

## Appendix F

# Road Inventory Protocol





# Contents

<b>F. ROAD INVENTORY PROTOCOL</b>	<b>F-1</b>
<i>F.1 MRC Roads</i>	<i>F-1</i>
<i>F.2 MRC Road Points</i>	<i>F-1</i>
F.2.1 Culverts	F-1
F.2.2 Crossings	F-3
F.2.3 Landings	F-4
F.2.4 Road slides	F-5
F.2.5 Erosion	F-5
F.2.6 Rock pits	F-6
F.2.7 Spoil piles	F-6
F.2.8 Water holes	F-7
F.2.9 Landslides	F-7



## F. ROAD INVENTORY PROTOCOL

Our Global Positioning System (GPS) allows MRC to collect data on our roads and road features (e.g., culverts, crossings, landings) that could potentially deliver sediment to watercourses. This satisfies the state requirement for road inventory of potential sediment-producing sites within listed “impaired” watersheds in northern California. Road data also helps MRC prioritize our own projects for installation, maintenance, and removal. Sections F.1 and F.2 list the types of data collected. The MRC Road Department will provide data collectors with training and written instructions to ensure that we are providing accurate and comparable information throughout the term of the HCP/NCCP.

### F.1 MRC Roads

#### Road Data

- Letter ID for mainline road (A-Z)
- Road number
- Road name
- Description of road use (e.g., public road, road on MRC land)
- Description of road status (permanent, seasonal, temporary, decommissioned, historic, undetermined)
- Type of road surface (paved, rocked, native, undetermined)
- Type of road prism (outsloped, insloped with ditch, crowned, flat, or combination)
- Average road width (ft)
- Road grade (<15%, >15%, undetermined)
- Length of road grade (0-300 ft, 300-800 ft, 800-1300 ft, >1300 ft, undetermined)
- Erosion Hazard Rating (EHR) of road surface
- Road passable for ATV? (yes/no)
- Source for the geographic location of the road (GPS, forester, or aerial photos)
- Road on MRC land? (yes/no)
- Inventory block in which the road is located
- Watershed Analysis Unit (WAU) in which the road is located
- Planning watershed in which the road is located
- Date of road survey
- Surveyor comments

### F.2 MRC Road Points

#### F.2.1 Culverts

#### Culvert Data

- Site number

**Culvert Data**

- Culvert type (watercourse culvert or ditch relief culvert)
- Culvert material (steel, aluminum, plastic, combination, or other)
- Culvert diameter (in.)
- Culvert length (ft)
- Culvert condition (functional or non-functional)
- Culvert marking (mile post #)
- Interior condition of inlet (open, partially plugged, or plugged)
- Exterior condition of inlet (crushed, rusty, or bottom rusted out)
- Maximum channel width (ft) above an inlet area of a culvert at peak flow
- Maximum channel depth (ft) above an inlet area of a culvert at peak flow
- Channel slope (%) above an inlet area of a culvert
- Structures installed for erosion control at the inlet? (yes, no, repair, or install)
- Trash rack installed or in need of repair? (yes, no, repair, or install)
- Inlet bevel cut to increase flow capacity? (yes/no)
- Drop inlet installed? (yes, no, repair, or install)
- Flared inlet installed? (yes, no, repair, or install)
- Interior condition of the outlet (open, partially plugged, or plugged)
- Exterior condition of the outlet (crushed, rusty, or bottom rusted out)
- Structures installed for erosion control at the outlet? (yes, no, repair, or install)
- Outlet has logs or boulders acting as energy dissipators? (yes, no, repair, or install)
- Downspout installed at culvert outlet? (yes/no)
- Downspout installation or repair needed to minimize erosion? (install, repair, replace, or none)
- Culvert on a potentially fish-bearing stream? (known, unknown, or does not apply)
- Drop height (ft) below a culvert outlet
- Gradient of ditch relief culvert >10% or >2% of road prism? (yes, no, or does not apply)
- Inlet of ditch relief culvert skewed >35%? (yes, no, or does not apply)
- Length of ditch that drains to inlet? (0-50, 50-100, 100-200, 200-400, 400-800 or >800 ft)
- Measured length of road that drains surface runoff to a watercourse crossing?
- Culvert has diversion potential? (yes, road; yes, ditch; no diversion potential; already diverted)
- Drainage structures installed? (water bar, rolling dip, rocked rolling dip, does not apply, none)
- Type of fill over the culvert? (paved, rocked, native, or native rock)
- Evidence of past erosion at the site? (rill, gully, washout, or slide)
- Estimated fill volume (yd<sup>3</sup>) at crossing
- Volume (yd<sup>3</sup>) of past erosion (measured and calculated) which delivered to a watercourse

### Culvert Data

- Potential for a site to deliver sediment to a watercourse? (high, moderate, low)
- Estimated volume of controllable erosion (yd<sup>3</sup>)
- Need for immediate treatment at the site? (high, moderate, low)
- Work already completed on the site? (yes/no)
- All erosion measures have been implemented and erosion controlled? (yes/no)
- Source of the geographic data for the site feature? (GPS, forester, aerial photos)
- Name of MRC employee, contractor, or consultant doing the site inspection
- Survey data automatically generated by GPS
- Additional comments about the site

## F.2.2 Crossings

### Crossings Data

- Site number
- Crossing type (dipped, low water, bridge, ditch relief, Humboldt, other)
- Crossing site passable with an ATV? (yes/no)
- Crossing site rocked to minimize future erosion at the site? (yes/no)
- Maximum channel width (ft) above an inlet area of a culvert at peak flow
- Maximum channel depth (ft) above an inlet area of a culvert at peak flow
- Channel slope (%) above an inlet area of a culvert
- Type of bridge construction (log, flatcar, other)
- Decking material on the bridge (dirt, steel, wood)
- Type of bridge rails currently installed (logs, steel, decking, none)
- Length of the bridge (ft)
- Width of the bridge (ft)
- Maximum flow width that can pass under the bridge (ft)
- Height of the bridge (ft)
- Rails installed on the bridge? (yes/no)
- Bridge rails at least 8 in. x 8 in.? (yes/no)
- Condition of the bridge sill (good, poor)
- Condition of the bridge decking (good, poor)
- Overall condition of the bridge (good, poor)
- Culvert on a potentially fish-bearing stream? (known, unknown, does not apply)
- Length of road (ft) that drains surface runoff to the watercourse crossing site
- Culvert has diversion potential? (yes, road; yes, ditch; no diversion potential; already diverted)

### Crossings Data

- Drainage structures to divert erosion? (i.e., water bar, rolling dip, rocked rolling dip, none)
- Estimated fill volume (yd<sup>3</sup>) at crossing
- Evidence of past erosion at the site (rill, gully, washout, slide)
- Volume (yd<sup>3</sup>) of past erosion which has already delivered to a watercourse
- Potential for a site to deliver sediment to a watercourse (high, moderate, low)
- Estimated volume of controllable erosion (yd<sup>3</sup>)
- Need for treatment at the site? (high, moderate, low)
- Work already completed on site? (yes/no)
- All erosion measures have been implemented and erosion controlled? (yes/no)
- Source of the geographic data for the site feature? (GPS, forester, aerial photos)
- Name of MRC employee, contractor, or consultant doing the site inspection
- Survey data automatically generated by GPS
- Additional comments about the site

## F.2.3 Landings

### Landings Data

- Site number
- Size of landing area (0-3000, 3000-6000, 6000-10,000, 10,000-15,000 or >15,000 ft<sup>2</sup>)
- Landslide occurred at or near the landing? (yes/no)
- Fill condition (stable, unstable or failed-active; failed-dormant, if landslide occurred)
- Perched material (unstable fill, slash, or cull logs) that should be pulled back? (yes/no)
- Potential volume of future slide (yd<sup>3</sup>)
- Evidence of past erosion at the site (rill, gully, washout, slide)
- Volume (yd<sup>3</sup>) of past erosion which has already delivered to a watercourse
- Distance between land and the nearest watercourse (0-50, 50-200 or 200+ ft)
- Potential for the site to deliver sediment to a watercourse (high, moderate, low)
- Estimated volume of controllable erosion(yd<sup>3</sup>)
- Need for treatment at the site (high, moderate, low)
- All erosion measures have been implemented and erosion controlled? (yes/no)
- Is this the last landing on the road? (yes/no)
- Source of the geographic data for the site feature? (GPS, forester, aerial photos)
- Name of MRC employee, contractor, or consultant doing the site inspection
- Survey data automatically generated by GPS
- Additional comments about the site



## F.2.4 Road slides

### Road Slide Data

- Site number
- Type of road slide (potential fill failure, failed cutbank slide, active streambank slide)
- Status of the road slide (already failed, potential failure, or active)
- Potential volume of future slide (yd<sup>3</sup>)
- Slide size class (0-25, 25-50, 50-100, 100-200 or 200+ yd<sup>3</sup>)
- Distance of the road slide to the nearest watercourse (0-50, 50-200 or 200+ ft)
- Potential for the site to deliver sediment to a watercourse (high, moderate, low)
- Estimated volume of controllable erosion(yd<sup>3</sup>)
- Need for treatment at the site (high, moderate, low)
- Source of the geographic data for the site feature? (GPS, forester, aerial photos)
- Name of MRC employee, contractor, or consultant doing the site inspection
- Survey data automatically generated by GPS
- Additional comments about the site

## F.2.5 Erosion

### Erosion Data

- Site number
- Site able to deliver sediment to a watercourse? (no, major rilling, gully)
- Rill length (ft)
- Gully length (ft)
- Gully width (ft)
- Gully depth (ft)
- Length of road that drains surface runoff to the watercourse crossing site (ft)
- Distance between the site and the nearest watercourse (0-50, 50-200 or 200+ ft)
- Volume (yd<sup>3</sup>) of past erosion which has already delivered to a watercourse
- Potential for a site to deliver sediment to a watercourse (high, moderate, low)
- Estimated volume of controllable erosion(yd<sup>3</sup>)
- Need for treatment at the site (high, moderate, low)
- Work already completed on site? (yes/no)
- Source of the geographic data for the site feature? (GPS, forester, aerial photos)
- Name of MRC employee, contractor, or consultant doing the site inspection
- Survey data automatically generated by GPS
- Additional comments about the site

## F.2.6 Rock pits

### Rock Pit Data

- Site number
- Average size of the rock pit base area (ft<sup>2</sup>)
- Maximum height of the rock pit's face (ft)
- Vehicle access to the rock pit? (yes/no)
- Rock pit drained to minimize the potential for erosion? (yes/no)
- Any perched material near the top of the rock pit? (yes/no)
- Evidence of past erosion at the site (rill, gully, washout, slide)
- Volume (yd<sup>3</sup>) of past erosion which has already delivered to a watercourse
- Potential for a site to deliver sediment to a watercourse (high, moderate, low)
- Estimated volume of controllable erosion(yd<sup>3</sup>)
- Need for treatment at the site (high, moderate, low)
- Source of the geographic data for the site feature? (GPS, forester, aerial photos)
- Name of MRC employee, contractor, or consultant doing the site inspection
- Survey data automatically generated by GPS
- Additional comments about the site

## F.2.7 Spoil piles

### Spoil Pile Data

- Site number
- Size of the spoil pile (ft<sup>2</sup>)
- Distance between the spoil pile and the nearest watercourse (0-50, 50-200 or 200+ ft)
- Evidence of past erosion at the site (rill, gully, washout, slide)
- Volume (yd<sup>3</sup>) of past erosion which has already delivered to a watercourse
- Potential for the site to deliver sediment to a watercourse (high, moderate, low)
- Estimated volume of controllable erosion(yd<sup>3</sup>)
- Need for treatment at the site (high, moderate, low)
- Source of the geographic data for the site feature? (GPS, forester, aerial photos)
- Name of MRC employee, contractor, or consultant doing the site inspection
- Survey data automatically generated by GPS
- Additional comments about the site

## F.2.8 Water holes

### Water Hole Data

- Site number
- Waterhole type: watercourse pool (P), riffle (R), blocked culvert (B), pond (P), lake (L), or other (O)
- Vehicle access to drafting site? (yes/n
- Access road to the water hole needs work? (none, minimal, extreme)
- Approach to the water hole rocked in order to minimize road surface erosion? (yes/no)
- Recovery rate for water hole after water truck fill-up? (fast, 1 hour; slow, 1 day)
- Evidence of past erosion at the site (rill, gully, washout, slide)
- Volume (yd<sup>3</sup>) of past erosion which has already delivered to a watercourse
- Potential for the site to deliver sediment to a watercourse (high, moderate, low)
- Estimated volume of controllable erosion(yd<sup>3</sup>)
- Need for treatment at the site (high, moderate, low)
- Work already completed on site? (yes/no)
- All erosion measures have been implemented and erosion controlled? (yes/no)
- Source of the geographic data for the site feature? (GPS, forester, aerial photos)
- Name of MRC employee, contractor, or consultant doing the site inspection
- Survey data automatically generated by GPS
- Additional comments about the site

## F.2.9 Landslides

### Landslide Data

- Site number
- Landslide affected the road prism? (yes/no)
- Volume of material that is currently on the road surface (yd<sup>3</sup>)
- Length of the landslide site (ft)
- Width of the landslide site (ft)
- Depth of the landslide site (ft)
- Distance between the landslide and the nearest watercourse (0-50, 50-200 or 200+ ft)
- Source of the geographic data for the site feature? (GPS, forester, aerial photos)
- Name of MRC employee, contractor, or consultant doing the site inspection
- Survey data automatically generated by GPS
- Additional comments about the site

