

A photograph of a dirt road in a forest. The road is unpaved and appears to be in need of maintenance. On the right side of the road, there is a large pile of gravel or crushed rock. The background shows a dense forest of tall trees.

Prioritizing Road Treatments

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Presentation Outline

- What are the priorities for road treatment, generally?
- What does a road assessment tell you?
- Why are road management plans important?
- Examples of prioritization
- What are “bottom line” trump cards?
- Summary

Prioritization Defined

To order things (e.g., activities, treatments) according to their importance or urgency.

Priorities depend upon objectives and consequently vary according to who owns and manages a road and what purposes the road serves.

“Importance” is determined relative to objectives.

What are the Principal Objectives of Road Owners and Managers?

- Public roads serving commercial, residential and recreation uses: maintain accessibility with emphasis on public safety.
- Public roads serving resource management uses: provide temporary or permanent access to areas undergoing management while meeting regulatory requirements. In special cases improve environmental performance of roads.
- Private roads serving multiple uses: maintain accessibility as required to serve uses. Meet regulatory requirements if applicable.



The overriding objective of most road managers is to keep roads open, functional and safe when they are in use.



In Today's World

Implementing best management practices while meeting primary objectives is mandatory.

- BMPs help guarantee that road design and function are acceptable.
- BMPs help ensure a minimally acceptable level of quality workmanship.
- BMPs help prevent unacceptable environmental impacts.

Special Cases

- Regulations may require road managers to undertake specific actions to reduce environmental impacts of roads over and above BMPs.
- Some entities, such as state and federal parks, National Forests, conservation organizations and other owners may focus on eliminating roads and upgrading roads that will remain in use.



General Priorities

- For public and private road managers concerned with maintaining access at all times, the first priority is on keeping roads open or when they are closed due to weather-related failures, to re-open them as soon as possible. In rural areas, these road managers commonly operate on very limited budgets.
- For managers concerned with resource management, maintaining and creating access at least cost is often an overriding consideration.
- Prioritization should address both short-term and long-term road management requirements.

What Does a Road Assessment Tell You?

- Conditions affecting accessibility and safety e.g., presence of potholes, failing cut and fill slopes, plugged ditches and culverts, broken pipes, etc.
- At risk conditions e.g., presence of undersized crossings, unstable fills, imminent landslides, etc.
- Potential opportunities for long-term improvement e.g., inadequately drained road segments, chronic maintenance problems, poorly located road sections, etc.

Road Management Plans

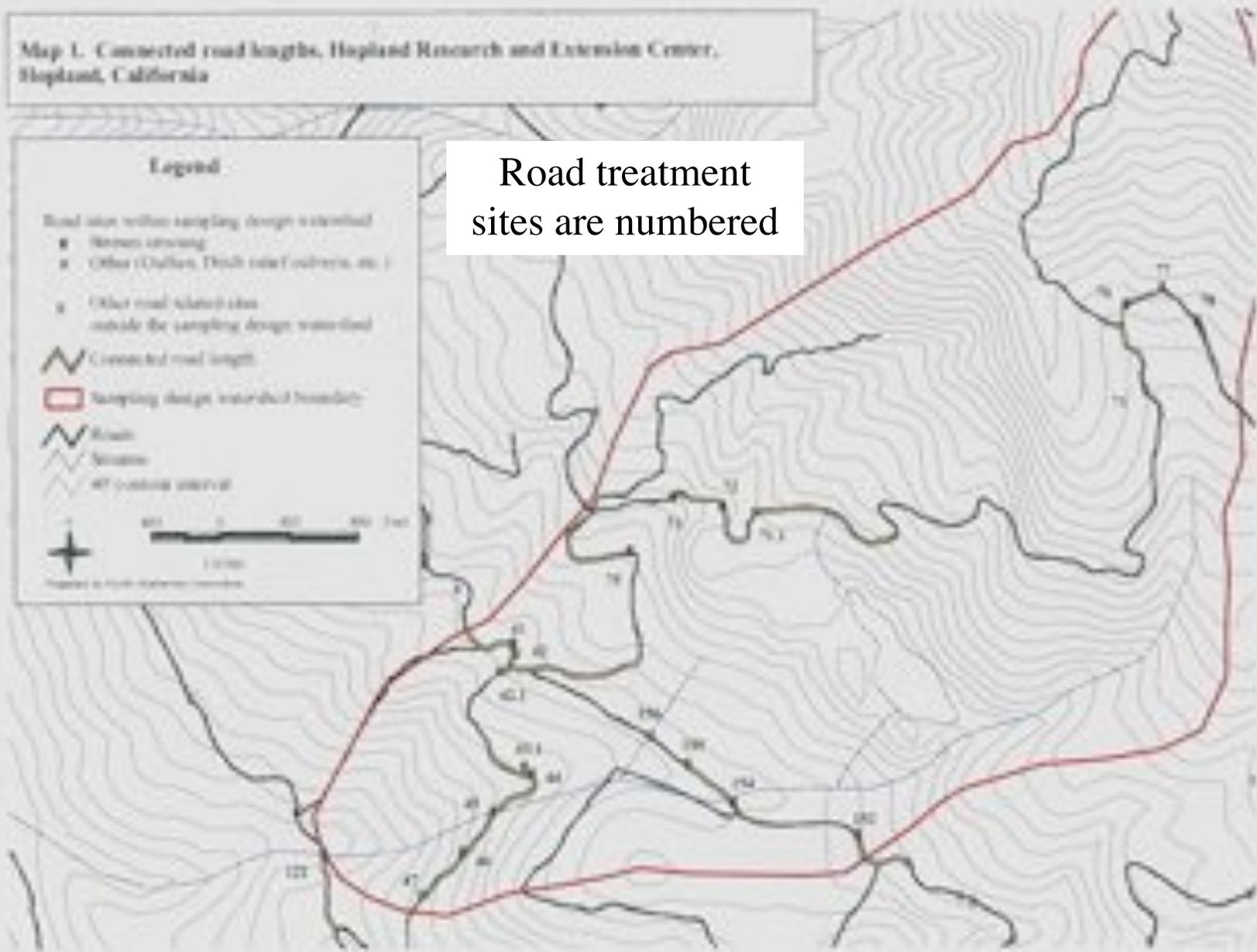
Addressing Implementation of Measures to Deal with Findings of a Road Assessment

- Road management plans may be of variable detail.
- They should include a map or maps of existing conditions and identification of sites requiring treatment.
- Treatments may include annual maintenance activities, road improvements and/or restoration and road closures or relocations.
- Treatments should be scheduled over the planning timeframe, along with costs and sources of funding.

Map 1. Connected road lengths, Hopland Research and Extension Center, Hopland, California



Road treatment sites are numbered



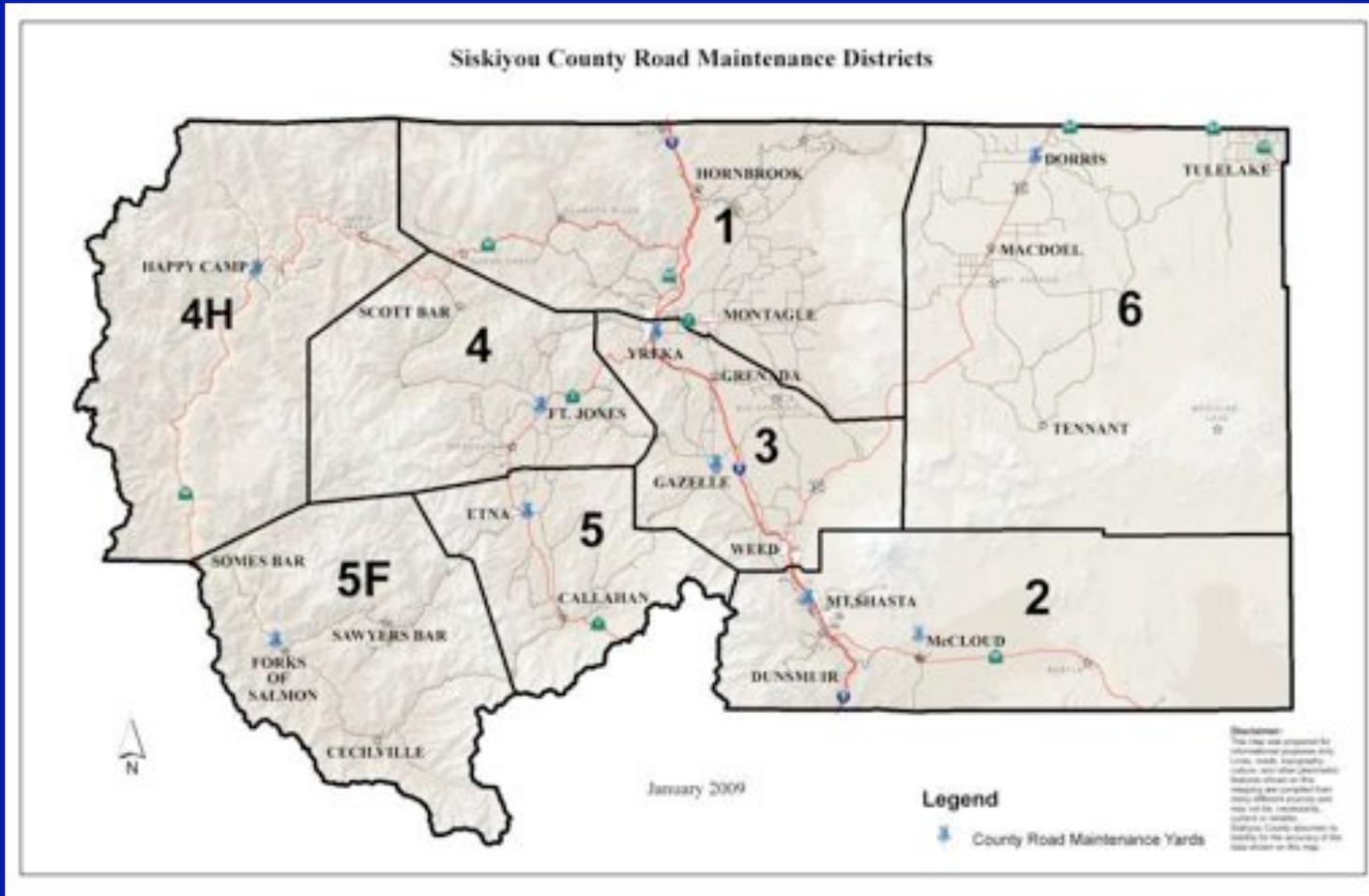
Some Examples of Prioritization



Prioritizing Maintenance

Given limited budgets, how do rural counties decide what maintenance activities have the highest priority?

- Example: Siskiyou County is responsible for 1361 miles of road and 175 bridges. Over a third of these roads are unpaved.
- Currently, the county receives about \$9 million/year to manage its roads.
- “The (road) Department’s highest priority is to provide needed maintenance to protect the investment in existing roads and bridges and to provide for improvements to the safety, capacity and serviceability of roads.”



The county is divided into six road maintenance districts, each of which has a roads supervisor. The roads supervisor establishes local priorities for maintenance based on his or her site-specific knowledge.

Some Typical Priorities

- Ensuring that roads are open to users at all times, including responding to emergencies (except for seasonal closures).
- Conducting maintenance to ensure the safety of the public e.g., winter plowing and sanding roads, filling potholes, removing debris from the roadway, etc.
- Replacing structurally or operationally deficient structures.
- Undertaking maintenance that will prevent road closures or failures e.g., clearing ditches and culverts before winter, brushing to maintain safe visibility, treatments to maintain integrity of the road surface, etc.

Typical Priorities (cont.)

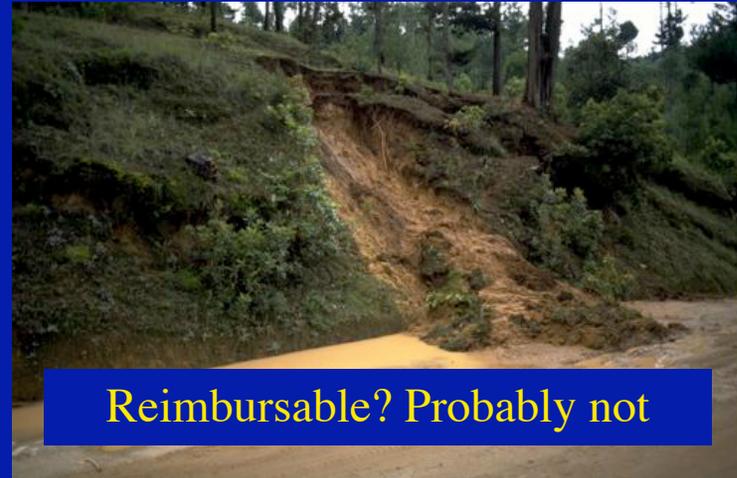
- Resurfacing roads and maintaining gravel surfaces as funding and staffing permit.
- Improving environmental performance of roads as funding permits (typically depends on augmentation of baseline road budgets and grants).
- Closing or relocating roads that are in unfavorable locations (depends on augmentation of baseline road budgets and strong support of users and the Board of Supervisors).

Funding for Routine Maintenance

- Siskiyou County's funding for road management is derived from state and federal sources, not from property taxes or the general fund.
- “Funding...is always less than the work that needs to be accomplished..”
- Cuts in funding are anticipated in the near future and new revenue sources are needed.

Funding for Emergencies and Environmental Improvements

- When emergencies occur, the county responds by spending its reserves to restore road functionality. It may then seek reimbursement from the Federal Emergency Management Agency.
- Projects aimed at improving the environmental performance of roads, such as fish passage projects, are generally funded by state or federal grants in most rural counties.



Issues with Rural County Road Management

- Rural counties are large but populations are small. Highway user's tax is apportioned by population and maintained road mileage. Consequently, this is a limited source of funds.
- Many rural counties depend on federal funds derived from National Forest timber harvesting or related legislation. These revenues are unstable, generally declining.
- Other sources of state funding are expiring. Also, there is a shift in priority favoring private contracting versus the public sector. This will reduce the quantity of work that can be done.
- Bottom line, road management funding is declining and this is affecting staffing and the ability to do the required work.
- Many rural counties include watersheds and streams that are listed as impaired (TMDLs) wherein there is an expectation that efforts will be undertaken to reduce sources of impairment.

Prioritizing Fish Passage Improvements: Geographic Priorities

- Most fish passage projects are focused within the ranges of T&E species.
- Within those ranges, further emphasis is placed on specific watersheds.
- This may change in the future.



Criteria for Fish Passage Improvement

Source Document: Part XII of the Department of Fish and Game Stream Habitat Restoration Manual

- Criteria and Objectives for Passage Projects:
 - Efficient and safe passage for all aquatic organisms and life stages
 - Continuity of geomorphic processes such as movement of debris and sediment
 - Accommodation of behavior and swimming ability of organisms to be passed
 - Diversity of physical and hydrologic conditions leading to diversity of passage opportunities
 - Projects that are self-sustaining and durable
 - Facilitate passage of terrestrial organisms that move within the riparian corridor
- Implementation of these criteria suggests designs based on natural systems. That is not always feasible.

Prioritizing Fish Passage (cont.)

- Criteria used to prioritize or choose among several potential sites by the Five County Conservation Program include:
 - Degree to which the crossing structure is a barrier
 - Number of aquatic species present
 - Potential upstream habitat gain
 - Quality of upstream habitat
 - Condition of existing crossing
 - Potential for accommodating 100-year flows plus sediment
- Additional criteria may include goals for restoration, potential effects of project on upstream or downstream habitat, needs of non-fish aquatic species and/or terrestrial wildlife and potential for facilitating spread of exotic or invasive species.

Prioritizing Sediment Reduction Projects

Source Document: Part X of the Department of Fish and Game Stream Habitat Restoration Manual

- Criteria Used to Evaluate Priorities:
 - Volume of sediment potentially delivered to a stream
 - Potential for future erosion
 - Accessibility e.g., is other work planned for the road?
 - Costs for treatment
 - Urgency of treating the site
 - Cost effectiveness or money spent per cubic yard saved
- Projects should meet pre-established cost-effectiveness criteria, result in significant sediment reduction and have an immediate need for treatment.
- Other potential benefits e.g., protection of water supply, presence of endangered species, may apply.

Sediment Reduction Projects (cont.)

- Cost-effectiveness will vary due to regional differences in operational costs.
- Treating groups of sites, rather than individual sites is preferred.
- Treat biologically important sub-watersheds first.
- Urgency of treatment and/or potential effects on critical resources may trump other criteria.



Trump Cards-All Managers

- Maintaining functionality
- Responding to emergencies
- Regulatory mandates
- The ultimate trump card: funding



Summary

- Setting priorities for road treatments requires an assessment of conditions and preferably, a road management plan.
- Treatments may include annual maintenance tasks, road improvements and/or road restoration or closure.
- What is done depends on the road manager's objectives and site conditions.
- Road management may be dictated by regulatory requirements, emergencies and by available funding.



Thank You!

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