems to individual landowners in both letters and individual meetings with field crew members (Table 2 - Appendix C).

Road Inventory Data and Sediment Delivery

Once a site of erosion was identified, the next step was to fill out a Road Inventory Data form and a Sediment Delivery from Roads, Cutbanks and Ditches data sheet (PWA) for each site, to assess the nature and size of the problem. The data collected on these two sheets describes the condition of the road at that specific location, identifies the cause of erosion, and estimates the magnitude of the problem. Again, a recommendation for treatment was written along with narrative comments.

Sediment Transport Corridors - STC's

If the site was exceptionally large in size or magnitude of delivery of sediment to the stream, a separate Sediment Transport Corridor (STC) form was filled out. This form called for a description of the source and cause of the problem, measurable dimensions and a sketch map. The STC form later served as a red flag indicating larger, more immediate problems.

When an STC is encountered, field workers measure it, sketch it and record its location and direction of sediment flow. The crew member assesses the STC's affect on the stream, choosing from *virtually unnoticeable*, *sediment deposition*, *significant aggradation* and *other* and describes in narrative form, what they see and what they believe to be the source. The surface area of the STC is estimated by measuring its width and length to the nearest 1/2m with a tape. The annual sediment yield from each STC can later be calculated in the data analysis through an estimated erosion factor or the Universal Soil Loss Equation - USLE.

Road Survey Results

1) General Assessments
2) Initial Prescriptions
3) Characterization of the Problem
4) Identifying Sites of High Erosion
5) Prioritization of Sites for Restoration

1) General Assessments

The general assessments made at each site, as written on the Road Location forms included:

1) improve surface
2) improve drainage
3) close road

Recommendations to improve road drainage were written at 442 sites and an improved road surface was recommended at 113 sites. 86 sites (short sections of 10 roads) were recommended to be closed (Figure 1).

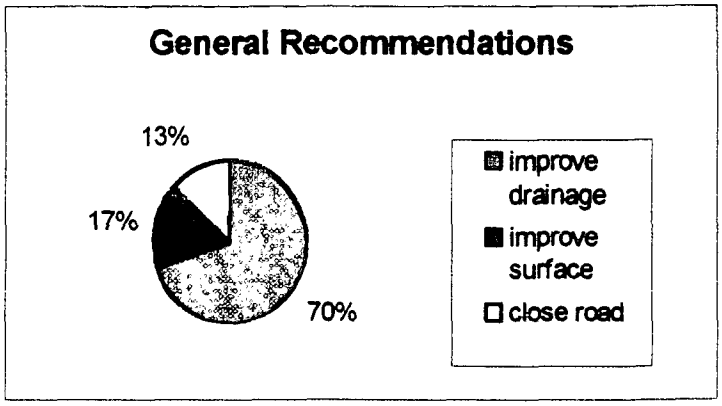


Figure 1.

2) Initial Recommendations

Initial prescriptions addressed problems involving waterbars and dips, culverts, road grading, stream crossings, fill and need for revegetation. These initial prescriptions were summarized and included in a letter to each individual landowner, with the general assessment of the problems on their stretch of road and recommendations for fixing them (Appendix C). Recommendations were categorized as:

1) maintain waterbar/dip
2) improve waterbar/dip
3) install waterbar/dip
4) maintain culvert (cmp)
5) clean out culvert
6) improve culvert
7) replace culvert
8) install culvert
9) inslope road
10) outslope road
11) repair stream crossing
12) create rocked ford
13) crown road
14) create road berm
15) rock on road
16) break berm
17) excavate material
18) plant with vegetation

The following section summarizes the number and types of problems encountered. It is important to note that on many road segments, several of these sites are closely linked, meaning that a number of problems can be solved with one action, such as re-grading the road or installing additional waterbars which would improve several sites all at once.

Waterbars and dips (wb/dips)
Waterbars and rolling dips were recommended to be installed at 199 sites. At 8 sites, existing wb/dips needed maintenance and at 10 sites existing wb/dips needed improvement.

Culverts (cmp's)
The need for new or improved corrugated metal pipes (cmp's), more commonly known as culverts, was evaluated. Recommendations for installing new cmp's were made at 49 sites. 20 already existing cmp's needed improvement, 14 needed to be cleaned out and 24 needed continued maintenance.

Road slope and surface
At 5 sites, recommendations were made to inslope the road, and, at 213 sites, recommendations were made to outslope the road. Outsloping is a more hydrologically sound practice which drains the road off into the hillslope without sending the run-off into insloped channels which drain into smaller streams which eventually flow to the main stem channel. At three sites crowning the road was prescribed, seven sites needed a berm installed, rock was needed at 70 sites, and at 235 sites, the field crew recommended that berms be broken. 25 sites needed to be excavated.

Stream crossings
It was recommended that stream crossings be repaired in 38 sites and rocked fords were recommended in 98 sites.

Revegetation
18 sites were identified for replanting to combat erosion.

3) Characterization of the Problem

The Road Inventory Form filled out at each problem site helped to characterize the exact nature and extent of the problem. The road was first identified as either:

1) maintained (0, 1,2), 0 = poorly maintained, 1= moderate, and 2 = in good shape
2) abandoned,
3) driveable
4) decommissioned.

A range of road conditions prevailed throughout the watershed. Of the total sites, 31% were judged as well maintained, 35% were moderately well maintained, 34 % were poorly maintained. A total of 74 sites were noted on abandoned roads and two thirds of the sites evaluated as "poorly maintained" occurred on these abandoned roads. Only one site (<1%) was on a road that had been decommissioned instead of abandoned (Figure 2).

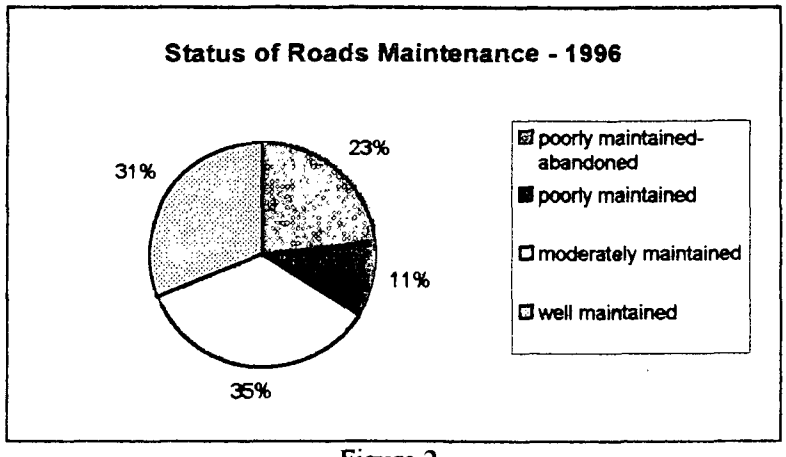


Figure 2.

Each site was then evaluated as to whether it was yielding sediment, either currently or in the past (Y/N). 167 sites were noted to be either presently or historically yielding sediment and a Sediment Delivery Form was filled out for those sites.

The nature of the problem was classified as either:

1) landslides,
2) stream crossings,
3) gully,
4) road bed (road surface, ditch, cutbank),
5) ditch relief/culvert.

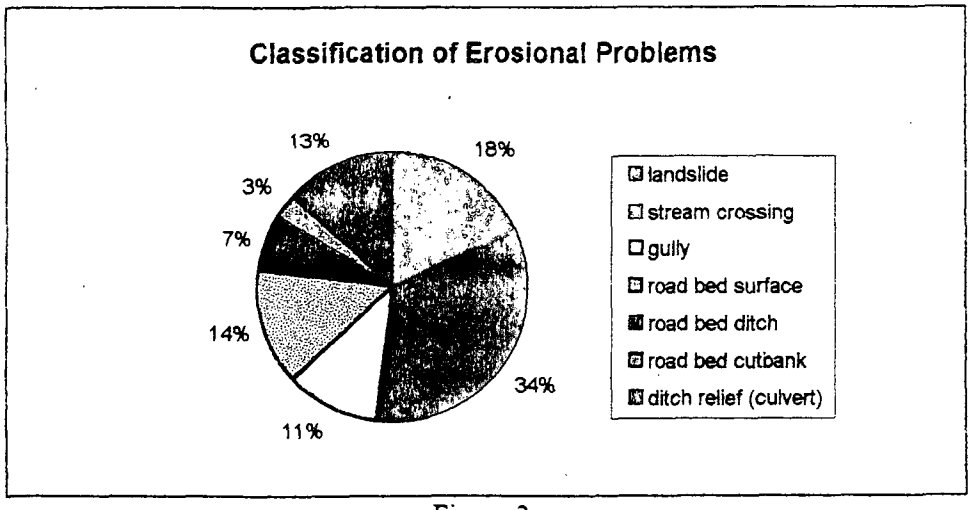


Figure 3.

The largest source of erosion problems were stream crossings (34% of all sites), followed by landslides (18%), road bed surface (14%), ditch relief-culverts (13%), gullies (11%), road bed ditches (7%) and road bed cutbanks (3%). Within each of these categories, more detailed information was collected, such as type of landslide or road failure or size of culvert recommended, requiring measurement of channel dimensions and channel gradient.

Landslides were identified at 87 sites. Sliding due to road fill failures was noted at 32 sites (37%), three sites were attributed to landing fill failures (4%), and 52 sites attributed to cutbank slides (59%). Four of these latter sites were identified as deep-seated landslides. Of these 87 sites, 6% were on slopes of <30%, 28% were on slopes of 30-60% and not surprising, the majority, 66% were on slopes of 60% or greater. Distance from noted landslides to the nearest stream channel ranged from 10 feet to 250 ft., with an average of 72 ft. (Figures 4&5).

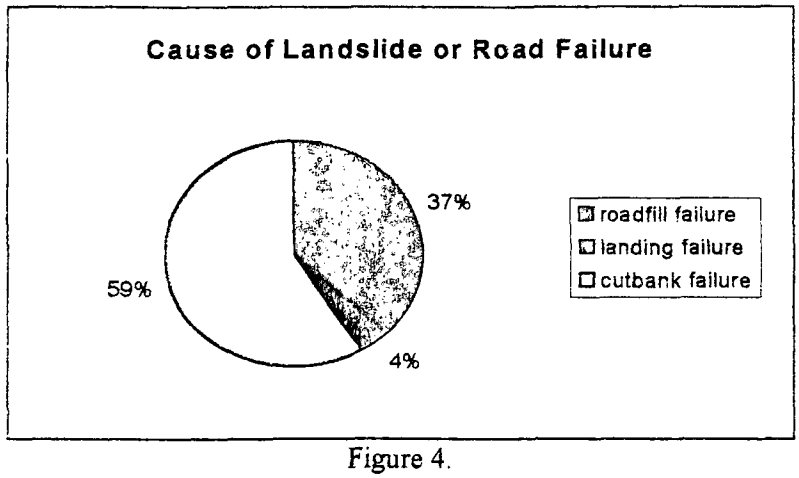


Figure 4.

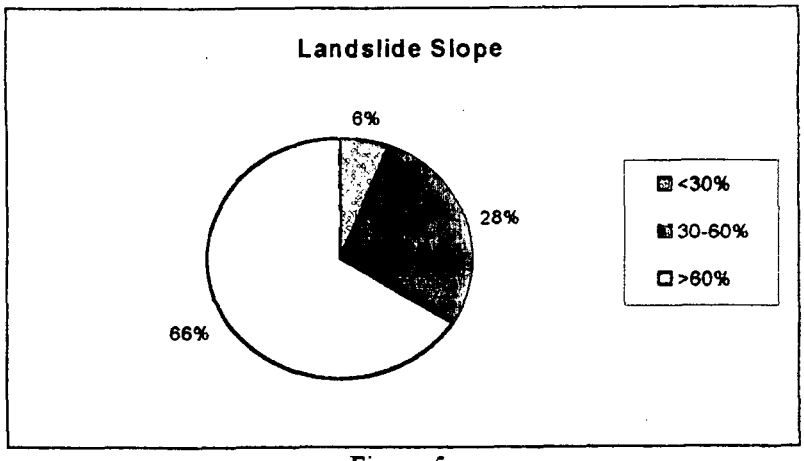


Figure 5.

4) Identifying Sites of High Erosion

The first step in planning for restoration is to prioritize sites according to the size and magnitude of problem, the erosion potential, and the actual past and future sediment yield. These parameters were evaluated by both estimating and measuring:

1) erosion potential (high, medium or low),
2) past erosion (% delivery and dimensions of width, depth and length),
3) future volume (% delivery and dimensions of width, depth and length).

These data are found in Table 1 - Sites of High Erosion, in Appendix B. Sites were included on this list if they had a high or medium potential for erosion, had high volumes of sediment delivery, either in the past or in the future (typically >10 cubic yards) or had high % delivery rates either in the past or the future (typically 50-100%). Narrative comments were written to augment the understanding of the problem. These data were then used in the prioritization of high erosion sites for future restoration.

5) Prioritization of Sites for Restoration

Table 1 in Appendix B, was generated in preparation for a part of Phase III of the Greenwood Creek Watershed Project - Road Work and Restoration. Sites of highest erosion, as identified from both the data and STC forms, were revisited in 1997 by a team of experts which included U.S. Fish and Wildlife and California State Fish and Game personnel, as well as Fred Euphrat, PhD., consultant to the project and a certified erosion specialist. During this reconnaissance work, seventeen of the sites were prioritized for future work depending on the magnitude of the problem, access to site and photo documentation of the problem. These sites have been located on the road maps found in Appendix B.

Community Outreach

One of the primary goals throughout this project is to include individual landowners in the restoration of roads and to encourage and educate individuals to maintain private roads to decrease sediment input into Greenwood Creek. After the road survey was completed and the general assessments and initial recommendations were summarized, a large spreadsheet was created with this summary. Each landowner will be contacted by project personnel and provided with an update on the status of the road survey. They will also receive a letter which includes a smaller summary spreadsheet of problems that were found on that particular landowners' stretch of road. The summary lists both the location and nature of the problems and invites the landowners to meet with the Project manager and field crew to discuss solutions to the erosion. The summary spreadsheets for all recommendations can be found in Table 2, Appendix C, Letters to Landowners.

Future Follow-up Work

GCWP Phase III also involves a variety of activities. Specific proposed activities include: a) road erosion control and restoration using simple tools such as hoes and shovels, on 25 miles of the watershed road system with the cooperation of 26 landowners; b) production of a 22-minute educational video documenting road erosion problems and simple preventive solutions (working title: "Roads and Fish"); c) treatment of a number of critical road erosion sites, (see Map packet, Appendix B); d) survey of the headwaters stream system for restoration planning; e) training and employment of local workers; and f) GPS/GIS mapping.

The primary purpose of erosion and restoration work is to reduce sedimentation in Greenwood Creek by clearing culverts, improving drainage structures and doing other simple road maintenance over a widespread watershed area before the 1997 winter rains begin. The work will mostly involve clearing culverts and repairing drainage structures with hoes and shovels (3-4 weeks), and some limited logjam and seed-mulch work (two 3-day projects). Three slightly more complex projects are also planned and include, 1) disbursement of a log jam and installation of a bridge at the Greenwood Creek/Russian Gulch stream intersection, 2) seed/mulching of an old Railroad Grade slide, and stream bank armoring and revegetation at a Greenwood Creek mainstem crossing/ford just below the waterfalls at mile 13. The work will be part-time or full-time seasonal, depending on Project scheduling, and will occur in October-December 1997.

Secondly, the project's goal is to heighten landowner alertness and involvement and improve landowner knowledge of road maintenance. The latter goal will be accomplished by involving landowners in the road maintenance work side by side with our trained workers, by providing work crews to help landowners prepare for the winter rains, and through landowner workshops. Additionally, the Greenwood Creek Watershed Project in conjunction with a local film company, is planning to produce an educational video

entitled "Roads and Fish" to inform landowners and communities about road erosion control.

Work on these future projects will benefit the Greenwood Creek Coho salmon and steelhead fishery by helping to reduce sedimentation in Greenwood Creek. In the long term the project strives to improve landowner skills, knowledge and consciousness regarding road maintenance and the impact of roads on fish. Future projects for next year include installing culverts, bridges and trash racks, and re-grading roads as well as some possible instream restoration.

References

North Coast Regional Water Quality Control Board. 1988 with amendments through 1992. Water Quality Control Plan for the North Coast Region.

Bjornn, T.C. and D. W. Reiser; 1991. Habitat Requirements of Salmonids in Streams. Influences of Forest and Rangeland Management on Salmonid Fishes and Their Habitats. American Fisheries Society Special Publication 19:83-138.

Appendix A

* * *

1996 Road Survey Protocols

Road Location Sheet
Road Inventory Data Form
Sediment Delivery From Roads, Cutbanks and Ditches
Sediment Transport Corridors - STCs

Road Location Sheet

Road_____pg_____of_____

Researcher's name_____

Date_____

Location: Transect value or other ID	Rill X-Section and Width, OR Road Name and Bearing ø = no rills, T=trace n/a =not applicable	needs surface	needs drainage	close road	Recommendation: 1) waterbar/ dip 2) culvert x-drain 3) inslope 4) outslope 5) stream xing repair 6) rocked ford 7) crown 8) berm 9) rock 0) break berm
no.	inches x inches	y/n	y/n	y/n	prescription
no's					

Check?__ **P.W.A. ROAD INVENTORY DATA FORM** (7/29/96) (RSDM) ASAP?__

GENERAL INFO. Site #: Mileage: Air Photo: Sketch?:

Road: Maintained: Abandoned: Driveable: Decommissioned:

Inspector: Date: Watershed: Year built:

Treat? (Y,N): Sediment yield (Y,N):

PROBLEM (circle)- Landslide (fillslope, cutbank or hillslope) Stream crossing Gully
Road bed (rd surface, ditch, cutbank) Ditch Relief CMP Other

Landslide - road fill failure: landing fill failure: deep-seated landslide:
cutbank slide: already failed: potential failure:
dist. to stream (ft): slope(%):

Stream - culvert (Y): bridge (Y): Humboldt (Y): fill (Y):
diameter (in): pipe condition(O,C,R,P) --->inlet: outlet: bottom:
headwall hgt (in): cmp slope (%): stream class (1,2,3):
% washed out: D.P. (Y, N): Diverted?: Plug potential (H,M,L):
channel grad(%): channel dimensions W: D: sed. transport (H,M,L):

no problem xing (Y): est'd xing vol (yds): <50/50-100/100-250/250-500/>500

Erosion - Erosion Potential (H,M,L):

Past erosion (yds): Delivery (%): Size W: D: L:

Future volume(yds): Delivery(%): Size W: D: L:

Comment on problem - _____

_____

_____

_____

SOLUTION Treatment immediacy (H,M,L): Complexity (H,M,L): Mulch area (ft^2):

Treatment- excavate soil (Y): install critical dip (Y): add TR/DS (Y):
repair/clean cmp (Y): install/repl cmp (Y) (dia.): (length): none (Y):
reconst. fil (Y): improve rd drainage (Y): other (Y):
check culvert size (Y): outslope road w/rolling dips (Y):

Volume excavated (yds): Production rate (yds/hr): Computer volume (yds):
Volume stockpiled (yds): Volume endhauled (yds): Endhaul dist (ft):

Hours- excavator: dozer: dump truck: grader:
loader: backhoe labor: other:

Comment on treatment:_____

_____

_____

SEDIMENT DELIVERY FROM ROADS, CUTBANKS AND DITCHES (PWA 7/96)

***** *General Info.* *****

Road: **Stream Crossing site #:** **Inspector:** **Date:**
LEFT BANK or RIGHT BANK road reach? RB / LB

****

LEFT BANK DATA...

**** *Cutbanks* *****

Length: Hgt: ~~Area:~~
%Bare: ~~Exposed Area (ft^2):~~ ~~Rate (in/yr):~~
EP (H,M,L): Sediment Delivery to Ditch (%):
Comment:_____

_____

****** *Ditch Erosion* ******

Ditch length (ft): Bare %: ~~Eroding (ft):~~ W: L: D:
Ditch erosion - none: minor rilling: major rilling: gullied:
Ditch erosion potential (H,M,L): Sediment Delivery to stream (%):
Ditch comment_____

****** *Road Surface* ******

Road segment length (ft): Road segment avg width (ft): ~~Area (ft^2):~~
Road shape(%) - [IS: OS: Flat: Crowned:] % Bermed:
Road surfacing - Native (Y,N): Rocked (Y,N): Paved/chip sealed (Y,N):
Road erosion - none: sheet wash: minor rilling: major rilling: gullied:
Sediment delivery to stream (%): W: L: O:
Road surface comment_____

Comment on overall problem _____

_____

RIGHT BANK DATA...

**** Cutbanks *****

Length: Hgt: ~~Area:~~
%Bare: ~~Exposed Area (ft^2):~~ ~~Rate (in/yr):~~
EP (H,M,L): Sediment Delivery to Ditch (%):
Comment:_____

_____

****** *Ditch Erosion* ******

Ditch length (ft): Bare %: ~~Eroding (ft):~~
Ditch erosion - none: minor rilling: major rilling: gullied:
Ditch erosion potential (H,M,L): Sediment Delivery to stream (%): W: L: O:
Ditch comment_____

****** *Road Surface* ******

Road segment length (ft): Road segment avg width (ft): ~~Area (ft^2):~~
Road shape(%) - [IS: OS: Flat: Crowned:] % Bermed:
Road surfacing - Native (Y,N): Rocked (Y,N): Paved/chip sealed (Y,N):
Road erosion - none: sheet wash: minor rilling: major rilling: gullied:
Sediment delivery to stream (%):
Road surface comment_____

Comment on overall problem_____

_____

Sediment Transport Corridors

STC *drains from:* *Left bank* *Right bank* (facing upstream)

Affect on stream: virtually unnoticable sediment deposition significant aggradation

other: _____

Possible causes or sources: _____

_____

_____

_____

STC dimensions: _____

Please Sketch below:

sample no. _____ meter location _____to_____ scribe's name _____ date _____

Explanation for PWA Road Inventory Data Form

The PWA Field Inventory Data Form was developed to assist in the assessment of past and potential future erosion problems, including their nature, cause, magnitude and solution. It is used to identify and classify erosion problems, to prioritize potential work sites, and to prescribe specific watershed treatments aimed at protecting stream channels and fish habitat.

Use of this work sheet is intended to provide a standardized and comparable analysis of observed features throughout a watershed. Using this form, field personnel can measure, describe and interpret landforms and erosional problems in a consistent and uniform manner. In addition, data is most useful if it is collected in a computerized database format that will allow for inventory information to be rapidly analyzed and used to prepare a work plan for implementation.

Based on field observations and interpretive remarks provided on this form, and developed through additional site inspections, land managers will be provided with a prioritized listing of the most critical, on-going and potential sediment sources within each basin.

The following text is provided to help explain the meaning of each question, and possible answer, contained on the Inventory Data Form. The form contains over 30 separate questions or categories of questions. Not all questions are applicable for each site identified int eh field. Only those questions which are applicable for a site should be answered, and only the type of answer allowed (e.g., Yes or No,... or a number) should be given. Comments can be made in the comment sections.

ALL SITES - Data collected for all inventoried sites

1. Site Number: The identification name or number given this specific site. Each site should have a unique ID number for future reference which is shown on an aerial photo mylar overlay. The number is also used to identify each site in database searches.

2. Mileage: For each site that could be reached by a vehicle, a "mileage" is logged on the photo overlay map and on the computerized data sheet. Mileages are typically given from the start of the road for each site that could be reached by vehicle. If the road was not driveable, the word "WALK" is used instead of a mileage. The length of walking-roads is then determined from digitizing maps or aerial photographs.

3. Air Photo: The flight line and frame of the air photos used for mapping. Original field mapping information is contained on an acetate overlay for each of the aerial photos covering the assessment area.

4. Sketch?: Have you made a sketch of the site (on the back of the data form)?

5. Road Name: The name of the road which the site is located on, or nearest to. Many roads have posted names, such as the #500 Road. Other roads will be un-named and you will have to develop a logical numbering system.

6. Maintained (Y,N): Is the road currently being maintained? Is there evidence of maintenance activities having been performed recently? (Y,N)

7. Abandoned (Y,N): Answered "Yes," if the road is abandoned or blocked, and unmaintained. The road may still be driveable, but it is classified as abandoned if there is no obvious maintenance to the culverts, the ditches are not cleaned, and vegetation is overgrowing the roadbed. Spur roads are also considered abandoned if they are completely and permanently blocked at their beginning. Gated roads are not necessarily considered abandoned, but they may be. If the road is not "abandoned," then it is considered "maintained."

8. Driveable (Y,N): Could you drive on the road, or are there obstructions, washouts or vegetation that make it impossible?

9. Decommissioned (Y,N): Has this road been "decommissioned?" (Stream crossings excavated, road surface and ditches permanently drained, unstable fills removed - decommissioned roads can still have potential treatment sites if stream crossings were not completely excavated or unstable fill was left untreated). Abandoned roads, even if all the stream crossings are washed out, are not considered to be "decommissioned."

10. Inspector(s): Use the names or initials of the inventory crew.

11. Date (mapped): The date the field mapping for this site was carried out.

12. Watershed: The name of the watershed (from the map or from the landowner).

13. Year Built: This is the first year the road showed up on aerial photographs. This is not likely the year it was constructed. The construction history for roads in the assessment area is obtained from maps and aerial photographs.

14. Treat (Y,N): The answer to this question represents our final recommendation as to whether on not this site should be treated. It is answered: "Y" if the site should be treated, "Y?": if the site should be treated if equipment is at or near the site doing other work and "N" if this site is not recommended for treatment.

15. Sediment Yield (Y,N): Will this site yield sediment to a stream channel if it is left untreated? If this question is answered "no" then you probably don't need to fill out a data sheet (it is not a site).

16. Problem Type (circle): Circle the appropriate type(s) of problems at each locality. (Note: gullies are new channels that have a cross sectional area over 1 ft^2 (1'x1').

Gullies are caused by concentrated surface runoff (often below culvert outfalls, on skid trails or on large bare areas such as landslide scars) or by stream diversions. Anything smaller is considered a rill and lumped with surface erosion processes. Streambank erosion is often natural and unavoidable but can be accelerated by the build-up of bed deposits in the channel, deflected stream flow caused by landslides or debris in the channel, or by increases in discharge.)

Landslide Sites...

17. Road Fill Failure (Y,N): This just involves the outside edge of the road prism, where loose material was pushed over the side during road construction. These failures can show up many years after construction.

18. Landing Fill Failure (Y,N): This just involves the outside edge of the log landing, where loose material was pushed over the side during landing construction. These failures can show up many years after construction.

19. Deep Seated Slide (Y,N): These features usually cover fairly large areas with multiple scarp systems running through natural slopes and/or across roads and skid trails. Characterized by emerging groundwater, leaning trees, active and inactive scarp systems, and episodic, seasonal movement from several feet to several hundred feet annually. Some may not move annually. Most deep seated landslides are difficult and expensive to control. They usually involve much more than just the road fill.

20. Cutbank slide (Y,N): This is a landslide that is confined to the cutbank on the inside of the road. Usually, these landslides just dump material on the road bed and none of it gets into the stream channels. Some of the bigger slides can go right over the road and down slope into a channel. Cutbank slides are usually just maintenance problems (not sediment yield problems).

21. Already failed (Y,N): Landslides which have already failed are generally inactive features that have partially or largely revegetated and show no significant signs of pending erosion or sediment delivery. Gullies will often have armor lag deposits in the channel bed. Landslides may be inactive even though vegetation is still sparse and it still looks bad.

22. Potential failure (Y,N): Features which are assigned this category are thought to be potentially ready and waiting to fail. They may be currently inactive (showing no signs of movement in the last several years), but the scarps and other indicators suggest that during an especially large storm the instability could become active and fail or move downslope. It may also be part of slide that already failed, but there is still a chunk ready to go.

23. Dist. to stream (ft): How far is it from this landslide site from the nearest stream (where sediment would be delivered), in feet?

24. Slope (%): What is the slope of the hillside below the site, in percent? This is the slope of the natural ground below the base of the fill slope, not the slope of the road fill looking from the outside edge of the road. You will likely have to go down to the foot of the fillslope to take a good measurement with your clinometer.

Stream Crossing Sites...

25. Stream Crossing Type: Stream crossings are locations where ephemeral, intermittent or perennial streams cross a road. The crossing may be a culverted crossing, a bridge, a Humboldt log crossing, or a fill crossing that never had any drainage structure installed. Mark "Y" or circle the applicable answer.

26. Diameter (CMP)(in inches): This is the culvert diameter, in inches. Typical choices include 12, 18, 24, 30, 36, 42, 48, 52, 60, 72. Measure each culvert with a measuring tape because it is easy to be fooled and guess incorrectly. .

27. Pipe condition (O,C,R,P): This question requires three answers - the Inlet, the Outlet and the Bottom of the culvert pipe. O = OK; C = Crushed; R = Rusted (severe, to the point of having holes in the bottom); P = Plugged (anything over about 20% blocked should be marked "plugged").

28. Headwall height (inches): Headwall height measurements are only made on stream crossings with culverts. Measure the vertical height from the bottom of the culvert inlet to the lowest point in the stream crossing fill where the water would begin to flow out of the crossing and down the ditch, or over the fill on onto the road. Some headwall height measurements will be made to the low point on the inboard edge of the road and others will be made to the ditch. You have to figure out where the low point is and where water would flow if the culvert were to plug.

29. CMP slope (%): What is the average slope of the culvert? This measurement can be taken by looking up the culvert from the outlet, or down the culvert from the inlet. Use a clinometer. If the culvert is straight, you can place you clipboard in the culvert inlet, put your clinometer on you clipboard and read out the slope gradient.

30. Stream Class (1, 2, 3): These are the stream classed used by Fish and Game and the Department of Forestry. Basically, Class I are fish bearing at some time of the year, Class 3 move sediment but don't provide any habitat to bugs or amphibians. Class 2 are the rest (have bugs and/or amphibian habitat at some time of the year.

31. % washed out (%): if the crossing is eroding, how much of it has gone? Is it 10% washed out or is it 50% washed out. If it is completely washed out you put "100." Culverted stream crosings can wash out by having stream flow flow over the fill, by having extreme culvert outlet erosion or by having a Humboldt log crossing develop sink-holes and subsurface gully erosion.

32. D.P.? (Y,N): Does the crossing have a high diversion potential? (Y or N) That is, if the culvert plugged, would flood waters spill over the road and back into the stream channel (No D.P.) or would the water flow down the road or ditch (High D.P.). All stream crossings (where roads cross over stream channels) have either no DP or a high DP. There are no other choices. If the crossing has No D.P., overflow might cause the fill to be washed out, but the streamflow would not be diverted out of its channel. If the crossing has a High D.P., the fill crossing at the point of diversion would not wash out but a gully would form down the road, in the ditch and/or where the water left the road and crossed the slope.

33. Diverted (Y,N): Is the stream currently diverted down the road?

34. Plug potential (H,M,L): This is the estimated potential for this culvert (or Humboldt log crossing) to plug with sediment or woody debris (High, Moderate or Low). It has a plug and high failure potential if the capacity is too small, or if the culvert could be easily plugged. This is an **estimate** of how likely the culvert is to plug in the next big storm. The amount of mobile organic debris and sediment being transported in the channel and whether or not an adequate trash rack is in place (some crossings work fine without a trash rack because little debris moves in the channel during storms) are considered.

35. Channel gradient (%): The slope of the natural channelupstream from the stream crossing, in percent. Do not measure channel gradient in the flat reach influenced by the stream crossing and culvert inlet.

36. Channel dimensions (W, D): The dimensions of the active natural channel (width and depth), in feet.

37. Sed Transport (H,M,L): This is the relative capability of the stream to transport sediment (and thereby move sediment and debris down to the culvert inlet) (answered: High, Moderate or Low). This is a subjective and relative observation that needs to be "calibrated" in the field.

38. No problem xing (Y,N): Answer this "Yes" if there in nothing wrong or at risk at the stream crossing. No-problem crossings are usually characterized by oversized culverts in good overall condition, no outlet erosion, no plugging potential, no diversion potenial and (often) relatively low rates of sediment transport in the channel.

39. Estimated xing volume (yds^3): For no-problem stream crossings, make an estimate of the volume of the stream crossing (use and record basic width, depth and length measurements in the comment section below).

40. Erosion Potential (H,M,L): The estimated potential for additional erosion is a judgement call, based on observations already taken, as to the potential for additional, significant erosion at this site. This is a probability estimate, not an estimate of how much erosion is likely to occur. The answer is either High, Moderate or Low.

Questions about past erosion, future erosion potential and possible treatments are answered for each site. In this important section, estimates are given of how much erosion occurred at the site in the past, how much was delivered to a stream channel where it might eventually impact fisheries resources, how much future erosion is to be expected from this site, and whether or not it appears that on-going or potential problems can be corrected. The details of actual treatments and prescriptions are then addressed uinder the "Solutions" section.

41. Past Erosion (yds): The volume of past erosion (yds^3) at the site is recorded. The volume is typically derived from field measurements. Width, depth and length measurements can be recorded here also. If the feature is complex, several different measurements may be given to account for the entire feature.

42. Delivery (%): This is an estimate of the percent of the past eroded material that was actually delivered to the stream channel system.

43. Future Erosion (yds^3): This is the estimated volume of future erosion. It is determined by taking quantitative planimetric measurements in the field and calculating the size and volume of potential erosion that would be generated. This question calls for an estimate, but the estimate is based on field observations and measurements. For existing gullies, potential and existing landslides and potential stream crossing washouts, it is possible to estimate the volume of future erosion that is likely to occur.

- Volumes are easiest to estimate for potential stream crossing washouts, because the fills placed in the channels when roads are built are fairly regular in shape and you can assume most of the fill would eventually be lost if the culvert plugged and the crossing washed out by fluvial erosion.

- Next, oversteepened landings generate limited volumes of sediment when they fail by debris sliding, and these quantities can be estimated fairly easily.

- Existing, enlarging gullies lengthen, widen and deepen until they become stable and the final dimensions (hence volumes of future erosion) may be estimated. Indeed, many existing gullies that were formed during major storm events and still look raw may already be largely stable. Most sediment to be eroded from these features may well be limited to gradual bank retreat and collapse.

- Debris slides (landslides) generated from steep headwater swale areas (usually where they are crossed by roads) are limited in size at the point of origination. However, debris slides generated at these sites often grow much larger as they move down the steep channels and scour debris from the channel bed. This makes their final volumes sometimes much larger than that estimated at the initiation site itself. Use your best judgement and base your volume predictions for such features on occurrences that have been documented or observed in your area. If your estimate includes additions of material scoured from channels and downslope areas, via these debris torrent mechanisms, make sure you differentiate the two sources on the check sheet.

- The future volumetric yield of large translational landslides can be difficult to estimate largely because they move episodically, they move at unpredictable rates and they occasionally become self-stabilized after moving for a period of time. Such slides are typically bounded by scarps or other natural features that place an upper bound on the amount of material that is **likely (or possible)** to move downslope and into a stream channel. However, this is an upper limit and not a reasonable estimate of the expected future volume. Instead, an estimate is made of what portion of the mass is likely to move downslope before the feature eventually stabilizes. Potential volumetric contributions from debris slides and other "fast" mass movements can be predicted much more easily than yields from episodically active translational landslides.

44. Future Delivery (%): Will future eroded sediment enter a stream channel? If any of the future eroded sediment will enter a stream channel and could eventually be washed to downstream areas, then there will be delivery. If all the eroded sediment will be stored on the slope and never move into the stream system then there will be no delivery. This is an estimate of how much sediment (expresses as a % of the volume of expected erosion) that is likely to be delivered to the stream channel.

45. (WxLxD): Measurements of the potential erosion feature, expressed as average Width X Length x Depth. If the feature is complex, several different measurements may be given to account for the entire feature. These measurements describe the planimetric assumption used by field personnel to determine future erosion volumes.

46. Comment on problem(s): The summary comments for each site generally describe the nature of the erosion problem and important site characteristics. The summary comments section is here to help the reader quickly gain a feel for the site without having to read all the detailed questions that follow.

47. Treatment Immediacy (H,M,L): The subjective answer to this question lets you decide if the work needs to get done right now! or later. Is the feature falling apart and going to change dramatically this coming winter? Does erosion at this site seriously threaten important downslope or downstream resources (eg spawning or rearing areas)? Answer "High", "Moderate" or "Low" (no big rush, but erosional problems or potential erosion source should be corrected in the future). This is question that field personnel summarized how critical it is to perform erosion control work at this site. This answer is based on the severity of the potential erosion, its volume, its predicted activity level and the sensitivity of the resources at risk.

48. Complexity (H,M,L): A subjective estimate of the difficulty of performing the recommended treatment. For example, a simple stream crossing excavation or the excavation of a small unstable fill along the outboard edge of the road would usually be categorized as LOW complexity. On the other hand, a 1,000 yd^3 excavation of a Humbold log crossing which will require construction of a lower access road and dump truck endhauling may be classified as a HIGH complexity site. It is best to explain your thoughts in the comment section at the bottom of the data sheet.

49. Mulch area (ft^2): This is the expected area that will be bared by heavy equipment operations. This area may need mulching and seeding to control erosion after operations are complete. Many sites located away from stream channels will not need these treatments. Only if bare soil could erode and be delivered to a stream channel is there a need to mulch and seed.

50. Possible Treatments, "Y" is placed next to recommended treatments. "Excavate soil" is reserved for excavations where the soil will be permanently removed from the site (thus, replacing or installing a culvert is not marked "excavate soil" because all the dirt is placed back in the hole - if some dirt is permanently removed from the work site, then mark "excavate soil).

51. Volume excavated (yds^3): This is the total volume of material which must be excavated from the unstable fillslopes or stream crossings at this site. This volume is used to help predict costs and equipment times needed to perform the excavation work. In addition, it is used to help determine whether endhauling will be necessary to dispose of spoil from the site. Questions related to the excavation of fill crossings on abandoned roads: This is actually the estimated volume of material that will have to be excavated from the stream crossing site to prevent future erosion and sediment delivery. In many cases, because the stream banks must be sloped back to a stable gradient, slightly more sediment will have to be excavated from the crossing than would eventually fail or be washed away by fluvial erosion.

52. Production rate (yds^3/hr): State the production rate (excavation rate) your have used for this site to calculate the needed equipment hours. Use the comment section at the bottom of the page to itemize how many hours of each piece of equipment are assigned for each task and sub-task. See the "cheat-sheet" for some general guidance in estimating equipment production rates for various tasks).

53. Computer volume (yds^3): The computer program may be used to help you determine volumes to be excavated. The form for collecting data to enter into the computer is on the back of the data sheet.

54. Volume stockpiled (yds^3): How much of the excavated spoil can you pile locally (without using dump trucks).

55. Volume endhauled (yds^3): From measurements in the field, the available storage volume is calculated and compared to the total excavated volume to determine the need for endhauling equipment. If local storage is insufficient, additional storage sites will have to be found in nearby areas along the road. Endhauling requires dump trucks.

56. Endhaul Distance (ft): If you have to truck the dirt away, how far does it have to go? Try to keep it as close as is possible.

57. Equipment hours: If a piece of equipment is to perform several different tasks or subtasks, then list the individual times that go together to add up to total equipment time for each piece of equipment.

- Excavator (hrs) - estimated hours of excavator time needed for direct excavation at the work site. This estimate does not include time for travelling or other miscellaneous tasks.

- Dozer (crawler tractor) (hrs) - estimated hours of tractor time needed for direct excavation at the work site. This estimate does not include time for travelling or other miscellaneous tasks.

- Dump trucks (hrs) - estimated hours of dump truck time needed for endhauling excess spoil to stable storage locations.

- Grader (hrs) - estimated hours of road grader time needed for direct excavation and road work at the work site. This estimate does not include time for travelling or other miscellaneous tasks.

- Loader (hrs) - estimated hours of loader time needed for direct excavation at the work site. This estimate does not include time for travelling or other miscellaneous tasks.

- Backhoe (hrs) - estimated hours of backhoe time needed for direct excavation at the work site. This estimate does not include time for travelling or other miscellaneous tasks.

- Labor (hrs) - estimated hours of laborers needed to perform such tasks as culvert installation, culvert cleaning, etc.

- Other - This category is reserved for any other tasks or equipment not listed above.

58. Comment on treatment: Included in this comment section are estimated equipment hours needed for backhoes, dump trucks, etc. In addition, details for equipment or labor treatments and logistics may be outlined in this comment. You should strive to fill this comment with useful information.

EXPLANATION FOR *PWA* ROAD DATA FORM

Sediment Delivery from Roads, Cutbanks and Ditches

Road prism, cutbank(s) and ditch data will be collected at all approaches to stream crossings, and at all sites with a potential for sediment delivery to a stream. First, prior to answering any specific questions on the form, field personnel should determine if any erosional products derived from the road surface, cutbank or ditch are being delivered to the stream on an annual basis. Secondly, field crews must then determine the up-road distance(s) of road bed, cutbank and/or ditch which has the ability of delivering runoff and sediment to the stream crossing culvert inlet or outlet, or to the stream via a gully. This effectively isolates the length of road that will be considered in the assessment of this road reach. If any sediment delivery is identified, field personnel should then go ahead and answer the appropriate portions of the form.

GENERAL INFO

General info is information which allows us to connect the data being collected to a specific location in the watershed. General info includes:

Road Name: The name or number of the road the site is located along.

Inspector: The initials of the field crew collecting the data.

Date: The month, day and year the data was collected.

Stream Crossing or Site Number: The specific, unique number assigned to the site.

Left Bank or Right Bank: This question is answered looking downstream or down slope. Circle the **RB** for right bank sediment contributions, **LB** for left bank sediment contributions, or circle both the **LB/RB** if both road approaches are contributing sediment to the site or stream crossing.

CUTBANKS (as a sediment source)

Length: The length (ft) of cutbank on the approach to the stream crossing that is or could contribute sediment to the stream crossing culvert (ie., the inboard ditch drains to the stream crossing inlet), or to a site such as a ditch relief culvert which has sediment delivery to a stream.

Height: The average height of the cutbank on the approach to the stream crossing or site.

% Bare: The area of the cutbank that is composed of bare soil, expressed in estimated percent of total cutbank area. Thick litter, vegetation and non-erodible rock is not considered "bare." If you put 35%, that means that you have estimated 35% of the cutbank is composed of exposed bare soil, and the other 65% is either rock or vegetation, or something else that is not erodible.

Erosion Potential (H,M,L): Estimated erosion potential (erodibility) of the bare portions of the cutbank. Answered as High, Moderate or Low. If the bare soil appears to be rapidly eroding on an annual basis, put High. If it looks real stable and not eroding, put Low.

Sediment Delivery [from cut bank] to Ditch (%): How much of the eroded sediment from the cutbank is actually getting to the ditch? High, Moderate or Low percentage (%). If it is a low %, then most of it must be stored in talus cones or at the base of the cutbank before it gets into the ditch. If its a high %, then most of it appears to feed directly into the ditch.

DITCH (as a sediment source)

Ditch Length (ft): What is the total length of ditch which drains to the stream crossing? This will probably extend from a rolling dip, water bar or ditch relief culvert, or another stream crossing culvert up the road, but it may extend from a drainage divide where the ditch leads off in both directions.

Bare (%): Looking at the ditch, what percent of it is bare and what percent is covered with vegetation, coarse rock, bedrock or undisturbed litter? We're mostly interested in the part of the ditch that carries water (the bottom and the lowest sides) and is, or could be, a sediment source. For this question, we want to know if the ditch is eroding and is a sediment source.

Eroding (ft): Of the ditch that is bare, are there sections that appear to be eroding, actually scouring the bottom or sides of the ditch beyond the original ditch dimensions? How many feet of the ditch are eroding? The eroding sections of the ditch are often to be found in the steepest sections, and/or near the end of the ditch where water flow is usually the greatest during storms.

Ditch Erosion (ft) None, Minor Rill, Major Rill and Gullied: Pace/measure the length of ditch experiencing each of the four (4) categories of erosion. The total number of feet should equal the ditch length. The erosion estimates are not those of the ditch dimension, but rather are those of the enlarged or eroded area or portion of the ditch. **Minor rilling** is ditch erosion with a total cross-sectional area **less than 0.5 ft²**. **Major rilling** is erosion in the ditch with a total cross-sectional area between **0.5 ft² and 1.0 ft²**. **Gullied** ditches have cross-sectional areas **greater than 1.0 ft²**. If some portion of the ditch is gullied, provide the average width, depth and length of the gully. You'll need to make some estimates.

Ditch Erosion Potential (H,M,L): Estimated erosion potential (erodibility) of the bare or eroding portions of the ditch. Answered as High, Moderate or Low. If the bare soil appears

to be rapidly eroding on an annual basis, put High. If it looks real stable and not eroding, put Low.

Sediment Delivery [from ditch] to Stream (%): An estimated measure of the ability of the ditch to transport sediment to the stream crossing inlet. This estimate considers evidence of recent sediment transport and erosion in the ditch, as well as possible sediment traps that would prevent transported sediment from reaching the stream. Answered as a percent (%) of the sediment in transport.

For example, sometimes there is a big grassy flat just before the stream crossing where some of the ditch flow spreads out and drops its sediment before getting to the stream. This could lessen or eliminate sediment delivery. Likewise, if the upper half of the ditch is essentially plugged by a cone of coarse rock ravel from the cutbank and no fine ditch sediment is getting through, then at most sediment delivery could be 50%.

Alternatively , there is often a small, active channel in the ditch bottom that can efficiently carry ditch flow right to the stream at the culvert inlet. If the ditch is an open conduit all the way to the stream, and there is evidence of annual sediment transport, then it would merit a very high delivery estimate.

ROAD SURFACE (as a sediment source)

Road Segment Length (ft): What is the total length of the road which is draining into the ditch or over the outside edge of the road where sediment can be delivered to a stream. You'll need to look along the entire road length to figure how much of the road drains to the ditch (insloped) and how much drains away from the ditch (outsloped). This "length" may be divided from several different spots along the road and they may not be connected to each other. For example, if you have 1,000 feet of ditch, perhaps 650 feet of road drain to that ditch, and the rest drains to the outside of the road (not into the ditch). That 650 feet may occur in one or more segments located along the ditch.

Road Segment Average Width (ft): What is the average width of the road that is draining into the ditch. From the above example, what is the average width of the road that is draining into the ditch or onto the outside edge of the road along the 650 feet of road.

Road Shape (%): For the entire length of the road which drains to a stream crossing or site with sediment delivery to a stream, estimate the percentage that is 1) *insloped*, 2) *outsloped*, 3) *flat* (water drains straight down the road), 4) *crowned* (drains both in and out from a high center). The answers from these four categories should add to 100%. Then answer what percentage of the road has a grader built berm along the outside edge of the road (0 to 100%).

Road Surfacing: Indicate which type of surfacing is dominant along the road reach: *native* earth surfacing, imported *rock* surfacing or *paved/chip seal* surfacing?

Road Erosion (ft) None, Sheet, Minor Rill, Major Rill and Gullied: Pace/measure the length of road experiencing each of the five (5) categories of erosion. The total number of feet should equal the road length. Road segments experiencing sheet erosion will often exhibit a lag deposit of coarser rocks with evidence for only fine (sand sized or smaller) particles and litter in transport. Sheet erosion results in gradual lowering of the whole road surface, in combination with vehicles mechanically wearing down the surface, and is not a form of concentrated runoff erosion.

Concentrated runoff results in rill and gully erosion. **Minor rilling** is erosion with a total cross-sectional area **less than 0.5 ft²**. **Major rilling** is erosion with a total cross-sectional area between **0.5 ft² and 1.0 ft²**. **Gullied** road segments have cross-sectional areas **greater than 1.0 ft²**. If some portion of the road is gullied, provide the average width, depth and length of the gully. You'll need to make some estimates.

Sediment Delivery [from road surface] to Stream (%): The road surface can deliver sediment to the stream either through the ditch (if the road drains to the ditch, and the ditch drains into the stream) or through a gully (if road runoff drains off the road surface and into a gully that extends tot he stream). It is most important to first determine that a direct and active link of sediment transport exists from the road surface through a ditch or gully and to the stream.

Sediment delivery is then an estimated measure of the ability of road surface runoff to transport sediment to the stream at the stream crossing inlet or outlet via the ditch, or a gully, expressed as a % of total road surface erosion. This estimate considers evidence of recent sediment transport and erosion in the ditch or in gullies below berm drains or waterbars along the outside edge of the road, as well as possible sediment traps that would prevent transported sediment from reaching the stream. For a low %, some times there is a big grassy flat or some other barrier to sediment transport exists before the stream crossing and some of the ditch and road runoff spreads out and drops its sediment before getting to the stream. For a high %, there is often a small channel or gully that can efficiently carry ditch and road flow right to the stream at the culvert inlet, or a gully/rill below a berm drain or water bar that extends directly to the stream channel.

In general, you should add up the road surface area that drains to a ditch or gully capable of transporting sediment to the stream. If a section of road surface drains to the ditch, but the sediment cannot be transported down the ditch to the stream, then that section of road is not considered a sediment source and should not be included in the road surface survey (delivery = 0%). Thus, if the road is insloped, be careful to determine whether or not the road surface actually drains to a segment of ditch that is capable of transporting sediment to the stream. Alternately, if a 200 foot section of road drains to a berm drain (or ditch) that is directly connected to the stream by a small, active channel or gully, then delivery would be high (approaching 100%). Alternately, if the entire length of road is crowned, and the outer ½ of the road has no delivery to streams, then at best the sediment could be 50%. If the upper half of the ditch does not deliver to the stream, then total delivery from the road surface could not exceed 25%.

Appendix B

* * *

Photos of High Priority Sites

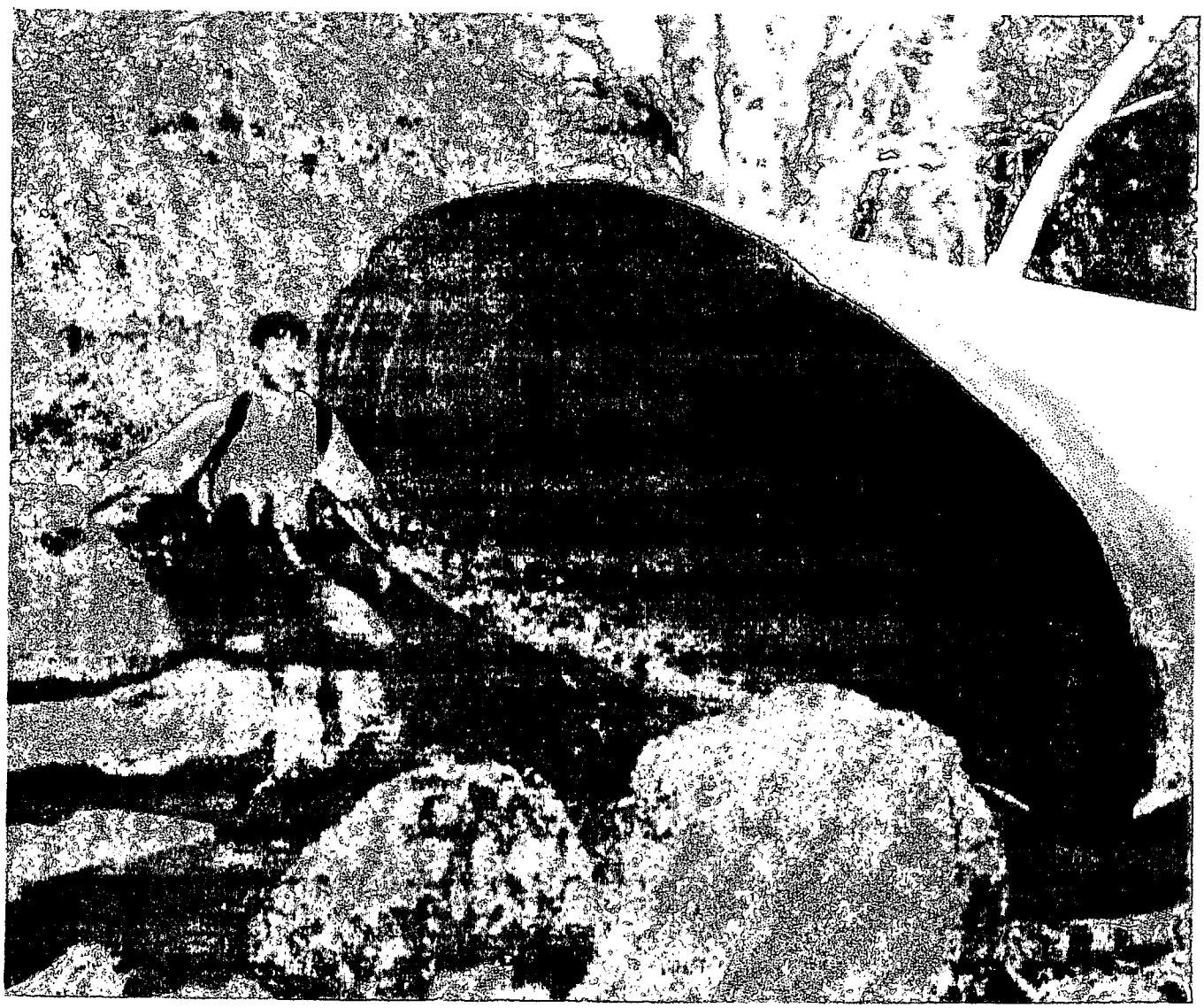
Road Maps of Greenwood Creek Watershed

Sites of High Erosion

Greenwood Watershed Association

Survey Images

Road Survey 1996 - Priority Site 4
Jesse Russell (near blown culvert)
Summer, 1996
Photo by Dave Gurney



Greenwood Watershed Association

Survey Images

Road Survey 1996 - Priority Site 6

Photo by Dave Gurney

Greenwood Watershed Association

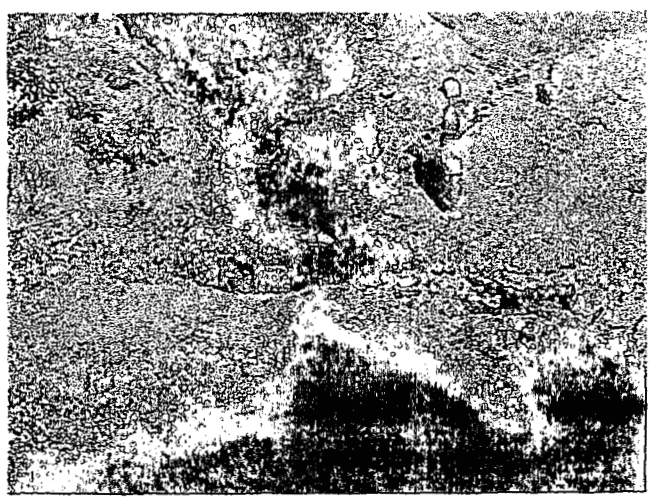
Survey Images

Road Survey 1996 - GRV Main Road
Photo by Rick Carver

Greenwood Watershed Association

Survey Images

Fish Crossing - Maple Basin Road
September 28, 1997
Photo by Dave Gurney

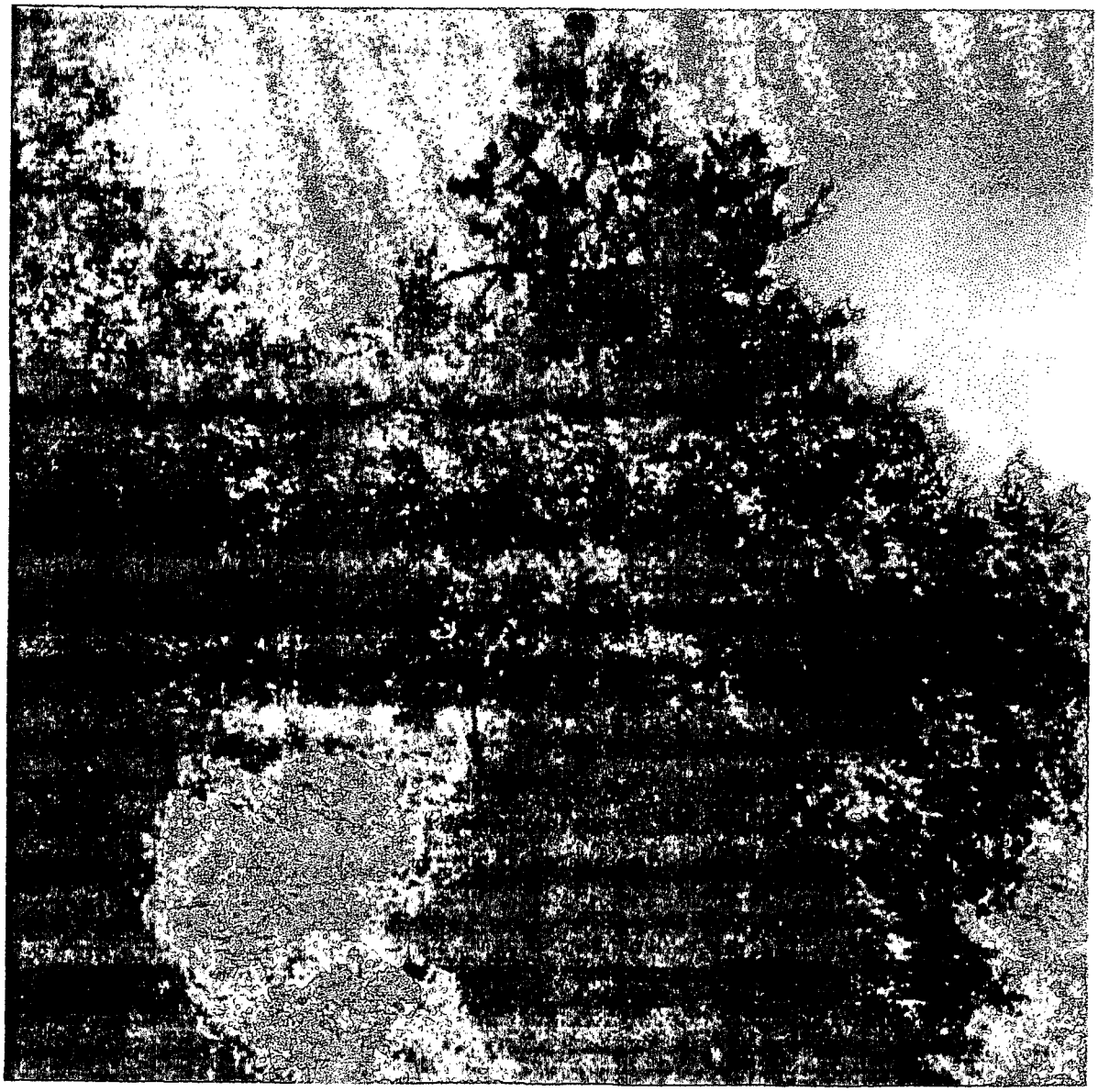


Greenwood Watershed Association

Survey Images

Road Survey 1996 - Priority Site 9

Photo by Rick Carver



Greenwood Watershed Association

Survey Images

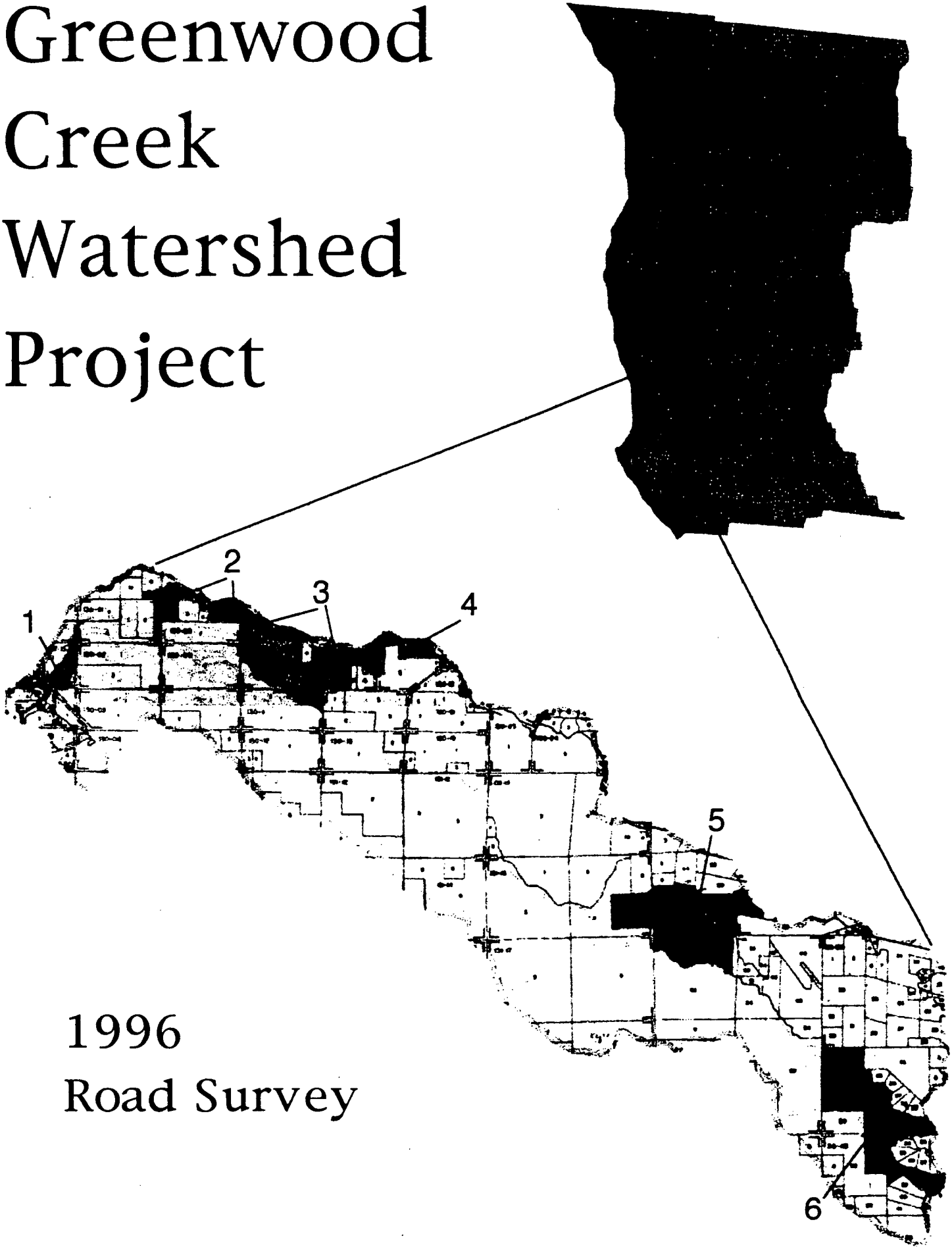
Road Survey 1996 - Priority Site 10
Coho Salmon Crossing
Photo by Dave Gurney

Greenwood Watershed Association

Survey Images

Road Survey 1996 - Priority Site 11
Ron Bloomquist with GPS system
Photo by Rick Carver

Greenwood Creek Watershed Project



1996
Road Survey

Greenwood Creek Watershed Project

Road Survey and Erosion Control 1996-1997

USGS Map Quads: Navarro, Elk, Mallo Pass and Cold Springs

Contents: 17 High Priority Road Erosion Sites Table

Map No.	Site Name	Township Range	Section
Map 1	Greenwood Commons	T 15 N R 17 W	26
Map 2	Kuchrawy to Sandkulla	T 15 N R 16 W	30, 19, 24, 25
Map 2 A	Sandkulla to McLaughlin	T 15 N R 16 W	29, 32
Map 3	Mills to Johnson	T 15 N	28, 33
Map 4	Johnson to Carleton	T 15 N R 16 W	28
Map 5	Greenwood Ridge Vineyards	T 14 N R 15 W R 16 W	12, 7, 18
Map 6	Sky Ranch Estates	T 14 N R 15 W	21, 28

Greenwood Creek Watershed Project Phase III

17 High Priority Road Erosion Sites

SKY RANCH ESTATES: Map 6	Photos	Road Inventory
<u>SRE: South Fork Road</u>		
Site 1: poor drainage 1.5 miles of road: outslope, rolling dips		Sites 1-4, 1-36 mi. .03-.12, .01-1.54
Site 2: poor drainage, losing road clear culvert, spot rock, outslope, roll/dips	Dave Roll 2: #6-7	SF-2: Site 15 mi. .62
Site 3: berm & upslope erosion rolling dips, outslope, mulch, replant	Dave Roll 2: #8-10	Sites 1-15 (10) mi. .01-.62 (.44)
Site 4: 3-4 ft. culvert blowout, broken road install culvert, re-drain rd, rolling dips, rock	Dave Roll 2: #12-17	Sites 6-15 mi. .36-62
<u>SRE: South Fork-B Road (Sec. 32)</u>		
Site 5: major rilling, cutbank slump, cracks outslope, roll/dips, spot rock, break berms, mulch	Dave Roll 1: #22-28	Sites 1-27 mi. .06-.48
Site 6: poor drainage, diverted stream clear culvert, outslope, roll/dips, break berms	Dave Roll 1: #29-36	Site 32-49 mi. .62-.83
<u>SRE: DeVlieg/ Maple Basin Road/Russian Gulch</u>		
Site 7: erosion at doulble-culvert, cutbank slide rolling dips, spot rock, mulch, replant	Dave Roll 2: #21-25	DeV site 2, .02 MBR site 6, .21
GREENWOOD RIDGE VINEYARDS: Map 5		
<u>GRV Main Road</u>		
Site 8: poor drainage, small culvert, landslides replace culvert, outslope, roll/dips, rock ford	Rick: #3-7	Site 6-10 mi. .18-.35
Site 9: poor drainage, small culvert, landslides replace culvert, re-grade, re-drain	Rick: #8-12	Site 15 mi. .74
<u>GRV Maple Basin Road</u>		
Site 10: stream draining across road, washout install culvert, outslope, spot rock, mulch	Dave Roll 2: #18-19	Site 9 mi. .31

(Continued)

NOTE: The site numbers of the Road Inventory sheets (column on right) are the best guide to the sites. In general, ignore site numbers in photos where they appear. Check this table (or the backs of photos) for Road Inventory site numbers.

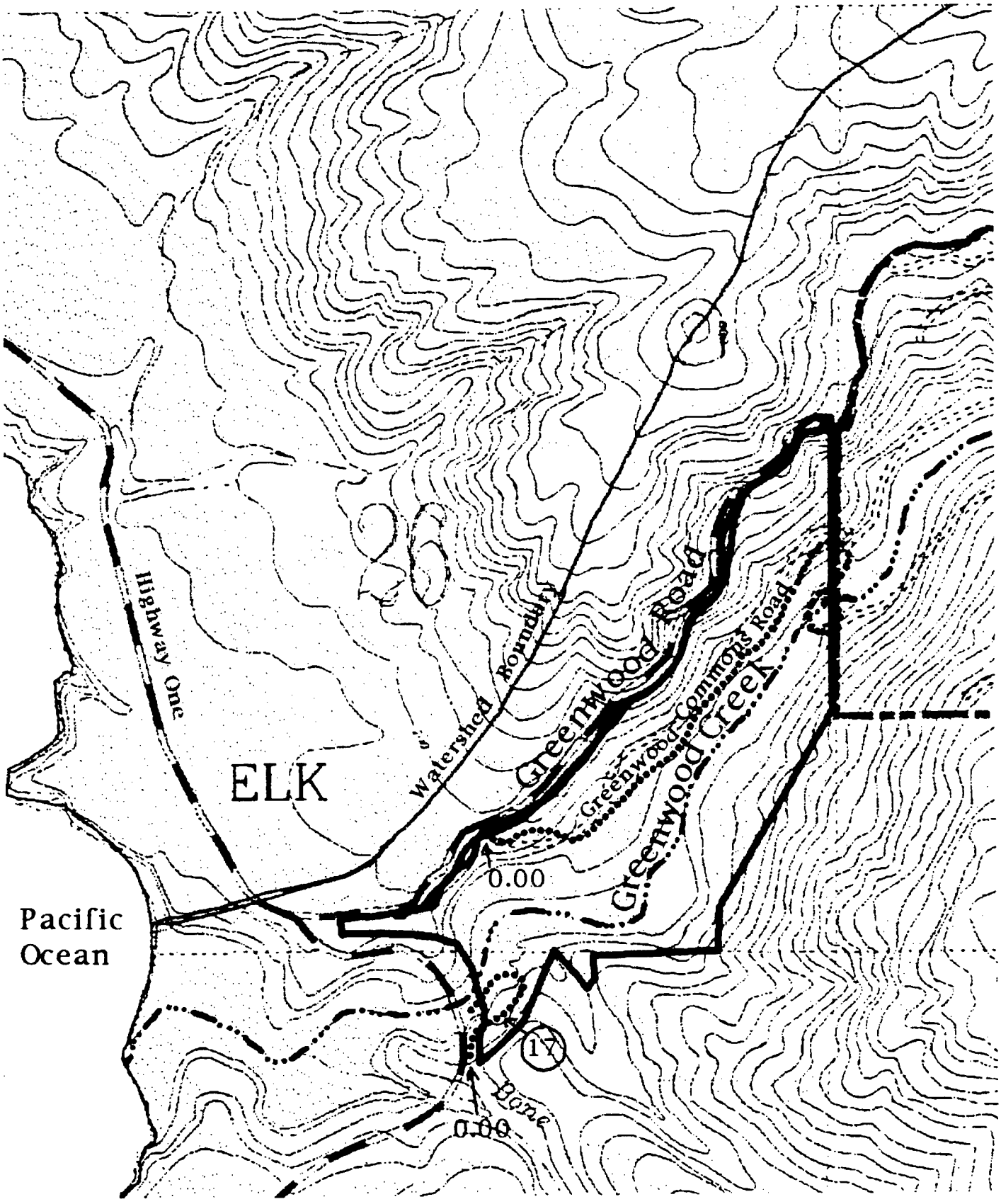
Greenwood Creek Watershed Project Phase III

17 High Priority Road Erosion Sites

	Photos	Road Inventory
TROTTER RANCH: Map 3		
Mills-Dahlbeck-C Road		
Site 11: failed landing/haul road re-shape drainage, outslope, mulch	Rick: #16-18	Sites 1-7 mi. .02-.16
Site 12: poorly functioning culvert repair culvert, critical dip, waterbars, mulch	Rick: #20-23	Site 6-8 mi. .14-.21
WEAVER: Map 2A		
Sassen-Weaver Logging Road-2		
Site 13: heavy erosion at stream crossings repair crossings, waterbar, spot rock	Dave Roll 2: #29-32	Sites 3-6 mi. .12-.26
Old Creek Rail Road Grade (Weaver)		
Site 14: landslide into Greenwood Creek manual drainage repair, seed/mulch	Ron: cover page, insert page	east of Site 1 east of mi. .01
ADDITIONAL SITES: Maps 4, 2A, 1		
Site 15: Young-A & Young/L-P Rd. (Map 4) - waterbar, clear culvert, spot rock, mulch	(no photos)	Site 2-3 mi. .02-.09
Site 16: Sandkulla A-1 (Map 2A) - waterbar, mulch		Site 12, mi .32
Site 17: ECWD (Map 1) - (.01-.25 mi) - install rolling dips, spot rock (see General Inventory)		Site 1-25 mi. 0-.25

NOTE: The site numbers of the Road Inventory sheets (column on right) are the best guide to the sites. In general, ignore site nunbers in photos where they appear. Check this table (or the backs of photos) for Road Inventory site numbers.

Greenwood Commons 1

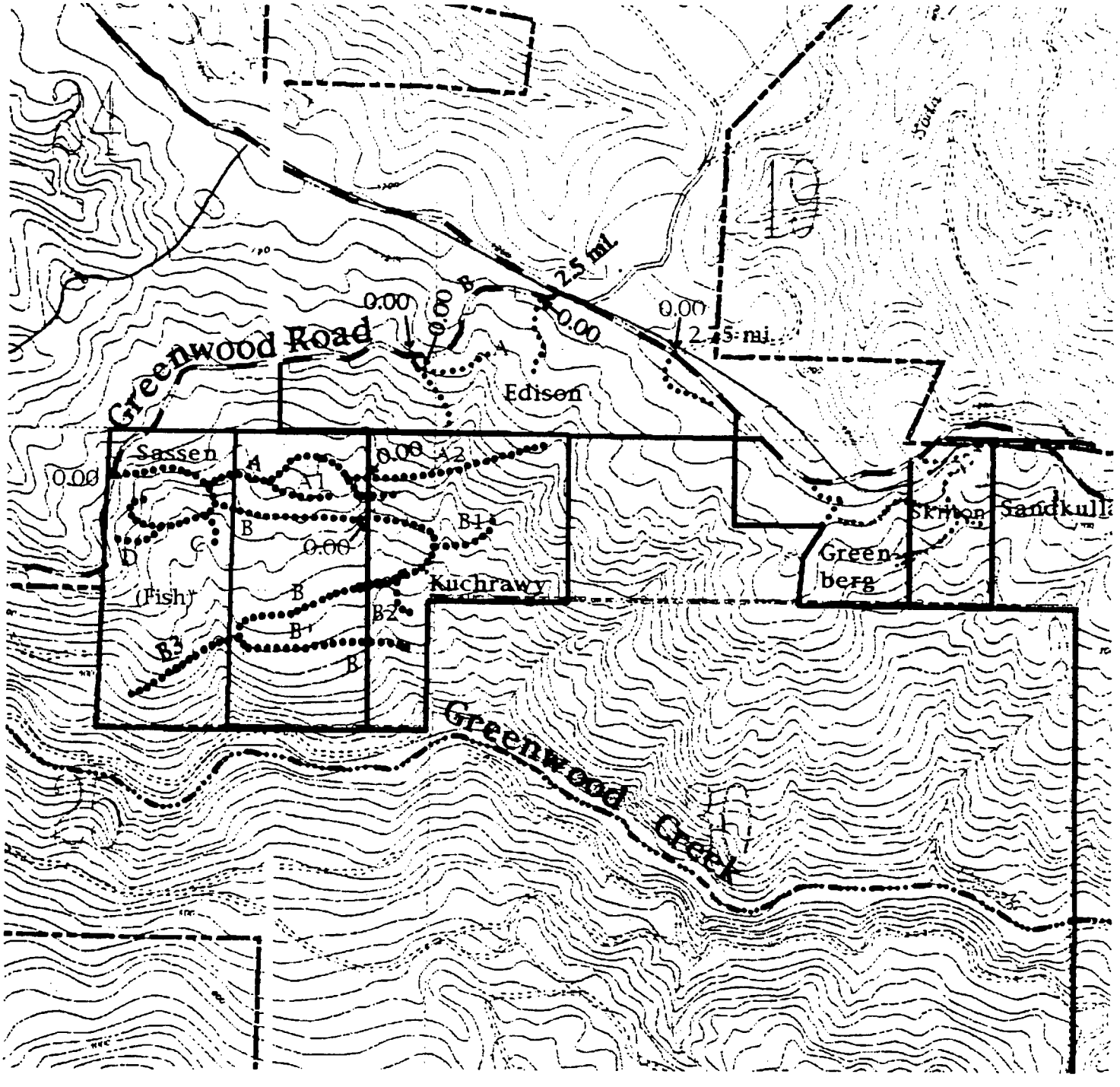


Priority Sight 17

Road to Elk County Water District (ECWD) wells .01 - .25 mi.

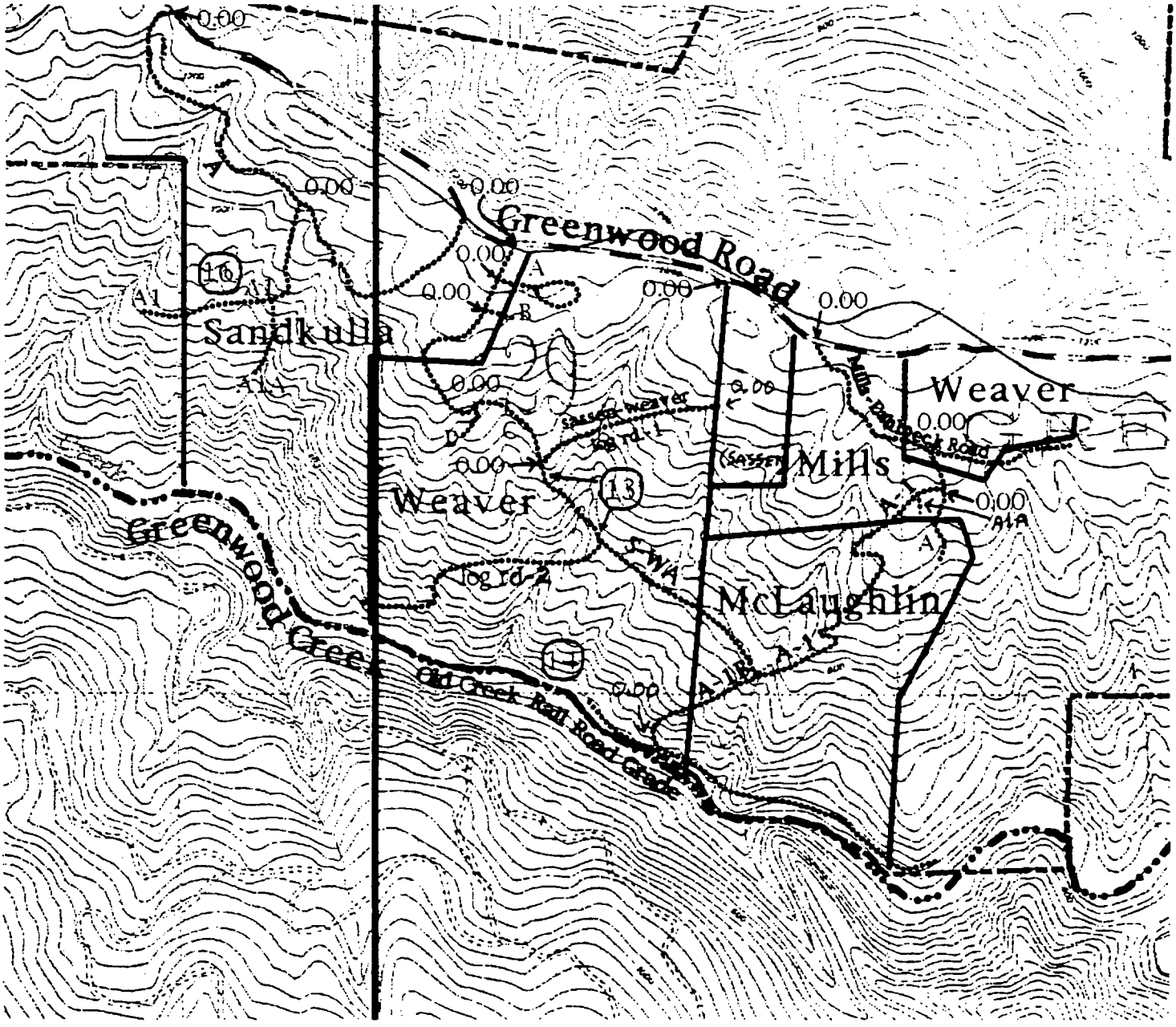
..... Surveyed Roads

Kuchrawy to Sandkulla 2



..... Surveyed Roads

Sandkulla to McLaughlin

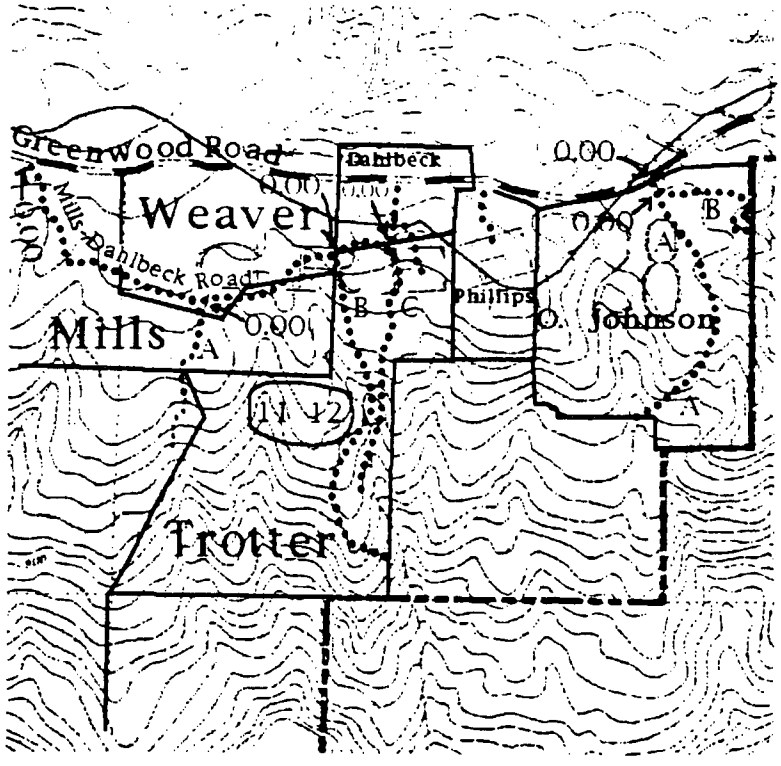


Priority Sights
13, 14, 16

..... Surveyed Roads

note: Sandkula=Sandkula A

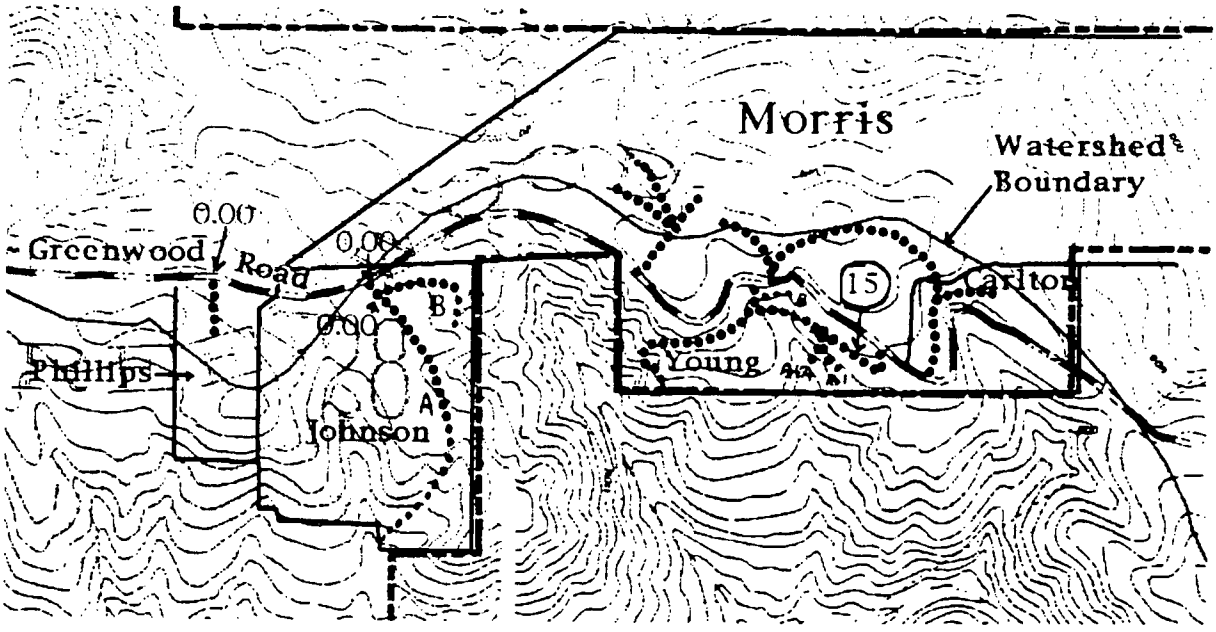
Mills to Johnson



..... Surveyed Roads

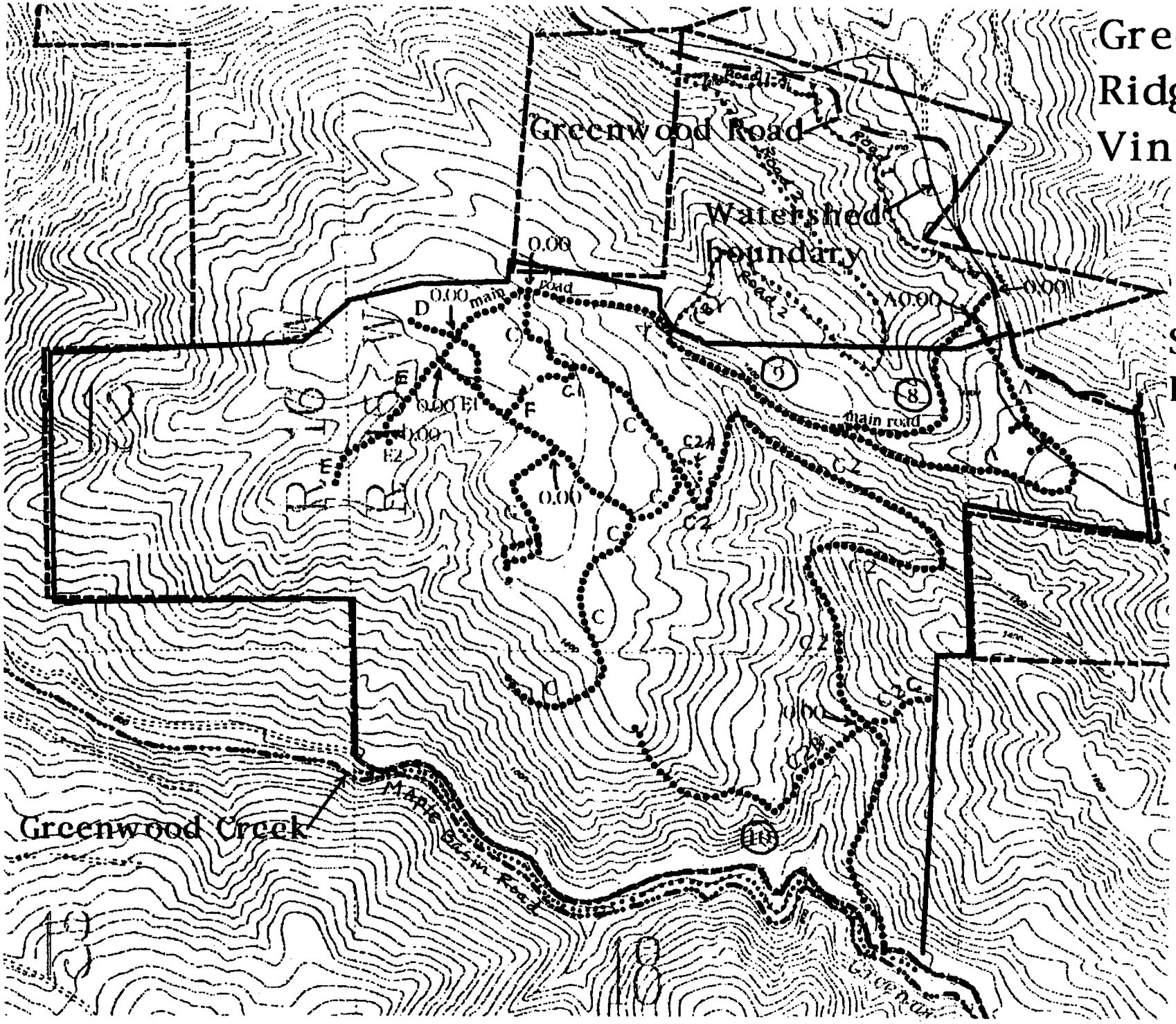
Priority
Sights
11, 12

Johnson to Carlton



..... Surveyed Roads

Priority
Sight 15



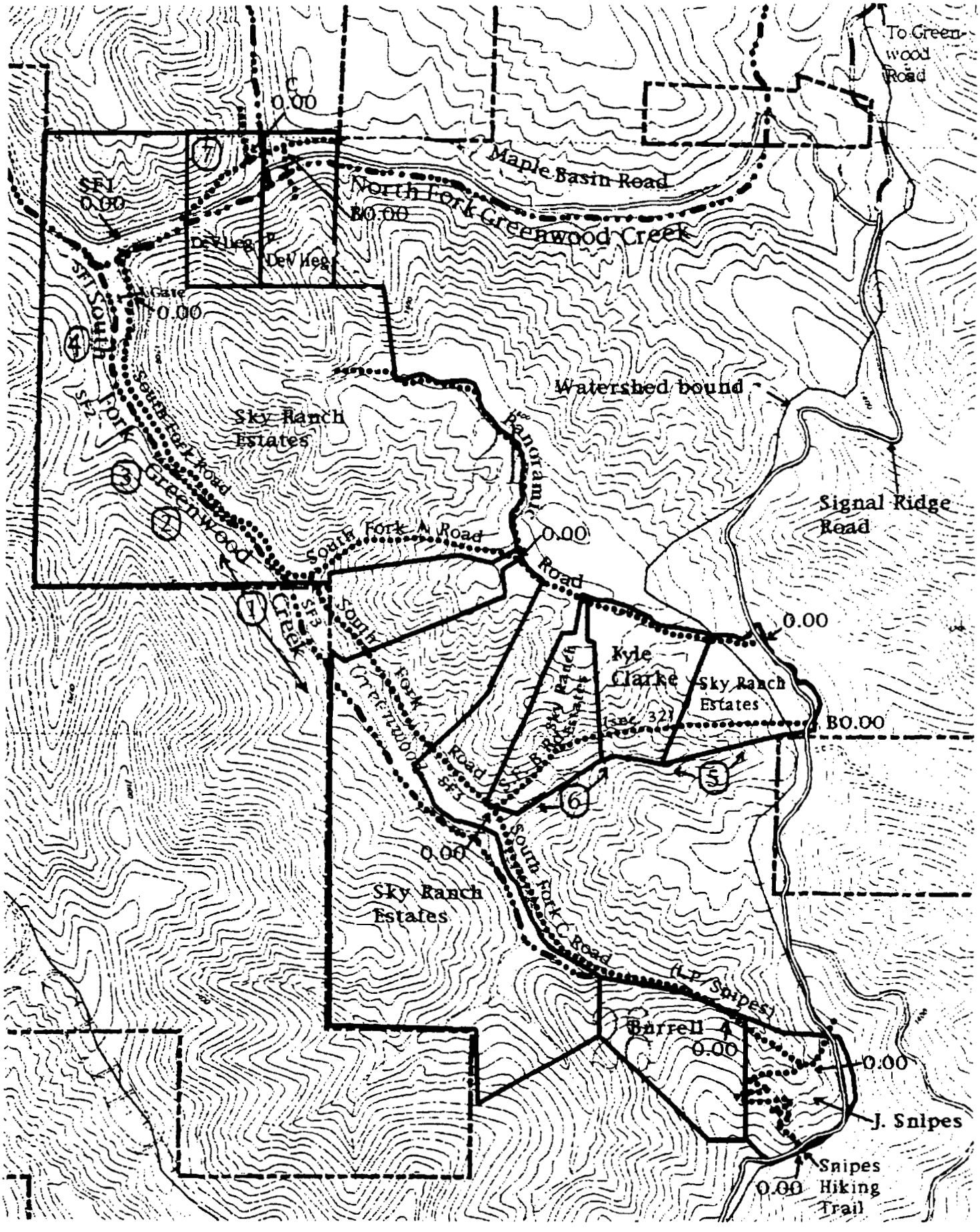
Greenwood Ridge Vinyards

5

Surveyed Roads

Priority Sights
8, 9, 10

Sky Ranch Estates



Greenwood Creek Watershed Project
Cooperating Landowners 1996-1997

Parcel no.	Owner	Road surv permission form	Road surv completed	Rd surv data sent?-priority	Notes:
LOWER AND MIDDLE WATERSHED					
127-25-11	ECWD	(P)	C	Y-1	Elk County Water District
127-15-2	Greenwood Commons	(P)	C	Y-1	Greenwood Commons Trust
129-04-7 129-11-6	Edison	P	C	Y-3	Bill & Lydia 1005 Gr Rd 877-3369
*130-01-7	Fish	P '97	C '97	Y-2	Clark, 877-3494
130-01-9 130-05-1	Kuchrawy	P	C	Y-1	Andrew & Susan 11 Brandywine Ter. Millis MA 02054 David K - (508) 376-1222
130-05-3	Greenberg	P	C	Y-3	Steve - (602) 948-0887 fx 948-4255 4420 E. Horseshoe Rd Phoenix 85028
130-05-5	Skilton	P	C	Y-3	Dave & Audrey 32851 Gr Rd. 877-3270. 3.25 mi E
130-05-6 130-09-7 130-10-5	Sandkulla	P	C	Y-1	Callie 4 mi E of Elk. RR Bx 1020. 877-3275
130-10-11 130-10-17 130-10-12 130-13-21	Weaver	P	C	Y-1	Al & Sandra 1021 Gr Rd 877-3249
130-10-18 130-10-19	Parker Mills	P	C	visit	1022 Greenwood Rd - 877-3568
130-10-20 130-11-4 130-13-33	McLaughlin	P	C	Y-2	Skip - 31751 Greenwood Rd 877-3268
130-13-22	Dahlbeck	P	C	3	Lyle & Jo Ann (916) 447-1884 1210 14th Av Sacto 95822 (1/4 sec)
130-13-12	M Phillips	P	C	3	Margaux POB 133. 877-3451
130-13-32	Trotter	P	C	Y-1	Marvin - 31275 Gr Rd - 4.67 mi E 2400 Meadow Dr Redw Vly 95470
130-14-2	Johnson	P	C	2	Oliver - 1746 Flagler Av NE Atlanta. GA 30309 tel (404) 873-1983 - ref Michael
130-14-12	Young, Sr	P	C	2	Paul - 1043 Gr Rd - 877-3274

Parcel no.	Owner *	Road surv permission form	Road surv completed	Rd surv data sent?-priority	Notes:
130-14-4	Carleton	P	C	2	Vince & Carolyn 30.000 Gr Rd 877-3540
130-14-13	Morris	P	C	3	Janet - 30250 Gr Rd
130-22-5	Hodgkinson	(P)	Info.	none	Barbara - 28380 Gr Rd 684 Benicia Dr #40 SR 95409-3061 SE corner: rd Serg., S Rock. Karish
UPPER WATERSHED					
Greenwood Ridge Vineyards:					
26-30-28	Green. JH	P	C	Y-1	ref Allan Green 24555 Greenwood Rd Philo 95466 hm 877-3262 wk 895-2002
26-30-43	Green. A	P	C	Y-1	
26-30-18	Green. JH	P	C	Y-1	roads - Bill Holcomb 895-3307
26-30-31	Green	P	C	Y-1	
26-30-33	Green	P	C	Y-1	
26-30-20	Green. JH	P	C	Y-1	
26-30-24	Green. JH	P	C	Y-1	
26-30-32	Green. JH	P	C	Y-1	
26-30-34	Green. JH	P	C	Y-1	
26-30-35	Green. JH	P	C	Y-1	
26-30-29	*Green. A	P '97	C '97	Y-1	(former Berry parcels)
26-30-30	*Green. A	P '97	C '97	Y-1	
26-30-38	*Green. A	P '97	C '97	Y-1	
26-30-39	*Green. A	P '97	C '97	Y-1	
26-30-44	Green. JH	P	C	Y-1	
26-30-45	Green. A	P	C	Y-1	
26-31-44	Green. A	P	C	Y-1	
26-37-44	Green. JH	P	C	Y-1	
26-37-45	Green. JH	P	C	Y-1	
26-37-38	Green. JH	P	C	Y-1	
26-60-3	Johnsen. Arvid &	(P)		none	Arvid & Jean 22501 Ph-Gr Rd Philo 95466-9439
Signal Ridge and Sky Ranch Estates:					
26-61-2 26-61-3	De Vlieg De Vlieg	P (+SS)	C	Y-1	Patricia (415) 334-7119 679 Madrid St SF 94112 North Fork Stream Survey '97
26-61-35	Brooks	P-SS '97	C	(SS only)	Carolyn & Gary - 895-2539 (3513?) 7200 Signal Ridge Philo 95466
26-60-31	**Brinton	letter 8/5/97			Edward - letter (619) 459-7226 8347 La Jolla Shores Dr La Jolla 92037
26-60-28 26-60-30	**Krig **Krig	letter 8/5/97			Thomas 227 Ave B Redondo Beach 90277 Steve Tillecky - DuPratt Winery

Parcel no.	Owner	Road surv permission form	Road surv completed	Rd surv data sent?-priority	Notes:
26-61-1	Sky Ranch	P & SS-P '97	C	Y-1	Kirk Handley. Pres. 877-3466
26-61-14	Estates	P & SS-P '97	C	Y-1	
26-61-16		P & SS-P '97	C	Y-1	So. Fork Stream Survey '97
26-61-18		P & SS-P '97	C	Y-1	
26-61-19		P & SS-P '97	C	Y-1	
26-61-20		P & SS-P '97	C	Y-1	
26-61-21		P & SS-P '97	C	Y-1	
26-61-22		P & SS-P '97	C	Y-1	
26-61-23		P & SS-P '97	C	Y-1	
26-61-24		P & SS-P '97	C	Y-1	
26-61-32?		P & SS-P '97	C	Y-1	see Ilsen Eden below
26-43-44		P & SS-P '97	C	Y-1	
26-61-17	Du Vigneaud	P	C	SRE	Jean Louis & Ann - 895-2220 6601 Signal Ridge Rd Philo 95466
26-61-13	Clarke	P	C	SRE	Kyle - 895-2765 POB 107 Philo 95466
26-43-38	Burrell	P	C	SRE	Howard 511 Tracy Av SR 95401
26-61-25	Handley	P	C	SRE	Kirk: Pat Hank - 877-3466 Boxholder Elk
26-61-27	Anderson	P	C	SRE	Steve & Janet - 895-2575/2341 POB 563 Philo 95466
26-61-28	Serie Juliani	P	C	SRE	Lee & Robt. - 895-2375
26-61-32	Eden	P	C	SRE	Ilsa Eden (510) 526-7700 494 Vincente Av Berk 94707
26-61-15	Parlapiano	P	C	SRE	Jesse & Mike
26-61-30	Catagnola	P	C	SRE	George
26-43-8	Snipes	P	C	1	James - 895-2430 POB 177 Philo 95466
26-61-36	Kohlmeister	(P)	Info.	none	Annette - POB 94 Philo 95466
60% of watershed	Lousiana Pacific	(P)	L-P survey	1	contact: Tom Schultz 964-4781 POB 489 FB 95437

** Landowners who have been contacted recently, but have not yet responded.

Note: The Sky Ranch Estates (SRE) road system is being surveyed and monitored by the Project through the Association. Individual driveways are not presently included.

SS = 1997 stream survey (P) = oral permission, partial permission or unnecessary

Table 1 - Sites of High Erosion

Road Name	Site #	Location	Site Notation	STC Form?	Potential (H,M,L)	Past Vol (yds)	Fut. Vol. (yds)	Past Delivery %	Future Delivery %
Commons	1	0.01	waterbar						
Commons	8	0.24	landslide		M	20		5	10
Commons	11	0.38	landslide		H	30		70	90
G.R.V (C2B)	1	0.02	class 1 turns into class 1		H	12	2	100	100
G.R.V Maple Basin	1	0	plugged culvert	Y	H	50	40	100	100
G.R.V Maple Basin	5	0.13	hill slope slide	Y (3x)	H	100	100	100	100
G.R.V Maple Basin	6	0.17	class 3 cmp	Y	H	20	10	100	
G.R.V Maple Basin	9	0.31	class 1 stream + cmp		H	8	8	100	100
G.R.V Maple Basin	26	1.06	class 3 and spring in ditch	Y	H				
G.R.V. (C2)	30	1.43	plastic pipe 12"		M	15	5	70	70
G.R.V. (C2)	35	1.69	class 3 large cmp	Y	H	50	30	100	100
G.R.V. (A)	1	0.08	minor rilling	Y	H	5	>5	100	100
G.R.V. (A)	6	0.36	steep slope		H	0	50		100
G.R.V. (A)	7	0.38	ridge crest		H	0	30		100
G.R.V. Main Road	4	0.09	class 3 stream crossing		M	0	50		50
G.R.V. Main Road	5	0.1	cut bank slump		H	30	70		
G.R.V. Main Road	6	0.18	class 3 stream xing - culvert		L	0	20		100

Table 1 - Sites of High Erosion

Road Name	Site #	Location	STC Form?	Comments on Erosion Problem	Recommendations
Commons	1	0.01			
Commons	8	0.24		land slide cut bank	
Commons	11	0.38		landslide - cutbank slide inside of road and rocks, rolling across road and down fillslope side 30 yds from Gnwd creek	
G.R.V (C2B)	1	0.02		Needs bridge or large arched culvert if road is reopened.	
G.R.V Maple Basin	1	0	Y	Culvert has plugged. Probably because of cutbank slide. Diverted water has washed over edge causing a fillslope slide.	
G.R.V Maple Basin	5	0.13	Y (3x)	High volume of water draining from road above and Green C2 has resulted in two large fillslope/hillslope slides.	Needs berm.
G.R.V Maple Basin	6	0.17	Y	Cmp appears to have been plugged by cutbank slide. Water drained over side creating fillslope slide. 2 yds. remain in ditch.	
G.R.V Maple Basin	9	0.31		Cmp is too small for winter flow of class 1 stream. Fill is likely to wash out. Cmp is 1/3 full of gravel at inlet. Cutbank slide on RB will wash into creek.	
G.R.V Maple Basin	26	1.06	Y	Road fill is sliding.	
G.R.V. (C2)	30	1.43		Overflow at last site has resulted in too much flow. Gully has formed above and below cmp outlet. Ditch is partially clogged.	
G.R.V. (C2)	35	1.69	Y	Two class 3 streams have severely eroded cutbank. Several overhangs create potential for future slides.	Outslope road. Break berm.
G.R.V. (A)	1	0.08	Y	Inslope ditch relief dumping sediment into class 3 stream head.	Install waterbar/dip. Outslope road.
G.R.V. (A)	6	0.36		New landing hillslope with unstable soil and soil fills stream channel and road crosses stream channel. No culvert or anything.	
G.R.V. (A)	7	0.38		Powder soil on new logging road outsloped uphill from class 3 stream with no water bars. Soil will wash into stream.	
G.R.V. Main Road	4	0.09		Filled class 3 stream regraded to inside ditch which drains into culvert 300 ft downhill.	
G.R.V. Main Road	5	0.1		Steep hill above cutbank has slumped towards roadbed (with trees).	
G.R.V. Main Road	6	0.18		Culvert becoming plugged at inlet.	

Table 1 - Sites of High Erosion

Road Name	Site #	Location	STC Form?	Comments on Erosion Problem	Recommendations
G.R.V. Main Road	7	0.19	Y		Outslope road. Break berm.
G.R.V. Main Road	8	0.24	Y	Too much water for culvert. Culvert drains into old logging road creating bully system.	Install culvert.
G.R.V. Main Road	9	0.32		Skid road alongside class 2 stream. Humboldt crossing is rotting out and clogging at inlet.	
G.R.V. Main Road	17	0.81		Water was shotgunning out of culvert creating large gully. Culvert is now plugged at inlet.	
G.R.V. Maple Basin (A)	4	0.13		Gully forming on cutbank. Water is probably running off the road above at the wrong location.	
G.R.V. Maple Basin (A)	5	0.16		Fillslope is eroding into Greenwood Creek, probably during high water flow.	
Maple Basin - DeVlieg	6	0.21	Y	Large cutbank slide above fillslope slide. Potential for more cutbank and fillslope erosion.	Replant.
Mills- Dahlbeck (C)	2	0.04	Y	Gullying occurring on cutbank (right bank) road surface and on fillslope. Existing waterbar is creating major erosion of fillslope bank.	Replant.
Mills- Dahlbeck (C)	4	0.1	Y	Gullying down road to water bar - diverted water creating hole/gully on fillslope (rt. bank) & back onto road surface around the corner.	Maintain water bar/dip. Improve water bar/dip. Install waterbar/dip. Rock ford. Excavate. Replant.
Mills- Dahlbeck (C)	5	0.13		New stream bed forming along east edge of landing and road system - major soil erosion.	Excavate. Replant.
Mills- Dahlbeck (C)	7	0.16	Y	Stream crossing filled into culvert, piece of plastic on right side of road is intercepting sediment but inadequate. Fill starting to end on fillslope side (left). Also cutbank erosion is occurring. Stress cracks.	Improve culvert.
Mills- Dahlbeck (C)	10	0.35	Y	Stream crossing road is washed out.	Repair stream xing. Replant.
Mills-Dahlbeck	14	0.62		Landing torn up with skid trails, erosion has started - (major blowout 1/2 mi. down slope?) Log road goes at least 1/4 mi straight down - Major rilling and stress cracks.	
Mills-Dahlbeck (A)	2	0.05		Old skid road drawing off main road system, gullying on skid road straight down hill.	
Mills-Dahlbeck (A1)	7	0.31		Old culvert is exposed through 1/4th of road, crushed and plugged.	

Greenwood Watershed Road Survey Final Report
Table 1 - Sites of High Erosion

Road Name	Site #	Location	Site Notation	STC Form?	Potential (H,M,L)	Past Vol (yds)	Fut. Vol. (yds)	Past Delivery %	Future Delivery %
G.R.V. Main Road	7	0.19	road crown discharge thru berm	Y					
G.R.V. Main Road	8	0.24	culvert x-drain in low pt on road - creates huge gullies	Y	H	20		100	
G.R.V. Main Road	9	0.32	stream xing (C2) skid road		H		30	100	100
G.R.V. Main Road	17	0.81	blocked culvert (inlet)		H	100		100	
G.R.V. Maple Basin (A)	4	0.13	water bar		H	20	20	100	100
G.R.V. Maple Basin (A)	5	0.16	rocked ford		H	30	20	100	100
Maple Basin - DeVlieg	6	0.21	cut bank slide	Y	H	100	30	100	100
Mills- Dahlbeck (C)	2	0.04	landing skid road	Y	H	40		50	
Mills- Dahlbeck (C)	4	0.1	gullying on down slope	Y	H	30		50	
Mills- Dahlbeck (C)	5	0.13	gully - stream on edge of landing		H	25	100	60	
Mills- Dahlbeck (C)	7	0.16	landing slumping out	Y	H	15	250	<10	95
Mills- Dahlbeck (C)	10	0.35	stream xing blown out	Y	H	8	12	50	50
Mills-Dahlbeck	14	0.62	ridge nose landing		H	100			
Mills-Dahlbeck (A)	2	0.05	Mills A 1		M	20		10	
Mills-Dahlbeck (A1)	7	0.31	Mills A 1 stream crossing		H	30		40	

Table 1 - Sites of High Erosion

Road Name	Site #	Location	STC Form?	Comments on Erosion Problem	Recommendations
Mills-Dahlbeck (A1)	16	0.77		Major stream crossing has eroded most of the road & fill slope.	
Mills-Dahlbeck (A1b)	25	1.14		Water escaping from above stream channel. Water bar, creating gullying & steep slope also slipping.	
Mills-Dahlbeck (A1b)	26	1.25	Y	Slumped hill, partial landslide - stream xing on downhill side.	Repair stream xing. Rock ford.
Mills-Dahlbeck (A1b)	28	1.32	Y	Road washed out. no culvert or ford.	Repair stream xing.
Mills-Dahlbeck (A1b)	31	1.44	Y	Stream crossing road with no culvert or ford going right to Greenwood creek.	Repair stream xing.
Old Creek R.R. (mcl.)	2	0.06		Class 2 stream formed rocked ford. Is potential slide.	
Panoramic main stem	5	0.64	*** Y***	Ditch filled with sediment and culvert plugged.	Maintain culvert.
Sandkulla (A-1)	12	0.32		Class 3 stream crossing blowout	
Sassen - Weaver log road 1	3	0.14		Cutbank slide has been sufficiently grown over.	
Sassen - Weaver log road 1	5	0.25		Needs waterbar into redwoods before stream xing.	
Sassen - Weaver log road 2	6	0.26		Too much water from second to last site #4. Stress cracks on road fill.	
Sassen Kuchrawy (B)	2	0.21		Needs trash rack. Road could use surface. High ditch erosion potential and high delivery percentage to stream from cutbank.	
Snipes Hiking Trail (B)	1	0		Cutbank slide and fillslope slides.	
Snipes Hiking Trail (S.H.T.)	3	0.14		Cutbank & fillslope beginning to slide on 70 deg. hillslope. Stress cracks / unstable soil.	
Snipes Hiking Trail (S.H.T.)	9	.24+		Numerous gullies in fillslope. Cutbank slide 12'X8'X3'D	
Snipes Hiking Trail (S.H.T.)	10	0.27		Rilling down road causing fillslope to erode.	
Snipes Hiking Trail (S.H.T.)	13	0.32		Road, road fill, lots of cut trees and brush in class 3 stream bed.	
Snipes Hiking Trail (S.H.T.)	14	0.33	Y	Fillslope eroded from skid trail.	No prescription written
Snipes Hiking Trail (S.H.T.)	18	0.43		Cutbank slide onto road.	
Snipes Hiking Trail (S.H.T.)	19	0.44	Y	Road crossing stream. No waterbars or culvert.	Install culvert. Outslope road. Repair stream Xing. Rock ford.
Snipes Hiking Trail (S.H.T.)	23	0.52	Y		Install waterbar/dip. Outslope road. Rock ford. Break berm.
Snipes Hiking Trail (S.H.T.)	24	0.54	Y	Fresh graded soil pushed into stream, class 3. Channel high potential for stream to divert. Also, log jam.	No prescription written

Table 1 - Sites of High Erosion

Road Name	Site #	Location	Site Notation	STC Form?	Potential (H,M,L)	Past Vol (yds)	Fut. Vol. (yds)	Past Delivery %	Future Delivery %
Mills-Dahlbeck (A1)	16	0.77	major stream crossing		H	20		50	
Mills-Dahlbeck (A1b)	25	1.14	land slide / wash out		M	5	50	15	
Mills-Dahlbeck (A1b)	26	1.25	stream xing	Y	H	75	5000	10	10
Mills-Dahlbeck (A1b)	28	1.32	large stream washout	Y	H	75		50	
Mills-Dahlbeck (A1b)	31	1.44	A1b goes into creek side rd.	Y	H	10			
Old Creek R.R. (mcl.)	2	0.06	large class 2 stream xing		H	20	10	100	
Panoramic main stem	5	0.64	culvert xing	*** Y***	H	5		5	
Sandkulla (A-1)	12	0.32	class 2 xing no culvert		L	35		100	0
Sassen - Weaver log road 1	3	0.14	culvert class 3		L	30		30	
Sassen - Weaver log road 1	5	0.25	cut bank slide		M	40	2	50	50
Sassen - Weaver log road 2	6	0.26	cut slope erosion from gully above major gully in road		H	13	10		100
Sassen Kuchrawy (B)	2	0.21	large class 2 stream & cut bank		H	60		100	100
Snipes Hiking Trail (B)	1	0	cut bank / fill failure		H	10	20	10	
Snipes Hiking Trail (S.H.T.)	3	0.14	cut bank & fill failure		M	3	20	40	60
Snipes Hiking Trail (S.H.T.)	9	.24+	fill failure		H	10	50	80	
Snipes Hiking Trail (S.H.T.)	10	0.27	fill failure		H	5	35	20	
Snipes Hiking Trail (S.H.T.)	13	0.32	road into stream		H	20		100	
Snipes Hiking Trail (S.H.T.)	14	0.33	STC / fill failure	Y	H	50		100	
Snipes Hiking Trail (S.H.T.)	18	0.43	cut bank / fill failure		H	20	10	80	80
Snipes Hiking Trail (S.H.T.)	19	0.44	class 3 stream xing	Y	H	10	10	100	100
Snipes Hiking Trail (S.H.T.)	23	0.52	STC fill slope	Y					
Snipes Hiking Trail (S.H.T.)	24	0.54	road built through stream	Y	H		50	100	100

Table 1 - Sites of High Erosion

Road Name	Site #	Location	STC Form?	Comments on Erosion Problem	Recommendations
South Fork (B) sky ranch sec.32	21	0.35		Class 3 stream filled in. Major and minor rilling on road surface. Old cutbank slide and gradual sliding from exposed cut bank. Ditch has major rills. Stream diverts down road and forms a gully where it exits.	
South Fork (B) sky ranch sec.32	31	0.61		Class 2 stream diverted down inside ditch / gully to culvert ~ 100 ' below. Large 25 year old rt bank cutbank slide may still be delivering sediment gradually to ditch. Gradual cutbank sliding on left bank and poten. for larger slide. etc.	
South Fork (B) sky ranch sec.32	33	0.64		Culvert 30% filled with debris. Insufficient headwall. Diverted down road making two gullies and adding to a third where it meets class 3 stream. Shot gun.	
South Fork (B) sky ranch sec.32	37	0.67		Needs rocked ford. Flow diverted down road. Gullied ditch from last cmp. Rilling and gullying of fill slope. Large old cutbank slide.	
South Fork (B) sky ranch sec.32	41	0.73		Class 3 stream is unable to cross road and flows down inside ditch until it meets south fork road forming large gully.	
South Fork (C) (L.P. / Snipes)	10	0.31	Y		Excavate.
South Fork (C) (L.P. / Snipes)	11	0.36	Y		Install culvert.
South Fork (C) (L.P. / Snipes)	12	0.37		Cutbank slide into ditch and water will run down road into class 3 stream	
South Fork (C) (L.P. / Snipes)	14	0.4	Y	Stream / ditch diverted onto roadbed discharging over fill bank.	Break berm.
South Fork (C) (L.P. / Snipes)	15	0.44	Y	Cutbank slump and filled ditch and diverted water across rd through berm & fillslope dn bank into class 2 stream.	Install waterbar/dip. Excavate.
South Fork (C) (L.P. / Snipes)	24	0.83	Y		No prescription written
South Fork (Panoramic fire rd.)	3	0.11		Cutbank slide - the soil has been graded off road years ago but some soil in road.	Rock ford.
South Fork (Panoramic fire rd.)	4	0.14	Y	Gully down road and goes through berm into class 3 stream.	
South Fork (Panoramic fire rd.)	9	0.39		Class 2 stream flow onto roadbed, goes along inslope side of road for 80 ft. till dumping off edge.	
South Fork (Panoramic fire rd.)	10	0.4	Y	No culvert just up road from this site. Water goes along rd w/ added water from spring - washes off edge and into stream. Road washing out.	Rock ford.
South Fork (Panoramic fire rd.)	12	0.5		No cmp at class 3 stream xing.	

Table 1 - Sites of High Erosion

Road Name	Site #	Location	Site Notation	STC Form?	Potential (H,M,L)	Past Vol (yds)	Fut. Vol. (yds)	Past Delivery %	Future Delivery %
South Fork (B) sky ranch sec.32	21	0.35	class 3		H	42	23	80	80
South Fork (B) sky ranch sec.32	31	0.61	class 2		H	1000	150	50	
South Fork (B) sky ranch sec.32	33	0.64	cmp		H	5	15	90	
South Fork (B) sky ranch sec.32	37	0.67	class 3		H	1000	20	50	50
South Fork (B) sky ranch sec.32	41	0.73	class 3 is diverted		H	50	50	90	90
South Fork (C) (L.P. / Snipes)	10	0.31	log STC	Y					
South Fork (C) (L.P. / Snipes)	11	0.36	major ditch erosion	Y					
South Fork (C) (L.P. / Snipes)	12	0.37	cut bank failure		H	20	5	80	80
South Fork (C) (L.P. / Snipes)	14	0.4	ditch / cut bank / road bed gullying	Y	M	5	15	80	90
South Fork (C) (L.P. / Snipes)	15	0.44	ditch plugged / diverted	Y		5	>5	100	100
South Fork (C) (L.P. / Snipes)	24	0.83	ditch plugged / diverting	Y					
South Fork (Panoramic fire rd.)	3	0.11	roadbed into class 3 stream		H	30	5	100	100
South Fork (Panoramic fire rd.)	4	0.14	sever gullying next to class 3 stream	Y	H	20		100	
South Fork (Panoramic fire rd.)	9	0.39	class 2 stream xing		H	5	30	60	90
South Fork (Panoramic fire rd.)	10	0.4	road washed out	Y	H	25		100	100
South Fork (Panoramic fire rd.)	12	0.5	class 3 stream xing		L	4	30	90	90

Table 1 - Sites of High Erosion

Road Name	Site #	Location	Site Notation	STC Form?	Potential (H,M,L)	Past Vol (yds)	Fut. Vol. (yds)	Past Delivery %	Future Delivery %
South Fork Road Part 1	3	0.07	cut bank spring		H	30	30	100	100
South Fork Road part 2	2	0.19	slumped cut slope		M	3	15	20	
South Fork Road part 2	6	0.36	culvert - shot gunning		H	20		100	
South Fork Road part 2	8	0.4	land slide; cut slope		H	15	50	80	100
South Fork Road part 3	16	0.69	low spot needs drainage		H	20	8	30	30
South Fork Road part 3	23	0.91	skid road on right			4	12	60	60
South Fork Road part 3	29	1.3	cut bank slide		H	25	25	80	80
South Fork Road part 3	34	1.49	slide before X roads caused by class 3	Y	H	100	40	50	50
Young (A)	2	0.09	cut bank slide & fill slope failure		H	20	7	50	50
Young - L.P.	2	0.005	spring in rd. - rills going down fill slope	Y					
Young - L.P.	3	0.02	stream xing with culvert shot gun & water coming under		H	20		100	

Table 1 - Sites of High Erosion

Road Name	Site #	Location	STC Form?	Comments on Erosion Problem	Recommendations
South Fork Road Part 1	3	0.07		Large exposed cutbank has slid into ditch.	
South Fork Road part 2	2	0.19		Cutbank (steep) is slumped, eroding and has filled ditch.	
South Fork Road part 2	6	0.36		Culvert shotgun into class 1 stream.	
South Fork Road part 2	8	0.4		Road built on near vertical slope next to creek. Cutslope and fill are about to go.	
South Fork Road part 3	16	0.69		Already failed cutbank slide. Potential for more failure. Possible class 3 stream coming out of bank may cause cutbank slide.	
South Fork Road part 3	23	0.91		Stress cracks. Overhanging section on cutbank above site. Fill slope has eroded above skid road.	
South Fork Road part 3	29	1.3		Cutbank slide caused by class 3 stream. Rd. is filled & stream diverts down road. Potential additional sliding. Some tension cracks in fill slope.	
South Fork Road part 3	34	1.49	Y	Cutbank slide probably caused by class 3 stream. Stream filled and diverted down road. Possibly contributing to erosion of fillslope beside Gnwd. Creek.	Install waterbar/dip. Outslope road. Break berm.
Young (A)	2	0.09		Cutbank slide and fillslope slide.	
Young - L.P.	2	0.005	Y		Repair stream-xing.
Young - L.P.	3	0.02		Class 2 stream with culvert shot gun and water flowing underneath culvert. Stream came over road at one time.	

Appendix C

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General Assessments &

Initial Road Prescriptions

Landowner: _____

Road Name	Site #	Location	Site Notation	needs surface	needs drainage	close road	Recommendations
E.C.W.D.	1	0	start at bridge	y			
E.C.W.D.	2	0.01	major rilling	y			Needs rock.
E.C.W.D.	3	0.02	minor rilling at gate	y			Needs rock.
E.C.W.D.	4	0.03	mid slope	y	y		Install waterbar/dip. Outslope road. Needs rock. Break berm.
E.C.W.D.	5	0.04	water bar	y	y		Install waterbar/dip. Outslope road. Needs rock.
E.C.W.D.	6	0.05	mid slope minor rilling	y	y		Install waterbar/dip. Needs rock.
E.C.W.D.	7	0.06	mid slope major rilling	y	y		Install waterbar/dip. Outslope road. Needs rock. Break berm.
E.C.W.D.	8	0.07	failed water bar	y	y		Install waterbar/dip. Outslope road. Needs rock. Break berm.
E.C.W.D.	9	0.08	class 3 stream	y	y		Install waterbar/dip. Outslope road. Needs rock. Break berm.
E.C.W.D.	10	0.08	class 3 stream	y	y		Install waterbar/dip. Outslope road. Needs rock. Break berm.
E.C.W.D.	11	0.09	mud stop minor rilling	y	y		Install waterbar/dip. Outslope road. Needs rock.
E.C.W.D.	12	0.1	mid slope minor rilling	y	y		Install waterbar/dip. Outslope road. Needs rock.
E.C.W.D.	13	0.12	mid slope	y	y		Outslope road. Needs rock.
E.C.W.D.	14	0.13	mid slope	y	y		Outslope road. Needs rock.
E.C.W.D.	15	0.14	at turn	y	y		Needs rock.
E.C.W.D.	16	0.15	mid crown	y	y		Needs rock.
E.C.W.D.	17	0.16	mid dip	y	y		Needs rock.
E.C.W.D.	18	0.17	mid crown	y	y		Needs rock.
E.C.W.D.	19	0.18	mid slope	y	y		Needs rock.
E.C.W.D.	20	0.19	mid crown	y	y		Needs rock.
E.C.W.D.	21	0.2	mid dip	y	y		Needs rock.
E.C.W.D.	22	0.21	mid dip	y	y		Needs rock.
E.C.W.D.	23	0.22	mid dip	y	y		Outslope road. Needs rock. Break berm.
E.C.W.D.	24	0.23	at first well	y	y		Outslope road. Needs rock.

Landowner: _____

Road Name	Site #	Location	Site Notation	needs surface	needs drainage	close road	Recommendations
E.C.W.D.	25	0.25	at second well				
Commons	1	0.01	waterbar				Maintain water bar/dip.
Commons	2	0.09	str-xing	y	y		Install waterbar/dip.
Commons	3	0.13	bank erosion				
Commons	4	0.14	minor rilling		y		Install waterbar/dip.
Commons	5	0.16	waterbar		y		Maintain water bar/dip. Improve water bar/dip. Rock ford.
Commons	6	0.18	waterbar		y		Maintain water bar/dip. Improve water bar/dip. Rock ford.
Commons	7	0.22	waterbar/landslide	y	y		Maintain water bar/dip. Improve water bar/dip.
Commons	8	0.24	landslide				Outslope road. Excavate. Replant.
Commons	9	0.26	waterbar		y		Improve water bar/dip.
Commons	10	0.29	waterbar		y		Maintain water bar/dip. Improve water bar/dip.
Commons	11	0.38	landslide				Excavate. Replant.
Commons	12	0.41	rockslide		y		Excavate.
Commons	13	0.44	waterbar - old culvert	y			Replace culvert.
Commons	14	0.47	culvert - stream xing		y		Improve culvert.
Commons	15	0.47	diverted stream channel		y		Rock ford.
Edison	1	0.01	abandoned rd on left				
Edison	2	0.02	abandoned rd on left				
Edison	3	0.05	midslope				Improve water bar/dip. Install culvert. Outslope road. Break berm.
Edison	4	0.07	road ends				
Edison (A) off of 34001 Gnwd Rd.		0.01	minor rilling		y		Outslope road. Break berm.
Edison (A) off of 34001 Gnwd Rd.		0.02	abandonded road on left to corral				
Edison (A) off of 34001 Gnwd Rd.		0.04	abandonded road on right back to main rd				
Edison (A) off of 34001 Gnwd Rd.		0.07	road meets gate				
Edison (A) off of 34001 Gnwd Rd.		0.12	road ends at well				
Edison 2.5 mi up Gnwd Rd		0.07	major rilling		y		Install waterbar/dip. Break berm.
Edison 2.5 mi up Gnwd Rd		0.09	needs waterbar		y		Install waterbar/dip. Outslope road. Break berm.

Landowner: _____

Road Name	Site #	Location	Site Notation	needs surface	needs drainage	close road	Recommendations
Edison 2.5 mi up Gnwd Rd		0.13	needs waterbar		y		Install waterbar/dip. Outslope road. Break berm.
Edison 2.5 mi up Gnwd Rd		0.14	needs waterbar		y		Install waterbar/dip.
Edison 2.5 mi up Gnwd Rd		0.17	needs waterbar		y		Install waterbar/dip. Outslope road.
Edison 2.5 mi up Gnwd Rd		0.19	needs waterbar		y		Install waterbar/dip.
Edison 2.5 mi up Gnwd Rd		0.22	road ends at cabin		y		
Edison 2.75 up Gnwd Rd.		0	crushed culvert alongside Gnwd Rd.		y		Improve culvert.
Edison 2.75 up Gnwd Rd.		0.03	minor rilling		y		Install waterbar/dip. Outslope road.
Edison 2.75 up Gnwd Rd.		0.05	minor rilling		y		Install waterbar/dip. Outslope road.
Edison 2.75 up Gnwd Rd.		0.07	road ends at house				
Greenburg - Matson		0.07	culvert				Maintain culvert.
Greenburg - Aubry		0.07	to house - no problems on road				
Skilton	1	0.05	major rilling	y	y		Install waterbar/dip.
Skilton	2	0.08	end of road				
Skilton	3	0.08	driveway distance				
Sassen	1	0.08	waterbar	y	y		Maintain water bar/dip. Outslope road.
Sassen	2	0.18	culvert	y			Maintain water bar/dip. Install culvert.
Sassen	3	0.22	culvert	y	y		Install culvert.
Sassen	4	0.23	cloud's driveway on left (A)	y	y		Needs rock.
Sassen	5	0.24	sub-surface drain on left ditch				
Sassen	6	0.27	logging rd on left (B)			y	Maintain water bar/dip. Install culvert.
Sassen	7	0.31	rolling dip short cut to (C)				Maintain water bar/dip.
Sassen	8	0.34	road to cabin on landing (C)	y	y		Maintain water bar/dip. Outslope road.
Sassen	9	0.37	culvert				Maintain culvert.
Sassen	10	0.4	logging rd with landing			y	Maintain water bar/dip.
Sassen	11	0.43	major rilling	y	y		Outslope road. Needs crown.
Sassen	12	0.45	road ends				
Sassen (C)	1	0.04	rd ends at skid trail				

Landowner: _____

Road Name	Site #	Location	Site Notation	needs surface	needs drainage	close road	Recommendations
Sassne (D)		0.02	waterbar with major rilling			y	Replant.
Sassne (D)	2	0.05	stream xing			y	Rock ford.
Sassen (D)	3	0.1	end of rd. turns into skid trails			y	Maintain water bar/dip. Rock ford.
Sassen Kuchrawy	1	0	start of road		y		
Sassen Kuchrawy	2	0.2	start of survey at property line	y	y		Outslope road. Break berm.
Sassen Kuchrawy	3	0.22	rocked ford	y	y		Outslope road. Rock ford. Break berm.
Sassen Kuchrawy	4	0.23	mid slope	y			Maintain water bar/dip. Outslope road. Break berm.
Sassen Kuchrawy	5	0.25	PG&E rd on left				
Sassen Kuchrawy	6	0.27	end of drive at home	y			
Sassen Kuchrawy (A-2)	1	0	PG&E rd				
Sassen Kuchrawy (A-2)	2	0.03	skid trail on left		y		Maintain water bar/dip.
Sassen Kuchrawy (A-2)	3	0.09	class 2 stream	y	y		Rock ford.
Sassen Kuchrawy (A-2)	4	0.11	mid slope		y		Maintain water bar/dip. Outslope road.
Sassen Kuchrawy (A-2)	5	0.16	mid slope		y		Outslope road. Break berm.
Sassen Kuchrawy (A-2)	6	0.19	mid slope				
Sassen Kuchrawy (A-2)	7	0.21	class 2 stream at property line				
Sassen Kuchrawy (B)	1	0.19	start at property line	y	y		Outslope road. Break berm.
Sassen Kuchrawy (B)	2	0.21	large class 2 stream & cut bank	y	y		Outslope road. Break berm.
Sassen Kuchrawy (B)	3	0.26	class 3 stream	y	y		Rock ford. Needs rock.
Sassen Kuchrawy (B)	4	0.32	class 2 stream	y	y		Needs rock.
Sassen Kuchrawy (B)	5	0.35	mid slope	y	y		Install waterbar/dip. Needs rock.
Sassen Kuchrawy (B)	6	0.38	rd forks at landing	y	y		Needs rock.
Sassen Kuchrawy (B)	7	0.42	mid slope	y	y		Install waterbar/dip. Outslope road. Needs rock. Break berm.
Sassen Kuchrawy (B)	8	0.45	mid slope	y	y		Install waterbar/dip. Outslope road. Needs rock.
Sassen Kuchrawy (B)	9	0.46	class 2 cmp	y	y		Improve culvert. Needs rock.
Sassen Kuchrawy (B)	10	0.5	rd 2 on left	y	y		Install waterbar/dip. Needs rock.
Sassen Kuchrawy (B)	11	0.51	large class 2	y	y		Improve culvert. Needs rock.
Sassen Kuchrawy (B)	12	0.54	mid slope	y	y		Install waterbar/dip. Outslope road. Needs rock.

Landowner: _____

Road Name	Site #	Location	Site Notation	needs surface	needs drainage	close road	Recommendations
Sassen Kuchrawy (B)	13	0.58	class 3 cmp	y	y		Needs rock.
Sassen Kuchrawy (B)	14	0.6	mid slope	y	y		Install waterbar/dip. Needs rock.
Sassen Kuchrawy (B)	15	0.61	property line	y	y		Outslope road. Needs rock. Break berm.
Sassen Kuchrawy (B)	16	0.85	2 class 3 treams converg at property line	y	y		Rock ford. Needs rock.
Sassen Kuchrawy (B)	17	0.87	mid slope		y		Outslope road. Break berm.
Sassen Kuchrawy (B)	18	0.94	end of road				
Sassen Kuchrawy (B-1)	1	0.01	large class 3 stream	y			Rock ford. Needs rock.
Sassen Kuchrawy (B-1)	2	0.03	mid slope		y		Outslope road. Break berm.
Sassen Kuchrawy (B-1)	3	0.06	log landing - end of road				
Sassen Kuchrawy (B-2)	1	0.02	log landing	y			
Sassen Kuchrawy (B-2)	2	0.04	end of property at landing	y			
Sandkulla (A)	1	0.01	major rilling		y		
Sandkulla (A)	2	0.02	major rilling		y		
Sandkulla (A)	3	0.06	gullying		y		
Sandkulla (A)	4	0.11	minor rilling		y		
Sandkulla (A)	5	0.19	road surface gullying		y		
Sandkulla (A)	6	0.22	major rilling		y		
Sandkulla (A)	7	0.24	major rilling		y		
Sandkulla (A)	8	0.26	major rilling		y		
Sandkulla (A)	9	0.31	cut bank to stream xing above water sys.		y		
Sandkulla (A)	10	0.32	cut bank - filled culvert		y		
Sandkulla (A)	11	0.95	Sandkulla A meets Gnwd rd at Skla ranch				
Sandkulla (A-1)	1	0.04	rillings to water bar & gully	y	y		Install waterbar/dip. Outslope road.
Sandkulla (A-1)	2	0.05	rillings to water bar & gully	y	y		Outslope road.
Sandkulla (A-1)	3	0.08	road ot A1A				
Sandkulla (A-1)	4	0.14	class 2 spring on road				
Sandkulla (A-1)	5	0.16	class 2 spring on road				

Landowner: _____

Road Name	Site #	Location	Site Notation	needs surface	needs drainage	close road	Recommendations
Sandkulla (A-1)	6	0.19	class 2 spring on road				
Sandkulla (A-1)	7	0.195	culvert class 2 xing				Maintain culvert.
Sandkulla (A-1)	8	0.22	landing				
Sandkulla (A-1)	9	0.25	cut bank slide class 3 xing				Maintain water bar/dip. Rock ford.
Sandkulla (A-1)	10	0.26	cut bank slide				
Sandkulla (A-1)	11	0.3	cut bank slide - no drainage of rd				
Sandkulla (A-1)	12	0.32	class 2 xing no culvert				Rock ford.
Sandkulla (A-1)	13	0.33	skid road				
Sandkulla (A-1)	14	0.34	class 3 xing				Rock ford.
Sandkulla (A-1)	15	0.37	cut bank failure				
Sandkulla (A-1)	16	0.375	class 3 xing				Rock ford.
Sandkulla (A1A)	1	0.01	class 2 xing				Rock ford.
Sandkulla (A1A)	2	0.03	class 3 crossing				Repair stream xing.
Sandkulla (A1A)	3	0.04	end of A1A - field				
Weaver 1021	1	0.08	Weaver (A) on left				
Weaver 1021	2	0.12	Weaver (b) on left				
Weaver 1021	3	0.15	culvert				Clean out culvert.
Weaver 1021	4	0.3	culvert				Clean out culvert.
Weaver 1021	5	0.36	culvert				Clean out culvert.
Weaver 1021	6	0.38	logging road meets driveway				
Weaver 1021	7	0.43	driveway to shed				Clean out culvert.
Weaver 1021	8	0.46	Weaver house				
Weaver (A)	1	0.05	(A) at .08, at barn				
Weaver (A)	2	0.12	end of loop around barn				
Weaver (B)	1	0.03	(B) at .12, to end at cabin				
Weaver (C)	1	0	(C) at .38, E205logging road meets driveway				
Weaver (C)	2	0.02	culvert				Maintain culvert.

Landowner: _____

Road Name	Site #	Location	Site Notation	needs surface	needs drainage	close road	Recommendations
Weaver (C)	3	0.06	large water bar at Y in rd. (C1 to left)				Maintain water bar/dip.
Weaver (C)	4	0.1	road C ends hits C in logging road				
Weaver (D)	1	0.02	drive ends at shed				
Phillips	1	0.01	pothole needs drainage		y		Install waterbar/dip.
Phillips	2	0.05	deep tracks	y	y		Needs crown.Needs berm.
Phillips	3	0.09	deep tracks	y	y		Install waterbar/dip. Needs crown.
Phillips	4	0.12	deep pothole	y	y		Needs rock.
Mills-Dahlbeck	1	0.02	jeep trail				
Mills-Dahlbeck	2	0.17	class 3 stream by barn		y		Install waterbar/dip. Install culvert. Rock ford.
Mills-Dahlbeck	3	0.22	ridge nose				
Mills-Dahlbeck	4	0.28	midslope below aple orchard culv. # 3 xing		y		Improve culvert. Repair stream xing.
Mills-Dahlbeck	5	0.31	midslope	y	y		Install waterbar/dip. Rock ford.
Mills-Dahlbeck	6	0.33	ridge nose McLaughlin driveway				
Mills-Dahlbeck	7	0.38	mid slope stream xing		y		Install culvert.
Mills-Dahlbeck	8	0.45	ridge nose				
Mills-Dahlbeck	9	0.48	mid slope		y		Install waterbar/dip.
Mills-Dahlbeck	10	0.49	mid slope	y	y		Rock ford.
Mills-Dahlbeck	11	0.55	culvert xing & road junction	y	y		Install culvert.
Mills-Dahlbeck	12	0.57	ridge nose McCutcheon's				
Mills-Dahlbeck	13	0.58	mid slope dip		y		Rock ford.
Mills-Dahlbeck	14	0.62	ridge nose landing	y	y	y	
Mills-Dahlbeck	15	0.69	ridge nose road junction		y		Rock ford.
Mills-Dahlbeck	16	0.76	junction Greenwood rd.				
Mills-Dahlbeck (A)	1	0.03	Mills A	y	y		Install waterbar/dip.
Mills-Dahlbeck (A)	2	0.05	Mills A 1	y	y	y	Needs berm.
Mills-Dahlbeck (A)	3	0.11	Mills A 1		y	y	Install culvert.

Landowner: _____

Road Name	Site #	Location	Site Notation	needs surface	needs drainage	close road	Recommendations
Mills-Dahlbeck (A1)	4	0.12	Mills A 1			y	Install waterbar/dip.
Mills-Dahlbeck (A1)	5	0.19	Mills A 1		y	y	Install waterbar/dip.
Mills-Dahlbeck (A1)	6	0.24	Mills A 1	y			
Mills-Dahlbeck (A1)	7	0.31	Mills A 1 stream crossing		y	y	Replace culvert.
Mills-Dahlbeck (A1)	8	0.35	landslide		y	y	Install culvert. Excavate.
Mills-Dahlbeck (A1)	9	0.4	cut bank slumped		y	y	Install waterbar/dip. Outslope road.
Mills-Dahlbeck (A1)	10	0.47	cut bank slumped		y	y	Install waterbar/dip.
Mills-Dahlbeck (A1)	11	0.49	stream xing		y	y	Install culvert. Rock ford.
Mills-Dahlbeck (A1)	12	0.54	log landing				
Mills-Dahlbeck (A1)	13	0.63	stream xing no culvert		y	y	Rock ford.
Mills-Dahlbeck (A1)	14	0.67	stream channel cuts gully inside roadbed		y	y	Install waterbar/dip. Rock ford.
Mills-Dahlbeck (A1)	15	0.75	small slump / landslide		y	y	
Mills-Dahlbeck (A1)	16	0.77	major stream crossing		y	y	
Mills-Dahlbeck (A1)	17	0.8	major gullying from prev. (to here)?		y	y	Install waterbar/dip.
Mills-Dahlbeck (A1)	18	0.86	Mills A1 - gully - landslide trees falling		y	y	Repair stream xing.
Mills-Dahlbeck (A1)	19	0	stream crossing		y	y	Repair stream xing.Rock ford.
Mills-Dahlbeck (A)	20	0.94	rd, junction with A1b			y	
Mills-Dahlbeck (A1b)	21	0.99	stream crossing		y	y	Repair stream xing.Rock ford.
Mills-Dahlbeck (A1b)	22	1	rd junction to left				
Mills-Dahlbeck (A1b)	23	1.02	old landing rds. in every direction				
Mills-Dahlbeck (A1b)	24	1.13	stream xing		y	y	Install culvert. Repair stream xing.Rock ford.
Mills-Dahlbeck (A1b)	25	1.14	land slide / wash out		y	y	Repair stream xing.Rock ford.
Mills-Dahlbeck (A1b)	26	1.25	stream xing		y	y	Repair stream xing.Rock ford.
Mills-Dahlbeck (A1b)	27	1.27	gullied ditch to WB		y	y	Install waterbar/dip. Repair stream xing.Rock ford.
Mills-Dahlbeck (A1b)	28	1.32	large stream washout		y	y	Repair stream xing.
Mills-Dahlbeck (A1b)	29	1.39	med. stream xing		y	y	Repair stream xing.

Landowner: _____

Road Name	Site #	Location	Site Notation	needs surface	needs drainage	close road	Recommendations
Mills-Dahlbeck (A1b)	30	1.42	rd. ditch goes off into watercourse				
Mills-Dahlbeck (A1b)	31	1.44	A1b goes into creek side rd.		y	y	Repair stream xing.
Mills-Dahlbeck (A1)?	2	0.13	Skip McLaughlin Dr. way, culvert - mild e+E236rosion		y		Maintain culvert.
Mills-Dahlbeck (B)	1	0.03	down hill gullying		y		Install waterbar/dip.
Mills- Dahlbeck (C)	1	0.02	log landing skid rd		y	y	
Mills- Dahlbeck (C)	2	0.04	landing skid road	y	y	y	Replant.
Mills- Dahlbeck (C)	3	0.06	water bar erosion	y	y	y	Replant.
Mills- Dahlbeck (C)	4	0.1	gullying on down slope	y	y	y	Maintain water bar/dip. Improve water bar/dip. Install waterbar/dip. Rock ford. Excavate. Replant.
Mills- Dahlbeck (C)	5	0.13	gully - stream on edge of landing	y	y	y	Excavate. Replant.
Mills- Dahlbeck (C)	6	0.14	water bar / gullying out			y	Excavate. Replant.
Mills- Dahlbeck (C)	7	0.16	landing slumping out			y	Improve culvert.
Mills- Dahlbeck (C)	8	0.21	minor rilling		y	y	Install waterbar/dip. Inslope road.
Mills- Dahlbeck (C)	9	0.25	small landing			y	Replant.
Mills- Dahlbeck (C)	10	0.35	stream xing blown out		y	y	Repair stream xing.Replant.
			Mills - Dahlbeck B				
Mills- Dahlbeck/Laurie McGary dr.		0.02	minor rilling		y		Install waterbar/dip.
Mills- Dahlbeck/Laurie McGary dr.		0.09	minor rilling		y		Install waterbar/dip.
Mills- Dahlbeck/Laurie McGary dr.		0.11	minor rilling		y		Install waterbar/dip.
Sassen 4.32 mi.		0	greenwood road				
Sassen 4.32 mi.		0.03	jeep trail to Mills culvert crossing				Maintain culvert.
Sassen 4.32 mi.		0.12	2nd jeep trail to left				
Sassen 4.32 mi.		0.22	ditch erosion				
Sassen 4.32 mi.		0.29	short drive to right				Install waterbar/dip.
Sassen 4.32 mi.		0.29	main drive				Install waterbar/dip. Outslope road.
Sassen 4.32 mi.		0.33	end cabin drive				Install waterbar/dip. Outslope road.

Landowner: _____

Road Name	Site #	Location	Site Notation	needs surface	needs drainage	close road	Recommendations
Old Creek R.R. (mcl.)	2	0.06	large class 2 stream xing				Rock ford.
Old Creek R.R. (mcl.)	3	0.11	stream xing class 3				Rock ford.
Old Creek R.R. (mcl.)	4	0.2	class 3 stream				Outslope road. Rock ford.
Old Creek R.R. (mcl.)	5	0.25	property line				
Old Creek R.R. (mcl.)	6	0.26	class 3 stream				
O. Johnson		0	Scotch broom invasion - plant trees				
O. Johnson	1	0.03	road to Lit's rd. (B)				
O. Johnson	2	0.2	first entrance to loop rd. rd. (B)				
O. Johnson	3	0.21	2nd exit from rd. (B) Loop rd. Hagen				
O. Johnson	4	0.26	major rilling				Install waterbar/dip. Outslope road. Break berm.
O. Johnson	5	0.29	loop rd. at Johnson's rd. (C)				
O. Johnson	6	0.33	end of Johnson rd.				
O. Johnson (A)		0.09					Maintain culvert.
O. Johnson (A)		0.2	End of Johnson's rd.(A)				Maintain water bar/dip.
Morris		0.2	rd. from grwd ridge				
Morris			to Carleton Driveway				
Young - L.P.	1	0	near property line fill slope erosion		y		Install waterbar/dip.
Young - L.P.	2	0.005	spring in rd. - rills going down fill slope		y		
Young - L.P.	3	0.02	stream xing with culvert shot gun & water coming under		y		Repair stream xing.
Young - L.P.	4	0.04	rd surface bumpy - not sure what cause	y	y		
Young - L.P.	5	0.08	old rd. across field - rilling coming down	y	y		Install waterbar/dip.
Young - L.P.	6	0.16	cut bank slide 2ft w - 12 ft l	y	y		Install waterbar/dip.
Young - L.P.	7	0.17	rilling down rd. tc water bar?	y	y		Install waterbar/dip.

Landowner: _____

Road Name	Site #	Location	Site Notation	needs surface	needs drainage	close road	Recommendations
Sassen - Weaver log road 1	1	0	start of road at cabin				Install waterbar/dip.
Sassen - Weaver log road 1	2	0.03	prop. line to Weavers				Maintain water bar/dip. Maintain culvert.
Sassen - Weaver log road 1	3	0.14	culvert class 3				Install waterbar/dip. Maintain culvert.
Sassen - Weaver log road 1	4	0.15	culvert class 3				Maintain culvert.
Sassen - Weaver log road 1	5	0.25	cut bank slide		y		Install waterbar/dip.
Sassen - Weaver log road 1	6	0.27	culvert class 2				Maintain culvert. Break berm.
Sassen - Weaver log road 1	7	0.34	meets Weaver (C) at landing				
Sassen - Weaver log road 1	8	0.39	water bar & road fill with stress cracks		y		Install waterbar/dip.
Sassen - Weaver log road 2	1	0.07	from end of Weaver C, rocked road stream xing				
Sassen - Weaver log road 2	2	0.09	fill slope erosion at ridge nose		y		Install waterbar/dip.
Sassen - Weaver log road 2	3	0.12	humboldt stream 3 xing				Needs rock.
Sassen - Weaver log road 2	4	0.18	out slope erosion class 3 stream xing				Repair stream xing.
Sassen - Weaver log road 2	5	0.21	landing w/ non used culvert 2 rds below Sassen-Weaver to left				
Sassen - Weaver log road 2	6	0.26	cut slope erosion from gully above mahor gully in road				Repair stream xing.
Sassen - Weaver log road 2	7	0.28	large culvert class 3 stream xing				
Sassen - Weaver log road 2	8	0.38	culvert class 3 stream xing				Maintain culvert.
Sassen - Weaver log road 2	9	0.51	rocked ford stream xing class 3				Install culvert. Needs rock.
Sassen - Weaver log road 2	10	0.65	class 3 stream				Replant.
Sassen - Weaver log road 2	11	0.67	end of road property line				Replant.
Sassen - Weaver (A)	1	0.07	class 3 stream				
Sassen - Weaver (A)	2	0.09	class 2 stream				Needs rock.
Sassen - Weaver (A)	3	0.21	end of Sassen - Weaver (A)				
Old Creek R.R. (mcl.)	1	0.01	class 2 stream xing				Replant.

Landowner: _____

Road Name	Site #	Location	Site Notation	needs surface	needs drainage	close road	Recommendations
Young - L.P.	8	0.2	stream xing		y		Rock ford.
Young (A)	1	0.03	gully on cut bank side		y	y	Install waterbar/dip.
Young (A)	2	0.09	cut bank slide & fill slope failure		y	y	Install waterbar/dip.
Young (A)	3	0.1	road (A1)				
Young (A)		0.11	stream crossing		y	y	Rock ford.
Young (A)	4	0.13	fill slope failure		y	y	Excavate.
Young (A)	5	0.15	fill slope failure		y	y	Install waterbar/dip. Break berm.
Young (A)	6	0.2	rd. intersection below landing				
Young (A)	7	0.32	rd. going back & up hill				
Young (A)	8	0.34	stream head with gulling rd.		y	y	Install waterbar/dip.
Young (A)	9	0.35	rd. ends & skid rd. starts				
Young (A)		0.02	Road (A1), cut bank slide		y	y	
Young (A)	1	0.04	Road (B), major rill on cut bank edge of landing		y	y	
Young (A)		0.08	Road (B) ends				
Carleton		0	leaves Gnwd. rd.				
Carleton		0.04	culvert				Maintain culvert.
Carleton		0.14	first home on left				Install waterbar/dip.
Carleton		0.2	studio parking				Install waterbar/dip.
Upper Watershed							
Pano-ramic main stem	1	0.15	long left bank ditch		y		Install culvert.
Pano-ramic main stem	2	0.22	21510 Panoramic road		y		Maintain culvert.
Pano-ramic main stem	3	0.28	major rilling		y		Break berm.
Pano-ramic main stem	4	0.34	bottom of draw		y		Install culvert.
Pano-ramic main stem	5	0.64	culvert xing		y		Maintain culvert.
Pano-ramic main stem	6	0.8	culvert xing		y		Maintain culvert.
Pano-ramic main stem	7	0.88	culvert xing				Maintain culvert.
Pano-ramic main stem	8	1	minor rilling				
Pano-ramic main stem	9	1.02	end of Pan rd. turn around				

Landowner: _____

Road Name	Site #	Location	Site Notation	needs surface	needs drainage	close road	Recommendations
South Fork (Panoramic fire rd.)	1	0.04	major rilling	y	y		Install waterbar/dip. Outslope road.
South Fork (Panoramic fire rd.)	2	0.08	class 3 stream xing		y		Install waterbar/dip. Rock ford.
South Fork (Panoramic fire rd.)	3	0.11	roadbed into class 3 stream	y	y		Rock ford.
South Fork (Panoramic fire rd.)	4	0.14	sever gullying next to class 3 stream	y	y	y	Rock ford.
South Fork (Panoramic fire rd.)	5	0.2	class 2 stream joins				
South Fork (Panoramic fire rd.)	6	0.23	cut bank failure	y	y		Install waterbar/dip. Rock ford.
South Fork (Panoramic fire rd.)	7	0.26	fill slope erosion				Inslope road. Needs berm.
South Fork (Panoramic fire rd.)	8	0.3	berm wash out		y	y	Needs berm.
South Fork (Panoramic fire rd.)	9	0.39	class 2 stream xing	y	y		Install culvert.
South Fork (Panoramic fire rd.)	10	0.4	road washed out	y	y		Rock ford.
South Fork (Panoramic fire rd.)	11	0.44	gullying in roadbed			y	
South Fork (Panoramic fire rd.)	12	0.5	class 3 stream xing	y	y	y	Install culvert.
South Fork (Panoramic fire rd.)	13	0.52	PFR meets GCs fork road				
South Fork (B) sky ranch sec.32	1	0.06	ridge top turn		y		Break berm.
South Fork (B) sky ranch sec.32	2	0.09	jeep trail on right		y		Break berm.
South Fork (B) sky ranch sec.32	3	0.11	mid slope		y		Break berm.
South Fork (B) sky ranch sec.32	4	0.13	yellow gate		y		Outslope road. Break berm.
South Fork (B) sky ranch sec.32	5	0.14	mid slope turn		y		Install waterbar/dip. Outslope road. Break berm.
South Fork (B) sky ranch sec.32	6	0.16	mid slope		y		Install waterbar/dip. Outslope road. Break berm.
South Fork (B) sky ranch sec.32	7	0.17	class 3 cmp		y		Outslope road. Needs rock. Break berm.
South Fork (B) sky ranch sec.32	8	0.19	mid slope		y		Outslope road. Break berm.
South Fork (B) sky ranch sec.32	9	0.2	mid slope		y		Install waterbar/dip. Outslope road. Break berm.
South Fork (B) sky ranch sec.32	10	0.21	mid slope		y		Outslope road. Break berm.
South Fork (B) sky ranch sec.32	11	0.22	mid slope		y		Install waterbar/dip. Outslope road. Break berm.
South Fork (B) sky ranch sec.32	12	0.23	mid slope		y		Outslope road. Break berm.
South Fork (B) sky ranch sec.32	13	0.25	mid slope		y		Install waterbar/dip. Outslope road. Break berm.
South Fork (B) sky ranch sec.32	14	0.27	class 3		y		Outslope road. Rock ford. Break berm.
South Fork (B) sky ranch sec.32	15	0.29	mid slope		y		Install waterbar/dip. Outslope road. Break berm.
South Fork (B) sky ranch sec.32	16	0.3	mid slope		y		Outslope road. Break berm.

Landowner: _____

Road Name	Site #	Location	Site Notation	needs surface	needs drainage	close road	Recommendations
South Fork (B) sky ranch sec.32	17	0.31	mid slope		y		Install waterbar/dip. Outslope road. Break berm.
South Fork (B) sky ranch sec.32	18	0.32	mid slope turn		y		Break berm.
South Fork (B) sky ranch sec.32	19	0.33	mid slope turn		y		Install waterbar/dip. Outslope road. Break berm.
South Fork (B) sky ranch sec.32	20	0.34	mid slope		y		Outslope road. Break berm.
South Fork (B) sky ranch sec.32	21	0.35	class 3	y	y		Install waterbar/dip. Outslope road. Repair stream xing.Rock ford. Needs rock.
South Fork (B) sky ranch sec.32	22	0.37	class 2		y		Outslope road. Break berm.
South Fork (B) sky ranch sec.32	23	0.39	mid slope		y		Break berm.
South Fork (B) sky ranch sec.32	24	0.42	mid slope		y		Install waterbar/dip. Outslope road.
South Fork (B) sky ranch sec.32	25	0.44	mid slope		y		Install waterbar/dip. Outslope road. Break berm.
South Fork (B) sky ranch sec.32	26	0.45	mid slope		y		Install waterbar/dip. Outslope road. Break berm.
South Fork (B) sky ranch sec.32	27	0.48	class 2		y		Install waterbar/dip. Outslope road. Repair stream xing.Rock ford. Break berm.
South Fork (B) sky ranch sec.32	28	0.5	mid slope cut bank slide		y		Outslope road.
South Fork (B) sky ranch sec.32	29	0.53	class 3		y		Outslope road. Repair stream xing.Rock ford. Break berm.
South Fork (B) sky ranch sec.32	30	0.55	mid slope		y		Install waterbar/dip. Outslope road. Break berm.
South Fork (B) sky ranch sec.32	31	0.61	class 2		y		Install culvert. Outslope road. Repair stream xing.Rock ford. Break berm.
South Fork (B) sky ranch sec.32	32	0.62	mid slope		y		Install waterbar/dip. Outslope road. Break berm.
South Fork (B) sky ranch sec.32	33	0.64	cmp		y		Outslope road. Needs rock. Break berm.
South Fork (B) sky ranch sec.32	34	0.65	mid slope		y		Outslope road. Break berm.
South Fork (B) sky ranch sec.32							
South Fork (B) sky ranch sec.32	36	0.66	mid slope		y		Break berm.
South Fork (B) sky ranch sec.32	37	0.67	class 3		y		Install waterbar/dip. Repair stream xing.Rock ford.
South Fork (B) sky ranch sec.32	38	0.68	mid slope minor rilling		y		Outslope road. Break berm.
South Fork (B) sky ranch sec.32	39	0.7	mid slope minor rilling		y		Install waterbar/dip. Outslope road. Rock ford. Break berm.
South Fork (B) sky ranch sec.32	40	0.72	mid slope minor rilling		y		Install waterbar/dip. Outslope road. Rock ford. Break berm.
South Fork (B) sky ranch sec.32	41	0.73	class 3 is diverted	y	y		Outslope road. Repair stream xing.Rock ford. Needs rock.
South Fork (B) sky ranch sec.32	42	0.75	mid slope		y		Outslope road. Break berm.
South Fork (B) sky ranch sec.32	43	0.76	mid slope				Outslope road. Break berm.

Landowner: _____

Road Name	Site #	Location	Site Notation	needs surface	needs drainage	close road	Recommendations
South Fork (B) sky ranch sec.32	44	0.77	mid slope		y		Outslope road. Break berm.
South Fork (B) sky ranch sec.32	45	0.78	mid slope		y		Outslope road. Break berm.
South Fork (B) sky ranch sec.32	46	0.79	mid slope		y		Outslope road. Break berm.
South Fork (B) sky ranch sec.32	47	0.8	mid slope		y		Outslope road. Break berm.
South Fork (B) sky ranch sec.32	48	0.82	mid slope		y		Outslope road. Break berm.
South Fork (B) sky ranch sec.32	49	0.83	end at South Forks rd.		y		Install culvert.
South Fork Road Part 1	1	0.03	large cmp on North Fork				
South Fork Road Part 1	2	0.06	mid slope		y		Outslope road. Rock ford. Break berm.
South Fork Road Part 1	3	0.07	cut bank spring				Install culvert. Outslope road. Break berm.
South Fork Road Part 1	4	0.12	cmp at yellow gate class 2 spring		y		
South Fork Road part 2	1	0.01	road fill washed out	y			Needs berm.
South Fork Road part 2	2	0.19	slumped cut slope				Install culvert.
South Fork Road part 2	3	0.22	cut bank filling ditch		y		Excavate.
South Fork Road part 2	4	0.24 - .27	ditch full of leaves & debris - needs cleaning		y		Excavate.
South Fork Road part 2	5	0.29	ditch full of leaves - diverts		y		Excavate.
South Fork Road part 2	6	0.36	culvert - shot gunning		y		Improve culvert.
South Fork Road part 2	7	0.39	inslope ditch filled		y		Excavate.
South Fork Road part 2	8	0.4	land slide; cut slope	y	y		Install waterbar/dip. Inslope road.
South Fork Road part 2	9	0.41	fill slope failure				
South Fork Road part 2	10	0.44	cut bank / ditch failure		y		Excavate.
South Fork Road part 2	11	0.47	culvert		y		Excavate.
South Fork Road part 2	12	0.49	old skid trail - gullying		y		Excavate.
South Fork Road part 2	13	0.53	ditch filled - diverted		y		Excavate.
South Fork Road part 2	14	0.57	no culvert		y		Install culvert.
South Fork Road part 2	15	0.62	stream xing / PF rd junc. culvert ditch blocked above cmp inlet blocked		y		Clean out culvert.
South Fork Road part 3	16	0.69	low spot needs drainage		y		Install waterbar/dip. Break berm.

Landowner: _____

Road Name	Site #	Location	Site Notation	needs surface	needs drainage	close road	Recommendations
South Fork Road part 3	17	0.74	culvert x drain		y		Improve culvert.
South Fork Road part 3	18	0.78	mid slope ridge nose		y		Install waterbar/dip. Outslope road. Break berm.
South Fork Road part 3	19	0.8	class 3 stream		y		Outslope road. Rock ford. Break berm.
South Fork Road part 3	20	0.84	low spot in road		y		
South Fork Road part 3	21	0.86	low spot in road		y		Outslope road. Rock ford.
South Fork Road part 3	22	0.87	class 3 cmp		y		Clean out culvert. Needs rock.
South Fork Road part 3	23	0.91	skid road on right		y		Install waterbar/dip. Outslope road. Break berm.
South Fork Road part 3	24	1.01	class 2 cmp		y		Install waterbar/dip. Improve culvert.
South Fork Road part 3	25	1.04	low spot in road		y		Outslope road. Break berm.
South Fork Road part 3	26	1.11	skid trail on left				
South Fork Road part 3	27	1.14	road (B) on left		y		
South Fork Road part 3	28	1.21	large class 2 cmp		y		Improve culvert. Outslope road. Break berm.
South Fork Road part 3	29	1.3	cut bank slide		y		Outslope road. Rock ford. Break berm.
South Fork Road part 3	30	1.33	class 3 rocked ford		y		Outslope road. Rock ford. Break berm.
South Fork Road part 3	31	1.38	class 3		y		Rock ford.
South Fork Road part 3	32	1.4	mid slope (So. Fork C)		y		Outslope road. Break berm.
South Fork Road part 3	33	1.43	large class 2 (L.P. snipes) road (C) on left		y		Improve culvert. Outslope road. Repair stream xing.Break berm.
South Fork Road part 3	34	1.49	slide before X roads caused by class 3		y		Install waterbar/dip. Outslope road. Break berm.
South Fork Road part 3	35	1.5	3 roads branch				
South Fork Road part 3	36	1.54	ran into ribbon				
Snipes Hiking Trail (S.H.T.)	1	0.01	minor rilling	y	y	y	Install waterbar/dip.
Snipes Hiking Trail (S.H.T.)	2	0.07	junc. SHT (A)				
Snipes Hiking Trail (S.H.T.)	3	0.14	cut bank & fill failure	y	y	y	Install waterbar/dip. Outslope road.
Snipes Hiking Trail (S.H.T.)	4	0.16	cut bank / min. rilling / stress cracks		y	y	Install waterbar/dip. Outslope road.
Snipes Hiking Trail (S.H.T.)	5	0.19	rilling / fill failure		y	y	Install waterbar/dip.
Snipes Hiking Trail (S.H.T.)	6	0.21	cut bank failure		y	y	Install waterbar/dip. Outslope road.
Snipes Hiking Trail (S.H.T.)	7	0.23	fill failure		y	y	Install waterbar/dip. Needs berm.

Landowner: _____

Road Name	Site #	Location	Site Notation	needs surface	needs drainage	close road	Recommendations
Snipes Hiking Trail (S.H.T.)	8	0.24	cut bank failure			y	Install waterbar/dip.
Snipes Hiking Trail (S.H.T.)	9	.24+	fill failure		y	y	Install waterbar/dip. Rock ford.
Snipes Hiking Trail (S.H.T.)	10	0.27	fill failure		y	y	Install waterbar/dip.
Snipes Hiking Trail (S.H.T.)	11	0.31	fill failure		y	y	Install waterbar/dip.
Snipes Hiking Trail (S.H.T.)	12	.31+	cut bank failure		y	y	Install culvert. Inslope road.
Snipes Hiking Trail (S.H.T.)	13	0.32	road into stream			y	
Snipes Hiking Trail (S.H.T.)	14	0.33	STC / fill failure			y	
Snipes Hiking Trail (S.H.T.)	15	0.36	major rilling	y	y	y	Install waterbar/dip.
Snipes Hiking Trail (S.H.T.)	16	0.39	junc. SHT (B)			y	
Snipes Hiking Trail (S.H.T.)	17	0.4	fill failure		y	y	Install waterbar/dip.
Snipes Hiking Trail (S.H.T.)	18	0.43	cut bank / fill failure	y	y	y	
Snipes Hiking Trail (S.H.T.)	19	0.44	class 3 stream xing		y	y	Install culvert. Outslope road. Repair stream xing.Rock ford.
Snipes Hiking Trail (S.H.T.)	20	0.45	gullying off fill slope		y	y	Install waterbar/dip.
Snipes Hiking Trail (S.H.T.)	21	0.49	major rilling 200 ft.	y	y	y	Install waterbar/dip. Rock ford.
Snipes Hiking Trail (S.H.T.)	22	0.5	switchback / fill slope failure	y	y	y	Install waterbar/dip. Rock ford.
Snipes Hiking Trail (S.H.T.)	23	0.52	STC fill slope	y	y	y	Install waterbar/dip. Outslope road. Rock ford. Break berm.
Snipes Hiking Trail (S.H.T.)	24	0.54	road built through stream	y	y	y	
Snipes Hiking Trail (S.H.T.)	25	0.55	cut bank slump	y	y	y	
Snipes Hiking Trail (S.H.T.)	26	0.56	SHT meets Snipes rd.				
Sipes Hiking Trail (B)	1	0	cut bank / fill failure		y	y	Install waterbar/dip.
Sipes Hiking Trail (B)	2	0.04	gullying	y	y	y	
Sipes Hiking Trail (B)	3	0.05	meets Snipes road				
South Fork (C) (L.P. / Snipes)	1	0.01	minor rilling	y	y		Install waterbar/dip.
South Fork (C) (L.P. / Snipes)	2	0.06	major rilling	y	y		Install waterbar/dip.
South Fork (C) (L.P. / Snipes)	3	0.13	small skid road		y		Excavate.
South Fork (C) (L.P. / Snipes)	4	0.14	cut bank failure		y		Excavate.
South Fork (C) (L.P. / Snipes)	5	0.17	skid road - access to powerlines		y		
South Fork (C) (L.P. / Snipes)	6	0.2	class 3 stream xing		y		Install culvert. Rock ford.

Landowner: _____

Road Name	Site #	Location	Site Notation	needs surface	needs drainage	close road	Recommendations
South Fork (C) (L.P. / Snipes)	7	0.21	rilling - ditch plugged		y		Excavate.
South Fork (C) (L.P. / Snipes)	8	0.26	major ditch erosion		y		Install culvert.
South Fork (C) (L.P. / Snipes)	9	0.29	class 3 stream crossing		y		Install culvert.
South Fork (C) (L.P. / Snipes)	same	0.29	skid road - goes up hill to power lines		y	y	
South Fork (C) (L.P. / Snipes)	10	0.31	log STC				Excavate.
South Fork (C) (L.P. / Snipes)	11	0.36	major ditch erosion	y	y		Install culvert.
South Fork (C) (L.P. / Snipes)	12	0.37	cut bank failure				
South Fork (C) (L.P. / Snipes)	13	0.39	Snipes "hunting trail"			y	
South Fork (C) (L.P. / Snipes)	14	0.4	ditch / cut bank / road bed gullying	y	y		Break berm.
South Fork (C) (L.P. / Snipes)	15	0.44	ditch plugged / diverted	y	y		Install waterbar/dip. Excavate.
South Fork (C) (L.P. / Snipes)	16	0.5	ditch erosion		y		Install waterbar/dip. Outslope road.
South Fork (C) (L.P. / Snipes)	17	0.57	stream xing class 2 / culvert		y		Improve culvert. Excavate.
South Fork (C) (L.P. / Snipes)	18	0.58	ditch erosion		y		
South Fork (C) (L.P. / Snipes)	19	0.61	stream xing / culvert		y		Improve culvert.
South Fork (C) (L.P. / Snipes)	20	0.69	ditch erosion / too small culvert		y		Install culvert.
South Fork (C) (L.P. / Snipes)	21	0.75	cut bank / ditch erosion stream xing class 3		y		Install culvert.
South Fork (C) (L.P. / Snipes)	22	0.77	cut bank failure		y		Excavate.
South Fork (C) (L.P. / Snipes)	23	0.81	cut bank failure		y		Excavate.
South Fork (C) (L.P. / Snipes)	24	0.83	ditch plugged / diverting		y		
South Fork (C) (L.P. / Snipes)	25	0.85	Snipes rd. meets GCSF				
Maple Basin - DeVlieg	1	0.08	culvert x-drain		y		Outslope road. Break berm.
Maple Basin - DeVlieg	2	0.1	cut bank slide				Replant.
Maple Basin - DeVlieg	3	0.13	road (B) left to house		y		Outslope road.
Maple Basin - DeVlieg	4	0.14	Russian Gultch culverts		y		Outslope road.
Maple Basin - DeVlieg	5	0.16	Russian Gultch road		y		Install culvert. Outslope road. Break berm.
Maple Basin - DeVlieg	6	0.21	cut bank slide				Replant.

Landowner: _____

Road Name	Site #	Location	Site Notation	needs surface	needs drainage	close road	Recommendations
Maple Basin - DeVlieg	7	0.32	class 3 stream & cmp		y		Install culvert. Outslope road. Needs rock. Break berm.
Maple Basin - DeVlieg	8	0.36	property line DeVlieg / Sky Ranch				
Maple Basin - DeVlieg	9	0.4	cmo		y		Improve culvert.
Maple Basin - DeVlieg	10	0.42	mid slope dip				Replant.
Maple Basin - DeVlieg	11	0.44	road on left to South Fork		y		Outslope road. Break berm.
Maple Basin - DeVlieg	12	0.49	end of property - Sky Ranch		y		Outslope road. Break berm.
DeVlieg (B, B1,C) + Russian G.		0.01	culvert North Fork class 1				
DeVlieg (B, B1,C) + Russian G.		0.02	double culvert				
DeVlieg (B, B1,C) + Russian G.		0.04	mid slope		y		Install waterbar/dip. Outslope road.
DeVlieg (B, B1,C) + Russian G.		0.05	road (A) on left		y		Install waterbar/dip. Outslope road.
DeVlieg (B, B1,C) + Russian G.		0.08	at fence at house		y		Install waterbar/dip. Outslope road.
Greenwood Ridge Vineyards							
G.R.V. Main Road	1	0.02	culvert xing				
G.R.V. Main Road	2	0.04	down slope curve		y		Outslope road. Break berm.
G.R.V. Main Road	3	0.05	RB potential cut bank failure				Excavate.
G.R.V. Main Road	4	0.09	class 3 stream crossing		y		Install waterbar/dip. Rock ford.
G.R.V. Main Road	5	0.1	cut bank slump		y		Outslope road. Break berm.
G.R.V. Main Road	6	0.18	class 3 stream xing - culvert		y		Clean out culvert.
G.R.V. Main Road	7	0.19	road crown discharge thru berm		y		Outslope road. Break berm.
G.R.V. Main Road	8	0.24	culvert x-drain in low pt on road - creates huge gullies		y		Install culvert.
G.R.V. Main Road	9	0.32	stream xing (C2) skid road		y		Clean out culvert. Replant.
G.R.V. Main Road	10	0.35	class 3 stream X diverted by inslope ditch		y		Install culvert.
G.R.V. Main Road	11	0.47	road xing Green (A)		y		
G.R.V. Main Road	12	0.55	road tips away from drainage	y	y		Inslope road.
G.R.V. Main Road	13	0.66	tension cracks in steep fill		y		Install culvert. Outslope road. Break berm.
G.R.V. Main Road	14	0.69	tension cracks in steep fill		y		Install culvert. Outslope road. Break berm.

Landowner: _____

Road Name	Site #	Location	Site Notation	needs surface	needs drainage	close road	Recommendations
G.R.V. Main Road	15	0.74	too small culvert / gullying below		y		Improve culvert.
G.R.V. Main Road	16	0.78	culvert x-drain				Clean out culvert.
G.R.V. Main Road	17	0.81	blocked culvert (inlet)		y		Clean out culvert.
G.R.V. Main Road	18	0.89	road xing Green (B)				
G.R.V. Main Road	19	0.99	long ditch		y		
G.R.V. Main Road	20	1.03	log road xing to (R)				
G.R.V. Main Road	21	1.06	Main Fork Gnwd Ridge Vinyard & Gnwd (C)				
G.R.V. Main Road	22	1.14	make a ditch on inside of turn		y		
G.R.V. Main Road	23	1.23	junction at apple orchard (D) - (E)				
G.R.V. Main Road	24	1.39	road (F) to (???) on left				
G.R.V. Main Road	25	1.47	junction at winery road (G) on right				
G.R.V. (A)	1	0.08	minor rilling		y		Install waterbar/dip. Outslope road.
G.R.V. (A)	2	0.11	in slope ditch		y		
G.R.V. (A)	3	0.2	road junction - 3 driveway to houses and trailer				
G.R.V. (A)	4	0.26	road surface powdery	y	y	y	Install waterbar/dip.
G.R.V. (A)	5	0.33	log landing - unstable soil on slope		y	y	Install waterbar/dip. Replant.
G.R.V. (A)	6	0.36	steep slope		y	y	Install waterbar/dip.
G.R.V. (A)	7	0.38	ridge crest		y	y	Install waterbar/dip.
G.R.V. (A)	8	0.58	road goes back down to G.R.V.		y	y	Install waterbar/dip.
G.R.V. (A)	9	0.7	driveway to new house		y		Install waterbar/dip. Outslope road.
G.R.V. (A)	10	0.77	driveway meets G.R.V. road				
G.R.V. (B)							
G.R.V. (C)	1	0.04	culver : and ditch relief				
G.R.V. (C)	2	0.13	culvert : STC xing		y		Maintain culvert.

Landowner: _____

Road Name	Site #	Location	Site Notation	needs surface	needs drainage	close road	Recommendations
G.R.V. (C)	3	0.18	culvert : STC xing		y		Maintain culvert.
G.R.V. (C)	4	0.27	downhill straight away		y		Install waterbar/dip. Install culvert.
G.R.V. (C)	5	0.31	culvert : DR, stream xing		y		Improve culvert.
G.R.V. (C)	6	0.34	culvert - ditch relief		y		Maintain culvert.
G.R.V. (C)	7	0.38	road junction with Maple Basin Rd.				
G.R.V. (C)	8	0.48	Alan's house - side ditch culvert		y		Maintain culvert.
G.R.V. (C)	9	0.54	nose crest - ditch plugged		y		
G.R.V. (C)	10	0.57	culvert				
G.R.V. (C)	11	0.62	culvert		y		Clean out culvert. Improve culvert.
G.R.V. (C)	12	0.83	end of G.R.V. - (C)				
G.R.V C (c)		0.06	mid slope water bar failed		y		Maintain water bar/dip.
G.R.V C (c)		0.09	water bar needs work		y		Maintain water bar/dip. Outslope road.
G.R.V C (c)		0.1	water bar needs work class 3		y		Maintain water bar/dip. Outslope road.
G.R.V C (c)		0.11	end of Alan's at gate				
G.R.V. (C1)		0	culvert				
G.R.V. (C1)		0.01	gullying on downhill curve		y		Install waterbar/dip.
G.R.V. (C1)		0.05	gullying on downhill curve		y		Install waterbar/dip.
G.R.V. (C2)	1	0.01	C 2 (A) on left				
G.R.V. (C2)	2	0.05	original road loops around .07				
G.R.V. (C2)	3	0.12	water bar failed		y		Maintain water bar/dip. Outslope road. Break berm.
G.R.V. (C2)	4	0.16	water bar failed		y		Maintain water bar/dip.
G.R.V. (C2)	5	0.19	water bar failed		y		Maintain water bar/dip. Outslope road. Break berm.
G.R.V. (C2)	6	0.21	water bar failed		y		Maintain water bar/dip. Outslope road.
G.R.V. (C2)	7	0.24	water bar failed		y		Maintain water bar/dip. Outslope road. Break berm.
G.R.V. (C2)	8	0.27	rocked ford large class 3				
G.R.V. (C2)	9	0.43	needs rocked ford at small class 2		y		Outslope road. Rock ford. Break berm.

Landowner: _____

Road Name	Site #	Location	Site Notation	needs surface	needs drainage	close road	Recommendations
G.R.V. (C2)	10	0.48	needs rolling dip or rocked ford		y		Outslope road. Rock ford.
G.R.V. (C2)	11	0.52	needs drainage		y		Install waterbar/dip. Outslope road. Break berm.
G.R.V. (C2)	12	0.56	needs drainage		y		Install waterbar/dip. Outslope road. Break berm.
G.R.V. (C2)	13	0.58	water bar		y		Install waterbar/dip.
G.R.V. (C2)	14	0.59	needs water bar		y		Install waterbar/dip. Outslope road.
G.R.V. (C2)	15	0.61	water bar failed		y		Install waterbar/dip. Outslope road.
G.R.V. (C2)	16	0.65	water bar failed		y		Install waterbar/dip. Outslope road. Break berm.
G.R.V. (C2)	17	0.67	rocked ford				Rock ford. Break berm.
G.R.V. (C2)	18	0.7	rocked ford		y		Outslope road. Break berm.
G.R.V. (C2)	19	0.73	rocked ford at large class 2				
G.R.V. (C2)	20	0.78	rocked ford - small class 2				Outslope road. Rock ford. Break berm.
G.R.V. (C2)	21	0.8	skid trail		y		Install waterbar/dip. Outslope road. Break berm.
G.R.V. (C2)	22	0.85	cmo		y		Outslope road. Break berm.
G.R.V. (C2)	23	0.93	cut bank slide				Break berm.
G.R.V. (C2)	24	1.11	potential slide		y		Outslope road. Break berm.
G.R.V. (C2)	25	1.14	potential fill slope slide		y		Outslope road. Break berm.
G.R.V. (C2)	26	1.23	meets rd. crossing class 2 stream, road (C2B)		y		Outslope road. Break berm.
G.R.V. (C2)	27	1.35	class 2 spring		y		Outslope road. Rock ford. Break berm.
G.R.V. (C2)	28	1.39	class 2 stream and cmp		y		Outslope road. Break berm.
G.R.V. (C2)	29	1.4	class 3		y		Rock ford. Break berm.
G.R.V. (C2)	30	1.43	plastic pipe 12"				Improve culvert. Outslope road.
G.R.V. (C2)	31	1.46	class 3 w/cmp		y		
G.R.V. (C2)	32	1.55	drain mid slope		y		Outslope road. Break berm.
G.R.V. (C2)	33	1.66	water bar		y		Outslope road. Break berm.
G.R.V. (C2)	34	1.67	low spot in road		y		Outslope road. Break berm.
G.R.V. (C2)	35	1.69	class 3 large cmp		y		Outslope road. Break berm.
G.R.V. (C2)	36	1.71	gate		y		Install waterbar/dip. Outslope road. Break berm.
G.R.V. (C2)	37	1.74	failed water bar		y		Maintain water bar/dip. Outslope road. Break berm.

Landowner: _____

Road Name	Site #	Location	Site Notation	needs surface	needs drainage	close road	Recommendations
G.R.V. (C2)		1.76	end of (C2) rd.		y		Outslope road. Break berm.
G.R.V (C2B)	1	0.02	class 1 turnes into class 1				
G.R.V (C2B)	2	0.04	large class 3 rocked ford		y		Rock ford.
G.R.V (C2B)	3	0.06	major rilling		y		Install waterbar/dip.
G.R.V (C2B)	4	0.07	class 3 needs water bar		y		Install waterbar/dip. Outslope road.
G.R.V (C2B)	5	0.08	needs water bar		y		Install waterbar/dip.
G.R.V (C2B)	6	0.09	needs water bar		y		Install waterbar/dip. Outslope road.
G.R.V (C2B)	7	0.1	needs water bar		y		Install waterbar/dip. Outslope road.
G.R.V (C2B)	8	0.12	needs water bar		y		Install waterbar/dip. Outslope road.
G.R.V (C2B)	9	0.13	needs water bar		y		Install waterbar/dip. Outslope road.
G.R.V (C2B)	10	0.15	needs water bar		y		Install waterbar/dip. Outslope road.
G.R.V (C2B)	11	0.17	needs water bar		y		Install waterbar/dip. Outslope road.
G.R.V (C2B)	12	0.2	class 3		y		Outslope road. Rock ford.
G.R.V (C2B)	13	0.21	needs water bar		y		Install waterbar/dip. Outslope road.
G.R.V (C2B)	14	0.22	needs water bar		y		Install waterbar/dip. Outslope road.
G.R.V (C2B)	15	0.24	needs water bar		y		Install waterbar/dip. Outslope road.
G.R.V (C2B)	16	0.26	needs water bar		y		Install waterbar/dip. Outslope road.
G.R.V (C2B)	17	0.28	needs drainage		y		Install waterbar/dip. Outslope road.
G.R.V (C2B)	18	0.3	needs water bar		y		Install waterbar/dip. Outslope road.
G.R.V (C2B)	19	0.32	ridge nose		y		Outslope road.
G.R.V (C2B)	20	0.34	needs drainage		y		Install waterbar/dip. Outslope road.
G.R.V (C2B)	21	0.35	ridge nose		y		Outslope road.
G.R.V (C2B)	22	0.39	abandoned road on left		y		Outslope road.
G.R.V (C2B)	23	0.44	road opens to field				
G.R.V (C2C)		0.02	mid slope - needs drainage				Install waterbar/dip. Outslope road.
G.R.V (C2C)		0.03	mid slope - water bar failed				Install waterbar/dip. Outslope road. Break berm.
G.R.V (C2C)		0.04	minor rilling - needs drainage				Install waterbar/dip. Outslope road. Break berm.
G.R.V (C2C)		0.05	minor rilling - needs water bar				Install waterbar/dip. Outslope road. Break berm.
G.R.V (C2C)		0.06	needs water bar				Install waterbar/dip. Outslope road.
G.R.V (C2C)		0.07	needs water bar				Install waterbar/dip. Outslope road.

Landowner: _____

Road Name	Site #	Location	Site Notation	needs surface	needs drainage	close road	Recommendations
G.R.V (C2C)		0.09	needs water bar				Install waterbar/dip. Outslope road.
G.R.V (C2C)		0.1	major rilling needs water bar				Install waterbar/dip. Outslope road.
G.R.V (C2C)		0.11	needs water bar				Install waterbar/dip. Outslope road.
G.R.V (C2C)		0.12	needs water bar at turn				Install waterbar/dip. Outslope road.
G.R.V (C2C)		0.14	needs water bar				Install waterbar/dip. Outslope road. Break berm.
G.R.V (C2C)		0.15	needs water bar				Install waterbar/dip. Outslope road. Break berm.
G.R.V (C2C)		0.17	needs water bar				Install waterbar/dip. Outslope road. Break berm.
G.R.V (C2C)		0.18	needs water bar				Install waterbar/dip. Outslope road. Break berm.
G.R.V (C2C)		0.18	end at fence line				Install waterbar/dip. Outslope road.
G.R.V. (D)		0	start at house				
G.R.V. (D)		0.17	rilling in road		y		Install waterbar/dip.
G.R.V. (D)		0.19	rilling		y		Install waterbar/dip.
G.R.V. (D)		0.26	end of road				
G.R.V. (E)		0	start at hours				
G.R.V. (E)		0.03	(E1) start on left				
G.R.V. (E)		0.17	start of (2) end of (E) at cellar				
G.R.V. (E2)		0	start of (E2)				
G.R.V. (E2)		0.12	end of (E2) at ???				
G.R.V. (E1)		0.08	end of (E1)				
G.R.V. (F)		0.05	to end of (F)				
G.R.V. (G)		0.16	G. (1) on left				
G.R.V. (G)		0.32	G meets (G1)				
G.R.V. (G)		0.43	end of (G)				
G.R.V. (G1)		0.18	to end of (G1) total distance				
G.R.V. (H)		0	start of (H)				
G.R.V. (H)		0.03	culvert				
G.R.V. (H)		0.1	out slope break berm				Install culvert. Outslope road. Break berm.
G.R.V. (H)		0.18	end of (H) at house				
G.R.V Maple Basin	1	0	plugged culvert		y		Clean out culvert. Outslope road.
G.R.V Maple Basin	2	0.04	cmo		y		

Landowner: _____

Road Name	Site #	Location	Site Notation	needs surface	needs drainage	close road	Recommendations
G.R.V Maple Basin	3	0.06	gullying		y		
G.R.V Maple Basin	4	0.1	meets Green (C2)		y		Install culvert. Outslope road. Break berm.
G.R.V Maple Basin	5	0.13	hill slope slide				Needs berm.
G.R.V Maple Basin	6	0.17	class 3 cmp		y		
G.R.V Maple Basin	7	0.22	mid slope		y		Outslope road.
G.R.V Maple Basin	8	0.27	mid slope		y		Install culvert. Outslope road. Break berm.
G.R.V Maple Basin	9	0.31	class 1 stream + cmp		y		
G.R.V Maple Basin	10	0.36	mid slope		y		Outslope road.
G.R.V Maple Basin	11	0.39	ridge nose jeep trail		y		Install culvert. Outslope road. Break berm.
G.R.V Maple Basin	12	0.41	mid slope		y		Install waterbar/dip. Outslope road. Break berm.
G.R.V Maple Basin	13	0.44	mid slope		y		Install waterbar/dip. Outslope road. Break berm.
G.R.V Maple Basin	14	0.46	plugged cmp		y		Clean out culvert. Outslope road. Break berm.
G.R.V Maple Basin	15	0.52	mid slope spring		y		Outslope road.
G.R.V Maple Basin	16	0.54	road on left to creek		y		Outslope road.
G.R.V Maple Basin	17	0.58	culvert class 2		y		Outslope road.
G.R.V Maple Basin	18	0.65	mid slope		y		Install waterbar/dip.
G.R.V Maple Basin	19	0.7	class 3 cmp		y		
G.R.V Maple Basin	20	0.73	cmp ditch relief is plugged		y		Clean out culvert.
G.R.V Maple Basin	21	0.82	mid slope		y		Install waterbar/dip.
G.R.V Maple Basin	22	0.85	mid slope class 3		y		Install waterbar/dip.
G.R.V Maple Basin	23	0.89	class 3 cmp		y		Maintain culvert.
G.R.V Maple Basin	24	0.95	mid slope		y		Install waterbar/dip.
G.R.V Maple Basin	25	0.99	class 3 needs cmp		y		Install culvert.
G.R.V Maple Basin	26	1.06	class 3 and spring in ditch		y		
G.R.V Maple Basin	27	1.09	mid slope spring		y		Install waterbar/dip.
G.R.V Maple Basin	28	1.13	large class 3		y		Improve culvert. Outslope road.
G.R.V Maple Basin	29	1.15	class 2		y		Improve culvert. Outslope road.
G.R.V Maple Basin	30	1.18	class 3 cmp		y		Improve culvert.
G.R.V Maple Basin	31	1.27	end of Green's		y		Outslope road. Break berm.
G.R.V. Maple Basin (A)	1	0.04	rocked ford				

Landowner: _____

Road Name	Site #	Location	Site Notation	needs surface	needs drainage	close road	Recommendations
G.R.V. Maple Basin (A)	2	0.07	water bar		y		Install waterbar/dip. Outslope road.
G.R.V. Maple Basin (A)	3	0.1	water bar		y		Install waterbar/dip. Outslope road.
G.R.V. Maple Basin (A)	4	0.13	water bar		y		Outslope road. Break berm.
G.R.V. Maple Basin (A)	5	0.16	rocked ford		y		Outslope road. Break berm.
G.R.V. Maple Basin (A)	6	0.21	end of Green (A)				