

Table of Contents

| | |
|---|-----|
| INTRODUCTION | 2 |
| STEP 1 – SETTING UP THE ANALYSIS..... | 4 |
| STEP 2- DESCRIBING THE SITUATION..... | 5 |
| TABLE 2.1 - EXISTING TRANSPORTATION SYSTEM | 7 |
| TABLE 2.2 - EXISTING ROAD CLASSIFICATIONS/DENSITY | 23 |
| STEP 3- IDENTIFYING ISSUES | 23 |
| TABLE 3.1 ANNUAL DEFERRED MAINTENANCE COSTS..... | 25 |
| STEP 4- ASSESSING BENEFITS, PROBLEMS AND RISKS OF THE EXISTING ROAD SYSTEM ... | 26 |
| LANDS..... | 27 |
| Table 4.1 | 29 |
| Table 4.2 | 36 |
| SOIL, WATER, AIR, AND FORESTRY | 37 |
| Table 4.3 <i>General Ecosystem Survey Units Found in the Watersheds of the Santa Catalina EMA</i> | 38 |
| Table 4.4 <i>General Ecosystem Survey Units Descriptions</i> | 39 |
| RECREATION | 43 |
| Table 4.5 <i>Recreation Route Recommendations</i> | 45 |
| RANGE MANAGEMENT | 47 |
| SPECIAL USES..... | 50 |
| BIOLOGY | 52 |
| Table 4.6 <i>Threatened, Endangered, Proposed and Sensitive Animal and Plant Species</i> | 54 |
| Table 4.7 <i>Management Indicator Species</i> | 57 |
| MINERALS | 64 |
| CULTURAL RESOURCES..... | 68 |
| FIRE PROTECTION & SAFETY | 71 |
| STEP 5- DESCRIBING OPPORTUNITIES AND SETTING PRIORITIES | 71 |
| TABLE 5.1 - RECOMMENDED TRANSPORTATION SYSTEM..... | 89 |
| TABLE 5.2 - ROADS ANALYSIS COMPARISONS..... | 89 |
| STEP 6- REPORTING..... | 90 |
| APPENDIX A: DEFINITIONS..... | 92 |
| APPENDIX B: BEST MANAGEMENT PRACTICES | 93 |
| APPENDIX C – INTERDISCIPLINARY TEAM..... | 97 |
| APPENDIX D – IDT COMMENTS..... | 98 |
| APPENDIX E – FSM 7700 | 99 |
| APPENDIX F – FOREST TRANSPORTATION ATLAS | 100 |

References

- Coronado National Forest, Forest Level Roads Analysis Report, January 13, 2003.
Prepared by Melissa D. Shafiqullah, P.E.

Introduction

On January 12, 2001, the Forest Service issued the final National Forest System Road Management Rule. This rule revised regulations concerning the management, use, and maintenance of the National Forest Transportation System. The final rule is intended to help ensure that additions to the National Forest System road network are essential for resource management and use; that construction, reconstruction, and maintenance of roads minimize adverse environmental impacts; that unneeded roads are decommissioned; and that restoration of ecological processes is initiated.

This Watershed Level Transportation Analysis Plan (TAP) addresses existing open National Forest System Roads (NFSR) as well as non-system roads located in the Santa Catalina Ecosystem Management Area (EMA). This Transportation Analysis is not a NEPA document but supports NEPA Planning. It is an integrated ecological, social, and economic approach to transportation planning, addressing both existing and future roads. 36 CFR 212.5 requires that the forest identify the minimum road system needed for safe and efficient travel and for administration, utilization, and protection of National Forest System lands.

The Transportation Analysis process is described in Report FS-643, Roads Analysis: *Informing Decisions About Managing the National Forest Transportation System*. The Transportation Analysis requirements for Forest, Area, Watershed and Project Scale are described in *FSM 7700 - Transportation System: Chapter 7710 - Transportation Atlas, Records, and Analysis*; also see Interim Directives that may be policy at the time of the report. Below is the link to the complete FSM 7700 - Transportation System.
<http://fsweb.wo.fs.fed.us/directives/fsm/7700/7710.rtf>

Objectives

The objective of this analysis is to provide the Forest Service Line Officer with critical information to ensure that existing and future road systems are safe and responsive to public needs and desires, are affordable and efficiently managed, have minimal negative ecological effects on the land, are in balance with available funding for needed management actions, and are consistent with road management objectives FSM 7712.5. This analysis will not change or modify any existing NEPA decisions, but information generated by this analysis might cause the line officer to reconsider, and perhaps at some future date revise previous NEPA decisions.

Transportation Analysis Overview

This analysis is intended to identify changes to the national forest transportation system that may be needed to meet current or future management objectives, and to provide information that allows integration of ecological, social, and economic concerns into future decisions about areas. The process is intended to complement, rather than replace or preempt, other planning and decision processes.

The analysis process is a six-step progression, regardless of scale, customized to local situations; landscape and site conditions coupled with public issues, forest plan land

allocations, and management constraints. This report provides a set of possible road-related issues and analysis questions for the Interdisciplinary Team (IDT) to investigate. Only those relevant questions and any additional suggestions on information needs and research findings that might apply to the project need to be addressed.

Six Step Process

- Step 1. Setting up the Analysis
- Step 2. Describing the Situation
- Step 3. Identifying Issues
- Step 4. Assessing Benefits, Problems and Risks
- Step 5. Describing Opportunities and Setting Priorities
- Step 6. Reporting

The amount of time and effort spent on each step differs by the complexity of the issues, specific situations and available information particular to the project. Details about these steps can be found in FS-643 titled *Roads Analysis: Informing Decisions about Managing the National Forest Transportation System*.

Transportation Analysis Products

This report is a product of the six step analysis process and documents the information and analyses used to identify opportunities and priorities for future national forest road and motorized trail systems (where applicable). Included in this report is a transportation map displaying the existing/recommended road system and where applicable the existing/recommended motorized trail system and the needs and/or recommendations for each. This report will:

- Identify needed and unneeded roads;
- Identify road related social, environmental and public safety risks;
- Identify site-specific priorities and opportunities for road improvements and decommissioning;
- Identify areas of special sensitivity or any unique resource values.

This report will help managers address questions on road access related to ecosystem health and sustainability, commodity extraction, recreation, social and cultural values, and administrative uses.

This report may help to inform future management decisions on the merits and risks of building new roads; relocating, upgrading, or decommissioning existing roads; managing traffic; and enhancing, reducing, or discontinuing road maintenance. This analysis is based upon:

- Use of the best available scientific information;
- Economics;
- Social and economic costs and benefits of roads; and
- Contribution of existing and proposed roads to management objectives.

- Input from resource specialists

Step 1 – Setting Up the Analysis

Purpose, Scope and Objectives:

The purpose of the project is to identify the road system needed to administer and utilize NFS resources within budget constraints. This TAP will support the Forest Plan Revision document which is currently undergoing the revision process.

The scope of this analysis includes the area bounded by the Santa Catalina Ecosystem Management Area. This is an Ecosystem Management Area level TAP with boundaries indicated on the map in Appendix F. A complete inventory of user-created routes is not required in order to complete a TAP. However, new routes are continually being created during the inventory process and therefore this report will only reflect user-created routes as of the date of this report. Some user-created routes are well located, provide excellent opportunities for outdoor recreation by motorized and non-motorized users alike, and would enhance the system of designated routes and areas. Other user-created routes are poorly located and cause unacceptable environmental impacts. The Coronado National Forest is committed to working with user groups and others to identify such routes and consider them for analysis on a site-specific basis. (36 CFR 212.2) This analysis will include recommendations where appropriate to add user-created routes to the forest transportation system or recommend prohibition or restriction of motor vehicle use on identified system roads.

The objective of this Transportation Analysis is to provide critical information for a road system that is safe and responsive to public needs and desires, is affordable, conforms to the National Forest Plan, is efficiently managed, has minimal negative ecological effects on the land, and is sustainable with available funding for needed management actions. All existing roads, proposed roads and motorized trails, within the project area, as well as access roads to the Forest Boundary are included in this Transportation Analysis Plan. This analysis provides a comprehensive look at the network of NFS roads and motorized NFS trails as well as all other user-created roads located in the EMA and will be used during the NEPA process.

This document provides information for the Forest Plan Revision and the Travel Management Rule as it relates to the Coronado National Forest. This analysis will look at the options concerning access issues and needs, proliferation of non-system roads, un-needed roads, user-created routes, mixed use, and OHV use where applicable. In addition road density is analyzed since we are undergoing a Forest Planning Revision process and road density provides valuable information when the plan is revised.

The standard and guideline for road density on the Coronado National Forest is 1 mile per square mile. This is documented on page 34 of the Coronado National Forest Plan (USDA Forest Service, August 1988). It is listed in the roads section because roads affect wildlife

habitat both by displacing natural vegetation and terrain, and by bringing disturbance to the area. In addition, roads divert overland flow of water and are a source of erosion and dust.

Analysis Plan

The following items were specifically investigated in this analysis:

- Verify current road conditions and drivability.
- Verify accuracy of road locations on maps.
- ID Team and Line Officer identify preliminary access and resource issues, concerns and opportunities.
- Identify additional issues, concerns and opportunities through internal and external resource staffs.
- Recommend changes to the road system based on the findings of this roads analysis.

Information Needs

The following items were specifically discussed or described in this analysis:

- Accurate location and condition of all roads within the project area.
- Assessment of opportunities, problems and risks for roads and motorized trails in the project area.
- Public access needs and desires in the area.
- Areas of special sensitivity, resource values, or both.
- Best management practices for the area.

Potential Key Issues, Concerns, and Opportunities

The following items were addressed in this analysis:

- Mineral access
- Range Permit access
- Special Uses
- OHV Recreation Use
- Archaeological sites within the study area
- Motorized Trail and Vehicle route sharing
- Private property blocking federal land access
- Excessive roads in the study area

Step 2- Describing the Situation

Regional Setting

The Santa Catalina Mountains Ecosystem Management Area (EMA) is located within the Basin and Range physiographic province (Fenneman 1931) in southwestern Arizona which is characterized by an east-west alignment of generally parallel mountain ranges with broad valleys in between. The primary mountain ranges in the vicinity of the alternatives considered includes the Santa Catalina Mountains, with elevations ranging from 2,600 to 9,200 feet and the Rincon Mountains ranging in elevations up to 8360 and retaining steep

jagged cliffs. The slopes and valleys of both ranges are bisected by intermittent riparian tributaries.

The vegetation within the Santa Catalina EMA ranges from desert and desert grassland to woodland, riparian and forest communities in response to changes in elevation, precipitation, and temperature.

The following communities are located in proximity to this EMA:

- Tucson
- Catalina
- Oracle
- Marana
- Benson
- Mescal
- Vail
- San Manuel
- Oro Valley
- Mammoth

The Interdisciplinary Team (Appendix C) convened and examined the existing transportation system in relation to current forest plan direction. This required a description of the road system; its location, ownership, condition, and current forest plan direction. A description of the physical, biological, social, cultural, economic and political aspects of the analysis area was discussed and generated by the team.

A map of the area's transportation system was developed to facilitate this description. (See Appendix F).

The products of this step are:

- A map or other descriptions of the existing road system defined by the current forest plan, and
- Basic data needed to address transportation analysis issues and concerns.

The following table provides existing data such as length of road within the Forest Boundary, current maintenance level and route status as listed in the INFRA database. The table also provides data on user-created routes that were GPSed using a Trimble GeoXT handheld unit. The table provides data above and beyond what is required by a TAP. The information provided in the table was also used to generate existing densities for the EMA.

Table 2.1 - Existing Transportation System

| EXISTING SYSTEM | Road Classifications | | | | | New Proposed Routes (Miles) | Operational Maintenance Level | Description |
|-----------------|--|-------------------------------------|--------------------------------|-------------------------------------|--------------------|-----------------------------|-------------------------------|---|
| | OA - Open Authorized (Miles) on Forest | CA - Closed Authorized (Miles) ML 1 | OU - Open Unauthorized (Miles) | Route Status Decommissioned (Miles) | OHV Routes (Miles) | | | |
| 1 | 0.76 | | | | | | 3 | Willow Canyon |
| 1 A | 0.57 | | | | | | 3 | South Willow |
| 1 B | 0.96 | | | | | | 3 | North Willow Loop |
| 1 C | 0.38 | | | | | | 3 | North Willow Ridge |
| 2 | 1.54 | | | | | | 3 | Bear Wallow |
| 3 | 0.50 | | | | | | 2 | Incinerator Ridge |
| 4 | 0.22 | | | | | | 3 | Inspiration Rock |
| 5 | 0.78 | | | | | | 3 | Molino Basin CG |
| 5 A | | | | 0.50 | | | D | Mercer Springs - previously obliterated |
| 6 | 1.28 | | | | | | 3 | Loma Linda - Private Road to summer homes |
| 7 | 1.16 | | | | | | 3 | Organization Ridge |
| 8 | 0.91 | | | | | | 3 | Lower Soldier |
| 8 A | 0.53 | | | | | | 3 | Unknown |
| 8 B | 0.15 | | | | | | 3 | Unknown |
| 8 C | 0.14 | | | | | | 3 | Unknown |
| 9 | 1.76 | | | | | | 4 | Rose Canyon CG |

| Road Number | OA | CA | OU | D | OHV | New | ML | Description |
|-------------|------|------|------|------|-----|-----|----|--|
| 9 A | 0.50 | | | | | | 3 | Green Mountain Loop - Rose Canyon CG |
| 9 B | 0.33 | | | | | | 3 | Sycamore Camp Host - Rose Canyon CG |
| 9 C | 0.09 | | | | | | 3 | Willow Canyon RV - Rose Canyon CG |
| 9 D | 0.10 | | | | | | 3 | Willows Edge - Rose Canyon CG |
| 9 E | 0.12 | | | | | | 3 | Red Tail - Rose Canyon CG |
| 9 F | 0.37 | | | | | | 3 | Rose Peak - Rose Canyon CG |
| 9 G | 0.14 | | | | | | 4 | Rose Accessible - Rose Canyon CG |
| 9 H | 0.16 | | | | | | 3 | Rose Admin Access - Rose Canyon CG |
| 10 | 1.45 | | | | | | 4 | Marshall Gulch |
| 11 | 3.40 | | | | | | 4 | Ski Valley |
| 11 A | 0.22 | | | | | | 2 | Radio Tower - under Special Use Permit |
| 12 | 0.39 | | | | | | 4 | Whitetail CG |
| 13 | 0.58 | | | | | | 1 | Sollers Point - road to heliport; locked gate |
| 14 | 1.43 | | | | | | 3 | Spencer Canyon |
| 15 | 0.60 | | | | | | 2 | FAA |
| 15 A | 0.19 | | | | | | 2 | Un-named |
| 16 | | | | 0.20 | | | | Wedding - previously obliterated road |
| 17 | | 0.50 | | | | | 1 | Old Bigelow |
| 18 | | 1.76 | | | | | 1 | Radio Ridge - Used by Trico Electric and Water District; previously called Trail 624; [see Trail 624] |
| 19 | 1.03 | | | | | | 2 | Turkey Run |
| 21 | 0.48 | | | | | | 4 | Carter Canyon |
| 29 | 3.06 | | | | | | 2 | Pepper Sauce |
| 29-1.00L-1 | | | 0.41 | | | | | Unauthorized Road |
| 29 A | | | | 2.00 | | | D | Un-named - previously decommissioned road |

| Road Number | OA | CA | OU | D | OHV | New | ML | Description |
|---------------|-------|----|------|---|-----|-----|----|--------------------------|
| 29 B | 0.17 | | | | | | 2 | Un-named |
| 29 C | 0.10 | | | | | | 2 | Connector |
| 34 | 1.54 | | | | | | 3 | Bigelow |
| 35 | 15.47 | | | | | | 4 | Happy Valley |
| 35-Disp CG 1 | | | 0.11 | | | | | Dispersed Campground |
| 35-Disp CG 2 | | | 0.44 | | | | | Dispersed Campground |
| 35-Disp CG 3 | | | 0.08 | | | | | Dispersed Campground |
| 35-Disp CG 4 | | | 0.06 | | | | | Dispersed Campground |
| 35-Disp CG 5 | | | 0.06 | | | | | Dispersed Campground |
| 35-Disp CG 6 | | | 0.11 | | | | | Dispersed Campground |
| 35-Disp CG 7 | | | 0.01 | | | | | Dispersed Campground |
| 35-Disp CG 8 | | | 0.03 | | | | | Dispersed Campground |
| 35-Disp CG 9 | | | 0.06 | | | | | Dispersed Campground |
| 35-Disp CG 10 | | | 0.01 | | | | | Dispersed Campground |
| 35-Disp CG 11 | | | 0.03 | | | | | Dispersed Campground |
| 35-Disp CG 12 | | | 0.10 | | | | | Dispersed Campground |
| 35-Disp CG 13 | | | 0.04 | | | | | Dispersed Campground |
| 35-Disp CG 14 | | | 0.10 | | | | | Dispersed Campground |
| 35-Disp CG 15 | | | 0.04 | | | | | Dispersed Campground |
| 35-Disp CG 16 | | | 0.09 | | | | | Dispersed Campground |
| 35-Disp CG 17 | | | 0.10 | | | | | Dispersed Campground |
| 35-Disp CG 18 | | | 0.09 | | | | | Dispersed Campground |
| 35-Disp CG 19 | | | 0.04 | | | | | Dispersed Campground |
| 35-spur | | | 0.32 | | | | | Unauthorized Road - loop |

| Road Number | OA | CA | OU | D | OHV | New | ML | Description |
|----------------------|-------|------|------|---|-----|-----|----|--|
| 36 | 6.50 | | | | | | 2 | Bellota Ranch |
| 36-2.50L-1 | | | 0.38 | | | | | Unauthorized Road |
| 36 A | 3.13 | | | | | | 2 | West Spring |
| 36 B | | 0.72 | | | | | 1 | Cerro Tank |
| 37 | 2.58 | | | | | | 2 | Italian Trap |
| 37-2.47L-1 | | | 0.14 | | | | | Unauthorized Road |
| 37-2.54R-1 | | | 0.15 | | | | | Unauthorized Road |
| 37-Italian Trap Tank | | | 0.20 | | | | | Unauthorized Road |
| 37-Ruin-bypass-road | | | 0.19 | | | | | Unauthorized Road- south end of 37 |
| 38 | 23.42 | | | | | | 3 | Control Road |
| 38-9.46R-1 | | | 0.17 | | | | | Unauthorized Road |
| 38-9.50L-1 | | | 0.07 | | | | | Unauthorized Road |
| 38-9.91L-1 | | | 0.22 | | | | | Unauthorized Road |
| 38-16.46R-1 | | | 0.53 | | | | | Unauthorized Road |
| 38-16.61R-1 | | | 0.07 | | | | | Unauthorized Rd - hunter access w/ AZGFD |
| 38-16.61R-2 | | | 0.19 | | | | | Unauthorized Rd - hunter access w/ AZGFD |
| 38-17.78R-1 | | | 0.07 | | | | | Unauthorized Road |
| 38-18.10R-1 | | | 0.19 | | | | | Unauthorized Road |
| 38-21.50R-1 | | | 0.13 | | | | | Unauthorized Road |
| 38-21.50R-2 | | | 0.22 | | | | | Unauthorized Road |
| 38-22.06R-1 | | | 0.18 | | | | | Unauthorized Road |
| 38-22.06R-2 | | | 0.26 | | | | | Unauthorized Road |
| 38-22.10R-1 | | | 0.17 | | | | | Unauthorized Road |
| 38-22.34L-1 | | | 0.53 | | | | | Unauthorized Road |

| Road Number | OA | CA | OU | D | OHV | New | ML | Description |
|--------------------------|-------|----|------|---|-----|------|-----|--|
| 38-22.86L-1 | | | 0.24 | | | | | Unauthorized Road |
| 38-22.86L-2 | | | 0.10 | | | | | Unauthorized Road |
| 38-23.00R-1 | | | 0.28 | | | | | Unauthorized Road |
| 38-23.00R-2 | | | 0.07 | | | | | Unauthorized Road |
| 38-23.65L-1 | | | 0.20 | | | | | Unauthorized Road |
| 38-24.81L-1 | | | 0.21 | | | | | Unauthorized Road |
| 38-24.81L-2 | | | 0.23 | | | | | Unauthorized Road |
| 38-24.81L-3 | | | 0.03 | | | | | Unauthorized Road |
| 38-24.81L-4 | | | 0.05 | | | | | Unauthorized Road |
| 38-24.81R-1 | | | 0.20 | | | | | Unauthorized Road |
| 38-American Flag Reroute | | | | | | 0.61 | | American Flag Reroute - 0.61 miles of proposed new road construction |
| 38-Pvt Rd 1 | | | 0.06 | | | | | Leads to Pvt: 0.07 miles long; 0.1 mi on private |
| 38-Pvt Rd 2 | | | | | | | | 0.25 miles of Private road to Leatherwood Mine - entirely on private land |
| 38-Pvt Rd 3 | | | | | | | | 0.49 mile- County Jurisdiction near Geesaman Wash; starts on County and ends on County; 0.03 mi on FS. Not a declared County Rd. |
| 100 | 3.81 | | | | | | 3 | Sabino Canyon- Admin Use Only |
| 100 A | 1.55 | | | | | | 4 | Lower Bear Canyon - Admin Use Only |
| 100 B | 0.19 | | | | | | 3 | Sabino Overlook - Admin Use Only |
| 100 C | 0.41 | | | | | | 3 | Cactus Picnic - Admin Use Only |
| 100 D | 0.16 | | | | | | 2,3 | Sabino Dam - Admin Use Only |
| 100 E | 0.17 | | | | | | 3 | Sabino Lake- Admin Use Only |
| 100 F | 0.20 | | | | | | 3 | Sabino Group Picnic - Admin Use Only |
| 371 | 10.63 | | | | | | 3 | Redington Road |

| Road Number | OA | CA | OU | D | OHV | New | ML | Description |
|---------------------|------|----|------|---|-----|-----|----|---|
| 371-13.50L-1 | | | 0.12 | | | | | Unauthorized Road |
| 371-15.20L-1 [4427] | | | | | | | | Previously called Unauthorized Road to White Tank [see 4427] |
| 371-16.10R-1 | | | 0.08 | | | | | Unauthorized Road |
| 510 | 1.95 | | | | | | 3 | Catalina State Park - main road |
| 510 A | 0.14 | | | | | | 3 | Ranger Road - Catalina State Park |
| 510 B | 0.10 | | | | | | 3 | Maintenance Rd - Catalina State Park |
| 510 C | 0.14 | | | | | | 3 | Heli Spot - Catalina State Park |
| 510 D | 0.46 | | | | | | 3 | Un-named - Catalina State Park |
| 510 E | 0.10 | | | | | | 3 | Un-named - Catalina State Park |
| 510 F | 0.10 | | | | | | 3 | Un-named - Catalina State Park |
| 510 G | 0.47 | | | | | | 3 | Un-named - Catalina State Park |
| 510 H | 0.16 | | | | | | 3 | Un-named - Catalina State Park |
| 510 I | 0.15 | | | | | | 3 | Un-named - Catalina State Park |
| 510 J | 0.37 | | | | | | 3 | Un-named - Catalina State Park |
| 511 | 1.07 | | | | | | 3 | Un-named - Catalina State Park |
| 511 A | 0.37 | | | | | | 3 | Un-named - Catalina State Park |
| 511 B | 0.22 | | | | | | 3 | Un-named - Catalina State Park |
| 511 C | 0.61 | | | | | | 3 | Un-named - Catalina State Park |
| 607 | 0.36 | | | | | | 3 | Sykes Knob |
| 614 | 0.46 | | | | | | 3 | Bear Wallow Summer Homes |
| 615 | 0.17 | | | | | | 4 | General Hitchcock |
| 625 | 0.43 | | | | | | 3 | Soldiers Camp Annex |
| 625 A | 0.31 | | | | | | 3 | Soldier Camp - |
| 629 | 0.25 | | | | | | 4 | Lowell- Admin Use Only |

| Road Number | OA | CA | OU | D | OHV | New | ML | Description |
|------------------------|-------|------|------|---|-----|-----|----|--|
| 635 | 0.50 | | | | | | 2 | Beuhman Canyon - 2.85 miles long; Portion of rd previously numbered 654. Was conflicting w/ duplicate Rd in D4; see 654 [654 A was then changed to 635 for continuation] |
| 635 A | | | | | | | | Un-named - was changed to 635 |
| 639 | 2.77 | | | | | | 2 | Campo Bonito |
| 639-1.12L-1 | | | 0.08 | | | | | Unauthorized Road |
| 639-1.58L-1 | | | 0.08 | | | | | Unauthorized Road |
| 639-2.13L-1 | | | 0.14 | | | | | Unauthorized Road |
| 640 | 1.07 | | | | | | 2 | Little Hill Mine - |
| 640-spur [4491] | | | 0.27 | | | | | Previously called Unauthorized Road - leads to Mine Adit; should be 4491 |
| 640 A | | 1.40 | | | | | 1 | Un-named |
| 642 | 1.35 | | | | | | 2 | Baby Jesus Ridge - part on FS in roadless area |
| 642-1.18L-1 | | | 0.11 | | | | | Unauthorized Road in IRA |
| 642-2.03L-1 | | | 0.49 | | | | | Unauthorized Road in IRA |
| 642-2.06L-1 | | | 0.31 | | | | | Unauthorized Road in IRA |
| 643 | 6.92 | | | | | | 2 | Cargodera Canyon - partially in roadless area. |
| 654 | | | | | | | | Renumbered - 4.18 miles entirely off Forest : Bullock Canyon- Duplicate road # in D4 (see 635) |
| 736 | 15.48 | | | | | | 2 | Charouleau Gap - 3.32 miles off Forest |
| 736-3.25L-1 | | | 0.14 | | | | | Unauthorized Road |
| 736-4.40R-1 | | | 0.37 | | | | | Unauthorized Road |
| 736-11.03R-1 | | | 0.58 | | | | | Unauthorized Road |
| 736-14.35L-1 | | | 0.06 | | | | | Unauthorized Road |
| 736-14.35R-1 | | | 0.06 | | | | | Unauthorized Road |
| 736-16.24L-1 | | | 0.55 | | | | | Unauthorized Road |

| Road Number | OA | CA | OU | D | OHV | New | ML | Description |
|------------------------|-------|------|------|---|-----|-----|-------|---|
| 736-18.81L-1 | | | | | | | | Unauthorized Road - entirely on Private ; 0.66 miles |
| 736-18.94L-1 | | | | | | | | Unauthorized Road - entirely on Private ; 0.30 miles |
| 736-Disp CG 1 | | | 0.06 | | | | | Dispersed camping |
| 736-Disp CG 2 | | | 0.03 | | | | | Dispersed camping |
| 737 | 1.12 | | | | | | 2 | Burn Tank |
| 750 | 0.19 | | | | | | 3 | Showers Point |
| 804 | 0.33 | | | | | | 3 | Sabino Warehouse - restricted access |
| 804 A | 0.13 | | | | | | 4 | Sabino Tram Maintenance Rd. |
| 805 | 0.26 | | | | | | 4 | Sabino Overflow - old Shooting Range site |
| 807 | 0.26 | | | | | | 4-3-1 | Hirobayashi Campground - a.k.a. Prison Camp |
| 807-0.26L-1 | | | 0.15 | | | | | Horse Corral Loop at end of Prison Camp Road - not part of original 807 road; never added to system |
| 807 A | | 1.18 | | | | | 1 | Old Prison Camp Rd - originally part of 807. Changed to 807 A per TAP meeting |
| 807 A-0.82L1 | | | 0.34 | | | | | Unauthorized Road |
| 807 A-0.93L1 | | | 0.16 | | | | | Unauthorized Road |
| 833 | 23.41 | | | | | | 5 | Mt. Lemmon Highway - Federal Highway and County Jurisdiction |
| 833-Borrow Pit Rd. | | | 0.12 | | | | | Not entered in Infra -Off the Catalina highway |
| 833-Bug Spring parking | | | | | | | | Off Catalina highway - part of Federal Highway ROW; 0.04 miles |
| 833-Butterfly Rd | | | 0.15 | | | | | Not entered in Infra -Off Catalina highway |
| 833-Butterfly Pvt Rd | | | 0.04 | | | | | Road to private residence; summer home |
| 833-County Mtnce Yard | | | 0.18 | | | | | Not entered in Infra - Old Trash Compactor site near Palisades |
| 859 | 0.65 | | | | | | 3 | Bonito Canyon |
| 859-0.23R-1 | | | 0.27 | | | | | Unauthorized Road |

| Road Number | OA | CA | OU | D | OHV | New | ML | Description |
|-----------------|-------|------|------|---|-----|-----|----|--|
| 859-0.23R-2 | | | 0.22 | | | | | Unauthorized Road |
| 4307 | 0.20 | | | | | | 2 | Miller Trailhead |
| 4307-0.05R-1 | | | 0.32 | | | | | Unauthorized Road - off FS 35 in Miller Canyon |
| 4307-0.14R-1 | | | 0.06 | | | | | Dispersed C/G |
| 4399 | 0.39 | | | | | | 2 | Tucson Electronics |
| 4400 | | 1.50 | | | | | 1 | Lemmon Rock |
| 4401 | 3.71 | | | | | | 2 | Dan Saddle |
| 4402 | 3.04 | | | | | | 2 | Papago Well |
| 4403 | 0.19 | | | | | | 2 | Lizard Rock |
| 4404 | 1.08 | | | | | | 2 | Mule Deer Tank |
| 4405 | 10.41 | | | | | | 2 | Mesa de la Osa |
| 4405-4.50R-1 | | | 2.23 | | | | | Unauthorized Road |
| 4405-4.50R-2 | | | 0.25 | | | | | Unauthorized Road |
| 4405-4.50R-3 | | | 0.65 | | | | | Unauthorized Road |
| 4405-4.50R-4 | | | 0.60 | | | | | Unauthorized Road |
| 4405-10.34R1 | | | 1.15 | | | | | Unauthorized Road |
| 4405 A | 0.29 | | | | | | 2 | Chiva Falls |
| 4405 B | 0.26 | | | | | | 2 | Un-named |
| 4405 C | 1.22 | | | | | | 2 | Un-named |
| 4405 C -0.06L-1 | | | 0.27 | | | | | Unauthorized Road to Anillo Tank |
| 4406 | 1.76 | | | | | | 2 | Old Happy Valley |
| 4407 | 0.50 | | | | | | 2 | Brush Corral - 0.50 mi on FS; 9.66 mi total |
| 4407 A | | | | | | | | Cedar Spring - 0.50 miles long - entirely off FS |
| 4408 | 1.92 | | | | | | 2 | Turkey Creek Storage |

| Road Number | OA | CA | OU | D | OHV | New | ML | Description |
|----------------------------|------|------|------|------|-----|-----|----|--|
| 4409 | | 1.77 | | | | | 1 | Bear Creek - closed or has grown over. |
| 4410 | 1.01 | | | | | | 2 | Page Creek Riparian |
| 4411 | 2.30 | | | | | | 2 | Eagle Peak - 3.654 miles off forest |
| 4417 | 5.69 | | | | | | 2 | Chiva Loop |
| 4417-0.50L-1 | | | 0.09 | | | | | Unauthorized Road |
| 4417-4.06R-1 | | | 0.20 | | | | | Unauthorized Road - leads to prospect |
| 4417-4.75R-1 [4424] | | | | | | | | Previously called Unauthorized Road 4417-4.75R-1 [see 4424] |
| 4422 | | | | 0.50 | | | | Three Feathers Tank - This used to be part of 4417. Then it was decom and renumbered to 4422. 4422 [lower] was then renumbered to 4417 for continuation to 371. |
| 4422 A | | | | 0.13 | | | D | Un-named - previously decommissioned road [used to come off the old 4422] |
| 4423 | | 0.48 | | | | | 1 | Jug Tank |
| 4424 - old | | 0.06 | | | | | 1 | Park Tank - Part ML 1 and part Trail |
| 4424 | 1.02 | | | | | | | FS 4424 is a Dual use Road & OHV Trail |
| 4425 | 1.93 | | | | | | 2 | Metate Tank |
| 4425-0.78L-1 | | | 0.15 | | | | | Unauthorized Road - leads to mine |
| 4425-1.17R-1 | | | 0.53 | | | | | Unauthorized Road - leads toward Buckhorn Tank |
| 4426 | 3.74 | | | | | | 2 | High Road |
| 4426-3.50L-1 | | | 0.16 | | | | | Unauthorized Road - leads toward Anillo Tank |
| 4427 | 0.16 | | | | | | 2 | White Tank - road to White Tank |
| 4428 | | 0.30 | | | | | 1 | Un-named |
| 4429 | 2.19 | | | | | | 2 | Trail Tank |
| 4429-1.75L-1 | | | 0.40 | | | | | Unauthorized Road |
| 4430 | 1.16 | | | | | | 2 | Bull Spring- Rd is 2.4 mi long w/ 1.16 mi on FS |

| Road Number | OA | CA | OU | D | OHV | New | ML | Description |
|----------------|------|------|------|---|-----|------|----|--|
| 4431 | 5.77 | | | | | | 2 | Alamo Spring |
| 4431-0.32R-1 | | | 0.77 | | | | | Unauthorized Road |
| 4431-0.97R-1 | | | 0.23 | | | | | Unauthorized Road |
| 4431-Disp CG | | | 0.05 | | | | | Dispersed camping |
| 4431 A | 0.18 | | | | | | 2 | Un-named |
| 4431-reroute | | | | | | 0.95 | | Proposed reroute of mud bog near Government Tank |
| 4432 | 1.68 | | | | | | 2 | Deer Park Tank |
| 4432-Disp CG 1 | | | 0.05 | | | | | Dispersed camping |
| 4432-Disp CG 2 | | | 0.07 | | | | | Dispersed camping |
| 4433 | | 0.60 | | | | | 1 | Alambre |
| 4434 | 0.98 | | | | | | 2 | Dead Cow |
| 4434 (old) | | | 0.10 | | | | | Used to be part of 4434 |
| 4435 | 1.10 | | | | | | 2 | Race Track |
| 4435-0.51L-1 | | | 0.95 | | | | | Unauthorized Road |
| 4435-0.74R-1 | | | 0.07 | | | | | Unauthorized Road |
| 4436 | 3.02 | | | | | | 2 | Tequila Tank |
| 4437 | 2.05 | | | | | | 2 | Woods Tank |
| 4438 | 4.58 | | | | | | 2 | Bullock Canyon - 2.39 Miles of road in IRA. |
| 4441 | 5.46 | | | | | | 2 | Old Grandad Tank |
| 4442 | 0.76 | | | | | | 2 | Tuffet Tank |
| 4443 | 0.88 | | | | | | 2 | Jack Daniels Tank |
| 4445 | | 2.45 | | | | | 1 | Agua Caliente Hill |
| 4446 | | 4.57 | | | | | 1 | Gnat Tank |
| 4447 | 1.49 | | | | | | 2 | Un-named |

| Road Number | OA | CA | OU | D | OHV | New | ML | Description |
|-------------------|------|------|------|---|-----|-----|----|--|
| 4447-0.49R-1 | | | 0.07 | | | | | Unauthorized Road |
| 4447-0.52R-1 | | | 0.29 | | | | | Unauthorized Road |
| 4447-0.52R-2 | | | 0.09 | | | | | Unauthorized Road |
| 4447-0.52R-3 | | | 0.21 | | | | | Unauthorized Road |
| 4448 | | 0.77 | | | | | 1 | Donovan Tank |
| 4450 | 0.15 | | | | | | 3 | Road to San Manuel - 12.715 miles off Forest |
| 4451 | 0.77 | | | | | | 2 | Lombar |
| 4454 | 3.07 | | | | | | 3 | Oracle Utility road |
| 4454-Private Rd | | | 0.08 | | | | | Unauthorized Road - Private Access off FS 4454 near Oracle - 0.08 mi |
| 4458 | 1.85 | | | | | | 2 | Un-named |
| 4458-0.18R-1 | | | 0.61 | | | | | Unauthorized Road |
| 4458-0.18R-2 | | | 0.13 | | | | | Unauthorized Road |
| 4458-1.13R-1 | | | 0.18 | | | | | Unauthorized Road |
| 4458-1.16R-1 | | | 1.09 | | | | | Unauthorized Road |
| 4458-1.31R-1 | | | 0.15 | | | | | Unauthorized Road |
| 4458-Power Line | | | 0.15 | | | | | 0.15 miles of easement off FS Rd 4458 |
| 4461 | 0.19 | | | | | | 2 | American Flag Hill |
| 4465 | | 0.80 | | | | | 1 | Arizona Trail Road |
| 4466 | 0.76 | | | | | | 2 | Highjinks Mine Road |
| 4466-0.32L-1 | | | 0.08 | | | | | Unauthorized Road |
| 4467 | 0.29 | | | | | | 2 | Un-named |
| 4467-powerline rd | | | 0.53 | | | | | Unauthorized Road |
| 4469 | 0.84 | | | | | | 2 | Bonito Mine |
| 4470 | 1.48 | | | | | | 2 | Southern Bell Mine |

| Road Number | OA | CA | OU | D | OHV | New | ML | Description |
|----------------------------|------|----|------|---|-----|-----|----|--|
| 4470-0.12R-1 | | | 0.29 | | | | | Unauthorized Road |
| 4470-0.27R-1 | | | 0.18 | | | | | Unauthorized Road |
| 4472 | 6.67 | | | | | | 2 | Nugget |
| 4472-0.17L-1 | | | 0.05 | | | | | Unauthorized Road |
| 4472-0.17R-1 | | | 0.11 | | | | | Unauthorized Road |
| 4472-6.72L-1 | | | 0.09 | | | | | Unauthorized Road |
| 4474 | 0.20 | | | | | | 2 | Un-named |
| 4475 | 1.85 | | | | | | 2 | Un-named |
| 4476 | 0.43 | | | | | | 3 | Peppersauce Trail |
| 4477 | 0.98 | | | | | | 2 | Peppersauce CG - 1.87 miles long; comes in and out of pvt |
| 4479 | 0.70 | | | | | | 2 | American Flag Spring |
| 4483 | 3.06 | | | | | | 2 | Rice Peak |
| 4483-0.02R-1 | | | 0.10 | | | | | Unauthorized Road |
| 4483-0.42L-1 | | | 1.19 | | | | | Unauthorized Road |
| 4483-Oracle Ridge Trail #1 | | | 0.46 | | | | | Unauthorized Road- off Rice Peak - can drive to edge of IRA. |
| 4485 | 0.71 | | | | | | 2 | Un-named |
| 4487 | 0.90 | | | | | | 2 | Oracle Hill |
| 4487-0.06L-1 | | | 0.14 | | | | | Unauthorized Road |
| 4487-0.20L-1 | | | 0.15 | | | | | Unauthorized Road |
| 4487-0.31R-1 | | | 0.15 | | | | | Unauthorized Road |
| 4487-0.48R-1 | | | 0.28 | | | | | Unauthorized Road |
| 4487-Foot trail | | | 0.68 | | | | | Unauthorized Road and Foot Trail leading to Oracle Ridge Trail |
| 4487-extension | | | | | | | | Existing Trail system - 1.60 miles of existing fire break road |

| Road Number | OA | CA | OU | D | OHV | New | ML | Description |
|--------------------------------|---------------|--------------|--------------|-------------|-------------|-------------|----|---|
| 4488 | | 0.83 | | | | | 1 | Un-named |
| 4491 | 0.27 | | | | | | 2 | Burney Mine - previously called 640-spur |
| 4493 | 0.42 | | | | | | 2 | Pig Spring |
| 4493-extension | | | | | | 0.76 | | Pig Spring - 0.76 miles of proposed road extension |
| 4494 | | | | 0.26 | | | D | Un-named - previously decommissioned road |
| 4495 | 1.21 | | | | | | 2 | Fanning Tank |
| 4496 | 4.99 | | | | | | 2 | Rancheria Spring |
| 7702 | 0.29 | | | | | | 2 | Access to non-federal - 0.14 off Forest |
| 7703 | 0.02 | | | | | | 2 | Triangle YMCA - 95 ft on FS; 0.451 mi off Forest |
| 7705 | | 1.11 | | | | | 1 | Dodge Tank - currently ML1 |
| 7705-0.46R-1 [736-15.72R-1] | | | 0.29 | | | | | Unauthorized Road - previously shown on map as 736-15.72R-1 |
| 7706 | | | | | | | | Located entirely on Private - off NFSR 11 |
| Charles Dam | | | 0.52 | | | | | Unauthorized Rd to Charles Dam |
| Hidden Spring | | | 0.93 | | | | | Unauthorized Rd - Hidden Spring - inside IRA 0.65 miles |
| OHV 2 | | | | | 0.47 | | | OHV Trail |
| OHV 3 | | | | | 1.48 | | | OHV Trail |
| OHV 4 | | | | | 1.53 | | | OHV Trail |
| OHV route | | | | | 1.35 | | | OHV Trail |
| OHV connector 1 | | | | | 0.05 | | | OHV Trail |
| OHV connector 2 | | | | | 0.07 | | | OHV Trail |
| Trail 624 - [18] | | | | | | | | Radio Ridge - 1.76 miles long- previously overlooked as system road 18 [see road 18] |
| TOTALS | 263.33 | 20.80 | 31.87 | 3.59 | 4.95 | 2.32 | | |

| | | | | | | | | |
|-----------------------------|---------------|--|--|--|--|--|----------------------|----------------------------------|
| EMA Area (sq. mi.) = | 405.74 | | | | | | EMA Total Rd miles = | 320.95 (OA + CA + OU+OHV) |
| Existing EMA Rd density = | 0.791 | | | | | | | |

Table 2.1. Legend

Road Classifications:

OA = Open Authorized Road on the Forest Road System (NFSR)

CA = Closed Authorized Road on the Forest Road System (ML 1)

OU = Open Unauthorized Road, not on the Forest Road System (Unauthorized Road)

D = Identified for Decommissioning

Maintenance Level Descriptions:

1 = Basic custodial care (closed)

2 = High clearance vehicles

3 = Suitable for passenger cars

4 = Moderate degree of user comfort

5 = High degree of user comfort

C = Convert use

D = Decommission

Maintenance levels shown on the table indicate roads currently in INFRA and under Forest Service jurisdiction. For unauthorized roads recommended to be added to the system, the maintenance levels are merely recommended levels.

Maintenance levels define the level of service provided by, and maintenance required for, a specific road. Maintenance levels must be consistent with road management objectives and maintenance criteria.

Roads may be currently maintained at one level and planned to be maintained at a different level at some future date. The operational maintenance level is the maintenance level currently assigned to a road considering today's needs, road condition, budget constraints, and environmental concerns; in other words, it defines the level to which the road is currently being maintained. The objective maintenance level is the maintenance level to be assigned at a future date considering future road management objectives, traffic needs, budget constraints, and environmental concerns. The objective maintenance level may be the same as, or higher or lower than, the operational maintenance level. The transition from operational maintenance level to objective maintenance level may depend on reconstruction or disinvestment.

Decommissioning Methods:

- Reestablish former drainage patterns, stabilize slopes, and restore vegetation.
- Block the entrance to a road, install water bars and/or outslope. Entrance treatment can include earthen barriers or hide with brush or woody debris.
- Remove culverts, reestablish drainage-ways, remove unstable fills, pull back road shoulders, and scatter slash on the roadbed.
- Completely eliminate the roadbed by restoring natural contours and slopes.
- Gate and closure order to eliminate all human uses.
- Abandon and monitor for motorized use.
- Other methods designed to meet the specific conditions associated with the unneeded roads.

Table 2.2 - Existing Road Classifications/Density

| Road Classification | Existing Miles of Road | Road Density* |
|--|-------------------------------|----------------------|
| OA = Open Authorized | 263.33 | 0.649 |
| CA = Closed Authorized | 20.80 | 0.051 |
| OU = Open Unauthorized | 31.87 | 0.079 |
| Decommissioned | 3.59 | N/A |
| OHV | 4.95 | 0.012 |
| EMA total road miles (OA+CA+OU+OHV) | 320.95 | 0.791 |

*Density based on EMA Area of 405.74 sq. mi.

Step 3- Identifying Issues

The following issues were addressed in this analysis:

- Mineral access
- Private land access
- Special Uses
- OHV Recreation Use
- Archaeological sites within the study area
- Trail and Vehicles route sharing
- Private property blocking federal land access
- Excessive roads in the study area
- Dispersed camping and user created routes

The purpose of this step is to:

- Describe the origin of the issues
- Identify the key questions and issues affecting road-related management

The products of this step are:

- A summary of key road-related issues, including their origin and basis, and
- A description of the status of the current data

The Interdisciplinary Team (Appendix C) met initially in November 2006 to identify EMA issues. A review of the questions in FS-643 titled *Roads Analysis: Informing Decisions about Managing the National Forest Transportation System* was also used as a supplement in order to identify any issues not previously made aware for this project.

The agreed upon list of issues helped drive the analysis and determine what information was needed to resolve them. Because reaching consensus on which issues take priority was difficult, policy guidance was very helpful to the IDT.

Answers to the following questions helped to identify the most important road-related issues in the analysis area.

- What are the primary public issues and concerns related to roads and access?
- What are the primary management concerns (internal issues) related to roads and access?
- What are the primary legal constraints on roads and roads management?
- What additional information will be needed to better understand and define the key issues?
- What resources and skills are available to complete an effective analysis?

Road Maintenance Issues

The road system that reflects long-term funding expectations would be about 9% of the existing system. Maintaining a route system and balancing the needs between resource protection and public wishes is a challenging task. The travel analysis helps to fulfill two major requirements of 36 CFR 212, subparts A and B:

- 1) Identify the minimum road system
- 2) Identify and subsequently designate a system of roads, motorized trails, and areas for motor vehicle use.

Annual congressionally appropriated road maintenance funding is approximately 9 percent of what is needed to accomplish proper maintenance for the current authorized road system on the Coronado National Forest, including this EMA. Current allocated budgets are insufficient to manage and maintain the road system on the Coronado and this EMA. There is a need to get more financially in balance with road maintenance funding versus road maintenance needs. The forest's authorized road network will continue to degrade and have access impacts as well as environmental impacts. Decreasing the Forest's maintenance costs while increasing road maintenance funding should continue to be our goal. A strategy to reduce costs, balance resource needs and meet the access needs of the Coronado will have to be assessed and evaluated. Strategies that reduce the level of road maintenance costs include:

- Decrease road maintenance levels
- Decrease mileage by closing or decommissioning authorized system roads
- Transfer jurisdiction or maintenance responsibilities to other maintenance entities (including private)
- Convert open and/or closed roads to motorized trails for widths less than 50 inches recognizing this will increase trail maintenance costs (class 1, 2, or 3 which is basically a minimally maintained, natural surfaced trail)
- Combination of the above strategies

The Coronado National Forest Annual Maintenance Plan provides a list of roads that will receive maintenance during that fiscal year. The list of roads is generated with consultation between District Staff and District Ranger as well as the Road Manager. Maintenance is prioritized and any known critical safety need receives the highest priority. The Coronado has conducted annual road condition surveys since 1999 to determine the maintenance and associated funding needed to maintain roads to the required safety standards and assigned maintenance levels. The condition surveys describe the features of the road (e.g. surfacing material, ditches, culverts, signs, etc.). Deferred and annual maintenance costs for those roads are then calculated using a regional standard cost guide.

Maintenance Level 2 roads are required to meet standards for route marker signing. The Highway Safety Act requires maintenance level 3-5 roads to meet the standards for directional, regulatory, and warning signs. There are areas on this EMA where the standards are not being met due to lack of funding. Clearing for sight distance and safety is not occurring as often as needed due to limited funding. Therefore with limited funding, the focus must be on high-priority roads which are identified in the Annual Maintenance Plan and approved by the line officer. High priority roads are often maintenance level 3-5 roads, which cost more per mile to maintain than maintenance level 2 roads. Each mile of maintenance level 3-5 road which receives maintenance deprives multiple miles of maintenance level 2 roads from receiving maintenance. Conversely, a reduction in the number of miles of maintenance level 2 roads receiving maintenance makes a disproportionately small improvement in the ability to maintain maintenance level 3-5 roads. Most high road density areas are attributable to maintenance level 2 roads. In most cases user created routes which are unauthorized roads are contributing to the road density in the EMA and therefore need to be decommissioned in order to reduce the density.

With insufficient funding for road maintenance, it is expected that maintenance level 3-5 roads on the Coronado will degrade into lower maintenance levels over time. Since the forest can properly maintain only approximately *9 percent of the current authorized road system, it should be expected and planned that total mileage of maintenance for level 3-5 roads will decrease due to degradation of these assets and inability to maintain them in as-is condition.

[* reference: **Identifying the Minimum Sustainable Road System, FY 2005 DATA - Road Miles, Budget, and Deferred Maintenance Needs**]

Table 3.1 Annual Deferred Maintenance Costs

| Operational Maintenance Level | EMA Existing Miles | Regional Average Annual Unit Cost per Mile | Total Annual Cost |
|-------------------------------|--------------------|--|-------------------|
| 5 | 0.00 | \$8,349 | \$0 |
| 4 | 8.78 | \$7,856 | \$68,976 |
| 3 | 24.53 | \$5,069 | \$124,343 |
| 2 | 133.92 | \$3,817 | \$511,173 |
| 1 | 18.28 | \$127 | \$2,322 |
| Totals | 186.72 | | \$706,814 |

Note: Annual Unit Cost per mile taken from R3 2006 averages; see reference above

This economic assessment is based on regional averages for deferred maintenance road data since Coronado National Forest data was not statistically valid for the last few years. In addition, the Coronado's road crew in the last few years has been involved in Border Patrol road work and off forest road maintenance and therefore cost data over an extended period of time is not available.

Although the initial remedy may be to close and decommission roads to provide a sustainable system, the table does not address the expense of closing and decommissioning. These costs would need to include both the planning cost of conducting the appropriate environmental analysis as well as the physical implementation cost of achieving the desired objective.

Shared road maintenance is occurring primarily on maintenance level 3-5 roads, but could be improved on key access roads. Currently there are road maintenance agreements with Pinal, Cochise and Pima Counties. Many of the Forest Service maintenance agreements are out of date and should be revised. Agreements with other county governments and agencies need to be investigated in the future.

Legal access on or to authorized system roads is lacking in many locations. Resolving access problems often consumes funding otherwise used for road maintenance. Conversely, unequivocal lack of legal access with no viable solution is an opportunity to remove authorized road mileage from the Forest road system and thereby save maintenance funds for roads with legal access.

Step 4- Assessing Benefits, Problems and Risks of the Existing Road System

The purpose of this step is to assess the benefits, problems and risks of the current road system and whether the objectives of the Forest Plan are being met

The products of this step are:

- A synthesis of the benefits, problems and risks of the current road system,
- An assessment of the ability of the road system to meet management objectives

Roads analysis is a science-based process and the interdisciplinary team (Appendix C) used and interpreted relevant scientific literature to identify issues which may cause potential impacts. Any assumptions made during the analysis, and limitations of the information on which the analysis is based will be described.

Specific questions were used to assess benefits, problems, and risks. Benefits are the potential uses and socioeconomic gains provided by roads and related access. Problems are conditions for certain environmental, social, and economic attributes that managers deem to be unacceptable. Risks are likely future losses in environmental, social, and economic attributes if the road system remains unchanged. The questions were used as a checklist to scan the range of possible

benefits, problems, and risks and to screen them for those relevant to roads in the area under consideration.

The relevant questions were then used to guide more in-depth assessment and link to the science base for each of the identified benefits, problems, and risks. These questions were not intended to be prescriptive, but were used to assist the interdisciplinary team in developing questions and approaches appropriate to each analysis area. Which questions are appropriate for a particular analysis area and which warrant deep or cursory treatment will depend on the particular area and the issues being addressed. Some questions may need to be addressed at several scales. Addressing these and other road-related questions was done with maps, GIS, statistical summaries, or other information that contributed to understanding the benefits, needs, risks, and effects of the roads. These indicators did not answer questions directly but assisted in discerning and quantifying important interactions.

Lands

- *How does the road system connect large blocks of land in other ownership to public roads (ad hoc communities, subdivisions, inholdings, and so on)?*
- *How does the road system affect managing roads with shared ownership or with limited jurisdiction? (Federal Revised Statute 2477, cost-share, prescriptive rights, FLPMA easements, FRTA easements, DOT easements)?*
- *How does the road system connect to public roads and provide primary access to communities?*
- *How does the road system affect managing special-use permit sites (concessionaires, communications sites, utility corridors, and so on)?*
- *What are people's perceived needs and values for access?*

Background:

The Santa Catalina Mountain Ecosystem Management Area (EMA) is located within the Santa Catalina Ranger District, Coronado National Forest in Pima, Pinal and Cochise Counties near the rapidly developing communities of Benson, Oracle, Catalina, Vail, and Tucson, Arizona. The Saguaro National Park East is surrounded on three sides by the Santa Catalina EMA. This EMA also includes the 56,933-acre Pusch Ridge Wilderness and 38,590-acre Rincon Mountain Wilderness, as well as the popular Sabino Canyon Recreation Area and Catalina State Park (5,493 acres).

There are numerous scattered private land parcels of various shapes and sizes within and adjacent to the proclaimed boundaries of the Santa Catalina EMA, resulting in a complex and intermingled landownership pattern. Depending on the location of the private land, National Forest System Roads (NFSRs) may be used to access them. An NFSR is defined as a forest road other than a road which has been authorized by a legally documented right-of-way held by a State, county or other local public road authority (36 CFR 212.1, 251.51, 261.2).

Unless otherwise required by an order, the use of an existing NFSR does not require a special-use authorization; however, any such use is subject to compliance with all Federal and State laws governing the road used (36 CFR 251.50(d)). Where ingress and egress to private land is via an existing NFSR, which is open and available for general public use, the private landowner is permitted to use the road without a written authorization.

The use of an NFSR for ingress and egress to private lands does not include the right to relocate, construct, reconstruct, or maintain the existing roadway, clear any vegetation, or perform any other ground disturbing activities. If ingress or egress to private land across NFS land requires surface disturbance or the use of a road not on the NFSR system or open to unrestricted public use, the landowner must apply for and receive a special-use or road-use authorization (36 CFR 251.110(d)).

It is Forest Service policy to provide access across National Forest System (NFS) land to private in-holdings that is adequate to secure the owners thereof of reasonable use and enjoyment of their land without unnecessarily reducing the management options of the Forest Service or damaging NFS lands or resources. "Access needs" to in-holdings are addressed on an individual basis as requests are received. When a subdivision occurs on a larger private parcel, it is also Forest Service policy to require the landowners to create a road user association or some type of consolidated organization to represent all of the landowner interests. This eliminates the need for the Forest to enter into road use or special-use permits with each individual landowner.

If access is being provided by a public road agency such as the County or State, then the Forest Service may not be obligated to provide any additional access over Federal lands. When larger developments or subdivisions occur and in-holding traffic is expected to exceed that generated by the users of NFS land, Agency policy is to pursue turning jurisdiction of the Forest road over to another public road authority such as the County or State. The volume of in-holding traffic may require relocation of portions of an existing road or construction of an entirely new road. These roads will be open and available to the traveling public on a regular and consistent basis.

The main access to the analysis area is from Interstate 10, State Highways 76 and 77. There are also several roads in Pima, Pinal and Cochise Counties such as 35 (Happy Valley Road), 38 (Control Road), 371 (Redington Road), 643 (Golder Ranch Road), 833 (General Hitchcock Hwy), Golder Ranch Road, and the San Pedro Road that provide main access in this EMA. These roads connect to arterial, collector, and some local roads within and outside the proclaimed forest boundary where traffic is dispersed into the Forest for a variety of uses. These roads also provide public and administrative access to and from communities, commercial enterprises, private residences and lands, and make for pleasurable drives and loop drives. The Redington area within the Santa Catalina EMA is also a very popular ATV riding area as well as a dispersed camping area. ATV riders camp and park in this area and ride nearby trails and closed roads.

Roads are also needed to access special-use authorizations permitting various types of activities on NFS land within the EMA. In addition to the Mount Lemmon Ski Valley, recreation residences, Mount Bigelow and Kellogg Mountain Observatories, communication sites and

various organization and church camps, there are numerous commercial outfitters under permit who use the road system and could be affected if roads are closed, decommissioned or changed in maintenance level. Changes to any authorized or unauthorized roads will remain an important issue to special-use permit holders as well as private landowners.

This analysis is broken into three categories. They are as follows:

- 1. Existing Roads that provide access to special-use authorization sites; connect blocks of non-Federal land to public roads; have shared ownership or with limited Forest Service jurisdiction; or connect to public roads and provide primary access to communities:**

Table 4.1

| Road Number | Description/Recommendation |
|---|--|
| 6 (Middle Sabino Rd) | <p>Connects non-Federal (Town of Summerhaven) 833 (General Hitchcock Highway). Connects to 10 (Sabino Canyon Park Rd) and 833 (General Hitchcock Highway). A majority of the road is located on non-federal land (\pm 1.3 miles). The two very short segments of the road located on NFS land at both ends of 6 where it connects to 10 and 833 (\pm 0.04 miles) are authorized under an easement.</p> <p><u>Note:</u> Pima County identifies the road as <u>Middle Sabino</u>; the Forest Service identifies the road as <u>Loma Linda</u>.</p> |
| 7 (Organization Ridge Rd) | <p>Connects NFS lands to 833 (General Hitchcock Highway) and provides access to several organization camps (Organization Ridge) under special use permit.</p> |
| 8 (Fern Ridge Rd; Lower Soldier) | <p>Connects numerous recreation residences on NFS land to 833 (General Hitchcock Highway).</p> <p><u>Note:</u> Pima County identifies a majority of the road as <u>Fern Ridge</u> (\pm0.4 miles) and a short portion of the road at the beginning as <u>Sykes Knob</u> (\pm0.03 miles); the Forest Service identifies the entire road as <u>Lower Soldier</u>.</p> |

| Road Number | Description/Recommendation |
|--|--|
| <p>10 (Sabino Canyon Park Rd; Marshall Gulch)</p> | <p>Connects non-Federal land (Town of Summerhaven) to 833 (General Hitchcock Highway). 10 (Sabino Canyon Park Rd) also connects to 6 (Middle Sabino Rd), 19 (Turkey Run Rd), and 21 (Carter Canyon Rd). Pima County maintains ± 0.7 miles of Sabino Canyon Park Rd across both non-federal lands (± 0.5 miles) and NFS lands (± 0.2 miles) from 833 (General Hitchcock Highway) to just below 6 (Middle Sabino Rd).</p> <p><u>Note:</u> Pima County identifies a majority of the road as <u>Sabino Canyon Park</u> and a short segment of the road from the intersection with 11 (Ski Run Rd) to the intersection 19 (Turkey Run Rd) as the 833 (General Hitchcock Highway); the Forest Service identifies the entire road as <u>Marshall Gulch</u>.</p> |
| <p>11 (Ski Run Rd; Ski Valley)</p> | <p>Connects non-Federal land (Town of Summerhaven), several communication sites (Radio Ridge), and Mount Lemmon Ski Valley to 10 (Sabino Canyon Park Rd) and 833 (General Hitchcock Highway). Pima County maintains 11 (Ski Run Rd) across both non-federal (± 0.4 miles) and NFS lands (± 1.0 miles) for 1.4 miles from 833 (General Hitchcock Highway) the gate at Ski Valley parking lot.</p> <p><u>Note:</u> Pima County identifies the road as <u>Ski Run</u>; the Forest Service identifies the road as <u>Ski Valley</u>.</p> |
| <p>11A</p> | <p>Connects to 11 (Ski Run Rd) to Catalina 2 Observatory. 11A is located entirely inside the Catalina 2 Observatory compound and gated from use by the general public.</p> |
| <p>19 (Turkey Run Rd)</p> | <p>Connects non-Federal land to 10. The first ± 0.5 mile of Turkey Run Rd from 10 (Sabino Canyon Park Rd) is located on non-Federal land and is maintained by Pima County.</p> |
| <p>21 (Carter Canyon Rd)</p> | <p>Connects non-Federal land to 10. The first ±0.5 mile of Carter Canyon Rd from 10 (Sabino Canyon Park Rd) is located on non-Federal lands and is maintained by Pima County.</p> |

| Road Number | Description/Recommendation |
|--|---|
| <p>18 (Miners/Radio Ridge Rd)</p> | <p>Connects to non-Federal land to 11 (Ski Run Rd) and 21 (Carter Canyon Rd). 18 (Miners/Radio Ridge Rd) also provides access to the communication towers, the Ski Valley lift, the Trico power line (all under special-use authorization) from both 11 (Ski Run Rd) and 21 (Carter Canyon Rd). The Trico Power line (special use permit) runs along the upper portion of road known as Radio Ridge Rd. A portion of the road (\pm 1 mile) known as Miners Ridge Rd traverses both non-federal and acquired NFS lands (reserved private road easements).</p> <p><u>Note:</u> Pima County identifies the portion of road from 11 (Ski Run Rd) as <u>Radio Ridge</u> and the portion of road (\pm 1 mile) from 21 (Carter Canyon Rd); the Forest Service identifies the road as Miners Ridge.</p> |
| <p>29 (Peppersauce Rd)</p> | <p>Connects non-Federal land to 38 (Control Road)</p> |
| <p>34 (Mt Bigelow Rd)</p> | <p>Connects NFS land to 833 (General Hitchcock Hwy). Provides access to several non-recreation special use authorizations (e.g., Mount Bigelow and Kellogg Mountain Observatories and several communication sites).</p> <p><u>Note:</u> Pima County identifies the road as <u>Mt Bigelow</u>; the Forest Service identifies the road as <u>Bigelow</u>.</p> |
| <p>35 (Happy Valley Road)</p> | <p>Connects non-Federal lands to Interstate-10. Shared ownership and maintenance with Cochise County and Pima County. Cochise County maintains the portion 35 (Happy Valley Road) across both non-federal and NFS lands within Cochise County from Interstate-10 to the Pima County line.</p> <p>Pima County maintains the portion 35 (Happy Valley Road) across both non-federal and NFS lands within Pima County from the Cochise County line to the Clopton Ranch (Special-use authorization).</p> <p>4410 becomes the Happy Valley Road where 35 intersects with it near Clopton Ranch (refer to 4410 below). 35 continues from the intersection with 4410 (Happy Valley Road) approximately \pm0.06 miles to non-Federal (private) land where it is gated and blocked from use by the general public. Recommend an interchange of reciprocal easements.</p> |

| Road Number | Description/Recommendation |
|----------------------------|--|
| 38 (Control Road) | Connects non-Federal lands to State Highway 77 and 833 (General Hitchcock Highway). Forest Service shares ownership and maintenance with Pima County and Pinal County. Provides primary access to numerous private in-holdings and many connector roads from the Oracle area to the Town of Summerhaven. |
| 38-16.61R-1 | Connects NFS lands to 38 (Control Road) and provides hunter access to NFS lands. |
| 38-16.61R-2 | Connects NFS lands to 38 (Control Road) and provides hunter access to NFS lands. |
| 38-21-50.R-1 | Close road and rehabilitate area. |
| 38-21-50.R-2 | Close road and rehabilitate area. |
| 38-22-06.R-1 | Close road and rehabilitate area. |
| 38-22-06.R-2 | Close road and rehabilitate area. |
| 38-22-06.R-2 | Close road and rehabilitate area. |
| 38-22-10.R-1 | Close road and rehabilitate area. |
| 38-22.34L-1 | Connects non-Federal lands to 38 (Control Road). Recommend special-use authorization be issued (private road easement) for road use. |
| 4461 | Connects special use authorization to 38 (Control Road). Recommend road use be consolidated with special-use authorization. |
| 38-23.65L-1 | Connects special use authorization to 38 (Control Road). Recommend road use be consolidated with special-use authorization. Recommend special-use authorization be issued (private road easement) for road use. |
| 100 (Sabino Canyon) | Connects the Sabino Canyon Recreation Area to Sabino Canyon Road. Used for administrative access into Sabino Canyon and the tram ride concessionaire via a special use authorization. There is no public vehicular traffic. |

| Road Number | Description/Recommendation |
|-----------------------------|--|
| 371 (Redington Road) | Connects to non-Federal land on both east and west sides of the Redington. Pima County maintains the Redington Road from proclaimed National Forest boundary on the Tucson side to proclaimed boundary on the San Pedro side authorized via a Forest Service easement. |
| 371-13.5L-1 | Close road and rehabilitate area. |
| 639 (West Campo Bonito) | Connects non-Federal land and a power line providing electricity residences in are to 38 (Control Road) and 4458. |
| 643 (Golder Ranch Road) | Connects Catalina State Park (acquired NFS lands managed by the State via a special use authorization) in the Sutherland Wash area and the Trico Electric Cooperative power line in Cargodera Canyon (electric power for the Summerhaven area) to State Highway 77 (Oracle Road). |
| 736 (Charouleau Gap Rd.) | Catalina Entrance. Connects to Lago Del Oro Parkway and provides access for numerous outfitter and guide special use holders through non-Federal lands to NFS lands. Arizona Game and Fish Department currently holds a perpetual easement from Arizona State Land Department for the portion of 736 outside the proclaimed NFS boundary. |
| 736 (Charouleau Gap Rd.) | Oracle Entrance. Connects to Callas Drive and the Town of Oracle. 736 (Charouleau Gap Rd.) also provides access for numerous outfitter and guide special use holders. |
| 833 (General Hitchcock Hwy) | <p>Connects non-Federal land in the Town of Summerhaven to Tucson. Major public access route from NFS lands in the Santa Catalina Ranger District. Provides access to non-Federal land, Mount Bigelow Observatory, Kellogg Mountain Observatory, Mount Lemmon Ski Valley, Recreation Residence Tracts, DOD Special Use Permit on Radio Ridge, several communication sites, Boy Scout Camp and Girl Scout Camp and various other special use authorizations. Pima County currently maintains 833 (General Hitchcock Highway) and holds a Federal Highway Administration easement for it.</p> <p><u>Note:</u> Pima County identifies the road as the General Hitchcock Hwy; the Forest Service identifies the road as the <u>Mt. Lemmon Hwy</u>.</p> |

| Road Number | Description/Recommendation |
|---------------------------------|--|
| 859 (East Campo Bonito) | Connects to non-Federal land and a commercial material operation outside the proclaimed National Forest boundary to 38 (Control Road). <u>Note:</u> Pinal County identifies the road as the Campo Bonito Road; the Forest Service identifies the road as the <u>Bonito Canyon Road</u> . |
| 859-0.23R-1 | Close road and rehabilitate area. |
| 859-0.23R-2 | Close road and rehabilitate area. |
| 4401 (Dan Saddle Rd.) | Connects non-Federal lands to 38 (Control Road) as well as the Arizona Trail. The first segment of Dan Saddle Rd (± 0.6 mile) from 38 (Control Road) is located on non-Federal lands and is currently gated and locked at 38. In addition, a second segment of roadway traverses ± 0.7 mile of 1.2 miles past the first segment of non-Federal lands. |
| 4402 (Papago Springs Rd) | Connects NFS lands, Papago Well, and the Rincon Mountain Wilderness Area in Posta Quemada Canyon to Pistol Hill Rd and Old Spanish Trail. |
| 4405-4.50R-1 | Connects to 4405 (Mesa de la Osa Rd). Leads to non-Federal land outside the proclaimed NFS boundary. |
| 4405-4.50R-4 | Connects to 4405 (Mesa de la Osa Rd). Leads to non-Federal land outside the proclaimed NFS boundary. |
| 4408 (Turkey Creek Road) | The first segment of 4408 (± 0.25 mile) from 35 (Happy Valley Road) is located on non-Federal lands. 4408 connects the Turkey Creek Trailhead to 35 (Happy Valley Road) and Rincon Mountain Wilderness Area. 4408 is also part of the Arizona Trail. |
| 4410 (Happy Valley Road) | Connects non-Federal (private) land to 35 (Happy Valley Road). 4410 becomes the Happy Valley Road where 35 intersects with it near Clopton Ranch (refer to 35 above). 4410 continues to a locked gate at the proclaimed National Forest boundary. |
| 4411 (Eagle Peak Road) | Connects non-Federal (private) land to 4410 (Happy Valley Road). |
| 4417 (Chiva Loop Road) | Connects 4405 (Mesa de la Osa Rd) to 371 (Redington Road). Connects to 4424 which leads to Saguaro National Park East, National Park Service. |
| 4447 | Connects to 635 (Buehman Canyon Road). Working with Pima County to obtain permanent legal access. |

| Road Number | Description/Recommendation |
|-----------------------------------|--|
| 4447-0.30R-1 | Close road and rehabilitate area. |
| 4447-0.49R-1 | Close road and rehabilitate area. |
| 4447-0.52R-1 | Close road and rehabilitate area. |
| 4447-0.52R-2 | Close road and rehabilitate area. |
| 4447-0.52R-3 | Close road and rehabilitate area. |
| 4450 | Connects non-Federal land to 38 (Control Road) and the San Pedro River Road. Access status is unknown. Provides primary access to numerous private inholdings and many connector roads from the San Manuel area and San Pedro Valley area. |
| 4454 (Cody Loop Road) | Connects to non-Federal land to 38 (Control Road). A Pinal County Road that provides permanent legal access to NFS lands. |
| 4458 | Provides access to a permitted power line (special use authorization) between 639 (West Campo Bonito Road) and 4454 (Cody Loop Road) as well as non-Federal land. |
| 4466 (Highjinks Mine Rd) | Connects non-Federal land to 639 (West Campo Bonito Road). |
| 4467 | Provides access to a permitted power line (special use authorization) from 639 (West Campo Bonito Road). |
| 4469 (Bonito Mine Road) | Connects non-Federal land to 639 (West Campo Bonito Road). |
| 4470 (Southern Bell Mine) | Connects to non-Federal land and 38 (Control Road). |
| 4483 (Rice Peak Road): | Connects a portion of the Arizona Trail to 29 (Peppersauce Road). |
| 4496 (Rancheria Spring Rd) | Connects non-Federal land to 736 (Charouleau Gap Rd.). Access blocked at proclaimed NFS boundary. |
| 7702 | Connects non-Federal land to 639 (West Campo Bonito Road). Recommend taking 7702 off the system and issuing a special-use authorization (private road easement) for road use. |
| 7703 (Triangle YMCA Road) | Connects non-Federal land to 639 (West Campo Bonito Road). A special-use authorization (private road easement) has been issued. |
| Chimney Canyon | Connects to non-Federal land. Close at Wilderness boundary and convert to trail. |

2. Existing roads that provide private access from non-Federal lands to NFS lands that are not needed to provide the primary access to non-Federal lands or interest:

Table 4.2

| Road Number | Description/Recommendation |
|----------------------|---|
| 642 (Cottonwood Rd.) | Connects non-Federal land to NFS lands in Inventoried Roadless Area – Baby Jesus Ridge. |
| 642-2.03L-1 | Close road and rehabilitate area. |
| 642-2.06L-1 | Close road and rehabilitate area. |
| 4441 | Blocked access. Connects to NFS lands from non-Federal land. |
| 4446 | Blocked access. Connects to NFS lands from non-Federal land. |

3. Future Considerations:

The ability of the public and Forest Service to access portions of NFS lands in the Santa Catalina EMA has become increasingly difficult in the recent past as rapid growth of Arizona's population has led to increased demand for access to public lands, and at the same time, increased development of adjacent private lands and inholdings have conflicted with public use. Many traditional access routes through adjacent private lands to the NFS have been gated and locked.

Reluctance by adjoining private landowners to grant right-of-way for public access has increased exponentially with the demand for public access. Most public land user and private landowner conflicts as well as creation of wildcat roads are due to attempts by public land users to access NFS lands after traditional access routes have been gated and locked.

As traditional access points are gated and locked, the public land has essentially become National Forest "back yards" for adjoining landowners and their guests, providing little direct benefit to the general public. Although it is a private landowner's right and prerogative to block and control access across their private land, to best serve the interests of all citizens, the Forest Service has a responsibility to provide reasonable access to public land.

Access needs identified in the existing or revised Forest Land and Resource Management Plan or in this analysis may not be fully met by the Forest road system, as it currently exists. The existing Forest road system may be needed for future activities not currently planned and to provide public access to the NFS lands as well as non-Federal lands within the proclaimed boundaries. Private landowners will continue to block and close many traditional access routes through their private lands, thus limiting and further restricting administrative and public access to and through NFS lands. New roads, relocation and reconstruction of portions of existing authorized and unauthorized roads, or re-commissioning of closed authorized and unauthorized roads may be required to meet both future administrative and public access needs.

Soil, Water, Air, and Forestry

- *How and where does the road system modify the surface and subsurface hydrology of the area?*
- *How and where does the road system generate surface erosion?*
- *How and where do road-stream crossings influence local stream channels and water quality?*
- *How and where does the road system create potential for pollutants, such as chemical spills, oils, or herbicides to enter surface waters?*
- *How and where is the road system 'hydrologically connected' to the stream system?*
- *How do the connections affect water quality and quantity (such as delivery of sediments, elevated peak flows)?*
- *What downstream beneficial uses of water exist in the area?*
- *What changes in uses and demand are expected over time?*
- *How are they affected or put at risk by road-derived pollutants?*
- *How and where does the road system affect wetlands?*
- *How does the road system alter physical channel dynamics, including isolation of floodplains; constraints on channel migration; and the movement of large wood, fine organic matter, and sediment?*
- *How does the road system affect riparian plant communities?*

Roads in the Santa Catalina Ecosystem Management Area (EMA) include parts of the following watersheds (See Figure 1):

- Ash Creek-Upper San Pedro River (Hydrologic Unit Code (HUC) 1505020209)
- Paige Creek-Lower San Pedro River (HUC 1505020302)
- Redfield Canyon-Lower San Pedro River (HUC 1505020303)
- Alder Wash-Lower San Pedro River (HUC 1505020305)
- Putnam Wash (HUC 1505020306)
- Tucson Wash-Lower San Pedro River (HUC 1505020308)
- Canada del Oro (HUC 1505030109)
- Cienega Creek (HUC 1505030201)
- Agua Verde Creek-Pantano Wash (HUC 1505030202)
- Tanque Verde creek-Rillito River (HUC 1505030203)

General

Roads affect soil, water, and air by accelerating erosion, diverting water, providing access for various polluting agents, and creating dust. The roads in these watersheds are having these affects, but have not been identified as causing significant negative effects on water quality at the sample points, or air quality at any monitoring location. However, local effects on soil, water (including riparian areas), and air may be important. Roads affect forestry resources by providing access for management of fuels and forest products. Following is the background information about the area.

Large areas of this EMA are not roaded or are accessible only by the poorest of roads. This is due in large part to the steep nature of the central portion of the EMA. The only route that traverses the EMA from north to south is the Hitchcock Highway (833) – Control Road combination. (38). The only route that traverses the range from east to west is the Redington Pass Road (371).

Soil

A General Ecosystem Survey (GES) was completed by the Forest Service in 1991 and covers the entire Santa Catalina EMA (USDA, 1991). In the GES report, the soils are found to occur in three of the four possible GES climatic classes due to wide range in elevation and aspect. These classes are Low Sun Mild (LSM) in the low elevation grasslands, chaparral, or shrublands, High Sun Mild (HSM) in the mid elevation woodlands, and Low Sun Cold (LSC) in the high elevation coniferous forests. These classes describe when the majority of the mean annual precipitation occurs and whether or not the winters are mild or cold. Low Sun indicates the majority of the annual precipitation occurs between September 30 and April 1; High Sun indicates the majority occurs between April 1 and September 30. The different GES Units found within the watersheds of the EMA are shown below in Figure 1 and Table 4.3, with general unit descriptions in Table 4.4.

TABLE 4.3 General Ecosystem Survey Units Found in the Watersheds of the Santa Catalina EMA

| Watershed Name | General Ecosystem Survey Units |
|---------------------------------------|---------------------------------------|
| Ash Creek-Upper San Pedro River | 235, 303, 475, 490 |
| Paige Creek-Lower San Pedro River | 303, 475,490 |
| Redfield Canyon-Lower San Pedro River | 303, 475, 476, 490 |
| Alder Wash-Lower San Pedro River | 452, 475, 476, 490 |
| Putnam Wash | 303 |
| Tucson Wash-Lower San Pedro River | 303, 475, 490 |
| Canada del Oro | 235, 303, 452, 475, 476 |
| Cienega Creek | 235, 303, 475 |
| Agua Verde Creek-Pantano Wash | 303, 475 |
| Tanque Verde Creek-Rillito River | 235, 303, 452, 475, 476, 490 |

TABLE 4.4 General Ecosystem Survey Units Descriptions

| GES UNIT | Average Gradient % | Surface Texture/ Modifier | Soil Depth | Parent Material | Climate Class (see text for description) | Erosion Hazard |
|-----------------|---------------------------|----------------------------------|-------------------|------------------------|---|-----------------------|
| 235 | 15% to 40% | Very gravelly/ sandy loam | Deep | Alluvium | LSM | Slight |
| 303 | 40% to 80% | Extremely Cobbly / Sandy Loam | Shallow | Granite | LSM | Moderate |
| 452 | 40% to 80% | Extremely Cobbly / Sandy Loam | Deep | Granite | LSC | Moderate |
| 475 | 40% to 80% | Extremely Cobbly / Sandy Loam | Shallow | Granite, Rhyolite | HSM | Moderate |
| 476 | 60% to 100% | Extremely Cobbly / Sandy Loam | Deep | Granite | LSC | Moderate |
| 490 | 4% to 25% | Very Cobbly / Sandy Loam | Deep | Granite, Rhyolite | HSM | Moderate to Severe |

See the summary below for recommended road closures related to soil stability or erosion issues.

Water

Arizona Department of Environmental Quality (ADEQ) assesses water quality for streams and natural channels throughout the State. Downstream water uses for the watersheds tributary to the San Pedro River listed above and for Cienega Creek are aquatic and wildlife warm water community species habitat, full body contact, fish consumption, and livestock watering. Downstream water uses for the Pantano Wash, Canada del Oro and Agua Verde Creek watersheds (watersheds tributary to the Santa Cruz River) are aquatic and wildlife warm water community species habitat - effluent dominated, and partial body contact. In addition, Sabino Canyon Creek (a tributary of the Rillito River) has aquatic and wildlife warm water community species habitat, full body contact, fish consumption, livestock watering, and drinking water standards listed as uses. In addition to having all the uses of the San Pedro River listed, Buehman Canyon (tributary to the San Pedro River) is designated as a Unique Water. The Arizona Final 2004 Integrated 305(b) Assessment and 303(d) Listing Report (<http://www.azdeq.gov/environ/water/assessment/download/303-04/>) indicates most of these waters have not been fully assessed. Buehman Creek has been assessed and found to attaining all uses. The Santa Cruz River, Cienega Creek, and Sabino Canyon Creek have been assessed and found to be attaining some uses. These have not had exceedances of standards recorded, but there have not been enough samples documented to make an assessment. Rose Canyon Lake has been assessed as impaired due to pH violations (both too high and too low) and turbidity violations in the past. Roads could be associated with elevated turbidity. Turbidity is no longer a standard, however the assessment indicates that a cause for elevated turbidity will be sought. (<http://www.azdeq.gov/environ/water/assessment/download/303-04/sc.pdf>).

Riparian areas are extremely important everywhere on the Coronado National Forest, and they occupy less than 4% of the watersheds in the Santa Catalina EMA. Roads can alter riparian areas by physically occupying the area, diverting water, providing access to people and vehicles that in turn destroy riparian vegetation, and by generating erosion that degrades the site.

The IDT recommendation is that the following unauthorized roads located in riparian areas and natural channels remain open because they are the only routes that access large portions of the EMA including private inholdings and mining claims:

| | | |
|--------------|--------------|--------------|
| 38-16.61R-1 | 38-16.61R-2 | 38-9.46R-1 |
| 38-16.46R-1 | 38-18.10R-1 | 38-24.81L-2 |
| 371-16.10R-1 | 736-11.03R-1 | 807-0.26L-1 |
| 4307-0.14R-1 | 4426-3.50L-1 | 4429-1.75L-1 |
| 4417-4.75R-1 | 4431-0.32R-1 | 4435.051L-1 |
| 4425-1.17R-1 | | |

When the opportunities present themselves, the Forest Service should consider relocating these roads out of the natural channels and riparian areas where possible.

In addition, the IDT recommendation is that unauthorized roads located at least partly in riparian areas and natural channels be classified and remain open but restricted to permittees or Forest Service because they are needed for access to the EMA and the erosion issues can be mitigated.

| | | |
|----------------------|-------------------|----------------------|
| 36-2.50L-1 | 38-22.06R-2 | 38-22.34L-1 |
| 38-22.86L-1 | 38-22.86L-2 | 38-23.65L-1 |
| 4405-4.50R-1 | 4405-4.50R-2 | 4405-4.50R-3 |
| 4405-4.50R-4 | 4466-0.32L-1 | 37-Italian Trap |
| 38-Pvt Rd 1 | 833-Borrow Pit Rd | 833-Butterfly Rd |
| 833-Butterfly Pvt Rd | 4467-Powerline Rd | 4470-0.12R-1 |
| 4487-extension | Hidden Spring | 833-County Mtnc Yard |
| 4454-pvt rd | 4458-Powerline | |

The IDT recommendation is that the following unauthorized roads be decommissioned because they are located partly in valuable riparian areas and are not needed:

| | | |
|--------------|--------------|---------------|
| 29-1.00L-1 | 38-9.50L-1 | 38-9.91L-1 |
| 38-16.61R-1 | 38-21.50R-1 | 38-21.50R-2 |
| 38-22.06R-1 | 38-22.06R-2 | 38-24.81 R-1 |
| 38-24.81L-1 | 38-24.81L-2 | 38-24.81L-3 |
| 38-24.81L-4 | 639-1.12L-1 | 639-2.13L1 |
| 736-4.40R-1 | 736-11.03R-1 | 736-14.35R-1 |
| 736-14.25L-1 | 736-16.24L-1 | 736-18.81L1 |
| 859-0.23R-1 | 859-0.23R-2 | 4405C-0.06L-1 |
| 4447-0.52R-1 | 4447-0.52R-2 | 4470-0.12R-1 |
| 4470-0.27R-1 | 4472-0.17L-1 | 4472-0.017R-1 |

| | | |
|--------------|--------------|--------------|
| 4458-0.18R-1 | 4458-0.18R-2 | 4483-0.42L-1 |
| 4487-0.06L1 | 4487-0.20L-1 | 4487-0.31R-1 |
| 4487-0.48R-1 | | |

The IDT recommendation is that routes 737, 7705, and unauthorized road 7705-0.46R-1 be classified as OHV or motorized trails.

It is proposed by the IDT to create a 4493-extension route from Pig Spring to the Coronado Camp area to avoid the riparian area of Canada del Oro.

Air

None of the Santa Catalina EMA watersheds are located in a Class I air quality area. None of the Santa Catalina EMA is located in a non-attainment area for air quality. Both Tucson and San Manuel have been designated as non-attainment areas in the past, but are currently in compliance (<http://www.azdeq.gov/environ/air/plan/notmeet.html>). In general, dust from roads is an air pollutant and should be minimized where possible. No roads are proposed for closure for air quality purposes at this time.

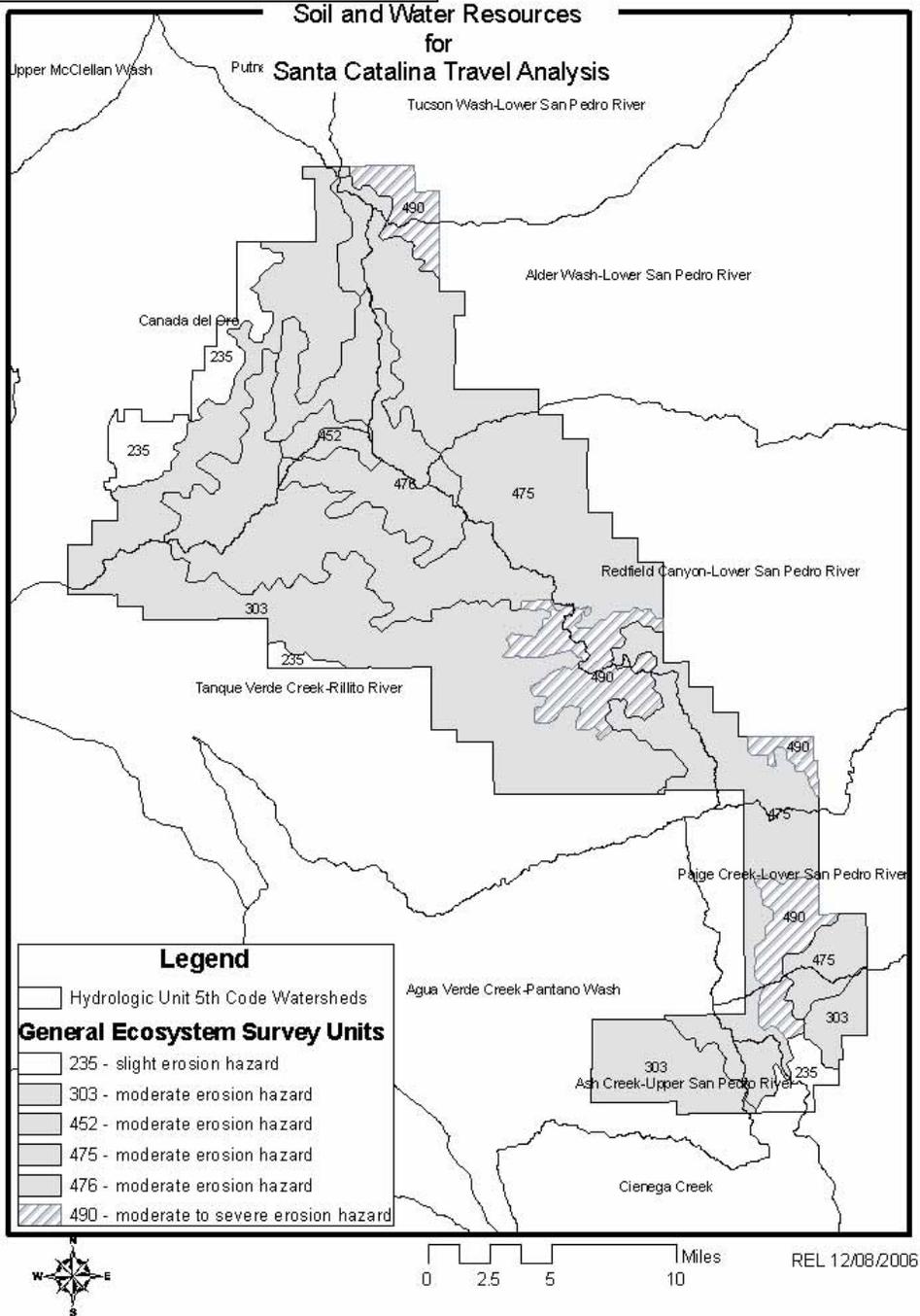
Forestry

The Santa Catalina EMA watersheds have provided limited sawtimber harvest opportunities and opportunities for personal use fuelwood gathering. Fuels management and other forest management activities use access by roads. No new roads are proposed, and no roads are proposed for closure for forest management purposes at this time.

It is recommended that all roads leading to known forest product or fuels management areas be retained.

All other open authorized roads are recommended for continued use and maintenance.

Figure 1. Soil and Watershed Map



References:

Arizona Department of Environmental Quality. 2004. Water Quality Assessment (<http://www.azdeq.gov/environ/water/assessment/download/303-04/sc.pdf>).

U.S. D.A. Forest Service. 1991. General Ecosystem Survey. U. S. D. A. Forest Service, Southwestern Region.

Recreation

- *Is there now or will there be in the future excess supply or excess demand for roaded/unroaded recreation opportunities?*
- *Is developing new roads into unroaded areas, decommissioning existing roads, or changing maintenance of existing roads causing significant changes in the quantity, quality or type of roaded/unroaded recreation opportunities?*
- *What are the adverse effects of noise and other disturbances caused by constructing, using and maintaining roads on the quantity, quality, or type of roaded/unroaded recreation opportunities.*
- *Who participates in roaded/unroaded recreation in the areas affected by road constructing, maintaining, or decommissioning.*
- *What are these participant's attachments to the area, how strong are their feelings and are alternative opportunities and locations available*

The west boundary of the Santa Catalina EMA is bordered by the City of Tucson and adjacent developed areas stretching from Oro Valley to the Rincon Valley. The communities of Catalina and Oracle (Pinal County) border the EMA to the north. The communities of Benson, Pomerene and various subdivisions are not far from the southern end. The population of Tucson and surrounding Pima County is estimated at over 1 million people. This rapidly increasing population is projected to be 2 million by the year 2055 (Pima Association of Governments). There is currently great demand for the motorized and dispersed recreation opportunities the Santa Catalina Ranger District has to offer and this will certainly increase with time, and the demand could increase beyond what the District can reasonably manage within the next 10 years. The capacity to manage this type of recreation is already strained in the more popular and accessible parts of the District. The recreation resources in the lower to mid elevations are used year-round and offer a variety of outdoor opportunities including hiking, biking, equestrian use, hunting, scenic driving, four wheel driving, motorcycle and ATV riding.

The majority of the District's motorized transportation system, including both authorized and unauthorized routes, lies within the foothills of this unique ecosystem. These routes offer motorized forms of wheeled vehicle recreation and provide access for non-motorized activities. The most popular area used by motorized vehicles is the vicinity of Redington Pass. This area contains a network of authorized non-motorized trails, off-highway vehicle (OHV) trails which are limited to vehicles 50 inches wide or less (*ATVs and motorcycles*), and rugged (*4WD, high ground clearance recommended*) maintenance level 2 roads. This designated vehicle touring area was improved by the Forest from 2002 to 2005 to accommodate an increasing demand for motorized recreational activities. ***The use of the word "area" as used in this report refers to the vicinity and is not used in the context of an "area", as defined by the Travel Management Rule, where off-road driving is permitted. The Forest contains no areas where cross country motorized travel is allowed. The forest plan prohibits driving off established roads.***

Other popular authorized routes used for motorized vehicle touring are located in the vicinity of Charouleau Gap, also known as "The Gap", which lies toward the north end of the Santa Catalina Mountains. The Gap has a history and reputation among four-wheel drive enthusiasts

for having challenging routes. The Forest recently obtained a perpetual easement to secure public access into the Gap through Arizona State land.

There are three primary (2WD *passable most of the year*) maintenance level 3 roads that currently provide public access into this EMA. These roads are routinely maintained and are heavily traveled. Traffic use counts collected during the time period of January 2000 to January 2001 for the three primary roads are as follows: (*This listed vehicle road counter data is projecting half count totals under the assumption that a vehicle enters and then exits the Forest*).

- 371, Redington Rd. traffic count totals 85,584 vehicles.
- 38, Control Rd. traffic count totals 9,944 vehicles.
- 35, Happy Valley Rd. count totals 7,245 vehicles.

The EMA's only primary maintenance level 4 paved road is the Catalina Highway (aka. General Hitchcock Highway). This highway has been designated as a National Scenic Byway, and is designated a High Impact Recreation Area (HIRA) corridor under the Recreation Enhancement Act of 2005 directives. Along this popular scenic drive are Forest amenities such as developed campgrounds, picnic areas, trailheads, vista points, organization camps, and recreation residences. There are also restaurants and a ski facility located in the Town of Summerhaven. The Byway is routinely maintained under the jurisdiction of the Pima County Department of Transportation.

Implementation of National Forest travel management policy within this EMA presents challenges. The objective is to provide continued opportunities for sustainable motorized backcountry touring, where people can enjoy driving their SUVs, 4WDs, ATVs, and motorcycles in a responsible and respectful manner on the authorized and designated system routes with minimum impacts to our unique ecosystems and landscape values.

The noise and dust from OHVs can detract from other recreation uses such as hiking, hunting, bird watching and camping. Currently, most noise impacts are related to the high-speed use of ATVs and motorcycles. In addition, target shooting is also popular along some of the favorite ATV/motorcycle routes and the two combined detract from opportunities for people who seek quiet places to escape the noise and bustle of the city. These noise impacts are most prevalent in the Redington Pass area.

There are several areas and routes used by OHV enthusiasts where resource damage occurs due to unauthorized off-road driving. This activity causes vegetation loss, soil erosion and habitat destruction. The disturbed areas are costly to rehabilitate and periodically monitor for compliance. The Forest already has a maintenance backlog and will need to focus the expenditure of limited dollars primarily on maintaining existing authorized travel routes and rehabilitating many of the unauthorized routes before building new routes.

Some low use unauthorized motorized routes can be incorporated into the Forest transportation system if these routes are determined suitable and enhance resource management needs and backcountry recreation goals for this EMA (i.e. provides a loop route, access to a campsite, or trailhead). These are included in the following table.

The table below lists the EMA routes or areas depicted on the transportation map and the routes recommended to be authorized for incorporation into the Forest Transportation System for recreation purposes (Maintenance Level 2 Open Authorized), routes recommended for decommissioning, or for administrative and/or permitted use only (Maintenance Level 2, OA with restrictions). Existing NFS routes not in this table are recommended for retention in the system. All unauthorized routes not shown in this table are recommended to be decommissioned and rehabilitated.

Table 4.5 Recreation Route Recommendations

| Recommend decommission | Recommend Closed Authorized ML1 | Recommend Open Authorized Restricted ML2 | Recommend Open Authorized ML2 | |
|---|--|---|--------------------------------------|-------------------------------------|
| 38-9.91L-1 | 4445 | Cat Track Tank | 38-9.46R-1 | 4417-4.75R-1 (4424) |
| 38-24.81R-1 | 4446 | Trail 624 – Radio Ridge | 38-16.46R-1 | 4426-3.50L-1 |
| 38-24.81L-2 | | 4405-4.50R-1 | 38-16.61R-1 | 4429-1.75L-1 |
| 38-24.81L-3 | | 4405-4.50R-2 | 38-16.61R-2 | 4431-0.32R-1 |
| 38-24.81L-4 | | 4405-4.50R-3 | 371-16.1R-1 | 4431-Government Tank Re-route |
| 371-13.5L-1 | | 4405-4.50R-4 | 38-18.10R-1 | 4435-0.51L-1 (OHV2 motorized trail) |
| 642-1.18L-1 | | 7705 | 642 | 4441 |
| 642-2.03L-1 | | | 643 | 4479 (4470-0.65L-1) |
| 642-2.06L-2 | | | 736-11.03R-1 | 4483-0.02R-1 |
| 4458-1.16R-1 | | | 833-Bug Spring Parking | 4441 |
| 4483-Oracle Ridge Trail – convert 0.46 mi. to trail | | | 4307-0.14R-1 | |
| 7705-0.46R-1 | | | | |

All the motorized vehicle routes depicted on the Redington Pass Backcountry Touring Area brochure map need to be INFRA designated routes, including the short spur roads connecting to the ATV/motorcycle designated routes. These touring area routes have been authorized using the NEPA process to prepare an Environmental Assessment and a Decision Notice was signed for Catalina OHV Project in 1997 approving designation for this Forest OHV area. Routes depicted as hiking trails in the Agua Caliente Hill Area are recommended as ML1 roads and routes that lead out of the Tanque Verde Guest Ranch property to Converse and then ending at the 4405 are recommended as ML2 roads, open-authorized with restrictions for administrative use only.

The **old 4424** route was closed to wheeled vehicle uses by the Decision Notice for the Catalina OHV Project for resource protection purposes, and a new flats road, presently shown as **4424** (4417-4.75R-1) on the brochure map, was constructed and needs to be added to INFRA as a authorized maintenance level 2 road.

The route labeled **4405-10.34R-1** on the transportation map as an unauthorized route was not part of the Catalina OHV project and needs to be closed.

A re-route of **4431** is recommended for resource reasons (mud bog).

Motorized Trails

All hiking trails on the District are closed to motorized travel, as directed by the Forest Plan (pp. 27-28, 7(c)). The District has developed almost 5 miles of motorized trail specifically for enhancing OHV recreation opportunities in Redington Pass near Forest Road 371. The routes currently showing as OHV 2, OHV 3, OHV 4, OHV route, OHV connector 1, OHV connector 2 are motorized trails and need to be entered and given numbers in INFRA Trails. A forest plan amendment is needed to clarify that only trails designated as motorized are open to motorized use.

Motorized Dispersed Camping

The Forest Plan (pp. 27, 28) provides for motorized dispersed camping as follows: “Vehicles may pull off roads or trails up to 300 feet for parking or camping.” Along many roads, parking and camping spots are limited by terrain, vegetation and rockiness. Frequently used motorized dispersed campsites, where evidence of camping such as fire rings can be seen, are usually readily identifiable. Some dispersed campsites are occupied only during hunting season and may not be obvious at other times of the year. With the population in the Tucson area continuing to grow, opportunities for motorized dispersed camping will always be in increasing demand.

While excessive heavy impacts from motorized dispersed camping are rare on most roads, there are some sites along heavily used roads that would benefit from mitigation and/or rehabilitation. Unacceptable soil and vegetation damage has occurred at sites that have more than one access road, have grown larger than necessary, or are connected to other roads or campsites by user-created OHV trails. Some dispersed sites are located on spur roads that extend beyond the 300-foot designated distance corridor. The need for mitigation and prevention of resource damage due to dispersed camping is expected to increase along with the demand for this type of recreation opportunity.

For routes **35, 4307, 4406, and 4409** the 300 foot designated distance corridor for motorized dispersed camping has been recommended to be eliminated and replaced with motorized access to camping in designated sites only. The unauthorized roads identified as 35-spur and 4307-0.05R-1 are recommended to be decommissioned. Other spur roads along route 35 that access dispersed campsites and extend beyond 100 feet of route 35 are recommended to be added to the system for campsite access once it has been determined they are not creating undue natural or cultural resource impacts and/or those impacts cannot be mitigated. Barriers may need to be created at some sites to mitigate impacts. Signing should be used to identify authorized

campsites on the ground. *The dispersed sites themselves should not be identified on the MVUM, only the designated routes they are adjacent to.*

It is recommended that the 300 foot designated distance corridor remain on other designated roads on the district and that the need to go to designated sites only along heavily used roads be evaluated annually. It will be necessary to amend the forest plan to eliminate the 300 foot corridor on the Happy Valley roads – 35, 4307, 4406, and 4409, and any additional spur roads off 35 that are designated.

Education and Partnerships

The Santa Catalina Ranger District's Recreation Program plans to continue OHV partnerships and use of OHV volunteers from the community to help educate other motorized vehicle users in travel ethics and to help support the Forest's backcountry travel management goals. Many organized OHV groups, clubs and individuals are environmentally sensitive and already abide by a motor vehicle travel code of ethics (i.e. Tread Lightly). The Recreation Program's goal is to avoid imposing unnecessary burdens on legal Forest users or, for that matter, on other Forest resource managers, that could slow forward momentum of the travel management priority and delay providing legitimate backcountry touring for responsible OHV enthusiasts.

Motorized Big Game Retrieval

National Forests in the Southwestern Region provide hunting opportunities that are important to the public. State agencies are responsible for managing big game within the capacity of the land. Therefore, designation of routes affecting harvest and the need for cross-country travel to facilitate big game retrieval should be identified in close collaboration with the responsible State agency. Designating distances for motorized big game retrieval is optional and not required in the Travel Management Rule.

Current Forest Plan direction does not allow for motorized big game retrieval. Deer, bear and javelina are the largest game species that can be taken on the Forest. Arizona Game and Fish Department (AGFD) (Region V, Tucson) staff members concur that current direction not be changed. AGFD and Forest staff agree that off-road vehicle travel to retrieve game causes unacceptable resource damage in the delicate arid and semi-arid ecosystems of the Forest and leads to the development of new unauthorized routes. Legally tagged game should continue to be retrieved using only non-motorized means.

Range Management

- *How does the road system affect access to range allotments?*

The Santa Catalina Ecosystem Management Area contains approximately 259,675 acres. There are 16 grazing allotments within this EMA. Fifteen are currently active. Only one allotment is vacant at the time of this report. Every allotment has structural range improvements that have been constructed by the FS over the tenure of the each grazing allotment for the purpose of improving applied management. All allotments have varying degrees of constructed roads within their boundaries which are used to access range improvements. Many, if not all, of these

improvements need to be maintained on a regular basis so the roads continue to serve an important purpose. As time has passed these roads have developed into what is basically considered to be a significant portion of the EMA transportation system. These are the roads or travel-ways that by-in-large make up the routes that are used by ATVs, 4WDs, motorcycles, hunters, bicyclers and other visiting publics. These are generally the roads we consider maintenance level 1 and 2 roads. We expect to keep all roads within the EMA (listed in INFRA) at their current maintenance level and do not intend to change their designation.

The following roads in the Santa Catalina EMA related to range management activities are recommended to be added to Term Grazing Permits:

| | | |
|----------------------|-------------|---------------|
| 36 A | 38-22.06R-2 | Hidden Spring |
| 36 B | 4448 | |
| 37-Italian Trap Tank | 7705 | |

The road network within the EMA is adequate for the purposes of range and wildlife management if better access is achieved. The District believes no new roads are needed. However, two or three roads need to be relocated or re-routed to achieve better environmental management of the existing roads. Also some roads need to be better maintained to allow the user public opportunity to travel to areas within the EMA without incurring damage to their vehicles or risking life and limb to bag a deer/pig/quail, fix a broken fence or clean a stock tank.

The Coronado shall ensure that grazing permit holders are aware of the Travel Management Rule (TMR) and seek their input into the designated system, any single purpose road(s) or trails(s) access needs, and needs for general cross-country travel, related to their authorized grazing activities. As a critical component of allotment management, the implementation of the TMR should be conducted in careful and considered consultation with the grazing permit holder [Federal Land Policy and Management Act of 1976, Sec. 402 (d) (e)].

Implementation of the TMR will require active management of all motorized use, including that related to permitted grazing activities. Motorized travel off the designated road system by grazing permit holders should be based on need related to carrying out required management practices, and compliance with the terms and conditions of Term Grazing Permits. Legitimate motorized use, including cross-country access, needed for conducting activities required under Term Grazing Permits will be authorized unless compelling natural and/or heritage resource issues require postponement or modification of the activity.

Motor vehicle use in designated wilderness areas will continue to be managed consistent with the provisions of the Wilderness Act [Section 4(d)(4)(2)] that provides for limited exceptions for grazing livestock as further defined in the Congressional Guidelines (FSM 2323.22).

Authorizations for cross-country motorized travel should meet the intent of the TMR to the fullest extent possible. Changes from historic patterns of travel should not impair management of the allotment or substantially impact the operator's economic viability. Permittee access to manage allotments would be provided through a combination of the designated Forest system roads and other access needs identified in their Term Grazing Permit. If not currently described

in a Term Grazing Permit, access needs other than the designated system, will be spelled out as a special provision in Part 3 of the Term Grazing Permit (either in the Allotment Management Plan (AMP), or directly as a special provision of the permit in Part 3) as presently being practiced. Since travel activities associated with Term Grazing Permits are on-going, with a long history, additional NEPA and a formal decision would not be required. However, a general description of the permitted level of motorized cross-country travel for grazing activities should be addressed in the discussion of cumulative effects in any Travel Management NEPA documents. In the event of significant future deviations from “current access needs” for motorized use as authorized by a Term Grazing Permit, these must be disclosed through subsequent NEPA on a site specific basis.

Annual Operating Instructions (AOIs) specify those annual actions that are needed to implement the management direction set forth in the Term Grazing Permit including the AMP. With regard to travel management needs, this will annually include a brief discussion of the use of vehicles and ATVs within the designated road system, any single purpose use roads or trails, and a description of the annually anticipated level of cross-country travel and access consistent with the Part 3 of the Term Grazing Permit and/or AMP. Any unplanned or emergency type travel not previously contemplated in the Term Grazing Permit would also be discussed with appropriate authorization and guidance established in the AOI.

All authorizations for cross-country motorized travel are subject to other existing regulations intended to protect natural and/or heritage resources. This includes compliance with regulations addressing use of vehicles off roads (36CFR 261.15), National Forest Wilderness (36 CFR 261.18), and National Forest Primitive Areas (36 CFR 261.21), as well as other applicable laws and regulations. Cross-country motorized travel should not be allowed when conditions are such that cross-country travel would cause unacceptable natural and/or heritage resource damage, and existing resource protection regulations should be enforced when conditions warrant.

Factors to consider in determining the appropriate level of cross-country motorized travel to authorize in Term Grazing Permits include, but are not limited to the following:

Grazing Management and Operational Related

- The number, location, and access (via currently designated travel routes) to range improvements (fences, corrals, cattleguards, pipelines, water delivery systems, earthen tanks) which must be checked, maintained, and repaired on a regular basis.
- The anticipated need for construction of new structural and non-structural range improvements identified through adaptive management and the NEPA process related to grazing authorizations and the development of AMPs
- The past and current level of cross-country travel as demonstrated over the past 10 – 20 years for general range management and permit compliance purposes.
- The type and complexity of grazing management and frequency of livestock movements for range management purposes.

- The type of fences needing to be maintained (e.g., electric fences as opposed to traditional barbed wire fences).
- The need for checking the functionality of fences and the logistics involved in the transport of repair materials to fence line locations.
- The need and logistics for repair and maintenance of wildlife, waterfowl, and other types of enclosures which are the responsibility of the grazing permit holder.
- The need for placing supplements in strategic locations for livestock and grazing management purposes.
- The need to check gates potentially left open by other national forest users (e.g., recreationists and hunters).
- The need to attend to sick or injured livestock.

Resource Management Related

- The potential to damage soil, watershed, vegetation, heritage, or other forest resources.
- The potential for harassment of wildlife and disruption of wildlife habitats.
- Special land-use designations such as wild and scenic river corridors.
- Terms and conditions in ESA section 7 Biological Opinions or compliance with letters of concurrence.
- Direction and requirements contained within land and resource management plans.

[Reference: Travel Management Rule Guidelines (Revised June 30, 2008)]

Special Uses

Special Use Authorization (SUA) holders should be informed about the Travel Management Rule and the pending designation of a system of roads, trails, and areas under the new regulation. It should be possible to satisfy some of the motorized access needs of SUA holders through the designated system, and holder input into the designation process should be sought. Some of the holders' motorized access needs may be on existing routes which will not be part of the designated system, and those routes should be approved by separate authorizations as appropriate.

SUA holders who have cross-country motorized access needs (off the designated system and off routes which are under authorization to them) will be required to request in writing what the specifics of their cross-country travel needs are, and to obtain written approval for that motorized

cross-country travel. The standard mechanisms for granting such approval would be the approval by the authorized officer of an operating plan which would become part of the SUA, or utilizing an existing clause within the SUA. The desired end-result is that the written authorization for cross-country motorized travel would become part of the SUA and therefore be enforceable under the terms of the SUA.

The authorization for cross-country motorized travel can address annual or multi-year activities. If an operating plan for maintenance or operational activities is not already required by a permit, and motorized cross-country travel is requested, the Forest will coordinate with the permit holder to amend the authorization either by adding the requirement for an operating plan or utilizing an appropriate existing SUA clause.

The written authorization for cross-country motorized travel should be needs based, authorizing only the cross-country motorized travel necessary to accomplish maintenance and operational activities necessary to conduct activities authorized by the SUA. All authorizations for cross-country motorized travel are subject to other existing regulations intended to protect natural and/or heritage resources. This includes compliance with regulations addressing use of vehicles off roads (36CFR 261.15), National Forest Wilderness (36CFR 261.18), and National Forest Primitive Areas (36 CFR 261.21), as well as other applicable laws and regulations. Cross-country travel should not be allowed when conditions are such that cross-country travel would cause unacceptable natural and/or heritage resource damage, and existing resource protection regulations should be enforced when conditions warrant.

Non-system motorized travel should not be authorized for holders of outfitter/guide SUA's to scout for game, set up hunting camps, or transport clients to hunting sites. Retrieval of harvested big game animals would be managed the same as for the general public (as outlined in Section V of these Guidelines). [Reference: Travel Management Rule Guidelines (Revised June 30, 2008)]

The following roads identified in the Santa Catalina EMA related to special use activities are recommended to be added to the SUA:

| | | |
|--------------------|----------------------|-------------------|
| 13 | 833-Butterfly Pvt Rd | 4454-Private Rd |
| 18 | 833-County Mtnc Yard | 4458 |
| 36-2.50L-1 | 4400 | 4466-0.32L-1 |
| 38-22.34L-1 | 4403 | 4467 |
| 38-22.86L-1 | 4405-4.50R-1 | 4467-powerline rd |
| 38-22.86L-2 | 4405-4.50R-2 | 4470-0.12R-1 |
| 38-23.65L-1 | 4405-4.50R-3 | 4477 |
| 38-Pvt Rd 1 | 4405-4.50R-4 | 4487-Foot trail |
| 833-Borrow Pit Rd. | 4425-1.17R-1 | 7703 |
| 833-Butterfly Rd | 4430 | |

Biology

- What ecological attributes, particularly those unique to the region, would be affected by “roading” of currently “unroaded” areas?
- To what degree do the presence, type, and location of roads increase the introduction and spread of exotic plant and animal species, insects, diseases, and parasites?
- What are the potential effects of such introductions to plant and animal species and ecosystem function in the area?
- To what degree do the presence, type, and location of roads contribute to the control of insects, diseases, and parasites?
- How does the road system affect ecological disturbance regimes in the area?
- What are the adverse effects of noise caused by developing, using, and maintaining roads?
- What are the direct effects of the road system on terrestrial species habitat?
- How does the road system facilitate human activities that affect habitat?
- How does the road system affect legal and illegal human activities (including trapping, hunting, poaching, harassment, road kill, or illegal kill levels)? What are the effects on wildlife species?
- How does the road system directly affect unique communities or special features in the area?
- Do areas planned for road entry, closure, or decommissioning have unique physical or biological characteristics, such as unique natural features and threatened or endangered species?
- How and where does the road system facilitate the introduction of non-native aquatic species?
- To what extent does the road system overlap with areas of exceptionally high aquatic diversity or productivity, or areas containing rare or unique aquatic species or species of interest?
- What are the traditional uses of animal and plant species within the area of analysis?
- How and where does the road system restrict the migration and movement of aquatic organisms?
- What aquatic species are affected and to what extent?

1. What ecological attributes, particularly those unique to the region, would be affected by the roading of current unroaded areas?

The Santa Catalina Mountains rise from the Sonoran Desert and range in elevation from approximately 3,000 ft in the foothills to 9,100 ft at the summit of Mt. Lemmon. The broad elevational gradient results in a great diversity of plant and animal species that form a variety of biotic communities in the mountain range. These biotic communities include Arizona upland division of Sonoran Desert scrub, Semi-desert Grassland, Madrean Evergreen Oak Woodland, Interior Chaparral, Rocky Mountain Montane Conifer Forest, Deciduous Riparian Woodland, and Relict Conifer Forest (Brown 1982). Within these biotic communities a large variety of vegetation associations provide habitat for a huge array of wildlife species. Of particular concern to land managers are species included on the Federal List of Threatened and Endangered

species, the Regional Forester's Sensitive Species List, and the List of Management Indicator Species (MIS) found in the Coronado National Forest Land Resource management. The tables below include the list of special status species that are known to occur or could potentially occur in the Santa Catalina Mountains.

The Santa Catalina Mountain EMA is located in Pima County within a short ride of the Tucson metropolitan area. The population base includes approximately one million residents. Additionally, southern Arizona is a destination for winter visitors and year round recreation due to its mild climate and, to a large extent, because of the availability of a high quality wildland experience on the Coronado National Forest. The Santa Catalina Mountains include a private enclave called Summerhaven located near the top of Mt. Lemmon that is served by a Scenic Byway that is variously known as the General Hitchcock Highway, the Mount Lemmon Highway, or the Catalina Highway. This high quality road provides access for approximately 1.3 million visitors per year, plus the residents of Summerhaven and nearby recreation residences and organization camps. The potential effects of roads to certain special status species of the Santa Catalina EMA are described below the table. Federally Listed Species such as cactus Ferruginous Pygmy Owl, Jaguar, and Jaguarundi are not discussed because potential effects are remote since there are no known recent records of occurrence on the Forest. A few Forest Service sensitive species are discussed in detail where there are particular concerns related to road construction. For the remainder of Sensitive species, there is a general discussion of potential impacts that are common to whole groups of species. The same is true of MIS species discussions.

In general the Santa Catalinas are the most urbanized mountain range in Southern Arizona. The road system, particularly on the top contributes to the urbanized effects that primarily result from the private development of Summerhaven as well as the recreation residences and developed campgrounds. Urbanization can result in changes in wildlife and plant communities of a variety of taxa (unit used in the science of biological classification). Urbanization affects forest dwelling bird communities by favoring certain species while selecting against others (Marzluff 1997). Similar effects may be expected for other taxa especially small mammals (Marzluff *ibid*). The presence of domestic pets such as dogs and cats increases nest failure in many bird species and may effect changes in distribution of small mammal and reptile species. The increase of both native and non-native predators can cause increased reproductive failure in the vicinity of the urban areas. Even low-density urban areas such as summer homes areas can affect the adjacent plant communities through trampling, soil compaction, and brush removal. These changes can favor one species over another due to disturbance tolerance or loss of suitable foraging or breeding habitat. As an example, the cliff chipmunk generally benefits from increased urbanization and human presence. On the Santa Catalina Mountains this species is also a known nest predator of ground nesting bird species (Kirkpatrick, pers. Comm. 2006), hence increases in chipmunk density are expected to result in increased nest failure of ground nesting birds.

In areas other than the highway corridor, there are some un-roaded areas such as large portions of the upper Canada del Oro Watershed, the northeastern watersheds emanating from Guthrie Mountain, and the Atchly, alder, and Ash canyons. These areas are relatively unaffected by this urbanization effect. Additional roads in these areas would tend to produce the effects seen along the developed highway corridor.

Table 4.6. Threatened, Endangered, Proposed and Sensitive Animal and Plant Species known to or suspected to occur on the Santa Catalina Ranger District:

| Group | Species | Common Name | Federal |
|---|---|--------------------------------------|----------------|
| | Scientific Name | | Status |
| <u>BIRDS</u> | <i>Glaucidium brasillianum cactorum</i> | Cactus ferruginous pygmy-owl | E |
| | <i>Strix occidentalis lucida</i> | Mexican spotted owl | T |
| <u>FISHES</u> | <i>Poeciliopsis occidentalis occidentalis</i> | Gila topminnow | E |
| | <i>Gila intermedia</i> | Gila chub | P |
| <u>MAMMALS</u> | <i>Panthera onca</i> | Jaguar | E |
| | <i>Felis yagouaroundi tolteca</i> | Jaguarundi | E |
| | <i>Leptonycteris curasoae yerbabuena</i> | Lesser long-nosed bat | E |
| Forest Service Sensitive Species | | | |
| <u>AMPHIBIANS</u> | <i>Rana yavapaiensis</i> | Lowland leopard frog | SEN |
| | <i>Eleutherodactylus augusti cactorum</i> | Western barking frog | SEN |
| | | | |
| <u>BIRDS</u> | <i>Falco peregrinus anatum</i> | American peregrine falcon | SEN |
| | <i>Accipiter gentilis apache</i> | Apache Northern goshawk | SEN |
| | <i>Vireo bellii</i> | Bell's vireo | SEN |
| | <i>Passerculus sandwichensis rufofuscus</i> | Chihauhuan savannah sparrow | SEN |
| | <i>Buteogallus anthracinus</i> | Common black hawk | SEN |
| | <i>Asturina nitida maxima</i> | Northern gray hawk | SEN |
| | <i>Coccyzus americanus occidentalis</i> | Western yellow-billed cuckoo | SEN |
| | | | |
| <u>INSECTS</u> | <i>Amblycheila baroni</i> | A Tiger beetle | SEN |
| | <i>Calephelis arizonensis</i> | Arizona metalmark | SEN |
| | <i>Agathymus aryxna</i> | Aryxna giant skipper | SEN |
| | <i>Neophasia terlootii</i> | Chiricahua white | SEN |
| | <i>Ameletus falsus</i> | False ameletus mayfly | SEN |
| | <i>Speyeria nokomis nitocris</i> | Mountain silverspot butterfly | SEN |
| | <i>Limenitis archippus obsoleta</i> | Obsolete viceroy | SEN |
| | <i>Anthocharis pima</i> | Pima orange tip | SEN |
| | <i>Agathymus polingi</i> | Poling's giant skipper | SEN |
| | <i>Argia sabino</i> | Sabino Canyon damselfly | SEN |
| | <i>Megathymus ursus</i> | Ursine giant skipper | SEN |

| Group | Species | Common Name | Federal |
|------------------------|---|--------------------------------------|----------------|
| <u>MAMMALS</u> | <i>Ovis canadensis mexicana</i> | Desert bighorn sheep | SEN |
| <u>REPTILES</u> | <i>Cnemidophorus burti stictogrammus</i> | Giant spotted whiptail | SEN |
| | <i>Thamnophis eques megalops</i> | Mexican garter snake | SEN |
| | <i>Gopheris agassizii</i> | Sonoran desert tortoise | SEN |
| <u>PLANTS</u> | <i>Salvia amissa</i> | Aravaipa sage | SEN |
| | <i>Heuchera glomerulata</i> | Arizona alum root | SEN |
| | <i>Carex ultra</i> | Arizona giant sedge | SEN |
| | <i>Manihot davisiae</i> | Arizona manihot | SEN |
| | <i>Aconitum infectum</i> | Arizona monkshod | SEN |
| | <i>Graptopetalum bartramii</i> | Bartram stonecrop | SEN |
| | <i>Eupatorium bigelovii</i> | Bigelow thoroughwort | SEN |
| | <i>Muhlenbergia dubioides</i> | Box Canyon muhly | SEN |
| | <i>Penstemon discolor</i> | Catalina beardtongue | SEN |
| | <i>Carex chihuahuensis</i> | Chihuahuan sedge | SEN |
| | <i>Hackelia ursine</i> | Chihuahuan stickseed | SEN |
| | <i>Samolus vegans</i> | Chiricahua mountain brookweed | SEN |
| | <i>Arabis tricornuta</i> | Chiricahua rock cress | SEN |
| | <i>Mammillaria mainiae</i> | Counter-clock fishhook cactus | SEN |
| | <i>Allium gooddingii</i> | Goodding's onion | SEN |
| | <i>Ipomoea tenuiloba</i> var. <i>lemmonii</i> | Lemmon's morning glory | SEN |
| | <i>Stevia lemmonii</i> | Lemmon's stevia | SEN |
| | <i>Hedeoma dentatum</i> | Mock pennyroyal | SEN |
| | <i>Echinomastus erectocentrus</i> var. <i>erectocentrus</i> | Needle-spined pineapple | SEN |
| | <i>Sisyrinchium cernuum</i> | Nodding blue-eyed grass | SEN |
| | <i>Abutilon parishii</i> | Pima indian mallow | SEN |
| | <i>Hieracium rusbyi</i> | Rusby hawkweed | SEN |
| | <i>Viola umbraticola</i> | Shade violet | SEN |
| | <i>Hermannia pauciflora</i> | Sparseleaf hermannia | SEN |
| | <i>Penstemon superbus</i> | Superb beardtongue | SEN |
| | <i>Muhlenbergia xerophila</i> | Sycamore Canyon muhly | SEN |
| | <i>Agave schottii</i> var. <i>treleasei</i> | Trelease agave | SEN |
| | <i>Tumamoca macdougallii</i> | Tumamoc globeberry | SEN |
| | <i>Metastelma mexicanum</i> | Wiggins milkweed vine | SEN |

LT = Listed Threatened; LE = Listed Endangered; FS = Forest Sensitive

Mexican Spotted Owl - Threatened. There are 17 known Mexican Spotted Owl Protected Activity Centers (PACs) on the Santa Catalina Ranger District. These 17 PACs are generally located along the highest elevations of the mountain range associated with steep heavily forested canyons. The General Hitchcock Highway (833) passes through or touches seven of these and the road to the top of Mt Lemmon (11) touches or passes through an additional three PACs. Additional roads that occur adjacent to or within PACs include routes 38, 625, 625 A, 10, 6, 14, 2, 34, 7, 12, 14, and 3. Both motorized and non-motorized vehicles may degrade or destroy spotted owl habitat, particularly riparian and shrub habitats vital to the owl's prey. Noise produced by vehicles and the vehicle riders may disturb spotted owl nesting and roosting sites. Most of the PACs are in areas with long-established road systems and the potential for additional road building is small due to the steep nature of the PACs. New roads in these PACs would have the effect of increasing disturbance to breeding owls and therefore adversely affect this Federally listed species.

Lesser Long-nosed Bat - Endangered.

This species is not known to roost in the Santa Catalina EMA, but is likely to forage in the area. It depends on Agave and Saguaro for food. Apart from direct disturbance of roost sites, potential effects to this taxa are associated with the loss of food plants. Large areas of the Santa Catalina Mountains remain un-roaded including wilderness and the areas described earlier in this section. These areas provide an adequate food source for this species. Creation of roads in these areas could impact the food plants for this species.

Lowland Leopard Frog - FS Sensitive. This species is known from several drainages in the Redington Pass area, as well as canyons on the western side of the mountain including Montrose and Romero. The western canyons are relatively protected from vehicular use, but the populations in the Redington Pass area are forced to coexist with a high level of off-road use. OHV use in the Tanque Verde watershed is extremely heavy and vehicles such as motorcycles, ATVs and highly modified four-wheel drives access a variety of areas off of the road system. The road system itself gives these forest users access to canyons such as Canyon del Pina, Aliso, and Juakin. These all support populations of lowland leopard frogs. OHV use can severely impact egg masses and tadpoles thereby reducing reproductive success of this declining species in the Santa Catalina EMA. Un-official or "wildcat" roads are of particular concern in the Redington Pass area due to the high intensity use by OHV enthusiasts.

The construction of new roads, creation of wildcat roads, and the use and maintenance of existing roads (i.e., 4405-10.34R-1, 4405, 4424, 4426, and 4404) can have negative effects on leopard frog habitat by increasing runoff, erosion and salutation and the potential for vehicular access to springs and pools as well as illegal collection and introduction of disease. However, firebreaks may reduce the incidence or extent of wildfire, protecting against ash flow and sedimentation of frog habitats.

Gila Chub - Endangered - This endangered fish is known from three canyons on the Santa Catalina EMA, all three are within the Pusch Ridge Wilderness. The populations are screened from vehicular impacts due to wilderness restrictions, except for Sabino Canyon where a paved road crosses occupied habitat total of ten times. Within the Sabino Canyon Recreation Area vehicle use is limited to a public shuttle that runs twice an hour across four crossings as well as administrative traffic for maintenance and other activities. There is potential habitat for the

species outside of Wilderness, but no known populations. Creation of new roads that cross perennial or intermittent streams on the EMA would have the effect of degrading potential habitat for this species through sedimentation of pool and riffle habitat or alteration of flow characteristics.

Northern Goshawk – FS Sensitive - This forest-dwelling raptor is found in forested habitat and its distribution overlaps that of the Mexican Spotted Owl in the Santa Catalina EMA. Concerns are virtually identical for goshawks as for Mexican spotted owl, with the primary potential impact from newly constructed roads being disturbance of breeding birds. Unlike the owl, however, the goshawk does not necessarily nest primarily in steep canyons. Its potential to nest in less steep habitat means that there is greater potential for the creation of roads in occupied habitat, so there is slightly greater potential for impacts from road building to this species.

Desert Tortoise – FS Sensitive -This species is found in the lowest elevations of the Santa Catalina EMA in Sonoran Desertscrub and occasionally up into semi-desert grassland. Many tortoises are killed by vehicles on roads that pass through its habitat. The construction of roads has the potential to disturb tortoise burrows where these animals over-winter and reproduce. This species is impacted by the largest number of roads on the district. Virtually all roads that pass through Sonoran Desertscrub habitat have the potential to impact this species. This means most roads in the lower elevations of Redington Pass, the roads along the south end of the EMA in the on the slopes of the Rincon Mountains, the lower elevation roads on the northeast flank of the Santa Catalinas, roads into the CDO and Sutherland Wash, and the lower elevation roads on the western and southern flanks of the Santa Catalina Mountains have the potential to impact this species. It follows that construction of new roads in these areas would also have the potential to impact this species.

FS Sensitive Species General Discussion - Construction and maintenance of roads in currently un-roaded areas has the potential to impact a variety of species in similar ways. Bird species are impacted most by fragmentation of habitat, disturbance during breeding season, and changes in habitat due to introduction of non-native plants and altered fire regimes. Increased encroachment on un-roaded areas results in impacts related to urbanization described at the beginning of this section. Plant species are also affected through direct disturbance of individuals from road construction or creation of wildcat roads. Additional effects to plant species can result from increased illegal collection of rare species and the introduction of non-native competitors that degrade habitat quality or alter natural fire regimes. Similarly, insect species are also potentially impacted by the introduction of non-native plants along travel corridors. Most frequently, non-native plants compete with and exclude native plant species that function as host plants for insects during some part of their complex life cycles.

Table 4.7 Management Indicator Species

| | Group | Species |
|---|------------------|--|
| 1 | Cavity Nesters | Coppery-tailed (Elegant) Trogon Sulphur-bellied Flycatcher Other primary and secondary cavity nesters* |
| 2 | Riparian Species | Gray hawk Blue-throated hummingbird Coppery-tailed (elegant) trogon |

| | Group | Species |
|---|-----------------------------------|---|
| | | Rose-throated becard Thick-billed kingbird Sulphur-bellied flycatcher Northern Beardless tyrannulet Bell's vireo Black bear |
| 3 | Species Needing Diversity | White-tailed deer Merriam's turkey Coppery-tailed (elegant) trogon Sulphur-bellied flycatcher Buff-breasted flycatcher Black bear |
| 4 | Species Needing Herbaceous Cover | White-tailed deer Mearn's quail Pronghorn antelope Desert massassauga Baird's sparrow |
| 5 | Species Needing Dense Canopy | Bell's vireo Northern beardless tyrannulet Gray hawk |
| 6 | Game Species | White-tailed deer Mearn's quail Pronghorn antelope Desert bighorn sheep Merriam's turkey Black bear |
| 7 | Special Interest Species | Mearn's quail Gray hawk Blue-throated hummingbird Coppery-tailed (elegant) trogon Rose-throated becard Thick-billed kingbird Sulphur-bellied flycatcher Buff-breasted flycatcher Northern beardless tyrannulet Five-striped sparrow |
| 8 | Threatened and Endangered Species | Desert bighorn sheep Gray hawk Peregrine falcon Blue-throated hummingbird Coppery-tailed (Elegant) trogon Rose-throated becard Thick-billed kingbird Sulphur-bellied flycatcher Buff-breasted flycatcher Northern beardless tyrannulet Bell's vireo Baird's sparrow Five-striped sparrow Mexican stoneroller Arizona (Apache) trout Gila topminnow Gila chub Sonora chub |

| | Group | Species |
|--|-------|---|
| | | Desert massassauga Twin-spotted rattlesnake Arizona ridge-nosed rattlesnake Huachuca (Sonora) tiger salamander Tarahumara frog Western barking frog Spikedace Arizona treefrog Mt. Graham spruce (red) squirrel Gould's turkey |

Management Indicator Species, or MIS, are organized into groups that represent their dependence on various habitat characteristics or their importance to humans. Groups 1 through 6 in the table above can all be impacted through the alteration of habitat from the introduction of non-native plants or directly by the loss of key habitat components such as the loss of dead trees that provide nesting cavities for group 1 species, for instance.

2. To what degree do the presence, type, and location of roads increase the introduction and spread of exotic plant and animal species, insects, diseases, and parasites?

Roads provide corridors for the introduction and spread of non-native species. The Santa Catalina EMA is particularly threatened by this because it is adjacent to a heavily populated area. The Tucson Basin is an immense source of non-native plants that are used as ornamental landscaping. Additionally, other governmental agencies in the region have used many of the invasive species as erosion control or as landscaping along roadways. The off-forest travel corridors used by the millions of visitors to access the Santa Catalina EMA are lined with invasive species such as fountain grass (*Pennisetum setaceum*) and buffelgrass (*Cenchrus ciliaris*). For this reason virtually all roads on the District are a concern for protecting biological diversity since they all are somehow connected to the Tucson Basin.

Additionally, Lehmann lovegrass (*Eragrostis lehmanniana*) and Boers lovegrass (*E. chloromelas*), introduced into the southwest in the early 1930s, has invaded low-elevation (3000 to 4500 feet) grassland habitats throughout the Santa Catalinas. While roads may have been a factor in its spread (highway rights of way were seeded with Lehmann lovegrass), there is no feasible control for non-native lovegrass. A larger concern for protecting biodiversity in the Santa Catalinas is the potential spread of non-native plants from residential development adjacent to the public land.

Non-native organisms have been a major factor implicated in declines of native amphibians and fish throughout western North America. Chiricahua leopard frogs are nearly always absent from sites supporting bullfrogs and nonnative predatory fish (Sredl and Howland 1997). Eradication of non-native fish species such as green sunfish (*Lepomis cyanellus*) have been a focus of the Coronado National Forest in recent years, particularly in Sabino Canyon. While state and federal agencies no longer intentionally introduce bullfrogs or green sunfish in Arizona, well-intentioned private individuals who are unaware of the repercussions of their actions still move bullfrogs and sunfish about. Existing roads accessing springs and riparian areas may facilitate the release of bullfrogs and other non-native organisms into leopard frog habitat.

A fungal skin disease, chytridiomycosis, first identified in Arizona in 1998, has been linked to amphibian decline in many parts of the world, including the leopard frogs in Arizona. Although the transmission mechanism of this fungus is not well known, vehicles are a likely source for moving the fungus between sites. The possible introduction of chytrid fungus to the Tanque Verde watershed and other perennial riparian habitat is a significant concern.

3. What are the potential effects of such introductions to plant and animal species and ecosystem function in the area?

Not all non-native species are a problem, but some aggressively out-compete native species. Lehmann lovegrass dominates low-elevation grassland community to the near exclusion of native species. Bufflegrass and fountain grass are similarly aggressive species that are rapidly spreading into desert scrub, desert grassland, and oak woodland habitat in the Santa Catalina EMA. These species produce abundant herbage that, when dry, may provide fuel for wildfires. The increased presence of these bunchgrasses in desert scrub habitat has increased the frequency and intensity of fires in desert habitat over that which most Sonoran desert species are adapted to tolerate. The potential impacts from bullfrog introduction are described above, as are concerns for introducing chytrid fungus into aquatic habitats.

4. To what degree do the presence, type, and location of roads contribute to the control of insects, diseases, and parasites?

The existing road system, particularly in the higher elevations along the General Hitchcock Highway corridor provides access for monitoring and control of these problems in coniferous forested habitat. More remote portions of the range are best accessed on horseback.

5. How does the road system affect ecological disturbance regimes in the area?

The primary ecological disturbances in the Santa Catalinas are drought, wildfire, and flood. Roads have no effect on drought but may increase the incidence of wildfire by providing access to areas of dense fuel. Although roads may increase the potential for human-caused fire, they also allow for rapid response by suppression crews.

Flooding in the Santa Catalina EMA has caused a great deal of damage to both sensitive aquatic systems and recreational development particularly in Sabino Canyon. This canyon supports a roadway that crosses the creek frequently over twelve 1930s era bridges that are actually dams with low water crossings. These dams have altered the stream morphology by trapping sediment that would otherwise move down the system naturally and be deposited on the valley floor. The bridges function also as gulley plugs that redirect high flows onto the roadway and cause repeated damage to the road itself. These bridges have had a variety of effects on the federally listed Gila Chub that are both bad and good. They have functioned as fish barriers that slow the progression of non-native fish species up the canyon, but they have also resulted in a stretch of approximately three miles that is heavily sedimented in and lacking in pool and riffle habitat that is needed for the species survival. A large stone dam on the lower end of the creek functions as an effective fish barrier, so the bridges are no longer needed to function as fish barriers.

Removal or redesign of the existing bridges in Sabino Canyon would greatly benefit the Federally Listed Endangered Gila Chub.

6. What are the adverse effects of noise caused by developing, using, and maintaining roads?

The presence of a highly developed recreation and residential corridor along the spine of the mountain range has subtle, but long-term effects on a variety of plant communities and species. These effects are the subject of research that focuses on the resulting similarity between such areas and urbanized areas. The changes are summarized under the heading of urbanization and are caused by more than just noise alone. Urbanization affects forest dwelling bird communities by favoring certain species while selecting against others (Block and Finch 1997). Similar effects may be expected for other taxa especially small mammals (Block and Finch *ibid*). The presence of house pets such as dogs and cats increases nest failure in many bird species and may effect changes in distribution of small mammal and reptile species. The increase of both native and non-native predators can cause increased reproductive failure in the vicinity of the urban areas. Even low-density urban areas such as summer home areas can affect the adjacent plant communities through trampling, soil compaction, and brush removal. These changes can favor one species over another due to disturbance tolerance or loss of suitable foraging or breeding habitat. As an example, the cliff chipmunk generally benefits from increased urbanization and human presence. On the Santa Catalina Mountains this species is also a known nest predator of ground nesting bird species (Kirkpatrick, pers. Comm. 2006), hence increases in chipmunk density are expected to result in increased nest failure of ground nesting birds.

The development, maintenance, and use of the Mount Lemmon Highway corridor have resulted in urbanization effects at the highest elevations of the mountain. A different effect results from route 371 and connected roadways. This is the main road traversing the Redington Pass area. Redington Pass is an area that suffers from excessive “wildcat” shooting. While no developed shooting range exists in the area, thousands of users drive the road to access unofficial shooting ranges. The shooting that occurs at these unofficial ranges is often targeted at old appliances, furniture, or other objects that are left when the shooting is finished. The problem is so severe that the Forest is unable to keep up with the garbage. These sites would require extensive clean-up of hazardous materials and rehabilitation that may cost millions of dollars. In addition to the damage, illegal firearms activities have been documented that include the use of automatic weapons to kill livestock owned by the grazing permittee in the area. It is reasonable to assume that such illegal killing is not limited to livestock and probably includes wildlife also.

The Redington Pass area is also extremely popular with OHV enthusiasts. Route 371 provides the access corridor that OHV users depend on to recreate on this portion of the National Forest. Much resource damage occurs as a result of heavy OHV use in the area including erosion, destruction of wetland habitat, destruction of developed water sources and noise disturbance. This use is not limited to legal activities. All pressures taken together, the effects to wildlife from construction, maintenance, and use of 371 and connected roadways is more extreme than the urbanization effects of the Mount Lemmon Highway Corridor.

7. What are the direct affects of the road system on terrestrial species habitat?

Roads can fragment habitat and disrupt wildlife migration corridors. Road density is high in the Redington Pass area, possibly exceeding Forest standards and guidelines. In addition to fragmenting the habitat and reducing habitat availability, high road density can translate to a higher incidence of vehicle caused mortality.

Route 736 is a significant source of habitat degradation for the Canada Del Oro creek. The road travels in the creek channel for several miles. The extremely rugged nature of the road attracts a level of use by off-road vehicles that is incompatible with proper riparian and aquatic habitat management. It is recommended that the TAP include a proposal for a by-pass road that should eliminate the creek bottom route. The proposed Pig Springs 4493 extension would meet the management needs for the CDO aquatic, riparian, and wildlife resources. The proposed reroute of route 736 would create about 0.5 miles of new road in the upland which would, in turn eliminate about 2.5 miles of road that travels in the CDO stream channel.

The proposed re-route, coupled with road maintenance would provide indirect benefits to wildlife resources. These benefits would be realized by allowing access by fire personnel for prescribed fire activities that are currently impossible. The improved access would also allow for improved initial attack capabilities that could reduce the threat of catastrophic wildfire and the effects that were realized in the Aspen fire of 2003 when fire personnel were unable to access the watershed to stop the progress of the wildfire.

8. How does the road system facilitate human activities that affect habitat?

See discussion under #6 above.

9. How does the road system affect legal and illegal human activities (including trapping, hunting, poaching, harassment, road kill, or illegal kill levels)? What are the affects on wildlife species?

See above.

10. How does the road system directly affect unique communities or special features in the area?

See above.

11. Do areas planned for road constructing, closure, or decommissioning have unique physical or biological characteristics, such as unique features and threatened or endangered species?

See above.

12. How and where does the road system facilitate the introduction of non-native aquatic species?

See above.

13. How and where does the road system overlap with areas of exceptionally high aquatic diversity or productivity or areas containing rare or unique aquatic species or species of interest?

While the Santa Catalina Mountains are a relatively dry range, there are many springs. Many of these springs are unreliable, but occur in areas that represent the last occupied habitat for Lowland leopard frog. Of particular concern are routes 37-2.47L1 and 37-2.54R1 that pass through occupied frog habitat in the Tanque Verde Creek area.

Similar concerns are for Papago Springs on route 4402, although this site does not represent occupied frog habitat, is it suitable.

14. What are the traditional uses of animal and plant species within the area of analysis?

Wildlife viewing (particularly birds), hunting, and hiking are the primary uses. Several active grazing allotments also exist.

15. How and where does the road system restrict the migration and movement of aquatic organisms?

As discussed earlier, the bridges in Sabino canyon have functioned as fish barriers. In the past this was beneficial to Gila Chub since it helped to restrict movement of non-native fish up the canyon. Since the removal of green sunfish, however, these same bridges are restricting the movement of Gila chub which could effect survival of individuals during drought conditions.

16. What aquatic species are affected and to what extent?

The primary aquatic species of concern is the lowland leopard frog population and Gila Chub described above.

The following discussions include Wildlife-related issues and opportunities with these road segments.

833 – County Mtnc Yard - This road is located near Palisade Ranger Station in the proposed County Maintenance Yard Facility. It is within a Protected Activity Center for Mexican Spotted Owl (MSO). If the maintenance yard is placed there and the road is placed under Special Use Permit, there will need to be mitigation for adverse effects to MSO. This road can be handled with Special Use Permit Access.

4400 – This road connects the trailheads around the radar base with Shovel springs to the east. It is important for wildlife management activities as well as fire suppression. It is within a Mexican Spotted Owl PAC, but it is proposed for Open-Authorized, Restricted which can be made compatible with MSO management. This road can be handled with Special Use Permit Access.

4405-10.40R1 - This road is within the Redington pass area and is located along a creek bottom through a riparian area that supports Forest Service Sensitive Frog species. Many impacts to sensitive species and their habitat occur from this road, so it is recommended for closure. It was previously identified for closure in the NEPA decision for the Redington OHV Project. It is proposed to decommission this road.

4431 – This is a bypass road to take vehicles out of areas of sensitive soil resources near Government Trap Tank. This particular area is located on a 200 acre lens of deep, clay soils that are highly sensitive to vehicle impacts and are currently denuded of vegetation as a result. These highly productive soils, if restored would provide a unique vegetative resource important to a variety of wildlife species. Currently off-road enthusiasts intentionally damage the area during wet periods. The proposed reroute will take traffic away from the area and protect this rare and sensitive resource. It is proposed to construct up to 1 mile of new road.

4434 - In the vicinity of Race Track Tank in the Redington Pass area there are a variety of roads. Heavy OHV use of these areas continually expands the road system, all of which represents the collection area for the tank. The tank is important to both livestock and wildlife. The erosion of the collection area from this heavy use reduces the longevity and capacity of this tank. Removal of as many roads in the area will help to improve this important resource. It is proposed to decommission this road.

4483-0.42L-1 – This is a segment of road that created a short-cut from the Oracle Ridge Trail to the twin tanks on the American Flag Allotment. This road is very steep and has been eroded to the point where it is impassable. The sedimentation contributed by this road adversely contributes to watershed conditions in the allotment as well as shortening lifespan and volume of the tank. Elimination of this road would move toward improving watershed conditions in the area. It is proposed to convert this to a non-motorized trail.

4493-extension - Aquatic resources in the CDO are severely adversely impacted by the presence of the Charouleau Gap road which travels for several miles in the bottom of the CDO. The proposed extension of the Pig Springs road (4493) will provide a by-pass that will remove the majority of traffic from over 4 miles of riparian and aquatic habitat. This bypass will greatly improve conditions for aquatic resources in the CDO. [See discussion under #7 above.]

Minerals

Objective: Provide access for areas of active mineral development and recreational placer mining activity while minimizing damage to other Forest resources.

Benefits: Proposed longer term exploration and mining activities can be appropriately monitored through implementation of approved plans of operation while recreational placer mining can continue to access prospective areas where they may recover small amounts of gold by non-mechanized means through individual and group recreational activities having minimal effects on other Forest resources by limiting effects, extent and duration of these activities.

Problems: Although the individual placer activities are limited in scope, the cumulative impacts on other Forest resources can be significant. This is especially true in the area of Campo Bonito and Coronado Camp where individual placer mining activity causes uprooting, crushing and undermining of vegetation and disruption of the natural compaction of stream gravels and fines, resulting in increased sedimentation within the drainages. Compaction and thinning of vegetation due to foot and vehicular traffic in and near the drainages, and some human and wildlife safety issues from the excavation of occasional large holes (up to several feet in diameter and depth) within the drainages. These problems however, are better addressed through active compliance than through changes to the road system. The roads that access the claim areas also access other resources, and cannot be closed or decommissioned.

Risks: Continued and increasing impact to the vegetation and water quality in the areas described above, hazards to wildlife and human safety.

Effects of proposed TAP recommendations on management of the Santa Catalina road system to locatable, leasable and salable minerals:

Locatable minerals (metals and certain industrial minerals) – Currently, the only locatable mineral activity in the Santa Catalina EMA is hobbyist or “recreational” placer gold mining. Over the past few years only a few inquiries have been received regarding non-recreational mineral exploration or development on mining claims, and no plans of operation have been completed. One limitation to the ability of operators to obtain approval for proposed plans of operation for mineral activities is that legal access is not available for many of the access routes onto Forest lands across adjacent private land. Frequently, therefore, an operator is unable to guarantee access to mine or to complete reclamation if that should become necessary.

Recreational placer gold mining activities are generally considered to be casual use and do not require formal notification to the Forest. Other mineral related casual uses which would not require Forest approval include claim staking, geological mapping, occasional surface sampling and other activities which do not adversely affect other Forest resources. While the Forest Service is obligated to permit reasonable access for such activities, this does not mandate the availability of vehicular access. In the event that a proposed mineral related activity needs vehicular access to an area where there are no designated system roads, temporary access routes can be approved for as part of plan of operations after adequate environmental compliance is completed and other protections have been agreed to as a condition of approval.

No changes to the road system have been proposed that would increase access to areas of mineral related activity. Roads designated for closure and/or decommissioning in the

TAP will not adversely affect any current or anticipated locatable minerals operations. Roads recommended for closure as described below but which may be needed for future mineral related activity could be utilized for that purpose under an approved Plan of Operations, which may impose closure and reclamation requirements as a condition of approval.

The Burney Hill Mine area in sections 22 and 23, T10S, R15E is easily accessed by route 736 from both the north and west. The other roads and unauthorized routes in the Burney Hill Mine area are not necessary for Forest functions and are recommended for closure as described below.

640 is an extension onto Forest lands of a route from Az State Hwy 77 across State Trust and private land providing access to Biosphere II and the Davy McGee quarry on private land and proceeding across additional private and State Trust lands before crossing onto Coronado Forest land a length of 1.07 miles across sections 22 and 23, T10S, R15E to connect with route 736. Sections 22 and 23 encompass a 600 to 700 acre area of old mines and prospects collectively referred to as the Burney Mine area. A quarter mile spur road, route 4491 providing access to several workings in the area is being recommended for decommissioning (see below). The Forest Service does not have a formal right-of-way across the Davy McGee land or the State Trust land. While access across the Davy McGee land is generally open, there is a locked gate to be passed through but the operator reserves the right to close the road at any time. Adequate access to the area is available via route 736 which exits Forest land to both to the north and to the west of the Burney Mine area. However, the north entry to route 736 is not currently a legal access.

Route 640 is recommended as a Maintenance Level 1 road because it does not provide legal access to the forest and does not connect to other Forest system roads or facilities that not already accessed by through-going roads. In the event that access within the Burney Mine area is needed for mineral exploration or development, temporary access can be provided for in a plan of operations which would be required for anything other than casual or incidental activities.

4491 is a 0.27 mile spur road in section 22, T10S R15E connecting with route 640 which is recommended for Level 1 (see 640 above). The road does not connect to any Forest facilities or other improvements. Whenever appropriate access to the mine area is needed, provisions can be made for temporary access under the provisions of an approved plan of operations.

736-16-24L-1 is an unauthorized westward spur from route 736 which extends 0.55 miles to the Forest boundary at the west edge of Section 14, T10S, R15E passing onto private land and accessing Az Hwy 77 by passing through State Trust and private land held by Davy McGee where access can be blocked off at the discretion of the mine operator. The road does not connect to any other Forest road or Forest facility. It has been identified as possible access for prospective

mineral operators, but temporary access for that purpose could be provided for under the provisions of an approved plan of operations.

Decommissioning of 736-16-24L-1 is recommended.

Authorized roads in the Campo Bonito area provide access to private land parcels within the Forest boundary. Most or all of the private land in that area consists of patented mining claims which are currently used for other purposes. There is little or no ongoing mining activity in the area. Although there are 18 unpatented mining claims held by 10 individuals in the Campo Bonito area, no Notices of Intent or Plans of Operations have been received.

4466-0.32L-1 in the Campo Bonito area is an unauthorized spur which should be considered for decommissioning unless recreational considerations warrant otherwise.

4401-Extension projects westward for almost two miles of steep switch-backs, leading down into Catalina Camp from Dan Saddle. The saddle marks the western end of route 4401 which is an authorized road connecting from route 38 to Dan Saddle, passing through both Forest land and private land. Documents filed between 1988 and the present by mining claimants at Catalina Camp note their work in extending the access from Dan Saddle down into Catalina Camp through use and other efforts although no such work was approved in a plan of operations. Perhaps because of the unauthorized road, the outline of the Oracle Inventoried Roadless Area was modified to exclude Catalina Camp.

The extension is shown on the transportation map and is reportedly navigable by quad. However, it is very rugged and difficult to drive on even in a small 4X4 vehicle. The extension is not shown as a road on the 1981 USGS Mt. Lemmon topographic quadrangle or the Catalina hiking map of 1988 which shows a hiking trail from Dan Saddle down to Catalina Camp.

Route 4401 west of Dan Saddle is recommended for decommissioning (1) for safety reasons, (2) it never was part of the original RATM layer and (3) it leads directly to the inventoried roadless area.

Salable minerals (common variety such as aggregate and decorative rock) will not be impacted by the proposed changes because there are no active salable mineral operations in the Santa Catalina Ranger District. The occasional requests for small amounts of rip rap and decorative stone for personal use are usually referred to other sources. The District has adopted an informal policy of deferring requests for salable materials, referring inquires to other sources. This approach is based on the potential adverse impacts on other Forest resources in an area of intense public recreational use coupled with the limited availability of material resources.

Leasable minerals (oil and gas, coal, geothermal, strategic minerals) will not be impacted because there are no known leasable mineral resources in the Santa Catalina EMA.

Cultural Resources

Guidelines for conducting a Transportation Analysis suggest addressing three questions pertinent to heritage resources:

- How does the road system affect access to paleontological, archaeological, and historical sites?
- How does the road system affect cultural and traditional uses (such as plant gathering, and access to traditional and cultural sites) and American Indian treaty rights?
- How are roads that are historic sites affected by road management?

In addition to these questions, it is also pertinent to consider impacts the road system has had, continues to have, and could have in the future on heritage resource sites in the area. In general road systems affect paleontological, archaeological and historical sites both positively and negatively. The primary positive affect of roads is the access provided for authorized visitation and site maintenance of a small number of sites. On the other hand a large number of archaeological sites have been adversely affected through physical damage to sites and the greater access by unauthorized artifact collectors.

A review of Coronado National Forest records shows that several hundred archaeological and historical sites have been recorded on Forest lands in the Santa Catalina EMA. Archaeological sites range chronologically from Archaic-period artifact scatters to 20th century mining, ranching, and Forest Service administrative sites. Prehistoric sites include habitations, artifact scatters, and rock art sites. The great majority of prehistoric sites occur in the lower elevations of the Santa Catalina and the Rincon Mountains. There is one National Register of Historic Places district within the Santa Catalina EMA. Two existing roads are required for access to historic properties. These are the Sabino Canyon Road (100), which provides vehicular access to the Lowell Administrative Site (629) and the Catalina Highway (833), which leads to the Lemmon Rock Lookout.

Direct impacts to heritage resource sites. It is clear that past road construction has to some extent damaged or disturbed a number of archaeological sites. A review of recorded sites in the EMA indicates that approximately 33 archaeological sites are crossed by roads. Impacts of roads on sites are variable, depending on the extent of disturbance from road construction and the nature and depth of the archaeological deposits. In the majority of cases, damage to archaeological sites occurred in decades before the National Historic Preservation Act mandated cultural resource surveys to identify archaeological sites subject to damage by undertakings on Federal lands. In most cases, the damage was largely limited to the time of construction many years ago and is no longer an ongoing concern. This is typically the case with more major roads where the road bed has been built up and surfaced either with gravel or pavement. There are, however, a number of cases on smaller roads where cultural materials are evident in the road bed and adjacent ditches and are subject to on-going disturbance. This is particularly the case with

small user-created (unauthorized) roads where road construction activities were unauthorized and therefore unformed by NEPA/cultural resource compliance and where original road disturbance was minimal or nonexistent, and ground disturbance was limited to the surface/near-surface deposits. Several areas in the Santa Catalina EMA where archaeological sites are subject to on-going disturbances include:

Road 4496 near CB Tank (3 archaeological sites)

Road 4432 near Park Tank (2 archaeological sites)

Road 639 Campo Bonito (2 archaeological sites)

Road 37 Italian Trap (4 archaeological sites)

Road 4435 Race Track Tank (2 archaeological sites)

At this time there are no plans to move or close these existing roads. These sites should be monitored annually by a professional archaeologist to document on-going disturbances.

To date, six archaeological sites have been noted to be crossed by six unauthorized roads that are tentatively proposed for closure, or for nonsystem status. These include the following roads as designated in the TAP roads inventory:

Road 4487-0.20L-1 near the Tucson Wash (1 archaeological site)

Road 4405-10.34R-1 – now closed (1 archaeological site)

Road 4431-0.32R-1 near Government Tank (1 archaeological site)

Road 642-2.03L-1 near Sutherland Wash (1 archaeological site)

Road 37 Ruin-bypass-road near Italian Trap (1 archaeological site)

Road 38-22.06R-2 near American Flag Ranch (1 archaeological site)

In each case, closure of the road would reduce impacts to a cultural resource site. Four sites are located at or near where a closure is recommended. Accordingly, consultation with a Coronado NF archaeologist is strongly recommended to ensure that damage to cultural resources is minimized during closure activities.

Several areas have been recommended for dispersed camping. These areas include portions of route 35 (Happy Valley Road), route 4431, and route 4432. Eight archaeological sites have been recorded along the southern portion of route 35. Archaeological survey, clearance, and any mitigation will need to be completed along routes 35, 4431, and 4432 prior to any dispersed campground designations.

Two new road reroutes have also been proposed. A section of route 4431 near Government Tank is proposed to be rerouted north of the existing road to prevent continuing resource damage. Route 4493 is proposed to be extended to reroute 736 around a riparian area. Archaeological survey and clearances will need to be completed before any ground-disturbing activities take place.

The American Flag Ranch, a historic structure, located next to the Mt. Lemmon Control Road (route 38) is being directly impacted by increased road traffic. Cracks in the adobe walls and structural damage in the porch can be attributed to vibrations from heavy gravel trucks driving past the structure at least 30 times/day. The Forest Service is proposing to move this segment of the road ½ mile to the east to prevent further impacts to this structure. The existing segment will be closed just beyond the American Flag Ranch House and will become a termination point and trailhead for the Arizona Trail.

Access to Paleontological, Archaeological, and Historic Sites. At a general level, the road system provides access to all of the sites in the area. Access provided by the road system in the area can affect paleontological, archaeological and historical sites both positively and negatively. The primary positive affect of road system is the access provided for authorized visitation and site maintenance of a small number of sites. Without road access, many sites would be rarely visited by either the public or Forest Service personnel. It would be much more difficult to monitor sites and ascertain whether any damage is occurring. On the other hand, road access exposes sites to damage by unauthorized artifact collectors and vandalism.

Within the Santa Catalina EMA, at least one paleontological site (or clusters of sites) relies on one Forest Road for access. The group of paleontological sites is in Peppersauce Canyon where access is provided by route 29, which will remain open.

Two existing roads are available for access to historic properties. These are the Sabino Canyon Road (100), which provides vehicular access to the Lowell Administrative Site and the Santa Catalina Highway (833), which leads to the Lemmon Rock Lookout.

Access to Traditional-Use Areas and Treaty Rights issues. As with heritage-resource sites, in a general sense, the road system provides access to all areas of traditional and cultural use. No traditional-use areas have been specifically identified in the Santa Catalina EMA. In recent years, O'odham basketmakers, particularly from the Ak-Chin Indian Community, have collected plants for making baskets south of Oracle, Arizona. Existing route 4487 provides access to these collecting areas. None of the Native American tribes with traditional ties to the Santa Catalina and Rincon Mountains has any treaty rights pertaining to Forest-administered lands.

Roads that are historic sites. Three roads have been recorded as cultural resource sites. The Sabino Canyon Road and associated features (100), the Catalina Highway 833, and the Mt. Lemmon Control Road 38 have all been determined eligible to the National Register of Historic Places. Other roads in the EMA are eligible for recognition as historic sites but have not been recorded and evaluated as sites. These include the Redington Pass Road (371) and the Campo Bonito Road (639). The Redington Pass Road provided access from the San Pedro River to Tucson in the late 19th Century. The Campo Bonito Road originally constructed in the early 20th

century was constructed to access the Campo Bonito Mining District. Routine maintenance and current use do not affect the historic qualities of the Redington Pass and Campo Bonito roads.

Fire Protection & Safety

- *How does the road system address the safety of road users?*
- *How does the road system affect investigative or enforcement activities?*
- *How does the road system affect fuels management?*
- *How does the road system affect the capacity of the Forest Service and cooperators to suppress wildfires?*
- *How does the road system affect risk to firefighters and to public safety?*

Road access is a major issue for all emergency resources. Most roads (except maintenance level 3) on the Santa Catalina Ranger District are not in any condition to provide firefighter access. Fire trucks are large. Firefighters are challenged by narrow roads and limited access. Both district engines lack the clearance for district maintenance level 2 roads. From a Fire perspective, maintenance level 1 & 2 roads on this district are ATV access only.

On a “going” fire, the District will not send any ground suppression resources down a road or into an area where they do not have sufficient turn around and egress. If necessary, a resource order can be placed for a dozer to obtain fire access on a case by case basis. At the least, existing roads may provide adequate control lines for burnout operations.

There is a dilemma with road access. District roads that are open for initial attack will also allow public access, increasing the chance for man-caused fires. Redington Pass Rd (371) is the best example. In the last 2 years, the majority of man-caused fires on the district have been started along that corridor. For this reason, it is not suggested to increase public access to the district via roads. It may limit ground transportation of firefighters, but with the overall steep topography on this district, the FS relies on using flight access (helispots and helicopters) for quick effective Initial Attack.

Residential encroachment in the Oro Valley and Oracle area is increasing. There is a growing need for accessing this part of the district from a fuels management aspect. District Fire Protection and Safety agrees with the recommendations made by the other specialists.

Step 5- Describing Opportunities and Setting Priorities

The purpose of this step is to:

- Describe the current road system with what is desirable or acceptable
- Describe modifications to the road system that would achieve desirable or acceptable conditions

The Products of this step are:

- A map of the current and proposed road system

The IDT analyzed the extent and current condition of roads on national forest system lands within the project area. This step compares the current condition to a desired future condition to help identify the opportunities and need for change. This report provides the information to develop the Forest's strategic intent for road management; that is, to balance the need for decommissioning or retaining unauthorized and authorized roads with the need to minimize risk to public safety and damage to natural resources. Before implementing any proposed actions the Forest will complete the NEPA process.

The recommendations and the issues associated with the identified roads and motorized trails on this EMA are described in the table below.

Table 5.1 – Recommended Transportation System

| Road Number | No Change | PROPOSED RECOMMENDATIONS | | | | | | | | DESCRIPTION / RECOMMENDATION |
|-------------|-----------|------------------------------|-----------------------------|-----------------------------|----------------------|---------------------------|----------------------------------|--------------------|----------------------|---|
| | | OA - Open Authorized (Miles) | OAR- Restricted Use (Miles) | Maintenance Level 1 (Miles) | Decommission (Miles) | Proposed New Construction | Is located Within 100 Ft of road | Existing OHV Trail | Convert to OHV Trail | |
| 1 | X | | | | | | | | | Willow Canyon |
| 1 A | X | | | | | | | | | South Willow |
| 1 B | X | | | | | | | | | North Willow Loop |
| 1 C | X | | | | | | | | | North Willow Ridge |
| 2 | X | | | | | | | | | Bear Wallow |
| 3 | X | | | | | | | | | Incinerator Ridge |
| 4 | X | | | | | | | | | Inspiration Rock |
| 5 | X | | | | | | | | | Molino Basin CG |
| 5 A | X | | | | | | | | | Mercer Springs - previously obliterated |
| 6 | X | | | | | | | | | Loma Linda - Private Road |
| 7 | X | | | | | | | | | Organization Ridge |
| 8 | X | | | | | | | | | Lower Soldier |
| 8 A | X | | | | | | | | | Unknown |

| Road Number | NC | OA | OAR | ML1 | D | New | 100' | OHV | C | Description / Recommendation |
|-------------|----|----|------|-----|---|-----|------|-----|---|--|
| 8 B | X | | | | | | | | | Unknown |
| 8 C | X | | | | | | | | | Unknown |
| 9 | X | | | | | | | | | Rose Canyon CG |
| 9 A | X | | | | | | | | | Green Mountain Loop - Rose Canyon CG |
| 9 B | X | | | | | | | | | Sycamore Camp Host - Rose Canyon CG |
| 9 C | X | | | | | | | | | Willow Canyon RV - Rose Canyon CG |
| 9 D | X | | | | | | | | | Willows Edge - Rose Canyon CG |
| 9 E | X | | | | | | | | | Red Tail - Rose Canyon CG |
| 9 F | X | | | | | | | | | Rose Peak - Rose Canyon CG |
| 9 G | X | | | | | | | | | Rose Accessible - Rose Canyon CG |
| 9 H | X | | | | | | | | | Rose Admin Access - Rose Canyon CG |
| 10 | X | | | | | | | | | Marshall Gulch |
| 11 | X | | | | | | | | | Ski Valley |
| 11 A | X | | | | | | | | | Radio Tower - currently under Special Use Permit |
| 12 | X | | | | | | | | | Whitetail CG |
| 13 | | | 0.58 | | | | | | | Sollers Point - 0.08 miles to remain OA; Recommend change the remaining length to OAR; ML2 |
| 14 | X | | | | | | | | | Spencer Canyon |
| 15 | X | | | | | | | | | FAA |
| 15 A | X | | | | | | | | | Un-named |
| 16 | X | | | | | | | | | Wedding - previously obliterated |
| 17 | X | | | | | | | | | Old Bigelow - currently ML 1 |
| 18 | | | 1.76 | | | | | | | Radio Ridge- recommend special use permit to Mt. Lemmon Water District and TRICO Electric; OAR ML2 [see Trail 624] |

| Road Number | NC | OA | OAR | ML1 | D | New | 100' | OHV | C | Description / Recommendation |
|---------------|----|----|-----|-----|------|-----|------|-----|---|---|
| 19 | X | | | | | | | | | Turkey Run |
| 21 | X | | | | | | | | | Carter Canyon |
| 29 | X | | | | | | | | | Pepper Sauce |
| 29-1.00L-1 | | | | | 0.41 | | | | | Unauthorized Road - recommend decommission |
| 29 A | X | | | | | | | | | Un-named - previously decommissioned road |
| 29 B | X | | | | | | | | | Un-named |
| 29 C | X | | | | | | | | | Connector |
| 34 | X | | | | | | | | | Bigelow |
| 35 | X | | | | | | | | | Happy Valley |
| 35-Disp CG 1 | | | | | | | N | | | Dispersed Campground - recommend to designate only for camping. 168 ft. perpendicular from road. |
| 35-Disp CG 2 | | | | | | | N | | | Dispersed Campground - recommend to designate only for camping. Rehab areas greater than 300ft. perpendicular from road. |
| 35-Disp CG 3 | X | | | | | | Y | | | Dispersed Campground - falls within 100 ft. perpendicular from road. Considered part of road. |
| 35-Disp CG 4 | | | | | | | N | | | Dispersed Campground - recommend to designate only for camping. 225 ft. perpendicular from road. |
| 35-Disp CG 5 | | | | | | | N | | | Dispersed Campground - recommend to designate only for camping. 125 ft. perpendicular from road. |
| 35-Disp CG 6 | | | | | | | N | | | Dispersed Campground - recommend to designate only for camping. 136 ft. perpendicular from road. |
| 35-Disp CG 7 | | | | | | | N | | | Dispersed Campground - recommend to designate only for camping. 140 ft. perpendicular from road. |
| 35-Disp CG 8 | X | | | | | | Y | | | Dispersed Campground - falls within 100 ft. perpendicular from road. Considered part of road. |
| 35-Disp CG 9 | | | | | | | N | | | Dispersed Campground - recommend to designate only for camping. 208 ft. perpendicular from road. |
| 35-Disp CG 10 | X | | | | | | Y | | | Dispersed Campground - falls within 100 ft. perpendicular from road. Considered part of road. |

| Road Number | NC | OA | OAR | ML1 | D | New | 100' | OHV | C | Description / Recommendation |
|----------------------|----|----|------|-----|------|-----|------|-----|---|---|
| 35-Disp CG 11 | X | | | | | | Y | | | Dispersed Campground - falls within 100 ft. perpendicular from road. Considered part of road. |
| 35-Disp CG 12 | | | | | | | N | | | Dispersed Campground - recommend to designate only for camping. 293 ft. perpendicular from road. |
| 35-Disp CG 13 | | | | | | | N | | | Dispersed Campground - recommend to designate only for camping. 189 ft. perpendicular from road. |
| 35-Disp CG 14 | | | | | | | N | | | Dispersed Campground - recommend to designate only for camping. 150 ft. perpendicular from road. |
| 35-Disp CG 15 | | | | | | | N | | | Dispersed Campground - recommend to designate only for camping. 350 ft. perpendicular from road. Comes off Disp C/G 14 |
| 35-Disp CG 16 | X | | | | | | Y | | | Dispersed Campground - falls within 100 ft. perpendicular from road. Considered part of road. |
| 35-Disp CG 17 | | | | | | | N | | | Dispersed Campground - recommend to designate only for camping. 155 ft. perpendicular from road. |
| 35-Disp CG 18 | | | | | | | N | | | Dispersed Campground - recommend to designate only for camping. 180 ft. perpendicular from road. |
| 35-Disp CG 19 | X | | | | | | Y | | | Dispersed Campground - falls within 100 ft. perpendicular from road. Considered part of road. |
| 35-spur | | | | | 0.32 | | | | | Unauthorized Road - recommend decommission |
| 36 | X | | | | | | | | | Bellota Ranch |
| 36-2.50L-1 | | | 0.38 | | | | | | | Unauthorized Road - Recommend as OAR; ML2 |
| 36 A | | | 0.44 | | | | | | | West Spring - Recommend change last 0.44 miles to OAR; ML 2 |
| 36 B | | | 0.72 | | | | | | | Cerro Tank - recommend as OAR; ML 2 |
| 37 | X | | | | | | | | | Italian Trap |
| 37-2.47L-1 | | | | | 0.14 | | | | | Unauthorized Road - recommend decommission |
| 37-2.54R-1 | | | | | 0.15 | | | | | Unauthorized Road - recommend decommission |
| 37-Italian Trap Tank | | | 0.20 | | | | | | | Unauthorized Road; recommend as OAR; ML2. Access to Italian trap tank. |

| Road Number | NC | OA | OAR | ML1 | D | New | 100' | OHV | C | Description / Recommendation |
|---------------------|----|------|------|-----|------|-----|------|-----|---|---|
| 37-Ruin-bypass-road | | | | | 0.19 | | | | | Unauthorized Road - recommend decommission |
| 38 | X | | | | | | | | | Control Road |
| 38-9.46R-1 | | 0.17 | | | | | | | | Unauthorized Road - Recommend as OA; ML2 |
| 38-9.50L-1 | | | | | 0.07 | | | | | Unauthorized Road - recommend decommission |
| 38-9.91L-1 | | | | | 0.22 | | | | | Unauthorized Road - recommend decommission |
| 38-16.46R-1 | | 0.53 | | | | | | | | Unauthorized Road - Recommend as OA; ML2 |
| 38-16.61R-1 | | 0.07 | | | | | | | | Unauthorized Rd - hunter access w/ AZGFD; recommend as OA; ML2 |
| 38-16.61R-2 | | 0.19 | | | | | | | | Unauthorized Rd - hunter access w/ AZGFD; recommend as OA; ML2 |
| 38-17.78R-1 | | | | | 0.07 | | | | | Unauthorized Road - recommend decommission |
| 38-18.10R-1 | | 0.19 | | | | | | | | Unauthorized Road - Recommend as OA; ML2 |
| 38-21.50R-1 | | | | | 0.13 | | | | | Unauthorized Road - recommend decommission |
| 38-21.50R-2 | | | | | 0.22 | | | | | Unauthorized Road - recommend decommission |
| 38-22.06R-1 | | | | | 0.18 | | | | | Unauthorized Road - recommend decommission |
| 38-22.06R-2 | | | 0.26 | | | | | | | Unauthorized Road- recommend as as OAR; ML2 |
| 38-22.10R-1 | | | | | 0.17 | | | | | Unauthorized Road - recommend decommission |
| 38-22.34L-1 | | | 0.53 | | | | | | | Unauthorized Road - Recommend as OAR; ML2 |
| 38-22.86L-1 | | | 0.24 | | | | | | | Unauthorized Road - Recommend as OAR; ML2 |
| 38-22.86L-2 | | | 0.10 | | | | | | | Unauthorized Road - Recommend as OAR; ML2 |
| 38-23.00R-1 | | | | | 0.28 | | | | | Unauthorized Road - recommend decommission |
| 38-23.00R-2 | | | | | 0.07 | | | | | Unauthorized Road - recommend decommission |
| 38-23.65L-1 | | | 0.20 | | | | | | | Unauthorized Road - Recommend as OAR; ML2 |
| 38-24.81L-1 | | | | | 0.21 | | | | | Unauthorized Road - recommend decommission |
| 38-24.81L-2 | | | | | 0.23 | | | | | Unauthorized Road - recommend decommission |

| Road Number | NC | OA | OAR | ML1 | D | New | 100' | OHV | C | Description / Recommendation |
|----------------------------|----|------|------|-----|------|------|------|-----|---|--|
| 38-24.81L-3 | | | | | 0.03 | | | | | Unauthorized Road - recommend decommission |
| 38-24.81L-4 | | | | | 0.05 | | | | | Unauthorized Road - recommend decommission |
| 38-24.81R-1 | | | | | 0.20 | | | | | Unauthorized Road - recommend decommission |
| 38- American Flag Reroute | | | | | | 0.61 | | | | American Flag Reroute - 0.61 miles of proposed new road construction |
| 38-Pvt Rd 1 | | | 0.07 | | | | | | | Unauthorized Road - Recommend as OAR; ML2 |
| 38-Pvt Rd 2 | X | | | | | | | | | 0.25 miles of Private road to Leatherwood Mine - entirely on private land |
| 38-Pvt Rd 3 | | | | | | | | | | 0.49 mile- County Jurisdiction near Geesaman Wash; Not a declared County Rd. Recommend to convey easement to County for FS portion. |
| 100 | X | | | | | | | | | Sabino Canyon- Admin Use Only |
| 100 A | X | | | | | | | | | Lower Bear Canyon - Admin Use Only |
| 100 B | X | | | | | | | | | Sabino Overlook - Admin Use Only |
| 100 C | X | | | | | | | | | Cactus Picnic - Admin Use Only |
| 100 D | X | | | | | | | | | Sabino Dam - Admin Use Only |
| 100 E | X | | | | | | | | | Sabino Lake- Admin Use Only |
| 100 F | X | | | | | | | | | Sabino Group Picnic - Admin Use Only |
| 371 | X | | | | | | | | | Redington Road |
| 371-13.50L-1 | | | | | 0.12 | | | | | Unauthorized Road - recommend decommission |
| 371-15.20L-1 [4427] | | | | | | | | | | Previously called Unauthorized Road to White Tank [see 4427] |
| 371-16.10R-1 | | 0.08 | | | | | | | | Unauthorized Road - Recommend as OA; ML2 |
| 510 | X | | | | | | | | | Catalina State Park - main road |
| 510 A | X | | | | | | | | | Ranger Road - Catalina State Park |
| 510 B | X | | | | | | | | | Maintenance Rd - Catalina State Park |

| Road Number | NC | OA | OAR | ML1 | D | New | 100' | OHV | C | Description / Recommendation |
|-------------|----|------|-----|-----|------|-----|------|-----|---|--|
| 510 C | X | | | | | | | | | Heli Spot - Catalina State Park |
| 510 D | X | | | | | | | | | Un-named - Catalina State Park |
| 510 E | X | | | | | | | | | Un-named - Catalina State Park |
| 510 F | X | | | | | | | | | Un-named - Catalina State Park |
| 510 G | X | | | | | | | | | Un-named - Catalina State Park |
| 510 H | X | | | | | | | | | Un-named - Catalina State Park |
| 510 I | X | | | | | | | | | Un-named - Catalina State Park |
| 510 J | X | | | | | | | | | Un-named - Catalina State Park |
| 511 | X | | | | | | | | | Un-named - Catalina State Park |
| 511 A | X | | | | | | | | | Un-named - Catalina State Park |
| 511 B | X | | | | | | | | | Un-named - Catalina State Park |
| 511 C | X | | | | | | | | | Un-named - Catalina State Park |
| 607 | X | | | | | | | | | Sykes Knob |
| 614 | X | | | | | | | | | Bear Wallow Summer Homes |
| 615 | X | | | | | | | | | General Hitchcock |
| 625 | | 0.20 | | | 0.23 | | | | | Soldiers Camp Annex - Decommission last 0.23 miles |
| 625 A | | 0.31 | | | | | | | | Soldier Camp - recommend change to OA; ML 2 |
| 629 | X | | | | | | | | | Lowell - Admin Use Only |
| 635 | X | | | | | | | | | Beuhman Canyon - Portion of rd previously numbered 654. Was conflicting w/ duplicate Rd in D4; see 654 |
| 635 A | | | | | | | | | | Un-named - changed to NFSR 635 for continuation of 635 |
| 639 | X | | | | | | | | | Campo Bonito |
| 639-1.12L-1 | | | | | 0.08 | | | | | Unauthorized Road - recommend decommission |

| Road Number | NC | OA | OAR | ML1 | D | New | 100' | OHV | C | Description / Recommendation |
|-----------------|----|------|-----|-----|------|-----|------|-----|---|--|
| 639-1.58L-1 | | | | | 0.08 | | | | | Unauthorized Road - recommend decommission |
| 639-2.13L-1 | | | | | 0.14 | | | | | Unauthorized Road - recommend decommission |
| 640 | X | | | | | | | | | Little Hill Mine |
| 640-spur [4491] | X | | | | | | | | | Previously labeled Unauthorized Road - [see 4491] |
| 640 A | X | | | | | | | | | Un-named |
| 642 | X | | | | | | | | | Baby Jesus Ridge - part on FS in roadless area |
| 642-1.18L-1 | | | | | 0.11 | | | | | Unauthorized Road in IRA - recommend decommission |
| 642-2.03L-1 | | | | | 0.49 | | | | | Unauthorized Road in IRA - recommend decommission |
| 642-2.06L-1 | | | | | 0.31 | | | | | Unauthorized Road in IRA - recommend decommission |
| 643 | X | | | | | | | | | Cargodera Canyon - partially in roadless area. |
| 654 [635] | | | | | | | | | | Renumbered - 4.18 miles entirely off Forest: Bullock Canyon- Duplicate road # in D4 [see 635] |
| 736 | X | | | | | | | | | Charouleau Gap - 3.32 miles off Forest |
| 736-3.25L-1 | | | | | 0.14 | | | | | Unauthorized Road - recommend decommission |
| 736-4.40R-1 | | | | | 0.37 | | | | | Unauthorized Road - recommend decommission |
| 736-11.03R-1 | | 0.52 | | | | | | | | Unauthorized Road - Recommend as OA; ML2. |
| 736-14.35L-1 | | | | | 0.06 | | | | | Unauthorized Road - recommend decommission |
| 736-14.35R-1 | | | | | 0.06 | | | | | Unauthorized Road - recommend decommission |
| 736-16.24L-1 | | | | | 0.55 | | | | | Unauthorized Road - recommend decommission |
| 736-18.81L-1 | | | | | | | | | | 0.66 mile Water Tank Road - entirely on Private |
| 736-18.94L-1 | | | | | | | | | | 0.30 mile Private Road - leads to water tank; entirely on Private |
| 736-Disp CG 1 | | | | | 0.06 | | | | | Unauthorized Road - recommend decommission |
| 736-Disp CG 2 | | | | | 0.03 | | | | | Unauthorized Road - recommend decommission |

| Road Number | NC | OA | OAR | ML1 | D | New | 100' | OHV | C | Description / Recommendation |
|-----------------------|----|------|------|-----|------|-----|------|-----|---|---|
| 737 | X | | | | | | | | | Burn Tank |
| 750 | X | | | | | | | | | Showers Point |
| 804 | X | | | | | | | | | Sabino Warehouse - restricted access |
| 804 A | X | | | | | | | | | Sabino Tram Maintenance Rd. |
| 805 | X | | | | | | | | | Sabino Overflow- old Shooting Range site |
| 807 | | 0.26 | | | | | | | | Hirobayashi Campground - recommendation is to shorten original 807 (1.60 mi to 0.26 mi) and to include horse corral loop (0.15 mi) as part of the main route. Portion going north would change to 807 A and stay ML 1. |
| 807-0.26L-1 | | 0.15 | | | | | | | | Horse Corral Loop at end of road - not part of original 807 road - recommend as OA continuation of 807. |
| 807 A | X | | | | | | | | | Old Prison Camp Rd. - keep as ML 1 road |
| 807 A-0.82L1 | | | | | 0.34 | | | | | Unauthorized Road - recommend decommission |
| 807 A-0.93L1 | | | | | 0.16 | | | | | Unauthorized Road - recommend decommission |
| 833 | X | | | | | | | | | Mt. Lemmon Highway |
| 833-Borrow Pit Rd. | | | 0.12 | | | | | | | Off the Catalina highway - recommend add as OAR; Admin Use Only |
| 833-Bug Spring Prkng | X | | | | | | | | | Off Catalina highway - part of Federal Highway ROW; 0.04 miles |
| 833-Butterfly Rd | | | 0.15 | | | | | | | Off Catalina highway- recommend as OAR; ML2 |
| 833-Butterfly Pvt Rd | | | 0.04 | | | | | | | Off Catalina highway- recommend as OAR; ML2 |
| 833-County Mtnce Yard | | | 0.18 | | | | | | | Old Trash Compactor site near Palisades- recommend as OAR; ML2 |
| 859 | X | | | | | | | | | Bonito Canyon |
| 859-0.23R-1 | | | | | 0.27 | | | | | Unauthorized Road - recommend decommission |
| 859-0.23R-2 | | | | | 0.22 | | | | | Unauthorized Road - recommend decommission |

| Road Number | NC | OA | OAR | ML1 | D | New | 100' | OHV | C | Description / Recommendation |
|-----------------|----|------|------|-----|------|-----|------|-----|---|--|
| 4307 | X | | | | | | | | | Miller Trailhead |
| 4307-0.05R-1 | | | | | 0.32 | | | | | Unauthorized Road - recommend decommission |
| 4307-0.14R-1 | | 0.06 | | | | | | | | Dispersed C/G: recommend add as OA; ML2 |
| 4399 | X | | | | | | | | | Tucson Electronics |
| 4400 | | | 1.50 | | | | | | | Lemmon Rock - Recommend change to OAR; ML2 |
| 4401 | X | | | | | | | | | Dan Saddle |
| 4402 | X | | | | | | | | | Papago Well |
| 4403 | X | | | | | | | | | Lizard Rock |
| 4404 | X | | | | | | | | | Mule Deer Tank |
| 4405 | X | | | | | | | | | Mesa de la Osa |
| 4405-4.50R-1 | | | 2.23 | | | | | | | Unauthorized Road - Recommend as OAR;ML2 |
| 4405-4.50R-2 | | | 0.25 | | | | | | | Unauthorized Road - Recommend as OAR;ML2 |
| 4405-4.50R-3 | | | 0.65 | | | | | | | Unauthorized Road - Recommend as OAR;ML2 |
| 4405-4.50R-4 | | | 0.60 | | | | | | | Unauthorized Road - Recommend as OAR;ML2 |
| 4405-10.34R1 | | | | | 1.15 | | | | | Unauthorized Road - recommend decommission |
| 4405 A | X | | | | | | | | | Chiva Falls |
| 4405 B | X | | | | | | | | | Un-named |
| 4405 C | X | | | | | | | | | Un-named |
| 4405 C -0.06L-1 | | | | | 0.27 | | | | | Unauthorized Road - recommend decommission |
| 4406 | X | | | | | | | | | Old Happy Valley |
| 4407 | X | | | | | | | | | Brush Corral - 0.50 mi on FS; 9.66 mi total |
| 4407 A | X | | | | | | | | | 0.50 miles long - entirely off FS |
| 4408 | X | | | | | | | | | Turkey Creek Storage |

| Road Number | NC | OA | OAR | ML1 | D | New | 100' | OHV | C | Description / Recommendation |
|---------------------|----|------|------|-----|------|-----|------|-----|---|---|
| 4409 | X | | | | | | | | | Bear Creek - closed or has grown over. Currently ML1 |
| 4410 | X | | | | | | | | | Page Creek Riparian |
| 4411 | X | | | | | | | | | Eagle Peak - 3.654 miles off forest |
| 4417 | X | | | | | | | | | Chiva Loop |
| 4417-0.50L-1 | | | | | 0.09 | | | | | Unauthorized Road - recommend decommission |
| 4417-4.06R-1 | | | | | 0.20 | | | | | Unauthorized Road - recommend decommission |
| 4417-4.75R-1 [4424] | | | | | | | | | | Now the new 4424; Dual use with OHV [see 4424] |
| 4422 | X | | | | | | | | | Three Feathers Tank - previously decommissioned |
| 4422 A | X | | | | | | | | | Un-named - previously decommissioned road |
| 4423 | X | | | | | | | | | Jug Tank - currently ML 1 |
| 4424 - old | X | | | | | | | | | Park Tank - Part ML 1 and part Trail |
| 4424 | X | | | | | | | | | FS 4424 is a Dual use Road & OHV Trail |
| 4425 | X | | | | | | | | | Metate Tank |
| 4425-0.78L-1 | | | | | 0.15 | | | | | Unauthorized Road - recommend decommission |
| 4425-1.17R-1 | | | 0.53 | | | | | | | Unauthorized Road - leads toward Buckhorn Tank; recommend as OAR; ML2 |
| 4426 | X | | | | | | | | | High Road |
| 4426-3.50L-1 | | 0.16 | | | | | | | | Unauthorized Road - recommend as OA; ML2 |
| 4427 | | | 0.16 | | | | | | | White Tank - recommend change to OAR; ML2 |
| 4428 | X | | | | | | | | | Un-named - currently ML 1 |
| 4429 | X | | | | | | | | | Trail Tank |
| 4429-1.75L-1 | | 0.40 | | | | | | | | Unauthorized Road - Recommend as OA; ML2 |
| 4430 | | | 1.12 | | | | | | | Bull Spring - recommend change 1.12 miles to OAR; ML2 |
| 4431 | X | | | | | | | | | Alamo Spring |

| Road Number | NC | OA | OAR | ML1 | D | New | 100' | OHV | C | Description / Recommendation |
|----------------|----|------|-----|-----|------|------|------|-----|---|---|
| 4431-0.32R-1 | | 0.77 | | | | | | | | Unauthorized Road - Recommend as OA; ML2 |
| 4431-0.97R-1 | | | | | 0.23 | | | | | Unauthorized Road - recommend decommission |
| 4431-Disp CG | | | | | | | Y | | | Dispersed Campground - falls within 100 ft. perpendicular from road. Considered part of road. |
| 4431 A | X | | | | | | | | | Un-named |
| 4431-reroute | | | | | | 0.95 | | | | Government Tank reroute |
| 4432 | X | | | | | | | | | Deer Park Tank |
| 4432-Disp CG 1 | | | | | | | N | | | Dispersed Campground - recommend to designate only for camping. 275 ft. perpendicular from road. |
| 4432-Disp CG 2 | | | | | | | N | | | Dispersed Campground - recommend to designate only for camping. 350 ft. perpendicular from road. |
| 4433 | X | | | | | | | | | Alambre - currently ML 1 |
| 4434 | X | | | | | | | | | Dead Cow |
| 4434 (old) | | | | | 0.10 | | | | | Used to be part of 4434 - recommend Decommission |
| 4435 | X | | | | | | | | | Race Track |
| 4435-0.51L-1 | | 0.76 | | | 0.20 | | | | | Unauthorized Road - recommend decommission 0.20 mi and add 0.76 mi as OA ML2. |
| 4435-0.74R-1 | | | | | 0.07 | | | | | Unauthorized Road - recommend decommission |
| 4436 | X | | | | | | | | | Tequila Tank |
| 4437 | X | | | | | | | | | Woods Tank |
| 4438 | X | | | | | | | | | Bullock Canyon - 2.39 Miles of road in IRA. |
| 4441 | X | | | | | | | | | Old Grandad Tank |
| 4442 | X | | | | | | | | | Tuffet Tank |
| 4443 | X | | | | | | | | | Jack Daniels Tank |
| 4445 | X | | | | | | | | | Agua Caliente Hill - currently ML 1 |

| Road Number | NC | OA | OAR | ML1 | D | New | 100' | OHV | C | Description / Recommendation |
|-----------------|----|----|------|-----|------|-----|------|-----|---|---|
| 4446 | X | | | | | | | | | Un-named - currently ML 1 |
| 4447 | X | | | | | | | | | Un-named |
| 4447-0.49R-1 | | | | | 0.07 | | | | | Unauthorized Road - recommend decommission |
| 4447-0.52R-1 | | | | | 0.29 | | | | | Unauthorized Road - recommend decommission |
| 4447-0.52R-2 | | | | | 0.09 | | | | | Unauthorized Road - recommend decommission |
| 4447-0.52R-3 | | | | | 0.21 | | | | | Unauthorized Road - recommend decommission |
| 4448 | | | 0.77 | | | | | | | Donovan Tank - recommend change to OAR; ML2 |
| 4450 | X | | | | | | | | | Road to San Manuel - 12.715 miles off Forest |
| 4451 | | | | | 0.77 | | | | | Lombar - existing Rd.; recommend decommission |
| 4454 | X | | | | | | | | | Oracle Utility road |
| 4454-Private Rd | | | 0.08 | | | | | | | Private Road - Recommend as OAR under permit; ML2 |
| 4458 | X | | | | | | | | | Un-named |
| 4458-0.18R-1 | | | | | 0.61 | | | | | Unauthorized Road - recommend decommission |
| 4458-0.18R-2 | | | | | 0.13 | | | | | Unauthorized Road - recommend decommission |
| 4458-1.13R-1 | | | | | 0.18 | | | | | Unauthorized Road - recommend decommission |
| 4458-1.16R-1 | | | | | 1.09 | | | | | Unauthorized Road - recommend decommission |
| 4458-1.31R-1 | | | | | 0.15 | | | | | Unauthorized Road - recommend decommission |
| 4458-Power Line | | | 0.15 | | | | | | | Recommend as OAR; ML 2; 0.15 miles of easement off FS Rd 4458 |
| 4461 | | | 0.19 | | | | | | | Recommend as OAR; ML 2 under special use permit. |
| 4465 | X | | | | | | | | | Arizona Trail Road - currently ML 1 |
| 4466 | X | | | | | | | | | Highjinks Mine Road |
| 4466-0.32L-1 | | | 0.08 | | | | | | | Unauthorized Road - Recommend as OAR; ML2 |
| 4467 | | | 0.29 | | | | | | | Recommend change to OAR; ML2 |

| Road Number | NC | OA | OAR | ML1 | D | New | 100' | OHV | C | Description / Recommendation |
|----------------------------|----|------|------|-----|------|-----|------|-----|---|--|
| 4467-powerline rd | | | 0.53 | | | | | | | Recommend as OAR; ML 2 under special use permit. |
| 4469 | X | | | | | | | | | Bonito Mine |
| 4470 | X | | | | | | | | | Southern Bell Mine |
| 4470-0.12R-1 | | | 0.29 | | | | | | | Unauthorized Road - Recommend as OAR; ML2 |
| 4470-0.27R-1 | | | | | 0.18 | | | | | Unauthorized Road - recommend decommission |
| 4472 | X | | | | | | | | | Nugget |
| 4472-0.17L-1 | | | | | 0.05 | | | | | Unauthorized Road - recommend decommission |
| 4472-0.17R-1 | | | | | 0.11 | | | | | Unauthorized Road - recommend decommission |
| 4472-6.72L-1 | | | | | 0.09 | | | | | Unauthorized Road - recommend decommission |
| 4474 | X | | | | | | | | | Un-named |
| 4475 | X | | | | | | | | | Un-named |
| 4476 | X | | | | | | | | | Peppersauce Trail - |
| 4477 | | | 1.64 | | | | | | | Peppersauce CG - 1.87 miles long; recommend 1.64 mi east of CG for special use only. OAR; ML2 |
| 4479 | X | | | | | | | | | American Flag Spring |
| 4483 | X | | | | | | | | | Rice Peak |
| 4483-0.02R-1 | | 0.10 | | | | | | | | Unauthorized Road - Recommend as OA; ML2 |
| 4483-0.42L-1 | | | | | 1.19 | | | | | Unauthorized Road - recommend decommission |
| 4483-Oracle Ridge Trail #1 | | | | | | | | | | Recommend convert to non-motorized trail; 0.46 miles |
| 4485 | X | | | | | | | | | Un-named |
| 4487 | X | | | | | | | | | Oracle Hill |
| 4487-0.06L-1 | | | | | 0.14 | | | | | Unauthorized Road - recommend decommission |
| 4487-0.20L-1 | | | | | 0.15 | | | | | Unauthorized Road - recommend decommission |

| Road Number | NC | OA | OAR | ML1 | D | New | 100' | OHV | C | Description / Recommendation |
|--------------------------------|----|----|------|-----|------|------|------|------|---|--|
| 4487-0.31R-1 | | | | | 0.15 | | | | | Unauthorized Road - recommend decommission |
| 4487-0.48R-1 | | | | | 0.28 | | | | | Unauthorized Road - recommend decommission |
| 4487-Foot trail | | | | | | | | | | End of 4487 - convert 0.68 miles to Dual Use: Road/Foot Trail |
| 4487-extension | | | 1.60 | | | | | | | Recommend dual use with existing foot trail for Admin Use Only |
| 4488 | X | | | | | | | | | Un-named - currently ML 1 |
| 4491 | | | | | 0.27 | | | | | Burney Mine - recommend decommission |
| 4493 | X | | | | | | | | | Pig Spring |
| 4493-extension | | | | | | 0.76 | | | | Pig Spring - 0.76 miles of proposed road extension |
| 4494 | X | | | | | | | | | Un-named - previously decommissioned road |
| 4495 | X | | | | | | | | | Fanning Tank |
| 4496 | X | | | | | | | | | Rancheria Spring |
| 7702 | | | 0.29 | | | | | | | Access to non-federal land – recommend as OAR |
| 7703 | | | 0.02 | | | | | | | Triangle YMCA - 95 ft on FS; 0.45 mi off Forest; recommend as OAR; ML 2 |
| 7705 | | | 1.11 | | | | | | | Dodge Tank - recommend changing to OAR; ML2 |
| 7705-0.46R-1 [736-15.72R-1] | | | | | 0.29 | | | | | Unauthorized Road - recommend decommission |
| 7706 | X | | | | | | | | | Located entirely on Private - off NFSR 11 |
| Charles Dam | | | | | 0.52 | | | | | Unauthorized Road - recommend decommission |
| Hidden Spring | | | 0.93 | | | | | | | Unauthorized Rd - Hidden Spring - inside IRA 0.65 miles - Recommend as OAR; ML2 |
| OHV 2 | X | | | | | | | 0.47 | | Existing OHV Trail |
| OHV 3 | X | | | | | | | 1.48 | | Existing OHV Trail |
| OHV 4 | X | | | | | | | 1.53 | | Existing OHV Trail |

| Road Number | NC | OA | OAR | ML1 | D | New | 100' | OHV | C | Description / Recommendation |
|------------------------------|----|---------------|-------|------|-------|------|------|------|------|---|
| OHV route | X | | | | | | | 1.35 | | Existing OHV Trail |
| OHV connector 1 | X | | | | | | | 0.05 | | Existing OHV Trail |
| OHV connector 2 | X | | | | | | | 0.07 | | Existing OHV Trail |
| Trail 624 [18] | | | | | | | | | | Radio Ridge- recommend special use permit to Mt. Lemmon Water District and easement to Radio Ridge; OAR - ML2 [see 18] |
| | | | | | | | | | | |
| TOTALS | | 4.92 | 20.98 | 0.00 | 16.97 | 2.32 | | 4.95 | 0.00 | |
| EMA Area (sq. mi.)= | | 405.74 | | | | | | | | |
| Recommended Proposed Density | | 0.738 | | | | | | | | |

TABLE 5.2 - TRANSPORTATION ANALYSIS COMPARISONS

| Road Classifications | Current Status (Miles) | Recommended Change (Miles) | Net Change in Roads From Existing (Miles) |
|--|-------------------------------|-----------------------------------|--|
| Open Authorized (OA) | 263.33 | 279.61 | +16.28 |
| Closed Authorized (CA) ML1 | 20.80 | 14.93 | -5.87 |
| Open Unauthorized (OU) | 31.87 | 0.00 | -31.87 |
| All Roads Identified for Decommissioning | 0.0 | 16.97 | +16.97 |
| <u>OHV miles</u> | 4.95 | 4.95 | 0.00 |
| <u>Convert to Trail</u> | 0.00 | 0.00 | 0.00 |
| | | | |
| <u>New Miles of Road</u> | 0.00 | 2.32 | +2.32 |
| | | | |

* Some unauthorized roads added to the system may include roads that have been in existence for many years but have never been added to the INFRA data base.

Step 6- Reporting

The Purpose of this step is to:

- Report the key findings of the analysis

The products of this step are:

- A report and a map.

Report

This report is available to the public, if requested and will become part of the EMA file. A map depicting all recommendations is in Appendix F.

Key Findings of the Analysis

The key findings and recommendations of this analysis are as follows:

- Decommissioning **16.97** miles of roads. List of Decommission Recommendations follows:

| | | |
|-------------------|---------------------|----------------|
| 29-1.00L-1 | 642-1.18L-1 | 4447-0.49R-1 |
| 35-spur | 642-2.03L-1 | 4447-0.52R-1 |
| 37-2.47L-1 | 642-2.06L-1 | 4447-0.52R-2 |
| 37-2.54R-1 | 736-3.25L-1 | 4447-0.52R-3 |
| 37-Ruin-bypass-Rd | 736-4.40R-1 | 4451 |
| 38-9.50L-1 | 736-14.35L-1 | 4458-0.18R-1 |
| 38-9.91L-1 | 736-14.35R-1 | 4458-0.18R-2 |
| 38-17.78R-1 | 736-16.24L-1 | 4458-1.13R-1 |
| 38-21.50R-1 | 736-Disp CG 1 | 4458-1.16R-1 |
| 38-21.50R-2 | 736-Disp CG 2 | 4458-1.31R-1 |
| 38-22.06R-1 | 807 A-0.82L1 | 4470-0.27R-1 |
| 38-22.10R-1 | 807 A-0.93L1 | 4472-0.17L-1 |
| 38-23.00R-1 | 859-0.23R-1 | 4472-0.17R-1 |
| 38-23.00R-2 | 859-0.23R-2 | 4472-6.72L-1 |
| 38-24.81L-1 | 4307-0.05R-1 | 4483-0.42L-1 |
| 38-24.81L-2 | 4405-10.34R1 | 4487-0.06L-1 |
| 38-24.81L-3 | 4405 C -0.06L-1 | 4487-0.20L-1 |
| 38-24.81L-4 | 4417-0.50L-1 | 4487-0.31R-1 |
| 38-24.81R-1 | 4417-4.06R-1 | 4487-0.48R-1 |
| 371-13.50L-1 | 4425-0.78L-1 | 4491 |
| 625 [part] | 4431-0.97R-1 | 7705-0.46R-1 |
| 639-1.12L-1 | 4434 (old) | [736-15.72R-1] |
| 639-1.58L-1 | 4435-0.51L-1 [part] | Charles Dam |
| 639-2.13L-1 | 4435-0.74R-1 | |

- Approximately **16.28 miles** of new authorized roads are recommended to be added to the current system. Some of this mileage will be restricted to public access and will be under Special Use Permit.
- Approximately **4.95 miles** of existing OHV Motorized trails were identified.
- A new proposed reroute around the American Flag Ranch will add approximately **0.61 miles** of newly constructed road and a decommission of approximately **0.334 miles** of existing road.
- A re-route around Government Tank is proposed due to the mud bog area on existing route 4431. The proposed re-route around the mud bog is approximately **0.95 miles**.
- There will be a reduction of **5.87 miles** of ML1 roads because some of these roads will be changed to open authorized roads with Special Use restrictions.
- **31.87 miles** of unauthorized roads were identified.

Appendix A: Definitions

Road Definitions (36 CFR 212.1)

Authorized Road - Roads wholly or partially within or adjacent to National Forest system lands that are determined to be needed for long-term motor vehicle access, including state roads, county roads, privately owned roads, national forest system roads and other roads authorized by the Forest Service.

Unauthorized Road - Road on national forest system lands that are not managed as part of the forest transportation system, such as unplanned roads, abandoned travelways and off-road vehicle tracks that have not been designated and managed as a trail and those roads that were once under permit or other authorization and were not decommissioned upon the termination of the authorization.

Temporary Roads - Roads authorized by contract, permit, lease, other written authorization or emergency operation not intended to be a part of the forest transportation system and not necessary for long-term resource management.

Road Decommissioning - Activities that result in the stabilization and restoration of unneeded roads to a more natural state or conversion to other non-road uses.

Road Reconstruction- Activities that result in improvement or realignment of an existing authorized road as defined below:

- Road Improvement- Activity that results in an increase of an existing road's traffic service level, expansion of its capacity or a change in its original design function.
- Road Realignment- Activity that results in a new location of an existing road or portions of an existing road and treatment of the old roadway.

Designated Areas- The Travel Management Rule defines an area as: "*A discrete, specifically delineated space that is smaller, and in most cases much smaller, than a Ranger District*" (36 CFR 212.1). If the responsible official elects to designate an area or areas, the preamble of the rule clarifies: "*areas designated for motor vehicle use are not intended to be large or numerous.*" And, "*...areas would have natural resource characteristics that are suitable for motor vehicle use, or would be so altered by past actions that motor vehicle use might be appropriate*" (Federal Register Vol. 70 No. 216, p. 68274).

Appendix B: Best Management Practices

Federal agency compliance with pollution control is addressed through section 313 of the Clean Water Act, Executive Order 12580 (January 23, 1987), National Non-point Source Policy (December 12, 1984), USDA Non-point Source Water Quality Policy (December 5, 1986) and the Environmental Protection Agency (EPA) in their guidance "Non-point Source Controls and Water Quality Standards" (August 19, 1987). In order to comply with State and local non-point pollution controls the Forest Service will apply Best Management Practices (BMPs) to all possible non-point sources which may result from management activities proposed in any future decision document. These BMPs are described in the Region 3 Soil and Water Conservation Handbook 2509.22.

Best Management Practices are the primary mechanism for achievement of water quality standards (EPA 1987). This appendix describes the Forest Service BMP process in detail and lists the key Soil and Water Conservation Practices that may be employed when in the implementation of a selected action is determined in a Record of Decision.

Best Management Practices include but are not limited to structural and non-structural controls, operations, and maintenance procedures. BMPs can be applied before, during, or after pollution producing activities to reduce or eliminate the introduction of pollutants into receiving waters (40 CFR 130.2, EPA Water Quality Regulation). Usually, BMPs are applied as a system of practices rather than a single practice. BMPs are selected on the basis of site-specific conditions that reflect natural background conditions and political, economic, and technical feasibility.

BMP IMPLEMENTATION PROCESS

In cooperation with the State, the Forest Service's primary strategy for the control of non-point source pollution is based on the implementation of preventative practices (i.e., BMPs). The BMPs for this project have been designed and selected to protect the identified beneficial uses of the watershed.

The Forest Service non-point source management system consists of the following steps:

1. BMP SELECTION AND DESIGN - Water quality goals are identified in the Forest Plan. These goals meet or exceed applicable legal requirements including State water quality regulations, the Clean Water Act, and the National Forest Management Act. Environmental assessments for projects are tiered to Forest Plans using the National Environmental Policy Act (NEPA) process. The appropriate BMPs are selected for each project by an interdisciplinary team. In each new location, there is flexibility to design different BMPs depending on local conditions and values and downstream beneficial uses of water. The BMP selection and design are dictated by the proposed action, water quality objectives, soils, topography, geology, vegetation, and climate. Environmental impacts and water quality protection options are evaluated, and alternative mixes of practices considered. Final collections of practices are selected that not only protect water

quality but meet other resource needs. The final sets of selected practices constitute the BMPs for the project.

2. BMP APPLICATION - The BMPs are translated into contract provisions, special use permit requirements, project plan specifications, and so forth. This ensures that the operator or person responsible for applying the BMP actually is required to do so. Site-specific BMP prescriptions are taken from plan-to-ground by a combination of project layout and resource specialists (e.g., hydrology, soils, etc.). This is when final adjustments to fit BMP prescriptions to the site are made.
3. BMP MONITORING - When an activity begins (e.g., road building, mining, timber harvesting, etc.), engineering representatives, resource specialists, and others ensure that BMPs are implemented according to plan. BMP implementation monitoring is done before, during, and after resource activity implementation. This monitoring answers the question: "Did we do what we said we would do?" Once BMPs have been implemented, further monitoring is done to evaluate if the BMPs are effective in meeting management objectives and protecting beneficial uses. If monitoring indicates that water quality standards are not being met or that beneficial uses are not being protected, corrective action will consider the following:
 - o Is the BMP technically sound? Is it really best or is there a better practice which is technically sound and feasible to implement?
 - o Was the BMP applied entirely as designed? Was it only partially implemented? Were personnel, equipment, funds, or training lacking which resulted in inadequate or incomplete implementation?
 - o Do the parameters and criteria that constitute water quality standards adequately reflect human induced changes to water quality and beneficial uses?
4. FEEDBACK - Feedback on the results of BMP evaluation is both short- and long-term in nature. Where corrective action is needed, immediate response will be undertaken. This action may include modification of the BMP, modification of the activity, ceasing the activity, or possibly modification of the State water quality standard. Cumulative effects over the long-term may also lead to the need for possible corrective actions.

All roads will be maintained using Best Management Practices to reduce watershed impacts.

1. Use Best Management Practices with specific practices identified and implemented for specific sites.
2. Control sediment, particularly resulting from soil movement caused by roads.

Under both Alternative B and C, improved road miles through reconstruction and maintenance would be accomplished utilizing Best Management Practices to bring these miles to minimum Forest standards. Best management practices are a practice or a combination of practices that is determined by a State (or designated area-wide planning agency) after problem assessment, examination of alternative practices and appropriate public participation to be the most effective, practicable (including technological, economic, and institutional considerations) means of preventing or reducing the amount of pollution generated by non-point sources to a level

compatible with Federal and State water quality goals and standards. Non-point source pollutants are generally carried over, or through, the soil and ground cover via stream flow processes.

Soil and Water Conservation Practices in the form of Best Management Practices (BMPs) will be implemented and monitored as directed in the Forest Plan. Through the use of BMPs the adverse effect of planned activities will be mitigated.

The following BMPs are applicable to all action alternatives:

Erosion Control Plan. Minimize erosion and sedimentation through effective planning prior to initiation of construction activities and through effective contract administration during construction.

Timing of Construction Activities. Schedule operations during periods when the probabilities for rain and runoff are low. Equipment shall not be operated when ground conditions are such that unacceptable soil compaction or displacement results. Erosion control work must be kept current when construction occurs outside of the normal operating season.

Road Slope Stabilization. Prevent on-site soil loss from exposed cut slopes, fill slopes, and spoil disposal areas. The level of stabilization effort needed must be determined on a case-by-case basis. Surface stabilization measures shall be periodically inspected, as necessary, to determine effectiveness. In some cases, additional work may be needed to ensure that the vegetative and/or mechanical surface stabilization measures continue to function as intended.

Dispersion of Subsurface Drainage from Cut and Fill Slopes. Minimize the possibilities of cut or fill slope failure and the subsequent production of sediment. Dispersal of collected water should be accomplished in an area capable of withstanding increased flows.

Control of Road Drainage. Minimize the erosive effects of concentrated water flows caused by road drainage features.

Timely Erosion Control Measures on Incomplete Roads and Stream Crossing Projects. Minimize erosion and sedimentation from road construction sites where final drainage structures have not been completed. Apply protective measures to all areas of disturbed, erosion-prone, unprotected ground that is not to be further disturbed in the present year. When conditions permit operations outside of the Normal Operating Season, erosion control measures must be kept current with ground disturbance to the extent that the affected area can be rapidly "closed" if weather conditions deteriorate. Do not abandon areas for the winter with remedial measures incomplete.

Construction of Stable Embankments (Fills). Construct embankments with materials and methods which minimize the possibility of failure and subsequent water quality degradation.

Control of Side Cast Material. Minimize sediment production from side cast material during road construction, reconstruction, or maintenance. Side casting is not an acceptable construction alternative in areas where it will adversely affect water quality. Prior to commencing

construction or maintenance activities, waste areas should be located where excess material can be deposited and stabilized.

Servicing and Refueling of Equipment. Prevent pollutants such as fuels, lubricants, bitumens, raw sewage, wash water, and other harmful materials from being discharged into or near rivers, streams, and impoundments, or into natural or man-made channels leading thereto. Selecting service and refueling areas well away from wet areas and surface water, and by using berms around such sites to contain spills. Spill prevention, containment, and countermeasures (SPCC) plans are required if the volume of fuel exceeds 660 gallons in a single container or if total storage at a site exceeds 1320 gallons. Any SPCC needs to be reviewed and certified by a registered professional engineer.

Controlling In-Channel Excavation. Minimize sedimentation and turbidity resulting from excavation for in-channel structures, so as to comply with state and Federal water quality standards.

Disposal of Right-of-Way and Roadside Debris. Construction debris and other newly generated roadside slash developed along roads near streams shall not be deposited in stream channels (including ephemeral and intermittent).

Maintenance of Roads. Maintain roads in a manner that provides for water quality protection by minimizing rutting, failures, side casting, and blockage of drainage facilities (all of which can cause sedimentation and erosion).

Road Surface Treatment to Prevent Loss of Materials. Minimize sediment production and erosion from road surface materials to comply with state and Federal water quality standards. Road surface treatments are prescribed based on traffic levels, road design standards, soils, and geology.

Decommissioning of Roads. Reduce sediment generated from unneeded roads, roads that run in streambeds and roads that are located in streamside zones by closing them to vehicle use and restoring them to productivity.

APPENDIX C – INTERDISCIPLINARY TEAM

Supervisor’s Office

| | | |
|----------|---------|--|
| Curiel, | Eli | Engineering, Editor & ID Core Team Leader |
| Ahern, | Richard | Minerals Program Manager |
| Lefevre, | Bob | Soils, Water, Air & Forestry |
| Emmett | Tami | Public Access Program Manager |
| McKay, | George | Forest Lands Program Manager |
| Merritt, | Mark | Engineering (GPS/GIS) |
| White | Laura | Travel Management |

District Office

| | | |
|-------------------------------------|--------|--------------------|
| D5 – Santa Catalina District | | |
| Taiz, | Josh | Wildlife Biology |
| Connor, | Tim | Range Management |
| Makansi | Kathy | Cultural Resources |
| Wright | Rogers | AFMO |

APPENDIX D – IDT COMMENTS

APPENDIX E – FSM 7700

APPENDIX F – FOREST TRANSPORTATION ATLAS