

**Draft Existing and Desired Conditions
For Roads on
Anderson Mesa Landscape Scale Assessment**

USDA Forest Service
Southwestern Region
Coconino National Forest

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| /s/Paul Standing | District Engineer | 01/08/04 |
| Name | Title | Date |

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Introduction

This landscape level Roads Analysis Report will primarily address maintenance level 1 and 2 roads (closed and high clearance vehicle roads). It will also incorporate the work of the “Coconino National Forest, Forest Level Roads Analysis report” which analyzed maintenance level 3, 4 and 5 level roads (passenger cars roads) (also see appendix B for definitions).

The objective of roads analysis is to provide line officers with critical information to implement a road system that is both safe and responsive to the public, and has a minimal negative ecological impact on the land, within the available funding. This report can also provide a basis for selecting areas for site-specific NEPA analysis and public involvement. (See appendix A for additional information on this process.)

Existing Situation

Geographic Area: The entire mesa is geographically defined by 4 watershed boundaries and is large in scale, covering approximately 270,000 acres, or 422 square miles.

Land ownership:

| National Forest | Other: |
|-----------------|--------|
| | |

Key user groups: This is a popular area and provides a variety of uses for ranchers, wood gatherers, hunters, campers, fishermen, rock climbers and those who drive for recreation.

Existing condition:

The analysis area is moderately roaded. The terrain offers little or no natural barriers for off road travel. The policy concerning off-road travel has been open unless posted closed. This has allowed users to be able to drive cross-country and has helped contribute to the number and location of roads in the Anderson Mesa area. Due to soil and vegetation disturbance caused by repeated tire tracking in combination with dry conditions on the mesa, it takes a long time for grasses and forbs to cover the tracks created by off-road use and so they remain visible for some time, encouraging others to follow. User created roads lack proper drainage, during wet conditions, water is retained in the tracks, the roads often become impassible. Drivers then move over to an adjacent dry area, and then multiple tracks or a “braiding” effect is created. A high percentage of the roads within the analysis area are user created. Most user created roads do not comply with resource management direction, or consider resource protection in their location. Due to the high number of miles on the forest needing work, most of the

maintenance level 3 roads within the landscape area have received minimal maintenance and resurfacing over the last 10 years

. We currently have 711 miles of open road, resulting in a density of 1.68 miles per square mile. If the current proposals shown in the Forest Plan, Amendment 4, are followed, we will have an open road system of 579 miles or 1.37 miles per square mile. These figures includes the non-systems roads. As decisions are made concerning the non-system roads, these densities will change.

System Roads:

After the Forest Plan was signed, the Forest Service identified the open road system that met the target densities in the Resource Access Travel Management Plan (RA/TM). The RA/TM plan gives every road in the Forest Service System a category of open (unimpeded travel). Closed (physical barrier at either end with the road in-between intact), or obliterated (ripped by mechanical means and seeded). Public input was included in the RA/TM decisions.

After the RA/TM category was established, the National Forest engineers gave each Forest Service road a maintenance level.

Listed below are the miles of road, by maintenance level, that are currently in the Forest transportation system. They are listed by both the level they are currently being maintained (operational) and by the planned maintenance level (objective).

| Maintenance level 1 | Maintenance level 2 | Maintenance level 3 | Maintenance level 4 | Maintenance level 5 |
|---------------------|---------------------|---------------------|---------------------|---------------------|
| | | | | |
| Oper. 92.217 | Oper. 547.681 | Oper. 66.23 | Oper. 5.0 | Oper. 0 |
| Obj. 223.884 | Obj. 406.165 | Obj. 76.08 | Obj. 5.0 | Obj. 0 |

Many of these system roads begin as user created roads and were incorporated into the roads system in the 1980s, prior to the RA/TM process. They have inadequate drainage, are most often poorly located and many are causing resource damage. “Roads and off-road vehicle use affects wetland sites by compacting soils, which in-turn affects nutrient cycling, changing decomposition rates, and soil physical properties. This change in upland soil condition affects the amount of material that enters wetland sites, thus again affecting the nutrient cycling and changing decomposition rates through increased sediments.” (1)

Non-System:

There have been 92 miles of non-system roads identified at this time. This represents most of the known miles. Some additional work is still required to complete the inventory. It is not anticipated that this will result in a significant increase in the total miles for the area. These roads currently do not have maintenance levels assigned to them. If any of these roads are incorporated into the road system, maintenance levels would be assigned at that time.

The existing roads can be generally described as in fair to poor condition. Most are user created by ranchers, wood gatherers, hunters or those who drive for recreation, including off highway vehicles (OHVs). The greater availability of 4 wheel drive vehicles has resulted in a larger increase of user created roads in the last few years. This trend is expected to increase.

“The Chief of the Forest Service has identified unmanaged recreation-especially impacts from OHVs as one of the key concerns facing the nation’s forests and grasslands today. Unmanaged OHV use is creating a number of undesirable impacts on National Forest System lands including

- user-created unplanned roads and trails,
- severely eroded soils,
- damaged wetlands and harm to wetland species,
- habitat destruction,
- degraded water quality,
- the spread of invasive species, plants animals and disease-causing pathogens,
- destruction of cultural sites,
- and disturbance to sites sacred to American Indians.”(3)

Road Maintenance and Management:

The Coconino National Forest Plan and amendments provide direction for roads management. The recommendations in this analysis complement that direction and helps provide for future decisions concerning roads in the analysis area.

“Road densities in the Ponderosa pine/mixed conifer zone will be managed to achieve an average of 2 miles per square mile of open road, and in the woodland zone an average of 1 miles per square mile of open road”.(2)

“Manage off-road driving to provide opportunities while protecting resources and minimizing conflicts with other users”. “Areas are closed to off-road driving when adverse resource impacts occur, when conflicts with the minimum management requirements occur, or if areas are too sensitive to withstand traffic”.(2)

Criteria that determine off-road closures include: loss of soil productivity, steep slopes, Riparian areas or meadows being threatened or damaged, key wildlife areas being threatened or damaged, areas where visual quality objectives are jeopardized and to insure public safety.

Road building in protective activity centers should be avoided. Maintain road densities at the lowest level possible in Northern Goshawk habitats.

“Locate new roads out of stream courses and water-collection features such as swales. Relocate roads out of bottom positions and obliterate poorly located segments as they are identified. Provide adequate road drainage to prevent concentrated flow and sedimentation. Use the following BMP techniques to minimize sedimentation from road construction and reconstruction:

- out sloped road surface;
- leadout ditches and relief culverts;
- energy dissipaters on culverts;
- vegetating cut and fill slopes;
- riprap installation;
- rolling grade”.(2)

“Operate and maintain roads in accordance with objectives as specified in road prescriptions. Roads not needed for industry, public and/or administration of the forest are to be closed or decommissioned”.(2)

“Maintain access roads to the lowest standard and density necessary for two-wheel drive pick-ups for removal of green firewood”.(2)

“Seasonally close roads using gates or barriers where the road structure support is inadequate when the ground is wet and/or for resource protection.”(2)

Issues and Concerns:

Impacts to wildlife and damage to watershed, riparian and wetlands resources were identified as key issues on the mesa, by both Forest Service specialists and publics during the April, 2003 meetings,. Many of these concerns had to do with the number and location of user created roads.

Desired Condition

The final road network would be at the minimum density needed to satisfy the needs of the key user groups while addressing the resource concerns and management directions identified in the LSA. The final network would provide un-roaded patches for wildlife needs, and would take into account wildlife corridors. The system would consider fire risk and potential. Each road would be located out of streamcourses and

water collection features where possible and would be brought up to and maintained to the lowest standard possible to satisfy these needs and cause the least resource damage possible. "Roads would provide access to wetland areas to sufficiently accommodate recreational or other activities. People would take responsibility to use roads in a way that minimizes resource damage. Roads that exist create minimum effects to wetland function. No new roads are allowed within wetland areas"(1) The size of the final system would fit within the financial resources of the agency so that it would receive on going maintenance. Areas would be closed to off-road driving when adverse resource impacts occur. Roads not needed for industry, public and/or administration of the forest would be closed or decommissioned".(2) Visual quality would play an important role in determining the final road network. The current road system provides ample opportunity to access forest recreation, and provide a source of enjoyment in and of themselves. The design of the final network would take incorporate this value.

"The Forest Service, based on partner and public dialogue, is planning to revise its national policy guiding the use of motorized vehicles to develop a designated-use system on roads and trails to minimize or eliminate the undesirable impacts from unmanaged OHV use. The proposal is to revise CFRs and prepare a draft CFR for public review and comment by early to mid-year 2004."(3) This planning effort could affect the desired condition on Anderson Mesa, and would need to be factored in, in any future projects on the mesa.

APPENDIX A

Achieving the Desired Condition is not possible at this level but could be accomplished with several project level proposals. As each project is spun off, they would follow the guidelines below.

- 1) Adopt the recommendations of the LSA.
- 2) Adopt the recommendations of the Forest Level Roads Analysis to insure that we maintain continuity of the maintenance level 3+ road throughout the mesa.
- 3) Each road retained in the system would have a value/risk assessment done. This assessment would follow the procedure designed for the Forest Level Roads Analysis, which is detailed in appendix C. Each road designated for retention would have a current road management objective (RMO) sheet.
- 4) Due to the high number of user created roads both currently in the system and those that will be added to the system, a reconstruction plan is needed to bring those roads designed for retention up to standard.
- 5) Roads not needed for industry, public and/or administration of the forest will be scheduled to be closed or decommissioned.

APPENDIX B

Definitions:

Maintenance level:

Maintenance levels define the level of service provided by, and maintained for, a specified road. Several factors are considered when selecting a maintenance level.

1. Resource needs and protection.
2. Road investment protection.
3. Service life.
4. User safety, comfort and convenience.
5. Volume and type of traffic, including travel speed.
6. Surface type
7. Administrative objectives.

Roads may be maintained at one level currently, the operational maintenance level and planned to be maintained at different level at some future date, or the objective level.

Maintenance level descriptions:

Level 1. Assigned to roads closed to vehicular traffic during the time they are closed. The closure period must exceed one year. Roads receiving level 1 maintenance may be of any type.

Level 2. Assigned to roads open for use by high clearance vehicles. Passenger cars are not a consideration. Traffic is normally minor. These may have been constructed for a single use, such as log haul.

Level 3. Assigned to roads open and maintained for passenger cars by a prudent driver. Safety is considered but user comfort and convenience are not considered priorities.

Level 4. Assigned to roads open and maintained for passenger cars and designed and maintained to provide a moderate level of user comfort and convenience at moderate speeds.

Level 5. Assigned to roads open and maintained for passenger cars and designed and maintained to provide a high level of user comfort and convenience. These roads are normally double lane and paved.

System roads: Those roads which have been inventoried and incorporated into the Forest transportation system and assigned maintenance levels.

Non-System: These roads are user-created, often referred to as social roads. They are not part of the Forest transportation system. They have not been assigned maintenance levels and they need to be evaluated for incorporation into the system or obliteration.

Decommission Road: The road prism and structures have been altered and/or removed where necessary to restore basic drainage patterns and return the land to the underlying resource allocation. The road is removed from the Forest road category. Conversion to trail may be appropriate. This term replaces the old term “obliteration”.

Bibliography

- (1) Taken from the specialists report “Existing and desired conditions of riparian-wetlands” prepared for the Anderson Mesa Project by the “Wetlands collaborate Team”
- (2) Taken from the Coconino Forest Plan
- (3) OHV background paper

APPENDIX C

Risks and Benefits of Roads

Roads on the Anderson Mesa provide access for many uses. Their presence has effects on the natural and cultural resources of the National Forest.

Value and risk assessment:

The interdisciplinary team selected a method of analysis that would assess the Values and Risks associated with each road. The following values and risks were identified by the team. They also represent, in broad terms, the issues associated with the Anderson Mesa transportation system.

Values: Road are valued for Forest Management because they provide access to:

FACILITIES

RESOURCES

RECREATION

SAFETY(access for wildfire response)

Risks: The presence or conditions of reads may present risks associated with:

WATERSHED CONDITON

WILDLIFE

CULTURAL RESOURCES

HEALTH AND SAFETY

RECREATIONAL OPPORTUNITY

Roads were placed in categories of high or low value combined with high or low risk.

Value Assessment Criteria

| Item | Item Description |
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| Value Statement | RECREATION OPPORTUNITY – Maintenance level 1, 2, 3, and user-created roads pose a risk to provision of a variety of recreation opportunities when they conflict with the designated Recreation Opportunity Spectrum (ROS). |
| Value Criteria | <p>HIGH RISK – Maintenance level 1, 2, 3, and user-created roads in conflict with designated ROS levels of Semi-primitive motorized, Semi-primitive non-motorized, and primitive.</p> <p>LOW RISK – Maintenance level 1, 2, 3, and user-created roads not in conflict with designated ROS levels of Roaded Natural, Rural or Urban.</p> |
| Available GIS Data | <ol style="list-style-type: none"> 1. GIS data capable of identifying ROS and Maintenance levels 1, 2, 3, and user-created roads are currently available. 2. Some changes may have taken place that are not recorded on the Forest Plan ROS maps, these may have to be added or changed. |
| Specialist Needs | <ol style="list-style-type: none"> 1. Specialists having detailed knowledge of ROS mapping and status. 2. |
| Analysis | <ol style="list-style-type: none"> 1. Assessment of value will employ preliminary GIS identification of areas having potential maintenance level – ROS conflicts, followed by specialist review. 2. |
| Rationale | <p>Roads having higher maintenance levels increase traffic and visitor use in forest areas that have been mapped with lower development ROS levels. This poses a conflict, and often causes the sought after recreation opportunities to be lost or displaced. In addition, the criteria for the lower development ROS levels includes low evidence of the sights and sounds of man, and low frequency of interactions between users, neither can be met with the higher maintenance level roads.</p> |

| Item | Item Description |
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| Value Statement | RESOURCE ACCESS, CATTLE SHIPPING, OR ROCKS AND MINERALS – Maintenance level 3 roads have value when they satisfy a regular, recurring need for safe, efficient, heavy-haul access to commercial livestock shipping facilities and maintenance level 2 roads have value when needed for maintenance of water sources. This item also assesses roads that have value for access to and hauling from rock and mineral mines. |
| Value Criteria | HIGH VALUE - Roads providing regular, recurring heavy-haul access to livestock shipping facilities or maintenance of water sources associated with permitted grazing allotments or access to rock and mineral mines. These roads will be used many times during the 20-year analysis period. The improved nature of these roads provides increased heavy-haul |

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| | <p>efficiency, and improved public safety.</p> <p>LOW VALUE - Roads not providing regular, recurring access to livestock shipping facilities or water source maintenance associated with permitted grazing allotments or access to rock and mineral mines. These roads will be used infrequently during the 20-year analysis period. High clearance vehicle access is expected to provide adequate resource management access and public safety.</p> |
| Available GIS Data | 3. GIS data capable of identifying areas of commercial livestock shipping facilities or all individual water source locations or mines are not currently available. |
| Specialist Needs | 3. Specialists having detailed knowledge of areas used for regular, recurring heavy-haul of commercial livestock or water source maintenance or mines. |
| Analysis | 3. Assessment of value will rely solely on specialist input and review because GIS data capable of identifying areas having potential to require regular, recurring heavy-haul of commercial livestock or water source maintenance or mine locations are not currently available. |
| Rationale | <ol style="list-style-type: none"> 1. Access to and from commercial livestock shipping facilities on maintenance level 3 roads are needed for heavy-haul of commercial livestock on permitted grazing allotments or rocks and minerals. 2. Access to maintenance level 2 roads may be needed for routine maintenance of water storage facilities. |

| Item | Item Description |
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| Risk Statement | <p>MANAGEMENT INDICATOR SPECIES MOST LIKELY AFFECTED BY MAINTENANCE LEVEL 3 ROADS (PRONGHORN ANTELOPE) – Maintenance level 1, 2, 3, and user-created roads incur a risk to pronghorn antelope habitat and survival. Impacts from road use, maintenance, development, reconstruction and obliteration will have varying degrees of risks and effects depending on spatial distribution, maintenance level, and distance of roads from critical wildlife habitats.</p> |
| Risk Criteria | <p>HIGH RISK – Road segment has an associated fence paralleling the road in close proximity and is located in pronghorn antelope habitat as identified the Red Rock Ranger District Wildlife Biologist.</p> <p>LOW RISK – Road segment is not located in medium or high quality pronghorn antelope habitat or does not have an associated fence paralleling the road.</p> |
| Available GIS Data | 4. Accurate, up to date GIS data capable of identifying pronghorn antelope habitat is not available. |
| Specialist Needs | 4. Specialists having detailed knowledge of spatial distribution of pronghorn antelope habitat and associated risks involved in road wildlife interactions. |

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| | 5. Specialists having knowledge of existing fences adjacent to maintenance level 3 roads. |
| Analysis | 2. Specialist identification and review of areas with antelope habitat. |
| Rationale | 1. Existing roads especially with associated fences create a barrier to pronghorn antelope movement and fragment and decrease the habitat critical to survival. High traffic along these roads tends to negatively affect antelope behavior and habitat. Impacts along these roads from road use, maintenance, development, reconstruction and obliteration pose risks and effects on pronghorn antelope habitat also. |

| Item | Item Description |
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| Risk Statement | OTHER RIPARIAN DEPENDENT MANAGEMENT INDICATOR SPECIES MOST LIKELY AFFECTED BY MAINTENANCE LEVEL 1, 2, 3, and USER-CREATED ROADS – Maintenance level 1, 2, 3, and user-created roads incur a risk to riparian dependent MIS species, habitat and survival. Impacts from road use, maintenance, development, reconstruction and obliteration will have varying degrees of risks and effects depending on spatial distribution, maintenance level, and distance of roads from critical wildlife habitats. |
| Risk Criteria | HIGH RISK – Road segment accesses riparian areas supporting or capable of supporting riparian dependent MIS. LOW RISK – Road segment does not access riparian areas supporting or capable of supporting riparian dependent MIS. |
| Available GIS Data | 5. GIS data identification of riparian areas is available. Complete GIS data with identified areas supporting or capable of supporting riparian dependent MIS is not available. |
| Specialist Needs | 6. Specialists having detailed knowledge of spatial distribution of MIS presence or riparian areas capable of supporting MIS and associated risks involved in road wildlife interactions. |
| Analysis | 3. Specialist identification and review of areas supporting MIS or habitat capable of supporting riparian dependent MIS. Riparian dependent MIS species analyzed include the following, hairy woodpecker, warbling vireo, yellow-billed cuckoo, Bell’s vireo, yellow-breasted chat, Lucy’s warbler, summer tanager, hooded oriole, western wood pewee, macroinvertebrates. |
| Rationale | 1. Existing roads accessing riparian areas with MIS or habitat capable of supporting MIS poses a risk due to potential destruction of riparian area function (vegetation, water quality). Proper functioning condition of riparian area is essential to MIS survival. Impacts along these roads from |

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| | road use, maintenance, development, reconstruction and obliteration pose risks and effects MIS and their habitat. |
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| Item | Item Description |
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| Risk Statement | NATIVE FISHERIES and ASSOCIATED HABITAT – Maintenance level 1, 2, 3, and user-created roads incur a risk to native fisheries or their designated, or proposed critical or potential suitable habitat. |
| Risk Criteria | <p>HIGH RISK – Road segment crosses, or is within 100 feet of a stream reach identified as designated, or proposed critical or potential suitable habitat, or known locations of occupied habitat.</p> <p>LOW RISK – Road segment does not cross or is not within 100 feet of a stream reach identified as designated, or proposed critical or potential suitable habitat, or known locations of occupied habitat.</p> |
| Available GIS Data | 6. GIS data capable of identifying stream segments with high risk due to road location, and are based on the segment of the road that intersects, or is within 100 feet of a stream reach identified as designated, or proposed critical or occupied habitat. |
| Specialist Needs | 2. Specialists having detailed knowledge of occupied fisheries habitat or stream reaches identified as designated, or proposed critical or potential suitable or occupied habitat. |
| Analysis | <p>4. Assessment of risk will employ GIS identification of areas designated, or proposed as critical habitat of native fisheries and their associated habitat followed by specialist review.</p> <p>5. Assessment of risk will include specialist knowledge of locations and review of areas of potential suitable or occupied habitat of native fisheries and their associated habitat.</p> |
| Rationale | 1. Roads crossing streams, or roads located within 100 feet proximity to streams with occupied, potential or designated critical habitat pose a risk to fisheries and their associated habitat due to potential sediment delivery above natural background levels. Sediment delivery above natural background levels may embed stream substrate and consequently reduce macro-invertebrate populations and spawning gravels necessary for fisheries survival. |

SPECIES ANALYZED:

1. Spikedace
2. Loachminnow
3. Razorback Sucker
4. Colorado Pikeminnow
5. Roundtail Chub

| Item | Item Description |
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| Risk Statement | THREATENED, ENDANGERED, OR SENSITIVE (TE&S) SPECIES – Maintenance level 1, 2, 3, and user-created roads may incur a risk to critical Threatened, Endangered or Sensitive wildlife species and their habitat. Impacts from road use, maintenance, development, reconstruction and obliteration will have varying degrees of risks and effects depending on spatial distribution, maintenance level, and distance of roads from critical wildlife habitats. |
| Risk Criteria | <p>HIGH RISK – Road segment intersects a Protected Activity Center (PAC), or is within 200 meters of peregrine eyries, or within ¼ mile of bald eagle breeding areas, or accesses occupied Chiricahua leopard frog tanks, or accesses riparian areas with or potential for sensitive species listed below, or accesses sensitive plant populations listed below.</p> <p>LOW RISK – Road segment does not intersect or access the locations listed above under the parameters identified.</p> |
| Available GIS Data | 7. GIS data capable of identifying PAC’s. Other TE&S species do not have complete GIS coverage or data available. |
| Specialist Needs | 3. Specialists having detailed knowledge of spatial distribution of PAC’s, and other TE&S species, their habitat and associated risks involved in road wildlife interactions. |
| Analysis | <p>6. This item assesses the following T&E species; Mexican spotted owl, bald eagle, and Chiricahua leopard frog.. This item also assesses the following sensitive species; lowland leopard frog, garter snakes, tiger beetles, obsolete viceroy butterfly, common black hawk, and peregrine falcon.</p> <p>7. Sensitive plants include Verde Valley sage and heathleaf wild buckwheat.</p> <p>8. Assessment of risk will employ GIS identification of areas designated as PAC’s and other maps identifying TE&S species overlaid with maintenance level 1, 2, 3, and user-created roads, followed by specialist review.</p> |
| Rationale | 1. Impacts from road use, maintenance, development, reconstruction and obliteration may have risks and effects on critical wildlife species and their |

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| | associated habitat including disturbance to nesting, riparian or upland habitat, vehicular access to tanks with frogs and potential spread of fungus. Depending on proposed activities, seasonal restrictions must be followed. |
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| Item | Item Description |
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| Risk Statement | WATER QUALITY, RIPARIAN FUNCTION - STREAM PROXIMITY TO ROADS – Maintenance level 1, 2, 3, and user-created roads incur a risk to water quality, riparian function and associated beneficial uses when located in close proximity to perennial streams. |
| Risk Criteria | HIGH RISK – Road location may hinder attainment of state water quality standards or proper riparian function on perennial or intermittent streams. Identified road segment is within 100 feet of a perennial or intermittent stream. The 100-foot criterion follows Coconino National Forest Plan Standards and Guidelines for minimum buffer zones within riparian areas. LOW RISK - State Water Quality standards for turbidity should not be exceeded due to road location in the watershed or adjacent to perennial, listed as impaired streams. Assigned road management standards adequately protect perennial streams monitored by ADEQ. No road segments are located within 100 feet of a perennial or intermittent streams. |
| Available GIS Data | 8. GIS data capable of identifying stream segments with high risk and are based on the segment of the road that intersects the 100 foot buffer zone adjacent to the listed stream |
| Specialist Needs | 4. Specialists having detailed knowledge of listed, perennial streams. |
| Analysis | 9. Assessment of risk will employ GIS identification of perennial, listed streams or water bodies. 10. Assessment of risk will rely on specialist identification of listed streams or water bodies not meeting the State water quality turbidity standard located within the 100-foot buffer zone followed by specialists review. |
| Rationale | 1. Water quality, riparian function and associated beneficial uses may be affected by roads located in inadequately buffered streamside zones. The potential for sediment delivery to streams is high in hydrologically connected road networks or along road segments with inadequate vegetative filter strips. Riparian vegetation and streambanks may be impacted. |

| Item | Item Description |
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| Risk Statement | WATER QUALITY, SEVERE EROSION – STREAM CROSSINGS AND - RIPARIAN CONNECTIVITY – Maintenance level 1, 2, 3, and user-created roads located on soils with severe erosion hazard and connected to streams may deliver large amounts of sediment into adjoining riparian areas and reduce the proper function of riparian areas or incur a risk to water quality and associated beneficial uses following disturbances |

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| | that remove most or all vegetative ground cover followed by high storm events. |
| Risk Criteria | <p>HIGH RISK – Road location may adversely affect connected riparian area function or may hinder attainment of the state water quality standard for turbidity on perennial streams following disturbance and high storm events. The road segment intersects a riparian area and is located on soils identified with a severe erosion hazard within ¼ mile of the riparian area. Soils with severe erosion hazard are identified by the Coconino National Forests TES. Connected disturbed area (CDA) is greater than 66% on measured roads.</p> <p>LOW RISK – Road is not located on soils with severe erosion hazard within ¼ mile of a riparian area or CDA is less than 66%.</p> |
| Available GIS Data | 9. GIS data capable of identifying areas with high erosion hazard, riparian areas and roads, and CDA |
| Specialist Needs | 5. Specialists having detailed knowledge of TES polygons with high erosion hazard and location of connected riparian areas. |
| Analysis | <p>11. Assessment of risk will employ GIS identification of TES polygons having high erosion hazard or CDA overlaid with the perennial and intermittent stream course and road layers. Roads located on soils with severe erosion hazard and within ¼ mile of streams or high CDA will identify high-risk road segments followed by specialist review.</p> <p>12. Where gaps in riparian stream course coverage exist, and where road segments appear to be within ¼ mile of the riparian area, specialist review will be needed to determine risk.</p> |
| Rationale | 1. Road segments located in areas with severe erosion hazard or in high CDA may potentially contribute and deliver large amounts of sediment into adjoining riparian areas and reduce the proper function of riparian areas or incur a risk to water quality and associated beneficial uses following disturbances that remove most or all vegetative ground cover followed by high storm events. |

| Item | Item Description |
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| Value Statement | WILDFIRE CONTROL ACCESS – Maintenance level 2 & 3 roads have value when they provide recurring and rapid access to high frequency wildfire areas. |
| Value Criteria | <p>HIGH VALUE – Roads intersecting the 25% of public land survey sections accounting for 55.5% of wildfire starts reported in the Coconino National Forest fire database.</p> <p>LOW VALUE – Roads not as described above.</p> |
| Available GIS Data | GIS data capable of identifying areas having high frequency wildfire. |

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| Specialist Needs | Specialists having detailed local knowledge of fire frequency patterns and fire response routes. |
| Analysis | Assessment of value will employ GIS identification of roads providing access to high frequency wildfire areas, followed by specialist review and revision. |
| Rationale | Fifty five and a half percent (55.5%) of all wildfire starts reported in the Coconino National Forest fire database occur on just 25% of public land survey sections. These sections provide a logical focus for identification of roads having high value for wildfire control. |

| Item | Item Description |
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| Value Statement | FACILITIES ACCESS, AND DEVELOPED, AND DISPERSED RECREATION – Maintenance level 1, 2, and 3 roads have value when they provide access to Forest Service-related facilities requiring access. Examples include developed recreation facilities; air monitoring sites and facilities not open to the general public. This item also assesses value of roads providing access to dispersed recreation sites |
| Value Criteria | HIGH VALUE – Roads providing access facilities. LOW VALUE – Roads not as described above. |
| Available GIS Data | GIS data capable of identifying facilities requiring access. GIS data is also available for location and impact of dispersed recreation sites along Fossil Creek. |
| Specialist Needs | Specialists having detailed local knowledge of facilities and recreation sites requiring access. |
| Analysis | Assessment of value will employ GIS identification of roads providing access to facilities and recreation sites requiring access, followed by specialist review and revision. |
| Rationale | Providing access to facilities is a valuable public service. |

| Item | Item Description |
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| Risk Statement | HERITAGE RESOURCES – Maintenance level 1, 2, and user-created roads pose risks to heritage sites when they intersect sites or occur in areas of high to moderate site density. Level 3 roads do not pose a risk because either they have been surveyed or heritage site mitigated or impacts have already taken place and are not mitigatable any more. |
| Risk Criteria | HIGH RISK – Roads that have been surveyed for heritage resources and have sites impacted by the roads at a density of three or more per linear mile, or roads that have not been surveyed but are located in an area with high or moderate site densities, or user-created roads since they have a high probability of intersecting sites due to high site density in the watershed. They also have high risk because they provide access to high site density areas exposing them to potential damage from vandalism. LOW RISK – Level 3 roads and roads that have been surveyed for heritage resources and sites are not impacted by the roads or impact roads |

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| | at a density of less than three per squarer mile, or the roads have not been surveyed but are located in low site density areas. |
| Available GIS Data | GIS data capable of identifying heritage sites intersected by roads, or areas of moderate to high-density sites. |
| Specialist Needs | Specialists having detailed local knowledge of clearances and heritage site densities. |
| Analysis | Assessment of risk will employ GIS identification of roads that have heritage clearance, or roaded areas identified as having high-density heritage sites. |
| Rationale | Heritage sites must be inventoried and evaluated in areas where ground disturbance or where public access through user-created roads in high site density areas occurs. In areas where passenger car roads intersect these sites, mitigation measures or rerouting roads may be needed to avoid site damage. In areas of moderate to high site density, the potential for site damage increases, and roads passing through these areas would have a high priority for heritage inventory and determining if changes in maintenance, mitigation, or rerouting would be required for clearance. |

| Item | Item Description |
|---------------------------|--|
| Value Statement | RESOURCE ACCESS, TIMBER HAUL and FUELWOOD – Maintenance level 2 & 3 roads have value when they satisfy a regular, recurring need for safe, efficient, heavy-haul access to commercial timber and commercial and non-commercial fuelwood gathering. |
| Value Criteria | HIGH VALUE - Roads providing regular, recurring heavy-haul access for high-value timber and fuelwood removal. These roads will be used many times during the 20-year analysis period. The improved nature of these roads provides increased heavy-haul efficiency, and improved public safety. LOW VALUE - Roads not providing regular, recurring access for timber & fuelwood removal. These roads will be used infrequently during the 20-year analysis period. High clearance vehicle access is expected to provide adequate resource management access and public safety. |
| Available GIS Data | GIS data capable of identifying areas of commercial livestock shipping facilities or all individual water source locations or mines are not currently available. |
| Specialist Needs | Specialists having detailed knowledge of areas used for regular, recurring heavy-haul of commercial timber or water fuelwood gathering. |
| Analysis | Assessment of value will rely solely on specialist input and review because GIS data capable of identifying areas having potential to require regular, recurring heavy-haul of commercial livestock or water source maintenance or mine locations are not currently available. |
| Rationale | Access to and from commercial timber harvesting on maintenance level 3 roads are needed. Access to maintenance level 2 roads may be needed for routine fuelwood gathering.. |

| Item | Item Description |
|---------------------------|---|
| Risk Statement | INVASIVE WEEDS AND NON-NATIVE VEGETATION. – Maintenance level 1, 2 & 3 and user-created roads incur a risk to the spread of invasive weeds and non-native vegetation. |
| Risk Criteria | <p>HIGH RISK - Roads intersect known or expected population of invasive weeds or non-native vegetation and may spread seeds into roadside ditches or uninfected areas.</p> <p>LOW RISK – Roads do not intersect known or expected population of invasive weeds or non-native vegetation and are unlikely to spread seeds into roadside ditches or uninfected areas.</p> |
| Available GIS Data | GIS data capable of identifying areas of commercial livestock shipping facilities or all individual water source locations or mines are not currently available. |
| Specialist Needs | Specialists having detailed knowledge of areas of known or expected areas of invasive weeds or non-native vegetation. |
| Analysis | Assessment of value will rely solely on specialist input and review because GIS data capable of identifying areas of known or expected areas of invasive weeds or non-native vegetation. |
| Rationale | Maintenance level 1, 2 & 3 and user-created roads incur a risk to the spread of invasive weeds and non-native vegetation. |