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Draft Environmental Impact Statement for Travel Management on the Tonto National Forest

Gila, Maricopa, Pinal, and Yavapai Counties, Arizona

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Draft Environmental Impact Statement for Travel Management

Tonto National Forest
Gila, Maricopa, Pinal, and Yavapai Counties, Arizona

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Abstract: The Tonto National Forest proposes changes to motorized use on roads, trails, and areas to meet requirements of *Executive Order 11644*, as amended by *Executive Order 11989*, and in the Travel Management Rule regulations (*36 CFR 212, Subpart B*). Routes and areas not designated for motorized use would be prohibited from motorized travel unless authorized under an exemption in the Travel Management Regulations. This involves amending the Tonto National Forest Plan to restrict cross-country motorized travel in all nondesignated areas and amending other direction related to motorized use that does not comply with the Travel Management Rule. Three action alternatives (Alternatives B, C, and D) propose changes to the current system of National Forest System roads, trails, and areas for motorized use. This draft environmental impact statement (EIS) documents the analysis of the no action, a modified proposed action, and two alternatives to the proposed action to designate motorized use on the Tonto National Forest.

Alternative A proposes no change from the existing condition. Current management plans would continue to guide management of the project area. No changes would be made to the current National Forest transportation system. The Travel Management Rule would not be implemented and no Motor Vehicle Use Map (MVUM) would be produced. This action would not comply with the Travel Management Rule[1].

Alternative B proposes approximately 2,367 miles of roads for decommissioning, resulting in approximately 894 miles of designated roads and 1,666 miles of motorized trails open to public use. This alternative prohibits cross-country motorized travel except within 300 feet on both sides of designated roads and motorized trails for personal fuelwood gathering in permitted areas. The emphasis of Alternative B is limited motorized access across the Tonto National Forest and was developed in response to comments received during scoping.

[1] Forest Service Travel Management Final Rule Website

Alternative C is a modification of the proposed action scoped in February 2013 and proposes approximately 1,290 miles of roads for decommissioning, resulting in approximately 1,340 miles of designated roads and 2,230 miles of motorized trails open to public use. This alternative prohibits cross-country motorized travel except in eight proposed OHV areas totaling approximately 6,791 acres. It would also allow motorized access, up to one mile on both sides of designated roads and motorized trails, for retrieval of legally harvested elk and bear (totaling approximately 1,293,178 acres), a corridor of 100 feet on both sides of designated roads and motorized trails for dispersed camping, and corridor 300 feet on both sides of designated roads and motorized trails for personal use fuelwood gathering in permitted areas.

Alternative D was developed in response to public comments received on the proposed action and provides the highest level of motorized recreation opportunities and access across the forest. This alternative proposes approximately 194 miles of roads for decommissioning, resulting in approximately 3,347 miles of designated roads and 1,520 miles of motorized trails open to public use. This alternative prohibits cross-country motorized travel except in eight proposed OHV areas totaling approximately 6,791 acres. It would also allow motorized access, up to one mile on both sides of designated roads and motorized trails, for retrieval of legally harvested mule deer, white tail deer, elk and bear (totaling approximately 2,068,208 acres), a corridor of 300 feet on both sides of designated roads and motorized trails for dispersed camping and for personal use fuelwood gathering in permitted areas.

Of the alternatives under consideration at this stage, Alternative C is preferred by the responsible official. However, this document is the draft Environmental Impact Statement and does not commit the responsible official or the Tonto National Forest to any one alternative.

Reviewers should provide the Forest Service with their comments during the review period of the draft environmental impact statement. This will enable the Forest Service to analyze and respond to the comments at one time and to use information acquired in the preparation of the final environmental impact statement, thus avoiding undue delay in the decision making process. Reviewers have an obligation to structure their participation in the National Environmental Policy Act (NEPA) process so that it is meaningful and alerts the agency to the reviewers' position and contentions. Vermont Yankee Nuclear Power Corp. v. NRDC, 435 U.S. 519, 553 (1978). Environmental objections that could have been raised at the draft stage may be waived if not raised until after completion of the final environmental impact statement. City of Angoon v. Hodel (9th Circuit, l986) and Wisconsin Heritages, Inc. v. Harris, 490 F. Supp. 1334, 1338 (E.D. Wis. 1980). Comments on the draft environmental impact statement should be specific and should address the adequacy of the statement and the merits of the alternatives discussed (40 CFR 1503.3).

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Date Comments Must Be Received: The 45-day comment period will commence once the Notice of Availability is published in the Federal Register. The Tonto National Forest will post the date comments must be received by once it is published in the Federal Register to the Web site Tonto National Forest Travel Management.

Summary

The Tonto National Forest proposes to designate a system of roads and motorized trails, in addition to prohibiting motorized cross-country travel, except in designated motorized areas and fixed-distance corridors solely for the purpose of motorized dispersed camping or motorized big game retrieval. The area affected by the proposal includes the entire Tonto National Forest. This action is needed because the increasing number of unmanaged motorized recreationists on the forest has been contributing to resource damage. The project area being analyzed in this document is the entire Tonto National Forest.

On November 2, 2005, the Forest Service announced the final Travel Management Rule regulations governing off-highway vehicles (OHVs) and other motor vehicle use on national forests and grasslands. Under the new regulations, which reiterate direction given in previous *Executive Orders (11644 and 11989)*, forests that do not already restrict OHV travel to designated roads and trails must do so. Motor vehicles, including OHVs, must remain on designated roads and trails systems or in designated areas while on the national forest.

Currently, the Tonto National Forest does not have a forestwide designated road or trail system; cross-country motorized travel is permitted except in areas that are signed closed or restricted to seasonal use. To date, four ranger districts (Cave Creek, Globe, Mesa, and Tonto Basin) are closed to cross-country travel by Closure Orders, direction in the 1985 Tonto National Forest Plan, or other designation that restricts motor vehicle use.

The Tonto National Forest published a proposed action in the Federal Register on February 1, 2013. This original proposed action would have resulted in approximately 3,812 miles of designated National Forest System road and trails and 1,417 acres of designated areas open to motor vehicles on the National Forest, adding approximately 280 miles of unauthorized routes. This alternative was eliminated from detailed study to reflect updated data and in response to public comments and replaced by newly developed Alternative C, which is the preferred alternative. Two other action alternatives (B and D) were developed in addition to the no action Alternative A, which proposes no change from the existing condition.

All three action alternatives (B, C, and D) would require amendments to the Forest Plan. Alternatives A and D would only allow one permit zone, Bulldog Canyon. Alternative B includes the addition of five motorized permit zones, while alternative C includes the addition of four motorized permit zones. Motorized big game retrieval of elk and bear is allowed in Alternatives C and D—up to one mile on both sides of all designated motorized routes—but alternative D also allows retrieval of white tail and mule deer, which nearly doubles the affected acreage. Alternative B does not allow for motorized retrieval off of designated roads or motorized trails. Dispersed camping is restricted to 65 acres in Alternative B. In contrast, Alternatives C and D would allow motor vehicle use for dispersed camping in designated corridors; alternative C proposes 100 feet on both sides of all designated motorized routes, while Alternative D proposes 300 feet on both sides of all designated motorized routes. To clarify, the alternatives are summarized in alphabetical order:

- Alternative A proposes no change to existing conditions. This alternative would not comply with the Travel Management Rule.
- Alternative B, developed in response to public comments during scoping, has the fewest miles of roads and motorized trails open to the public and the most miles of roads proposed for decommissioning. It is the only alternative which does not allow motor

vehicle use for big game retrieval and motor vehicle use for dispersed camping to designated sites only. This alternative does allow for cross-country travel, up to 300 feet both sides of all designated motorized routes, for fuelwood gathering within designated areas.

- Alternative C has the second lowest number of miles of roads designated to be open to the public, but has the most miles of motorized trails.
- Alternative D has the most miles of motorized roads open to travel by the public and the most acres of cross-country travel for the purposes of dispersed camping and big game retrieval.

Overall, the modified proposed action, Alternative C, would provide the most balance between protection of the natural and cultural resources, while still providing motorized access to the public for a variety of recreational opportunities. All of the action alternatives (one of which must be implemented as per the final rule) increase the forest's ability to protect resources and manage the transportation system more effectively.

Based upon the effects of the alternatives, the responsible official will decide which of the action alternatives will be chosen to implement the Travel Management Rule.

List of Acronyms

ADEQ	Arizona Department of Environmental Quality
ADOT	Arizona Department of Transportation
AZGFD	Arizona Game and Fish Department
	APE Area of potential effect
ARPA	Archaeological Resources Protection Act
ATV	All-terrain vehicle
BA	Biological assessment
BE	Biological evaluation
BIA	Bureau of Indian Affairs
BLM	Bureau of Land Management
BMPs	Best management practices
BOR	Bureau of Reclamation
CAA	Federal Clean Air Act
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
CO2	Carbon dioxide
DEIS	Draft environmental impact statement
DO	Dissolved oxygen
EIS	Environmental impact statement
EPA	Environmental Protection Agency
FR	Federal Register
FS	Forest Service
FSH	Forest Service Handbook
FSM	Forest Service Manual
FY	Fiscal year
HUC	Hydrologic unit code
GIS	Geographic information system
GMU	Game management unit
HDMS	Heritage data management system
ID	Interdisciplinary (as in ID Team)
IBA	Important bird area
IRA	Inventoried roadless area
LEI	Law enforcement and investigations
MBGR	Motorized big game retrieval
MIS	Management indicator species
MRS	Minimum road system
ML	Maintenance level
ML 1	Maintenance level 1 (closed to public motorists)
ML 2	Maintenance level 2
ML 3	Maintenance level 3
ML 4	Maintenance level 4
ML 5	Maintenance level 5
MVUM	Motor vehicle use map
NAAQS	National Ambient Air Quality Standards
NEPA	National Environmental Policy Act
NF	National Forest
NFS	National Forest System

NFMA	National Forest Management Act
NHPA	National Historic Preservation Act
NO_x	Nitrogen oxides
NVUM	National visitor use monitoring
NRIS	Natural resource information system
OHV	Off-highway vehicles
PA	Programmatic agreement
PAC	Protected activity center
PFA	Post fledgling area
PNVT	Potential Natural Vegetation Type
PM	Particulate matter
R3	Region 3
RARE	Roadless area review and evaluation
RATM	Resource access-travelway management
RD	Ranger District
RFA	Recreation facility analysis
RNA	Research natural area
ROS	Recreation opportunity spectrum
SHPO	State Historic Preservation Officer
SIP	State implementation plan
SMS	Scenery management system
SPNM	Semiprimitive nonmotorized
SUV	Sports utility vehicle
TES	Terrestrial ecosystem survey
TEUI	Terrestrial Ecological unit inventory
TM	Travel Management
TMDL	Total maximum daily load
USC	United States Code
USDA	United States Department of Agriculture
USFS	United States Forest Service
USFWS	United States Fish and Wildlife Service
VMS	Visual management system
VMT	Vehicle miles traveled
VOC	Volatile organic compounds
VQO	Visual quality objective

Contents

Summary ..... **iii**
List of Acronyms ..... **v**
Chapter 1. Purpose of and Need for Action **1**
Introduction 1
Document Structure 1
The Travel Management Rule 2
Location of Proposed Travel Management 3
Background of Motor Vehicle Use and Management on the Tonto National Forest 5
Existing and Desired Conditions 6
Existing Condition 6
Desired Condition 8
Purpose of and Need for Changes to Travel Management 8
Decision Framework 8
Public Involvement 9
Consultation and Communication with Tribes 10
Issues Associated with Motorized Travel 10
Designation of Roads, Motorized Trails, and OHV Areas 11
Motor Vehicle Use for Big Game Retrieval 12
Motor Vehicle Use for Dispersed Camping 12
Chapter 2. Alternatives, Including the Proposed Action **13**
Introduction 13
Development of Alternatives 13
Alternatives Considered in Detail 14
Alternative A – No Action 15
Alternative B 28
Alternative C 35
Alternative D 47
Alternatives Considered but Eliminated from Detailed Study 56
Original Proposed Action Published in the Federal Register 56
Development of Existing Condition from Current Database 57
Alternative Submitted by the Center for Biological Diversity 59

Comparison of Alternatives 61
Chapter 3. Affected Environment and Environmental Consequences 71
Analysis Process 71
Cumulative Effects 72
General Assumptions and Limitations 72
Resource Reports 73
Legal and Regulatory Compliance 74
Transportation Facilities 74
Affected Environment 74
Environmental Effects 75
Recreation Resources 83
Affected Environment 83
Environmental Effects 94
Wilderness, Wild and Scenic Rivers, Inventoried Roadless Areas, and Special Management Areas 122
Designated Wilderness Areas 122
Wild and Scenic Rivers 132
Inventoried Roadless Areas 141
Special Management Areas 150
Visual Resources 152
Affected Environment 153
Environmental Effects 154
Socioeconomics 163
Affected Environment 163
Environmental Effects 182
Heritage Resources 189
Affected Environment 189
Environmental Effects 191
Contemporary Indian Uses 205
Affected Environment 205
Environmental Effects 206

Game and Nongame Species (Wildlife Related Recreation) 215
Affected Environment 216
Environmental Effects 222
Law Enforcement 233
Existing Conditions 234
Environmental Effects 235
Wildlife and Plant Habitat Resources 244
Threatened, Endangered, Candidate, and Sensitive Species 245
Management Indicator Species 355
Migratory Birds 443
Noxious/Invasive Weeds 450
Hydrological Resources 454
Affected Environment 454
Environmental Effects 458
Soil Resources 471
Affected Environment 472
Environmental Effects 476
Air Quality 484
Affected Environment 484
Environmental Effects 487
Climate Change 489
Affected Environment 489
Environmental Effects 490
Short-term Uses and Long-term Productivity 491
Unavoidable Adverse Effects 493
Irreversible and Irretrievable Commitments of Resources 493
Chapter 4. Consultation and Coordination 495
Preparers and Contributors 495
Distribution of the Draft Environmental Impact Statement 498
Glossary of Terms 505
References 517

Appendix A: Proposed Changes to the Forest Plan 527

List of Tables

Table 1: Existing Road System 7
Table 2: Current Roads and Trails (No Action) 15
Table 3: Roads and Trails for Alternative B 28
Table 4: Unauthorized Routes Proposed for Inclusion for Alternative B 29
Table 5: Permit Zones for Alternative B 29
Table 6: Roads and Trails for Alternative C 36
Table 7: Unauthorized Routes Proposed for Inclusion for Alternative C 36
Table 8: OHV Areas for Alternative C 37
Table 9: Permit Zones for Alternative C 39
Table 10: Retrieval of Elk and Bear Data for Alternative C 43
Table 11: Roads and Trails for Alternative D 48
Table 12: Unauthorized Routes Proposed for Inclusion for Alternative D 48
Table 13: Retrieval of Mule Deer, Whitetail Deer, Elk, and Bear Data for Alternative D 52
Table 14: Side-by-Side Comparison of Alternatives 61
Table 15: Comparison of Effects for Alternatives by Resource 64
Table 16: Summary of Road Receiving Annual Maintenance by Maintenance Level (in Miles) ... 76
Table 17: Road Needing Maintenance by Maintenance Level (in Miles) for Each Alternative 77
Table 18: Road Miles Needing Maintenance by Maintenance Level for Alternative A 78
Table 19: Road Miles Needing Maintenance by Maintenance Level for Alternative B 78
Table 20: Road Miles Needing Maintenance by Maintenance Level for Alternative C 79
Table 21: Road Miles Needing Maintenance by Maintenance Level for Alternative D 79
Table 22: Routine and Deferred Maintenance Cost Estimates for Existing NFS Roads (RATM) By Maintenance Level 79
Table 23: Maintenance Cost Estimates for Alternative A (based on 2006 figures) 80
Table 24: Maintenance Cost Estimates for Alternative B (based on 2006 figures) 81
Table 25: Maintenance Cost Estimates for Alternative C (based on 2006 figures) 81
Table 26: Maintenance Cost Estimates for Alternative D (based on 2006 figures) 82
Table 27: Recreation Opportunity Spectrum Classes for the Tonto National Forest (1985) 87
Table 28: Modified ROS for Current Condition (2013) 89
Table 29: Occurrences of Motor Vehicle Routes Crossing Arizona Trail – Alternative A 99
Table 30: Occurrences of Motor Vehicle Routes Crossing Arizona Trail – Alternative B 104
Table 31: Changes in ROS - Alternative B 105
Table 32: Occurrences of Motor Vehicle Routes Crossing Arizona Trail – Alternative C 110
Table 33: Changes in ROS - Alternative C 111
Table 34: Occurrences of Motor Vehicle Routes Crossing Arizona Trail – Alternative D 117
Table 35: Changes in ROS – Alternative D 118
Table 36: Motorized Routes in Wilderness by Alternative 127

Table 37: Effects on Wilderness Characteristics by Alternative 129
Table 38: Motorized Dispersed Camping Opportunities within Wild and Scenic River Corridors 135
Table 39: Number of Motorized Crossings for Potential Wild and Scenic Rivers 138
Table 40: Miles of Motorized Routes within Potential Wild and Scenic River Corridors 139
Table 41: Motorized Dispersed Camping Opportunities within Potential Wild and Scenic River Corridors 140
Table 42: Motorized Routes in IRAs by Alternative 145
Table 43: Direct and Indirect Effects to IRA Characteristics by Alternative 146
Table 44: Motorized Routes within Special Management Areas by Alternative 150
Table 45: Race/Ethnicity of Population for 2011 by County, including Four-County Area and U.S. 167
Table 46: Disability Status Related to Recreational Activities 171
Table 47: Land Ownership for 2011 by County, including Four-County Area and U.S. 172
Table 48: Components of Federal Land Payments to State/Local Governments, FY 2012 173
Table 49: Changes in Employment by Industry 175
Table 50: Government Employment for 2011 by County, including Four-County Area and U.S. 178
Table 51: Distribution of Race/Ethnicity by Four-County Area and Tonto National Forest 180
Table 52: Archaeological Survey of Unauthorized Routes by Alternative 203
Table 53: Hunt Applicants and Permits Issued by GMU on Tonto National Forest in 2011 217
Table 54: Violation Notices, Warnings, and Incident Reports for Tonto National Forest, including Bulldog Canyon OHV Area 236
Table 55: Description and Acreage of Potential Natural Vegetation Types Present on Forest 246
Table 56: Miles of Roads and Road Density in Each PNVT and Acres of Each PNVT Impacted by Five Analysis Factors under Each Alternative 251
Table 57: Species Considered Sensitive on the Tonto National Forest 354
Table 58: Habitat Types and Trends for Management Indicator Species on the Tonto National Forest 357
Table 59: Total Acres of Ponderosa Pine Forest Mild and Mixed Conifer with Aspen Habitat Impacted under Each Alternative 368
Table 60: Total acres of Pinyon-Juniper Chaparral, Pinyon-Juniper Grassland, Madrean Encinal Woodland, and Interior Chaparral Habitat Impacted under Each Alternative 384
Table 61: Total acres of Semidesert Grassland Habitat Impacted under Each Alternative 402
Table 62: Total acres of Desert Communities Habitat Impacted under Each Alternative 409
Table 63: Total Acres of Cottonwood Willow Riparian Forest Habitat Impacted under Each Alternative 417
Table 64: Total acres of Mixed Broadleaf Deciduous Riparian Forest Habitat Impacted under Each Alternative 429

Table 65: Tonto National Forest Migratory Bird Species of Concern 444
Table 66: Water Quality Categories 454
Table 67: Riparian Vegetation on Tonto National Forest 458
Table 68: Road Density by Ranger District 462
Table 69: Forest Wide Changes from Existing Conditions—Alternative B 462
Table 70: Route Density by Ranger District—Alternative B 464
Table 71: Forest Wide Changes from Existing Conditions—Alternative B 465
Table 72: Route Density by Ranger District—Alternative C 466
Table 73: Forestwide Changes from Existing Conditions—Alternative C 467
Table 74: Route Density by Ranger District—Alternative D 469
Table 75: Forestwide Changes from Existing Conditions—Alternative D 469
Table 76: Erosion Risks on Tonto National Forest (Existing Roads) 472
Table 77: Soil Strength on Tonto National Forest (Existing Roads) 475
Table 78: Sediment Delivery to Streams from Road Buffers and Stream Crossings 476
Table 79: Miles of Unpaved Roads and Projected 2013 Baseline Uncontrolled Emissions for Alternative A 486
Table 80: General Conformity Emissions Thresholds by SIP Planning Area 487
Table 81: Specific Changes to the Tonto National Forest Plan Related to ORV and Cross Country Use 527
Table 82: Specific Changes to the Tonto National Forest Plan Related to Recreation Opportunity Spectrum 528

List of Figures

Figure 1: Map of the Tonto National Forest, including Ranger Districts 4
Figure 2: Map of Permit Zones for Alternative A 18
Figure 3: Map of Game Management Units Overlapping the Tonto National Forest 20
Figure 4: Map of Motorized Big Game Retrieval for Alternative A 22
Figure 5: Map of Dispersed Camping for Alternative A 24
Figure 6: Map of Fuelwood Areas for Alternative A 26
Figure 7: Map of Permit Zones for Alternative B 30
Figure 8: Map of Dispersed Camping for Alternative B 32
Figure 9: Map of Fuelwood Areas for Alternative B 34
Figure 10: Map of OHV Areas for Alternatives C 38
Figure 11: Map of Permit Zones for Alternative C 40
Figure 12: Map of Motorized Big Game Retrieval for Alternative C 42
Figure 13: Map of Dispersed Camping Corridors for Alternative C 44
Figure 14: Map of Fuelwood Areas for Alternative C 46
Figure 15: Map of Permit Zones for Alternative D 49
Figure 16: Map of Motorized Big Game Retrieval for Alternative D 51
Figure 17: Map of Dispersed Camping Corridors for Alternative D 53
Figure 18: Map of Fuelwood Areas for Alternative D 55

Figure 19: Map of Recreation Opportunity Spectrum for the Tonto National Forest (1985) 88
Figure 20: Map of Modified ROS for Current Condition (2013) 90
Figure 21: Map of Distance to Nearest Designated Road or Motorized Trail – Alternative A 98
Figure 22: Map of Distance to Nearest Designated Road or Motorized Trail – Alternative B 103
Figure 23: Map of ROS for Alternative B 106
Figure 24: Map of Distance to Nearest Designated Road or Motorized Trail – Alternative C 109
Figure 25: Map of ROS for Alternative C 112
Figure 26: Map of Distance to Nearest Designated Road or Motorized Trail – Alternative D 116
Figure 27: Map of ROS for Alternative D 119
Figure 28: Map of Wilderness Areas within and Adjacent to the Tonto National Forest 124
Figure 29: Map of Wild and Scenic Rivers on the Tonto National Forest 133
Figure 30: Map of Potential Wild and Scenic Rivers on the Tonto National Forest 137
Figure 31: Map of Inventoried Roadless Areas on the Tonto National Forest 143
Figure 32: Map of the Tonto National Forest and the Four-County Area (Gila, Maricopa, Pinal, and Yavapai Counties) 165
Figure 33: Percent Change in Population by County, the Four-County Area, and U.S. 166
Figure 34: Median Age by County, with U.S., for 2000 and 2011 167
Figure 35: Age Distribution of Tonto National Forest Visitors, 2008 169
Figure 36: Race/Ethnicity Distribution of Tonto National Forest Visitors, 2008 170
Figure 37: Components of Federal Land Payments per Fiscal Year for the Four-County Area ... 173
Figure 38: Allocation of Federal Land Payments for the Four-County Area 175
Figure 39: Employment Related to Farming as a Percent of Total Employment, 2011 176
Figure 40: Employment Related to Mining as a Percent of Total Employment, 2011 177
Figure 41: Employment Related to Timber as a Percent of Total Employment, 2011 178
Figure 42: Individuals and Families below Poverty for 2011 by County and Four-County Area 181
Figure 43: Federal Land Payments, Percent of Total General Government Revenue, Fiscal Year 2007 183
Figure 44: Federal Land by Agency, Percentage of Total Land Area 183
Figure 45: Map of Major Fishable Waters on the Tonto National Forest 219
Figure 46: Arizona Hunting License Sales, 2000-2012 221
Figure 47: Arizona Fishing License Sales, 1980-2008 221
Figure 48: Map of Impaired Streams and Water Bodies within Tonto National Forest 456
Figure 49: Map of Areas with Moderate to Soil Erosion Risk 474

Chapter 1. Purpose of and Need for Action

Introduction

Motor vehicles are used for many activities on the Tonto National Forest, such as sightseeing, camping, hiking, hunting, fishing, recreational riding, and collecting fuelwood and other forest products, as well as permitted and administrative uses. Current regulations prohibit trail construction and operation of vehicles in a manner that is damaging to the land, wildlife, or vegetation (*36 CFR 261—Prohibitions*). However, these regulations have not proven sufficient to control the addition of routes or environmental effects.

The project area being analyzed in this document is the entire Tonto National Forest. Of the six ranger districts that make up the Tonto National Forest, two currently permit cross-country motorized travel (Payson and Pleasant Valley), except in areas that are closed by forest order; restricted to seasonal use; or designated by Congress, such as wilderness areas. The other four ranger districts (Cave Creek, Globe, Mesa, and Tonto Basin) are closed to cross-country travel per the 1985 Tonto National Forest Land and Resources Management Plan (Forest Plan).

This draft environmental impact statement (draft EIS) describes the proposed project to improve the management of motorized vehicle use on National Forest System lands on the Tonto National Forest in accordance with the Travel Management Rule (*36 CFR 212, 251, and 261*). The project will result in the publication of a motor vehicle use map (MVUM) showing those roads, trails and areas designated for motor vehicle use. After the MVUM has been released to the public, travel off the designated system will be prohibited unless authorized by permit or as allowed by the Travel Management Rule and the designated Responsible Official.

The Tonto National Forest has evaluated alternatives and is issuing this draft EIS to disclose the potential effects of changes to the existing system of National Forest System roads, prohibiting cross-country travel, and designating a system of roads, trails, and areas where motorized travel can occur on the forest in order to comply with the Travel Management Rule.

Document Structure

The Forest Service has prepared this draft EIS in compliance with the National Environmental Policy Act (NEPA) and other relevant Federal and State laws and regulations. This draft environmental impact statement discloses the direct, indirect, and cumulative environmental impacts that would result from the proposed action and alternatives.

The document is organized into four chapters:

Chapter 1. Purpose and Need for Action: The chapter includes information on the history of the project proposal, the purpose of and need for the project, and the Agency's proposal for achieving that purpose and need. This section also details how the Forest Service informed the public of the proposal and how the public responded.

Chapter 2. Alternatives, including the Proposed Action: This chapter provides a more detailed description of the Agency's proposed action as well as alternative methods for achieving the stated purpose. These alternatives were developed based on significant issues raised by the public and other agencies. This discussion also includes mitigation measures. Finally, this section provides a summary table of the environmental consequences associated with each alternative.

Chapter 3. Affected Environment and Environmental Consequences: This chapter describes the existing condition of the project area and the environmental effects of implementing the proposed action and other alternatives. This analysis is organized by resource area.

Chapter 4. Consultation and Coordination: This chapter provides a list of preparers and agencies consulted during development of the environmental impact statement.

Additional documentation, including detailed analyses of project area resources, may be found in the project record located at the Tonto National Forest Supervisor's Office, 2324 E. McDowell Road, Phoenix, Arizona and on the Forest website at: Tonto National Forest Travel Management Project Documents

The Travel Management Rule

On November 9, 2005, the Forest Service published travel management regulations governing off-highway vehicles (OHVs) and other motor vehicles on national forests and grasslands. This is referred to as the Travel Management Rule or "final rule." The final rule was developed in response to the substantial increase in use of OHVs on National Forest lands and related damage to forest resources caused by unmanaged OHV use over the past 20 to 30 years. The regulations implement *Executive Order (EO) 11644* and *EO 11989* regarding off-road use of motor vehicles on Federal lands. The final rule "provides for a system of [National Forest System] NFS roads, NFS trails, and areas on NFS lands that are designated for motor vehicle use.… Motor vehicle use off designated roads and trails and outside of designated areas is prohibited" (*36 Code of Federal Regulations (CFR) 212.50*). Per the final rule, forests that do not already restrict motorized travel to designated roads, trails, and areas must do so. Designated roads, trails, and areas shall be identified on a motor vehicle use map (MVUM) and made available to the public.

> Once roads, trails, and areas on the Tonto National Forest have been designated and identified on the MVUM, motor vehicle use off of the designated system is prohibited. The following vehicles and uses are exempted from this prohibition: (1) aircraft; (2) watercraft; (3) over-snow vehicles[2]; (4) limited administrative use by the Forest Service; (5) use of any fire, military, emergency, or law enforcement vehicle for emergency purposes; (6) authorized use of any combat or combat support vehicle for national defense purposes; (7) law enforcement response to violations of law, including pursuit; and (8) motor vehicle use that is specifically authorized under a written authorization issued under Federal law or regulations (*36 CFR 251.51*).
>
> The rule further states that "the responsible official may incorporate previous administrative decisions regarding travel management made under other authorities, including designations and prohibitions of motor vehicle use, in designating NFS roads, trails, and areas" (*36 CFR 2212.50(b)*). The final rule does not require reconsideration of any previous administrative decisions that allow, restrict, or prohibit vehicle use on NFS roads, trails or areas and that were made under other authorities. However, the responsible official may choose to

[2] Over snow vehicle use on the Tonto National Forest is limited to occasional use during infrequent heavy snowfall in the northern ranger districts of Payson and Pleasant Valley, mostly for emergency ingress and egress to private land. Such use is minimal and will not be covered in this decision.

> reconsider past decisions, with public involvement, as necessary to achieve the purposes of the final rule (Federal Register, vol. 70, no. 216, p. 68269). This NEPA analysis concerns changes to the system that are needed to meet the Travel Management Rule.

As part of the process in complying with the final travel management regulations, the Tonto National Forest conducted a forestwide travel analysis process in 2006, reviewing the entire current road system. The intent of this process was to identify needed changes to the existing road and motorized trail systems. In early 2013, with the development of an environmental impact statement to analyze the effects of implementing the travel management rule, forest staff reviewed and refined the proposed designated road and motorized trail system to ensure protection, while providing for administration and utilization, of National Forest System lands (*36 CFR 212.5(b)*).

For the purposes of this analysis, the term "road" or "trail" is defined as a National Forest System road or trail that is designated for motor vehicle use pursuant to *36 CFR 212.51*. An unauthorized road or trail is, "a road or trail that is not a forest road or trail or a temporary road or trail and that is not included in a forest transportation atlas" (*36 CFR 212.1*). Unauthorized routes have generally developed without agency authorization, environmental analysis, or public involvement and do not have the same status as National Forest System roads or trails included in the forest transportation system.

The travel management rule employs an iterative, ongoing process that begins with an analysis of the transportation system, which is then carried into a NEPA analysis for proposed changes to the system of roads, trails, and areas. This results in the designated transportation system, which can be adapted over time. The motor vehicle use map will show this system and will be valid until the forest issues a new map based on system changes found to be necessary. The final rule states that this map will be reissued every year, which would be reflective of any changes made to the designated system.

Location of Proposed Travel Management

The Tonto National Forest covers approximately 2,964,308 acres in central Arizona and is the fifth largest national forest in the National Forest System. The Tonto National Forest spans a range of ecosystems from the Sonoran Desert through a variety of chaparral and pinyon pine/juniper up to the mixed conifer and ponderosa pine of the Mogollon Rim. The Tonto National Forest is divided into six ranger districts: Cave Creek, Globe, Mesa, Payson, Pleasant Valley, and Tonto Basin (Figure 1).

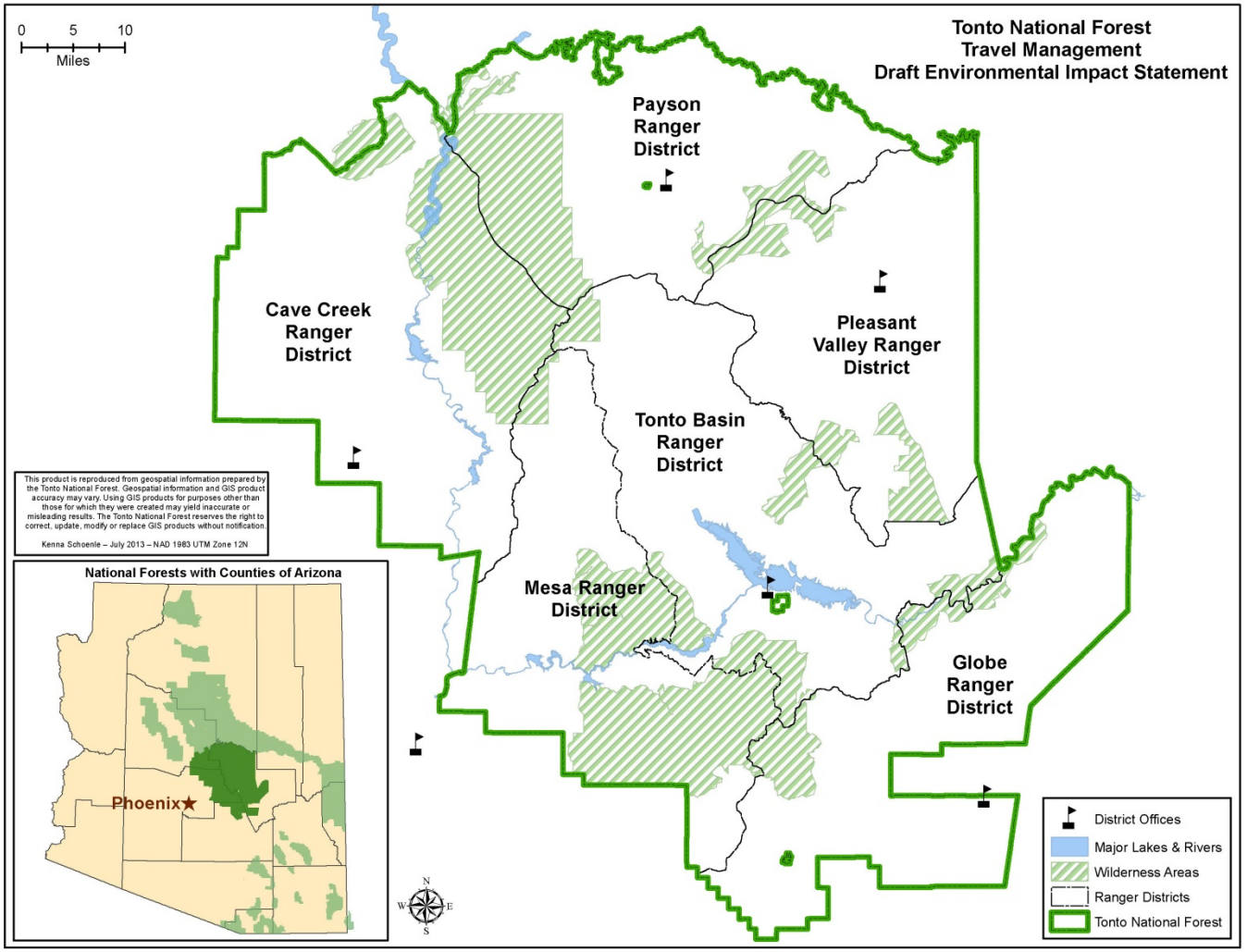

Figure 1: Map of the Tonto National Forest, including Ranger Districts

The Tonto National Forest abuts the northern edge of the Phoenix metropolitan area, which has a population of more than four million people. The city of Phoenix itself has a population of approximately 1.5 million[3], making it the sixth largest city in the United States. The Phoenix area is a popular destination for conferences, conventions, and tourism with its warm and sunny year-round climate, wide variety of business, cultural, and recreational offerings, serviced by many direct flights from most major U.S. cities. These factors combine to make the Tonto National Forest one of the most heavily visited national forests (U.S. Forest Service, 2005a), with nearly 5 million recreational visitors annually (U.S. Forest Service, 2012).

Many of these visitors drive through the Tonto National Forest for sightseeing the natural landscape or on their way to other destinations, such as the Grand Canyon or other northern, high-elevation locations to escape the Phoenix Valley's summer heat. Others come for the variety of water-based recreation such as fishing, boating, water skiing, swimming, rafting, or to picnic near picturesque desert lakes and rivers.

Background of Motor Vehicle Use and Management on the Tonto National Forest

Motor vehicles are used for many activities on the Tonto National Forest. These activities include sightseeing, camping, hiking, hunting, fishing, recreational riding, and collecting fuelwood and other forest products, as well as permitted and administrative uses. Motor vehicle use is both a form of access to nonmotorized activities on the Forest and a form of recreation in and of itself. On Arizona National Forests and other public lands, off-highway vehicle (OHV) use varies depending on terrain and user preferences: off-road motorcycles, including dirt bikes, have a narrow wheelbase width and can be ridden on single-track trails; all-terrain vehicles (ATVs) often have a wheelbase width of 50 inches or less and riders straddle the vehicle, with multiple riders sitting one in front the other; utility terrain vehicles (UTVs) allow riders to sit side-by-side and may have a wheelbase width greater than 50 inches; and full-sized vehicles, which have a high enough clearance and traction to drive off paved roads.

During the past ten years, OHV use has increased dramatically across the nation and on millions of acres of public land in the western U.S. In Arizona, sales of OHVs increased 623 percent, from 1995 to 2006 (Arizona State Parks, 2009). Prior to 2001, the majority of OHV sales in Arizona consisted of ATVs; however, by 2008 UTVs had surpassed the sales of ATVs in Maricopa County (Arizona State Parks, 2009). According to a survey conducted by Arizona State Parks (2009), 22 percent of adult Arizona residents have participated in motorized recreation, with nearly 11 percent indicating that motorized vehicle use accounts for the majority of their recreation. Riding a motorized vehicle off designated and maintained roads and trails can result in effects to resources, including increased soil erosion, decreased water quality, decreased air quality, damage to cultural resources, disruptions to wildlife, changes in natural vegetation, or conflicts with forest users seeking a nonmotorized experience. Managing motorized recreation is particularly challenging on the Tonto National Forest as the desert ecosystem does not provide many natural barriers to prevent users from riding anywhere their vehicle will take them. The Tonto National Forest is the most heavily-used national forest for motorized recreation, with nearly a million visitors using OHVs on the Forest annually (English *et al.*, 2004).

[3] According to the U. S. Census Bureau 2012 population estimates (U.S. Census Bureau Quick Facts: States accessed on June 14, 2013).

The issue of increasing motorized use is not specific to the Tonto National Forest. Unmanaged recreation, including motor vehicle use, was listed as one of the four key threats to the health and sustainability of national forests by former Forest Service Chief Dale Bosworth. In November 2005, a Travel Management Rule was established as a regulation to improve management of motorized use by defining where motorized use is acceptable and where it is not. More specifically, this rule requires Forest Service staff at each national forest and grassland to designate motor vehicle use on roads, trails, and areas by vehicle class and time of year if appropriate. After designation, motor vehicle use not in accordance with the designation is prohibited, except for those exemptions listed in the Travel Management Rule, such as limited administrative use by the Forest Service or permitted activities (*36 CFR 212.51*). The Travel Management Rule only applies to motorized vehicle use and does not affect or prohibit any nonmotorized access.

Existing and Desired Conditions

Existing conditions describe the current management situation and environmental conditions within the project area. Desired Conditions describe the goals for travel management as defined by Forest Plan guidance, the Travel Management Rule and other regulations, as well as the public's needs. The topic areas below represent broad-scale features associated with a district transportation system. Additional information about existing conditions related to specific resources can be found in Chapter 3 of this document.

Existing Condition

Motor vehicles are used to access the forest and engage in a wide variety of activities on the Tonto National Forest. Additionally, forest visitors use the existing transportation system to support their lifestyle with activities such as firewood collection and hunting/game retrieval. Currently, motor vehicles may drive on any open road as well as access the forest interior by driving "cross-country" or off of forest roads, except where prohibited by existing off-road closure areas. These "motorized travel restricted" areas are closed to cross country travel to protect sensitive soil and vegetation, wetlands, wilderness areas, and non-motorized recreational opportunities. These areas have been closed by previous official Forest Orders or legislative actions, such as congressionally designated wilderness.

The Forest Service uses five maintenance levels (ML) to classify roads, ranging from ML 1 indicating intermittent service roads closed to vehicular use, to ML 5, indicating roads that provide a high degree of user comfort and convenience. ML 3, 4, and 5 roads are those suitable for passenger cars. Some of these roads are dirt, some are gravel, and some are paved. ML 3, 4, and 5 roads are subject to the Highway Safety Act; therefore, they generally receive more maintenance than level 1 and 2 roads. This report will refer to passenger car roads (ML 3, 4, and 5 that a typical sedan could drive down) and high clearance roads (ML 2) that are maintained for high clearance vehicles.

According to the current database for roads on the Tonto National Forest, there are approximately 2,952 miles of roads open to the public: 645 miles for passenger vehicles and 2,308 miles for high clearance (Table 1). This database shows that there are 1,739 miles of ML 1 (closed to vehicular use) roads and 267 miles of decommissioned routes. However, after reviewing updated satellite imagery and gathering on-the-ground information from ranger district personnel, Forest Service Law Enforcement Officers, and Arizona Game and Fish Department employees, it was

determined that many of the ML 1 and decommissioned routes are quite likely still open to the public and being used currently by motor vehicles. Because of this inconsistency, it was decided that the existing condition for the roads system on the Tonto National Forest, the baseline for which the effects of the proposed changes to the road system for this project, results in approximately 5,000 miles of roads open to motor vehicle use[4]. Currently, there are no trails designated for motorized use only.

Table 1: Existing Road System

Road Maintenance Level	Miles	Percent of Total
Not Under Forest Service Jurisdiction	13	n/a
Decommissioned	n/a	0
Level 1	n/a	0
Level 2	2,308	47
Level 3	458	9
Level 4	136	3
Level 5	50	1
FS Roads Likely Open to Public, ML Unknown	2,006	40
Total (FS Jurisdiction)	**4,958**	**100**

In addition to the forest roads described above, the Tonto National Forest has seen the proliferation of unauthorized, or "user-created," routes[5]. In most cases, these roads appear as "two track" roads that access popular areas for dispersed recreation (camping, hunting, horseback riding, etc.). These roads are not kept in the Forest Service roads inventory, and do not receive maintenance to ensure environmental impacts are minimized. The number of unauthorized routes continues to grow as more and more visitors use the area and drive vehicles off road. Most of these routes include unauthorized travel for which the forest currently has no data[6] and routes that have been created by repeated off-road travel in areas where cross-country travel was permitted. Additionally, unauthorized routes have been created in areas where cross-country travel was not permitted but existing prohibitions or enforcement of such prohibitions were not adequate.

A more detailed description of the existing conditions, including specific mileage for roads, can be found in Chapter 2; the No Action Alternative (Alternative A).

[4] A more detailed discussion of the inconsistencies between what is in the Tonto National Forest databases for roads and trails and what is currently on the ground can be found in the Alternatives Considered but Eliminated from Detailed Study section of Chapter 2 of this document.
[5] *36 CFR 212.1* Defines an unauthorized road or trail as: A road or trail that is not a forest road or trail or a temporary road or trail and that is not included in a forest transportation atlas.
[6] Per the final Travel Management Rule, an exhaustive inventory of unauthorized routes was not conducted on the Tonto National Forest, nor is there any expectation that such an inventory will be conducted.

Desired Condition

The Tonto National Forest Land and Resource Management Plan (Forest Plan) is the guiding document for Forest Service management of natural resources and uses of the forest. Currently, the Tonto National Forest allows motorized cross-country travel throughout the forest except in three types of areas: congressionally designated wilderness, areas closed to motorized use in the forest plan, or areas closed to motorized use in a forest closure order. Areas closed to motorized use in the forest plan and areas closed to motorized use in a closure order can be seasonal closures. In addition, the Travel Management Rule directs the Forest Service to provide for a system of NFS roads, NFS trails, and areas on NFS lands that are designated for motor vehicle use and by class and time of year (if appropriate) (*36 CFR 212.50*). Part of the desired condition is that the forest road system is the minimum system necessary to provide safe and efficient travel for the administration, utilization, and protection of NFS lands considering long-term funding expectations while ensuring that the identified system minimizes adverse environmental impacts (*36 CFR 212.5 (b)*). The desired condition is a designated system of roads, motorized trails, and OHV areas that are managed and sustainable, which accommodate motorized access needs consistent with the Forest Plan and the 2005 Travel Management Rule.

Purpose of and Need for Changes to Travel Management

The purpose of this project is to comply with the Travel Management Rule by providing a system of roads, trails, and areas designated for motor vehicle use by class of vehicle and time of year on the Tonto National Forest. In addition, the magnitude and intensity of motor vehicle use has increased to the point that the intent of *EO 11644* and *EO 11989*, both pertaining to the use of motorized vehicles on public land, cannot be met while still allowing unrestricted cross-country travel. There is a need to determine which, if any, authorized National Forest System roads currently open should be closed to motorized travel. In addition, there is a need to determine which, if any, authorized roads currently closed should be open to motorized travel. There is also a need to identify any restrictions on allowed uses, classes of vehicles, and/or seasons of use for specific routes. There is also a need to determine which, if any, unauthorized routes should be added to National Forest System as trails or roads open for motorized access. Furthermore, there is a need to determine if, when, where, and how far motor vehicles may be driven off designated roads for the sole purpose of motorized dispersed camping, motorized big game retrieval, and collection of forest products. Finally, there is a need to amend the Forest Plan[7], in part, to prohibit motor vehicle use off designated National Forest System roads, trails, and areas except as shown on the motor vehicle use map and to revise wording for consistency regarding definition to comply with Travel Management Rule, *36 CFR 261.13*.

Decision Framework

The Tonto National Forest Supervisor is the responsible official and will decide the following:

- Changes to the existing road system;
- Changes to existing motorized trails and areas open to cross-country motorized travel;

[7] A detailed account of plan amendments associated with the action alternatives can be found in Appendix A of this document.

- The distance motor vehicles may travel off specific designated routes for the purpose of dispersed camping , big game retrieval, and collection of forest products; and
- Language and content changes to the Tonto National Forest Plan via a forest plan amendment through use of the 1982 rule procedures as allowed by the transition language of the 2012 planning rule (*36 CFR 219.17(b)(3)*).

The decision will be based on a consideration of the environmental effects of implementing the proposed action or alternatives developed in response to significant issues. The Forest Supervisor may select the proposed action, an alternative analyzed in detail, or a modified proposed action or alternative within the project's range of alternatives. The Tonto National Forest Supervisor, responsible official for this environmental impact statement process, chose to focus this analysis and subsequent decision on meeting the primary purpose and intent of the Travel Management Rule to designate National Forest System roads, trails, and areas on Forest Service managed lands for motor vehicle use (*36 CFR 212.51*). Previous administrative decisions concerning development of existing National Forest System roads and trails, road construction, road reconstruction, motorized trail construction, and land suitability for motorized use on existing roads are outside of the scope of this analysis. This analysis does not preclude a planning effort that considers changes to the motorized route system at a later date. Any such future proposal would require an appropriate environmental analysis and documentation in a NEPA decision.

Furthermore, this environmental analysis process is focused on implementing *36 CFR 212 Subpart B* of the Travel Management Rule. This decision will not affect the terms and conditions associated with special use authorization of National Forest System land, outlined in *36 CFR 251*, including motorized access for grazing and livestock use and minerals.

Furthermore, over snow vehicle use on the Tonto National Forest is limited to occasional use during infrequent heavy snowfall in the northern ranger districts of Payson and Pleasant Valley, mostly for emergency ingress and egress to private land. Such use is minimal and will not be covered in this decision.

Public Involvement

In October 2009, the forest released a proposed action. Seven public meetings were held throughout the communities within and proximate to the forest in November and December 2009 to gather input about the proposed action, including roads and trails proposed for motorized use. Comments to the proposed action were accepted through December 4, 2009. A draft version of an environmental assessment was released for public comment on January 6, 2012 for a 30-day comment period. Due to the length and complexity of the environmental assessment and requests from the public, an additional 30-day comment period began on February 5, 2012. Approximately 300 letters were received during these two comment periods.

After initiating compliance with the Travel Management Rule under an environmental assessment, the Tonto National Forest determined that the level of significance reached a point that environmental analysis for travel management under an environmental impact statement (EIS) would be more appropriate. On February 1, 2013, a notice of intent to prepare an EIS was published in the Federal Register, initiating a 30-day scoping period that ended March 4, 2013.

Approximately 1,794 postcards and 1,673 emails were sent to interested and affected parties[8]. Approximately 120 replies were received, including 20 form letters from Rim County Riders ATV Club members.

Consultation and Communication with Tribes

Communication with Tribes interested and affected by travel management on the Tonto National Forest has been ongoing since 2009. The following is a list of the Tribes and Tribal communities that have provided comments about travel management and a summary of their issues and concerns:

- Fort McDowell Yavapai – supports closure of routes that access their adjacent reservation to protect from vandalism.
- Gila River Indian Community and Salt River Pima-Maricopa Indian Community – wants the forest to maintain existing roads as they are now, without adding roads or unauthorized routes, and focus on enforcement to protect heritage sites.
- Hopi – supports the most restrictive action for travel management, limiting motorized access, decreasing motorized route mileage, and prohibiting cross-country travel.
- San Carlos Apache Tribe – wants the identification and protection of historic sites, while allowing for continued access for Tribal members to sacred, holy, traditional, cultural, and heritage resource sites. They also encourage the forest to decommission all unauthorized routes and as many roads as possible.
- White Mountain Apache Tribe – wants all cultural heritage resources to be protected by closing routes and limiting motorized access in areas on the forest that are adjacent to tribal land.
- Yavapai Apache Nation and Tonto Apache Tribe – supports an action that is most restrictive for motorized access and use.
- Yavapai Prescott Indian Community – also supports an action that is most restrictive for motorized access and use.
- Ak-Chin Indian Community – supports a plan that will protect the land and wildlife from damage associated with motor vehicle use.

Issues Associated with Motorized Travel

Issues serve to highlight effects or unintended consequences that may occur from the proposed action and alternatives, giving opportunities during the analysis to reduce adverse effects and compare trade-offs for the decision maker and public to understand. Issues help set the scope of the actions, alternatives, and effects to consider in our analysis (Forest Service Handbook 1909.15.12.4).

Comments from the public and other agencies submitted during the scoping period were used to formulate issues concerning the Proposed Action. An issue is a point of dispute or disagreement with the Proposed Action based on some anticipated environmental effect. The interdisciplinary

[8] There was duplication in some instances with the postcards and emails where individuals and groups received both notifications.

team separated the issues into two groups: significant and nonsignificant. Significant issues were defined as those directly or indirectly caused by implementing the Proposed Action. Nonsignificant issues were identified as those:

- Outside the scope of the proposed action;
- Already decided by law, regulation, policy, the forest land and resource management plan, or other higher level decision;
- Irrelevant to the decision to be made; or
- Conjectural and not supported by scientific or factual evidence.

The Council on Environmental Quality NEPA regulations explains this delineation in Sec. 1501.7. "…identify and eliminate from detailed study the issues which are not significant or which have been covered by prior environmental review…."

Designation of Roads, Motorized Trails, and OHV Areas

1a. The amount of roads and motorized trails in the proposed action does not meet the current and future needs for motorized recreation and access throughout the Tonto National Forest.

Unit of measure: Miles of roads and trails designated open to motorized vehicles.

1b. The proposed action does not meet the needs for diverse motorized recreation opportunities.

Unit of measure: Miles of trails designated for the following motorized users: single track/motorcycle; ATV (less than 50 inches wide); UTV; or full-sized vehicles.

1c. Designation of roads and motorized trails would result in user conflict.

Unit of measure: Distance to nearest motorized road or trail and changes in recreation opportunities across the forest.

1d. Designation of roads, motorized trails, and OHV areas would result in impacts to water and soil resources.

Unit of measure: Miles, acres, and percentage of roads and areas related to watersheds and soil categories.

1e. Designation of roads, motorized trails, and OHV areas would result in impacts to wildlife habitat.

Unit of measure: Density of roads and motorized trails in all habitat types for threatened, endangered, and Forest Service sensitive species.

1f. Designation of roads, motorized trails, and OHV areas would result in impacts to cultural resources.

Unit of measure: Number of cultural resources impacted.

Motor Vehicle Use for Big Game Retrieval

2. Authorizing motorized big game retrieval off designated routes could impact water and soil resources, wildlife habitat, cultural resources, and nonmotorized recreational experiences.

Unit of measure: Number of average off-road vehicular trips for motorized retrieval of big game by species, along with the potential acres allowed for motorized big game retrieval.

Motor Vehicle Use for Dispersed Camping

3a. Limiting motor vehicle use to access dispersed camping to a specific distance from designated roads or motorized trails or to designated dispersed sites may reduce dispersed camping opportunities, cause user conflict, and concentrate resource impacts.

Unit of measure: Acres of designated camping corridors or designated dispersed camping sites.

3b. Motorized dispersed camping corridors allow motorized use in areas that can cause impacts to water and soil resources, wildlife habitat, and cultural resources.

Unit of measure: Acres and intensity of designated motorized dispersed camping corridor use in sensitive wildlife habitat, riparian areas, and number of cultural resources impacted.

Chapter 2. Alternatives, Including the Proposed Action

Introduction

This chapter describes and compares the alternatives considered for the "Draft Environmental Impact Statement for Travel Management on the Tonto National Forest" (draft EIS). It includes a description and maps of each alternative considered. Based on the issues and concerns identified in public comment on the proposed action, the Forest Service developed two alternative proposals that achieve the purpose and need differently than the Proposed Action. In addition, the Forest Service is required to analyze a No Action alternative. The No Action, a modified proposed action replacing the original proposed action from the notice of intent to prepare an environmental impact statement, and two other action alternatives are described in detail in this chapter. In addition, alternatives considered but eliminated from detailed study are described.

This chapter also presents the alternatives in comparative form, defining the differences between each alternative and providing a clear basis for choice among options by the decision maker and the public. Some of the information used to compare the alternatives is based upon the design of the alternative and some of the information is based upon the environmental, social, and economic effects of implementing each alternative. These effects are discussed in detail in Chapter 3, by resource area.

Development of Alternatives

On February 1, 2013 the proposed action was scoped; it was modified from the proposed action in the draft environmental assessment (January 2012) in response to comments submitted. Starting in January 2013, Tonto National Forest engineering staff reviewed the existing road system being managed by the Tonto National Forest and developed a system for classifying roads to develop a desired road network from the engineering staff perspective.

A set of targeted questions was developed to provide a basis for a rationalized analysis to determine this desired road network using existing National Forest System road information, allowing for the differentiation of aspects of transportation routes that may exist and function solely as a motorized trail and those which provide administration as part of an engineered road system or primary transportation group[9]. Once nearly every road had been analyzed, the information was further reviewed on a district level, involving district rangers, Forest Service personnel familiar with the existing road and resource conditions, and Arizona Game and Fish Department Wildlife Managers whose wildlife management responsibilities overlapped with the corresponding district boundaries. This entire process took nearly four months, and allowed for the correction of some route alignment issues using aerial imagery gathered in 2012. The No Action Alternative, along with all the action alternatives, uses this corrected data. As a result of this process, Alternative C, a modified proposed action, replaced the original proposed action scoped in February 2013.

[9] A detailed description of this analysis and the questions used for consideration of each route on the Tonto National Forest can be found in the Transportation Specialist Report, Appendix A, in the project record.

Alternatives Considered in Detail

The description of the four alternatives being analyzed, including the No Action, in this draft EIS are organized by six elements to help the reader understand the differences and similarities among them. These elements are:

Roads and Trails Designated for Motor Vehicle Use: According to the Travel Management Rule, a National Forest System road 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*). In addition, a road is defined as "a motor vehicle route over 50 inches wide, unless identified and managed as a trail" (*36 CFR 212.1*).

Areas Designated for Motor Vehicle Use (open to travel off designated motor vehicle use routes): According to the Travel Management Rule, an area is defined as "a discrete, specifically delineated space that is smaller, and in most cases much smaller, than a Ranger District" (*36 CFR 212.1*).

Permit Zones: Are unique to the Tonto National Forest and are a discrete area where effects from OHV use are negatively impacting resources, but complete exclusion to the area by OHV use is not desirable. Currently there is one permit zone on the Tonto National Forest. In a permit zone, cross-country travel is not allowed. Instead, motorized vehicle users are required to get a permit to access the area, which would have locked gates and barriers restricting nonpermitted access.

Currently, there is no limit to the number of permits available. To obtain a permit, users would either obtain one in person at a designated Forest Service office or via the Internet. In both situations, interested users would be required to provide information to acquire a permit and the combination to the locked access gates. Once the user is granted a permit, additional instructions and a map would be provided detailing specific routes open for motorized use and a description of the penalties associated with driving off of the designated routes or providing access to users without a valid permit. Permits are valid for 6 months, but users can reapply for a permit for an additional 6 months of permitted use.

Permits are not required for nonmotorized users such as equestrians and hikers. They may enter the zone through equestrian/ pedestrian gates. The number of permits issued for the Bulldog Canyon Permit Zone is estimated on average of 750 per month over the course of a year or 9,000 annually. During periods of high use (winter), permits issued can be up to 30-50 permits per day.

While there is research into the effectiveness of face-to-face communication in increasing compliance in federal land users (such as Marion and Reid, 2007; Park *et al*., 2008; Roggenbuck, 1992), there is only anecdotal information regarding the improvement of resource conditions and their relationship to user compliance within the existing permit zone. Because of the lack of relevant quantitative or peer-reviewed qualitative analysis, roads and motorized trails within existing and proposed permit zones would not be treated differently than roads and motorized trails outside of these permit zones. This assumption will be used in the analysis for Chapter 3 of this document unless stipulations can be included in the permit as a form of mitigation (i.e., requiring vehicles to be washed clean of mud and plant debris that may result in the spread of noxious weeds).

Motor Vehicle Use for Big Game Retrieval: The Responsible Official may include in the designation the limited use of motor vehicles within a specified distance of designated routes, and if appropriate, within specified time periods solely for purposes of "…retrieval of a downed big game animal by an individual who has legally taken that animal" (*36 CFR 212.51 (b)*). Motorized off-road travel for other hunting activities, such as scouting or accessing hunting sites, would be prohibited.

Motor Vehicle Use for Dispersed Camping: Similar to big game retrieval using motor vehicles, the Responsible Official "may include in the designation the limited use of motor vehicles within a specified distance of certain designated routes, and if appropriate within specified time periods, solely for the purposes of dispersed camping…" (*36 CFR 212.51 (b)*).

Additional Information Pertaining to Motor Vehicle Use Designation: This section includes information about personal use fuelwood gathering. Currently, if a forest user receives a permit for personal use fuelwood, they are permitted to gather wood in specific areas during specified times (indicated by a packet with maps and regulations for gathering). The use of motorized vehicles to aid in the gathering of wood is not distance limited so long as the user is within the permitted area and not causing resources damage. Since most of the fuelwood gathering areas are within parts of the forest that are currently open to cross-country travel, designation of motor vehicle use for gathering will be analyzed in this draft EIS.

Alternative A – No Action

National Environmental Policy Act (NEPA) regulations require the no action alternative be included as a baseline for comparison to all action alternatives. This alternative proposes no change to the existing management of motorized travel on the Tonto National Forest.

Roads and Trails Designated for Motor Vehicle Use

Currently, the Tonto National Forest has management jurisdiction for approximately 5,000 miles of system roads[10] across the entire forest. Table 2 shows the type of use associated with the road system on the Tonto National Forest[11]. (Map A in the map packet shows the route system for this alternative.)

Table 2: Current Roads and Trails (No Action)

Type of Road/Trail	Miles
Roads Open to Passenger Vehicles (ML 3-5)	644.72
Roads Open to High Clearance Vehicles (ML 2)	2,307.67
Motorized Trails (Single Track)	0.00
Motorized Trails (General)	0.00

[10] A more detailed discussion of the inconsistencies between what is in the Tonto National Forest databases for roads and trails and what is currently on the ground can be found in this chapter in Alternatives Considered but Eliminated from Detailed study.

[11] A detailed account of each route for the Tonto National Forest for the existing condition can be found in the project record.

Type of Road/Trail	Miles
Administrative Use Only Road (ML 2 – ML 5)	0.00
Administrative Use Only Motorized Trail	0.00
FS Roads Likely Open to Public, ML Unknown[12]	2,006.20
Unauthorized (User Created)	672.34
Total Motorized Routes Open to Public	**4,958.58**
Total Motorized System	**4,958.58**

Since 2007, the Tonto National Forest has collected or received geographic information about unauthorized routes that are either obvious on the ground or are being used for motorized travel, totaling approximately 672 miles to date. There are also numerous routes existing on the Forest not accounted for in this document. Most of these routes include unauthorized travel for which the forest currently has no data and routes that have been created by repeated off-road travel in areas where cross-country travel was permitted or areas where cross-country travel was not permitted but existing prohibitions or enforcement of such prohibitions were not adequate. Without site-specific information about these routes, a quantitative analysis of their effects cannot be conducted in this draft EIS.

In addition to the mileage in Table 2, there are approximately 414 miles of roads that are within the forest boundaries but the forest does not manage, such as state highways and roads within private property. This data is not exhaustive, and as such, without site-specific information about these routes, a complete quantitative analysis of their effects cannot be conducted in this draft EIS.

Areas Designated for Motor Vehicle Use

Cross-country travel was restricted on the Cave Creek, Globe, Mesa, and Tonto Basin ranger districts per the Forest Plan, unless posted open. Other restricted areas across all ranger districts are closed to cross-country travel. These areas have been closed by the Forest Plan, previous Forest Closure Orders, and legislative actions, such as congressionally-designated wilderness.

There are currently no designated cross-country travel areas on the Tonto National Forest per the Travel Management Rule definition; however, approximately 703,618 acres of land are currently open for unrestricted motorized cross-country travel on the Payson and Pleasant Valley Ranger Districts. In addition, hunters that qualify for the Arizona Game and Fish Department CHAMP permit[13], which may be issued to persons who have a permanent disability or combination of disabilities, are restricted to the same acreage as is currently open to cross-country travel.

[12] An explanation of these routes can be found in the Existing and Desired Conditions section of Chapter 1 of this document.
[13] For more information about the CHAMP program with Arizona Game and Fish Department, go to Arizona Game and Fish Department Special Licenses

Permit Zones

There is currently one permit zone on the Tonto National Forest, the Bulldog Canyon OHV Area on the Cave Creek Ranger District, which is approximately 34,720 acres in size (Figure 2). Although the Bulldog Canyon OHV Area has “area” in the name, cross-country travel is not allowed. Instead, motorized vehicle users are required to get a permit to access the Bulldog Canyon OHV Area, which has locked gates and barriers restricting nonpermitted access. Motorized cross-country travel in the existing Bulldog Canyon OHV Area was restricted by *Forest Order No. 12-152*, due to considerable environmental damage occurring from uncontrolled vehicle use. The Order was signed by the Forest Supervisor on March 19, 1997, after completion of an environmental assessment. Findings of the analysis showed that uncontrolled vehicle use in Bulldog Canyon was contributing to significant soil and vegetation resource damage, but total closure was undesirable due to its proximity to the Phoenix metropolitan area.

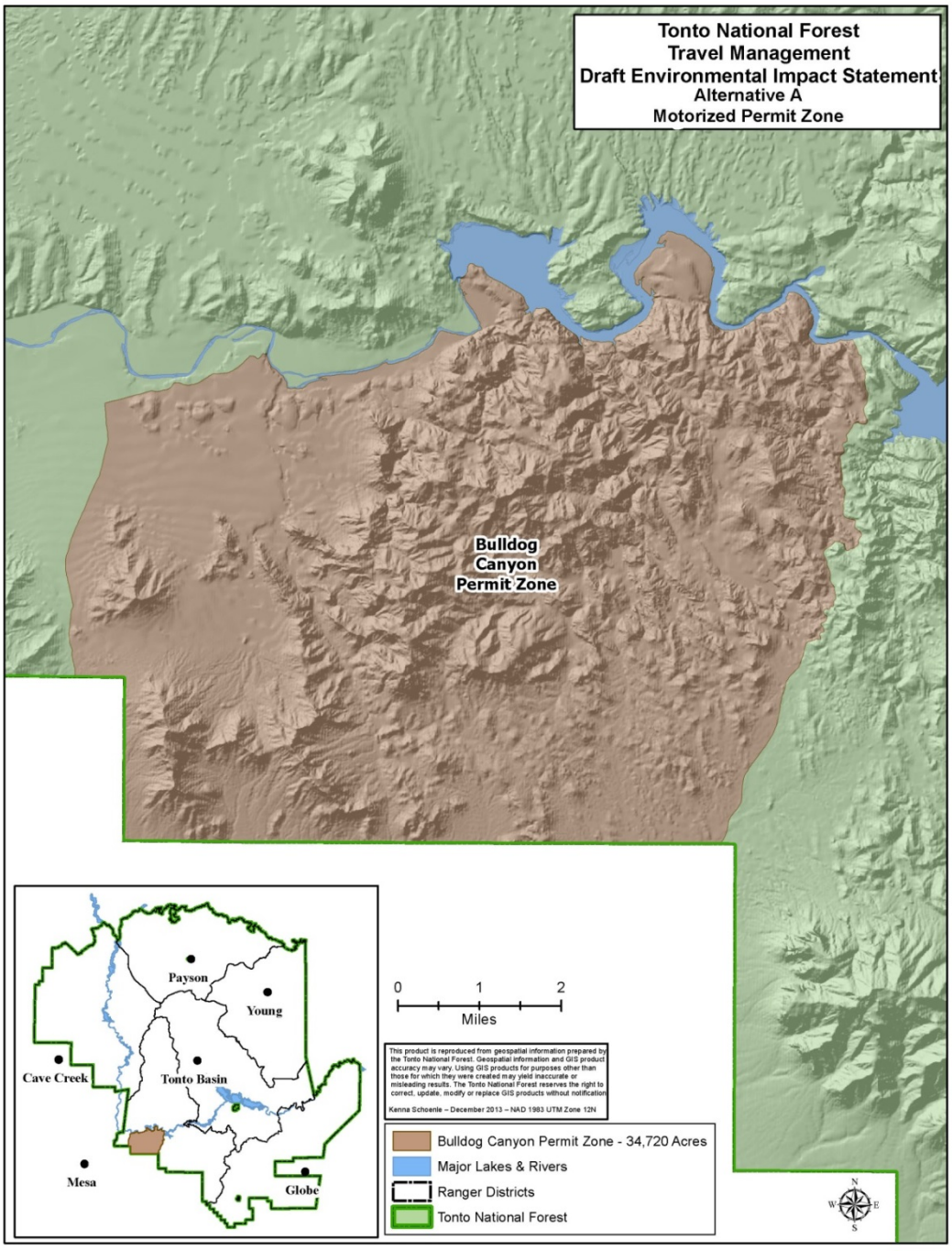

Figure 2: Map of Permit Zones for Alternative A

Motor Vehicle Use for Big Game Retrieval

The Arizona Game and Fish Department is the state agency responsible for managing game and nongame species in Arizona. The Tonto National Forest is divided into game management units, each of which has a different set of species and seasons that hunting can take place (Figure 3). Arizona Game and Fish Department manages the hunting and fishing license program along with providing programs targeted at conserving Arizona's diverse wildlife resources and managing for safe, compatible outdoor recreation opportunities.

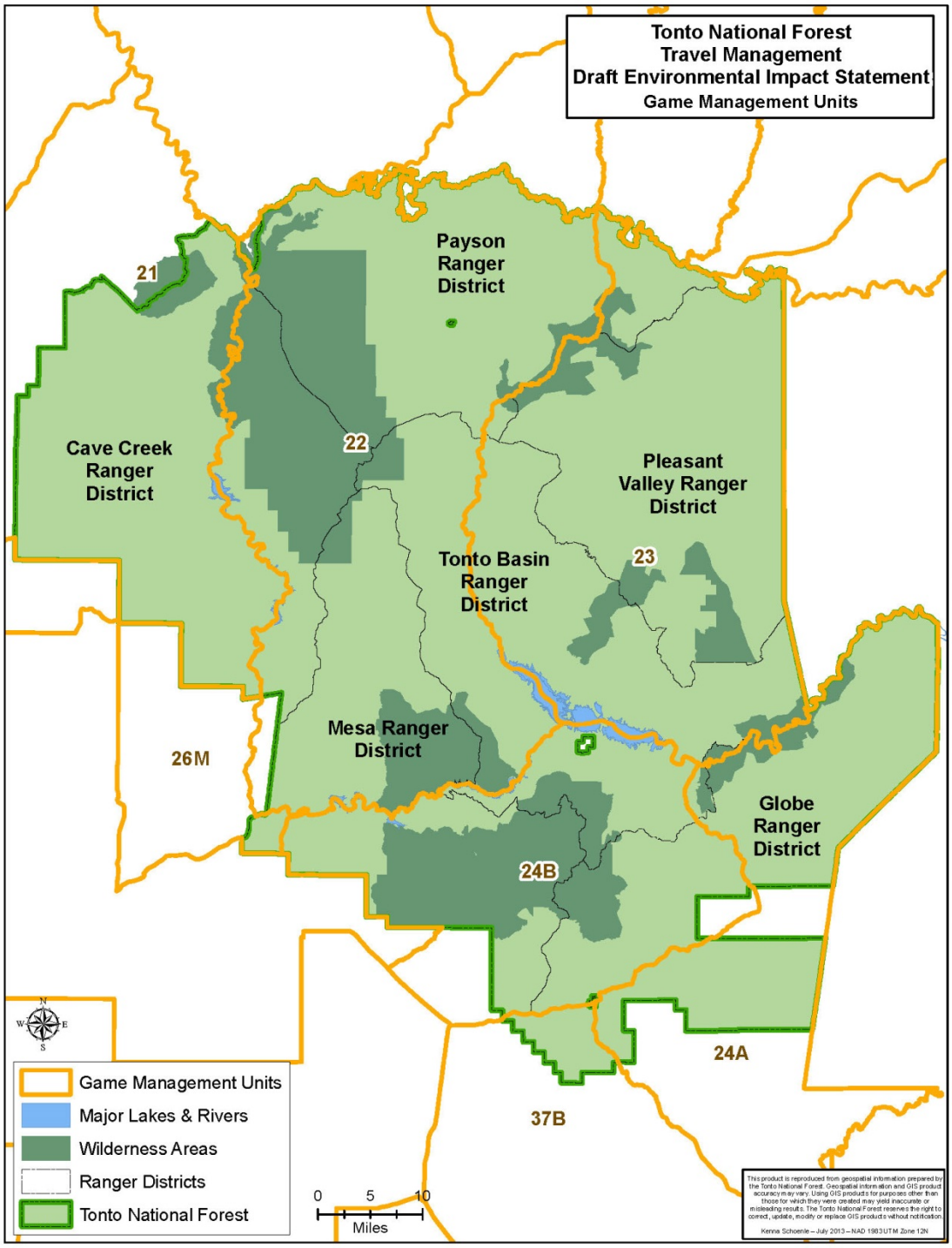

Figure 3: Map of Game Management Units Overlapping the Tonto National Forest

Currently, within the Payson and Pleasant Valley ranger districts, unless otherwise posted, motorized vehicles are allowed to travel cross-country for any number of activities, including retrieval of game (Figure 4). Hunters that qualify for the Arizona Game and Fish Department CHAMP permit[14], which may be issued to persons who have a permanent disability or combination of disabilities, are restricted to the same acreage as is currently open to cross-country travel.

[14] For more information about the CHAMP program with Arizona Game and Fish Department, go to Arizona Game and Fish Department Special Licenses

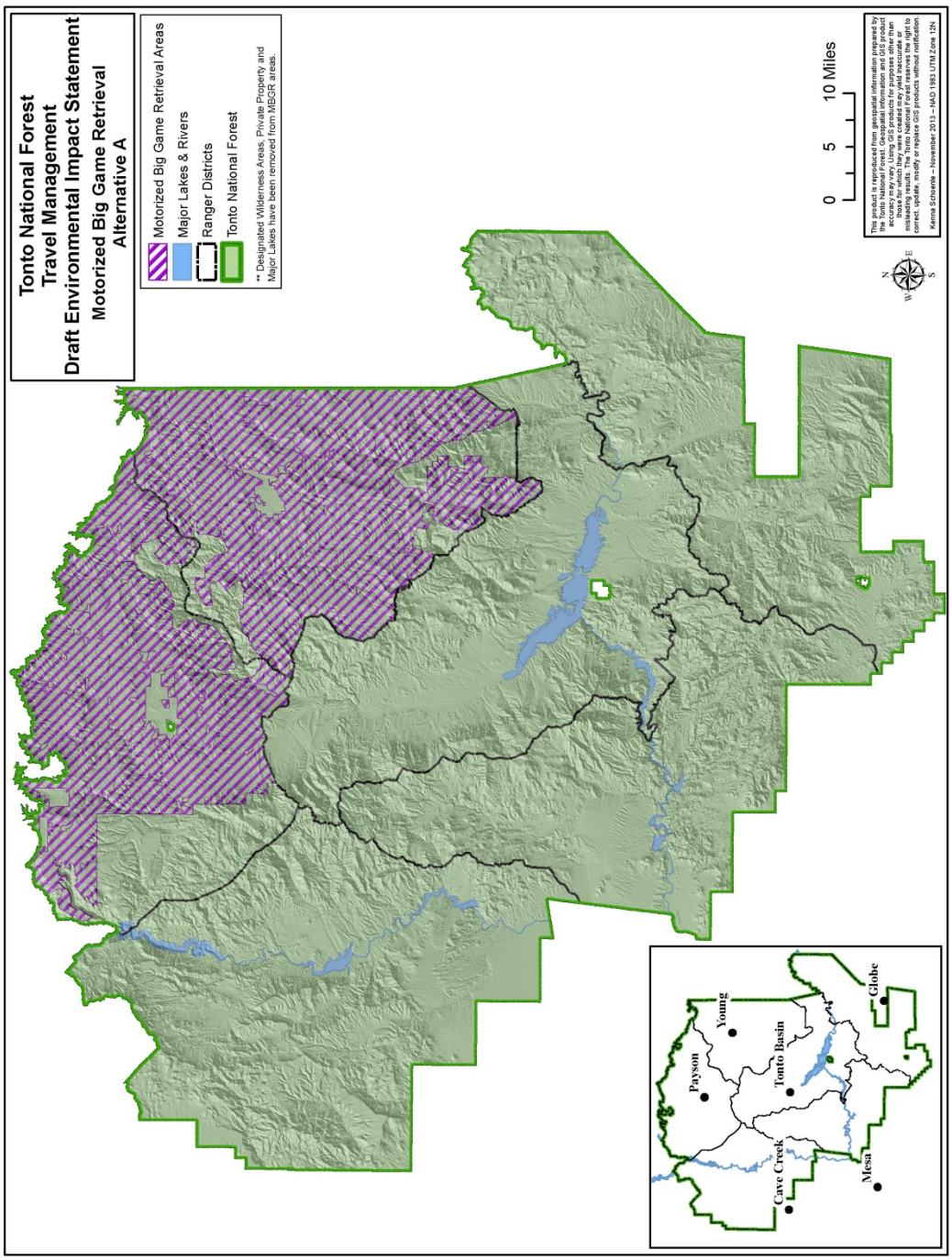

Figure 4: Map of Motorized Big Game Retrieval for Alternative A

In the remaining ranger districts, cross-country motorized travel is prohibited, unless posted open, and the current Forest Plan does not address a need for motorized big game retrieval. As a result, motorized vehicles are not allowed to travel cross-country for the purpose of retrieving downed game animals in most of the Cave Creek, Mesa, Globe, or Tonto Basin ranger districts. However, hunters may still unknowingly travel on unauthorized routes to retrieve game because of the current lack of signs on the ground or unintentionally taking a well-defined unauthorized route thinking it was a designated road on the current forest visitor map.

Motor Vehicle Use for Dispersed Camping

Use of motor vehicles off National Forest System roads to access campsites is a popular activity on the Tonto National Forest. In some instances, forest visitors park their vehicles at trailheads or roadside locations and hike to their camping spots. Others will drive cross-country to their desired camping spot, often with a recreational vehicle or camping trailer. Frequently-used dispersed campsites, where evidence of past use exists, are located along both National Forest System roads and unauthorized routes throughout the Forest. Currently, the distance traveled from existing roads to frequently-used dispersed campsites can vary depending on the terrain and proximity to water and shade trees. Based on knowledge from Forest Service law enforcement officers and Arizona Game and Fish Wildlife Managers, most of these dispersed campsites are within 300 feet of an existing road, including sites on the four districts where cross-country travel is currently prohibited. On the northern two ranger districts (Payson and Pleasant Valley), driving cross-country has been permitted regardless of the distance from an existing road (Figure 5). On the four southern ranger districts, driving off road is prohibited unless posted open and campers have been cited for driving off roads illegally.

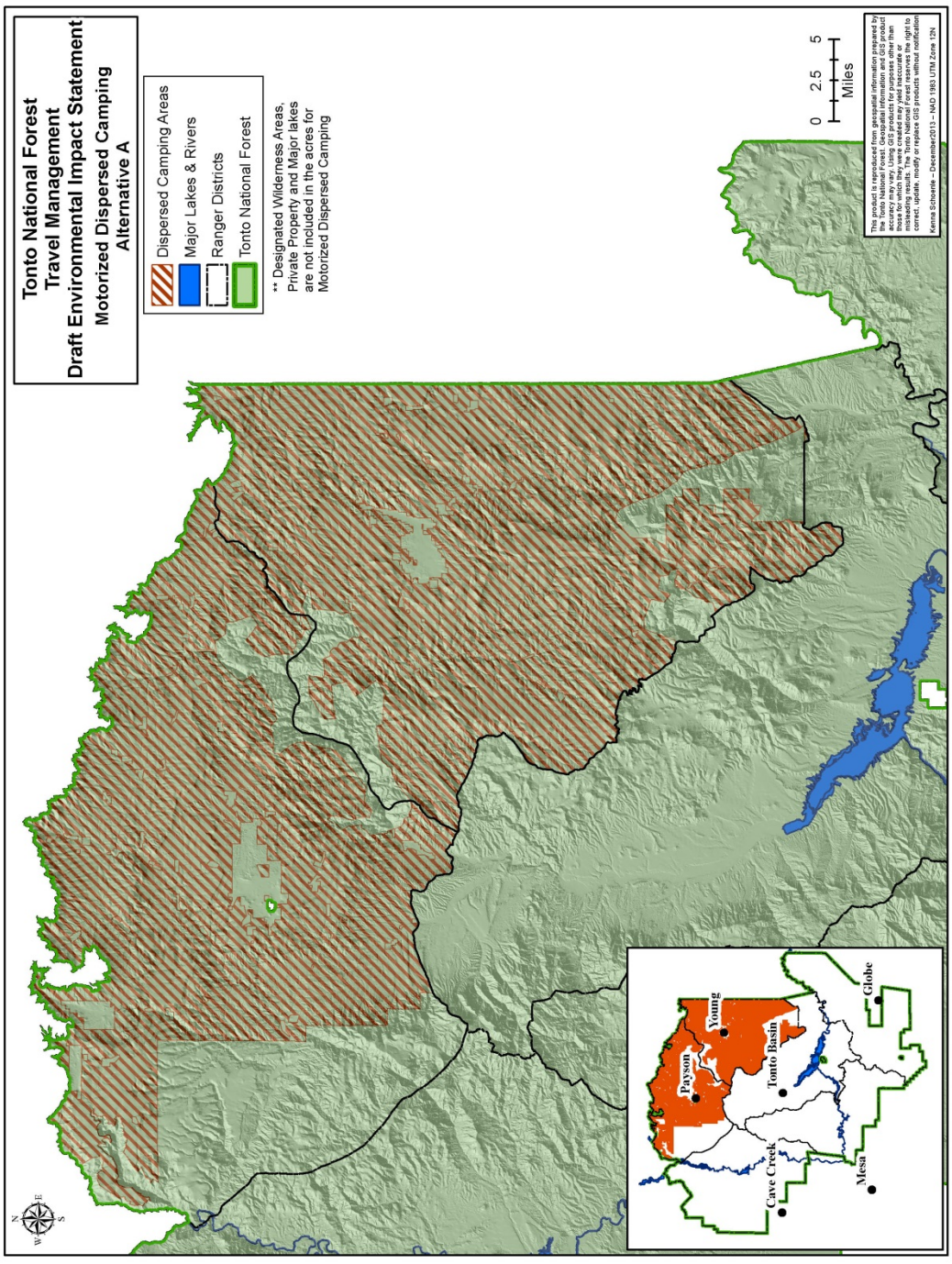

Figure 5: Map of Dispersed Camping for Alternative A

Within the last 15 years, Forest Service employees and contractors have mapped approximately 999 dispersed campsites within the Tonto National Forest[15]. This data was collected in a targeted manner, and is not an appropriate representation of dispersed camping within the Tonto National Forest. This data is not exhaustive, and as such, without site-specific information about existing dispersed sites that have yet to be mapped or recorded, a quantitative analysis of their effects cannot be conducted in this draft EIS. In addition, the data that has thus far been collected does not indicate the size or condition of the site. On the ground, most of the sites are the size of the disturbance associated with camping. Based on knowledge from Forest Service law enforcement officers and Arizona Game and Fish Wildlife Managers, these sites can range from less than 10 feet by 10 feet to an area approximately 100 feet across.

Additional Information Pertaining to Motor Vehicle Use Designation

Personal use fuelwood gathering and other forest products: Currently, permits for personal use fuelwood gathering are limited to the Globe, Payson, Pleasant Valley, and Tonto Basin ranger districts. Currently, this area is approximately 1,345,998 acres (Figure 6).

[15] None of these inventoried dispersed camping sites are located in the Globe and Mesa ranger districts.

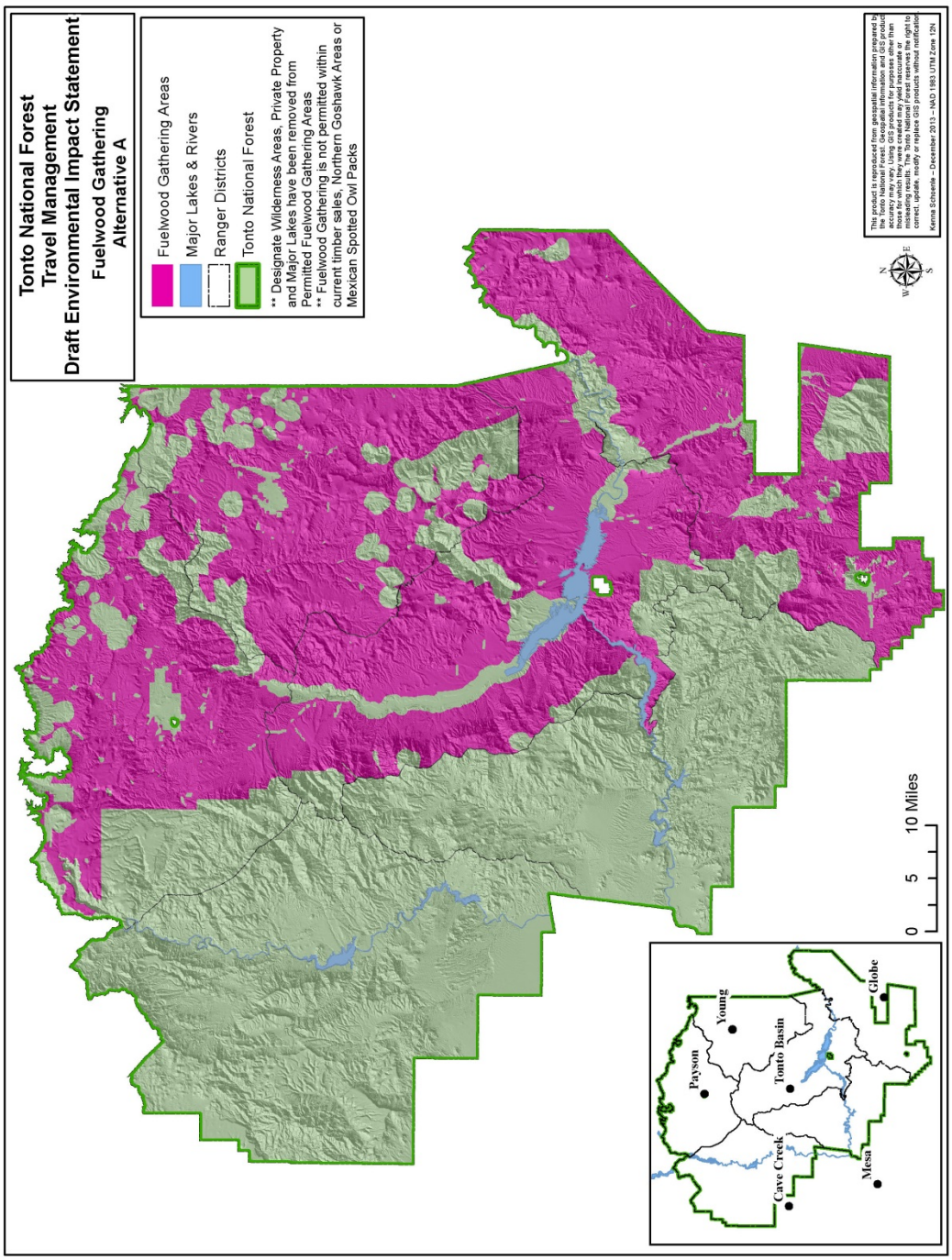

Figure 6: Map of Fuelwood Areas for Alternative A

Each year approximately 1,500 permits are issued and are for the Tonto National Forest only[16]. It does not allow cutting on other public land or on private land. Rules for permit holders include: Do not cut or remove wood from wilderness and experimental areas, campgrounds and picnic areas, restricted areas, administrative sites, ongoing commercial fuelwood or timber sales, special personal use areas, or nonharvest areas identified on the attached maps; and no fuelwood cutting is allowed on Mesa or Cave Creek ranger districts.

According to a Tonto National Forest silviculturist, the 2012 fuelwood gathering season ran from March 1 to December 31 (which is a standard season). During that time period, approximately 1,120 paid fuelwood permits for oak and juniper were issued, for a total volume of 4,484 hundred cubic feet. In addition, 296 free fuelwood permits for pinyon pine and ponderosa were issued, for a total volume of 1,184 hundred cubic feet.

Where fuelwood cutting is permitted, the following stipulations currently apply:

- Locate fuelwood before moving vehicle off route; take the most direct route to the product.
- Do not damage other vegetation in route to product location.
- Return to the designated road on the same direct path used; cover your route with slash or other available debris.
- If there is no good route; do not attempt to collect that fuelwood.
- Do not go off road when soils are wet or rutting may occur.

Additional forest products, such as seeds, cones, branches of shrubs, and driftwood, also need a permit to be gathered on the Tonto National Forest. The permits for most of these products are within existing permitted fuelwood gathering areas. Outside of these permitted areas, additional forest products would only be allowed using a motor vehicle on designated roads and in areas where motorized cross-country travel is permitted.

Collection of forest resources by tribal members: Currently, the policy (in compliance with the *American Indian Religious Freedom Act* and the U.S. Forest Service Policy toward American Indians and Alaska Natives (FSM 1563)) for the Tonto National Forest requires a permit for timber products to be used for religious purposes. No Forest Service permit is required for the collecting of minor quantities of medicinal and ceremonial plants, acorns, pinyon nuts, agave, tree boughs, water, plants, quartz crystals, other minerals, soil, invertebrate fossil remains, rocks, trees less than six feet in height, and other food plants or other resources for personal (noncommercial) use in traditional cultural or religious activities, provided those activities are in accordance with *Executive Order 13007*, applicable laws and regulations, and Forest Service policies regarding special forest products and botanical products. For tribal members, no artifacts or other cultural items or remains may be collected from archaeological sites without a permit. Motorized use for the gathering of forest resources is only allowed on designated roads. A permit does not allow cross-country vehicle travel.

[16] There is currently not a limit to the number of permits issued.

Need to amend the Forest Plan to include language from the decision: Motorized travel currently follows the Forest Plan, forest order closures, and Congressional designations, such as wilderness areas. This alternative would result in no amendments to the Forest Plan.

Alternative B

This alternative provides less motorized access than the existing condition and the proposed action and was developed to address the following issues identified during the scoping of the proposed action:

- Designation of roads and motorized trails would result in user conflict;
- Designation of roads, motorized trails, and OHV areas would result in impacts to water and soil resources;
- Designation of roads and motorized trails would result in impacts to wildlife habitat;
- Designation of roads and motorized trails would result in impacts to cultural resources;
- Authorizing motorized big game retrieval off designated routes could impact water and soil resources, wildlife habitat, cultural resources, and nonmotorized recreational experiences; and
- Motorized dispersed camping corridors allow motorized use in areas that can cause impacts to water and soil resources, wildlife habitat, and cultural resources.

Roads and Trails Designated for Motor Vehicle Use

Alternative B would result in 2,367 miles of roads proposed for decommissioning; some of these roads may already be effectively obliterated on the ground from lack of use or due to previous road closure efforts (Table 3). For public access, approximately 894 miles of designated roads and 1,666 miles of motorized trails would be open; leaving approximately 144 miles of roads and 355 miles of motorized trails restricted to public motorized use but authorized for administrative use[17] by the Forest Service or permitted activities. (Map B in the map packet shows the route system for this alternative.) Designated National Forest System roads within existing seasonal closure areas would be seasonally designated for motor vehicle use[18].

Table 3: Roads and Trails for Alternative B

Type of Road/Trail	Miles
Roads Open to Passenger Vehicles	353.38
Roads Open to High Clearance Vehicles	540.13
Motorized Trails (Single Track)	1.12
Motorized Trails (General)	1,664.95
Administrative Use Only Road	144.30
Administrative Use Only Motorized Trail	355.04

[17] Administrative use only means that motorized access is restricted, often with a locked gate, to Forest Service personnel or those that hold an authorized use permit to access the road or trail. These routes would not show up on the motor vehicle use map. Motorized user not authorized to be on these routes would be cited for being in violation.
[18] A detailed account of each route for the Tonto National Forest for Alternative B can be found in the project record.

Type of Road/Trail	Miles
Closed	0.00
Decommissioned Routes	2,367.03
Total Motorized Routes Open to Public	**2,559.57**
Total Motorized System	**3,058.90**

Of the unauthorized roads inventoried, Table 4 shows the mileage and proposed designation for this alternative.

Table 4: Unauthorized Routes Proposed for Inclusion for Alternative B

Type of Road/Trail	Miles
Roads Open to Passenger Vehicles	4.12
Roads Open to High Clearance Vehicles	6.45
Motorized Trails (Single Track)	0.00
Motorized Trails (General)	0.00
Administrative Use Only Road	10.34
Administrative Use Only Motorized Trail	29.53
Total Motorized Open to Public	**10.58**
Total Miles Proposed for Inclusion	**50.44**

Areas Designated for Motor Vehicle Use

In this alternative, there would be no designation of OHV areas.

Permit Zones

For this alternative, there would be five permit zones where motorized vehicles have to stay on designated routes and cannot travel cross-country: Bulldog Canyon, Desert Vista, The Rolls, St. Clair, and Sycamore (Table 5 and Figure 7).

Table 5: Permit Zones for Alternative B

Name of Permit Zone	Ranger District	Acres
Bulldog Canyon	Mesa	34,720.0
Desert Vista	Cave Creek	33,479.3
The Rolls	Mesa	24,143.7
St. Clair	Cave Creek	24,454.9
Sycamore	Mesa	34,127.0
Total		**150,924.9**

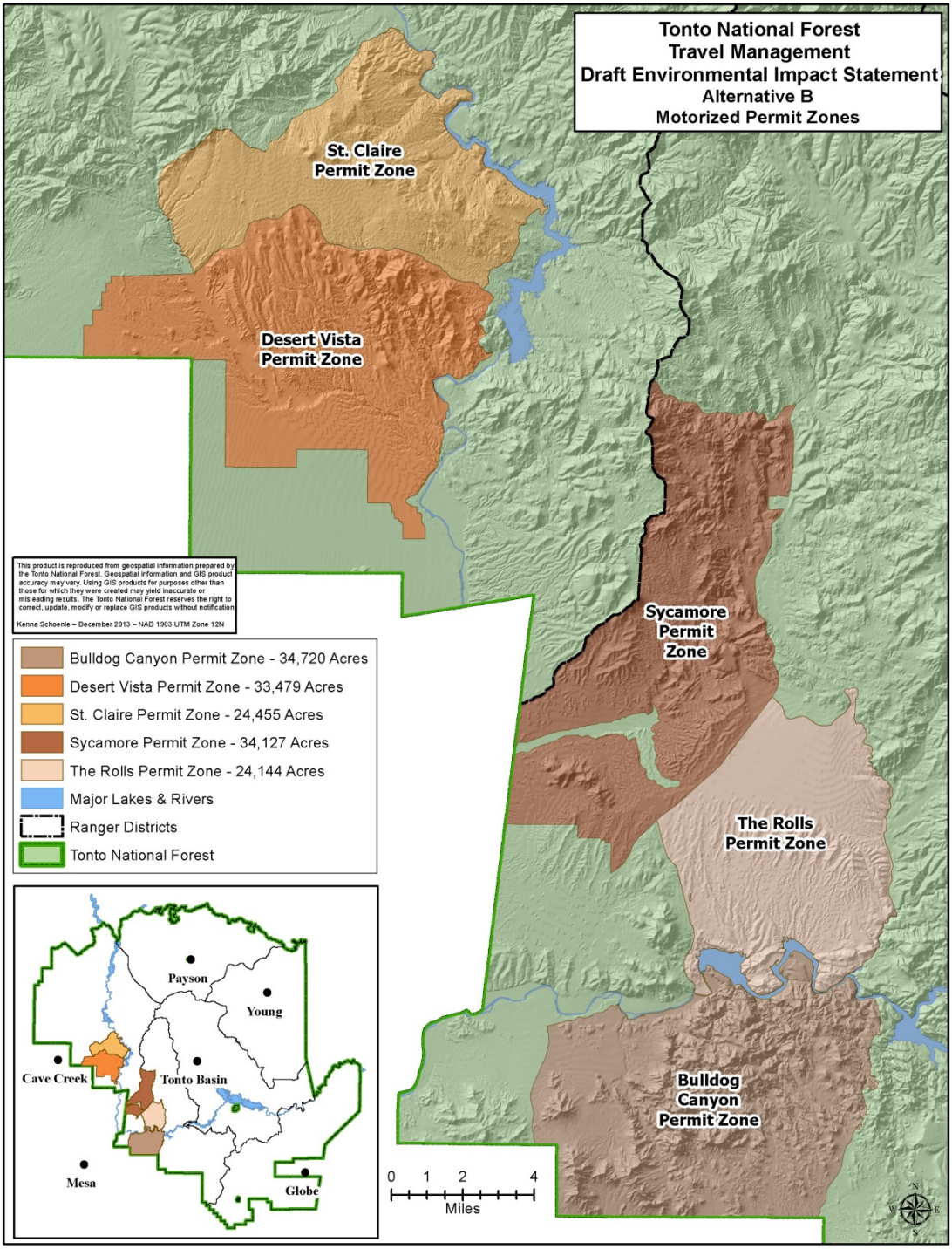

Figure 7: Map of Permit Zones for Alternative B

Motor Vehicle Use for Big Game Retrieval

No motorized cross-county travel would be allowed for the retrieval of any game species in this alternative.

Motor Vehicle Use for Dispersed Camping

Motorized access for dispersed camping in this alternative would be limited to designated dispersed sites that are accessible by a designated road or motorized trail. As indicated in the No Action Alternative (alternative A), Forest Service employees and contractors have mapped approximately 999 sites within the Tonto National Forest. However, not all of these sites would be designated in this alternative. Using a mapping exercise to draw a 50 foot buffer around these 999 sites, those that intersected designated routes for this alternative and were not within wilderness or private property would be designated as dispersed camping sites that can be accessed using a motor vehicle (Figure 8). Using this mapping exercise, 414 sites, totaling approximately 65 acres, would be designated for this alternative.

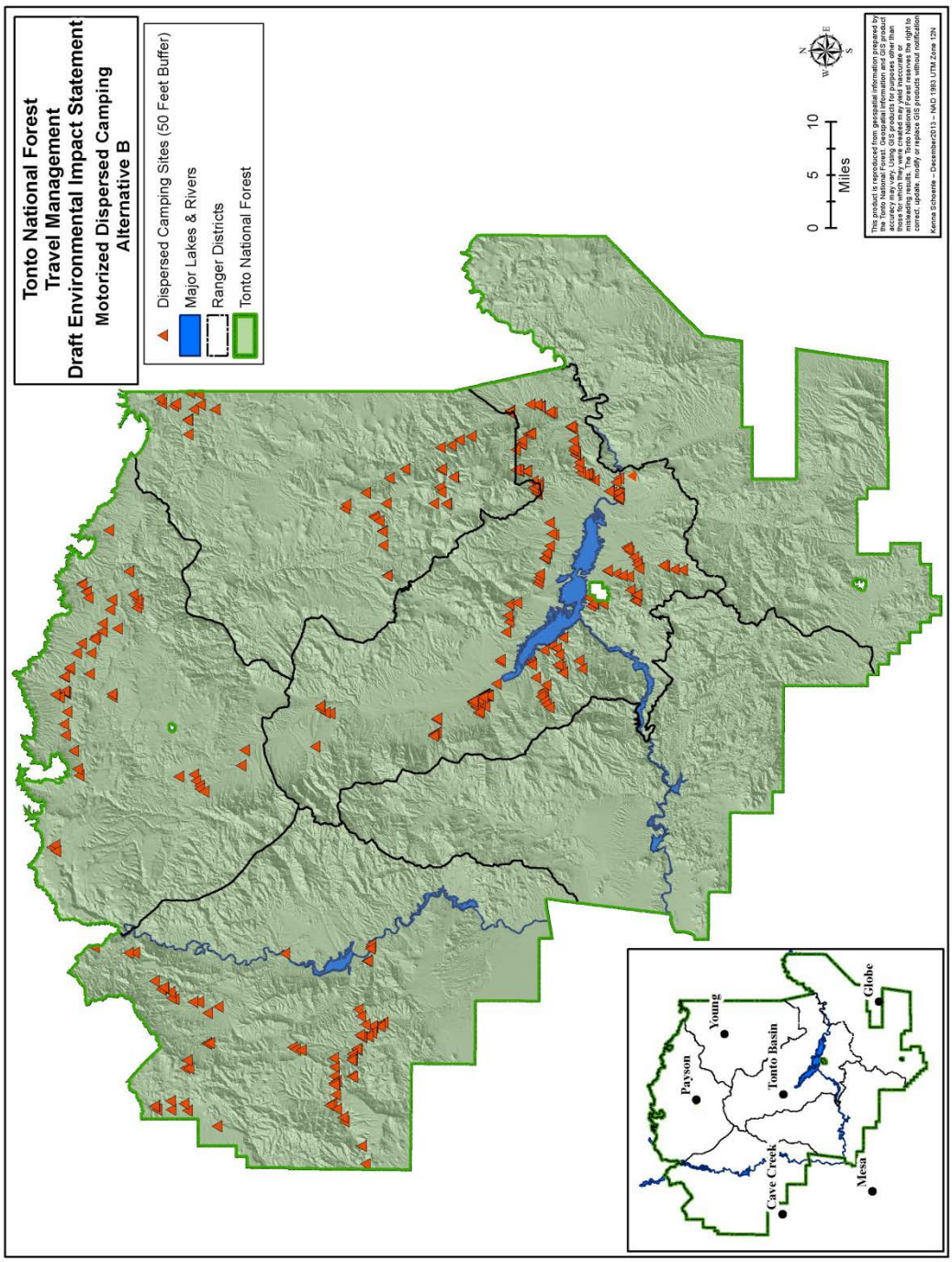

Figure 8: Map of Dispersed Camping for Alternative B

Additional Information Pertaining to Motor Vehicle Use Designation

Personal use fuelwood gathering: For some members of the public, especially those in remote towns located within the forest, fuelwood gathering on public lands is necessary to provide heat and a means for preparing food. As such, the use of a motorized vehicle for the purpose of collecting fuelwood would be permitted within 300 feet of a designated road or motorized trail within a woodcutting permit area, resulting in approximately 132,568 acres[19] (Figure 9).

[19] For the purpose of this analysis, all currently foreseeable fuelwood gathering permit areas are represented. However, in practice, these areas are not all open for use every year; this is dependent on existing vegetation conditions and the need to decrease dead and down material.

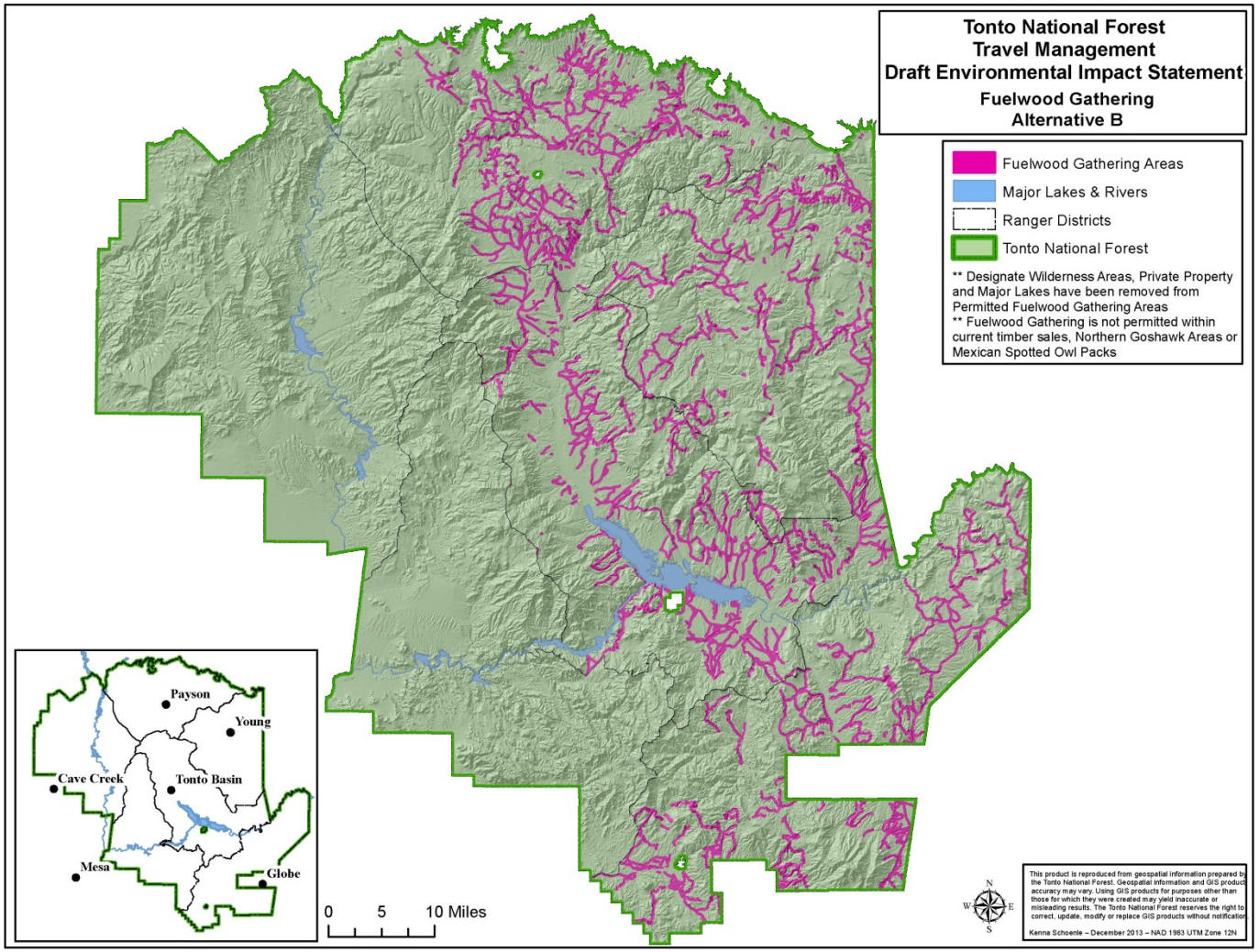

Figure 9: Map of Fuelwood Areas for Alternative B

Each year approximately 1,500 permits are issued and are for the Tonto National Forest only. Under this alternative, there is no quantitative information available that would indicate that the number of permits issued would change, either increasing or decreasing.

Collection of forest resources by tribal members: For Alternative B, there would be no change from the existing condition.

Need to amend the Forest Plan to include language from the decision: Alternative B would require the Forest Plan to be amended. A table summarizing the proposed changes to the forest plan is in Appendix A.

Alternative C

This alternative is a modified version of the proposed action scoped in February 2013 and was modified in response to comments received thus far in the project, along with feedback from Arizona Game and Fish Department, a Cooperating Agency for this project. The most notable change from the February 2013 proposed action is the designation of motorized trails for vehicles over 50 inches in width. Many comments came in indicating the need for motorized routes that provide a challenge and a range of opportunity greater than what ML 2 roads traditionally do. The ability to "rock crawl" and experience the opportunity to "conquer rough terrain" are potential elements that are not usually present on ML 2 roads that could be provided by the designation of motorized trails. Commenters also indicated that they would be inclined to volunteer with maintenance needs on motorized trails if they met the recreation needs, a Forest Service program called "Adopt a Trail." Finally, comments received also indicated the need for retrieval of bear using a motor vehicle[20].

Alternative C also reflects changes that resulted from a review of the Tonto National Forest road system. This information was further reviewed on a district level, involving district rangers, Forest Service personnel familiar with existing road and resource conditions, and Arizona Game and Fish Department Wildlife Managers whose wildlife management responsibilities overlapped with the corresponding district boundaries. This process allowed for the correction of alignment of roads using aerial imagery gathered in 2012, as reflected in this alternative. In addition, roads that were incorrectly identified as a higher maintenance level were corrected when possible to reflect the current and desired use. More information on these changes is available in the project record.

Roads and Trails Designated for Motor Vehicle Use

Alternative C would result in 1,290 miles of roads proposed for decommissioning; some of these roads may already be effectively obliterated on the ground from lack of use or due to previous road closure efforts (Table 6). For public access, approximately 1,340 miles of designated roads and 2,230 miles of motorized trails would be open; leaving approximately 166 miles of roads and 399 miles of motorized trails restricted to public motorized use but authorized for administrative use[21] by the Forest Service or permitted activities. (Map C in the map packet shows the route

[20] Additional information and justification for the inclusion of bear can be found in the Game and Nongame section of Chapter 2 of this document.

[21] Administrative use only means that motorized access is restricted, often with a locked gate, to Forest Service personnel or those that hold an authorized use permit to access the road or trail. These routes would not show up on the motor vehicle use map. Motorized users not authorized to be on these routes would be cited for being in violation.

system for this alternative.) Designated National Forest System roads within existing seasonal closure areas would be seasonally designated for motor vehicle use[22].

Table 6: Roads and Trails for Alternative C

Type of Road/Trail	Miles
Roads Open to Passenger Vehicles	544.47
Roads Open to High Clearance Vehicles	795.70
Motorized Trails (Single Track)	78.42
Motorized Trails (General)	2,150.94
Administrative Use Only Road	165.79
Administrative Use Only Motorized Trail	398.58
Closed	0.00
Decommissioned Routes	1,289.80
Total Motorized Open to Public	**3,569.52**
Total Motorized System	**4,133.90**

Of the unauthorized roads inventoried, Table 7 shows the mileage and proposed designation for this alternative.

Table 7: Unauthorized Routes Proposed for Inclusion for Alternative C

Type of Road/Trail	Miles
Roads Open to Passenger Vehicles	4.12
Roads Open to High Clearance Vehicles	6.45
Motorized Trails (Single Track)	72.59
Motorized Trails (General)	206.71
Administrative Use Only Road	10.75
Administrative Use Only Motorized Trail	29.53
Total Motorized Open to Public	**289.88**
Total Miles Proposed for Inclusion	**330.16**

Areas Designated for Motor Vehicle Use

In this alternative, motorized cross-county travel would be limited to four areas (Table 8 and Figure 10): The area around Bartlett Lake (Cave Creek Ranger District) between the variable

[22] A detailed account of each route for the Tonto National Forest Alternative C can be found in the project record.

water level and the high water mark[23]; Golf Course (Globe Ranger District); the area around Roosevelt Lake (Tonto Basin Ranger District) between the variable water level and the high water mark[24]; and Sycamore (Mesa Ranger District) totaling approximately 6,779 acres. In addition, commenters indicated the need to provide an opportunity for youth riders just learning OHV use and safety. To address this need, there are four proposed "tot lots" totaling approximately 12 acres. These areas would be limited to children and would allow them to learn to ride without the presence of other motorized users.

Table 8: OHV Areas for Alternative C

Name of OHV Areas	Ranger District	Acres
Bartlett Lake	Cave Creek	922.2
Golf Course	Globe	17.3
Roosevelt Lake	Tonto Basin	4,507.6
Sycamore	Mesa	1,331.9
Tot Lot Areas		
532	Cave Creek	0.8
Sycamore	Mesa	3.0
The Rolls	Mesa	6.0
Wildcat	Cave Creek	1.6
Total		**6,790.4**

[23] Some areas between the high water mark and the water will be prohibited to cross-country motorized travel to protect resources and to depict places where natural barriers and topography make motorized travel dangerous.
[24] Ibid

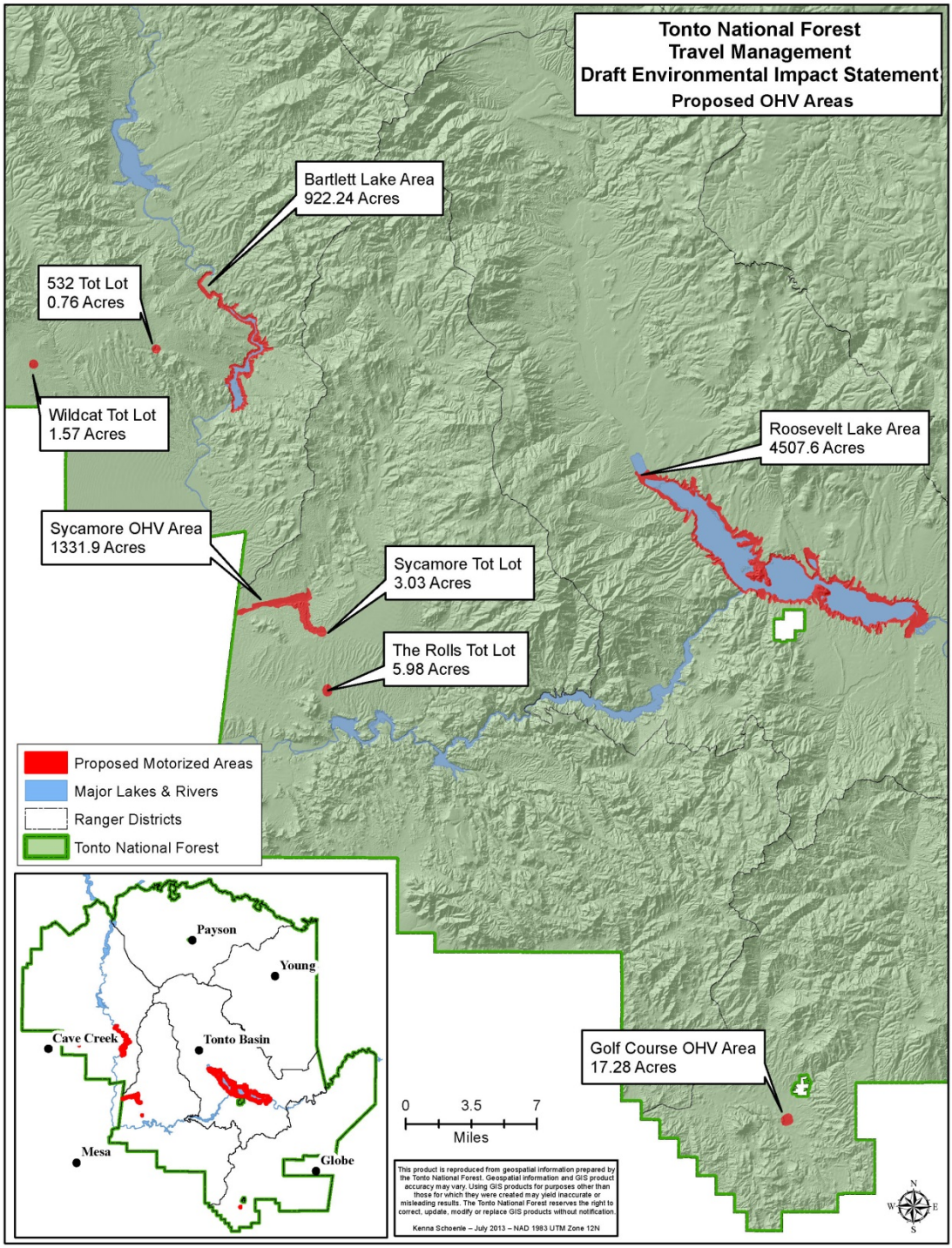

Figure 10: Map of OHV Areas for Alternatives C

Permit Zones

For this alternative, there would be four permit zones[25] where motorized vehicles have to stay on designated routes and cannot travel cross-country: Bulldog Canyon (Mesa Ranger District); Desert Vista (Cave Creek Ranger District); The Rolls (Mesa Ranger District); and St. Clair (Cave Creek Ranger District) (Table 9 and Figure 11).

Table 9: Permit Zones for Alternative C

Name of Permit Zone	Ranger District	Acres
Bulldog Canyon	Mesa	34,720.0
Desert Vista	Cave Creek	33,479.3
The Rolls	Mesa	24,143.7
St. Clair	Cave Creek	24,454.9
Total		**116,798**

[25] The Sycamore OHV Permit Zone was removed from this alternative in response to input questioning the ability to effectively implement controlled access for this area.

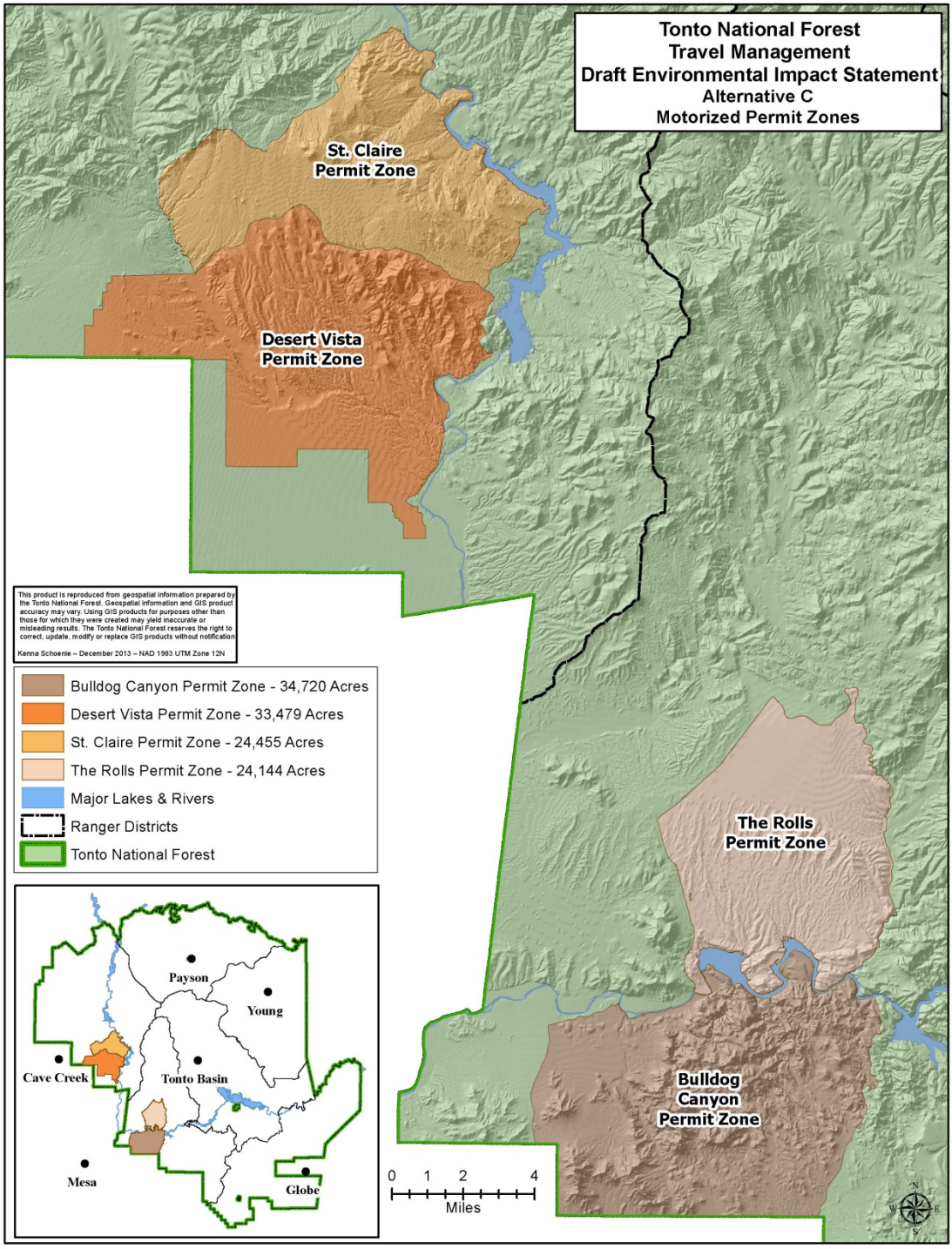

Figure 11: Map of Permit Zones for Alternative C

Motor Vehicle Use for Big Game Retrieval

Alternative C would allow motor vehicle use, up to one mile on both sides of all designated roads and motorized trails, solely for retrieving legally harvested elk and bear for all hunts[26]. Limitations to this corridor would be within congressionally designated areas where motorized travel is not permitted and other areas that would remain closed from existing closure orders. This results in approximately 1,293,178 acres where motorized retrieval would be permitted Figure 12).

[26] Within this corridor, Arizona Game and Fish Department CHAMP holders would be permitted to hunt and retrieve per Arizona Game and Fish Department Special Licenses accessed May 16, 2013. Based on 2012 data provided by the Arizona Game and Fish Department (manger of the program), approximately 81 CHAMP permits were issued for game management units on the Tonto National Forest.

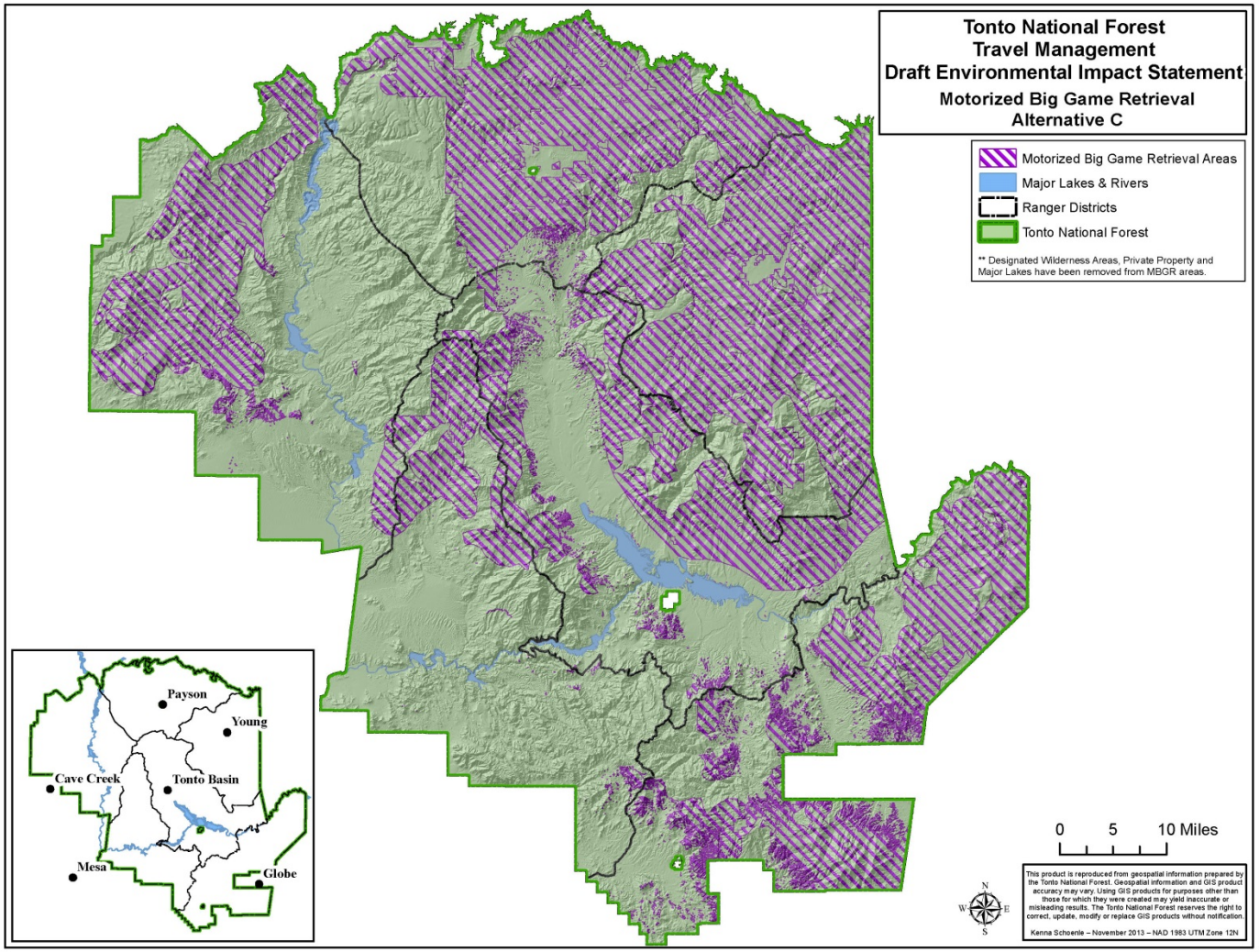

Figure 12: Map of Motorized Big Game Retrieval for Alternative C

The Arizona Game and Fish Department conducted an analysis to approximate the number of individuals that may use motorized big game retrieval on the Tonto National Forest for elk and bear[27] to assist in the understanding of the intensity of retrieval using a motorized vehicle off designated roads and motorized trails for this alternative.

Table 10 shows the approximate number of motorized trips that would be taken yearly, based on game management unit[28] and species.

Table 10: Retrieval of Elk and Bear Data for Alternative C

Game anagement Unit	Elk	Bear
21	*	0.90
22	103.02	2.74
23	90.58	9.16
24A	*	2.37
24B	*	0.40
37B	*	0.00
Total	**193.60**	**15.57**

*Permits for hunting elk are not issued for these units or elk harvested on the Tonto National Forest portions of these units and subsequent motorized big game retrieval is negligible.

Motor Vehicle Use for Dispersed Camping

Alternative C would allow motor vehicle use, up to 100 feet on both sides of all designated roads and motorized trails, for accessing dispersed camping sites (Figure 13). Limitations to this corridor would be in congressionally designated areas where motorized travel is not permitted and other areas that would remain closed from existing closure orders. For this alternative, an area of approximately 91,391 acres will be analyzed for the effects of motor vehicle use for dispersed camping.

[27] For a more detailed description of this analysis, see the Arizona Game and Fish Department Specialist Report in the project record.
[28] A map showing the game management units within the Tonto National Forest can be found in the description of Alternative A in this chapter

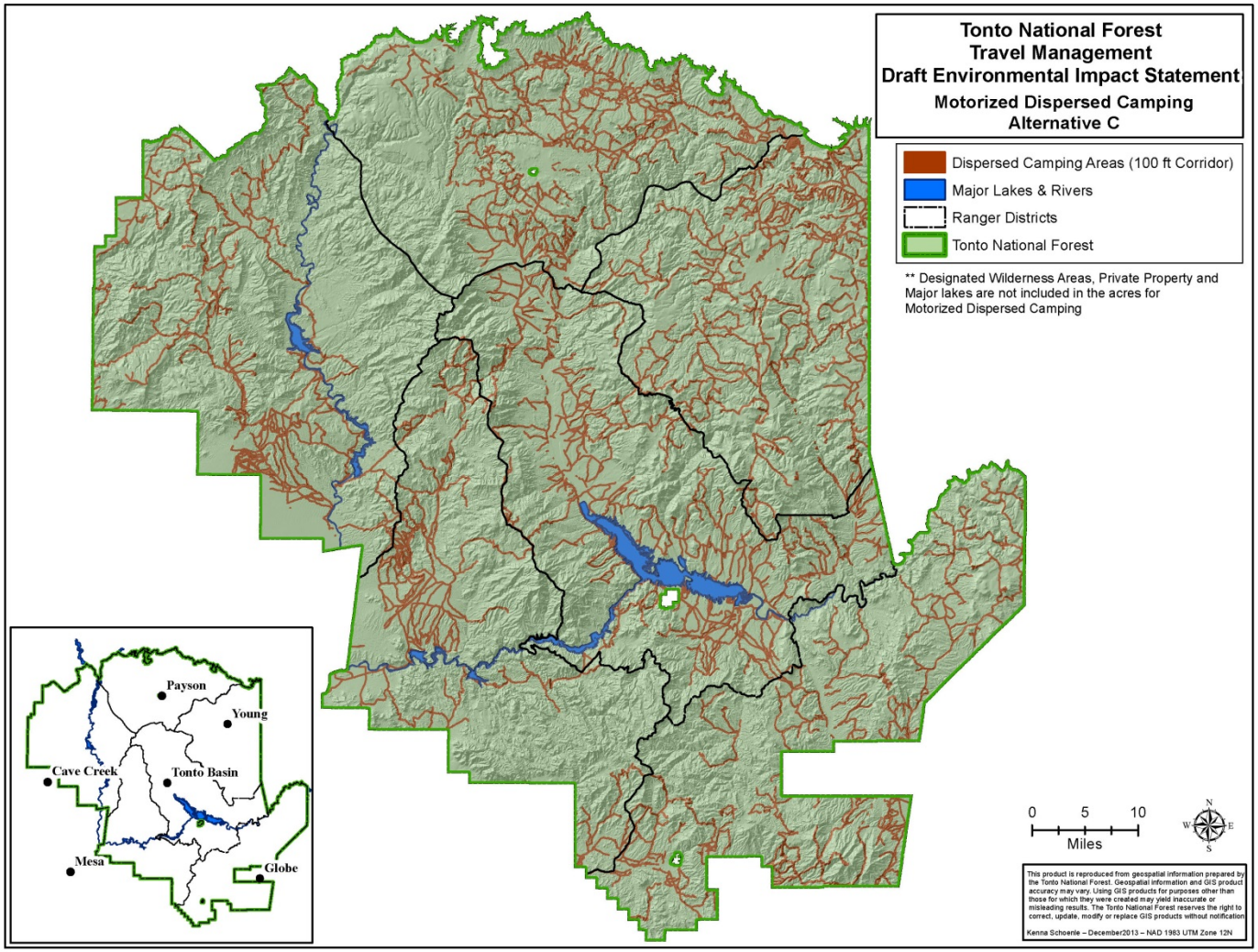

Figure 13: Map of Dispersed Camping Corridors for Alternative C

Additional Information Pertaining to Motor Vehicle Use Designation

Personal use fuelwood gathering: Alternative C would limit the use of a motorized vehicle for the purpose of collecting fuelwood to within 300 feet of a designated road or motorized trail within a woodcutting permit area, resulting in approximately 161,785 acres[29] (Figure 14).

[29] For the purpose of this analysis, all currently foreseeable fuelwood gathering permit areas are represented. However, in practice, these areas are not all open for use every year; it is dependent on existing vegetation conditions and the need to decrease dead and down material.

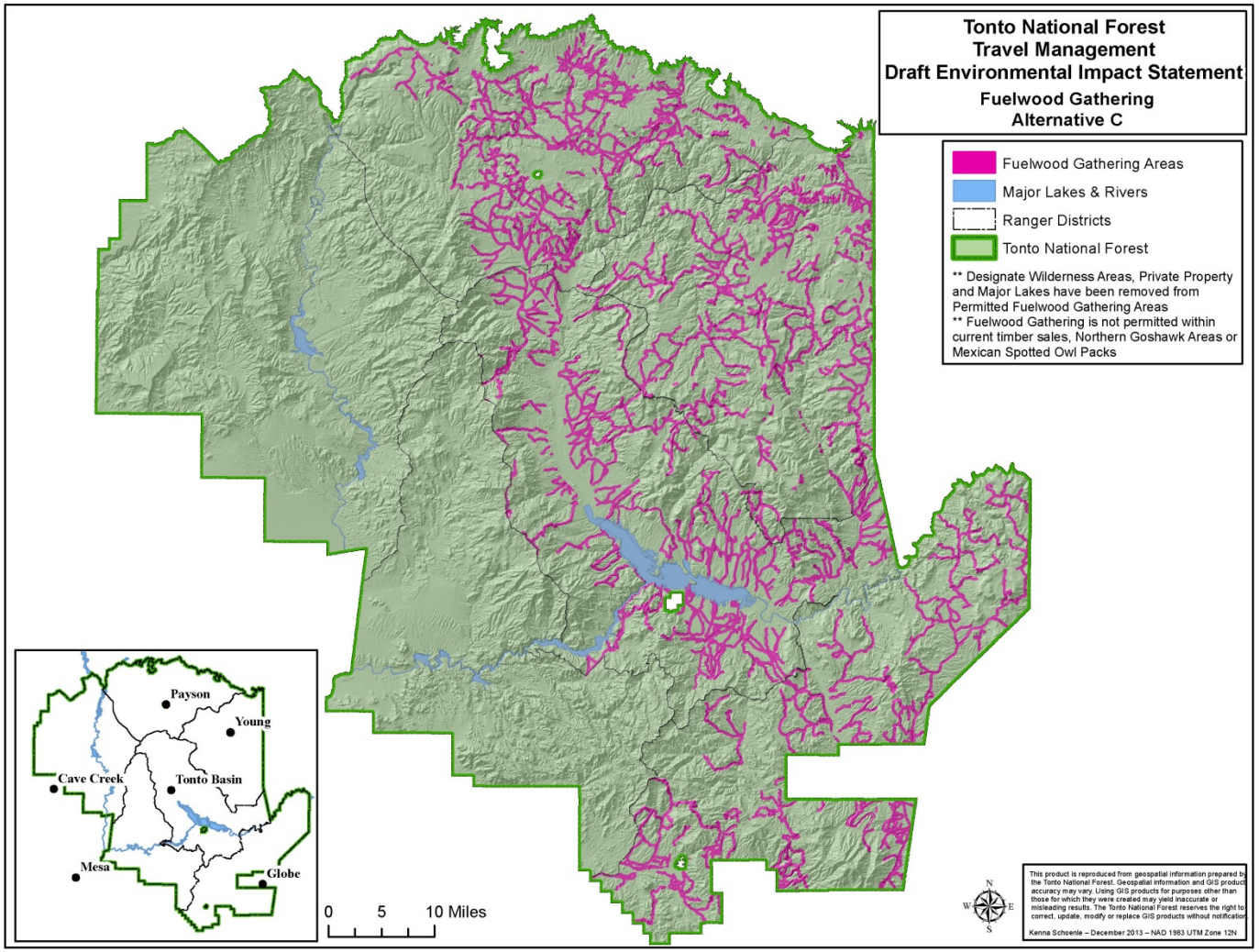

Figure 14: Map of Fuelwood Areas for Alternative C

Each year approximately 1,500 permits are issued and are for the Tonto National Forest only. Under this alternative, there is no quantitative information available that would indicate that the number of permits issued would change, either increasing or decreasing.

Additional forest products, such as seeds, cones, branches of shrubs, and driftwood, also need a permit to be gathered on the Tonto National Forest. In this alternative, collection of these products using a motor vehicle would only be permitted on designated roads and motorized tails.

Collection of forest resources by tribal members: For Alternative C, there would be no change from the existing condition.

Need to amend the Forest Plan to include language from the decision: Alternative C would require the Forest Plan to be amended. A table summarizing the proposed changes to the forest plan is in Appendix A.

Alternative D

This alternative provides more motorized access than the existing condition and the proposed action and was developed to address the following issues identified during the scoping of the proposed action:

- The amount of roads and motorized trails in the proposed action does not meet the current and future needs for motorized recreation and access throughout the Tonto National Forest;
- The proposed action does not meet the needs for diverse motorized recreation opportunities; and
- Limiting motorized access to dispersed camping to 30 feet from designated roads may reduce dispersed camping opportunities, cause user conflict, and concentrate resource impacts.

Roads and Trails Designated for Motor Vehicle Use

Alternative D would result in 194 miles of roads proposed for decommissioning; some of these roads may already be effectively obliterated on the ground from lack of use or due to previous road closure efforts (Table 11). For public access, approximately 3,347 miles of designated roads and 1,520 miles of motorized trails would be open; leaving approximately 49 miles of roads and 297 miles of motorized trails restricted to public motorized use but authorized for administrative use[30] by the Forest Service or permitted activities. (Map D in the map packet shows the route system for this alternative.) Designated National Forest System roads within existing seasonal closure areas would be seasonally designated for motor vehicle use[31].

[30] Administrative use only means that motorized access is restricted, often with a locked gate, to Forest Service personnel or those that hold an authorized use permit to access the road or trail. These routes will not show up on the motor vehicle use map. Motorized users not authorized to be on these routes will be cited for being in violation.
[31] A detailed account of each route for the Tonto National Forest for the Alternative D can be found in the project record.

Table 11: Roads and Trails for Alternative D

Type of Road/Trail	Miles
Roads Open to Passenger Vehicles	546.97
Roads Open to High Clearance Vehicles	2,798.91
Motorized Trails (Single Track)	102.74
Motorized Trails (General)	1,410.72
Administrative Use Only Road	49.27
Administrative Use Only Motorized Trail	296.54
Closed	0.00
Decommissioned Routes	201.22
Total Motorized Open to Public	**4,859.34**
Total Motorized System	**5,205.15**

Of the unauthorized roads inventoried, Table 12 shows the mileage and proposed designation for this alternative:

Table 12: Unauthorized Routes Proposed for Inclusion for Alternative D

Type of Road/Trail	Miles
Roads Open to Passenger Vehicles	4.77
Roads Open to High Clearance Vehicles	131.20
Motorized Trails (Single Track)	96.22
Motorized Trails (General)	320.26
Administrative Use Only Road	0.11
Administrative Use Only Motorized Trail	30.97
Total Motorized Open to Public	**552.45**
Total Miles Proposed for Inclusion	**583.52**

Areas Designated for Motor Vehicle Use

In this alternative, motorized cross-county travel would be limited to the same four areas and four “tot lots” that are being proposed in Alternative C.

Permit Zones

For this alternative, there would be one permit zone, the currently existing Bulldog Canyon Permit Zone on the Mesa Ranger District, totaling approximately 34,720 acres (Figure 15).

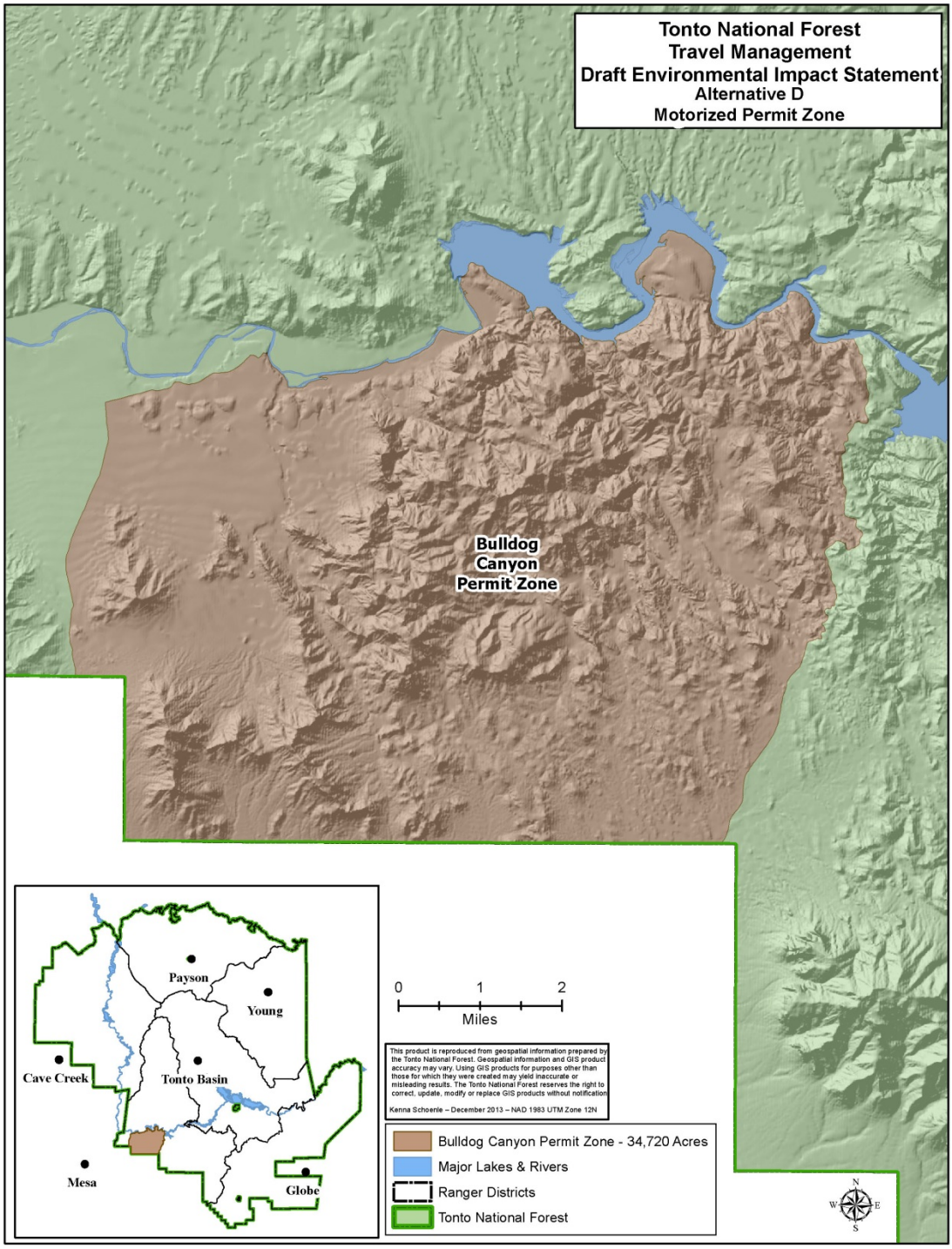

Figure 15: Map of Permit Zones for Alternative D

Motor Vehicle Use for Big Game Retrieval

Alternative D would allow motor vehicle use, up to one mile on both sides of all designated roads and motorized trails, solely for retrieving legally harvested mule deer, white tail deer, elk, and bear for all hunts[32]. Limitations to this corridor would be within congressionally designated areas where motorized travel is not permitted and other areas that would remain closed from existing closure orders. This results in approximately 2,068,208 acres where motorized retrieval would be permitted (Figure 16).

[32] Within this corridor, Arizona Game and Fish Department CHAMP holders would be permitted to hunt and retrieve per Arizona Game and Fish Department Special Licenses accessed May 16, 2013.

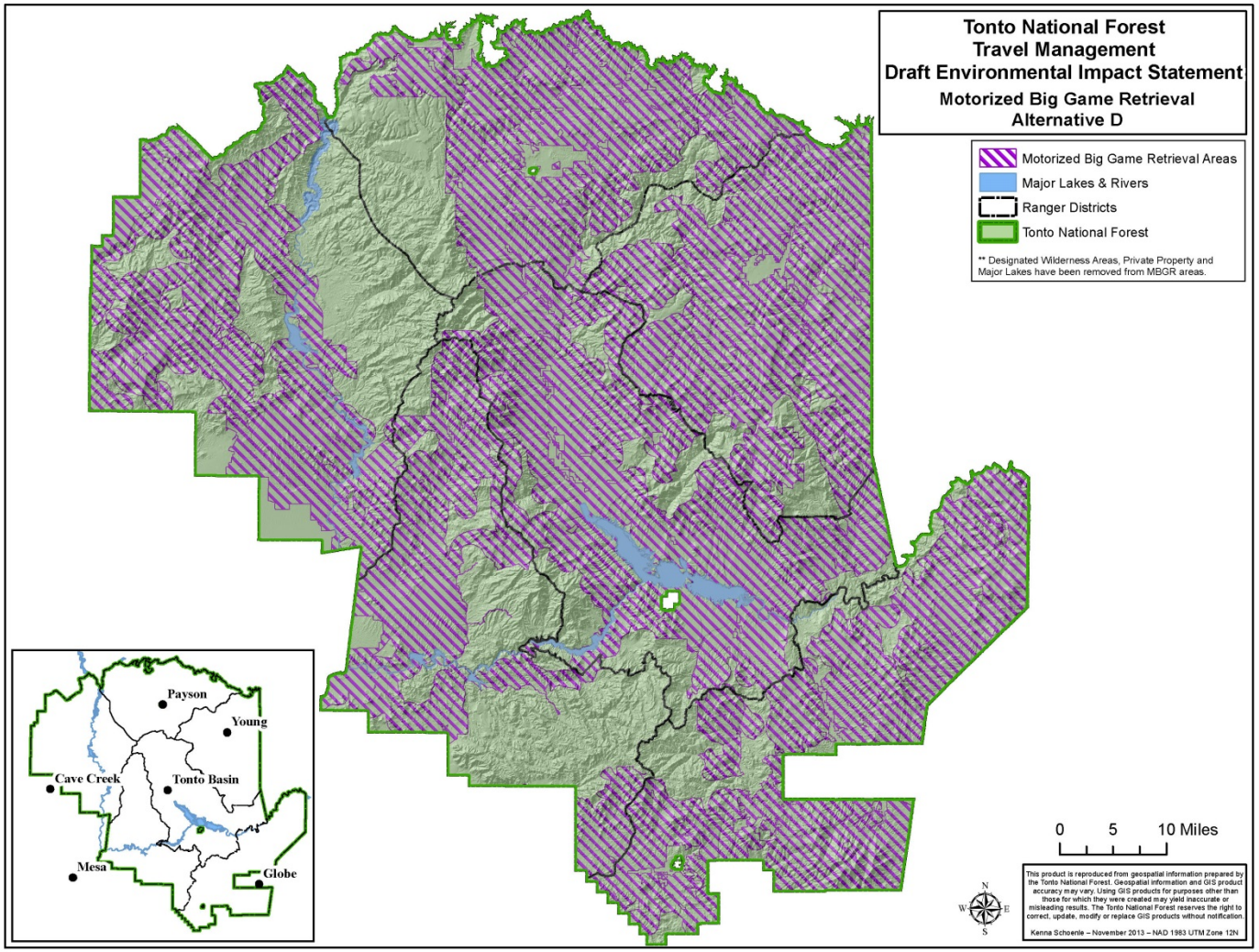

Figure 16: Map of Motorized Big Game Retrieval for Alternative D

Table 13 shows the approximate number of motorized trips that would be taken yearly[33], based on game management unit[34] and species.

Table 13: Retrieval of Mule Deer, Whitetail Deer, Elk, and Bear Data for Alternative D

Game Management Unit	Mule Deer	Whitetail Deer	Elk	Bear
21	25.86	20.08	*	0.90
22	22.36	44.39	103.02	2.74
23	52.41	65.93	90.58	9.16
24A	14.57	43.29	*	2.37
24B	18.61	32.32	*	0.40
37B	1.39	0.06	*	0.00
Total	**135.26**	**206.07**	**193.60**	**15.57**

*Permits for hunting elk are not issued for these units or elk harvested on the Tonto National Forest portions of these units and subsequent motorized big game retrieval is negligible.

Motor Vehicle Use for Dispersed Camping

Alternative D would allow motor vehicle use, up to 300 feet on both sides of designated roads and motorized trails, for accessing dispersed camping sites. Limitations to this corridor would be in congressionally designated areas where motorized travel is not permitted and other areas that would remain closed from existing closure orders. For this alternative, an area of approximately 336,038 acres will be analyzed for the effects of motorized travel in relationship to dispersed camping (Figure 17).

[33] For a more detailed description of this analysis, see the Arizona Game and Fish Department Specialist Report in the project record.
[34] A map showing the game management units within the Tonto National Forest can be found in the description of Alternative A in this chapter

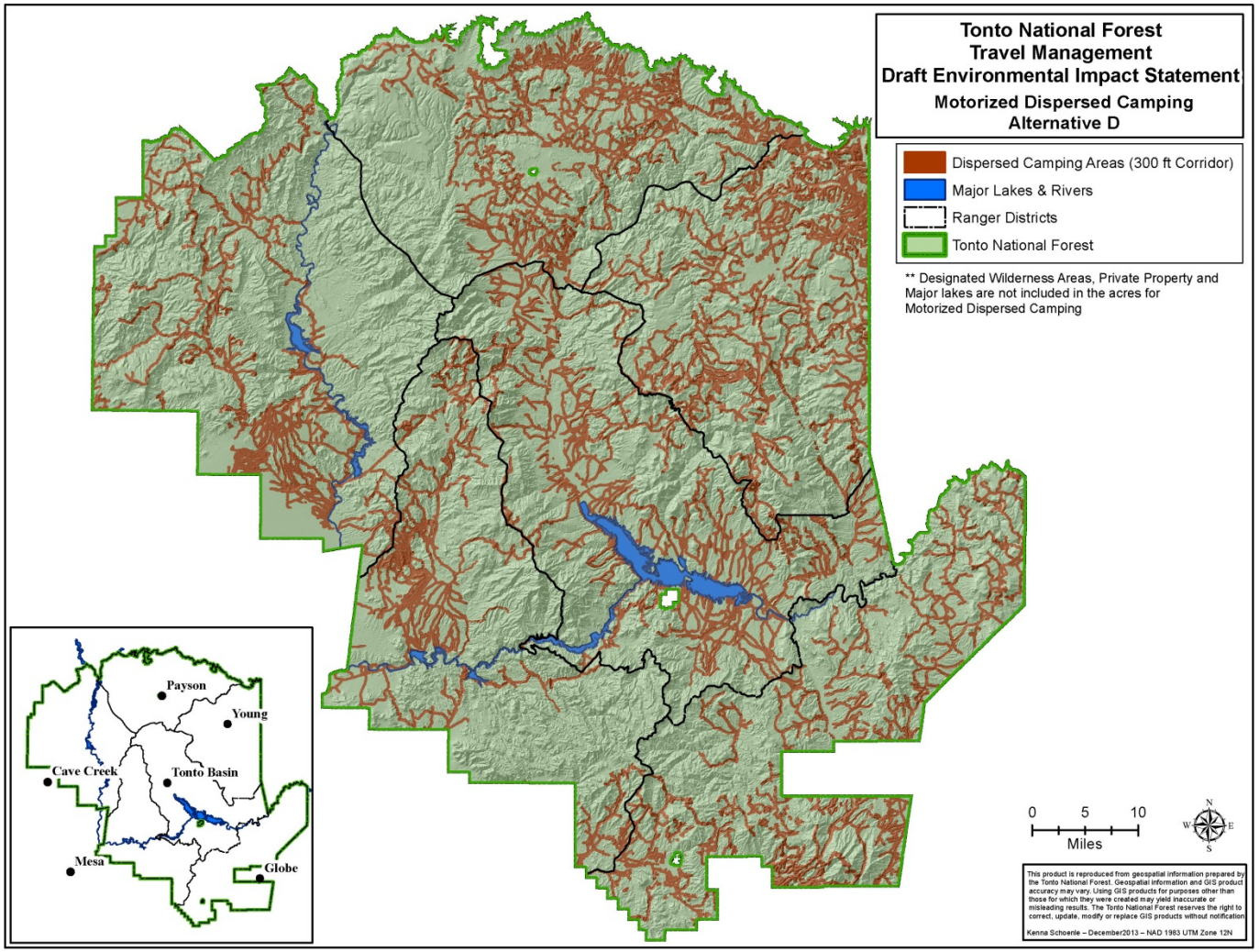

Figure 17: Map of Dispersed Camping Corridors for Alternative D

Additional Information Pertaining to Motor Vehicle Use Designation

Personal use fuelwood gathering: Alternative D would not limit the use of a motorized vehicle for the purpose of collecting fuelwood to those that have a personal use fuelwood cutting permit so long as they are within a woodcutting permit area. Just like the No Action Alternative, this area is approximately 1,345,998 acres [35] (Figure 18).

[35] For the purpose of this analysis, all currently foreseeable fuelwood gathering permit areas are represented. However, in practice, these areas are not all open for use every year; it is dependent on existing vegetation conditions and the need to decrease dead and down material.

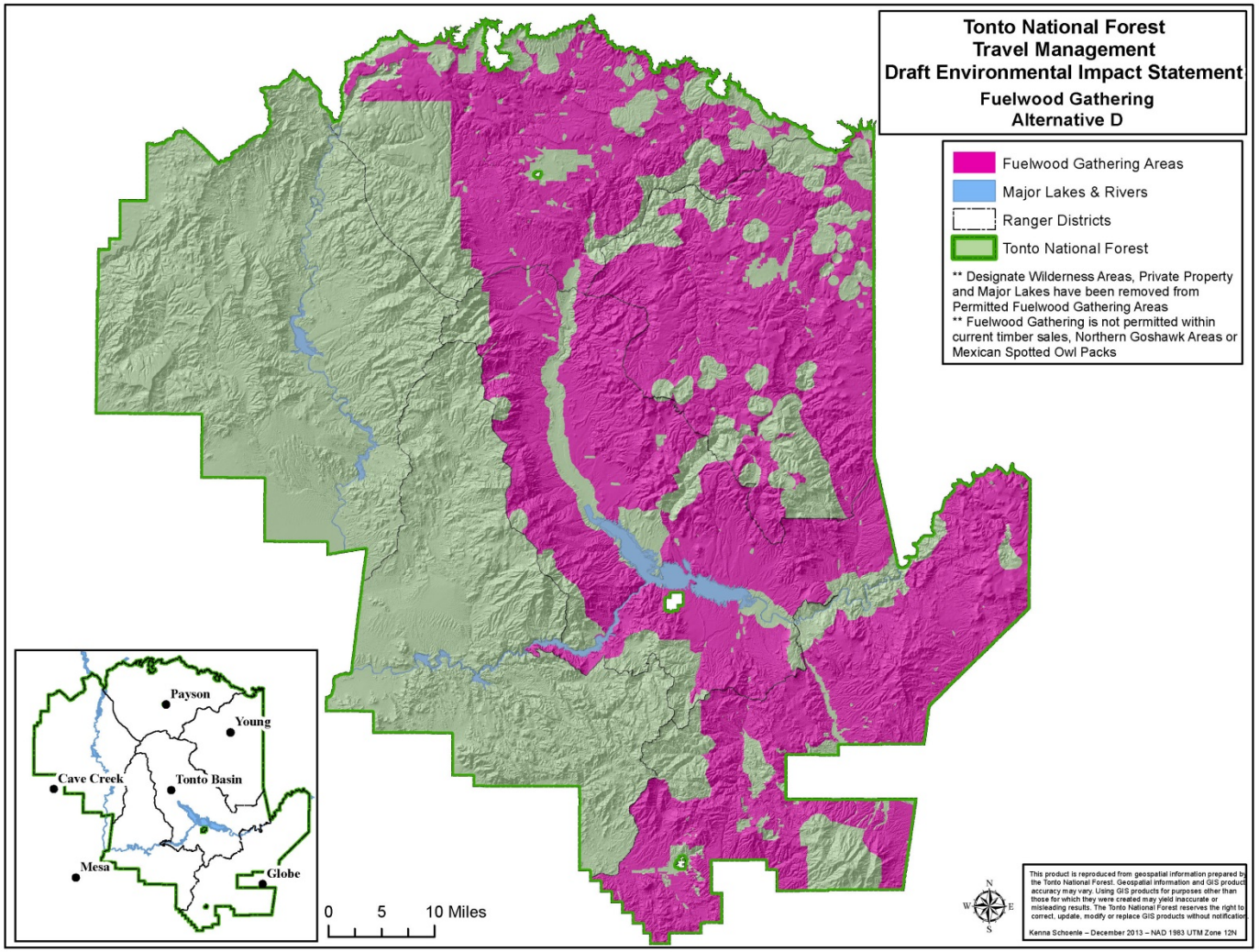

Figure 18: Map of Fuelwood Areas for Alternative D

Collection of forest resources by tribal members: For Alternative D, there would be no change from the existing condition.

Need to amend the Forest Plan to include language from the decision: Alternative D would require the Forest Plan to be amended. A table summarizing the proposed changes to the forest plan is in Appendix A.

Alternatives Considered but Eliminated from Detailed Study

The National Environmental Policy Act requires Federal agencies to rigorously explore and objectively evaluate all reasonable alternatives and to briefly discuss the reasons for eliminating any alternatives that were not developed in detail (*40 CFR 1502.14*). Public comments received in response to the proposed action provided suggestions for alternative methods for achieving the purpose and need. Some of these alternatives may have been outside the scope of the designation of roads, trails, and areas for motorized travel and the prohibition of cross-country travel on the Tonto National Forest, duplicative of the alternatives considered in detail, or determined to be components that would cause unnecessary environmental harm. Therefore, a number of alternatives were considered but dismissed from detailed consideration for reasons summarized below.

Original Proposed Action Published in the Federal Register

On February 1, 2013, a notice of intent to prepare an environmental impact statement was published in the *Federal Register*. The original proposed action would result in approximately 3,812 miles of designated NFS roads and trails and 1,411 acres of designated areas open to motor vehicles on the Tonto National Forest, with approximately 280 miles of user-created routes added to the forest transportation system. Specifically, approximately 2,567 miles of roads would be open to high clearance vehicles and approximately 967 miles would be open to passenger vehicles and approximately 1,187 miles of roads would be designated for administrative use only. Approximately 251 miles would be open to off-highway vehicle (OHV) travel only.

In addition, approximately 1,417 acres of designated areas would be open to motor vehicles use. Motorized retrieval of big game species would be limited to one mile on both sides of designated roads to retrieve a downed elk or bear only by an individual who has legally taken the animal. Motorized travel for the purpose of dispersed camping would not be allowed off designated roads and trails. Vehicles would be allowed to park one vehicle length, or up to 30 feet, from the edge of the designated road or trail.

Rationale for Elimination

This alternative was eliminated and replaced with alternative C, described in detail in this chapter, after considering all comments received thus far and a review of the existing road system using updated aerial imagery. The original proposed action scoped in 2013 was eliminated for the following reasons:

- Technical errors were found in the data within this alternative. Errors included such things as: missing Forest Service constructed routes, wrong alignment, length errors,

maintenance level identification, and incorrect jurisdiction identification. Technical errors have been corrected in the other action alternatives.

- Errors were found in the proposal (e.g., the proposed action originally proposed to close routes that were identified as a need by the public or forest staff for administrative uses or to access private inholdings).
- Distinctions between the original proposed action and Alternative C are not clear enough to show a major difference.
- All of the elements of the proposed action can be found in the other action alternatives.

Development of Existing Condition from Current Database

Currently, National Forest System roads are those identified with a road maintenance level in the Forest's road management records (call the Infrastructure or "Infra" database). This database was established to track and report on road management and maintenance level costs for Forest access and recreation. Though this database is updated regularly, it was never previously used to manage motor vehicle access on the Forest. The database had previously been used to identify a maintenance level for each road. Thus roads not receiving maintenance by the Forest Service and all motorized trails were often not included in the Infra database. On many forests, such as the Coconino National Forest, the Infra database was used as a template to identify the known road system, but was strongly supplemented with route information from public and agency input and site visits. The Infra database for the Tonto National Forest does not reflect the current condition to such a magnitude that it cannot be used as the existing condition.

Rationale for Elimination

On the Tonto National Forest, use of data in the Infra database as the current, existing condition would not provide a representative baseline from which to analyze because of actions that were taken, or often not taken, in tracking the current road system, as described below:

The 1985 Tonto National Forest Land and Resource Management Plan (Forest Plan): The Forest Plan indicated that the road and trail system at the time was "substandard" and that road maintenance needed to be at a level that provided for user safety and protection of investments, soil, and water resources. Substandard roads would be closed. The plan also listed road system miles by road maintenance levels; defining maintenance levels as follows (pp. 10-11):

- Level 1 (242 miles): "Roads are not open to traffic; they are maintained to protect the road investment and its surrounding resources. These roads may be opened for a specific activity and returned to Level 1 upon completion of the project."
- Level 2 (2246 miles): "Roads are maintained open for limited passage of traffic. Roads in this maintenance level are primitive type facilities intended for high clearance vehicles. Passenger car traffic is not a consideration."
- Level 3 (480 miles): "Roads are maintained open and safe for travel by a prudent driver in a passenger car. However, user comfort and convenience is not considered a priority."
- Level 4 (140 miles): "Roads are maintained to provide a moderate degree of user comfort and convenience at moderate travel speeds."

- Level 5 (95 miles): “Roads are maintained to provide a high degree of user comfort and convenience. These roads are normally two lanes with aggregate or paved surface.”

Resource Access-Travelway Management: After the decision on the Forest Plan, Tonto National Forest personnel conducted an intensive analysis of all inventoried roads on the forest, called the Resource Access-Travelway Management (RATM) process. A decision memo to implement the process was signed by the Forest Supervisor in 1990. The decision included miles of road system by road maintenance levels, including miles of roads to be obliterated: Level 1—1,906 miles; Level 2—2,198 miles; Level 3—399 miles; Level 4—83 miles; Level 5—77 miles; and Obliterated—13 miles. Once the RATM decision was signed, the information was documented in the Transportation Information Systems Database.

The information from the Transportation Information Systems Database was then exported into the Infra database concurrent with the development and implementation of the I-Web computerized tracking program and geographic information system (GIS) currently used. The management decisions recorded in Transportation Information Systems Database and transferred to I-Web program are assumed to be a direct relation to the decisions of the RATM process. Changes which were recorded in the I-Web modules post transition from Transportation Information Systems Database also occurred and are assumed to have been based on District and Line Officer decisions as well as refinement of the datasets in GIS.

Guidelines for Road Maintenance Levels (Forest Service Handbook 7709.58): Direction for road maintenance and its existing condition perceived to be applied from a management and maintenance standpoint is referred to as the operational maintenance level. Future desired condition of the management and maintenance of a road is referred to as the objective maintenance level. Specifically, 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” (Forest Service Handbook 7709.58.12.3.1).

The decisions of the 1990 RATM process that were carried to I-Web form the basis for the GIS information and all other data related to the current condition of the Tonto National Forest road system. However, implementation of road management objectives previously assigned to roads from the RATM process was never fully implemented due to various factors, including lack of funding and changes in ranger district personnel. In many instances, roads that were listed with an operational maintenance level of 2 or higher were identified with an objective maintenance level of 1 (closed to vehicular traffic), resulting in approximately 90 percent or more of the roads which were identified to be managed and maintained as maintenance level 1 (intermittent/closed) never received a prescriptive treatment or maintenance to implement a custodial closure and remain currently open to motorized use. In similar fashion, a small percentage of roads which are recorded in the I-Web data and GIS as objectively being decommissioned[36] were generally never

[36] Decommissioned is defined as the demolition, dismantling, removal, obliteration and /or disposal of a deteriorated or otherwise unneeded asset or component, including necessary cleanup work. This action eliminates the deferred

implemented. In addition, many roads which were identified as operational maintenance level 1 and objective level 1 in I-Web were seemingly incorrectly identified as "intermittent/closed" operationally to begin with. The result of the RATM process and how it was carried through several databases, along with the lack of implementation of proposed closed or decommissioned roads, results in a current situation on the Tonto National Forest where what is in the database for a road may not match what is currently on the ground.

A Travel Analysis Process (TAP) was completed for the Tonto National Forest with the intent to identify opportunities for the national forest transportation system to meet current and future management objectives, and provide information that allows integration of ecological, social, and economic concerns into recommendations, which can be used to assist with future decisions. This process recommended a minimum road system that included some unauthorized routes. These recommendations were presented to the public as the proposed action during scoping for the environmental assessment in 2009. While Tonto National Forest resource specialists were assembled to evaluate routes through the TAP based upon localized, site-specific resource risks (i.e., potential impacts to cultural resources and wildlife/habitat, etc.) and benefits (administrative needs, access to commercial facilities, recreational opportunities, etc.), the data collected is incomplete. As such, the recommendations that came from the TAP were not used to generate any of the action alternatives being considered in this analysis.

As part of this travel management process, the Tonto National Forest reviewed the existing road system (which was determined to be the objective maintenance level from RATM as adjusted based on other NEPA decisions) it currently manages. It was during this process, which included speaking with district personnel familiar with the roads, that the disparity between the current data for the forest's road system and what exists on the ground was revealed. As an example, there are approximately 267 miles of roads in RATM that had an objective level of decommissioned. After completing the review, approximately 75 miles were recommended as potential motorized trails and approximately 3 miles were identified as part of the desired road network for Alternative C. Similarly, there are approximately 1,739 miles of roads in RATM that had an objective level of ML 1 (closed to all motorized travel). After completing the review, approximately 936 miles were recommended as potential motorized trails and approximately 98 miles of roads were identified as part of the desired road network for Alternative C.

In summary, the direction from the 1985 Forest Plan is outdated, the RATM decision was never fully realized or implemented, the TAP does not have the sufficient information to inform travel management decisions, and a recent review of the current road system exposed errors. Thus, the current Infra database is not an adequate baseline for this NEPA analysis and will be eliminated from detailed study.

Alternative Submitted by the Center for Biological Diversity

An alternative was submitted by the Center for Biological Diversity (Center), accompanied with route-specific lists detailing where motor vehicle use should be prohibited. In general, the Center's proposal would limit motorized use:

- In critical wildlife habitat and water resources (such as streams, lakes, and riparian areas) to decrease potential effects. This includes prohibiting motorized use within 300 feet of

maintenance needs for the fixed asset. Portions of an asset or component may remain if they do not cause problems or require maintenance.

streams and lakes and in areas that provide critical habitat for sensitive, threatened, and endangered wildlife species;

- In areas of primitive and semiprimitive nonmotorized recreation opportunity spectrum classes from the 1985 Tonto National Forest Plan. This includes prohibiting motorized use for dispersed camping and big game retrieval in these areas;
- In areas with high cultural resource site densities or sensitive cultural resource areas. This includes prohibiting motorized use for dispersed camping and big game retrieval in these areas; and
- In proximity to designated wilderness areas and inventoried roadless areas to decrease potential effects associated with noise pollution and possible illegal intrusions by motorized vehicles. This includes prohibiting motorized use within a quarter of a mile of the wilderness boundary and within all inventoried roadless areas.

Rationale for Elimination

In order to spatially understand the Center's proposal of the above recommendations, these elements where mapped using GIS. The suggested motor vehicle prohibitions associated with wildlife habitat and water resources were the most restrictive of the above list for OHV use across the forest. If all roads that met this criteria were proposed for closure or decommissioning (and those that would no longer be accessible as they would not connect to remaining designated roads), several large sections of the forest would be inaccessible except by non-motorized means. Three notable areas that would not be accessible by motorized means are:

- Nearly the entire area of the Cave Creek Ranger District, including access to Bartlett Reservoir, Horseshoe Reservoir, much of the Verdi River, and access to the western side of the Mazatzal Wilderness;
- Nearly the entire area between State Routes 188 and 288, including very limited access to Salome and Hells Gate Wilderness Areas, and access to the northern side of Roosevelt Lake; and
- The area between the northern boundary of the Tonto National Forest along the Mogollon Rim and the town of Payson, which includes Forest Service Road 64, also known as the Control Road, developed and named because of its strategic location in controlling and preventing wildland fires.

While the Travel Management Rule instructed consideration of effects on, "Damage to soil, watershed, vegetation, and other forest resources" and "Harassment of wildlife and significant disruption of wildlife habitats" (*36 CFR 212.55 (b)(1)* and *36 CFR 212.55 (b)(2)*), it also stipulates consideration of effects on "…public safety, provision of recreational opportunities, access needs, conflicts among uses of National Forest System lands, the need for maintenance and administration of roads, trails, and areas that would arise if the uses under consideration are designated" (*36 CFR 212.55 (a)*). The motor vehicle use restrictions proposed by the Center would result in limiting access to areas on the Tonto National Forest that provide for opportunities for non-developed to low developed recreation sites. The potential result would be relocating those recreation users seeking a more primitive experience into areas already highly developed and lacking a primitive experience, such as the southern side of Roosevelt Lake, and the Superstition and Salt River Canyon Wilderness Areas. Much of the areas that would not permit motor vehicle access have steep terrain, resulting in limiting non-motorized access for some forest visitors.

Restricting access along the Control Road presents different concerns. There are many private property inholdings north of Payson along the Control Road, including Bonita Creek Estates and Tonto Village. Many of these inholdings have subdivisions, where multiple property owners live. While access to private property within the National Forest is permitted "…in order to reach their homes and to utilize their property" (*36 CFR 212.6 (b)*), visitors and services, such as mail delivery and utility service, would not be permitted under this provision in the rule.

Because of the limitations that potentially conflict with the Travel Management Rule, Forest Plan direction which provides for a range of recreational opportunities and the administration of the Forest Transportation System, the broad alternative proposal submitted by the Center is being dismissed from further study. However, many of the components of this submitted alternative, especially where specific routes were mentioned, were included in Alternative B, which does not add unauthorized routes, limits the use of motorized vehicles off designated roads and trails, and proposes to close many of the suggested routes to motorized use.

Comparison of Alternatives

This section provides a summary of the alternatives and the potential effects of implementing each alternative considered in detail. Table 14 provides a side-by-side comparison of the alternatives by the six elements provided in the alternative descriptions earlier in this chapter.

Table 14: Side-by-Side Comparison of Alternatives

	Alternative A	Alternative B	Alternative C	Alternative D
Roads and Trails Designated for Motor Vehicle Use (Miles)				
Roads Open to Passenger Vehicles (ML 3-5)	644.72	353.38	544.47	546.97
Roads Open to High Clearance Vehicles (ML 2)	2,307.67	540.13	795.70	2,798.91
Motorized Trails (Single Track)	0.00	1.12	78.42	102.74
Motorized Trails (General)	0.00	1,664.95	2,150.94	1,410.72
Administrative Use Only Road (ML 2 – ML 5)	0.00	144.30	165.79	49.27
Administrative Use Only Motorized Trail	0.00	355.04	398.58	296.54
Closed (ML 1)	n/a	0.00	0.00	0.00
Decommissioned Routes	n/a	2,367.03	1,289.80	201.22
Forest System Roads Likely Open to Public Use (ML Unknown)[37]	2,006.20	n/a	n/a	n/a
Unauthorized (User Created)	672.34	0.00	0.00	0.00

[37] A detailed explanation of these routes can be found in the Existing and Desired Conditions section of Chapter 1 of this document.

	Alternative A	Alternative B	Alternative C	Alternative D
Total Motorized Open to Public	**4,958.58**	**2,559.57**	**3,569.52**	**4,859.34**
Total Motorized System	**4,958.58**	**3,058.90**	**4,133.90**	**5,205.15**
Inventoried Unauthorized Routes[38] Proposed for Inclusion (Miles)				
Roads Open to Passenger Vehicles	n/a	4.12	4.12	4.77
Roads Open to High Clearance Vehicles	n/a	6.45	6.45	131.20
Motorized Trails (Single Track)	n/a	0.00	72.59	96.22
Motorized Trails (General)	n/a	0.00	206.71	320.26
Administrative Use Only Road	n/a	10.34	10.75	0.11
Administrative Use Only Motorized Trail	n/a	29.53	29.53	30.97
Total Motorized Open to Public	**n/a**	**10.58**	**289.88**	**552.45**
Total Miles Proposed for Inclusion	**n/a**	**50.44**	**330.16**	**583.52**
Areas Designated for Motor Vehicle Use (Acres)				
Name of Area **(Total Acres)**	Payson and Pleasant Valley Ranger Districts (703,618 total)	300 feet both sides of all designated roads and trails within fuelwood cutting permit areas (132,568 total)	Bartlett Lake (922); Golf Course (17); Roosevelt Lake (4,508); Sycamore (1,333); 4 Tot Lots (11) (6,790 total)	Same as Alternative C (6,790 total)
Permit Zones (Acres)				
Name of Permit Zone **(Total Acres)**	Bulldog Canyon (34,720 total)	Bulldog Canyon (34,720); Desert Vista (33,479); The Rolls (24,144); St. Clair (24,455); Sycamore (34,127) (150,925 total)	Bulldog Canyon (34,720); Desert Vista (33,479); The Rolls (24,144); St. Clair (24,455) (116,798 total)	Same as Alternative A (34,720 total)

[38] Since 2007, the Tonto National Forest has collected or received geographic information about unauthorized routes that are either obvious on the ground or are being used for motorized travel, totaling approximately 672 miles to date.

	Alternative A	Alternative B	Alternative C	Alternative D
Motor Vehicle Use for Big Game Retrieval (Acres)				
Total Acres Available (including Width of Corridor) **(Species Allowed)**	703,618 (elk, bear, mule deer, whitetail deer)	No motorized big game retrieval would be allowed	1,293,178 (1 mile both sides of all designated routes) (elk, bear)	2,068,208 (1 mile both sides of all designated routes) (elk, bear, mule deer, whitetail deer)
Motor Vehicle Use for Dispersed Camping (Acres)				
Distance from Designated Routes **(Total Acres)**	Driving off-road has been permitted in northern districts, prohibited in southern districts unless posted open (703,618 total)	414 Designated Sites (Buffered 50 feet from center point) (65 total)	100 feet both sides of all designated routes (91,391 total)	300 feet both sides of all designated routes (336,038 total)
Additional Information Pertaining to Motor Vehicle Use				
Personal Use Fuelwood Gathering **(Total Acres)**	Permitted to gather wood in designated woodcutting permit areas (1,345,998 total)	Within 300 feet of all designated routes within a designated woodcutting permit areas (132,568 total)	Within 300 feet of all designated routes within designated a woodcutting permit areas (161,785 total)	Same as Alternative A (1,345,998 total)
Collection of Forest Resources by Tribal Members	Only allowed on designated routes.	Same as Alternative A	Same as Alternative A.	Same as Alternative A
Need to Amend Forest Plan	Not necessary	Would Require Forest Plan Amendment[39]	Would Require Forest Plan Amendment[40]	Would Require Forest Plan Amendment[41]

Information below is focused on activities and effects where different levels of effects or outputs can be distinguished quantitatively or qualitatively among alternatives. Table 15 shows the comparison based on the resource areas from Chapter 3 of this document

[39] The amendment would include striking language allowing cross-country travel on the entire Payson and Pleasant Valley Ranger Districts and modifying the current Recreation Opportunity Spectrum. A detailed summary of these amendments can be found in Appendix B.
[40] Ibid
[41] Ibid

Table 15: Comparison of Effects for Alternatives by Resource

	Alternative A	Alternative B	Alternative C	Alternative D
Transportation Facilities				
Maintenance cycle of designated roads	ML 2 roads would be a 5.9 year cycle; ML 3-5 roads would be a 2.1 year cycle.	ML 2 roads would be a 1.4 year cycle; ML 3-5 roads would be a 1.2 year cycle	ML 2 roads would be a 1.8 year cycle; ML 3-5 roads would be a 2.0 year cycle	ML 2 roads would be a 1.8 year cycle; ML 3-5 roads would be a 7.2 year cycle
Recreation Resources				
Roads and Trails **Recreation Opportunity** **Motorized Trail Maintenance**	Few opportunities to recreate way from roads, except in designated wilderness areas No change from current ROS There are currently no designated motorized trails ($0 total)	Greatest ability to recreate away from motorized routes outside of designated Wilderness Greatest increase in nonmotorized opportunities; Greatest decrease in motorized opportunities $999,000 total	Ability to recreate away from motorized routes would be greater than Alternatives A and D, but less than Alternative B Increase of semiprimitive non-motorized from Alternative A $1,338,000 total	Nearly identical to Alternative A Greatest increase in motorized opportunities; Greatest decrease in nonmotorized opportunities $912,000 total
OHV Areas	No areas would be designated	OHV users could be dissatisfied at the lack of opportunity to travel off designated motorized route system	Provides opportunity to travel off designated motorized route system in 8 areas	Same as Alternative C
Big Game Retrieval	Only allowed in Payson and Pleasant Valley Ranger Districts	Greatest increase in nonmotorized opportunities forestwide	Has the potential to shift opportunities for nonmotorized recreation forestwide	Has the potential to shift opportunities for nonmotorized recreation forestwide
Dispersed Camping	Only allowed in Payson and Pleasant Valley Ranger Districts	Greatest potential for competition for sites, concentration of use and user conflict	Has the potential to shift opportunities for nonmotorized recreation forestwide	Has the potential to shift opportunities for nonmotorized recreation forestwide
Roadless, Wilderness, and Special Areas				
Wilderness	No change from current conditions	Greatest opportunity for improving all four Wilderness characters	Improves all four Wilderness characters over current conditions	Improves all four Wilderness characters over current conditions
Wild and Scenic Rivers	No change from current conditions	Greatest decrease for motorized access; Greatest opportunity for solitude	Decrease in motorized access from current conditions; Increase in solitude from current conditions	Greatest increase for motorized access; Greatest decrease for solitude

	Alternative A	Alternative B	Alternative C	Alternative D
Visual Resources				
Roads and Trails Designated for Motor Vehicle Use	Greatest potential for existing landscape character to become more natural in appearance; Greatest potential for forest to move toward the desired conditions for scenic quality.	Less than Alternative B, greater than Alternative D potential for existing landscape character to become more natural in appearance; Less than Alternative B, greater than Alternative D potential for forest to move toward the desired conditions for scenic quality.	Least potential for existing landscape character to become more natural in appearance; Least potential for forest to move toward the desired conditions for scenic quality.	Roads and Trails Designated for Motor Vehicle Use
Areas Designated for Motor Vehicle Use	Greatest potential for existing landscape character to become more natural in appearance; Greatest potential for forest to move toward the desired conditions for scenic quality.	No change from existing conditions.	No change from existing conditions.	Areas open to motorized cross-country travel
Motor Vehicle Use for Dispersed Camping	Within designated area: Least potential for existing landscape character to become more natural in appearance; Least potential for forest to move toward the desired conditions for scenic quality.	Within designated area: Less than Alternative D, greater than Alternative B potential for existing landscape character to become more natural in appearance; Less than Alternative D, greater than Alternative B potential for forest to move toward the desired conditions for scenic quality.	Within designated area: Greatest potential for existing landscape character to become more natural in appearance; Greatest potential for forest to move toward the desired conditions for scenic quality.	Motorized cross-country travel for dispersed camping
Socioeconomics				
Social and Economic Trends of The Four-County Area	Negligible	Negligible	Negligible	Negligible
Environmental Justice: Access for fuelwood gathering, big game retrieval, dispersed camping using a motor vehicle	Access would continue	Substantial decrease could disproportionately affect populations of concern	Decrease in access for fuelwood, increase in access for retrieval and dispersed camping could affect populations of concern	Increase in motorized use access could positively affect populations of concern

	Alternative A	Alternative B	Alternative C	Alternative D
Heritage Resources				
Effects of roads, motorized trails, and OHV areas	No change in current road system or cross-country travel on Payson and Pleasant Valley ranger districts	Significantly reduce direct and indirect effects to cultural resources compared to current condition; Decreases access for monitoring and patrolling of sites	Significantly reduce direct and indirect effects to cultural resources compared to current condition	Significantly reduce direct and indirect effects to cultural resources compared to current condition
Contemporary Indian Uses				
Effects of roads, motorized trails, and OHV areas on traditional use areas, sacred sites, and traditional activities; and Access to traditional resources and places of significance to Tribes	Continued cross-country travel on Payson and Pleasant Valley ranger districts would result in an increase in the cumulative effect and may inhibit or limit the use of such areas; No change from existing conditions	Reduces effects to sacred sites and traditional use areas; May restrict access for the practice of known contemporary Indian uses	Reduces effects to sacred sites and traditional use areas; Provides more access opportunities for known contemporary Indian uses	Reduces effects to sacred sites and traditional use areas; Provides the most access opportunities for known contemporary Indian uses
Game and Nongame Species				
Estimated percent of Tonto National Forest available for wildlife recreation (one mile buffer from roads/trails)	72% 2,050,400 acres	63% 1,813,400 acres	73% 2,081,500 acres	77% 2,204,500 acres
Estimated number of motorized big game retrievals	550 (elk, bear, mule deer, whitetail deer)	0	209 (elk, bear)	550 (elk, bear, mule deer, whitetail deer)
Estimated effect on satisfaction of wildlife related recreationists for motorized dispersed camping restrictions	Satisfied	Dissatisfied	Satisfied	Satisfied
Estimated direction of wildlife and wildlife habitat for desired future conditions	Away from	Towards	Towards	Away from
Law Enforcement				
General Enforcement	Difficult because of inconsistent rules and laws	Likely to result in higher violation rates	Amount of access would likely garner public support and thus achieve more voluntary compliance	

	Alternative A	Alternative B	Alternative C	Alternative D
OHV Areas	Damage and route creation currently takes place in areas closed to cross-country travel	Simplify enforcement as defense for driving off designated routes would be harder to defend	Designated areas may result in few attempts to travel off designated routes	Same as Alternative D
Permit zones	Prevents or reduces significant road proliferation and successful enforcement of driving off road violations in current permit zone	Increased effectiveness in enforcement within the permit zones; could move illegal uses to areas outside permit zones not currently impacted, Sycamore Permit Zone would be difficult to conduct efficient or successful enforcement	Same permit zones as Alternative B, except without Sycamore so effects similar	Same as the current condition
Wildlife and Plant Habitat Resources				
Effects to lesser long-nosed bat; Yuma clapper rail; Chiricahua leopard frog; Gila chub; desert pupfish; razorback sucker; and Gila topminnow	May affect the species but is not likely to adversely affect the species or its habitat			
Effects to ocelot and loach Minnow	No effect to the species or its habitat			
Effects to Western yellow-billed cuckoo and narrow-headed and northern Mexican gartersnakes	Not likely to jeopardize the continued existence of the species or result in the destruction or adverse modification of habitat			
Effects to southwestern willow flycatcher and Mexican spotted owl	May affect the species and is likely to adversely affect the species or its habitat	May affect the species but is not likely to adversely affect the species or its habitat	May affect the species and is likely to adversely affect the species or its habitat	
Effects to Colorado pikeminnow	May affect the species but is not likely to adversely affect the species or its habitat	No effect to the species or its habitat		May affect the species but is not likely to adversely affect the species or its habitat
Effects to spikedace	May affect the species but is not likely to adversely affect the species or its habitat	No effect to the species or its habitat	May affect the species but is not likely to adversely affect the species or its habitat	
Effects to Arizona cliffrose	No effect to the species or its habitat			May affect the species but is not likely to adversely affect the species or its habitat

	Alternative A	Alternative B	Alternative C	Alternative D
Effects to Arizona hedgehog cactus	May affect the species but is not likely to adversely affect the species or its habitat		May affect the species and is likely to adversely affect the species or its habitat	
Effects to critical habitat for southwestern willow flycatcher	likely to result in destruction or adverse modification of designated critical habitat for the species	not likely to result in the destruction or adverse modification of designated critical habitat for the species	likely to result in destruction or adverse modification of designated critical habitat for the species	
Effects to critical habitat for Mexican spotted owl	Likely to result in destruction or adverse modification of designated critical habitat for the species			
Effects to critical habitat for narrow-headed and northern Mexican gartersnakes	Not likely to result in the destruction or adverse modification of proposed critical habitat for the species			
Effects to critical habitat for loach minnow	No effect to designated critical habitat for the species			
Effects to critical habitat for spikedace; Gila chub; Chiricahua leopard frog; and razorback sucker	Not likely to result in the destruction or adverse modification of designated critical habitat for the species			
Effects to all federal candidate species	Determination: Alternative may impact individuals of the species, but is not likely to result in a trend toward federal listing or loss of viability.			
Effects to Forest Service sensitive species	Determination: Alternative may impact individuals of the species, but is not likely to result in a trend toward federal listing or loss of viability[42].			
Effects to bald and golden eagles	Determination: Alternative may impact individuals of the species, but is not likely to result in a trend toward federal listing or loss of viability.			
Effects to all Management Indicator Species	No change in habitat quantity or quality for species. Maintains current population and habitat trends	Increase in habitat quality for species. This increase would not alter forestwide habitat and population trends. Beneficial effects to habitat and populations	Increase in habitat quality for species. This increase would not alter forestwide habitat and population trends. Beneficial effects over Alternative A and Alternative D	Increase in habitat quality for species. This increase would not alter forestwide habitat and population trends. Beneficial effects over Alternative A

[42] The following have a no impact on the species determination: Lizard, Bezy's night (Alternative B); Springsnail, fossil (Alternative B); Bugbane, Arizona (Alternative B); Fleabane, Fish Creek (Alternative B); Sedge, Chihuahuan (Alternative B); Sedge, Cochise (Alternatives A, B, and C); and Vetch, horseshoe deer (Alternative B).

	Alternative A	Alternative B	Alternative C	Alternative D
Effects to macro-invertebrates	Road density would not decrease. Maintains current population and habitat trends	Decreased road density over all alternatives. Beneficial effects to habitat and populations over all alternatives	Reduces road density from Alternative A and Alternative D, increases road density from Alternative B. Beneficial effects over Alternative A and Alternative D	Reduces road density from Alternative A, increases road density from Alternative B and Alternative C. Beneficial effects over Alternative A
Effect to populations or habitat quality for Migratory Birds	Unintentional take is highly unlikely to occur at a level that would have a measurable effect	Greatest reduction in areas of potential affects by reducing road density	Reduces areas of potential affects by reducing road density	Similar to no action
Effects to Important Bird Areas	No change from current condition	Highest beneficial effect because reduction in miles of roads and trails open to public use	Beneficial effect because reduction in miles of roads and trails open to public use	Similar to no action
Effects associated with snags and dead/downed wood	No change from current condition	Positive effect because reduction in fuelwood gathering acres	Positive effect because reduction in fuelwood gathering acres	Similar to no action
Potential Spread of Noxious and Invasive Weeds (Cumulative Acreage)	24,782	4,336	20,739	25,852
Hydrological Resources				
Motorized routes near streams (miles)	2,239	1,351	1,773	2,210
Motorized routes in riparian areas (miles)	415	242	314	395
Number of stream crossings	7,148	4,278	5,614	6,986
Soil Resources				
Overall Effects of roads, motorized trails, and OHV areas	Continued effects to soils	Least overall effects to soils than the existing condition	Less overall effect to soils than the existing condition	More overall effects than other action alternatives; similar to existing condition
Air Quality				
NAAQS Violation Potential	No change from existing	Reduction in emissions; Reduction in criteria pollutant emissions; Significant adverse air quality impacts are not expected	Same as Alternative B	Same as Alternative B

Chapter 3. Affected Environment and Environmental Consequences

This chapter summarizes the physical, biological, social, and economic environments on the Tonto National Forest and the effects of implementing each alternative on that environment. It also presents the scientific and analytical basis for the comparison of alternatives presented in the chapter 2. It is organized by individual environment or resource topic.

The Affected Environment section for each resource topic describes the existing or baseline condition against which environmental effects are evaluated and from which progress toward the desired condition can be measured. The Environmental Consequences section for each resource topic discusses direct, indirect, and cumulative effects, and applicable mitigation measures. Effects can be neutral, beneficial, or adverse. Environmental consequences form the scientific and analytical basis for comparison of the alternatives, through compliance with standards set forth in the 1985 Tonto National Forest Land and Resource Management Plan (Forest Plan), as amended, with the 1969 National Environmental Policy Act (NEPA), and the 1976 National Forest Management Act. The Irreversible and Irretrievable Commitments of Resources section is at the end of this chapter.

Analysis Process

The environmental consequences presented here address the impacts of the actions proposed in each alternative for the Tonto National Forest Travel Management Project. Each motorized route and cross-country area proposed in the alternatives has been reviewed by resource specialists.

Environmental effects are disclosed for the following types of actions common to all action alternatives:

- **Prohibition of Cross-country Motor Vehicle Travel.** The direct and indirect effects of prohibiting motorized cross-country travel forestwide are described generally in each alternative, considering both current conditions and projected trends. Both short-term and long-term effects are presented.
- **Determination for Motor Vehicles Driven Off Designated Routes.** Effects resulting from permitting motorized access for the sole purpose of motorized dispersed camping, big game retrieval, or collection of forest products are described generally by alternative.
- **Additions to the National Forest Transportation System of New Roads and Motorized Trails.** The effects of adding new routes by incorporating inventoried unauthorized routes are analyzed by alternative in this chapter. For most resources, one or more resource indicators or analysis measures are used to measure the direct and indirect effects of each alternative. Both short- and long-term effects are presented.
- **Changes to the Existing National Forest Transportation System**. Effects caused by changes to vehicle class, season of use, and proposed decommissioning are described generally by alternative.

Additionally, effects are disclosed in this chapter for actions that are unique to an alternative.

Cumulative Effects

According to the Council on Environmental Quality (CEQ) NEPA regulations, "cumulative impact" is the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such actions (*40 CFR 1508.7*).

In order to understand the contribution of past actions to the effects of the proposed action and alternatives, this analysis relies on current environmental conditions as a proxy for the impacts of past actions. This is because existing conditions reflect the aggregate impact of all prior human actions and natural events that have affected the environment and might contribute to cumulative effects.

This cumulative effects analysis does not attempt to quantify the effects of past human actions by adding up all prior actions on an action-by-action basis. There are several reasons for not taking this approach. First, a catalog and analysis of all past actions would be impractical to compile and unduly costly to obtain. Current conditions reflect innumerable actions over the last century (and beyond), and trying to isolate the individual actions that continue to have residual impacts would be nearly impossible. Second, providing the details of past actions on an individual basis would not be useful to predict the cumulative effects of the proposed action or alternatives. In fact, focusing on individual actions would be less accurate than looking at existing conditions, because there is limited information on the environmental impacts of individual past actions, and one cannot reasonably identify each and every action over the last century that has contributed to current conditions and what exactly that contribution was. Additionally, focusing on the impacts of past human actions would risk ignoring the important residual effects of past natural events, which may contribute to cumulative effects just as much as human actions. Looking at current conditions captures all the residual effects of past human actions and natural events, regardless of which particular action or event contributed those effects. Third, public scoping for this project has yet to identify any public interest or need for detailed information on individual past actions. Finally, the Council on Environmental Quality issued an interpretive memorandum on June 24, 2005 regarding analysis of past actions, which states, "agencies can conduct an adequate cumulative effects analysis by focusing on the current aggregate effects of past actions without delving into the historical details of individual past actions." For these reasons, the analysis of past actions in this section is based on current environmental conditions.

General Assumptions and Limitations

The following assumptions and limitations apply to the project and the decision that will be forthcoming:

- No NEPA decision is necessary to continue use of the National Forest Transportation System (i.e. OHV and transportation) as currently designated and managed under the No Action alternative. These decisions were made previously.
- Unauthorized or user-created roads, trails, and areas are not National Forest Transportation System facilities. They are unauthorized. The agency never took action to create, manage, or construct them for public use. They were created by the public as a result of cross-country travel.

- Temporary roads, trails, and areas built to support emergency operations or temporarily authorized in association with contracts, permits, or leases are not intended for public use. They are not part of the National Forest Transportation System. Any proposal to add these temporary roads to the National Forest Transportation System will require a NEPA decision.
- Any unauthorized routes not included in the action alternatives are not precluded from consideration for addition to the National Forest Transportation System in future travel management actions.
- "Designation" is an administrative act which does not trigger NEPA analysis. Designation technically occurs with printing of the Motor Vehicle Use Map (MVUM) and does not require additional analysis.

Resource Reports

Each section in this chapter provides a summary of the project-specific reports, assessments, and input prepared by Forest Service resource specialists that are incorporated by reference in this draft EIS. The following reports are incorporated by reference:

- Transportation Facilities Report
- Recreation Report
- Wilderness, Wild & Scenic Rivers, Inventoried Roadless Areas, and Special Management Areas Report
- Visual Resources Report
- Socioeconomic Report
- Heritage Resources Report
- Contemporary Indian Uses Report
- Law Enforcement Report
- Arizona Game and Fish Department Report (Game and Nongame Species)
- Biological Assessment and Biological Evaluation (BA/BE) for Wildlife
- Management Indicator Species Report
- Migratory Bird Report
- Noxious Weed Risk Assessment (Noxious Weeds Report)
- Hydrology and Watershed Report
- Soils Report
- Air Quality Report

These reports are part of the project record on file at the Forest Supervisor's Office in Phoenix, Arizona. Copies of these reports are available upon request by contacting Anne Thomas, Project Leader, at (602) 225-5213 or by email at mariannethomas@fs.fed.us

Legal and Regulatory Compliance

NEPA at *40 CFR 1502.25(a)* directs "to the fullest extent possible, agencies shall prepare draft environmental impact statements concurrently with and integrated with …other environmental review laws and executive orders." Each resource section includes a list of applicable laws, regulations, policies, and executive orders that are relevant to that resource. Surveys, analyses, and findings required by those laws may also be addressed in each of those sections.

Transportation Facilities

This section discusses the effects of the alternatives on management and maintenance of National Forest System (NFS) roads and trails (i.e., transportation facilities). It addresses the extent to which the alternatives respond to the direction related to transportation facilities in the Tonto National Forest Plan (Forest Plan) (U.S. Forest Service, 1985) and considers whether changes to these facilities provide for adequate public safety and result in a sustainable route system.

Affected Environment

National Forest System roads are used for multiple purposes by various user groups. Forest staff utilizes the transportation system for a variety of administrative purposes, including fire management, law enforcement, and facilities management (e.g., utility, telecommunication, and mining facilities). Ranching, utility, telecommunication and mining permittees, and operators depend on the transportation system to maintain their permitted operations. Most roads on the forest are also used by hunters, for access to dispersed camping and by off-highway vehicle (OHV) recreationists. One example of a multiple-use road is Forest Road 24 on the Cave Creek Ranger District, also known as Seven Springs Road. The road accesses private property, range improvements, administrative sites, mining resources and recreation sites; and is used by recreationists, hunters, FS staff, private landowners, and OHV users among others. This road is categorized as a principal feeder/trunk route serving as a connector road with minor system roads feeding into it. Forest Roads 41, 562, and 468 are examples of roads that feed into Forest Road 24.

The Forest Service currently classifies maintenance of National Forest System roads by five maintenance levels (ML)[43]. This analysis refers to ML 3-5 roads that are maintained for prudent drivers in a standard passenger car, ML 2 roads that are maintained for high-clearance vehicles, ML 1 roads that are placed in storage for intermittent use. Utilization of roads identified as "administrative use only" is restricted to Forest Service personnel and emergency response personnel. Other authorized users of these routes can include special use and grazing permittees; mining companies; county, state, and Federal agencies; private land owners; and utility companies.

According to the current database for roads on the Tonto National Forest, there are approximately 2,952 miles of roads open to the public: 645 miles for passenger vehicles and 2,308 miles for high clearance. This database shows that there are 1,739 miles of ML 1 (closed to vehicular use) roads and 267 miles of decommissioned routes. However, after reviewing updated satellite imagery and gathering on-the-ground information from ranger district personnel, Forest Service Law Enforcement Officers, and Arizona Game and Fish Department employees, it was determined that

[43] For more information about the existing condition of the roads system, see that section in Chapter 1 of this document.

many of the ML 1 and decommissioned routes are currently open to the public and being used. Because of this, it was decided that the existing condition for the roads system on the Tonto National Forest, the baseline for which the effects of the proposed changes to the road system for this project, results in approximately 4,959 miles of roads open to motor vehicle use[44] .

One example of ML 1 roads still being utilized occurs in the Sugarloaf area on the Mesa Ranger District. Several roads feeding into the 1855 road that accesses the area, including forest roads 1857, segments A and B of 1857, 3472, and 1877 (equating to approximately six miles) are still being used despite their ML 1 status.

The average annual road maintenance budget is $2,326,900 (based on fiscal year 2008 to fiscal year 2012). Though not every mile of NFS road requires yearly maintenance, the annual maintenance budget is insufficient for supporting the Forest's annual maintenance needs. Only a percentage of the total roads on the forest are maintained each year, as opposed to the entire 2,757 miles of ML 2 through ML 5 roads. Maintenance that goes unperformed each year is considered deferred maintenance. Over the years, the Tonto National Forest road system has accrued a substantial amount of deferred maintenance. The Tonto does have cooperative maintenance agreements with Gila and Maricopa counties to help address combined road maintenance needs. Approximately 514 miles of NFS roads (264 miles of ML 2 roads, 193 miles of ML 3 roads, 44 miles of ML 4 roads, and 13 miles of ML 5 roads) are included in cooperative maintenance agreements with these counties[45].

Environmental Effects

Assumptions

The descriptions of the four alternatives being analyzed, including the No Action, in the draft EIS are organized by six elements discussed in Chapter 2. These elements affect the Forest System Roads differently and will require different assumptions to effectively analyze them. Roads and trails open to motorized travel will be analyzed further. The effect of the cross-country travel will not be analyzed further as routes created by cross-country travel are not considered U.S. Forest Service routes.

The assumption for this analysis is that there are no additional impacts in road maintenance associated with special order (or seasonal) closures because road maintenance is planned around the closures. Therefore, seasonal closures will not be discussed further in this analysis.

The assumption for this analysis is that motorized big game retrieval utilizes the existing forest roads and trails to the hunting destination. Therefore no additional analysis is needed. The retrieval efforts made off the forest roads and trails are not creating a road and therefore not analyzed as such.

The assumption for this analysis is that there are no additional impacts in transportation maintenance costs associated with designation of permit zones. The maintenance costs associated with the gates and signage needed for managing permit zones are considered part of the annual

[44] A more detailed discussion of the inconsistencies between what is in the Tonto National Forest databases for roads and trails and what is currently on the ground can be found in Chapter 2, Alternatives Considered but Eliminated from Detailed study.
[45] Forest Road Agreement between U.S. Forest Service and Gila County (2009) and Forest Road Agreement between U.S. Forest Service and Maricopa County (2011).

maintenance cost for that route. The construction of necessary fencing for permit zones however are considered project work and will not be analyzed as an annual cost in this analysis.

Motorized dispersed camping corridors are designated on several of the alternatives. However, there are no impacts in associated transportation maintenance costs that are not captured by total mileage of available NFS roads and motorized trails.

Methodology

The Forest Service does not receive sufficient funding to match the calculated estimates in Infra. Annualized items are funded on a project-by-project basis and are competed for regionally and nationally. Therefore, annual maintenance costs do not reflect the way the Forest actually maintains its road system. Every mile of road does not need to be maintained every year. Rather, roads are maintained on a cyclic basis and in response to safety hazards and situations where resource damage may occur. There are some high-use roads that receive maintenance every year to repair winter and storm run-off damage and damage due to heavy traffic loads. Other roads do not require more than periodic inspection and occasional maintenance to repair damage to the road surface and road structures, eliminate traffic hazards, and prevent resource damage. This is true of most of the existing roads maintained for high clearance vehicles (ML 2) and the roads and motorized trails proposed for addition to the system under the action alternatives.

Table 16 shows how many miles of road received annual maintenance from fiscal year 2009 to fiscal year 2012.

Table 16: Summary of Road Receiving Annual Maintenance by Maintenance Level (in Miles)

Maintenance Level	FY2009	FY2010	FY2011	FY2012	Average
2	470	477	341	276	391
3	279	298	255	173	252
4	38	31	38	66	44
5	13	10	2	3	7
Total	**800**	**816**	**636**	**518**	

The consideration of tracking the true cost of maintaining each mile of road is problematic. The costs and metrics that are currently available do not effectively convey how the annual road maintenance budget is being managed with respect to the roads that need maintenance. The Infra costs available would show that the needed budget to maintain our roads will exceed our available budget by five times. Although there is always a need for additional funds to maintain our roads, there has never been a time that the Forest has had the Infra-based funding available on an annual basis. The cost comparison will be included in the analysis; however the analysis will focus on the relative difference in cost between alternatives, not the discrepancy of available funding.

The methodology compares the amount of roads that we have historically maintained with our budget as a percentage of the overall roads system to those of each alternative. This will

effectively show how far our historical maintenance efforts would go toward maintaining the road system for each of the alternatives. The motorized trails would not be considered as a road as they would be analyzed through the recreation specialist report.

Direct and Indirect Effects

The four alternatives vary greatly in the mileage of roads needing maintenance (Table 17). The mileage noted in this table represents the road system the Tonto National Forest Service is required to periodically maintain. A portion of the road system is open to the public, while a portion of the road system is open for administrative purposes only. The mileage noted below reflects the total road miles for each maintenance level category inclusive of the administrative use only roads, and will be used for the analysis.

Table 17: Road Needing Maintenance by Maintenance Level (in Miles) for Each Alternative

Maintenance Level	Alternative A	Alternative B	Alternative C	Alternative D
3-5	645	376	572	548
2	2,308	663	935	2,849
Total	**2,953**	**1,507**	**1,507**	**3,397**

Cycle-Time Analysis

The metric used for comparison between the alternatives is the “cycle” time between regular forest road maintenance as a measure of years. The cycle time is the ratio of the total number of miles to the average miles maintained per year. The result will be a measure of how many years it would take to maintain every mile of road once before we start over. The lower the cycle time, the more often we maintain a forest road.

As an example, ML 2 roads designated in alternative A equates to 2,308 miles (Table 17). Table 16 indicates the Tonto National Forest has maintained on average 391 miles of ML 2 roads per year. Dividing Alternative A ML 2 mileage (2,308) by the average number of miles of ML 2 roads maintained per year (391) results in a value of 5.9, indicating with the number of ML 2 roads in alternative A it would take 5.9 years to maintain each road one time. Similarly, if the total number of miles of ML 3-5 for alternative A (645), is divided by the average number of miles of ML 3-5 roads maintained per year from table 4 (303), derived from adding averages for ML 3, 4 and 5, the result is 2.1. This indicates with the number of ML 3-5 roads in alternative A would take 2.1 years to maintain each road one time.

Alternative A

The alternative would not add any new facilities to the existing transportation system. Maintenance, signing, and improvements of unauthorized routes would not occur, because appropriated road and trail maintenance funds are restricted to expenditure for system roads and trails. Initially this alternative requires the least expenditure of funds. However, it has the potential to increase the need for resource funding to repair damage and degradation caused by continued motorized use of existing unauthorized routes and the creation of new unauthorized

routes through continued cross-country travel (Table 18). Maintenance of the ML 2 roads would be a 5.9 year cycle (once every 5.9 years the road would be maintained). Maintenance of the ML 3-5 roads would be a 2.1 year cycle.

Table 18: Road Miles Needing Maintenance by Maintenance Level for Alternative A

Maintenance Level	Alternative A (Miles)	Average Maintenance* (Miles)	# of Years to Cycle all Roads
3-5	645	303	2.1
2	2,308	391	5.9

**From data provided in Table 17*

Alternative B

This alternative provides the least amount of motorized access of all alternatives. This alternative would result in the decommissioning of all roads not designated for motorized use. Administrative roads would remain open. Some of these roads may already be effectively closed on the ground from lack of use or due to previous road closure efforts. Maintenance of the ML 2 roads would be a 1.7 year cycle (once every 1.7 years the road would be maintained) (Table 19). Maintenance of the ML 3-5 roads would be a 1.2 year cycle.

Table 19: Road Miles Needing Maintenance by Maintenance Level for Alternative B

Maintenance Level	Alternative A (Miles)	Average Maintenance* (Miles)	# of Years to Cycle all Roads
3-5	376	303	1.2
2	663	391	1.7

*From data provided in Table 17

Alternative C

This alternative is a modified version of the proposed action scoped in February 2013. It reflects the changes that resulted from a review of the desired road network that was discussed earlier in this chapter. This information was further reviewed on a district level, involving district rangers, Forest Service personnel familiar with the existing road and resource conditions, and Arizona Game and Fish Department enforcement officers whose game retrieval units overlapped with the corresponding district boundaries. This process allowed for the correction of alignment issues of roads using aerial imagery gathered in 2012, as reflected in this alternative. This alternative would result in the closure of all motorized routes (road and trails) not designated for motorized use that are not located within an area already closed to motorized use or entry. Some of the roads may already be effectively closed on the ground from lack of use or due to previous road closure efforts. Maintenance of the ML 2 roads would be a 1.9 year cycle (once every 1.8 years the road would be maintained) (Table 20). Maintenance of the ML 3-5 roads would be a 2.4 year cycle.

Table 20: Road Miles Needing Maintenance by Maintenance Level for Alternative C

Maintenance Level	Alternative A (Miles)	Average Maintenance* (Miles)	# of Years to Cycle all Roads
3-5	572	303	1.9
2	935	391	2.4

*From data provided in Table 17

Alternative D

This alternative provides the most motorized access of all alternatives. This alternative would result in the closure of all motorized routes (road and trails) not designated for motorized use that are not located within an area already closed to motorized use or entry. Some of these roads may already be effectively closed on the ground from lack of use or due to previous road closure efforts. Maintenance of the ML 2 roads would be a 1.8 year cycle (once every 1.8 years the road would be maintained) (Table 21). Maintenance of the ML 3-5 roads would be a 7.3 year cycle.

Table 21: Road Miles Needing Maintenance by Maintenance Level for Alternative D

Maintenance Level	Alternative A (Miles)	Average Maintenance* (Miles)	# of Years to Cycle all Roads
3-5	548	303	1.8
2	2,849	391	7.3

*From data provided in Table 17

Maintenance Cost Analysis

The cost of National Forest System road maintenance occurs on an annual basis and varies by maintenance level[46]. The following table shows the funding requirements to perform routine and periodic maintenance for all existing system roads on an annual basis (Table 22). It does not show actual funding. The annual cost shown below would maintain the roads in their current condition and begin to address the backlog of deferred maintenance. Shortfalls in road maintenance funding have resulted in a large backlog of deferred maintenance needs. Deferred maintenance can be generally defined as annual or routine maintenance that was not completed when scheduled.

Table 22: Routine and Deferred Maintenance Cost Estimates for Existing NFS Roads (RATM) By Maintenance Level

Maintenance Level	# of Miles	Annual Maintenance Needs per mile	Annual Cost
3-5	559	$8,230	$4,600,570
2	2,198	$1,949	$4,283,902

[46] Consideration of costs for maintaining the additional routes that would become motorized trails is detailed further in the Recreation Section.

Maintenance Level	# of Miles	Annual Maintenance Needs per mile	Annual Cost
Totals	**2,757**	------	**$8,884,472**

The ability to perform road maintenance is limited by the availability of time, personnel, equipment, materials, and funding. The amount of road maintenance accomplished per day or per season is dependent on the road maintenance level and condition of the road being maintained. The condition of the road is affected by both the environment and the volume of traffic over the road between maintenance cycles. Environmental factors include soil moisture, tree and brush growth, storm and spring run-off, and other natural events such as floods.

The average annual road maintenance budget is $2,326,900 (based on fiscal year 2008 to fiscal year 2012). It is important to note that while the annual maintenance budget is insufficient for supporting the Forest's annual maintenance needs, not every mile of NFS road or trail requires yearly maintenance. As shown in table 5, only a percentage of the total roads on the forest are maintained each year, as opposed to all 2,757 miles of ML 2 through 5 roads. Therefore, the difference between the annual maintenance budget and the annual needs is not as drastic as it appears. For example, in 2003, the estimated annual cost to maintain all NFS roads to standard was about $4.8 million. While this amount still exceeds the annual budget of approximately $2.3 million, this is a significantly smaller annual difference.

Alternative A

The alternatives reflect the No Action and would not add any new facilities to the existing transportation system. Maintenance, signing, and improvements of unauthorized routes would not occur, because appropriated road and trail maintenance funds are restricted to expenditure for system roads and trails. Initially this alternative requires the least expenditure of funds. However, it has the potential to increase the need for resource funding to repair damage and degradation caused by continued motorized use of existing unauthorized routes and the creation of new unauthorized routes through continued cross-country travel (Table 23). The cost to maintain the ML 2 -5 routes within this alternative would be $9,718,195 which is 417 percent of our annual maintenance budget.

Table 23: Maintenance Cost Estimates for Alternative A (based on 2006 figures)

Maintenance Level	# of Miles	Annual Maintenance Needs per mile	Annual Cost
3-5	645	$8,230	$5,308,350
2	2,308	$1,949	$4,498,292
Totals	**4,319**		**$9,718,195**

Alternative B

This alternative is a modified version of the proposed action scoped in February 2013. It provides the least amount of motorized access of all alternatives. This alternative would result in the decommissioning of all roads not designated for motorized use that are not located within an area

already closed to motorized use or entry. Administrative roads would remain open. Some of these roads may already be effectively closed on the ground from lack of use or due to previous road closure efforts. The cost to maintain the ML 2 -5 routes within this alternative would be $4,386,667 which is 189 percent of our annual maintenance budget (Table 24).

Table 24: Maintenance Cost Estimates for Alternative B (based on 2006 figures)

Maintenance Level	# of Miles	Annual Maintenance Needs per mile	Annual Cost
3-5	376	$8,230	$3,094,480
2	663	$1,949	$1,292,187
Totals	**4,319**		**$4,386,667**

Alternative C

This alternative is a modified version of the proposed action scoped in February 2013. The cost to maintain the ML 2 -5 routes within this alternative would be $6,529,875 which is 281 percent of our annual maintenance budget. (Table 25)

Table 25: Maintenance Cost Estimates for Alternative C (based on 2006 figures)

Maintenance Level	# of Miles	Annual Maintenance Needs per mile	Annual Cost
3-5	572	$8,230	$4,707,560
2	935	$1,949	$1,822,315
Totals	**4,319**		**$6,529,875**

Alternative D

This alternative provides the most motorized access of all alternatives. This alternative would result in the closure of all motorized routes (road and trails) not designated for motorized use. Some of these roads may already be effectively closed on the ground from lack of use or due to previous road closure efforts. The cost to maintain the ML 2 -5 routes within this alternative would be $10,062,741 which is 432 percent of our annual maintenance budget. (Table 26)

Table 26: Maintenance Cost Estimates for Alternative D (based on 2006 figures)

Maintenance Level	# of Miles	Annual Maintenance Needs per mile	Annual Cost
3-5	548	$8,230	$4,510,040
2	2849	$1,949	$5,552,701
Totals	**4,319**		**$10,062,741**

Summary of Direct and Indirect Effects

The cost of NFS road maintenance would vary by alternative. Alternative D increases maintenance costs more than any alternative. Alternative B would reduce the annual maintenance needs by approximately $5.3 million per year compared to Alternative A, resulting in the lowest annual road maintenance cost. Alternative C would reduce the maintenance need by $3.2 million per year compared to Alternative A. These costs would offset some of the savings mentioned above. Based on this analysis, Alternative B is the preferred alternative.

To support the existing transportation system with current and projected appropriated and non-appropriated maintenance funding, routine maintenance is being reduced, maintenance cycles are extended, and selective repairs are made to ensure public safety and prevent resource damage. Major repairs such as resurfacing or new bridges are funded by special appropriations outside of the Forest's annual budget. Current and projected funding levels do not cover deferred maintenance, which means that the deferred maintenance backlog grows annually.

All action alternatives would all create maintenance funding shortfalls to a greater degree than Alternative A, mostly because of adding motorized trails to the transportation system. Not performing routine annual maintenance on time may increase the amount of deferred maintenance. If annual maintenance was fully funded, it would still leave a large amount of deferred maintenance that would prioritized for completion upon identification of danger to the public or the potential for severe resource damage.

Cumulative Effects – All Alternatives

In addition to funding, the forest achieves yearly road maintenance goals by working in conjunction with county and state governments. Fluctuation of budgets with other governmental agencies could impact the total number of miles of maintenance achieved.

Potential effects on the road system from activities such as urban development, increased visitation, mineral exploration and other construction activities could include temporary increases in the amount of traffic and road use by OHV vehicles and larger vehicles, primarily construction trucks. Much of the cost of any additional road maintenance needed as a result of commercial activities proposed with these future projects would be borne by the purchaser of the commercial product, and any temporary road needed to access the product would be constructed and then decommissioned by the purchaser when no longer needed.

The effects of cumulative activities, when added to the effects of the activities proposed with this project, would result in additional current maintenance needs. There is also the potential for

increased conflict between commercial and noncommercial road users. Some roads and trails being designated as open for motor vehicle use could have an increased concentration of traffic, while other roads and trails could have a decreased concentration of traffic. Potential for conflict would be mitigated by the appropriate use of signing and traffic control during implementation of activities.

Recreation Resources

Unmanaged recreation has been identified by the Forest Service as one of four ―key threats to the nation‘s forests and grasslands. The use of OHVs is seen as a major component of unmanaged use (U.S. Forest Service, 2005b). During the past ten years, OHV use has increased dramatically across the nation and on millions of acres of public land in the Western United States. In Arizona, OHV use has increased by 347 percent since 1998 (Arizona Game and Fish Department, 2013a).

Managing motorized recreation is particularly challenging on the Tonto National Forest with its fragile desert ecosystems and high demand for motorized access. The Tonto National Forest is the most heavily-used National Forest for motorized recreation, with nearly a million visitors using OHVs on the Forest annually (U.S. Forest Service, 2012). Currently, Payson and Pleasant Valley Ranger Districts are open to motorized cross-country travel yearlong, unless otherwise restricted. Cross-country travel was restricted on the Cave Creek, Globe, Mesa, and Tonto Basin ranger districts per forest plan, unless posted open; however, illegal cross-country travel is known to occur. OHV use has occurred off forest system routes, in sensitive riparian areas, through heritage sites, in threatened or endangered species habitat, into designated wilderness areas, through streams and up stream banks, and across highly erodible slopes.

Affected Environment

As a result of increasing population, housing development, and OHV use, an extensive network of unauthorized routes has been established on the Forest. Forestwide, unauthorized routes are associated with nearly every private parcel of land within or next to the Forest. This shows that motorized access to the Forest is important to the local population for hunting and other recreational opportunities. However, there is a growing contingent of the population, who also live at the Forest‘s edge, that is distressed by what they view as constant noise, dust, unchecked trespass, and resource damage associated with unmanaged motorized vehicle use[47].

User Conflicts

Because of an increase in OHV use, there is a greater chance for conflicts between users that favor motorized recreation and those that do not. The earliest approach to recreational conflict was to view it as competition for resources among user groups (Devall and Harry, 1981; Owens 1985). Two more theoretically grounded and somewhat overlapping conceptualizations today are categorized as follows: conflict as goal interference and conflict based on differences in social values (MacLennan and Moore, 2011). Jacob and Schreyer (1980) conceptualized that goal interference can arise between recreationists on the basis of four distinct factors: activity style – the various personal meanings attached to an activity, resource specificity – the significance attached to using a specific recreation resource for a given recreation experience, mode of

[47] For more information, see the Law Enforcement section of this chapter.

experience – the varying expectation of how a natural environment is perceived, and tolerance for lifestyle diversity – the tendency to accept or reject lifestyles different from one's own.

All of these types of conflict can arise between motorized and nonmotorized recreationists. Use conflict often can be "asymmetrical" in that one user group is generally more impacted by conflict than the other. The most often reported social and safety impacts are conflicts between OHV and nonmotorized users, displacement of users, conflicts with private land owners, and irresponsible OHV operation[48]. Often motorized and nonmotorized users share the same or similar goals, but those seeking quiet and solitude through nonmotorized means are more likely to be disturbed by engine noise from an ATV than are those traveling by motor vehicle.

Members of the public, Arizona Game and Fish Department, and Arizona State Parks have shared their concerns about unrestricted OHV travel on public lands. Complaints focus on noise, litter, lack of environmental ethics and unsafe acts. In addition, "The Nonmotorized Arizona Trails 2000" (Arizona State Parks, 1999, p. 60) showed that 82 percent of motorized and 81 percent of nonmotorized trail users expressed concern over behavior of other users.

While conflicts exist on the Tonto National Forest between motorized users and nonmotorized users such as vehicular trespassing along the nonmotorized Arizona Trail and vehicular trespass into wilderness areas, they also exist between various types of motorized recreational vehicles (OHV types).

Conflicts between OHV types occur between four-by-four (4X4) full-sized vehicles, ATVs, and off-road motorcycles because of preferences for width of routes, distance travelled, and speed. Full-sized, 4X4 vehicles prefer wide routes and traveling long distances, since they drive in comfort with their supplies and soft seat, along with means to cool or warm themselves. ATV and off-road motorcycles look for narrow, short routes, since they cannot carry supplies and exert more energy riding. In addition, 4X4 full-sized vehicles take corners more slowly because they are larger, heavier, and more difficult to maneuver than the lighter weight ATV and off-road motorcycles that travel fast around corners. Dangerous conditions arise when different classes of motorized recreational vehicles meet at blind corners or narrow passages where there is poor visibility.

Motor vehicles are a legitimate and appropriate way for people to enjoy their National Forests in the right places, and with proper management. Current regulations were developed when OHVs were less widely available, less powerful, and less capable of cross-country travel than today's models. The growing popularity and capabilities of OHVs demand new regulations, so that the Forest Service can continue to provide these opportunities while sustaining the health of National Forest Service lands and resources.

Americans cherish the National Forests and Grasslands for the values they provide: opportunities for healthy recreation and exercise, natural scenic beauty, important natural resources, protection of rare species, wilderness, a connection with their history, and opportunities for unparalleled outdoor adventure. National Forests should provide access for both motorized and nonmotorized users in a manner that is environmentally sustainable over the long term. The National Forest is not reserved for the exclusive use of any one group, nor must every use be accommodated on

[48] GAO report June 2009 report to subcommittee on National Parks, Forests, and Public lands, Committee on Natural Resources, House of Representatives; Enhanced Planning Could Assist Agencies in Managing Increased Use of Off-Highway Vehicles

every acre. The Forests are managed by law for multiple uses. The Travel Management Rule supports the management of National Forest System (NFS) lands for multiple use as provided in the Multiple Use-Sustained Yield Act of 1960, which authorizes and directs the Secretary of Agriculture to develop and administer the renewable resources of timber, range, water, recreation, and wildlife on the national forests for multiple use and sustained yield of the products and services.

Recreation Opportunities

Visitor use on the Tonto National Forest is year round. Visitors flock to the forest's lower Sonoran Desert in the winter and in the summer seek refuge from the heat at the Salt and Verde Rivers or at one of the six man-made reservoirs along these rivers. Summer travels also find visitors in the high country camping under tall pines or fishing meandering trout streams south of the Mogollon Rim.

In addition to the large number of motorized recreationists described above, the Tonto National Forest also supports a wide range of nonmotorized recreation including hiking, backpacking, bicycling, horseback riding, watching and photographing wildlife and scenery, swimming, rafting, geo-caching, hunting, fishing, visiting archaeological and historical sites, and picnicking. Although some of these activities may include motorized travel to access them, the motorized travel is not the main point of the activity[49].

Permit Zones

Additionally, forest users can receive a free permit to the Bulldog Canyon OHV Area (not considered an OHV area per the Travel Management Rule), where users are provided a map and regulations for use of the 30 miles system roads within. *Forest Order No. 12-152* (signed by the Forest Supervisor March 19, 1997) restricted motorized travel in the existing permit zone due to considerable environmental damage occurring from uncontrolled vehicle use. Visitors currently receive a free permit and gate code from the Mesa Ranger District to access the Permit Zone. Motorized vehicles are required to stay on the high-clearance vehicle roads and passenger car roads. Motorized cross-country travel off these routes is prohibited within the Permit Zone. Permits are not required for non-motorized users such as equestrians and hikers. They may enter the zone through equestrian/pedestrian gates. The number of permits issued for the Bulldog Permit Zone is estimated on average of 750 per month over the course of a year, or 9,000 annually. During periods of high use (winter), permits issued can be up to 30 to 50 permits per day.

Prior to 1997, Bulldog Canyon had issues including illegal activities: violent crimes; dumping of car parts and abandoned vehicles, illegal dumping, and excessive trash; large parties/raves; target shooting, and extensive route proliferation. There were many conflicts between different OHV types and between motorized and non-motorized users. In addition, the impact of these issues degraded the natural desert landscape. Guided Jeep Tours also provide access to this area.

[49] For more detailed information about the recreational opportunities available on the Tonto National Forest, please see the Recreation Report in the project record.

Motor Vehicle Use for Big Game Retrieval

Big game hunting is a popular activity on the Tonto National Forest that brings many high-clearance and four-wheel drive vehicles to the Forest for both official hunting seasons and scouting for game before the seasons begin[50]. For purposes of motorized big game retrieval on the Tonto National Forest, big game often refers to black bear, and elk. These species may require a vehicle to retrieve them, whereas other game species, such as javelina, are typically retrievable without aid of a motor vehicle.

With no restriction to motorized cross-country travel on the Pleasant Valley and Payson ranger districts, big game retrieval using motor vehicles is currently allowed within all recreation opportunity classes of these two ranger districts. motorized big game retrieval using motor vehicles is not allowed, however is known to occur, on the Cave Creek, Globe, and Mesa ranger districts where the prohibition on cross-country travel is difficult to enforce.

Motor vehicles are not allowed to travel off-road for the purpose of game retrieval on the Cave Creek, Mesa, Globe, or Tonto Basin Ranger Districts. Instead, the Payson and Pleasant Valley Ranger Districts currently allow motor vehicles to travel off-road to retrieve any downed game animal as there is no prohibition to cross-country travel on these two districts.

Motor Vehicle Use for Dispersed Camping

Generally, dispersed camping is more popular at higher elevations on Payson and Pleasant Valley Ranger Districts from May through September, where cross-country travel is permitted. The Cave Creek, Globe, Mesa, and Tonto Basin Ranger Districts are generally more popular during colder seasons (although cross-country travel on these four districts is prohibited). During hunting season, many hunters set up dispersed campsites in their favorite hunting area.

Recreational Opportunity Spectrum

National Forest visitors are diverse in their preferences for recreational settings, experiences, and activities. The Forest Service uses the Recreation Opportunity Spectrum (ROS) class system to help guide future development and management to provide the variety of recreation experience desired by the public. The ROS classes include: Primitive; Semi-Primitive Nonmotorized; Semi-Primitive Motorized; Roaded Natural; Rural; and Urban. ROS classes help match visitors with their preferred recreation setting. These objectives are general goals, not standards and guidelines, and do not strictly govern future development.

In the early 1980s, the ROS Users Guide (U.S. Forest Service, 1982) was followed to inventory all areas of the forest according to their recreation opportunity spectrum. According to the inventory, urban settings occur on the Tonto National Forest adjacent to developed communities such as Payson, Globe, Pine, Strawberry, and Superior. Rural settings occur on forest lands extensively modified typically for residential development. Most areas of the Forest zoned Roaded Natural occur in state highway and NFS road corridors along with the Forest's lakes. Semi-Primitive Motorized settings occur between areas classified as Roaded Natural and Semi-Primitive Non-Motorized while Primitive settings tend to be in wilderness areas.

[50] For more information on hunter satisfaction, see the Game and Nongame section of this chapter.

Table 27 and Figure 19 display the overall acres of the ROS classifications within the Tonto National Forest in 1985, when the Forest Plan was signed.

Table 27: Recreation Opportunity Spectrum Classes for the Tonto National Forest (1985)

ROS Class	Acres	Percent of Forest
Urban	31,373	1.1
Rural	41,859	1.4
Roaded Natural	613,448	20.7
Semiprimitive Motorized	994,373	33.5
Semiprimitive Nonmotorized	1,007,967	34.0
Primitive	260,506	8.8
Unknown	16,143	0.5
Total	**2,965,669**	**100**

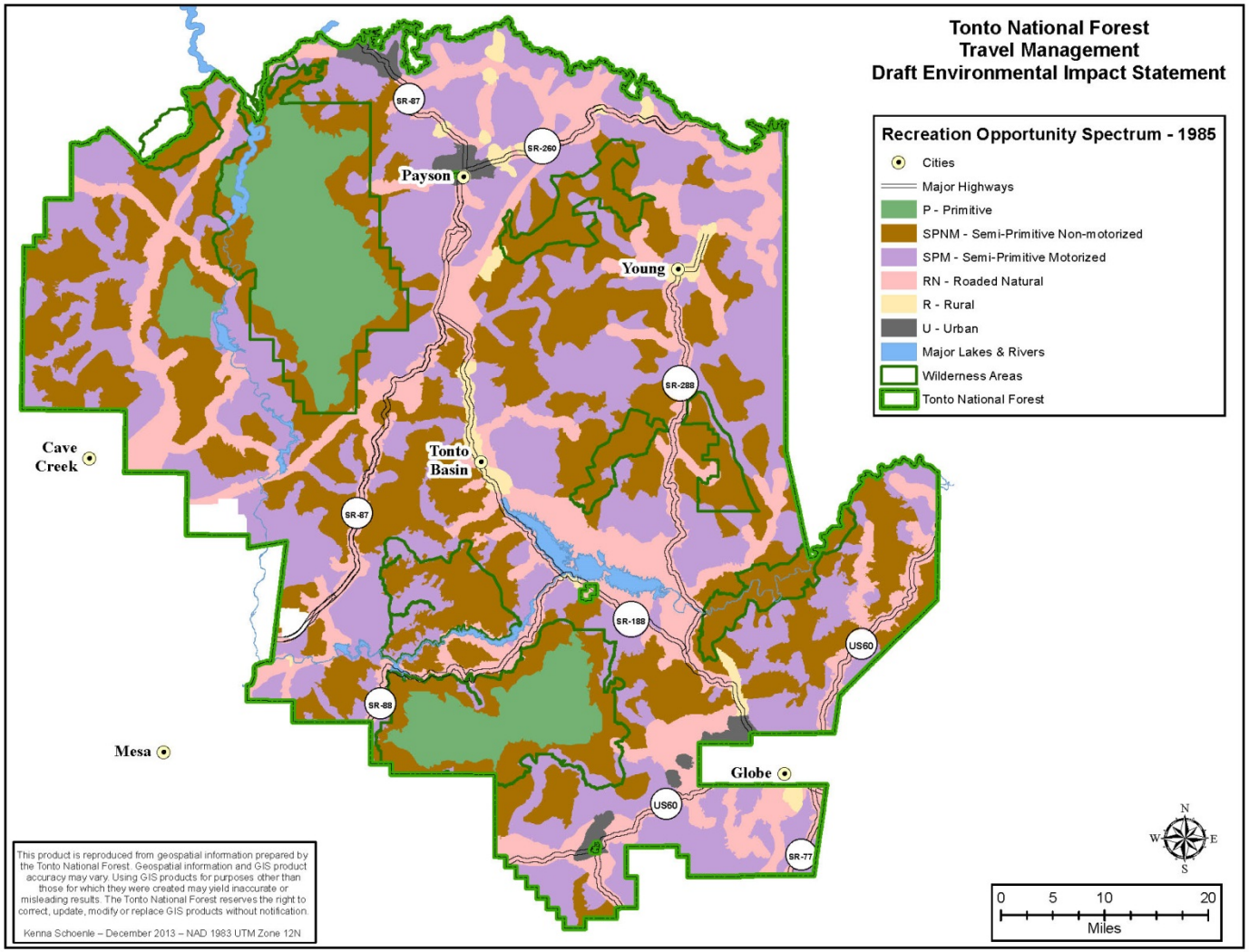

Figure 19: Map of Recreation Opportunity Spectrum for the Tonto National Forest (1985)

In the 1985 ROS inventory, there were only 260,506 acres designated as Primitive ROS, which is traditionally used when classifying Wilderness areas. Notes written by forest landscape architects documenting the inventory indicate that the Wilderness areas on the Tonto National Forest were inventoried exactly as non-wilderness areas of the forest, resulting in some of the wilderness areas not receiving the primitive ROS class that they should have. When the mapping process for the Forest Plan was completed in 1985, GIS systems did not exist. The original Mylar inventory maps were digitized and integrated into the GIS system in 2006. Since ROS maps were integrated into the Tonto National Forest GIS system, there have been numerous changes in the software used to manage geographic data. These changes have resulted in spatial differences, including forest and Wilderness boundaries, which have contributed to discrepancies in the Forest Plan for all ROS classes.

Because of these inconsistencies and errors in the current database representing ROS on the Tonto National Forest, it was determined that more accurate representation of the existing conditions for ROS was necessary for this analysis. This was done by first assigning all Wilderness areas as Primitive. Next, the road system in the Infra database was buffered using the same process that was used in the Forest Plan51. The updated current condition for the forest includes approximately 30,939 acres in Urban settings, which is 434 acres less than in 1987, 41,691 acres in Rural settings (168 acres less than in 1987), 571,379 acres in Roaded Natural settings (42,069 acres less acres than in 1987), and 519,259 acres in Semiprimitive Nonmotorized which is 488,708 acres less than in 1987 (Table 28 and Figure 20). The majority of the Forest now has 1,212,083 acres in Semiprimitive Motorized (217,710 acres more than in 1987). Approximately 588,937 acres are in the Primitive ROS class, which is 328,431 acres more than was indicated in the Forest Plan. This new GIS ROS layer is the best available data. The Tonto National Forest is currently developing the formal ROS reinventory in preparation for Forest Plan Revision. When the new ROS inventory is completed in 2014, it will be used for all project level analysis in the future.

Table 28: Modified ROS for Current Condition (2013)

ROS Class	Acres	Percent of Forest
Urban	30,939	1
Rural	41,691	1
Roaded Natural	571,379	19
Semiprimitive Motorized	1,212,083	41
Semiprimitive Nonmotorized	519,259	18
Primitive	588,937	20
Total	**2,964,287**	**100**

[51] For more information, see Appendix A of the Recreation Report in the project record.

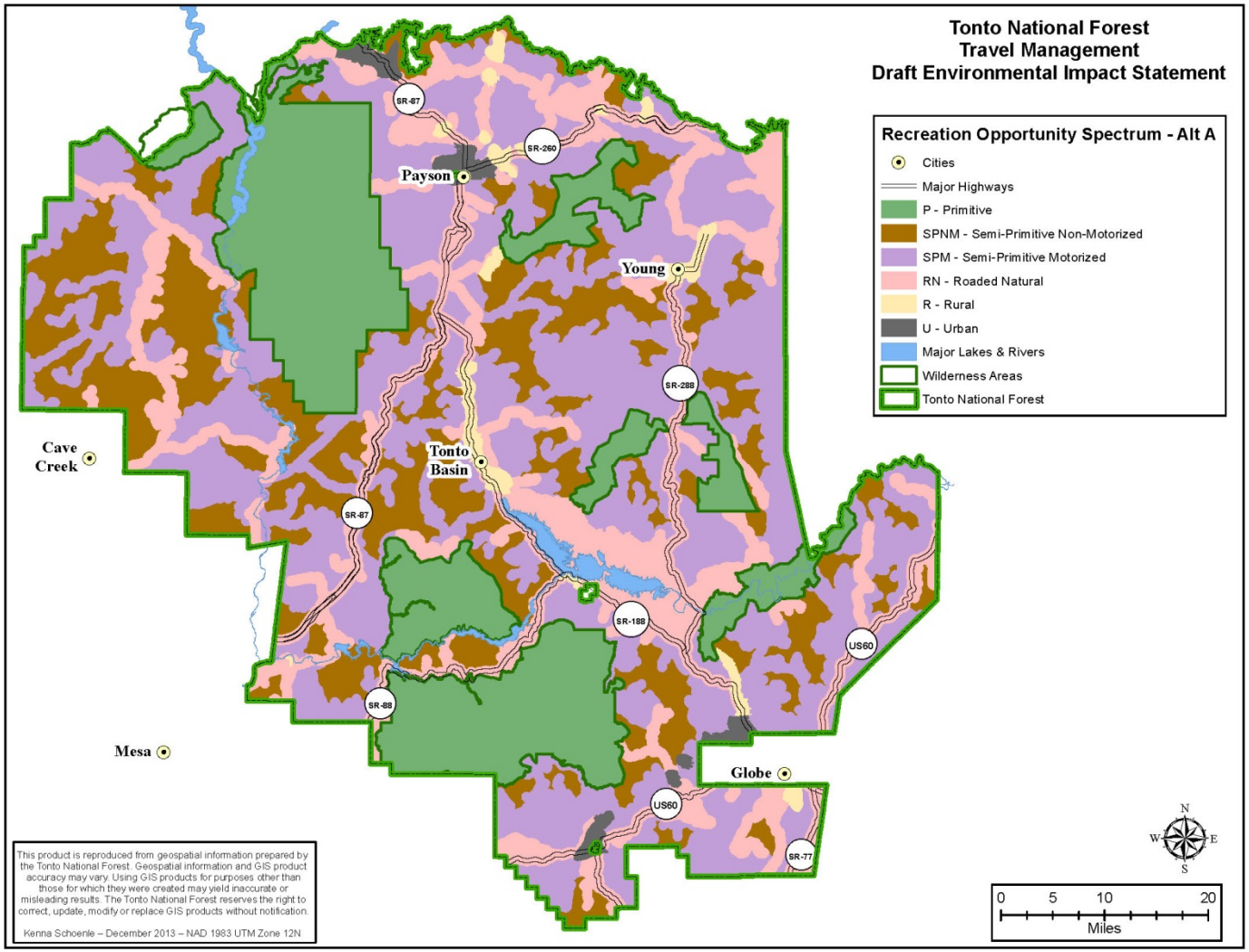

Figure 20: Map of Modified ROS for Current Condition (2013)

Arizona and Great Western Trail Opportunities

The Arizona Trail is an 800 plus mile National Scenic Trail from Mexico to Utah that connects mountain ranges, canyons, deserts, forests, wilderness areas, historic sites, trail system, points of interest, communities, and people[52]. The trail, which is predominantly nonmotorized, serves day hikers, backpackers, equestrians, mountain bicyclists, trail runners, nature enthusiasts, cross-country skiers, snowshoers, and mule and llama packers. While all of these activities currently take place on the Arizona Trail, it is the intent for the Forest Service to manage the trail as a corridor and identify resources within the corridors that should be preserved. The trail travels though the Superstition, Four Peaks, and Mazatzal wilderness areas on the Tonto National Forest. The Arizona Trail Association divides the trail into "passages," 192.8 miles of which are located on the Tonto National Forest.

Since 1992, a diverse partnership of land management agencies, the Great Western Trail (GWT) Association, and the Arizona State Association of 4 Wheel Drive Clubs have worked to make the Arizona Section of the GWT a reality[53]. The GWT, one of 16 National Millennium Trails, is a nonexclusive corridor of routes that accommodates a diverse myriad of trail users, both motorized and nonmotorized. In Arizona, the GWT is a system of existing backcountry roads that run north and south from Mexico to Utah. The first segment of the Arizona section of the trail was established in 1996, of which 8 miles is located on the Bull Dog Canyon Trail on the Mesa Ranger District. Another portion, the 71 mile Cave Creek segment was established in 1998. A total of 79 miles of the trail are located on the Tonto National Forest.

National Recreation Trail Opportunities

Approximately 50 miles of the Highline National Recreation Trail provides nonmotorized hiking, mountain biking and horseback opportunities along the Mogollon Rim on the Payson Ranger District. The trail with its spectacular views, canyons, and brushy hills was established in 1870, with Zane Grey using it for hunting in the area. A 19-mile segment of the Highline coincides with the nonmotorized Arizona Trail, all of which is nonmotorized. The Highline National Recreation Trail is not open to motorized use.

Another National Recreation Trail, Sixshooter Canyon trail provides a 6-mile continuous climb through several life zones into the Pinal Mountains with splendid views of Miami/Globe and surrounding area. The trail may be accessed from the CCC trailhead or Ferndell Trailheads on the Globe Ranger District and provides opportunities for nonmotorized activities; it also is not open to motorized use. The trail provides access to an Arizona National Champion tree, a Canyon Maple[54].

National Visitor Use Monitoring Data

The National Visitor Use Monitoring (NVUM) survey process was designed to better understand recreation use of the National Forest System lands (U.S. Forest Service, 2012). The NVUM program provides science-based estimates of the volume and characteristics of recreation

[52] Additional information regarding the Arizona Trail can be found at Arizona Trail website
[53] Additional information regarding the Great Western Trail can be found at Great Western Trail website
[54] Additional information regarding National Recreation Trails can be found at American Trails website

visitation to the National Forest System[55]. Visitor use monitoring was collected on the Tonto National Forest during fiscal years[56] 2003, 2008, and is currently being collected for 2013.

Information provided regarding NVUM data is from the 2008 surveys (U.S. Forest Service, 2012) unless stated otherwise. The information gleaned from NVUM is valid and applicable at Forest, Regional, and National levels, but was not designed to be accurate at the district or site specific level.

The total estimated site visits to the forest in fiscal year 2008 is 5,108,000 with 800,000 to developed day use sites, 961,000 to developed overnight use sites, 3,195,000 to general forested areas, and 152,000 to designated wilderness areas. A site visit is the entry of one person onto a National Forest site or area to participate in recreation activities for an unspecified period of time. Demographic results show that over 72 percent of visits are made by males. Hispanics/Latinos (13 percent) are the most common racial or ethnic minority. There are relatively few people aged 60 and up (12 percent) in the visiting population. Just over one third is in their thirties or forties and approximately 22 percent are under the age of 16. The Tonto National Forest serves a mostly local client base with the majority reporting that they are from Maricopa County. Nearly 73 percent of visits come from people who live within 50 miles of the forest.

The eight most frequently selected main activities reported by those surveyed on the Tonto National Forest are hiking/walking (26.3 percent), viewing natural features (23.4 percent), relaxing (23.3 percent), motorized trail activity (17.7 percent), fishing (15 percent), viewing wildlife (14.8 percent), driving for pleasure (14.5 percent), and OHV use (11 percent). These use figures could likely underestimate users since they represent what users indicated as the primary purpose of their visit. Users may not have indicated their mode of travel as the primary purpose of their visit

In terms of motorized trails, currently there are no designated single or double tract motorized trails on the Tonto National Forest. Although, some visitors to the forest indicated they had used motorized trails, more than likely they were actually using forest system roads that have not been maintained or an unauthorized route. Without a dedicated motorized trail system, it may be assumed that the needs of those seeking a motorized trail experience are not being met.

The overall satisfaction results showed that almost 73 percent of the people who visited were very satisfied with the overall quality of their recreation experience. Another 17 percent were somewhat satisfied. Less than 4 percent expressed any level of dissatisfaction. Developed facilities, access, and perception of safety all exceeded the target. The percent meeting expectation scores for all elements were fewer than 80 percent in Developed Sites.

To determine if current conditions met the needs of forest visitors, the NVUM survey conducted on the Tonto National Forest in 2008 included satisfaction questions. In the satisfaction portion of the survey, only “road condition” directly related to travel management. The majority of the visiting population felt roads and signage were very important. When visitors were asked about their satisfaction with the road conditions, approximately 50 percent were “very satisfied” and approximately 25 percent were “somewhat satisfied” (U.S. Forest Service, 2012). Less than 5 percent of those surveyed indicated that they were “very dissatisfied” with the road conditions (U.S. Forest Service, 2012). Based on this information, it is assumed that the amount of roads

[55] Supporting data for the NVUM information above can be found at Forest Service Recreation website
[56] Government fiscal years are October 1st through September 30th.

available for motorized recreation is meeting the needs. Although, without site-specific data it is not possible to determine if the location or type of road (paved or dirt) is specifically meeting the needs based on the NVUM survey data.

National Recreation Trends

Information from Outdoor Recreation Trends and Futures, a technical report by Cordell (2012), states one overriding national trend is quite evident: the mix of outdoor activities chosen by Americans and the relative popularity of activities overall have been evolving over the last several decades. One general category of activity showing growth in the first decade of the 21st century is nature-based recreation. Among types of nature based recreation, motorized activities showed growth up to 2005, but then showed a decrease up to 2009 that was similar to 2000. The trend in hunting, fishing, and backcountry activities remained relatively flat during this period. The clear growth area was within the overall group of activities oriented toward viewing and photographing nature. This study projects outdoor recreation activities to grow out to the year 2060. The top five activities projected with the highest growth potential in terms of participants are developed and other skiing, challenge activities, equestrian activities, and motorized water activities. The lowest rate of projected participant growth are visiting primitive areas, motorized off road activities and motorized snow activities, hunting, fishing, and floating water activities. These projections differ from Arizona trends discussed below.

Arizona Motorized Outdoor Recreation Trends

The 2013 Arizona Statewide Comprehensive Outdoor Recreation Plan (SCORP) reports that based on the Arizona Trails 2010 Plan, OHV users represent almost 22 percent of the Arizona population which include residents who use motorized vehicle on trails for multiple purposes[57]. Of that, 11 percent of Arizona residents reported that motorized trail use accounted for the majority of their use and are considered “core users.” With Phoenix and surrounding communities being among the fastest growing populations in the State, adjacent forest areas can expect a large increase in visitation.

The Arizona Trails 2010 Plan (Arizona State Parks, 2009) first level priority motorized trail recommendations include the following: protect access to trails/acquire land for public access; maintain and renovate existing trails and routes; mitigate and restore damage to areas surrounding trails, routes and areas; and establish designated motorized trails, routes and areas. Second level priority motorized trail recommendations include the following: increase on-the ground management presence and law enforcement; provide and install trail/route signs; provide maps and trail/route information; and provide educational programs.

Arizona’s top priority issues identified in the SCORP include: secure sustainable funding; improve collaborative planning and partnerships; and respond to needs of special population and changing demographics. Second priority issues include: resolve conflicts; secure access to public; protect Arizona’s natural and cultural resources and communicate with and educate the public. The two tiers of issues and associated goals and action strategies are described in more detail in Chapter 6 of the SCORP.

[57] Additional information regarding SCORP can be found at Arizona State Parks website

Trail Maintenance Costs

Currently there are no designated motorized trails on the Tonto National Forest. The budget allocated to maintain trails is currently, and has been historically, used to maintain non-motorized trails. However, as indicated in the NVUM survey results, many visitors to the Tonto National Forest believe they are recreating on motorized trails; likely ML 2 roads that have overgrown vegetation and challenging terrain.

Environmental Effects

Assumptions and Methodology

Assumptions

Existing National Forest System roads offer a broad range of recreation opportunities providing access for nonmotorized activities such as: hiking, bicycling, and horseback riding and for motorized activities including OHV riding, motorized dispersed camping, and motorized big game retrieval. In the action alternatives, motorized trails can range from single track, that would accommodate a dirt bike, to the width of a standard dirt road, that could be drive by any vehicle with high enough clearance or appropriate suspension. For this analysis, unless otherwise indicated, roads and full-size, four-by-four (4X4) vehicle motorized trails will be treated the same.

Assumptions Associated with User Conflicts: Overall, user conflict on motorized routes is expected to be minimized by implementing the Travel Management, because the locations of motorized routes, motorized dispersed camping and big game retrieval corridors, designated OHV Areas, and permit zones would all be defined and published on the Motor Vehicle Use Map (MVUM). When a user's expectations of what they will experience are aligned with the opportunities provided that user's satisfaction is increased and conflict between users had the potential to be reduced. Researchers have found that such a system reduces direct conflicts (Filmore and Bury, 1978; Frost and McCool, 1988; Albritton and Stein 2007; Snyder *et al*., 2008).

Assumptions Associated with Permit Zones: The roads and motorized trails within the permit zones will be analyzed no differently than the roads and motorized trails on the rest of the forest. Since the NVUM survey did not address permit zones specifically, there is a lack of information to determine the visitor use satisfaction with them. However, the Law Enforcement Report (in the project record) identifies compliance and enforcement issues associated with the permit zones.

Assumptions Associated with Motor Vehicle Use for Big Game Retrieval and Dispersed Camping: Corridors for motorized dispersed camping and motorized big game retrieval would all be defined with locations and published on the motor vehicle use map (MVUM). This would offer the public a means to better plan their recreational pursuits based on the unique expectations of the individual. MVUM would be updated on an annual basis.

Assumptions Associated with Motor Vehicle Use for Dispersed Camping: The follow are assumptions that are common to all action alternatives:

- Implementing the travel management rule only affects motorized dispersed camping (i.e., traveling off the designated NFS road system with a vehicle to set up a camp); it does not affect dispersed camping by any other nonmotorized means. Dispersed camping by any other nonmotorized means, such as parking within one vehicle length (including vehicle

and trailer) alongside a designated open road and walking into a dispersed campsite to set up camp would continue to be allowed anywhere on the forest in all action alternatives.

- Corridors for motorized dispersed camping are meant solely for the purpose of motor vehicle access to dispersed campsites. These corridors would be limited to what is needed to provide direct ingress and egress to the campsite, with the campsite the base of activity. These corridors would not be open to unrestrained motor vehicle use, i.e., driving a motor vehicle outside that which is needed to drive to and from the campsite.
- Outfitters would be limited to the same corridors proposed for motorized dispersed camping. This has a potential to change the type of hunting opportunity provided to the public.

Assumptions Associated with Trail Maintenance Costs: The follow are assumptions that are common to all action alternatives:

- There are no maintenance costs or needs for big game retrieval using motor vehicles projected in any of the action alternatives, so this activity will not be analyzed in terms of trail maintenance costs.
- There are no maintenance costs or needs for access of dispersed camping using motor vehicles projected in any of the action alternatives so this activity will also not be analyzed in terms of trail maintenance costs.
- There are no maintenance costs or needs for personal use fuelwood gathering and other forest products projected in any of the action alternatives so this activity will also not be analyzed in terms of trail maintenance costs.
- Decommissioning of unauthorized routes is not being considered under this analysis: therefore, costs associated with decommissioning are not calculated.

Methodology

Analysis methods included the use of Forest Service databases and Geographic Information System (GIS) data coverage for roads, trails, and with the current conditions for ROS from the Forest Plan amendment. The GIS mileage was used as a relative comparison for analyzing all resource areas. For this analysis, miles of roads and trails open or closed to different vehicles were calculated using the Forest Service GIS spatial data. Information about road and trail mileages is located in the Forest Service Infrastructure database (Infra) and in the project file. The Trails Infrastructure database is not completely linked to the GIS database. Calculations and numbers represent the GIS mileages of roads and trails within the administrative boundary of the forest, for comparative purposes. For Recreation Opportunities major Interstate and Highway mileages managed by other jurisdictions that travel within the Tonto National Forest boundary are included to display road opportunities available to visitors' forest wide.

This analysis was completed using the Recreation Opportunity Spectrum framework outlined in The Recreation Opportunity Spectrum Users Guide (ROS) (U.S. Forest Service, 1982). In Semi-Primitive Non-Motorized (SPNM) settings, roads are not compatible with motorized vehicle use. There are existing roads in this setting on the Tonto National Forest and there are roads proposed in SPNM in the action alternatives. Consistency with each ROS setting criterion (e.g., size, type, and degree of access; remoteness, etc.) is an ideal concept (U.S. Forest Service, 1986). When

considering real conditions on the ground, one or more of the setting criteria are routinely inconsistent with the "ideal" characteristics for that setting. Inconsistencies arise from a variety of causes, including earlier management actions or purposeful courses of action. For the latter, the apparently inconsistent factor might be completely in line with the type of opportunity most needed in the area (U.S. Forest Service, 1986).

The designations identified for ROS within the Forest Plan and amended Forest Plan are objectives to meet management goals to optimize users' recreation experiences on the Tonto National Forest. These categories are not prescriptive; for example the ROS categories of Semi-Primitive Motorized and Roaded Natural do not require a minimum miles of roads or motorized trails within these Opportunity Classes.

Data Limitations

There is no data available regarding user conflicts. Violation notices that have been issued on the Forest are discussed in the Law Enforcement section of this chapter. National Visitor Use Monitoring data is presented in the background section. This data pertains to the forest level and is not site specific. Estimates of motorized use are described in Alternative A – No Action Alternative. There is not a complete inventory of site locations or use data for dispersed sites. The Infra database does not contain a complete listing of trailheads located on the forest. With this data limitation, a comparison of existing motorized access to trailheads with the motorized access proposals within the action alternatives is not feasible.

Alternative A – Direct and Indirect Effects

Roads and Trails Designated for Motor Vehicle Use

Management of motorized recreation on the Tonto National Forest would not change from the existing condition. The existing total of 2,953 miles of road open to passenger and high clearance vehicles on the Tonto National Forest would remain open to the public for motorized travel by previous decision. In addition, 2,006 miles of open routes, where the maintenance level is unknown, would likely continue to be used by motorists. There are currently no motorized trails designated for general motorized use or for single track motorcycle use.

Under current conditions it is often not clear which routes are intended for motorized and nonmotorized activities. Lack of a designated route system does not provide for a diverse range of safe, motorized recreational opportunities and does not meet the expectations or desires of OHV enthusiast. This lack leads to an increase in the number of unauthorized routes. As the number of users continue to increase, the demand for additional motorized routes for recreation activities is likely to increase.

The No Action Alternative does not provide many opportunities to recreate in the forest without being near a road, except in designated wilderness areas (Figure 21). Currently approximately 59 percent of the forest is within 0.5 miles of an open motorized route, with no areas outside of Wilderness located greater than 4 miles away from a road. Of the non-wilderness, 1.5 percent of the forest is located within 2 to 4 miles from an open motorized route. Currently designated wilderness provides the only opportunity for those forest visitors seeking solitude where they can recreate in a setting greater than four miles from an open road. The road system provides access to all recreation niche settings particularly front country and linear adventure. The current mix of motorized and nonmotorized recreation opportunities does not appear to be meeting the needs of

the motorized public. This could be attributed to the fact that currently there is not a designated motorized trail route system on the Tonto National Forest.

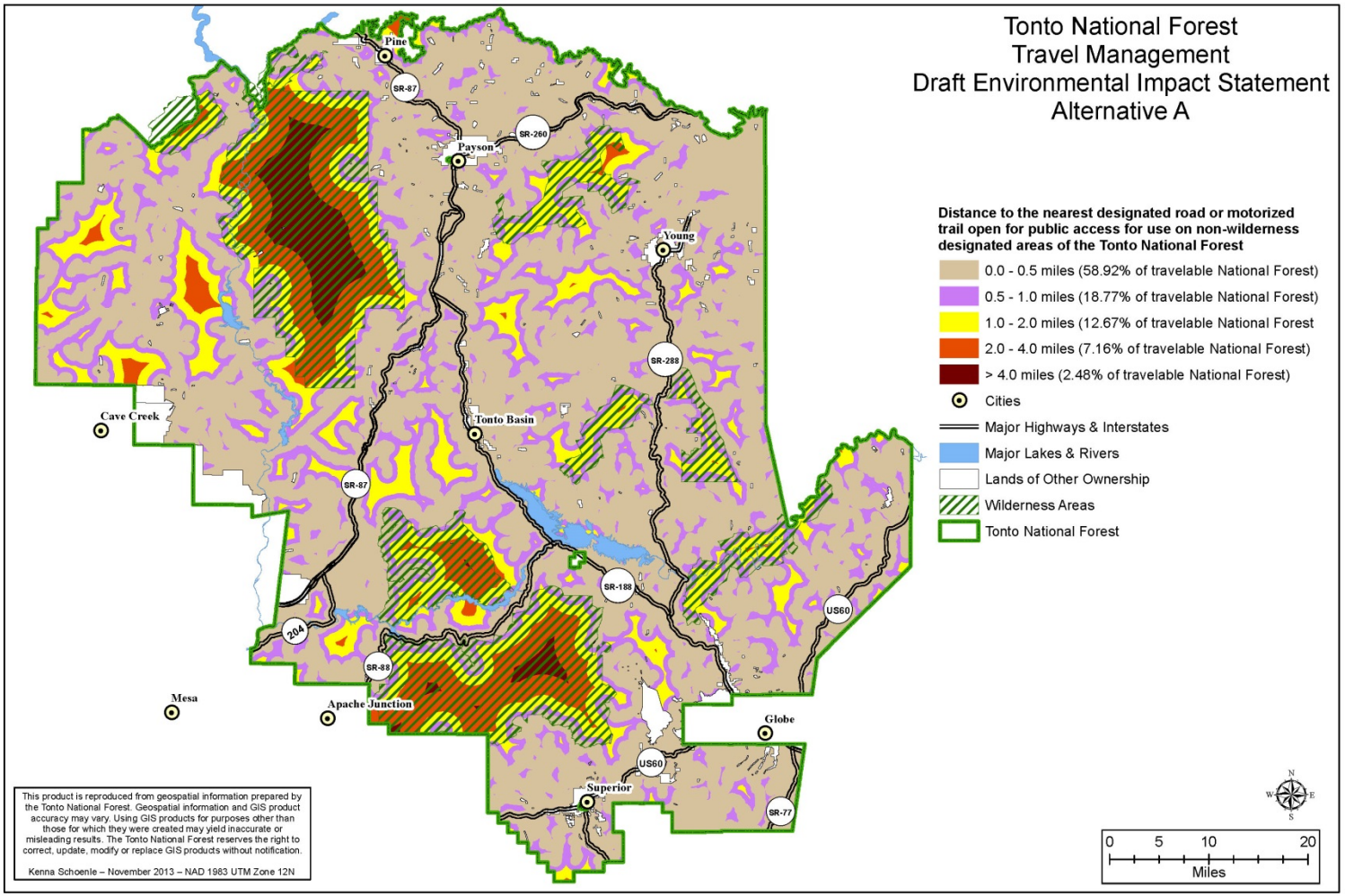

Figure 21: Map of Distance to Nearest Designated Road or Motorized Trail – Alternative A

Effects of User Conflicts

OHV use is likely to increase on the Forest, because of popularity of this activity and/or because of restrictions placed on state and local government land. Since there are currently no trails specifically managed for motorized use, and motorized users are expected to continue to travel cross-country and utilize the nonmotorized trail system, it is likely conflict between motorized and nonmotorized users would increase. An increase in conflicts between motorized users such as: ATV; off-road motorcycle; high-clearance vehicle; UTV; and full sized vehicle enthusiasts would also be likely, since there would not be clear guidelines for each type of use. The current safety issues from these conflicts would likely continue. Use of and the creation of additional unauthorized routes is likely to continue and increase, along with degradation to the natural landscape.

Effects to the Arizona and Great Western Trails

Currently 4.2 miles of the nonmotorized Arizona Trail are located on system roads. In addition, many of the passages of the Arizona Trail cross a motorized route. Table 29 shows the number of times a motor vehicle route crosses the trail, for a total of 50 times over the course of the 186 miles of the trail that in on the Tonto National Forest. These crossing on a trail that is intended to be a non-motorized trail and provide an non-motorized experience does not meet the intent nor provide the experience many hikers, mountain bikers, trail runners, and equestrian riders who utilize the trail.

Table 29: Occurrences of Motor Vehicle Routes Crossing Arizona Trail – Alternative A

Passage Name	Trail Mileage	Number of Motorized Crossings
Alamo Canyon	10.9	3
Reavis Canyon	17.8	12
Superstition Wilderness	28.6	5
Four Peaks	18.4	5
Pine Mountain	18.9	9
Saddle Mountain	15.2	3
Mazatzal Divide	20.9	0
Red Hills	13.6	1
Whiterock Mesa	10.9	1
Hardscrabble Mesa	11.5	8
Highline	18.6	3
Gila River Canyons	0.3	0
Total	**185.6**	**50**

The Great Western Trail is located on 71 miles of passenger vehicle (ML 3-5) and 8 miles of high clearance (ML 2) roads. This currently provides a semiprimitive motorized setting and experience for visitors on the Great Western Trail.

Effects to Recreation Opportunity Spectrum

There would be no change in the current conditions for the Recreation Opportunity Spectrum classes for the forest.

Effects of Motorized Trail Maintenance

Out year budget funding projections are currently unknown. No alternative would change the amount of funds available for trail maintenance. Since the Tonto National Forest currently does not have a designated motorized trail system, the emphasis of the trail program is on maintenance, reconstruction, and signing of forest nonmotorized trail system. Funding is limited for the signing and restoration of unauthorized routes. The partnership and volunteer program on the Tonto National Forest greatly attribute to the accomplishment of visitor contacts, trail maintenance, and reconstruction, and restoration of unauthorized routes.

Using the 2005 to 2010 Average National Trail Cost Figures, the estimated five year averages of the current Tonto National Forest non-motorized trail needs are: Total Operations $160,863, Deferred Maintenance $2,229,440, Annual Trail Maintenance $529,440 and Trail Capital Improvement (Trail Reconstruction) $2,948,985. The total (2005 to 2010 average Allocation figure) for funding the Tonto National Forest's Trails Program including Operations, Maintenance, and Trails Capital Investment is $1,677,237, which currently goes to maintain the nonmotorized trail system.

Areas Designated for Motor Vehicle Use

Cross-country motorized travel is currently permitted on the Payson and Pleasant Valley ranger districts. There are also many locations where highly-concentrated motorized use occurs on Cave Creek, Globe, and Mesa ranger districts even though these areas are currently closed to cross-country travel. These locations are popular places, where the public has found motorized recreational use most enjoyable due to the proximity to the Metropolitan Phoenix Area and the varied desert terrain. Families with young OHV users and beginners, OHV clubs, and small groups of motorized recreation enthusiasts frequent these intensively-used areas. These areas have become informally known as Desert Vista, St. Clair, Pipeline, Golf Course, Hewitt Station, Seven Mile Wash, Sycamore Creek, and The Rolls. Sycamore Creek is indicative of the use occurring in these concentrated use areas. Users of this site refer to it as "Sycamore OHV area" but the Tonto National Forest has not designated any of the areas described above as a cross-country travel area per the Travel Management Rule. An extensive network of unauthorized routes along with hill climbs can be found in Sycamore Wash. Often, these routes are created by users trying to exit the wash by driving up the incline or using these inclines to enhance the difficulty or vary the terrain in their motorized experience.

No change from the current condition is anticipated under this alternative.

Effects of User Conflicts

As the number of users continues to increase, demand for cross-country travel could likely increase. Although cross-country travel in the lower elevation, desert areas is not permitted, illegal use would likely continue, expanding areas where cross-country travel has been observed. In addition, conflicts between OHV users, recreational shooters, and nonmotorized users would continue to occur in these locations.

Motor Vehicle Use for Big Game Retrieval

Due to no prohibition on cross-country travel unless otherwise posted, the Payson and Pleasant Valley ranger districts would continue to allow motor vehicles to travel off-road to retrieve any downed game animal (approximately 703,618 total acres).

Motor vehicles are not allowed to travel off-road for the purpose of game retrieval on the Cave Creek, Mesa, Globe, or Tonto Basin ranger districts. The prohibition on cross-country travel would continue on these ranger districts. However, it is likely that some motorized big game retrieval is currently occurring and would continue to occur. This would have the potential to dissatisfy nonmotorized visitors (including hunters that prefer to not use motor), hikers, and horsemen who travel within these districts expecting a quiet recreation experience.

Effects of User Conflicts

This alternative provides 703,618 acres for motorized big game retrieval on the Payson and Pleasant Valley Ranger Districts. User conflicts can occur when hunters, traveling by foot or horseback, encounter hunters using motor vehicles in areas where motorized use is not expected to occur. There is a potential for this type of conflict to occur on Globe, Cave Creek, and Tonto Basin ranger districts where motorized retrieval is currently prohibited.

Motor Vehicle Use for Dispersed Camping

Generally, dispersed camping is more popular at higher elevations on Payson and Pleasant Valley ranger districts from May through September. The Cave Creek, Globe, Mesa, and Tonto Basin ranger districts are generally more popular during colder seasons. During hunting season, many hunters set up dispersed campsites in their favorite hunting area.

As previously described, there would be no change in recreational opportunities for motorized dispersed camping. On the Payson and Pleasant Valley ranger districts with no prohibition on cross-country travel unless otherwise posted, motor vehicles would continue to be allowed to travel off-road to access dispersed campsites on roughly 703,618 acres. These opportunities are provided within the high county and backcountry niche settings.

Motorized vehicles are currently not allowed to travel off-road for accessing dispersed campsites on the southern ranger districts (Cave Creek, Mesa, Globe, or Tonto Basin). However, it is likely that some motorized dispersed camping is currently occurring and would continue to occur during the fall and winter cooler seasons.

Effects of User Conflicts

These effects would be the same as those for motorized big game retrieval, as the areas open for this activity are the same.

Alternative B – Direct and Indirect Effects

Roads and Trails Designated for Motor Vehicle Use

There would be approximately 1,666 miles of motorized trail added to the system, which includes 1 mile of single-track motorcycle trail. In this alternative, there are 11 miles of unauthorized routes proposed to be added to the road system that will be open to the public, while none of the

inventoried unauthorized routes are proposed to be as added to the motorized system trail. The inventoried unauthorized routes are currently used and would provide additional road access on the forest. Overall, Alternative B proposes almost 4,006 miles less of motorized routes open to the public than currently exists.

Under Alternative B, the ability to recreate away from motorized routes outside of designated Wilderness would be greater than the current condition (Figure 22). Approximately 43 percent of the forest would be located within 0.5 miles from an open motorized route outside of wilderness, with less than five percent located outside of Wilderness providing an opportunity greater than 4 miles from an open motorized route. This alternative provides an opportunity for those seeking solitude to recreate 4 miles from an open road outside of designated Wilderness. Outside of Wilderness, 5.3 percent would be located 2 to 4 miles from an open motorized route.

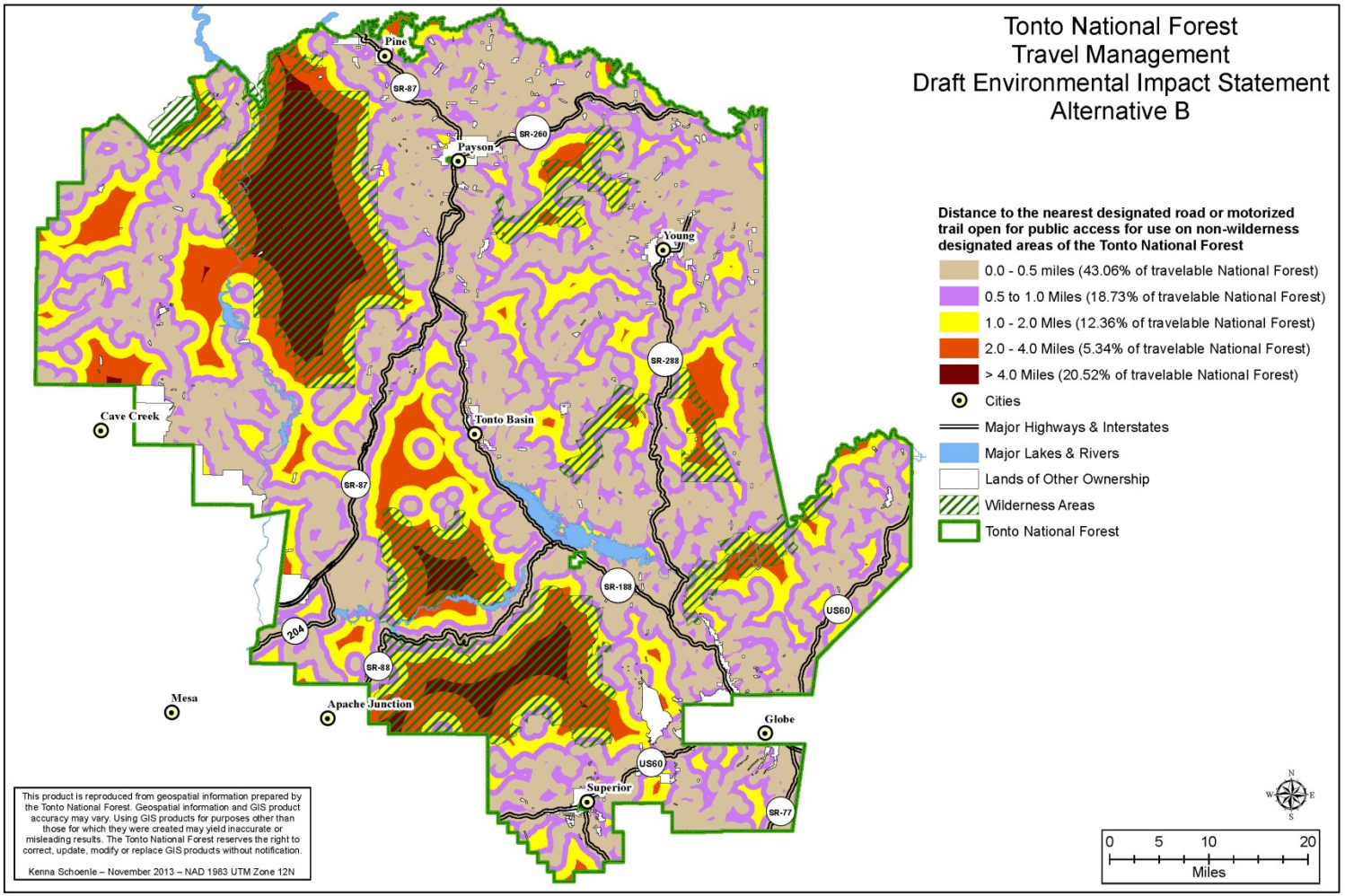

Figure 22: Map of Distance to Nearest Designated Road or Motorized Trail – Alternative B

Less emphasis is focused on OHV opportunities in the front country and driving for pleasure and motorized long distance trail use in the linear adventure recreational niches. This alternative provides the most opportunities for primitive and unconfined recreation activities outside of designated Wilderness.

Effects of User Conflicts

Forest recreation managers' report many motorized users are feeling disenfranchised and frustrated that they keep "losing trails and areas" to ride. After decades of relatively unrestricted use, many motorized users are beginning to feel squeezed (Yankoviak, 2005). Conflict for motorized users may stem from off-site interactions when other user groups seek to restrict motorized access and issue complaints about OHV use to land management agencies. This alternative, the most restrictive in terms of motorized access, has the potential to accentuate this type of conflict. However, this alternative provides the most opportunities for those users seeking solitude and primitive unconfined recreation experiences.

Effects to the Arizona and Great Western Trails

Currently 4.2 miles of the nonmotorized Arizona Trail are located on system roads. In addition, many of the passages of the Arizona Trail cross a motorized route. Table 30 shows the number of times a motor vehicle route crosses the trail, for a total of 29 times over the course of the 186 miles of the trail that are within the Tonto National Forest. While the occurrence of motorized routes in this alternative is almost half of the current condition, these crossing on a trail that is intended to be a non-motorized trail and provide an non-motorized experience still does not meet the intent nor provide the experience many hikers, mountain bikers, trail runners, and equestrian riders who utilize the trail expect.

Table 30: Occurrences of Motor Vehicle Routes Crossing Arizona Trail – Alternative B

Passage Name	Trail Mileage	Number of Motorized Crossings
Alamo Canyon	10.9	2
Reavis Canyon	17.8	9
Superstition Wilderness	28.6	4
Four Peaks	18.4	1
Pine Mountain	18.9	4
Saddle Mountain	15.2	1
Mazatzal Divide	20.9	0
Red Hills	13.6	1
Whiterock Mesa	10.9	0
Hardscrabble Mesa	11.5	5
Highline	18.6	2
Gila River Canyons	0.3	0
Total	**185.6**	**29**

On the Great Western Trail, 14 miles are proposed for decommissioning from the Forest boundary with Agua Fria National Monument on Bureau of Land Management land to the junction of Roundtree Canyon Road (Forest Service Road 24). Access to the Great Western Trail route would begin or end at the junction of Roundtree Canyon Road. This alternative proposes 7.3 miles of the GWT currently managed as road to be managed as motorized trail. There is the potential for user dissatisfaction by those accustomed to traveling this portion of the Great Western Trail in a motorized vehicle and the loss of motorized opportunities due to decommissioning proposed on 14 miles of the trail.

Effects to Recreation Opportunity Spectrum

This alternative would require a Forest Plan amendment, because it would not comply with the current Forest Plan. However, using the updated ROS for the existing condition, there are differences based on the ROS settings (Table 31 and Figure 23). The most notable difference is in the increase of semiprimitive non-motorized, nearly double the updated existing condition.

Table 31: Changes in ROS - Alternative B

ROS Category	Update Existing Condition (Acres)	Alternative B (Acres)	Difference (Acres)
Primitive	588,937	621,683	+ 32,746
Semiprimitive Nonmotorized	519,259	980,718	+ 461,459
Semiprimitive Motorized	1,212,083	843,000	- 369,083
Roaded Natural	571,379	445,909	- 125,470
Rural	41,691	41,774	+ 83
Urban	30,939	31,204	+ 265

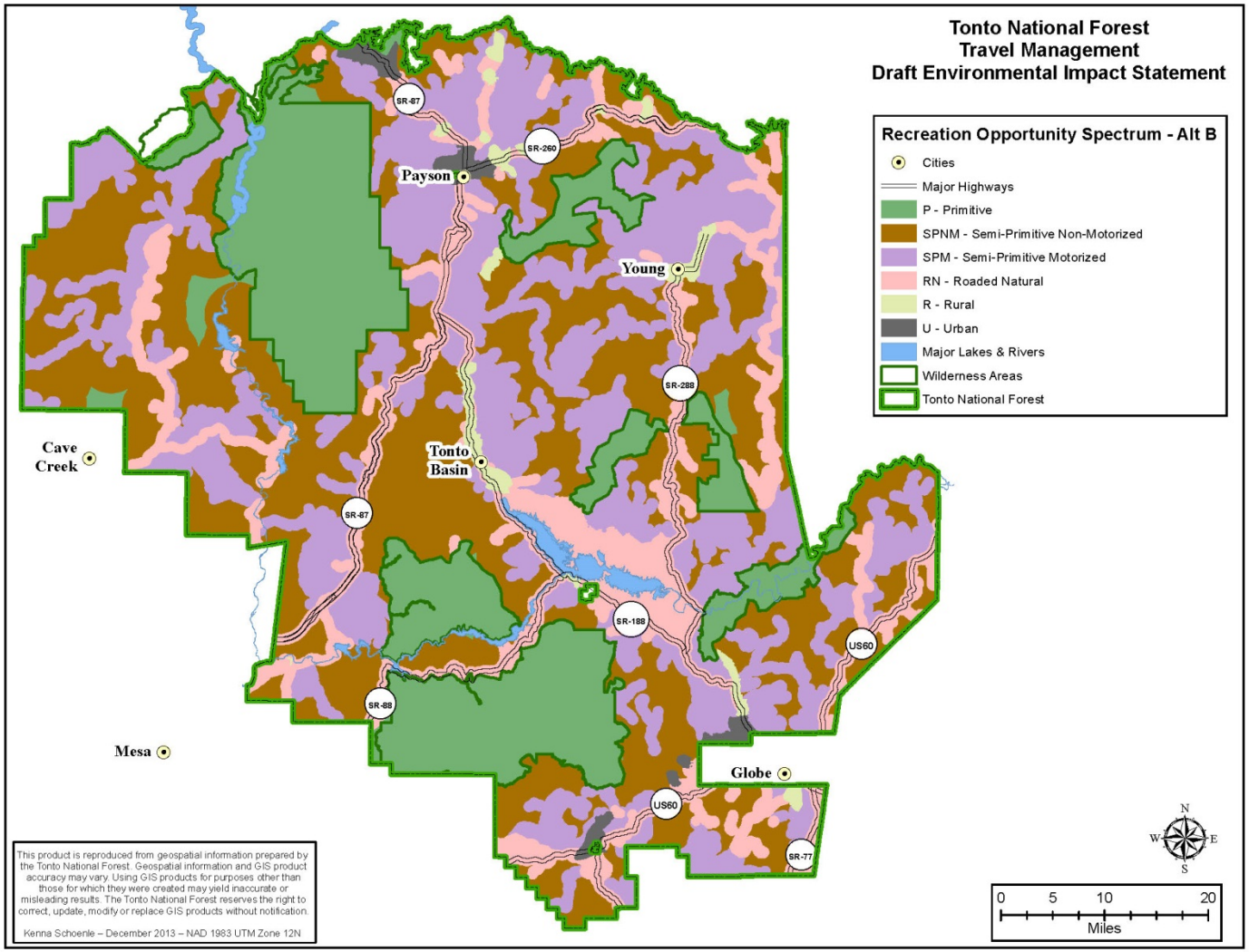

Figure 23: Map of ROS for Alternative B

For this alternative, those seeking motorized recreation in the forest will have less opportunities while those seeking nonmotorized recreation will have more opportunities than current conditions.

Effects of Motorized Trail Maintenance

This alternative proposes 1,666 miles of motorized trail at a cost of $600 per mile for maintenance (a total of $999,000). Trail maintenance for this alternative would need to be funded, either out of the Tonto's operating funding, or the work would need to be accomplished by volunteers. This alternative has slightly higher costs for trail maintenance than Alternative D.

Areas Open to Cross Country Travel

No OHV areas are proposed for designation in this Alternative. OHV users could be dissatisfied at the lack of opportunity to travel off the designated motorized route system.

Effects of User Conflicts

No OHV areas are proposed for designation in this alternative, which eliminates over 700,000 acres of cross-country travel opportunities on the Forest. This alternative does not address the current management issue of heavily-concentrated use of motorized vehicles in a small area occurring on the Tonto National Forest. With all motorized use concentrated to designated routes only, user safety issues such as conflicts between OHV users, especially younger beginners and those that favor a full-sized vehicle, would likely increase as the opportunities for motor vehicle travel would decrease. However, this alternative provides the most opportunities for nonmotorized forest visitors.

OHV users could be dissatisfied at the lack of opportunities provided for cross-country travel and travel on unauthorized routes in this alternative particularly on the Globe and Mesa Ranger Districts, specifically in the Sycamore drainage where cross-country travel are currently popular, albeit illegal, recreation activities.

Motor Vehicle Use for Big Game Retrieval

No motorized cross-country travel would be allowed for the retrieval of game species in this alternative. This proposal affects big game hunters who currently travel off of roads and trails to retrieve game on the Payson and Pleasant Valley ranger districts where cross-country travel is currently allowed. With the prohibition on cross-country travel on the Cave Creek, Mesa, Globe, and Tonto Basin ranger districts travel is currently restricted to open roads. This proposal poses no change on where motorized big game retrieval would be allowed on these districts[58].

Effects of User Conflicts

This alternative proposes no corridors for motorized big game retrieval, the only alternative to eliminate this type of opportunity. This is a reduction in opportunity on the Payson and Pleasant Valley Ranger Districts and poses no change for the Globe, Mesa, and Tonto Basin Ranger Districts. There is a potential for user dissatisfaction by hunters who currently retrieve game with

[58] For information about hunter satisfaction related to this prohibition of cross-country travel in this alternative, see the Game and Nongame section of this Chapter.

motor vehicles on Payson and Pleasant Valley Ranger Districts, which could cause conflict if OHV users decide to continue the practice on the two northern districts.

Motor Vehicle Use for Dispersed Camping

In Alternative B, motor vehicle access for dispersed camping is limited to designated dispersed sites that are accessible by a designated road or motorized trail. A total of 414 campsites have been inventoried on the forest. There would be a 50-foot buffer around the site where motorized vehicle travel will be allowed which estimates to be 65 acres total forest wide.

This proposal has the potential to affect campers who currently travel off of roads and trails to camp on the Payson and Pleasant Valley ranger districts where cross-country travel is currently allowed. Since this Alternative is the most restrictive it poses the most potential for competition for sites, concentration of use and user conflict.

Personal Use Fuelwood Gathering

This alternative proposes that the use of a motorized vehicle would be allowed within 300 feet of a designated road or trail for the purpose of gathering fuelwood within an existing fuelwood permit area. For those seeking a nonmotorized experience, this alternative would allow a user more opportunity within these areas.

Alternative C– Direct and Indirect Effects

Roads and Trails Designated for Motor Vehicle Use

Alternative C proposes the greatest number of motorized trails, 2,151 miles of general trails open to full sized vehicle and 78 miles for single track vehicles. In this alternative, there would be 544 miles open to passenger vehicle and 796 miles open to high clearance vehicles. Additionally, this alternative proposes the addition of 290 miles of unauthorized routes designated open to motorized use: 11 miles designated as roads; 207 miles designated as full sized vehicle trails; and 73 miles for single track vehicles. The inventoried unauthorized routes are currently used and would provide additional access on the forest. Overall, Alternative C proposes almost 1,390 miles less of motorized routes open to the public than currently exists.

Under alternative C, the ability to recreate away from motorized routes outside of designated Wilderness would be greater than the current condition (Figure 24). Approximately 52 percent of the forest would be located within 0.5 miles from an open motorized route outside of wilderness, while nearly 12 percent of the forest would be 2 or more miles from a designated road or motorized trail (approximately 4 percent would be four miles or greater). This alternative does not provide as much opportunity to recreate away from a road as Alternative B, but provides more than the current condition and Alternative D.

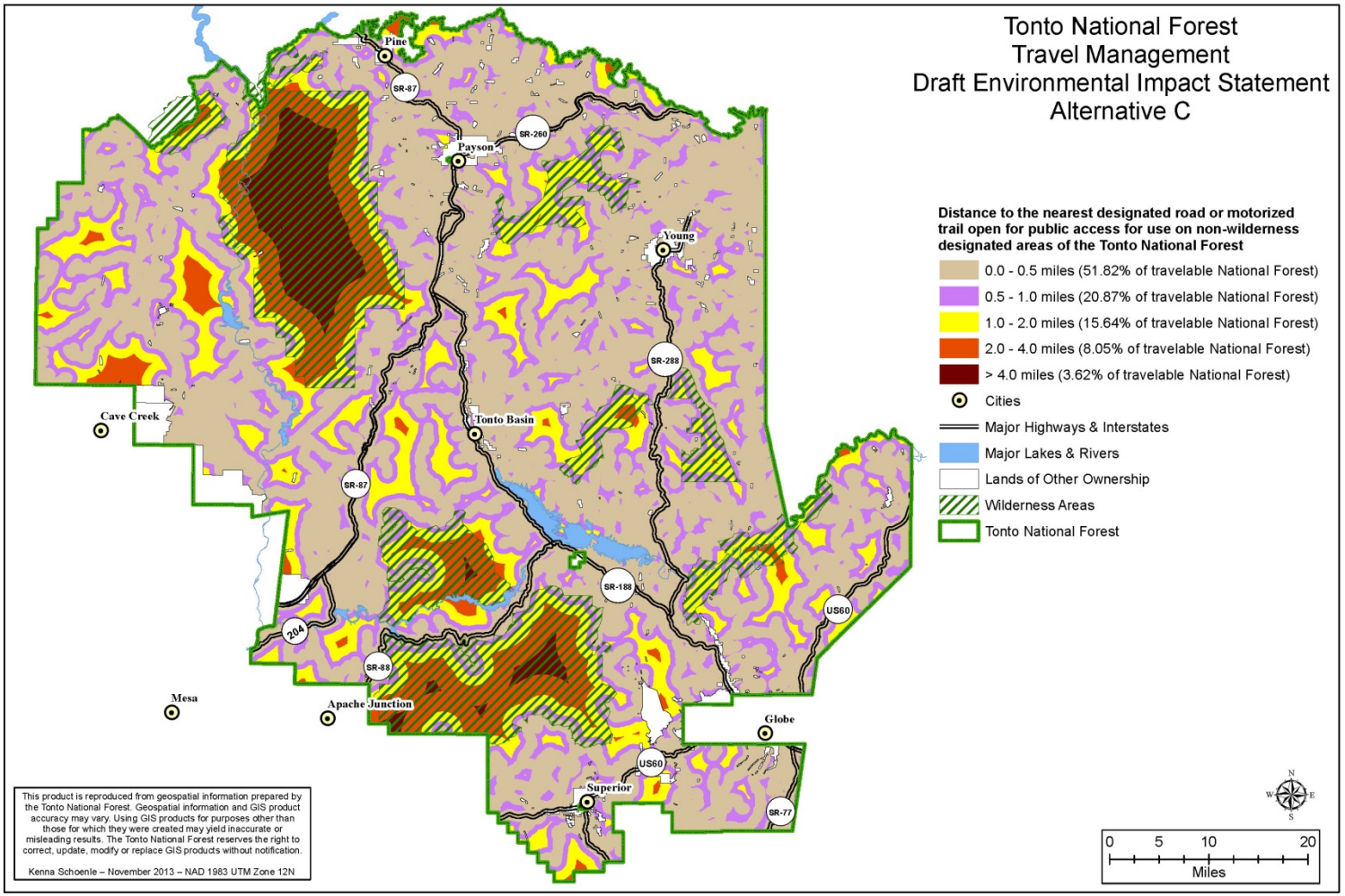

Figure 24: Map of Distance to Nearest Designated Road or Motorized Trail – Alternative C

OHV opportunities provided in the front country niche would include opportunities in designated OHV areas. Opportunities within the linear adventure recreational niche would emphasize driving for pleasure and a mix of motorized and non-motorized long distance trail use.

Effects of User Conflicts

With a designated motorized vehicle road and trail system, MVUM and signing would clarify for visitors which routes to take to participate in their motorized or nonmotorized recreation activity. This could reduce the likelihood of visitors misunderstanding what routes are open for motorized recreation activities. Reduced encounter rates between motorized and nonmotorized users should occur, since motorized use would be confined to the designated road and trail system. By reducing conflicts between motorized and nonmotorized users, the current safety issues would also likely reduce with this alternative. Alternative C has the potential to reduce conflicts between motorized users since the alternative offers the most miles of motorized trail and specifically designates motorized trail for single track motorcycle use.

Effects to the Arizona and Great Western Trails

Currently 4.2 miles of the nonmotorized Arizona Trail are located on system roads. This alternative proposes a reduction in number of miles of the Arizona Trail located on roads and where the trail crosses a road or motorized trail. Trail located on designated road or motorized trail would be reduced to approximately two miles. Table 32 shows the number of times a motor vehicle route crosses the trail, for a total of 29 times over the course of the 186 miles of the trail that are within the Tonto National Forest. While the occurrence of motorized routes in this alternative is decreased from the current condition, these crossing on a trail that is intended to be a non-motorized trail and provide an non-motorized experience still does not meet the intent nor provide the experience many hikers, mountain bikers, trail runners, and equestrian riders who utilize the trail expect.

Table 32: Occurrences of Motor Vehicle Routes Crossing Arizona Trail – Alternative C

Passage Name	Trail Mileage	Number of Motorized Crossings
Alamo Canyon	10.9	2
Reavis Canyon	17.8	11
Superstition Wilderness	28.6	5
Four Peaks	18.4	2
Pine Mountain	18.9	8
Saddle Mountain	15.2	2
Mazatzal Divide	20.9	0
Red Hills	13.6	1
Whiterock Mesa	10.9	1
Hardscrabble Mesa	11.5	6
Highline	18.6	2

Passage Name	Trail Mileage	Number of Motorized Crossings
Gila River Canyons	0.3	0
Total	**185.6**	**40**

The 79 miles of Great Western Trail route located on passenger vehicle roads remains the same as the current condition. This alternative reduces the miles of high clearance vehicle roads to 0.9 miles and proposes changing the amount of motorized trails to approximately seven miles. There is the potential for user dissatisfaction by those users accustomed to traveling these routes in a vehicle. Visitors who prefer a more primitive experience would benefit from the routes maintained as motorized trail.

Effects to Recreation Opportunity Spectrum

This alternative would require a Forest Plan amendment, because it would not comply with the current Forest Plan. However, using the updated ROS for the existing condition, there are differences based on the ROS settings (Table 33 and Figure 25). The most notable difference is in the increase of semiprimitive non-motorized, which increased by 174,662 acres. The effect for recreationists in Alternative C is those seeking motorized recreation opportunity in the forest will have less opportunities while those seeking nonmotorized recreation will have more opportunities than current conditions.

Table 33: Changes in ROS - Alternative C

ROS Category	Update Existing Condition (Acres)	Alternative B (Acres)	Difference (Acres)
Primitive	588,937	599,271	+ 10,334
Semiprimitive Nonmotorized	519,259	693,921	+ 174,662
Semiprimitive Motorized	1,212,083	1,071,701	- 140,382
Roaded Natural	571,379	529,150	- 42,229
Rural	41,691	39,264	- 2,427
Urban	30,939	30,980	+ 41

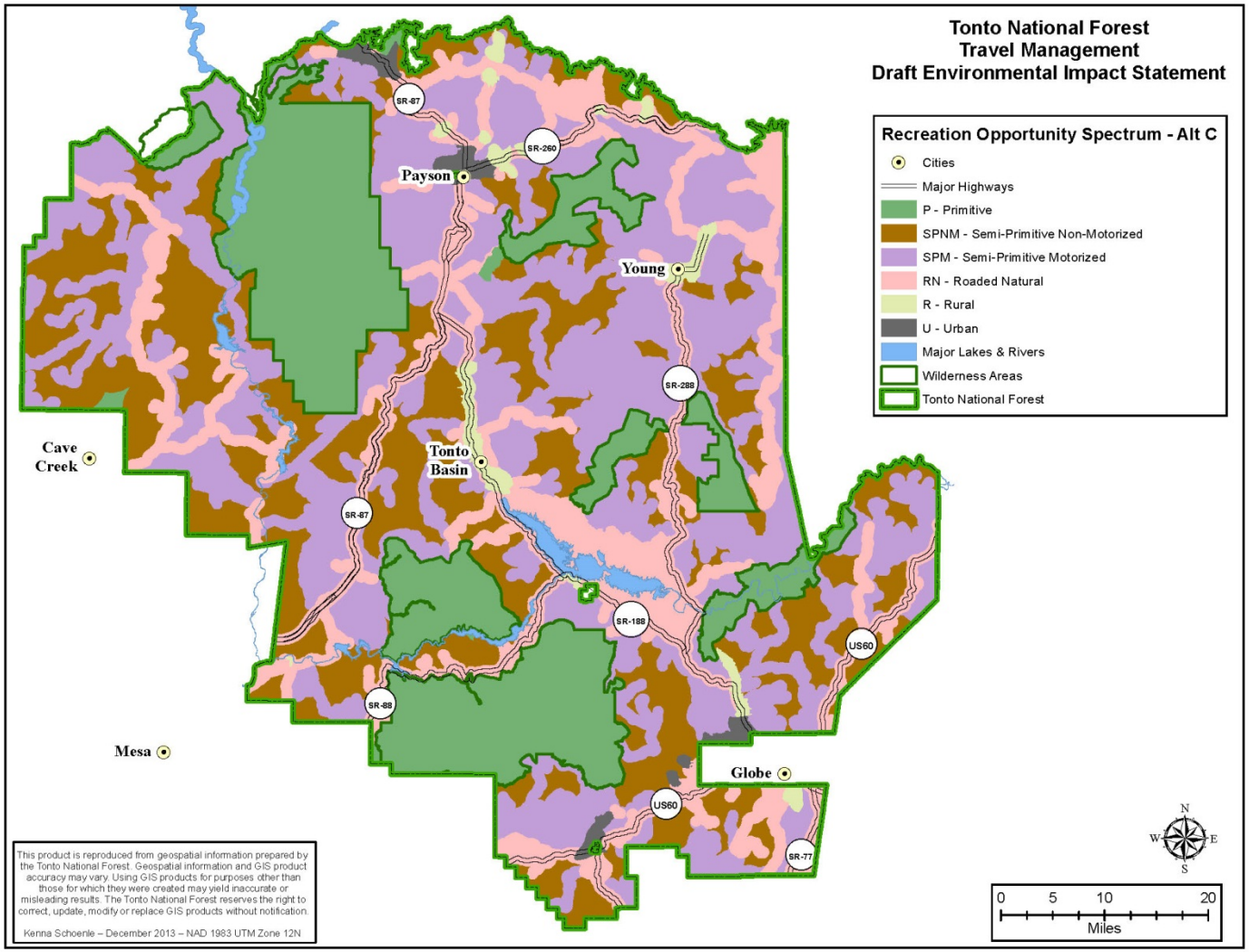

Figure 25: Map of ROS for Alternative C

Effects of Motorized Trail Maintenance

This alternative proposes 2,230 miles of motorized trail at a cost of $600 per mile for maintenance (a total of $1,338,000). Trail maintenance for this alternative would need to be funded, either out of the Tonto's operating funding, or the work would need to be accomplished by volunteers. Of the action alternatives, this alternative would be the greatest burden in terms of budget needs.

Areas Designated for Motor Vehicle Use

There are four OHV areas proposed in this alternative: including Bartlett Lake (922 acres); Golf Course (17 acres), Roosevelt Lake (4,508 acres) and Sycamore (1,332 acres). In addition, four tot lots are proposed (Sycamore, The Rolls, Wildcat, and 532) totaling approximately 12 acres. These tot lots would be limited to children and would allow them to learn to ride in a more contained area. The designated tot lots would likely reduce staging area expansion in adjacent locations often used by beginning riders. The Wildcat Tot Lot would be located within the proposed Desert Vista Permit Zone and located on the south side of Forest Road 19 (Bartlett Lake Road) at the site of an old materials pit. The 532 acre tot lot would be located adjacent to the St. Clair Permit Zone. The Sycamore Tot Lot would lie within the boundaries of the proposed Sycamore Cross-Country OHV area just north of Forest Road 19 at Indian Springs Wash. The Rolls Tot Lot would be located at the Pobrecito Recreation Site just east of the Bush Highway and is not part of the Rolls Permit Zone. Motorized cross-country travel would be allowed in these OHV areas and tot lots as depicted on the MVUM map and signed on the ground at each site.

There are two main differences between the proposed designated OHV areas and the proposed permit zones. In OHV areas, permits would not be required and travel would not be restricted to designated routes. Although most of the proposed OHV areas are in locations where motorized cross-county travel has been restricted, they are extremely popular locations with OHV enthusiasts due to their proximity to urban cities and varied desert terrain. By designating these OHV areas, OHV enthusiasts would be provided with an opportunity to recreate where cross-country travel would be permitted. These OHV area are also near locations where motorized trail riding would be emphasized, providing a greater diversity of motorized recreation opportunities.

Effects of User Conflicts

The areas that are proposed to be designated OHV areas currently receive heavy OHV use and are close to the urban cities of Mesa and Globe. These locations are not as desirable to nonmotorized users so it is less likely there would be conflict between motorized and nonmotorized recreationists in these areas.

By limiting cross-country travel to these limited environments of the four OHV areas: Bartlett Lake; Golf Course; Roosevelt Lake; and Sycamore; there would likely be reduced conflicts between motorized and nonmotorized recreationists. There could be a reduction in the conflict such as the illegal motorized access occurring onto the nonmotorized Arizona Trail from Golf Course on the Globe Ranger District. In addition, conflicts between OHV types would also likely be reduced, since all users have the same goal, to drive cross-country.

The creation of the four tot lots: Sycamore; The Rolls; Wildcat and 532; would likely reduce young OHV riders conflict with full-sized vehicles, increase user safety, proving a safe environment where children could develop their OHV riding skills.

Motor Vehicle Use for Big Game Retrieval

Alternative C would limit motor vehicle use for big game retrieval solely for the retrieval of elk and bear up to one mile on both sides of the 1,740 mile designated road system and 2,230 miles of designated motorized trail system forestwide. This would reduce opportunities for hunters on the Pleasant Valley and Payson ranger districts who currently retrieve big game using a motorized vehicle at distances over a mile. Although this would increase opportunities on the southern ranger districts (Cave Creek, Mesa, Globe, and Tonto Basin) where motorized big game retrieval is not currently authorized. This could affect those forest users that have become accustomed to a nonmotorized hunting opportunity in areas that currently limit cross-country travel on the southern ranger districts. Forestwide there would be an increase in motorized big game retrieval opportunities for hunters with a total of 1,293,178 acres, which is 589,956 acres more than currently allows for cross-country travel for retrieval. Limitations to this corridor would be in congressionally designated Wilderness areas where motorized travel is not permitted and other areas that would remain closed from existing closure orders.

Effects of User Conflicts

This alternative poses a reduction in opportunity on the Payson and Pleasant Valley ranger districts and possible dissatisfaction by hunters who are currently accustomed to retrieving game with a motorized vehicle greater than one mile from a road. This poses an increase in opportunity for hunters who prefer to retrieve game with a motorized vehicle on the Globe, Tonto Basin, and Cave Creek ranger districts. With this proposed change on the southern districts of the forest, conflicts could occur initially when hunters who prefer nonmotorized travel are not aware of the change in designation, meet hunters using motorized vehicles to retrieve game.

Motor Vehicle Use for Dispersed Camping

Alternative C would allow motor vehicle access up to 100 feet on both sides of the 1,340 mile designated road system and 2,230 miles of designated motorized trail system. Limitations to this corridor would be in congressionally designated Wilderness areas where motorized travel is not permitted and other areas that would remained closed from existing orders.

This alternative would affect campers on the Pleasant Valley and Payson ranger districts who usually access campsite sites greater than 100 feet of designated routes. This alternative provides additional opportunities on the Cave Creek, Mesa, Globe, and Tonto Basin ranger districts where cross-country travel from open roads is currently prohibited.

Personal Use Fuelwood Gathering

This alternative proposes that the use of a motorized vehicle would be allowed within 300 feet of a designated road or trail for the purpose of gathering fuelwood within an existing fuelwood permit area. For those seeking a nonmotorized experience, this alternative would allow users more opportunity within these areas.

Alternative D – Direct and Indirect Effects

Roads and Trails Designated for Motor Vehicle Use

Alternative D proposes the most mileage of roads and motorized trails open to the public, approximately 4,867 miles total. However, this alternative is still a decrease in miles of motorized routes open to the public from the current condition. This alternative proposes approximately 2,230 miles of designated motorized trail miles, with nearly 80 miles for single track vehicles only.

In Alternative D, approximately 330 miles of unauthorized routes are proposed to be designated for motor vehicle use. This would provide an opportunity for these routes currently being utilized by forest visitors without resource impacts to be available to the public.

Under alternative D, the ability to recreate away from motorized routes outside of designated Wilderness would be nearly identical to the current condition (Figure 26).

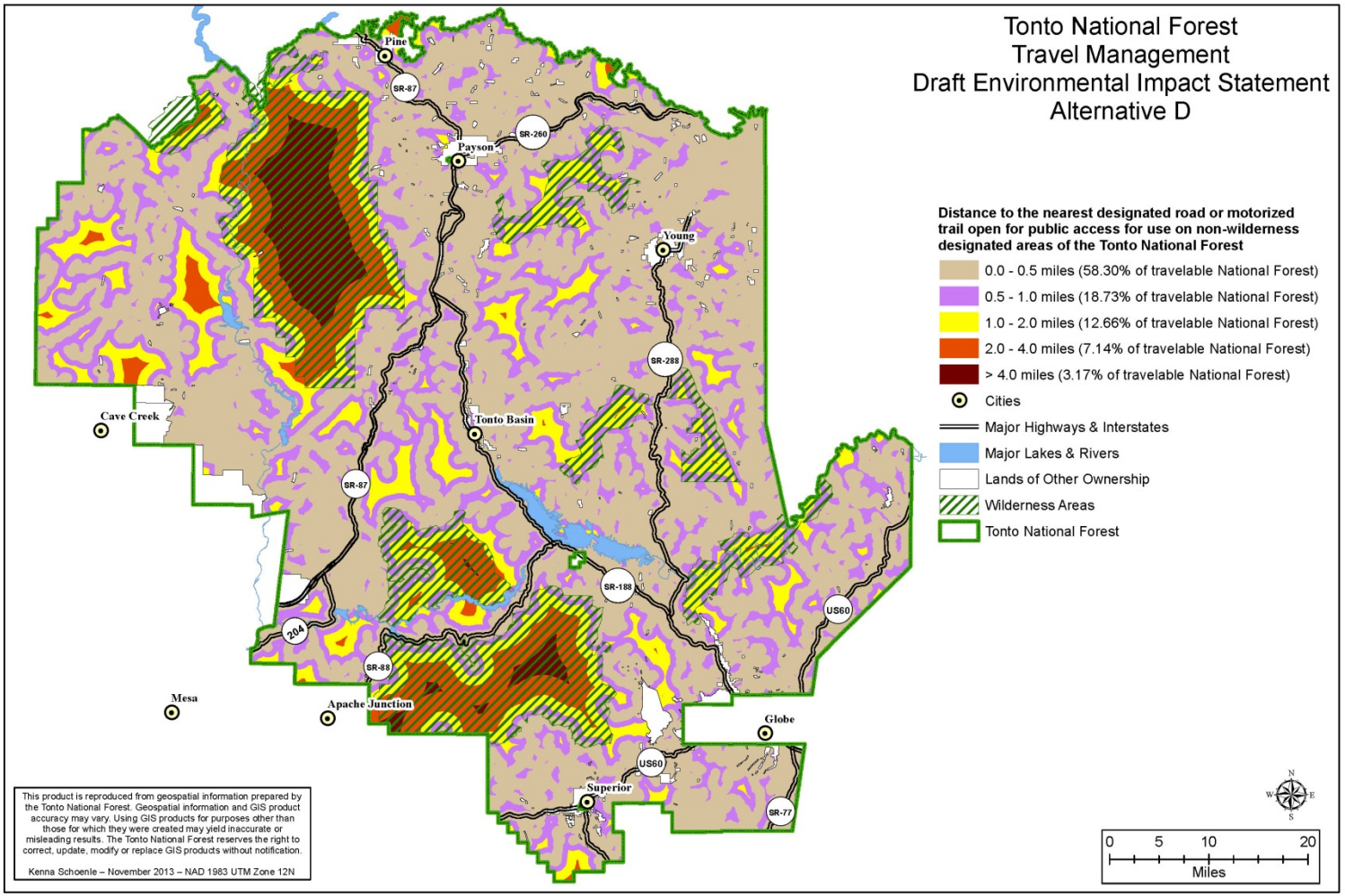

Figure 26: Map of Distance to Nearest Designated Road or Motorized Trail – Alternative D

Emphasis would focus on OHV opportunities in the front country and driving for pleasure and motorized long distance trail use in the linear adventure recreational niches.

Effects of User Conflicts

Alternative D has the potential to reduce conflicts between motorized users since this alternative offers the most miles of motorized trail specifically designated for single track motorcycle use. There is a potential for conflict between motorized and nonmotorized users since this alternative proposes the most miles of motorized routes within a Semiprimitive Nonmotorized recreation setting where motorized use is not compatible with the ROS setting.

Effects to the Arizona and Great Western Trails

Currently 4.2 miles of the nonmotorized Arizona Trail are located on system roads. This alternative proposes a reduction in number of miles of the Arizona Trail located on roads and where the trail crosses a road or motorized trail. Table 34 shows the number of times a motor vehicle route crosses the trail, for a total of 46 times over the course of the 186 miles of the trail that are within the Tonto National Forest. While the occurrence of motorized routes in this alternative is decreased from the current condition, these crossing on a trail that is intended to be a non-motorized trail and provide an non-motorized experience still does not meet the intent nor provide the experience many hikers, mountain bikers, trail runners, and equestrian riders who utilize the trail expect. Of the action alternatives, this alternative proposes the most interaction of Arizona Trail users with motorized use, which does not meet the intent of the Arizona Trail.

Table 34: Occurrences of Motor Vehicle Routes Crossing Arizona Trail – Alternative D

Passage Name	Trail Mileage	Number of Motorized Crossings
Alamo Canyon	10.9	2
Reavis Canyon	17.8	11
Superstition Wilderness	28.6	5
Four Peaks	18.4	5
Pine Mountain	18.9	9
Saddle Mountain	15.2	2
Mazatzal Divide	20.9	0
Red Hills	13.6	1
Whiterock Mesa	10.9	1
Hardscrabble Mesa	11.5	7
Highline	18.6	3
Gila River Canyons	0.3	0
Total	**185.6**	**46**

Alternative D proposes no change from the current condition to the motorized routes that comprise the Great Western Trail. The effects would be the same as those for Alternative A.

Effects to Recreation Opportunity Spectrum

This alternative would require a Forest Plan amendment, because it would not comply with the current Forest Plan. However, using the updated ROS for the existing condition, there are differences based on the ROS settings (Table 35 and Figure 27). The most notable difference is the increase in semiprimitive motorized and nearly equal decrease in roaded natural. The effect for recreationists in Alternative D is those seeking motorized recreation in the forest will have more opportunities while those seeking nonmotorized recreation will have less opportunities than current conditions.

Table 35: Changes in ROS – Alternative D

ROS Category	Update Existing Condition (Acres)	Alternative B (Acres)	Difference (Acres)
Primitive	588,937	590,244	+ 1,307
Semiprimitive Nonmotorized	519,259	510,012	- 9,247
Semiprimitive Motorized	1,212,083	1,262,602	+ 50,519
Roaded Natural	571,379	528,588	- 42,791
Rural	41,691	41,902	+ 211
Urban	30,939	30,939	0

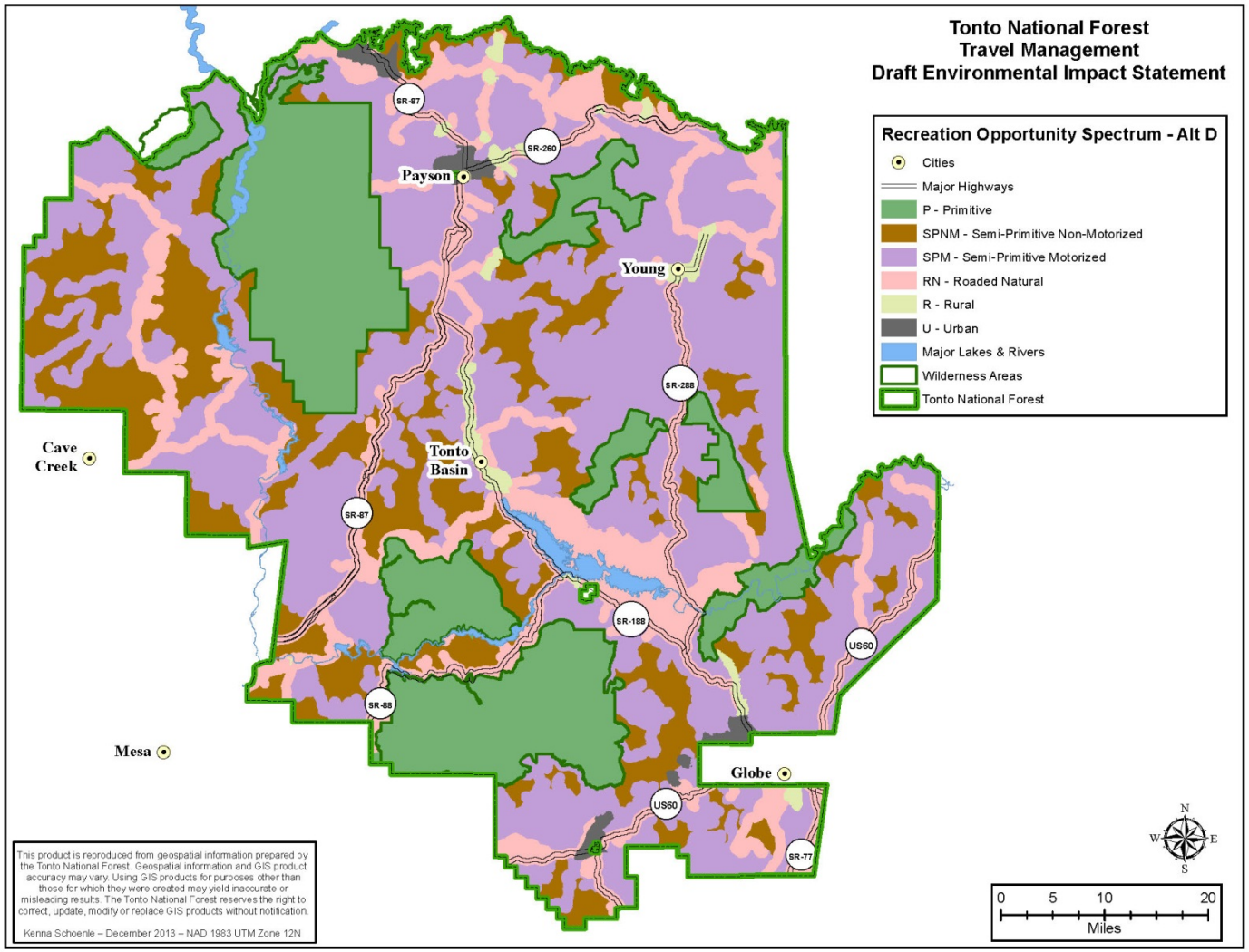

Figure 27: Map of ROS for Alternative D

Effects of Motorized Trail Maintenance

This alternative proposes 1,520 miles of motorized trail at a cost of $600 per mile for maintenance (a total of $912,000). Trail maintenance for this alternative would need to be funded, either out of the Tonto's operating funding, or the work would need to be accomplished by volunteers. This alternative has slightly less costs for trail maintenance than Alternative B.

Areas Designated for Motor Vehicle Use

This alternative has the same proposed designated OHV areas as Alternative C. The effects would be the same as those in Alternative C, including those for user conflicts.

Motor Vehicle Use for Big Game Retrieval

Alternative D would limit motor vehicle use for big game retrieval solely for the retrieval of elk, bear, white tailed deer, and mule deer up to one mile on both sides of the 3,347 mile designated road system and 1,520 miles of designated motorized trail system forestwide. This would reduce opportunities for hunters on the Pleasant Valley and Payson ranger districts who currently retrieve big game using a motorized vehicle at distances over a mile. Although this would increase opportunities on the southern ranger districts (Cave Creek, Mesa, Globe, and Tonto Basin) where motorized big game retrieval is not currently authorized. This could affect those forest users that have become accustomed to a nonmotorized hunting opportunity in areas that currently limit cross-country travel on the southern ranger districts. Forestwide there would be an increase in motorized big game retrieval opportunities for hunters with a total of 2,248,279 acres, which is 1,544,661 acres more than currently allows for cross-country travel for retrieval (the great increase of the action alternatives). Limitations to this corridor would be in congressionally designated Wilderness areas where motorized travel is not permitted and other areas that would remain closed from existing closure orders.

Effects of User Conflicts

Alternative D would limit motor vehicle use along designated road and motorized trail routes for retrieving legally harvested mule deer, white tail deer, elk and bear for all hunts. This adds an opportunity for hunters to retrieve game with a motorized vehicle on the Cave Creek, Mesa, Globe, and Tonto Basin ranger districts where motorized big game retrieval is not currently authorized. There is a potential conflicts could occur initially when hunters who prefer nonmotorized travel not aware of the change meet hunters using motorized vehicles to retrieve game.

This alternative poses very little change for hunters on the Pleasant Valley and Payson ranger districts. As in Alternative C, initially, there could be user dissatisfaction and conflict when hunters who prefer nonmotorized travel not aware of the change in designation meet hunters using motorized vehicles to retrieve game.

Motor Vehicle Use for Dispersed Camping

Alternative D would allow motor vehicle access up to 300 feet on both sides of the 3,347 mile designated road system and 1,519 miles of designated motorized trail system. This represents the most acres of corridors proposed for motor vehicle access for dispersed camping opportunities, a total of 336,038 acres. Limitations to this corridor would be in congressionally designated

Wilderness areas where motorized travel is not permitted and other areas that would remained closed from existing orders. This will affect campers on the Pleasant Valley and Payson ranger districts who access campsite sites greater than 300 feet of open roads. This alternative provides additional dispersed opportunities on the Cave Creek, Mesa, Globe, and Tonto Basin ranger districts where cross-country travel from open roads is currently prohibited.

Personal Use Fuelwood Gathering

In this alternative there would be no change from the existing condition, so the effects would be the same as Alternative A.

Cumulative Effects

The cumulative effects analysis for this analysis considers past, present, and reasonably foreseeable actions in terms recreation activities, opportunities and user conflicts on the Tonto National Forest, Forests in the Southwestern Region, and adjacent public lands for the next 20 years[59]. Twenty years was selected because it is the anticipated length of time for natural rehabilitation of unauthorized routes (where achievable) and other non-permitted activities that would affect recreation opportunities and the natural resources. Studies related to soil and vegetation disturbance indicated that the rehabilitation of these routes will take many years, especially those in arid climate zones (Cole, 1986). Some may never recover without assistance.

All National Forest in the Southwestern Region are either in the process of travel management planning or implementing existing Travel Management Plan decisions. Several Forests or ranger districts within the Southwestern Region have completed Travel Planning and have designated routes for motorized travel, published Motor Vehicle Use Maps and are currently implementing their decisions, including the Coconino, the Coronado, Kaibab, and Prescott National Forests. Of these forests, only the Coronado has not designated OHV areas where cross-country travel within is permitted. The Apache- Sitgreaves National Forest is currently working on the analysis for their travel management decision.

If the population in the Southwest and its preference for using off-highway vehicles continues to increase, a potential exists for an increase in conflicts between motorized and nonmotorized users in Alternative A, No Action. People wishing to avoid vehicles altogether could potentially be pushed to using wilderness areas exclusively. With a designated system in place, as proposed in all action alternatives, there would be no cumulative change since people would know where to go to avoid vehicles and where motorized activities are emphasized.

Urban development and interface growth would likely continue on private lands[60]. These will not directly affect National Forest land, but may increase the number of motorized and nonmotorized recreationists.

The creation of unauthorized routes is not limited to motorized travel, in some areas of the forest due to the number of users and frequency of use; unauthorized routes are being created by nonmotorized travel including equestrians and mountain bikers. In these areas, designation of nonmotorized routes may need to be considered in the future.

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[59] A complete list of Past Actions and Ongoing and Future Foreseeable Actions can be found in the Recreation Report in the project record.
[60] For more information, see the Socioeconomic Report in the project record.

A number of major road construction projects are planned by other government entities well into the future. Road construction can have short-term impacts on recreationists due to delays. Road construction can also have short-term impacts on the Forest's natural landscapes, but impacts are minimized through implementation of Best Management Practices. Over the long term, additional paved surfaces can increase recreation opportunities. Construction of the Tonto Creek Bridge may also result in increased recreation opportunities for local residents.

All action alternatives have the potential for the following cumulative effects upon motorized recreational opportunities:

- Change the array of recreational opportunities across the Forest and would restrict motorized cross-country travel and reduce the amount of motorized access on the Tonto National Forest.
- The possibility of user dissatisfaction over the loss of cross-country motorized access on the Payson and Pleasant Valley Ranger Districts.
- The possibility of user dissatisfaction with the loss of motorized recreational opportunities throughout the forest lands in the Southwestern Region 3, particularly in Arizona.

For all alternatives, volunteers who maintain trails help stretch the trail maintenance budget. Volunteers have enabled the Tonto National Forest to accomplish much needed trail maintenance, signing, fence construction, and visitor contacts with fewer dollars. Grants and other sources of funding would continue to be a viable option for increasing the Forest's ability to maintain the motorized and nonmotorized trail system. Having a designate motorized trail system has the potential to improve the forests chances to be competitive to obtain grants. While grants and volunteers cumulatively increase the amount of trails the Tonto National Forest could maintain, it is not expected to be enough to maintain every trail on the system on an annual basis with the potential for some trails to eventually pose a safety hazard.

All Action Alternative prohibit cross-country travel per Travel Management Rule direction. Selection of any of the action alternative would contribute to a statewide reduction in places to drive and camp on public land across the state of Arizona, especially as Forests complete the analysis for travel management and implement a decision.

Wilderness, Wild and Scenic Rivers, Inventoried Roadless Areas, and Special Management Areas

Designated Wilderness Areas

The concept of wilderness in the National Forest System was first implemented in 1924 with the administrative designation of the Gila Wilderness in New Mexico. In 1964 Congress passed the *Wilderness Act* designating a National Wilderness Preservation System. Congress passed the *Arizona Wilderness Act of 1984* designating additional lands to the National Wilderness Preservation System in Arizona.

Affected Environment

There are seven congressionally designated Wilderness Areas totaling over 615,855 acres (21 percent of the forest) located on the Tonto National Forest including the following (Figure 28): Superstition; Hellsgate; Mazatzal; Salome; Salt River Canyon; Four Peaks; and Sierra Ancha. The Superstition, Mazatzal, and Sierra Ancha were designated under the 1964 Wilderness Act with the remaining Wilderness Areas designated under the 1984 Arizona Wilderness Act. The 1984 Arizona Wilderness Act also designated additions to the Mazatzal and Superstition Wilderness Areas.

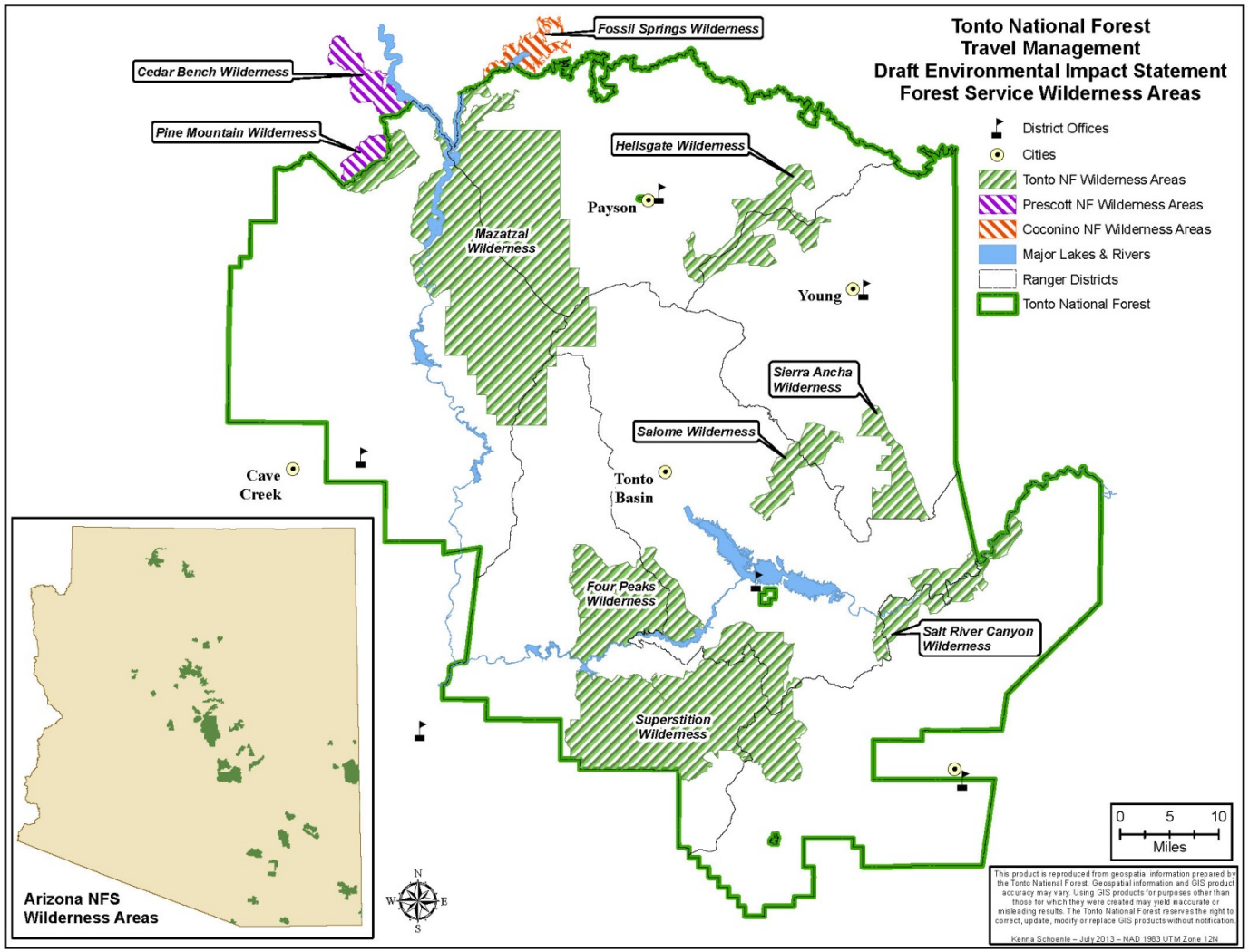


Figure 28: Map of Wilderness Areas within and Adjacent to the Tonto National Forest

Superstition Wilderness

This area was established as the Superstition Primitive Area by the Chief of the Forest Service in February 1939. It was then updated to a "wilderness" classification in 1940 and became a part of the wilderness preservation system with the passage of the *Wilderness Act in 1964*. The *Arizona Wilderness Act of 1984* added some 35,000 acres expanding the wilderness area to its present size and shape.

Forest Road 213 is outside the wilderness boundary, as it is buffered 33 feet from centerline on both sides of the road as defined within the legal description of the enabling legislation for the Superstition Wilderness.

Mazatzal Wilderness

The name Mazatzal translates to "an area inhabited by deer." The area was established as the Mazatzal Primitive Area by the Chief of the Forest Service in May 1938. It was then updated to a "Wilderness" classification in June 1940 and became a part of the wilderness preservation system with the passage of the Wilderness Act in 1964. The Arizona Wilderness Act of 1984 added some 46,000 acres expanding the wilderness area to its present configuration.

On the western side of the Mazatzal Wilderness Area, below the steep brush covered foothills, the Verde River flows through the Sonoran Desert. This river was designated by Congress in the 1984 Arizona Wilderness Act as a Wild River. Forest Road 406B (3.31 miles) is within the Wilderness and provides access to a private land inholding on the east side of the Wilderness and Forest Road 567B (0.34) is within the Wilderness and provides access to a private inholding located on the west side of the wilderness. Both roads currently show as open on the forest database; however, both are gated with special use permits issued to the private land holders. Written authorization for access in wilderness may be granted to provide access to inholdings totally surrounded by National Forest Wilderness and is detailed in Subpart D, *36 CFR 251.114 (g)*. Additional factors that must be considered when granting access within a Wilderness area are listed in Forest Service Manuel 2700 2730.3.

Forest Road 393 travels along the southern boundary of the wilderness, with 0.64 miles of this road located within the wilderness boundary. This road provides access to the powerline operated under special use permit issued to Arizona Public Service that is located outside of the Mazatzal Wilderness. This road currently provides a through route to access the powerline for routine maintenance and for a grazing permittee to access the grazing allotment located outside of wilderness. The road, powerline, and grazing operations predate the *Wilderness Act*.

Sierra Ancha Wilderness

This area was originally established by the Chief of the Forest Service in February 1933 as a Primitive Area. In 1951, its acreages was reduced and redesignated as a wild area. The Sierra Ancha Wilderness became a part of the wilderness preservation system with passage of the *Wilderness Act in 1964*.

Forest Roads 203B, 2886, and 2814 run in and out of the northeast wilderness boundaries in the Cherry Creek drainage, totaling 10.83 miles within the Wilderness. An additional 1.01 miles of Forest Roads 487A and 487B are located along and within the wilderness boundary in the

southwestern corner. This road provides access to a private land inholding within the Tonto National Forest. The private property within the forest and access road predate the *Wilderness Act*.

Hellsgate Wilderness

The Hellsgate Wilderness Area lies in the central mountain belt of Arizona at the base of the Mogollon Rim and was designated in 1984.

A segment of Forest Road 1625A (0.28 miles) is located on the northern boundary of the Wilderness. Another road segment, an inventoried unauthorized route (0.24 miles), is located within the wilderness boundary on the southeastern side of the wilderness.

Salome Wilderness

The Salome Wilderness Area, designated in 1984, features a rugged canyon with steep slopes, outcroppings of bedrock, and precipitous bluffs.

There is a segment of Forest Road 1765 (0.06 miles) that is located within the southern boundary of the Wilderness Area.

Salt River Canyon Wilderness

The Salt River, also designated in 1984, and its spectacular canyon bisect the wilderness for its entire length. The area can be visited practically anytime; however, there are no maintained trails within the entire wilderness.

There are three roads located within the Wilderness boundary: Forest Road 644A (0.80 miles) along the southern boundary, Forest Road 1790 (0.52 miles) located along the northeastern boundary, and Forest Road 368A (0.26 miles) located along the southeastern boundary.

Four Peaks Wilderness

The Four Peaks themselves are visible for long distances in all directions, and are a well-known landmark in Central Arizona. Visits to some parts of the wilderness can be made throughout the year, using a rather extensive trail system.

Designated in 1984, there are two roads (Forest Road 401 and Forest Road 1521) that are outside the designated wilderness and buffered 33 feet from centerline on both sides of the road as defined within the legal description of the enabling legislation for the Four Peaks Wilderness. Additionally, there are two roads located within the boundary: Forest Road 3741 (0.35 miles) and 3742 (0.3 miles) located within the northwestern corner of the wilderness. Additional roads are located along the wilderness boundary, but are outside of the Wilderness itself.

Environmental Effects

Methodology

The Wilderness Act describes wilderness using four qualities of wilderness character, which will be used for this analysis:

- Untrammeled – wilderness is essentially unhindered and free from modern human control or manipulation.
- Natural –wilderness ecological systems are substantially free from the effects of modern civilization.
- Undeveloped –wilderness is essentially without permanent improvements or modern human occupation.
- Solitude or Primitive unconfined recreational opportunities

Assumptions Associated with Wilderness Area Characteristics

The prohibition on cross-country travel on the Payson and Pleasant Valley ranger districts would be in place for all action alternatives. The current prohibition on cross-country travel on the southern ranger districts, (Cave Creek, Globe, Mesa, and Tonto Basin) would continue. The effects of the prohibition on cross-country travel in the short and long term are expected to be the same for the action alternatives:

- The prohibition on cross-country travel and the reduction of where people can drive would improve all four wilderness characteristics in all seven wilderness areas. In particular, the prohibition would reduce the encroachment of sight and sound across wilderness boundaries improving the solitude characteristic.
- Reduction in illegal intrusions would reduce the influence of humans on the wilderness improving the untrammeled characteristic within adjacent to the following boundaries of the following wilderness areas; eastern boundary of the Mazatzal, all of the boundary of the Hellsgate and Sierra Ancha and northeastern boundary of the Salome Wilderness.
- Fewer intrusions would reduce resource damage, improving the natural and solitude characteristics.
- The proposals reduce the chance of visitors meeting others due to a reduction in motorized access within and adjacent to Wilderness and the prohibition on cross-country travel on the Payson and Pleasant Valley ranger districts improving the wilderness character of *solitude*.
- There are no proposals for motorized areas, permit zones, and corridors for motorized dispersed camping or motorized big game retrieval located within a wilderness boundary.

Direct and Indirect Effects

Roads within designated Wilderness often affect wilderness characteristics. As Table 36 shows, there is currently 22.40 miles of known motorized routes within Wilderness Areas on the Tonto National Forest.

Table 36: Motorized Routes in Wilderness by Alternative

Route #	Miles	Alternative A	Alternative B	Alternative C	Alternative D
Superstition Wilderness					
28	0.09	Open to public-Unknown ML	Decommissioned	Decommissioned	Decommissioned

Route #	Miles	Alternative A	Alternative B	Alternative C	Alternative D
Mazatzal Wilderness					
393	0.64	ML 2 Road	Decommissioned	Admin Use Only	ML 2 Road
406B	3.65	Road Permit Use Only	Admin Use Only	Admin Use Only	Admin Use Only
567B	3.38	Road Permit Use Only	Decommissioned	Admin Use Only	Admin Use Only
Sierra Ancha					
203B	10.05	ML2/3 Road	Decommissioned	ML 2 Road	ML 2 Road
487A	0.14	ML 2 Road	Decommissioned	Admin Use Only	ML 2 Road
487B	0.87	ML 2 Road	Decommissioned	Admin Use Only	ML 2 Road
2814	0.19	Open to public-Unknown ML	Decommissioned	Decommissioned	Decommissioned
2886	0.59	Open to public-Unknown ML	Decommissioned	Decommissioned	Decommissioned
Hellsgate Wilderness					
1625A	0.28	ML 2 Road	Decommissioned	Decommissioned	ML 2 Road
Unauth Route	0.24	Unauthorized	Decommissioned	Decommissioned	Decommissioned
Salome Wilderness					
1765	0.06	Open to public-Unknown ML	Decommissioned	Decommissioned	Decommissioned
Salt River Canyon					
368A	0.26	Open to public-Unknown ML	Decommissioned	Decommissioned	Decommissioned
644A	0.80	Open to public-Unknown ML	Decommissioned	Decommissioned	ML 2
1790	0.52	Open to public-Unknown ML	Decommissioned	Decommissioned	ML 2
Four Peaks Wilderness					
3741	0.35	Open to public-Unknown ML	Decommissioned	Decommissioned	Decommissioned
3742	0.29	Open to public-Unknown ML	Decommissioned	Decommissioned	Decommissioned
Total Miles Open		22.40	3.65	18.73	20.33

Table 37 displays the effects on wilderness character that would result from the proposed changes to motorized access and recreation opportunities on the wilderness areas located on the Tonto National Forest.

Table 37: Effects on Wilderness Characteristics by Alternative

Wilderness Character	Alternative A (No Action)	Alternative B	Alternative C	Alternative D
Natural **Wilderness ecological systems are substantially free from the effects of modern civilization.**	Currently, there are 22.40 miles of known motorized routes within wilderness areas. The western boundary of the Mazatzal, all of the boundary of the Hellsgate and Sierra Ancha and northeastern boundary of the Salome Wilderness would continue to be vulnerable to motorized use and the potential for the addition of unauthorized routes and associated impacts to soil and vegetation due to the Payson and Pleasant Valley ranger districts being open to motorized cross-country travel. Currently illegal motorized trespass is also known to occur into the Mazatzal and Salt River Wilderness Areas with the creation of additional unauthorized routes and the associated impacts to soil and vegetation, including the potential for introduction of non-native species and the presence of pollutants. This illegal trespass is likely to continue to occur.	3.65 miles of motorized routes would be open to authorized permitted uses only. This alternative would have the greatest potential to reduce effects on soils and vegetation associated with motorized travel because it proposes to decommission nearly 20 miles of roads currently in wilderness areas. The remaining 3.65 miles of roads in the Mazatzal would be under special permit road use and regulated to decrease effects. This would substantially decrease the potential for introduction of non-native species and the presence of pollutants. This alternative has greatest opportunity for improving the natural characteristics.	18.73 miles of motorized routes would be open in this alternative. This has the potential to reduce the effects on soils and vegetation associated with motorized travel because it proposes to decommission nearly 4 miles of roads currently in the wilderness areas. 8.68 miles of roads to remain open would be under special permit road use and regulated to decrease effects. This alternative would improve the natural characteristic compared to the current condition by decreasing the potential for introduction of non-native species and the presence of pollutants.	20.33 miles of motorized routes would be open in this alternative. This has the potential to reduce the effects on soils and vegetation associated with motorized travel because it proposes to decommission about 2 miles of roads currently in the wilderness areas. 7.03 miles of roads to remain open would be under special permit road use and regulated to decrease effects. This alternative would improve the natural characteristic compared to the current condition, but provides the least opportunity, among the action alternatives, for providing the natural characteristic.
Untrammeled **Wilderness is essentially unhindered and free from modern human control or manipulation.**	Currently, there are 22.40 miles of known motorized routes within wilderness areas, along with many unauthorized routes that have not been inventoried. Without the prohibition of cross-country travel on the two northern ranger districts, four of the wilderness areas would continue to	3.65 miles of motorized routes would be open to authorized permitted uses only. Additionally, motorized big game retrieval and motorized dispersed camping would not be permitted, decreasing the chances of motor vehicle users unknowingly driving into these areas. With the exception of the Mazatzal	18.73 miles of motorized routes would be open in this alternative. Additionally, a corridor up to one mile on both sides of all designated motorized routes would be permitted for motorized big game retrieval and a corridor up to 100 feet on both sides of	20.33 miles of motorized routes would be open in this alternative. Additionally, a corridor up to one mile on both sides of all designated motorized routes would be permitted for motorized big game retrieval and a corridor up to 300 feet on both sides

Wilderness Character	Alternative A (No Action)	Alternative B	Alternative C	Alternative D
	be effected by motorized users unknowingly (or possibly illegally) driving into a wilderness area. In addition, if known roads have not been physically decommissioned within wilderness areas, there is an expectation that these roads would be maintained to standard.	Wilderness, existing motorized routes within the other wilderness areas would be decommissioned. The road in the Mazatzal Wilderness would be the only road that would be maintained and controlled within a wilderness area. This alternative has greatest opportunity for improving the untrammeled characteristic.	designated motorized routes would be permitted. Currently cross-country travel is not permitted on the four southern districts. By allowing the corridors for motorized big game retrieval and motorized dispersed camping, motorized users could unknowingly drive into a wilderness area. This alternative would improve the untrammeled characteristic compared to the current condition, and with education and enforcement, motorized incursions could decrease over time.	of designated motorized routes would be permitted. Currently cross-country travel is not permitted on the four southern districts. By allowing the corridors for motorized big game retrieval and motorized dispersed camping, motorized users could unknowingly drive into a wilderness area. This alternative has the least opportunity to improve the untrammeled characteristic compared to the current condition as it has the most motorized routes to be maintained within wilderness areas.
Undeveloped **Wilderness is essentially without permanent improvements or modern human occupation.**	Currently, there are 22.40 miles of known motorized routes within wilderness areas. There are also less than ten privately owned parcels of land surrounded by wilderness (inholdings). In many of the wilderness areas livestock grazing is permitted. Additionally, many of the wilderness areas have been mined over the last 150 years. There are currently signs of both of these activities. Additionally, there is an expectation that the current roads in the wilderness areas would be maintained to standard.	3.65 miles of motorized routes would be open to authorized permitted uses only. With the exception of the Mazatzal Wilderness, existing motorized routes within the other wilderness areas would be decommissioned. The road in the Mazatzal Wilderness would be the only road that would require permanent improvements. This alternative has greatest opportunity for improving the undeveloped characteristic.	18.73 miles of motorized routes would be open in this alternative. These roads would likely require some level of permanent improvement to maintain safe use and decrease effects associated with unmaintained roads. This alternative would improve the undeveloped characteristic compared to the current condition by decreasing the miles of roads that would need maintenance.	20.33 miles of motorized routes would be open in this alternative. These roads would likely require some level of permanent improvement to maintain safe use and decrease effects associated with unmaintained roads. This alternative would improve the undeveloped characteristic compared to the current condition by decreasing the miles of roads that would need maintenance, but would have the least opportunity for improving the undeveloped characteristic

Wilderness Character	Alternative A (No Action)	Alternative B	Alternative C	Alternative D
				among the action alternatives.
Outstanding opportunities for solitude or a primitive and unconfined type of recreation **Wilderness provides outstanding opportunities for people to experience solitude or primitive and unconfined recreation, including the values of inspiration and physical and mental challenge.**	The Superstition and Mazatzal wilderness areas are the largest in size with extensive NFS non-motorized trail system providing opportunities for primitive and unconfined recreation. The Mazatzal Wilderness Area is the largest in the Southwest. The smaller wilderness areas have a less extensive NFS trail system providing opportunities for Solitude. The Salt River Canyon Wilderness is unique in that it does not have a designated trail system. Most use occurs during the floating season from March1 through May 15	With the reduction in motorized routes described above, Alternative B provides the most opportunities for visitors to experience solitude or a primitive type of recreation experience. There is the potential for user dissatisfaction by those who are accustomed to traveling on routes currently open with a motorized vehicle that are proposed for closure. This alternative favors those users seeking solitude and unconfined type of recreation experiences in wilderness.	Alternative C provides less motorized opportunities than Alternative A, No Action and alternative D and more than proposed in alternative B. There is the potential for user dissatisfaction from users who are accustomed to traveling on routes currently open proposed for closure with a motorized vehicle. This alternative provides additional opportunities than the current condition for those users who seek solitude and unconfined type of recreation experiences in wilderness.	Alternative D would designate the most miles of motorized routes within wilderness; however, fewer motorized routes are proposed compared to current condition, and would provide the least opportunities for visitors to experience solitude or a primitive type of recreation experience.

Cumulative Effects

The spatial boundary for the cumulative effects analysis for wilderness areas includes the boundaries of the Superstition, Hellsgate, Mazatzal, Salome, Salt River Canyon, Four Peaks, and Sierra Ancha wilderness areas. This analysis considers past, present, and reasonably foreseeable actions upon the wilderness character r of wilderness areas located on the Tonto National Forest for the next twenty years. Some of these actions include past wildfires within wilderness areas. The 120,000 acre Willow Creek Fire burned the summer of 2004. Of that acreage, 80,000 acres is located within the Mazatzal Wilderness. On April 26, 2000, in the vicinity of Upper Coon Creek, a camper left a campfire smoldering. This resulted in the conflagration known as the Coon Creek Fire. Much of the Sierra Ancha Wilderness Area was burned by this fire that totaled almost 10,000 acres. Additionally, livestock grazing and certain mining practices are permitted in designated wilderness areas.

Wilderness character including the untrammeled attribute of wilderness may be compromised regardless of alternative from the general population increase particularly within the Phoenix metropolitan area and associated increase in recreational use within and adjacent to wilderness areas.

Cumulatively, all action alternatives would improve the wilderness characteristics when compared to the current condition because all action alternatives propose a reduction in the number of motorized routes located within wilderness boundaries on the Tonto National Forest.

Wild and Scenic Rivers

The National Wild and Scenic Rivers System was created by Congress in 1968 (*Public Law 90-542; 16 U.S.C. 1271 et seq*.) to preserve certain rivers with outstanding natural, cultural, and recreational values in a free-flowing condition for the enjoyment of present and future generations. There are three classifications of Wild and Scenic Rivers: “wild,” “scenic,” and “recreational.” For a river to be eligible for Wild and Scenic River designation it must be free flowing and, with its adjacent land area, must possess one or more outstandingly remarkable values. Outstandingly remarkable values are specific to each river segment and may include scenic, recreation, fish, historic, and cultural values.

Affected Environment

Currently, there are two designated Wild and Scenic Rivers on the Tonto National Forest (Figure 29). There is approximately 2.0 miles of ML-2 road located within the Verde Wild and Scenic River corridor and there are no motorized routes administered by the Tonto National Forest located within the Fossil Creek Wild and Scenic River corridor.

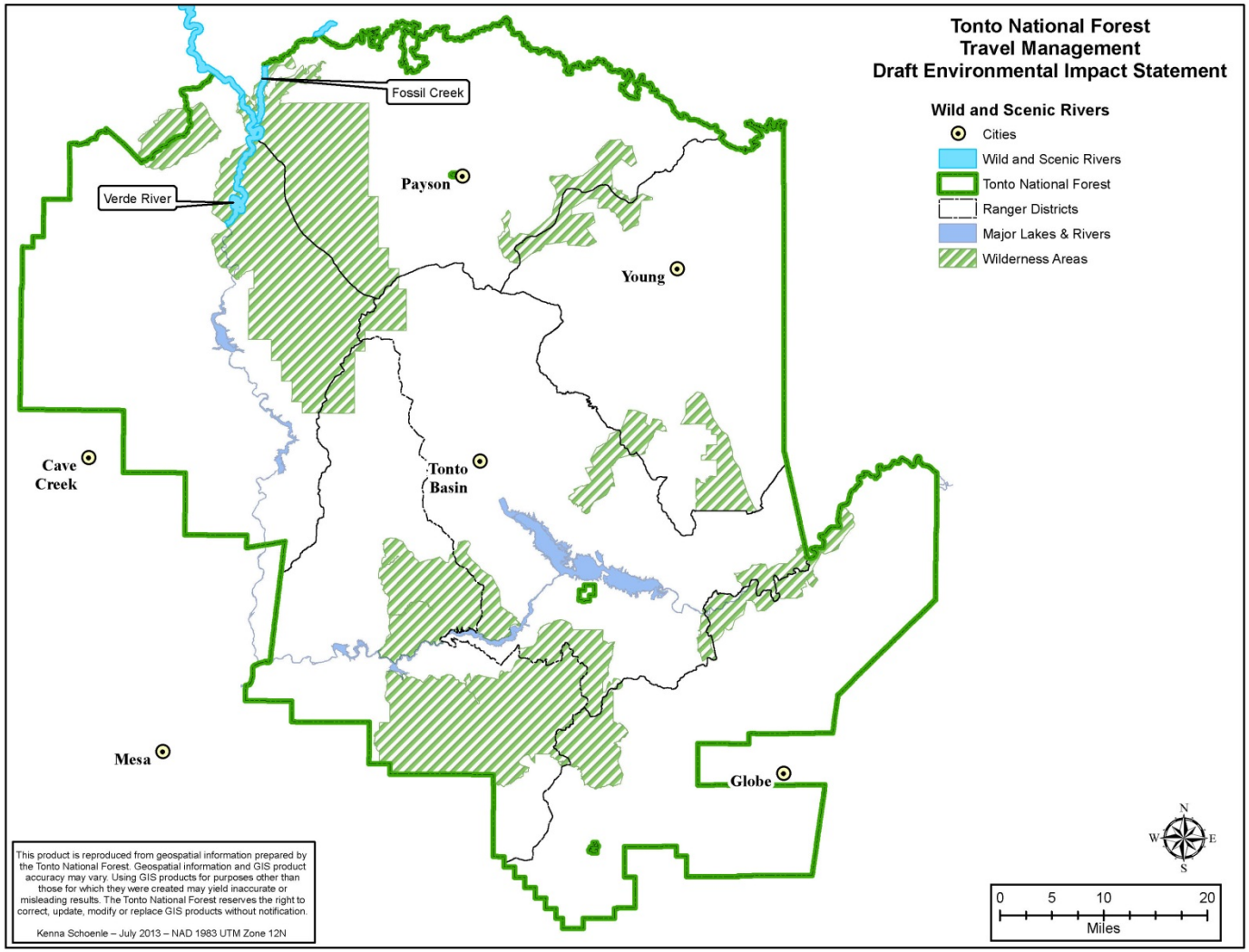


Figure 29: Map of Wild and Scenic Rivers on the Tonto National Forest

The Fossil Creek Wild and Scenic River is located 100 miles from Phoenix. Fossil Creek was designated by Congress in 2009 and includes 9.3 miles as wild and 7.5 miles as recreational segments. The Coconino National Forest has taken the lead for management of the river corridor. This includes the management of Forest Road 708 from the town of Strawberry that provides access to Fossil Creek.

The Coconino National Forest is currently preparing a Comprehensive River Management Plan (CRMP) for the Fossil Creek Wild and Scenic River. Fossil Creek is located on both the Tonto and Coconino national forests. The Coconino National Forest administers the Wild and Scenic River program for both forests. The CRMP provides a foundation for future river management guidance and direction by establishing Forest Service policies to protect and improve the Fossil Creek Wild and Scenic River for future generations. The CRMP will describe management direction, address site-specific issues, and identify actions to help care for the river corridor. A decision is estimated for spring of 2014. Temporary measures described below are in place to manage current use and protect the river resource.

Driving off road is prohibited within the Fossil Creek Wild and Scenic River corridor. A parking limit (30 vehicles) is being enforced on high visitor use days at the Fossil Springs Trailhead in order to enforce public safety and emergency access. Fossil Creek Road 708 is currently closed to motorized vehicles between the Fossil Springs and Waterfall Trailheads. This temporary closure is in effect to provide public health and safety during periods of unsafe road conditions resulting from unstable road surfaces. Overnight camping is prohibited within a one-quarter mile either side of Fossil Creek from the Old Fossil Creek Dam to the Fossil Creek Bridge. Camping is allowed below the Fossil Creek Bridge. Campfires are prohibited within one-quarter mile of Fossil Creek from the head of Fossil Creek, downstream 10 miles to Stehr Lakebed near milepost 3 on Forest Road 502. These interim measures will be evaluated with actions identified through the CRMP.

The Verde Wild and Scenic River Area is approximately 5,692 acres in size. The Scenic River segment is 50 percent located within the Coconino National Forest, 28 percent located within the Prescott National Forest and 12 percent located on the Tonto National Forest. The scenic classification is a total of 18.3 miles. The wild segment is predominantly located on the Tonto National Forest (93 percent) and 7 percent located on the Coconino National Forest. Virtually the entire Wild River Area is within the Mazatzal Wilderness and was established as a result of the *Arizona Wilderness Act of 1984* that designated this segment of the Verde River as a Wild River under the *Wild and Scenic River Act (Public Law 90-542)*. The Act requires that this segment be administered in such a manner as to protect and enhance its designated outstandingly remarkable scenic, fish and wildlife, and historical/cultural values, while protecting the river's free flowing character and water quality. The CRMP for the Verde Wild and Scenic River (U.S. Forest Service, 2004) describes the outstanding remarkable values in further detail for the entire Wild and Scenic River segment. The Prescott National Forest is the lead forest for management of the Verde Wild and Scenic River Corridor.

Environmental Effects

The analysis for the effects to Wild and Scenic Rivers on the Tonto National Forest will be assessed. The analysis for the effects to Wild and Scenic Rivers on the Tonto National Forest will be assessed based on motorized use and recreation opportunities within the designated river corridors. Currently, there is approximately 2.0 miles of ML 2 road located within the Verde Wild

and Scenic River corridor. All action alternatives propose no changes to the motorized route system located within the Verde Wild and Scenic River corridor. Currently, there are no motorized routes administered by the Tonto National Forest located within the Fossil Creek Wild and Scenic River corridor and none of the action alternatives propose any changes.

Currently, there are two instances of motor vehicle crossing of the Verde Wild and Scenic River. None of the action alternatives propose any changes to the number of crossings.

In terms of the effects of motorized dispersed camping within the two Wild and Scenic Rivers, Table 38 shows opportunities by alternative.

Table 38: Motorized Dispersed Camping Opportunities within Wild and Scenic River Corridors

Alternative	Motorized Dispersed Camping Opportunity	River Corridor Where Motorized Dispersed Camping Permitted (Acres)	River Corridor for Motorized Dispersed Camping (Miles)
A	Pleasant Valley and Payson Ranger Districts open	65.2	0.0
B	50' Buffer from Designated Sites	0.1	0.0
C	100' Buffer from Designated Routes	47.7	2.0
D	300' Buffer from Designated Routes	136.6	2.0

Alternative A

Currently with no prohibition on cross-country travel on the Payson Ranger District, where the Verde River Wild and Scenic River Corridor is located, there are 65 acres available for motorized dispersed camping.

Alternatives B

Alternatives B proposes a significant reduction in opportunities for motorized dispersed camping favoring those who prefer nonmotorized recreation activities within River corridors. Alternative B proposes 0.1 acre of motorized dispersed camping opportunities associated with designated dispersed sites within the Verde River Corridor. There is the potential for user dissatisfaction from visitors accustomed to cross-country travel being allowed and accessing dispersed campsites with a motorized vehicle on the Verde Wild and Scenic River corridor located on the Tonto National Forest.

Alternative C

Alternative C proposes 2 miles of corridors for motorized dispersed camping with an associated 47.7 acres. This represents a 27 percent decrease in opportunities compared to the current situation. There is the potential for user dissatisfaction from motorized users, since this alternative provides less opportunities to access dispersed campsites with a motorized vehicle within the Verde Wild and Scenic River Corridor than the existing condition. However, this alternative

provides more opportunities for those forest visitors who prefer more solitude when dispersed camping.

Alternative D

Alternative D also proposes 2 miles of corridors with an associated 136.6 acres, the most opportunity for those recreationists who prefer to access their dispersed campsite with a motorized vehicle within the Verde Wild and Scenic River Corridor. This alternative provides the least opportunities for those who seek solitude, while dispersed camping.

Potential Wild and Scenic Rivers Outside of Wilderness

The Nationwide Rivers Inventory is a listing of more than 3,400 free-flowing river segments in the United States that are believed to possess one or more “outstandingly remarkable” natural or cultural values judged to be of more than local or regional significance. Under a 1979 Presidential Directive, and related Council on Environmental Quality procedures, all federal agencies must seek to avoid or mitigate actions that would adversely affect one or more listed segments.

There are 18 Wild, Scenic, and Recreational potential river segments listed on the Nationwide Rivers Inventory located on the Tonto National Forest (Figure 30). These include the Salt River Canyon, the Upper Salt segment, a whitewater destination located within the Salt River Canyon Wilderness and the Lower Salt River, Arnett/Telegraph, Canyon Creek, Cherry Creek, Parker Creek, Pinto Creek, Fossil Creek, Workman Creek, Salome Creek located within the Salome Wilderness, Tonto Creek and Spring Creek located within the Hellsgate Wilderness and East and Upper Verde River with portions located within the Mazatzal Wilderness. These rivers have not been designated as Wild and Scenic; however, they are listed on the National Park Service – National Wild River Inventory as potential candidates to the River System.

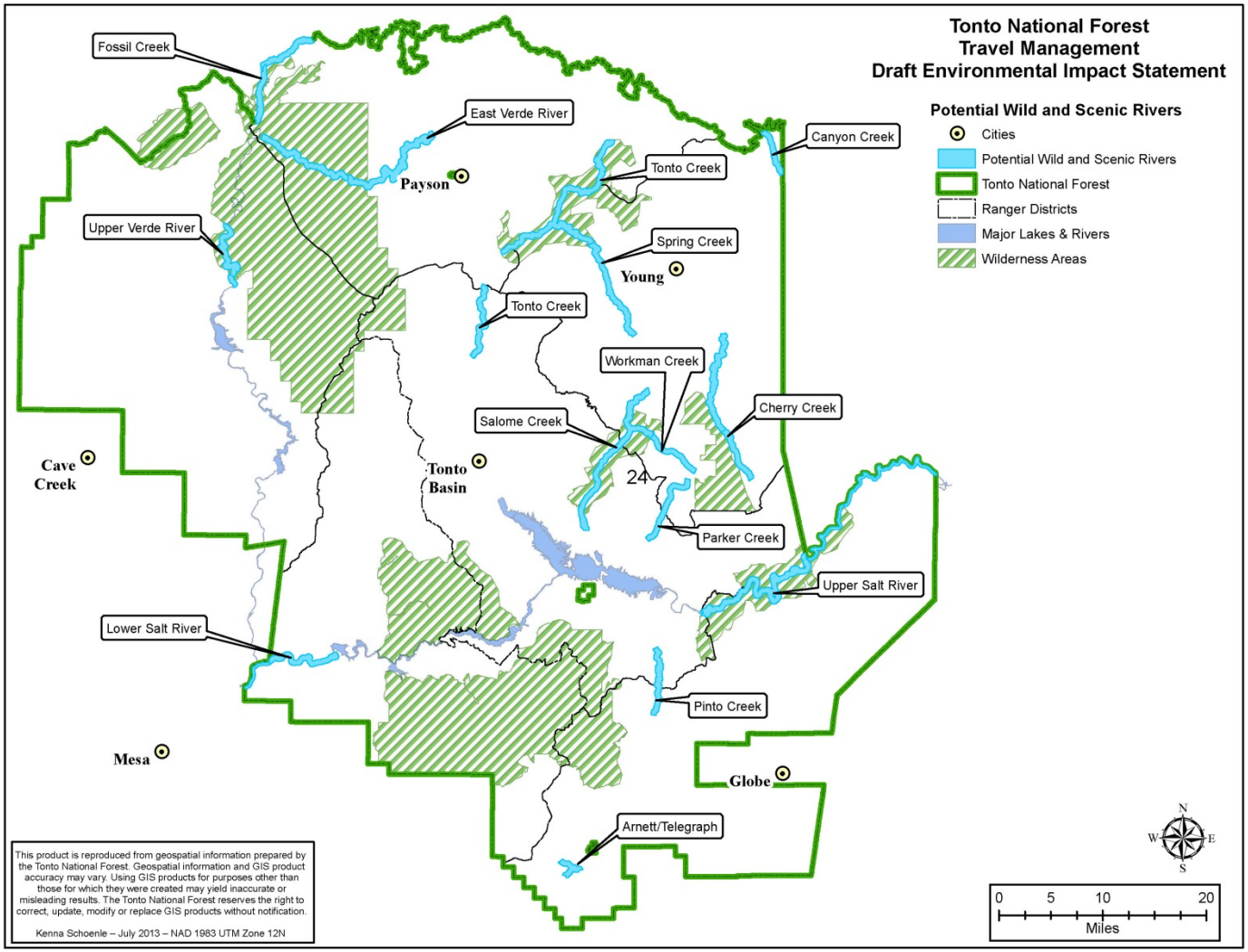


Figure 30: Map of Potential Wild and Scenic Rivers on the Tonto National Forest

Environmental Effects

The analysis for the effects to Wild and Scenic Rivers on the Tonto National Forest will be assessed based on motorized routes within the corridor and motorized creek crossings. There are no miles of motorized routes miles within 300 feet of potential Wild and Scenic River corridors outside of wilderness within the scenic segment of Fossil Creek and the wild segment of Tonto Creek. No motorized routes are proposed within any of the action alternatives with no effect or changes within these potential Wild and Scenic River corridors.

Table 39 shows the number of motorized crossing within each of the potential Wild and Scenic corridors by alternative.

Table 39: Number of Motorized Crossings for Potential Wild and Scenic Rivers

Name	Type	Alternative A	Alternative B	Alternative C	Alternative D
Workman Creek	Recreational	12	1	3	6
Upper Verde	Wild	2	0	1	2
Upper Salt River	Wild	5	1	2	4
Upper Salt River	Scenic	4	0	1	4
Tonto Creek	Wild	1	0	0	0
Tonto Creek	Scenic	11	7	9	11
Spring Creek	Recreational	11	6	8	10
Salome Creek	Wild	4	2	4	5
Pinto Creek	Scenic	5	2	2	4
Parker Creek	Scenic	9	8	8	9
Lower Salt River	Recreational	19	14	14	18
Fossil Creek	Recreational	1	0	1	1
East Verde River	Recreational	13	11	12	12
Cherry Creek	Wild	12	3	6	8
Cherry Creek	Scenic	7	2	5	6
Canyon Creek	Recreational	16	5	9	16
Arnett/Telegraph	Scenic	9	5	5	5
Total		**141**	**67**	**90**	**121**

Alternative A

Currently there are approximately 50 miles of road located within a potential Wild and Scenic River on the Tonto National Forest as follows: 29 miles Recreational River segments; 14 miles Scenic River segments and 7 miles Wild River segments (Table 40). Additionally, this alternative allows for 141 motorized crossings.

Table 40: Miles of Motorized Routes within Potential Wild and Scenic River Corridors

Name	Alternative A (Miles)	Alternative B (Miles)	Alternative C (Miles)	Alternative D (Miles)
Recreational River Segments				
Canyon Creek	4.33	3.66	5.20	7.40
East Verde River	5.53	5.67	6.71	7.86
Fossil Creek	2.15	0.00	2.15	2.15
Lower Salt River	7.44	13.87	13.87	13.94
Spring Creek	3.23	3.00	3.83	5.61
Workman Creek	6.32	4.14	4.99	5.87
Total	**28.99**	**30.35**	**36.74**	**42.84**
Scenic River Segments				
Arnett/ Telegraph	1.81	1.91	1.91	2.57
Cherry Creek	2.19	3.24	4.54	5.45
Fossil Creek	0.00	0.00	0.00	0.00
Parker Creek	4.16	5.34	5.54	5.70
Pinto Creek	1.71	1.38	1.67	2.18
Tonto Creek	2.05	2.58	2.94	3.30
Upper Salt River	1.72	0.42	0.65	1.73
Total	**13.64**	**14.88**	**17.25**	**20.93**
Wild River Segments				
Cherry Creek	4.36	1.76	2.24	4.99
Salome Creek	1.22	1.35	2.26	2.41
Tonto Creek	0.00	0.00	0.00	0.00
Upper Salt River	0.94	0.11	0.52	0.94
Upper Verde	0.81	0.00	0.56	0.81
Total	**7.33**	**3.22**	**0.56**	**9.15**
Total for All	**49.97**	**48.45**	**59.57**	**72.91**

Alternative B

Overall, alternative B proposes 48 miles, a one mile decrease in the miles of motorized routes within potential Wild and Scenic River corridors. Additionally, it proposes to decrease the number

of crossings to 67. These changes would provide more opportunities for users seeking a more primitive experience within the potential wild segments.

This alternative significantly decreases the opportunity for using a motor vehicle to disperse camp, nearly eradicating this type of recreation opportunity in the corridors of the potential Wild and Scenic River segments (Table 41). The effect from this proposal would limit motorized use for dispersed camping, causing those users to potentially look for this type of opportunity elsewhere. Those seeking a non-motorized experience in the corridors would become nearly exclusive to this type of recreation opportunity.

Table 41: Motorized Dispersed Camping Opportunities within Potential Wild and Scenic River Corridors

Alternative	Motorized Dispersed Camping Opportunity	River Corridor Where Motorized Dispersed Camping Permitted (Acres)	Corridor for Motorized Dispersed Camping (Miles)
A	Pleasant Valley and Payson Ranger Districts open	20,833.1	40.8
B	50' Buffer from Designated Sites	0.2	0.0
C	100' Buffer from Designated Routes	1,051.4	44.5
D	300' Buffer from Designated Routes	4,291.7	64.6

Alternative C

Alternative C proposes 59 miles of roads (Table 40), an increase in 10 miles—when compared to the current condition—of routes within Wild and Scenic River Segments within potential corridors with increases in miles in recreational and scenic and a decrease in miles within potential wild segments. Additionally, it proposes to decrease the number of motorized crossings in the corridor to 90 (Table 40). While the decrease in crossing would appeal to those seeking a more natural experience, the increase in miles of roads within the corridors would appeal to those that seek a motorized recreation experience.

In terms of using a motor vehicle for dispersed camping, this alternative decreases the overall acres where motorized travel many occur, but increases the mileage where the camping corridor is within the potential Wild and Scenic River corridor. Overall, this alternative would decrease the motorized dispersed camping opportunity for forest users.

Alternative D

While this alternative decreases the number of motorized crossings by 15 percent, it nearly doubles the miles of motorized routes within the potential Wild and Scenic River Corridors when compared to the current condition.

For motor vehicle use for dispersed camping, this alternative also substantially decreases the overall acres within the corridor. Overall, this alternative, when compared to the other action alternatives, provides the great opportunity for those users that prefer a motorized experience.

Cumulative Effects

The cumulative effects analysis for motorized routes and motorized creek crossings for Potential Wild and Scenic Rivers outside of wilderness considers the past, present and reasonably foreseeable actions within the 300 foot corridors of all Wild and Scenic River and Potential Wild and Scenic River segments outside of wilderness. In addition to the direct and indirect effects analyzed, other activities could impact the two designated Wild and Scenic Rivers on the Tonto National Forest. These activities include range allotment management and recreation activities that take place within the corridors. The cumulative effects for potential Wild and Scenic River segments would be similar, with projects like the Salt River Six Grazing Allotment Environmental Impact Statement, which is currently in draft form without a decision. All of the actions alternative would improve conditions in Wild and Scenic River and Potential Wild and Scenic River segments outside of wilderness. If other proposed projects within these corridors follow law, regulation, and policy, no cumulative effects are anticipated.

Inventoried Roadless Areas

In 1964 when Congress passed the *Wilderness Act* creating the National Wilderness Preservation System, the Act directed the Secretary of Agriculture to complete a study of 34 administratively designated “primitive areas” and determine their suitability as wilderness by September 2, 1974.

In 1971 the Forest Service expanded the scope of the review to include all roadless areas in the inventory and evaluation. This process was known as the Roadless Area Review and Evaluation. The Final Environmental Impact Statement for this project was released in 1973 and identified 247 roadless areas to be studied further for possible wilderness status as part of the multiple-use planning process used at the time. The *National Forest Management Act* of 1976 replaced that process with the requirement for an integrated land and resource management plan (forest plan) for each forest and grassland.

Inventoried Roadless Areas (IRAs) were authorized by the 2001 Special Areas; Roadless Area Conservation Final Rule, *36 CFR Part 294*. The “inventoried” part of the name comes from the Roadless Area Review and Evaluation forests conducted in the 1970s and 1980s described above. The characteristics that follow describe attributes considered when areas were inventoried for roadless area designations are:

- Natural, being substantially free from the effect of modern civilization.
- Undeveloped, having little or no permanent improvements or human habitation.
- Outstanding opportunities for solitude or primitive and unconfined recreation.
- Special features and values, or the potential to contribute to unique fish, wildlife and plant species and communities; outstanding landscape features; and significant cultural resource sites.
- Manageability, meaning the area is at least 5,000 acres in size.

The Roadless Area Conservation Final Rule prohibits road construction, reconstruction, and timber harvest, with exceptions, in Inventoried Roadless Areas because they have the greatest likelihood of altering and fragmenting landscapes, resulting in immediate long term loss of roadless area values. Roads and motorized trails can be present within IRAs. The Roadless Rule does not prohibit travel on existing roads or motorized trails.

Affected Environment

Approximately 209,762 acres (0.07 percent) of the forest's land mass is located within 13 individual Inventoried Roadless Areas (Figure 31).

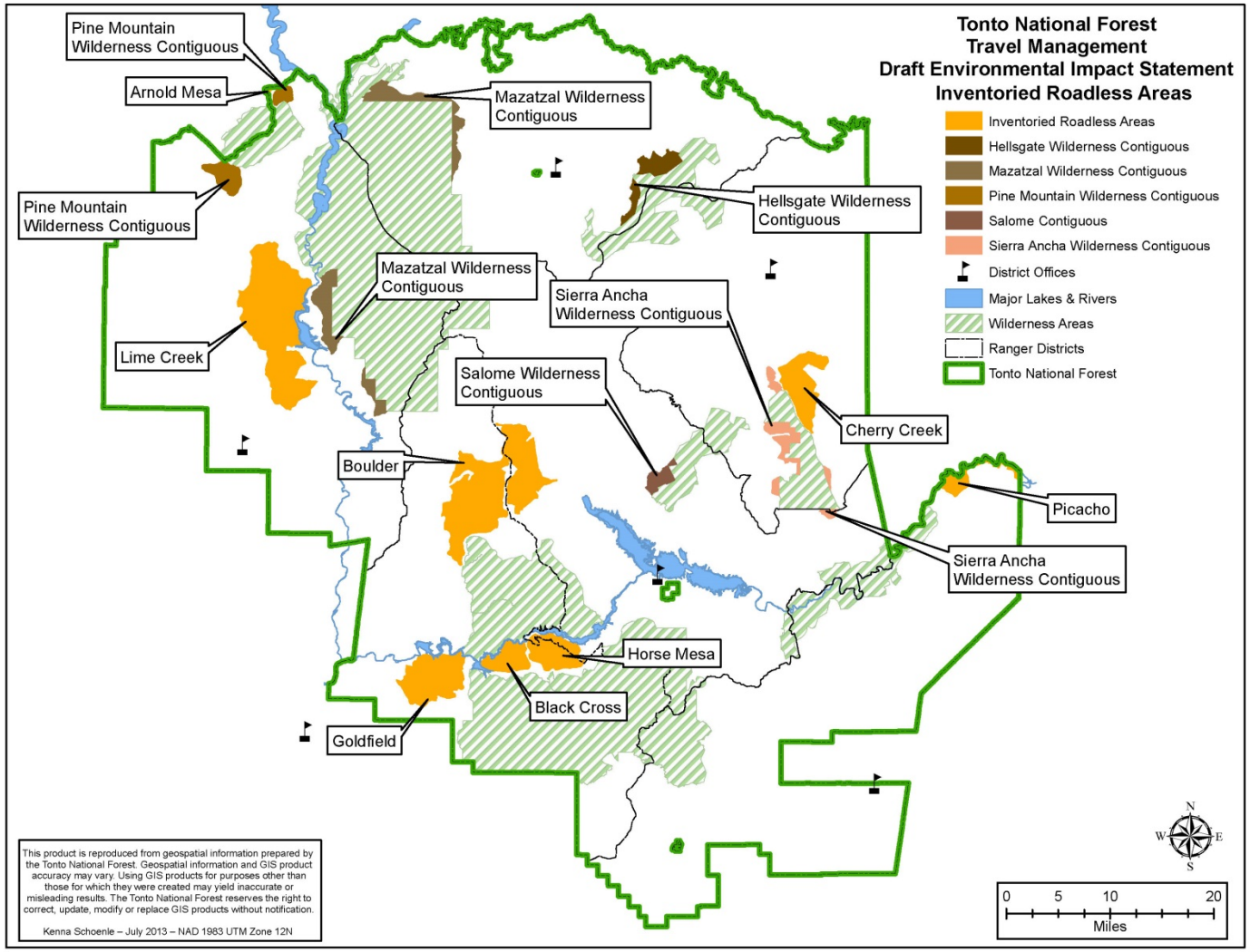


Figure 31: Map of Inventoried Roadless Areas on the Tonto National Forest

Currently, there are nearly 70 miles of motorized routes within IRAs, including 9 miles of inventoried unauthorized routes. Fifty-nine miles of these routes are Forest Service Roads that have been identified and tracked in databases. Almost 2 miles of State Highway 87 is also considered inside an IRA on the Tonto National Forest.

Environmental Effects

Inventoried Roadless Areas (IRAs) provide clean drinking water and function as biological strongholds for populations of threatened and endangered species. They provide large, relatively undisturbed landscapes that are important to biological diversity and the long-term survival of many at risk species. Inventoried Roadless Areas provide opportunities for dispersed outdoor recreation, opportunities that diminish as open space and natural settings are developed elsewhere. They also serve as bulwarks against the spread of nonnative invasive plant species and provide reference areas for study and research.

Inventoried Roadless Areas are managed for nine roadless characteristics resources or features that are often present in and characterize Inventoried Roadless Areas and are used for this analysis:

- Soil, water, and air resources
- Sources of public drinking water
- Diversity of plant and animal communities
- Habitat for threatened, endangered, and sensitive species and species dependent on large undisturbed areas of land
- Primitive and semiprimitive motorized and nonmotorized classes of recreation
- Reference landscape for research study or interpretation
- Natural appearing landscapes with high scenic quality
- Traditional cultural properties and sacred sites
- Other locally unique characteristics – Wild and Scenic Rivers, Arizona Trail, Great Western Trail, etc.

Direct and Indirect Effects

All Action Alternatives would prohibit cross-country travel in IRA and no action alternative proposes to designate any inventoried unauthorized routes in IRAs. Motorized routes within IRAs would be closed unless designated. This could improve resource conditions of all nine roadless characteristics and primitive classes of recreation opportunities within the Mazatzal Wilderness Contiguous, Hellsgate Contiguous, Cheery Creek, Sierra Ancha Wilderness Contiguous and IRAs located on the Payson and Pleasant Valley ranger districts. In addition, enforcement has the potential to prevent expansion of unauthorized routes and allow soil and water conditions associated with these routes to recover over time.

Roads within designated IRAs often affect roadless characteristics. As Table 42 shows, there is currently 56.23 miles of known motorized routes within IRAs on the Tonto National Forest.

Table 42: Motorized Routes in IRAs by Alternative

IRA Name	Alternative A (Miles)	Alternative B (Miles)	Alternative C (Miles)	Alternative D (Miles)
Mazatzal Wilderness Contiguous	5.94	0.00	3.58	6.25
Pine Mountain Wilderness Contiguous	1.50	0.40	1.50	1.50
Arnold Mesa	1.09	0.00	1.09	1.09
Hellsgate Wilderness Contiguous	8.56	0.00	6.55	8.56
Picacho	0.93	0.00	0.00	0.93
Black Cross	2.39	0.00	2.67	2.95
Boulder	10.44	1.72	10.42	10.46
Cherry Creek	8.73	0.00	4.71	9.24
Goldfield	4.55	0.00	2.66	4.55
Horse Mesa	0.00	0.00	0.00	0.00
Lime Creek	9.89	0.01	8.49	17.81
Salome Contiguous	0.00	0.00	0.00	0.00
Sierra Ancha Wilderness Contiguous	2.22	0.55	1.59	2.30
Total	**56.23**	**2.69**	**43.25**	**65.62**

Each alternative was analyzed based on the effects to the roadless characteristics for each Inventoried Roadless Area (Table 43).

Table 43: Direct and Indirect Effects to IRA Characteristics by Alternative

Alternative A (No Action)	Alternative B	Alternative C	Alternative D
Soil, Water, Aquatic and Air Resources			
This alternative would continue existing management of motorized routes, nearly 56 miles, within the IRAs. Watershed conditions in IRAs in the Cave Creek, Globe, Mesa, and Tonto Basin ranger districts where cross-country travel is not permitted would be minimally affected by this alternative. Watershed conditions in IRAs in the Payson and Pleasant Valley ranger districts may be impacted by authorized cross-country travel that enters into these areas, particularly if cross-country travel results in numerous passes in the same locations and develops into unauthorized routes.	This alternative proposes to designate the fewest miles (2.7 miles) of motorized routes of the action alternatives. This alternative would decommission approximately 67 miles of roads in the IRAs. This greatest potential for recovery of watershed conditions in the IRAs.	This alternative would designate 43.25 miles of motorized routes in IRAs would propose decommissioning of 28.91 miles within these areas. Impacts of this alternative on soil and water conditions in IRAs would be greater than alternative B, but may be less than alternative A because of the greater number of miles of roads proposed for decommissioning in this alternative. These actions would facilitate recovery of watershed conditions where these routes occur within IRAs.	This alternative would authorize 63 miles of motorized routes within IRAs and would propose decommissioning of 6.5 miles within these areas. This alternative would authorize more motorized routes within IRAs than any of the other alternatives. Soil and watershed impacts within the IRAs would be greatest from this alternative. This alternative would prevent expansion of unauthorized routes, would eliminate use on uninventoried unauthorized routes, and decommission 6.5 miles of motorized routes within IRAs. These actions would facilitate recovery of watershed conditions where these routes occur within IRAs
Sources of Public Drinking Water			
None of the Inventoried Roadless Areas are within or affect Designated Municipal Watersheds. Much of the Forest lies within the Salt and Verde River watersheds, which supply drinking water to the Phoenix Metropolitan Area. Impacts to watershed conditions from unlimited cross-country travel on the northern ranger districts and motorized routes (which affect drinking water quality) would be greatest in this alternative.	With the least miles of proposed designated motorized routes, this alternative would have the smallest impact on watershed conditions and their effects on drinking water supply.	The effects of this alternative on watershed conditions and drinking water supply would be greater than alternative B but less than alternatives A and D.	The effects of this alternative on watershed conditions and drinking water supply would be greater than alternatives B and C and similar to alternative A.

Alternative A (No Action)	Alternative B	Alternative C	Alternative D
Diversity of Plant and Animal Communities			
Where roads and trails exist within IRAs, they provide a vector for introduction of new non-native invasive species. This alternative has 56.23 miles of routes within IRAs which would leave these areas most open to invasion by noxious weeds and nonnative species via motorized travel vectors. Overall habitat conditions for sensitive plant species dependent on large undisturbed areas of land are stable. Due to existing condition of cross-country motorized travel being permitted with the associated expansion of unauthorized routes, localized areas may be degrading because of fragmentation and "edge effects."	This alternative proposes the fewest miles of motorized routes within IRAs (2.69 miles), and would have the least likelihood of introduction and spread of noxious weeds and non-native invasive plants to these areas. Habitat conditions would see improvement from existing conditions, which could generally lead to improvement in desired future conditions.	This alternative would reduce motorized routes to 43.25 miles and would decrease the likelihood of introduction and spread of noxious weeds and non-native invasive plants to these areas Habitat conditions would see improvement from existing conditions, which could generally lead to improvement in desired future conditions, but at a slower potential pace than Alternative B.	Alternative D would propose 65.62 miles of motorized access within IRAs. This alternative would have the greatest chance of introduction and spread of noxious weeds and non-native invasive plants. Impacts to diversity of plant and animal communities would likely increase from existing conditions. These effects may result in a trend of moving away from desired future conditions for wildlife diversity.
Habitat for TES and Species Dependent on Large Undisturbed Areas of Land			
Overall habitat conditions for TES and species dependent on large undisturbed areas of land are stable, but in some cases declining for species like the Chiricahua leopard frog. Due to the existing condition of cross-country motorized travel being permitted to continue with the associated expansion of unauthorized routes, localized areas are degrading and likely would continue degrading.	Routes proposed for designation are not found within TES habitat and would improve conditions for species that are dependent on large tracts of undisturbed land.	Routes proposed for designation are not found within TES habitat. Compared to the current condition, this alternative would improve conditions for species that are dependent on large tracts of undisturbed land.	Routes proposed for designation are not found within TES habitat. Compared to the current condition, this alternative would likely not improve conditions for species that are dependent on large tracts of undisturbed land.

Alternative A (No Action)	Alternative B	Alternative C	Alternative D
Primitive, Semiprimitive Nonmotorized and Semiprimitive Motorized Classes of Dispersed Recreation			
There are currently 56.23 miles of road providing access within IRAs. A number of the IRAs located on the forest are contiguous to a wilderness area or are located in close proximity to designated wilderness offering opportunities for primitive, semiprimitive nonmotorized recreational activities. Cross-country travel is currently allowed within permitted areas for motorized fuelwood gathering within the Mazatzal Contiguous, Hellsgate Contiguous, Boulder, Salome Contiguous, Cherry Creek, and Picacho IRAs.	Alternative B proposes the least motorized routes (2.69 mile) within IRAs. There could be visitor dissatisfaction due to being restricted from places they have traditionally accessed using motorized routes within IRAs. The reduction in road mileage provides additional primitive and semiprimitive nonmotorized opportunities within IRAs on the Forest and the least opportunities for a Semiprimitive Motorized Setting. This alternative would benefit visitors who prefer a more primitive experience traveling on motorized routes within IRAs.	Alternative C proposes a decrease (43.25 miles) of motorized routes compared to the current condition. This alternative would decrease the motorized opportunity to access IRAs, but would still provide an opportunity to those wishing to recreate in the IRAs using motor vehicles.	Alternative D proposes to increase motorized routes within IRAs (65.62). This alternative would favor those recreationists who prefer a semiprimitive motorized setting and would be least desirable to those wishing to recreate in the IRAs without motor vehicles.
Natural Appearing Landscapes with High Scenic Quality			
Currently, existing landscape character within the Black Cross, Boulder, Lime Creek, and Horse Mesa IRAs is becoming less natural in appearance due to cross-country travel on unauthorized routes and likely would continue. The Bulldog Permit Zone located within the Goldfield IRA has contributed to improving existing landscape character.	This alternative would decommission 66.85 miles of roads in the IRAs and designate only 2.69 miles. Overall this would result in the greatest potential for existing landscape character to become more natural in appearance.	This alternative would decrease the number of motorized routes in IRAs (13 miles less than the current condition) and would decommission nearly 30 miles of motorized routes. This would be less than Alternative B, greater than Alternative D potential for existing landscape character to become more natural in appearance.	This alternative would increase (9 miles more than current condition) motorized routes within IRA and decommission 6.5 miles. This would result in the least potential for existing landscape character to become more natural.
Reference Landscapes for Research Study or Interpretation			
See effects under Special Management Areas in this section.			

Alternative A (No Action)	Alternative B	Alternative C	Alternative D
Traditional Cultural Properties and Sacred Sites*			
Allowing unrestricted cross-country travel to continue on any part of the Forest would result in an increase in the cumulative effect on known contemporary Indian uses by degrading traditional use areas, damaging TCPs, sacred sites, and disrupting traditional activities and may inhibit or limit the use of such areas. Likewise, the potential remains for trespass onto reservation lands from uncontrolled and unclassified routes. Access to traditional resources and places of significance to Tribes will remain unchanged.	Alternative B greatly reduces potential direct and indirect effects to TCP, sacred sites, and traditional use areas by restricting cross-country travel, reducing the potential for trespass onto Tribal lands. In particular, restricting motorized vehicles to designated routes will reduce the potential for disruption of traditional cultural or religious activities. However, closure of some existing roads and eliminating cross-country travel may reduce opportunities for resource gathering, visitation of sacred and other traditionally significant sites and increase the need for nonmotorized travel for elderly traditional practitioners.	This alternative has similar effects as those described in Alternative B in terms of prohibiting cross-country travel. However, particularly for motorized big game retrieval, it also has greater potential than Alternative B for motorized recreational activities to disrupt traditional activities sensitive to public intrusion and increases the potential for trespass onto tribal land	This alternative has similar effects as those described in Alternative B in terms of prohibiting cross-country travel. This alternative, with the most proposed motorized access, particularly in regards to roads, would have the most potential for providing Tribal access to sacred and traditional places and resources. By the same token, it also has greater potential than the other alternatives for motorized recreational activities to disrupt traditional activities sensitive to public intrusion and increases the potential for trespass onto tribal land. Otherwise, effects on Tribal access to traditional resources and significant places under this alternative would be similar to what they would be under the alternative C.

* *More information can be found in the Heritage Resources and Contemporary Indian Uses Reports in the project record.*

Cumulative Effects

The cumulative effects analysis evaluates past, present, and reasonably foreseeable actions on roadless characteristics in IRAs. This analysis specifically considers those activities that have influenced motorized or nonmotorized travel in the IRAs and their associated effects on roadless characteristics.

The cumulative effects analysis area for this analysis includes the 13 Inventoried Roadless Areas within the boundary of the Tonto National Forest. Consideration was given to cumulative effects beyond the IRA boundary to include wilderness areas on the Tonto, Prescott and Coconino national forests and the White Canyon Wilderness administered by the Tucson Field Office of the Bureau of Land Management. Timeframe evaluated is the next twenty years.

In most cases the other projects proposed within IRAs trend towards improving Roadless Area character.

Special Management Areas

Affected Environment

In the 1985 Tonto National Forest Plan, opportunities were identified to provide areas for scientific study and protection through the establishment of research natural areas, botanical areas, or designation as natural areas under the Arizona Parks Board Natural Area Program. The plan indicates that OHV use is prohibited in all of these Natural Research Areas (RNAs), Proposed Natural Research Areas, wildlife area, and experimental forest.

Two additional Special Management areas on the Tonto National Forest include a wildlife area and an experimental forest. In the Three Bar Wildlife Area and the Sierra Ancha Experimental Forest, the plan restricts OHV use to system roads (U.S. Forest Service, 1985, pp. 161 and 175 respectively). The Sierra Ancha Experimental Forest is located west of the Sierra Ancha Wilderness Area.

Environmental Consequences

Roads within designated and proposed special management areas may affect the characteristics for which they have been designated or proposed. As Table 44 shows, there is currently 60.45 miles of known motorized routes within these special management areas on the Tonto National Forest.

Table 44: Motorized Routes within Special Management Areas by Alternative

Name	Alternative A (Miles)	Alternative B (Miles)	Alternative C (Miles)	Alternative D (Miles)
Designated RNAs				
Buckhorn Mountain	0.00	0.00	0.00	0.00
Bush Highway	2.13	1.57	1.57	1.57

Name	Alternative A (Miles)	Alternative B (Miles)	Alternative C (Miles)	Alternative D (Miles)
Proposed RNAs				
Picket Post Mountain	0.05	0.05	0.05	0.05
Sycamore Creek & Blue Point Cottonwood	2.89	0.80	0.88	1.34
Upper Forks Parker Creek	0.78	0.00	0.20	0.78
Special Areas				
Sierra Ancha Experimental Forest	31.70	13.48	16.48	26.25
Three Bar Wildlife Area	22.90	13.80	18.17	22.90
Total	60.45	29.70	37.27	52.89

Alternative A

Most special management areas have less than three miles of motorized routes within their boundaries, including 0.75 of unauthorized routes in the proposed Sycamore Creek and Blue Point Cottonwood NRA. The Three Bar Wildlife Area and the Sierra Ancha Experimental Forest currently have 22.90 and 31.70 miles of motorized routes respectively in their management areas, including 0.29 miles of unauthorized routes in the Sierra Ancha Experimental Forest.

In terms of a nonmotorized trail experience, four special management areas provide this opportunity: Buckhorn Mountain NRA; proposed Upper Forks Parker Creek NRA; Sierra Ancha Experimental Forest, and Three Bar Wildlife Area. Motorized cross-country travel is prohibited within all of these special areas. Buckhorn Mountain RNA and proposed Picket Post Mountain RNA have no motorized routes that are open to the public (the 0.05 miles of motorized routes with proposed Picket Post Mountain are for administrative use only and not open to the public). These areas provide primitive and unconfined recreation opportunities for forest visitors, while meeting the intent of these areas to provide nondisruptive research and education and keep the areas in their natural or unmodified condition and to protect natural features and vegetation.

Alternative B

This alternative proposes to reduce the number of miles of motorized routes within special management areas to nearly half of the existing condition and proposed Upper Forks Parker Creek will have no motorized routes within its boundaries. In proposed Picket Post Mountain RNA, the motorized routes (0.05 miles) are for administrative use only.

Alternative B would likely have less conflict with management goals to provide nondisruptive research and education and keep the areas in their natural or unmodified condition and to protect natural features and vegetation of these special management areas, when compared to the current condition and other action alternatives.

Alternative C

Alternative C proposes to reduce the motorized route system within special management areas to 37.27 miles. In proposed Picket Post Mountain and Upper Forks Parker Creek RNAs, the motorized routes (0.05 miles and 0.20 respectively) are for administrative use only and not open to public motor vehicle use. This alternative would decrease conflict with management goals to provide nondisruptive research and education and keep the areas in their natural or unmodified condition and to protect natural features and vegetation of these special management areas.

Alternative D

Alternative D proposes to reduce the miles of motorized routes in special management areas from current condition, but would have the most motorized routes of the action alternatives. Just like Alternatives B and C, the routes within proposed Picket Post Mountain NRA would be for administrative use only.

Of the action alternatives, this alternative would have the least decrease in conflict with management goals to provide nondisruptive research and education and keep the areas in their natural or unmodified condition and to protect natural features and vegetation of these special management areas.

Cumulative Effects

The cumulative effects analysis evaluates past, present, and reasonably foreseeable action upon Special Areas located on the Tonto National Forest for the next 20 years. All actions would vary the miles of motorized access on designated routes; however, these areas would continue to have a prohibition on cross-country travel and would meet the intent of the management goals of these special areas. Currently, there are no proposed projects within or adjacent to these areas that would have a cumulative effect over the direct and indirect effects of this proposal.

Visual Resources

The Forest Service Landscape Aesthetics: A Handbook for Scenery Management (U.S. Forest Service, 2000) indicates that “high quality scenery, especially scenery with natural-appearing landscapes, enhances people's lives and benefits society” (p. 1). Additionally, Visual Resource Management is defined in the Tonto National Forest Plan (Forest Plan) (U.S. Forest Service, 1985) glossary as “the art and science of planning and administering the use of Forest lands in such ways that visual effects maintain or upgrade man’s psychological welfare. The planning and design of visual aspects of multiple-use land management (U.S. Forest Service, 1985, p. 21 in glossary)”. Scenery management is “the art and science of arranging, planning, and designing landscape attributes relative to the appearance of places and expanses in outdoor settings” (U.S. Forest Service, 2000, p. 5 in glossary).

As the American population increases and more areas become urbanized, the Forest Service has seen an increase in public concern about the natural scenic qualities of national forests. “Research shows that there is a high degree of public agreement regarding scenic preferences. This research indicates that people value most highly the more visually attractive and natural-appearing landscapes. However, the fact that preferences may vary somewhat in different regions or cultures must be recognized” (U.S. Forest Service, 2000, p. 30).

"People utilize travelways and use areas throughout the national forests. In addition, they utilize travelways and use areas located outside of national forest boundaries that provide views into national forests. Travelways represent linear concentrations of public viewing including highways, roads, trails, rivers, and other waterways. Portions of landscapes visible from travelways and use areas are important to constituents for their scenic quality, aesthetic values, and landscape merits" (U.S. Forest Service, 2000, pp. 4-6).

Roads create disruptions in the natural appearing landscape and lower scenic integrity by reducing the natural appearance of the landscape. The major visual impact of roads is their linear configuration, which must be superimposed upon nonlinear landscapes (U.S. Forest Service, 1977). The proliferation of unauthorized routes, particularly in sparsely covered landscapes, can adversely affect the existing landscape character. The scenic qualities of forest landscapes are valuable resources and important factors in the development of management actions. Primary objectives of scenery management are to maintain natural appearance and to minimize alterations that contrast with the natural elements of forest landscapes. The Tonto National Forest Plan (U.S. Forest Service, 1985) directs that the scenic qualities of forest landscapes be recognized and emphasized in all resource planning and management activities.

Affected Environment

The Tonto National Forest offers several perennial watercourses primarily in the mountains that add to the Forests' beauty, including two Wild and Scenic Rivers: Verde and Fossil Creek, along with Salt River and Tonto Creek. There also are several large man-made lakes or reservoirs including Bartlett, Horseshoe, Saguaro, Canyon, Apache, and Roosevelt, several of which are in canyons, creating a beautiful contrast between lake and canyon walls.

The forest has two National Forest Scenic Byways running through it: From the Desert to the Tall Pines Scenic Road and Apache Trail Historic Road. Wilderness areas include Four Peaks, Hell's Gate, Mazatzal, Salome, Salt River Canyon, Sierra Ancha, and Superstition.

Human activities have altered the existing landscape character of the Tonto National Forest. A component of the current landscape character is the degree to which alterations created by management activities are already evident. This existing visual condition defines how natural or altered the present landscape looks (as opposed to the visual quality objectives, which define how natural the landscape should look). While many parts of the Forest, such as wilderness areas, are still predominantly natural in appearance there has been a significant amount of past and present human activities.

"Off-road vehicle impacts are particularly serious and difficult to manage. ORV impacts are particularly troublesome because impact potential is so high. Riders frequently seek out terrain that is particularly susceptible to impact and object to being confined to areas of concentrated use" (Cole, 1986 p. 2).

Environmental Effects

Assumptions and Methodology

Inaccurate Information and Data Limitations

There are two forms of direction from the 1980s for visual quality on the Tonto National Forest, narrative and maps. The Forest Plan narrative gives actual acres or a percentage of acres prescribed for the assigned VQOs for each management area. Major travel corridors on the VQO maps are in the retention VQO, including State Route 87, State Route 260, and US Highway 60, as well as the upper Salt River and Roosevelt Lake. The less heavily traveled corridors, such as State Route 188 and State Route 288, are in the partial retention VQO. Areas away from lakes, river corridors, and highways located in otherwise significantly disturbed areas allow more visually intrusive objects and are to be managed as modification and maximum modification VQOs. Wilderness areas on Forest Service Land are typically managed as preservation; however, the preservation objective is so small on the Forest-wide map below that it is not visible so it is shown separately. This is not an accurate representation of VQO of preservation on the forest.

Numerous factors have contributed to the current VQO GIS layer being outdated. One significant factor contributing in discrepancies in acreages for the preservation VQO from the 1980s and existing conditions today is that wilderness areas have expanded in size and the forest boundary has changed since the 1980s. In addition, since the VQO maps were integrated into the GIS system in 2006 there have been numerous changes in the versions of GIS software the forest uses (currently ArcGIS 10.1 NAD 83 UTM 12N is being utilized). These changes in the system have resulted in differences in forest boundary, wilderness boundaries, etc., which has contributed to discrepancies for all VQOs. Major changes in visitor use, recreation areas, and travel routes have also made the old inventory out-of-date for all VQOs. Due to the inaccuracies in VQO data, the alternatives will be evaluated on other criteria in addition to consistency with VQOs. The analysis of alternatives for impacts on the visual resources will also be based on the proposed decommissioning of existing roads, designation of unauthorized routes as either roads or motorized trails, areas open to motorized cross country travel, and dispersed camping.

Assumptions Associated With Roads and Trails

Changing existing roads that are open to motorized travel to trails open to motorized travel would Properly designed and maintained motorized routes decrease the negative effects on scenic quality (U.S. Forest Service, 2008a). Although unauthorized routes were not originally designed by Forest Service engineers, those that are being proposed to be added route to the system as a designated road or motorized trail would likely improve the existing landscape character, as they would be improved and maintained as necessary. In addition, with the designation of a motorized system, cross-country travel would be limited, requiring motorists to remain on the designated routes. This would decrease new unauthorized routes being formed. Eliminating unauthorized routes would move the forest towards the desired conditions for scenery. Thus, they will not be analyzed in this report.

Changing existing roads, especially ML 2 roads that have not been maintained or unauthorized routes to motorized trails would likely make no change to the existing landscape character since the prism would not increase in size. They may actually move towards the desired conditions for scenery since they would be properly designed and maintained. In addition, vehicles would be required to remain on the designated routes so new unauthorized routes would not be formed.

Eliminating unauthorized routes would move the forest towards the desired conditions for scenery.

Observation of forest conditions show that some routes naturally revegetate without use. Some roads changed from open to public access to decommissioned that no longer receive motorized use may revegetate over time depending on soil type and vegetation. Revegetation would improve the existing landscape character because they would be more natural appearing. Other routes would have to be actively restored to a more natural state by the Forest Service in future projects. Roads that are decommissioned would likely move the forest towards the desired conditions for scenery.

Assumptions Associated With Permit Zones

The designated roads and motorized trails within the permit zones may improve the existing landscape character since it is unlikely that new unauthorized routes would be formed. In addition, motorized vehicles would be required to stay on designated roads and trails in permit zones, just like the rest of the forest, and illegal dumping and shooting would be eliminated, which would move the forest toward the desired conditions for scenery. However, the barriers necessary to enforce the permit zones, such as pipe rail fencing and locked gates, may detract from the natural landscape character. The more barriers necessary to enforce the permit zones, the greater the chance of negative affects to visual quality. These effects can be decreased by using materials that blend with the natural landscape character and placing them properly so that they are not placed in direct line of sight.

Assumptions Associated with Dispersed Camping

As stated earlier, numerous studies have documented effects from motorized access to and use of dispersed camping on vegetation; particularly understory vegetation, and creation of barren soil areas. These adversely affect landscape character and move the resource away from desired conditions for scenic quality. In areas where dispersed camping is concentrated, these effects become visible and lead to unacceptable levels of impact (Cole, 1986). However, when motorized access to dispersed camping is spread out over the forest, the impacts affect a larger area and the routes to these sites create unnatural linear features and the sites themselves may affect landscape character if they can be seen from roads.

Assumptions Associated With Motorized Big Game Retrieval

Motorized big game retrieval corridors would not affect the existing landscape character because the amount of trips needed to retrieve game is not likely to form new unauthorized routes because the trips would be infrequent and would be spread over a large area; the likelihood of multiple trips across the same area are slim. The impacts are negligible and will not be analyzed in this report.

Assumptions Associated With Collection of Forest Resources

Motorized collection of forest resources would not change the existing landscape character because the amount of trips needed to gather forest resources is not likely to form new unauthorized routes because a small number of people would be making infrequent trips and they

would be spread over a large area; the likelihood of multiple trips across the same area is slim. The impacts are negligible and will not be analyzed in this report.

Methodology

As documented in the 2008 study Effects of All-Terrain Vehicles on Forested Lands and Grasslands (U.S. Forest Service, 2008a), "ATV traffic does have an impact on natural resources. The levels of disturbance can be reduced by proper trail design and maintenance and by focusing efforts on trail sections that require extra attention" (Meadows *et al*., 2008, p. iv).

Using GIS and associated tabular data, forest staff overlaid the Visual Quality Objectives layer with route inventories to assess the effects of the Proposed Action and alternatives on the visual resources as it relates to decommissioned existing roads, designating unauthorized routes as either roads or motorized trails, areas open to motorized cross country travel, and dispersed camping. In addition, data from the National Visitor Use Monitoring (NVUM) survey was used[61] (U.S. Forest Service, 2012).

Alternative A – Direct and Indirect Effects

Decommissioned Existing Roads and Unauthorized Routes

Without site-specific data, it is assumed that the 267 miles of roads listed as decommissioned in RATM have not been implemented and it is not possible to know whether they have returned to a natural state. As such, for this analysis all roads listed as decommissioned in RATM (along with all ML 1 roads) are assumed open and currently used by the public.

In terms of unauthorized routes, there have only been 672 miles inventoried (although there are more miles that the forest currently does not have site specific data for). These user created routes often detract from the visual quality of the forest. Until these routes can either be designated or revegetated, they will continue to affect visual resources.

Areas Designated for Motor Vehicle Use

Currently, there are no designated OHV areas although there are numerous locations with a proliferation of unauthorized routes (often illegal), which have created damaged vegetation and bare soil that detracts from the existing landscape character. The damage from these concentrated use areas is likely to continue and increase as influence from nearby populations increases. The foreground of such areas of more concentrated motorized use would typically not meet visual quality objectives defined in the Forest Plan.

Permit Zones

Currently, there is only one permit zone: Bulldog Canyon. The designated roads and motorized trails within the permit zones may continue to improve the existing landscape character since it is unlikely that new unauthorized routes would be formed. In addition, motorized vehicles would be required to stay on designated roads and trails in permit zones, just like the rest of the forest, and illegal dumping and shooting would be eliminated, which would continue moving the forest

[61] For more information about the National Visitor Use Monitoring survey, see the Recreation section of this chapter.

toward the desired conditions for scenery. The existing barriers could be seen from major roads and would continue to detract from the existing landscape character.

Of the existing 34,720-acre Bulldog Canyon Permit Zone on the Mesa Ranger District, approximately 17,496 acres are in areas of the forest managed for retention and 15,374 acres for partial retention.

Motor Vehicle Use for Dispersed Camping

Currently, the area available for motorized access to dispersed camping is 703,618 acres on the northern districts (Payson and Pleasant Valley). Approximately 86,690 acres are in areas of the forest managed for Retention and 265,689 acres for Partial Retention. On the four southern ranger districts (Cave Creek, Globe, Mesa, and Tonto Basin), driving off road is prohibited unless posted open; however, campers have been cited for driving off roads illegally in these areas. Much dispersed motorized camping takes place in the same sites year after year, resulting in sites that are easily identifiable visually due to the removal of vegetation from vehicles driving off road to dispersed campsites and the open, cleared area from vehicles parking and turning around which exposes bare ground and alters the existing landscape character. As determined by the Southwestern Regional Office when developing travel management rule guidelines in 2007, it is likely in the future there will be an increase in demand for dispersed motorized camping as population and visitation in the Southwest continues to grow. Although there is no site specific data, the effects of OHV use as part of dispersed camping on the Tonto National Forest would continue to alter the existing landscape character and would move away from the desired conditions for scenic quality.

Alternative B – Direct and Indirect Effects

Roads and Trails Designated for Motor Vehicle Use

In this alternative, there would be approximately 2,367 miles of decommissioned roads and only 11 miles of the unauthorized routes would be designated as roads or motorized trails open to the public. Once the on-the-ground work to decommission these roads and potentially rehabilitate the unauthorized routes, the existing landscape character would become more natural in appearance. This would also move the forest toward the desired conditions for scenic quality.

Of the proposed 2,367 miles of roads proposed to be decommissioned, approximately 346 miles are in areas of the forest managed for retention and 1,043 miles for partial retention. Of the 11 miles of unauthorized routes proposed to be designated as roads or motorized trails open to the public, approximately 4 miles are in areas of the forest managed for retention and 6 miles for partial retention.

Areas Designated for Motor Vehicle Use

In Alternative B, there would be no designated OHV areas proposed. It is unlikely that these heavily used areas would revegetate without obliteration and seeding. This alternative would move the forest toward the desired conditions for scenic quality.

Permit Zones

Alternative B proposes to add four permit zones, in addition to the current Bulldog Canyon, totaling approximately 150,925 acres. The designated roads and motorized trails within the permit zones may continue to improve the existing landscape character since it is unlikely that new unauthorized routes would be formed. In addition, motorized vehicles would be required to stay on designated roads and trails in permit zones, just like the rest of the forest, and illegal dumping and shooting would be eliminated, which would continue moving the forest toward the desired conditions for scenery. However, these four areas may require miles of barrier to enforce the permit zone's boundaries, which would detract from the natural landscape character. The more barriers necessary to enforce the permit zone, the greater the chance of adversely affecting the existing landscape character. These effects can be reduced by making the barriers with materials that blend with the natural landscape character and placing them properly so that they are not located in direct line of sight.

Of the proposed 150,925 acres of permit zones, approximately 29,451 acres are in areas of the forest managed for retention and 66,504 acres for partial retention.

Motor Vehicle Use for Dispersed Camping

For Alternative B, motorized access for dispersed camping would be limited to 414 sites, totaling approximately 65 acres (this includes a 50-foot buffer around each of the sites), which is 703,553 acres less than Alternative A. Although, according to Cole (1986), concentration leads to unacceptable levels of impact from trampling of vegetation. Based on data from the National Visitor Use Monitoring survey for the Tonto National Forest, approximately 4.8 million people visited the forest in one year. Of those, over half recreated on the forest. Even if it is assumed that five percent (or approximately 120,000) of those visitors participated in dispersed camping using a motor vehicle for access, these 414 sites would likely expand quickly and become completely denude of all vegetation and other natural features. This would adversely affect the existing landscape character in these small areas and would move away from the desired conditions for scenic quality. Where motorized access for dispersed camping would no longer be allowed, sites would only be accessed via hiking. This would likely improve the existing landscape character for the rest of the forest and move towards the desired conditions for scenic quality.

Approximately 12 acres of the forest open to motorized dispersed camping would be in areas of the forest managed for retention and 34 acres for partial retention. This would be a reduction of 86,678 in retention and 265,655 acres in partial retention as compared to Alternative A. Dispersed camping is incompatible with these VQOs.

Alternative C – Direct and Indirect Effects

This alternative proposes to decommission 1,290 miles of existing roads, designate 290 miles of unauthorized routes as either roads or motorized trails, designate four OHV areas, add three permit zones, and limit the use of a motor vehicle to access dispersed camping up to 100 feet on both sides of designated roads and motorized trails.

Roads and Trails Designated for Motor Vehicle Use

In this alternative, there would be approximately 1,290 miles of existing roads decommissioned and approximately 290 miles of unauthorized routes designated as either roads or motorized trails

open to the public. Once the on-the-ground work to decommission these roads and potentially rehabilitate the unauthorized routes, the existing landscape character would become more natural in appearance. This would also move the forest toward the desired conditions for scenic quality.

Of the proposed approximately 1,290 miles of roads to be decommissioned, approximately 211 miles are in areas of the forest managed for retention and 552 miles for partial retention. Of the approximately 290 miles of unauthorized routes proposed to be designated as roads or motorized trails open to the public, approximately 19 miles are in areas of the forest managed for retention and 131 miles for partial retention.

Areas Designated for Motor Vehicle Use

In this alternative, motorized cross-county travel would be limited to four areas: The area around Bartlett Lake (Cave Creek Ranger District) between the variable water level and the high water mark; Golf Course (Globe Ranger District); the area around Roosevelt Lake (Tonto Basin Ranger District) between the variable water level and the high water mark; and Sycamore (Mesa Ranger District) totaling approximately 6,778 acres. In addition, there are four proposed “tot lots” totaling approximately 12 acres. In most cases, the existing landscape character in proposed designated OHV areas has already been adversely affected by heavy motorized use (often illegal) so the actual effects of designating these areas would not likely be different from existing conditions.

Of the 6,790 total OHV area acres, 3,967 acres of the total acres for the OHV areas would be in retention and 2,164 acres in partial retention.

Permit Zones

Alternative C proposes to add three permit zones (St. Clair, The Rolls, and Desert Vista), in addition to the current Bulldog Canyon, totaling approximately 116,798 acres. The designated roads and motorized trails within the permit zones may continue to improve the existing landscape character since it is unlikely that new unauthorized routes would be formed. In addition, motorized vehicles would be required to stay on designated roads and trails in permit zones, just like the rest of the forest, and illegal dumping and shooting would be eliminated, which would continue moving the forest toward the desired conditions for scenery. However, these three areas may require miles of barrier to enforce the permit zone’s boundaries, which would detract from the natural landscape character. The more barriers necessary to enforce the permit zone, the greater the chance of adversely affecting the existing landscape character. These effects can be decreased by making the barriers with materials that blend with the natural landscape character and placing them properly so that they are not located in direct line of sight.

Of the proposed 116,798 acres of permit zones, approximately 24,668 acres are in areas of the forest managed for retention and 51,897 acres for partial retention.

Motor Vehicle Use for Dispersed Camping

Alternative C would allow motor vehicle use, up to 100 feet on both sides of designated roads and motorized trails, for accessing dispersed camping sites (approximately 91,391 acres). Limitations to this corridor would be in congressionally designated areas where motorized travel is not permitted. The disturbance would be spread throughout this corridor, decreasing the landscape

character. According to Tonto National Forest Law Enforcement[62], most visitors using motor vehicles for dispersed camping generally travel 300 feet from a current road. Based on this, the 100 foot corridor would have reduced vegetation and more bare soil. This would adversely affect the existing landscape character and move the corridor away from desired conditions, but could improve the landscape character beyond the corridor.

Approximately 220,375 acres would be in areas of the forest managed for retention and 809,146 acres for partial retention. This would be an increase of 133,685 acres in retention and 265,655 acres in partial retention as compared to Alternative A. Dispersed camping is incompatible with these VQOs.

Alternative D – Direct and Indirect Effects

This alternative proposes to decommission approximately 194 miles of existing roads, designate approximately 550 miles of unauthorized routes as either roads or motorized trails ,designate four OHV areas, and limit the use of a motor vehicle to access dispersed camping up to 300 feet on both sides of designated roads and motorized trails.

Roads and Trails Designated for Motor Vehicle Use

In this alternative, there would be approximately 194 miles of decommissioned roads and approximately 552 miles of unauthorized routes would be designated as roads or motorized trails open to the public. Once the on-the-ground work to decommission these roads and potentially rehabilitate the unauthorized routes, the existing landscape character would become more natural in appearance. This would also move the forest toward the desired conditions for scenic quality.

Of the proposed approximately 194 miles of roads proposed to be decommissioned, approximately 36 miles are in areas of the forest managed for retention and 98 miles for partial retention. Of the approximately 552 miles of unauthorized routes proposed to be designated as roads or motorized trails open to the public, approximately 57 miles are in areas of the forest managed for retention and 237 miles for partial retention.

Areas Designated for Motor Vehicle Use

Just like in Alternative C, motorized cross-county travel for Alternative D would be limited to four areas: The area around Bartlett Lake (Cave Creek Ranger District) between the variable water level and the high water mark; Golf Course (Globe Ranger District); the area around Roosevelt Lake (Tonto Basin Ranger District) between the variable water level and the high water mark; and Sycamore (Mesa Ranger District) totaling approximately 6,778 acres. In addition, there are four proposed “tot lots” totaling approximately 12 acres. In most cases, the existing landscape character in proposed designated OHV areas has already been adversely affected by heavy motorized use (often illegal) so the actual effects of designating these areas would not likely be different from existing conditions.

Of the 6,790 total OHV area acres, 3,967 acres of the total acres for the OHV areas would be in retention and 2,164 acres in partial retention.

[62] For more information, see the Law Enforcement section in this chapter.

Permit Zones

Alternative D would continue the designation of the Bulldog Canyon Permit Zone. The designated roads and motorized trails within the permit zones would continue to improve the existing landscape character since it is unlikely that new unauthorized routes would be formed. In addition, motorized vehicles would be required to stay on designated roads and trails in permit zones, just like the rest of the forest, and illegal dumping and shooting would be eliminated, which would continue moving the forest toward the desired conditions for scenery. The existing barriers could be seen from major roads and would continue to adversely affect the existing landscape character.

Of the existing 34,720-acre Bulldog Canyon Permit Zone on the Mesa Ranger District, approximately 17,496 acres are in areas of the forest managed for retention and 15,374 acres for partial retention.

Motor Vehicle Use for Dispersed Camping

Alternative D would allow motor vehicle use, up to 300 feet on both sides of designated roads and motorized trails, for accessing dispersed camping sites (approximately 336,038 acres). Limitations to this corridor would be in congressionally designated areas where motorized travel is not permitted. The disturbance would be spread throughout this corridor, decreasing the landscape character. According to Tonto National Forest Law Enforcement[63], most visitors using motor vehicles for dispersed camping generally travel 300 feet from a current road. On the northern districts, there would be no change from the existing condition. For the four southern districts, this would allow motorized access for dispersed camping, which could adversely affect the existing landscape character and could move the forest away from the desired conditions for scenic quality. However, campers have been cited for driving off roads illegally in these lower elevation districts and the actual effects would not likely be different from the existing condition.

Approximately 253,784 acres would be in areas of the forest managed for retention and 861,286 acres for partial retention. This would be an increase of 86,678 acres in retention and 265,655 acres in partial retention as compared to Alternative A. Dispersed camping is incompatible with these VQOs.

Comparison of Effects by Alternative

This section shows the effects of the four alternatives and how they compare to one another in terms of intensity of effects and their ability to move visual resources toward desired conditions.

Roads and Trails Designated for Motor Vehicle Use

For Alternative A, all decommissioned routes in RATM were assumed open and currently being used by the public for motorized access. Currently for Alternative A, there are 672 miles of inventoried unauthorized routes. Until these routes can either be designated or revegetated, they would continue to adversely affect existing landscape character. Furthermore, the creation of unauthorized routes would continue in the northern districts where cross-country travel is permitted.

[63] For more information, see the Law Enforcement section in this chapter.

Alternative B would result in approximately 2,367 miles of decommissioned roads and 11 miles of the unauthorized routes would be designated as roads or motorized trails. This is twice the amount of roads decommissioned than in Alternative C and ten times the amount than Alternative D. Alternative B would have the greatest potential to move the existing landscape character toward a more natural in appearance and to move the forest toward the desired conditions for scenic quality. However, Alternative D would still have a greater positive effect for existing landscape character than the current condition.

Areas Designated for Motor Vehicle Use

In Alternative A, the concentrated use areas would continue to allow for the proliferation of unauthorized routes. In Alternative B, there would be no designated OHV areas. Alternatives C and D propose eight OHV areas (6,790 acres) and in most cases the existing landscape character in proposed designated OHV areas has already been adversely affected by heavy motorized use (often illegal) so the actual effects of designating these areas would not likely be different from existing conditions. Alternative B is the only alternative that would allow for the revegetation over time in these areas.

Motor Vehicle Use for Dispersed Camping

Alternative A would allow dispersed camping anywhere in the two northern districts, where cross-country travel is currently permitted. In Alternative B, the 414 sites designated would likely expand quickly and become completely denude of all vegetation and other natural features, which would move these areas away from the desired conditions for scenic quality. Where motorized access for dispersed camping would no longer be allowed, sites would only be accessed via hiking and these sites would likely improve the existing landscape character for the rest of the forest and move towards the desired conditions for scenic quality. In Alternative C, the corridor (100 feet both sides of designated routes) would reduce vegetation and expose more bare soil. This would move the corridor away from desired conditions, but could improve the landscape character beyond the corridor. In Alternative D, the corridor (300 feet both sides of designated routes) would spread the effects throughout a corridor larger than Alternative B. On the northern districts, there would be no change from the existing condition. For the four southern districts, this would allow motorized access for dispersed camping, which could make the existing landscape character less natural in appearance and could move the forest away the desired conditions for scenic quality. However, campers have been cited for driving off roads illegally in these lower elevation districts and the actual effects would not likely be different from the existing condition.

Cumulative Effects

No Action (Alternative A)

The No Action would continue to allow cross-country travel on the northern districts, which would result in visible impacts. Continued proliferation of routes would result in a loss of existing landscape character and a potential inconsistency with VQOs. Route proliferation has the potential to carry visual disturbances into previously untrammeled areas with a consequent degradation of VQOs.

Past activities have altered the natural landscape character, creating its current condition. The most obvious and significant effects on scenic resources are from constructed facilities, highway construction, and vegetation manipulation.

The activities that have contributed include mining, utilities, timber management, recreational facility development, fire management (suppression, prescribed burning, and fuel breaks/reduction), livestock grazing, and others. Many of the impacts from these past activities were severe and some effects are presently hidden by vegetative growth, especially in the northern districts.

A wide variety of uses occurs on the Forest, much of it recreational. Recreational use is expected to increase dramatically during the next 20 years. Sightseeing and driving for pleasure are examples of activities that directly use roads as part of the recreational experience. The character of and access to scenic views, would directly depend on the road system for many people.

All Action Alternatives

Cumulative effects for the action alternatives would be the same as the direct and indirect effects because projects on the forest that could affect the existing landscape character would have mitigations and design features to reduce effects to the scenic quality. Currently, there are no known projects outside the forest that would affect the scenic quality. In addition, given the size of the Tonto National Forest, the likelihood that these projects would affect the overall scenic quality for the forest is not likely. Cumulatively, all of the action alternatives move the forest toward the desired condition for scenic quality.

Socioeconomics

This section addresses the potential social and economic impacts associated with the implementation of the Travel Management Rule. It outlines current regulatory direction, which guides the development of management activities and the issues addressed. It discusses the methodology of analysis, summarizes the existing condition, and discloses the direct, indirect, and cumulative effects of Alternative A (No Action), Alternative B, Alternative C (modified proposed action), and Alternative D while relating to current society and economy in the vicinity of the project area.

This socioeconomic analysis will discuss population demographics, major economic sectors related to public lands, economic specialization, and transfer payments to counties. This information will help address the following questions, “What influence does the management of motor vehicle access on the Tonto National Forest have on forest visitors” and “What portion of county government revenues depend on motor vehicle access?”

In addition to social and economic impacts, the assessment of environmental justice and impacts to communities provide measures of success used to assess how effectively the proposed activities meet the project’s purpose and need.

Affected Environment

Tonto National Forest is adjacent to the northern edge of the Phoenix metropolitan area, which has a population greater than four million people. The city of Phoenix itself has a population of

approximately 1.5 million[64], making it the sixth largest city in the United States. The Phoenix area is a popular destination for conferences, conventions, and tourism with its warm and sunny year-round climate, wide variety of business, cultural, and recreational offerings, serviced by many direct flights from most major U.S. cities. These factors combine to make the Tonto Nation Forest one of the most heavily-visited national forests, with nearly 5 million recreational visitors annually (U.S. Forest Service, 2012).

Social and Demographic Indicators

The existing conditions for social and demographics in this section include population trends, age distribution, and race and ethnicity percentages. In addition, each of these indicators is presented based on county and national data, along with Tonto National Forest visitation data[65].

Four-County Area Trends

The Economic Profile System-Human Dimensions Toolkit (EPS-HDT) was used to provide detailed socioeconomic reports for this project. This toolkit was designed by Headwaters Economics[66], an independent, nonprofit research group whose mission is to improve community development and land management decisions in the West. The Bureau of Land Management and Forest Service have made significant financial and intellectual contributions to the operation and content of EPS-HDT. EPS-HDT uses published statistics from federal data sources, including Bureau of Economic Analysis and Bureau of the Census, U.S. Department of Commerce; and Bureau of Labor Statistics, U.S. Department of Labor.

Using the Economic Profile System Analyst (EPSA) tool developed by Headwaters Economics, a socioeconomic profile was produced for the four counties that overlap with the Tonto National Forest: Gila, Maricopa, Pinal, and Yavapai Counties (Figure 32).

[64] According to the United States Census 2012 population estimates (U.S. Census Bureau Quick Facts accessed on June 14, 2013).
[65] Additional information about benchmark indicators for the four-county area in relationship to national values can be found in appendix A of the Socioeconomics Report in the project record.
[66] Headwaters Economics website

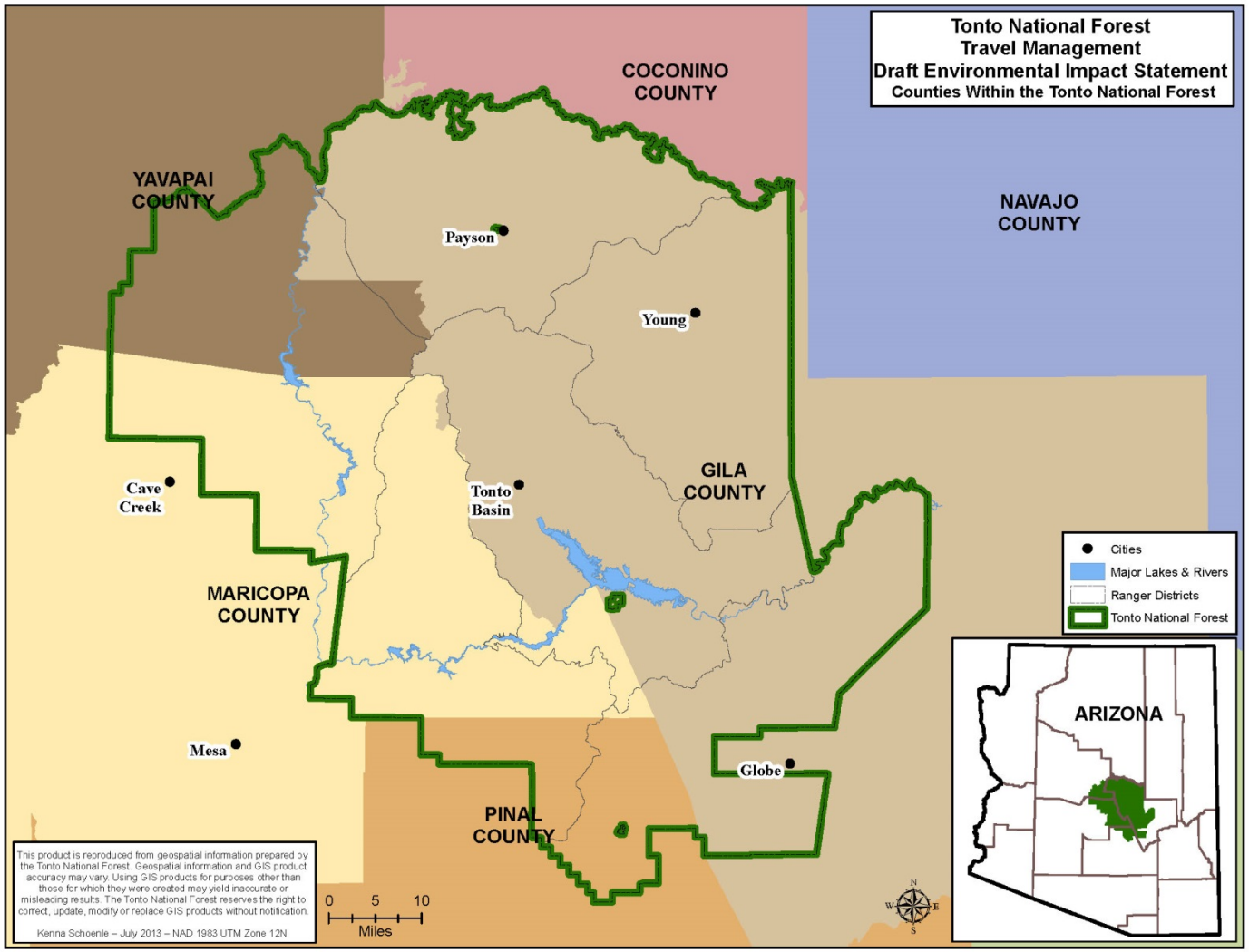


Figure 32: Map of the Tonto National Forest and the Four-County Area (Gila, Maricopa, Pinal, and Yavapai Counties)

Four-County Population

For 2011, the estimated total population of the four-county area is estimated at 4,414,301 (Headwaters Economics, 2013c). Specifically, the estimated 2011 population for each of these counties was: Gila 53,380 (4 percent), Maricopa 3,798,374 (56 percent), Pinal 351,709 (15 percent), and Yavapai 210,838 (25 percent).

From 1970 to 2011, populations have increased within the four-county area. With the exception of Gila County (increasing approximately 80 percent), the population increase for the remaining counties have at least tripled, while the population for the United States has only increased approximately 53 percent over the last 40 years (Headwaters Economics, 2013c). More recently (2000 to 2011), Gila County had the smallest estimated change in population; half of the national average (Figure 33[67]). In that same time period, Pinal County had the largest estimated change in population, nearly 96 percent (Headwaters Economics, 2013c).

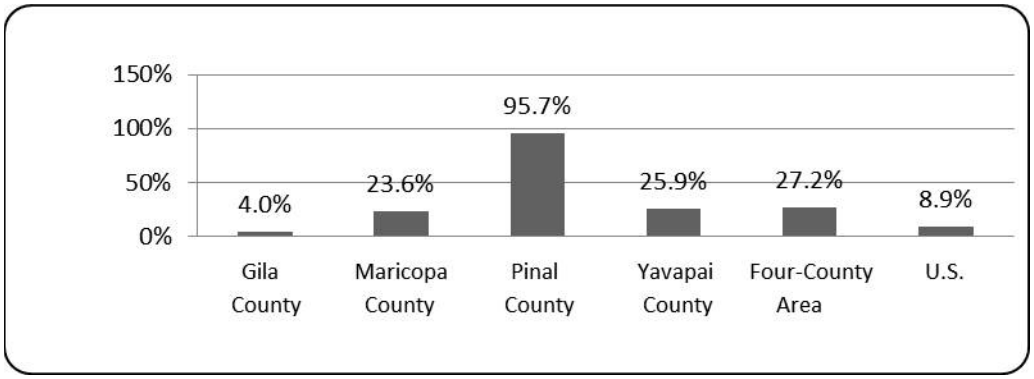


Figure 33: Percent Change in Population by County, the Four-County Area, and U.S.

Four-County Age Distribution

For public land managers, understanding the age distribution associated is beneficial in determining if management actions might affect some age groups more than others. It also may highlight the need to understand the different needs, values, and attitudes of different age groups. From 2000 to 2011, the age category with the largest estimated increase was those 45 to 64 years old; while the age category with the smallest estimated increase was those 35 to 44 years old (Headwaters Economics, 2013c).

For the four-county area, nearly 30 percent of the population is 19 years old or younger, while approximately 16 percent of the population is 60 years old or greater (Headwaters Economics, 2013c). Nationwide, percentages of those 19 years old or younger and those 60 years old or greater is similar to the four-county area percentages.

For the median age change from 2000 to 2011 (Figure 34), three of the four counties have increased, along with the median age for the entire United States; the median age for Gila County has increased the most, by about 12 percent, while the median age for Pinal County has decreased, by approximately four percent (Headwaters Economics, 2013c).

[67] Data from Headwaters Economics, 2013c.

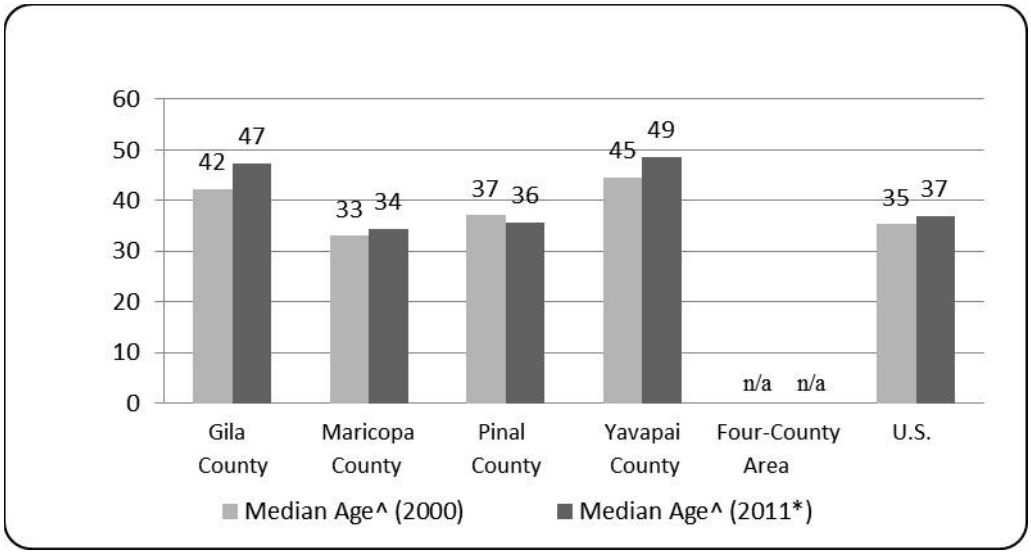


Figure 34: Median Age by County, with U.S., for 2000 and 2011

Four-County Race and Ethnicity Distribution

The racial and ethnic composition of the four-county area offers context for the social analysis. By understanding the social conditions within this area of influence, more informed decisions concerning those affected can be made. As shown in Table 45, the percentage of Hispanic or Latino individuals in the four-county area is nearly twice the percentage of the national average (Headwaters Economics, 2013c). Additionally, the percentage of Black or African American individuals in the four-county area is three times lower than the national average, while the percentage of American Indians in the four-county area is slightly more than double the national average (Headwaters Economics, 2013c).

Table 45: Race/Ethnicity of Population for 2011 by County, including Four-County Area and U.S.

Race	Gila County	Maricopa County	Pinal County	Yavapai County	Four County Area	U.S.
Hispanic or Latino (of any race)	17.8%	29.4%	28.8%	13.4%	28.4%	16.1%
Not Hispanic or Latino	82.2%	70.6%	71.2%	86.6%	71.6%	83.9%
White alone	65.9%	59.1%	58.3%	82.1%	60.2%	64.2%
Black or African American alone	0.4%	4.7%	4.2%	0.5%	4.4%	12.2%
American Indian alone	14.5%	1.6%	5.0%	1.6%	2.0%	0.7%
Asian alone	0.2%	3.3%	1.6%	0.7%	3.0%	4.7%

Race	Gila County	Maricopa County	Pinal County	Yavapai County	Four County Area	U.S.
Native Hawaiian/ Pacific Is. alone	0.1%	0.2%	0.4%	0.0%	0.2%	0.2%
Some other race	0.1%	0.1%	0.2%	0.1%	0.2%	0.2%
Two or more races	1.1%	1.6%	1.5%	1.5%	1.6%	1.9%
Total Population	**53,380**	**3,798,374**	**351,709**	**210,838**	**4,414,301**	**306,603,772**

Four-County Persons with Disabilities Distribution

For public land managers, understanding the adjacent population that has a disability can be beneficial in determining if management actions might affect this group disproportionately. It also may highlight the need to understand the different needs, values, and attitudes associated with this group. According to United States Census data for Arizona (accessed on June 27, 2013), there are approximately 456,000 persons with disabilities in the four-county area. Nearly 17 percent of Gila and Yavapai County residents identify themselves as being disabled, while Maricopa and Pinal County residents that identify themselves as being disabled is approximately 10 percent and 12 percent respectively (United States Census, accessed June 27, 2013).

Forest Visitation Trends

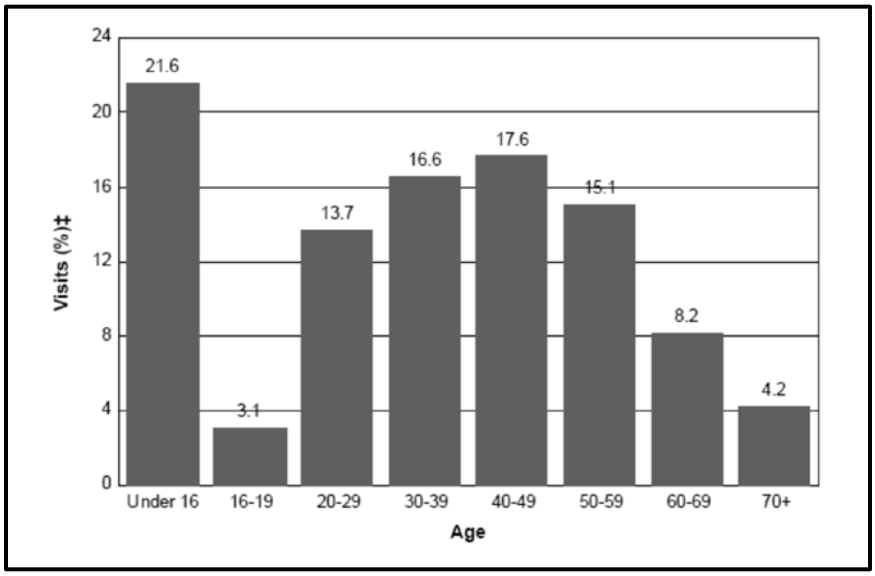
The National Visitor Use Monitoring (NVUM) program provides reliable information about recreation visitors to national forest system managed lands at the national, regional, and forest level. Once every five years, each National Forest and Grassland has a year of field data collection[68]. Currently, the Tonto National Forest is collecting visitation use data, thus the most current NVUM survey data available is from 2008 (U.S. Forest Service, 2012). For this survey, visitation is estimated through a combination of traffic counts and surveys of exiting visitors. Both are obtained on a random sample of locations and days distributed over an entire forest for a year. All of the surveyed recreation visitors are asked about their visit duration, activities, demographics, travel distance, and annual usage.

It is important for the reader to understand the limitations associated with the 2008 NVUM survey results. The descriptive information about national forest visitors is based upon only those visitors that were interviewed. In 2008, there were 3,496 individual who agreed to be surveyed (U.S. Forest Service, 2012). To extrapolate the number of total visitors, traffic counters were also set up throughout the Tonto National Forest during certain times. As such, when the 2008 NVUM survey results indicated that a certain percentage of the visitation participated in a specific activity or came from a certain area, it is not a percentage of the total calculated visitors[69].

[68] For more information about NVUM, see the Recreation section of this Chapter.
[69] This is important in relationship to some of the demographic data collected, such as the visitor's zip code. Although "X" percentage of those surveyed (3,496) may reside in Maricopa County, it does not mean that the same "X" percentage of the total visitors (4.8 million) are from Maricopa County.

Forest Visitation Age Distribution

As discussed earlier, there were approximately 4.8 million people that visited the Tonto National Forest (U.S. Forest Service, 2012). These visitors were divided into age groups and 24 percent of those that visited were 19 years of age or younger, while 12.4 percent were 60 years or older (Figure 35). This age distribution is similar to that of the four-county area.



‡ Calculations are computed using weights that expand the sample of individuals to the population of National Forest Visits.

Figure 35: Age Distribution of Tonto National Forest Visitors, 2008

Forest Visitation Race and Ethnicity Distribution

When completing the 2008 NVUM survey, respondents were able to choose more than one racial group, resulting in the total may be more than 100 percent. In addition, race and ethnicity were asked as two separate questions. Thirteen percent of the forest visitors indicated that they were Hispanic or Latino (U.S. Forest Service, 2012), which is less than half of the four-county area percentage. Black or African American visitors made up 2.3 percent and American Indian/Alaskan Native visitors made up 3.9 percent, nearly half of the four-county area percentage and double the four-county area percentage respectively (Figure 36).

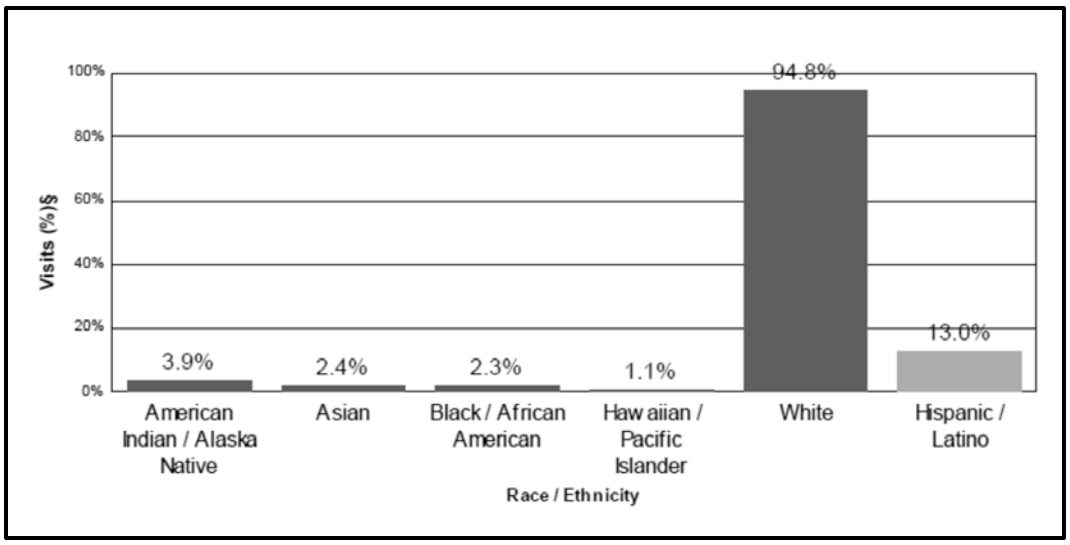


Figure 36: Race/Ethnicity Distribution of Tonto National Forest Visitors, 2008

Forest Visitation by Persons with Disabilities

Providing barrier-free facilities for recreation visitors is an important part of facility and service planning and development for the Forest Service. In addition, persons with disabilities may be more reliant on motorized access to participate in activities on the Tonto National Forest. For the Tonto National Forest, approximately seven percent of visitors identified that they had some of disability (U.S. Forest Service, 2012)

Motor Vehicle Use on the Tonto National Forest

According to a 2008 survey (U.S. Forest Service, 2012), Tonto National Forest visitors indicated that they participated in the following motor vehicle use related activities[70]:

- Motorized trail activity (18 percent)
- Driving for pleasure (15 percent)
- OHV use (11 percent)

In addition, visitors were asked about their use of special facilities or areas (U.S. Forest Service, 2012). Based on this information, approximately 21 percent of forest visitors indicated they had used a designated off road vehicle area, approximately 14 percent of forest visitors indicated they had used a forest road, approximately 19 percent of forest visitors indicated they had used motorized single track trails, and approximately 21 percent of forest visitors indicated they had used motorized dual track trails (U.S. Forest Service, 2012).

Motor Vehicle Use in Arizona

Based on study (Arizona State Parks, 2009), OHV users represent almost 22 percent of the Arizona population which include residents who use motorized vehicle on trails for multiple purposes. Of that, 11 percent of Arizona residents reported that motorized trail use accounted for

[70] Survey respondents could select multiple activities.

the majority of their time and are considered "core" users. OHV recreation is one of the most extensive recreational activities taking place on public and state lands in Arizona and is forecasted to continue to grow at an increasingly rapid rate (Arizona State Parks, 2013).

Frequent Recreation Participants with Disabilities

In a statewide 2013 study (Arizona State Parks), 25 percent of those surveyed identified themselves or someone in the household as having a disability. Also part of this survey, a subset of Arizonans surveyed was identified as those who participated in an activity once a week or more (frequent participators). Table 46 shows the recreational activities for frequent participators that identified themselves or someone in the household as having a disability (Arizona State Parks, 2013). Of those activities that require the use of a motorized vehicle, participation was at or above 25 percent.

Table 46: Disability Status Related to Recreational Activities

Activity	*General Disability	Hearing	Speech	Mental	Visual	Mobility	Chemical Sensitivity
Bird-watching and photography	25.0%	5.6%	0.0%	2.9%	1.7%	12.8%	2.2%
Visit a local park	21.9%	4.7%	0.0%	2.7%	2.7%	12.4%	1.6%
Visit a natural or wilderness area	18.6%	4.3%	0.3%	1.3%	2.1%	10.9%	1.1%
Nature study or environmental education activities	20.4%	4.6%	0.0%	3.9%	1.3%	9.2%	2.6%
4-wheel driving	30.2%	5.8%	0.0%	4.5%	1.8%	20.1%	1.3%
Off-highway vehicle use	25.5%	6.7%	0.0%	2.7%	1.3%	16.4%	0.9%
RV camping	35.4%	6.9%	0.0%	2.8%	4.2%	23.6%	0.0%
Walking, jogging or running on trails or at a park	17.7%	4.0%	0.2%	2.5%	1.8%	9.4%	1.3%
Fishing	30.9%	9.1%	0.0%	2.8%	3.2%	20.6%	1.2%
Hunting	22.9%	5.3%	0.0%	1.9%	1.9%	16.4%	0.5%
Day hiking	17.6%	4.3%	0.0%	2.6%	1.7%	8.7%	1.1%

**Respondents were allowed to choose more than one activity that they frequently participated in.*

Economic and Forest Contribution Indicators

The existing conditions for economic and forest contribution in this section includes major economic sectors related to public lands, economic specialization, and transfer payments to

counties. In addition, each of these indicators is presented based on county and national data, along with Tonto National Forest visitation data[71].

Four-County Area Land Base Ownership

As is the case in many western states, counties have a higher percentage of federally managed land than the national average. With the exception of Pinal County (19.5 percent), nearly half or above of the county land base for the other counties in the four-county area is federally managed (Headwaters Economics, 2013h). In terms of land base, nearly half of Gila County is managed by the Forest Service and roughly a third of Yavapai County is managed by the Forest Service, while the percentage managed by the Forest Service for Maricopa and Pinal Counties more closely reflect the national average (Table 47).

Table 47: Land Ownership for 2011 by County, including Four-County Area and U.S.

Land Ownership	Gila County	Maricopa County	Pinal County	Yavapai County	Four County Area	U.S.
Private Lands	4.0%	29.0%	25.6%	29.4%	24.1%	58.7%
Federal Lands	57.2%	52.9%	19.5%	46.0%	45.1%	28.8%
Forest Service	55.0%	11.0%	6.4%	33.8%	24.5%	8.4%
State Lands	1.0%	12.7%	34.6%	24.6%	18.4%	8.4%
Tribal Lands	37.7%	4.6%	20.3%	0.1%	12.1%	4.0%
City, County, Other	n/a	0.9%	0.0%	0.0%	0.3%	0.2%
Total Area (Acres)	**3,069,101**	**5,903,622**	**3,439,308**	**5,201,845**	**17,613,876**	**2,286,279,509**

Federal Land Payments to Counties

According the Profile of Federal Land Payments (Headwaters Economics, 2013j), federal land payments are distributed to state and local governments by the geography of origin. State and local government cannot tax federally owned lands the way they would if the land were privately owned. Therefore there are a number of federal programs that exist to compensate county governments for the presence of federal lands. These programs can represent a significant portion of local government revenue in rural counties with large federal land holdings (i.e., the four-county area), or based on the permitted use.

There are two main methods that Forest Service uses to pay counties: Payments in Lieu of Taxes (PILT), and Forest Service Revenue Sharing. Payments are funded by federal appropriations (e.g., PILT) and from receipts received by federal agencies from activities on federal public lands (e.g., timber, grazing, and minerals). The PILT payments compensate county governments for nontaxable federal lands within their borders. PILT is based on a maximum per-acre payment reduced by the sum of all revenue sharing payments and subject to a population cap. Forest

[71] Additional information about benchmark indicators for the four-county area in relationship to national values can be found in Appendix A of the Socioeconomic Report as part of the project record.

Service Revenue Sharing is a payment based on Forest Service receipts and must be used for county roads and local schools. Payments include the *Secure Rural Schools and Community Self-Determination Act*.

Over the past 25 years, Forest Service revenue sharing payments stayed relatively consistent, ranging from approximately $75,000 to $2,200,000, until 2008 when the payments spiked to approximately $7,860,000 (Figure 37). In 2012, the Forest Service revenue sharing payment was approximately $5,520,000. The Payments in Lieu of Taxes have mirrored the trend of the Forest Service revenue sharing payments over the past 25 years, but are often nearly two to three times greater.

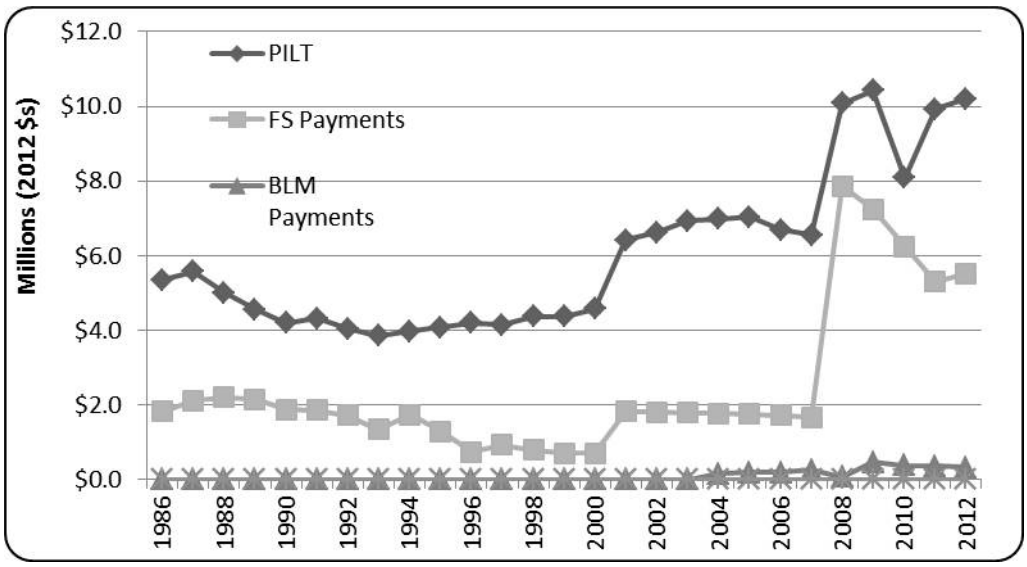


Figure 37: Components of Federal Land Payments per Fiscal Year for the Four-County Area

As shown in Table 48, in fiscal year (FY) 2012 PILT and Forest Service Payments still provide almost all the Federal Payments to the counties (Headwaters Economics, 2013j). These payments are also well above the national average for the four-county area and Maricopa County in particular. In FY 2012, PILT made up the largest percent of federal land payments in four-county-county area (63.6 percent), and U.S. Fish and Wildlife Services (USFWS) Refuge Payments and Federal Mineral Royalties made up the smallest (0 percent).

Table 48: Components of Federal Land Payments to State/Local Governments, FY 2012

Percentage of Total by County	Gila County	Maricopa County	Pinal County	Yavapai County	All Four Counties	U.S.
PILT	63.5%	80.3%	70.1%	51.7%	63.6%	13.5%
Forest Service Payments	36.4%	14.5%	25.7%	47.1%	34.4%	11.1%
BLM Payments	0.1%	5.2%	4.2%	1.2%	2.0%	2.2%
USFWS Refuge Payments	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

Percentage of Total by County	Gila County	Maricopa County	Pinal County	Yavapai County	All Four Counties	U.S.
Federal Mineral Royalties	0.0%	0.0%	0.0%	0.0%	0.0%	73.2%
Total ($)	**5,152,217**	**3,490,585**	**1,635,784**	**5,774,114**	**16,052,701**	**2,902,317,025**

As a federal land management agency, the Forest Service's revenue sharing programs are intended to offset the loss of tax revenue to counties that would normally be collected if the land ownership was state, county, city, or private. The Forest Service 25 Percent Fund, established in 1908, shares revenue generated from the sale of commodities produced on public land with the county where the activities take place (Headwaters Economics, 2013j). Twenty-five percent of the value of public land receipts are distributed directly to counties and must be used to fund roads and schools. States determine how to allocate receipts between these two local services. In addition, the *Secure Rural Schools and Community Self-Determination Act of 2000*, or *Public Law 106-393*, was enacted in fiscal year 2001 and provides five years of transitional assistance to rural counties affected by the decline in revenue from timber harvests on federal lands. The Act was reauthorized for a single year in 2007, again in 2008 for a period of four years, and again in 2012 for one year.

County governments can incur a number of costs associated with activities that take place on federal public lands within their boundaries (Headwaters Economics, 2013j). For example, counties must maintain county roads used by logging trucks and recreational traffic traveling to and from federal lands, and they must pay for law enforcement and emergency services associated with public lands. Several federal land payment programs, particularly those from the Forest Service, are specifically targeted to help pay for these costs. These programs include:

- Unrestricted: Consist of (1) PILT, (2) U.S. Fish and Wildlife Service Refuge Revenue Sharing, and (3) any distributions of federal mineral royalties from the state government.
- Restricted--County Roads: Consist of (1) *Secure Rural Schools and Community Self-Determination Act* (SRS) Title I, (2) Forest Service 25 Percent Fund, (3) Forest Service Owl payments (between 1993 and 2000 only), and (4) Forest Grasslands. Federal law mandates payments be used for county roads and public schools. Each state determines how to split funds between the two services.
- Restricted--Special County Projects: Consist of (1) SRS Title III funds that are distributed to county government for use on specific projects, such as Firewise Communities projects, reimbursement for emergency services provided on federal land, and developing community wildfire protection plans.

From 1986 to 2012, unrestricted federal payments grew from approximately $5,356,000 to $10,236,000 (Headwaters Economics, 2013j) (Figure 38). During that same time period, federal land payments restricted to county roads grew increased approximately 143 percent.

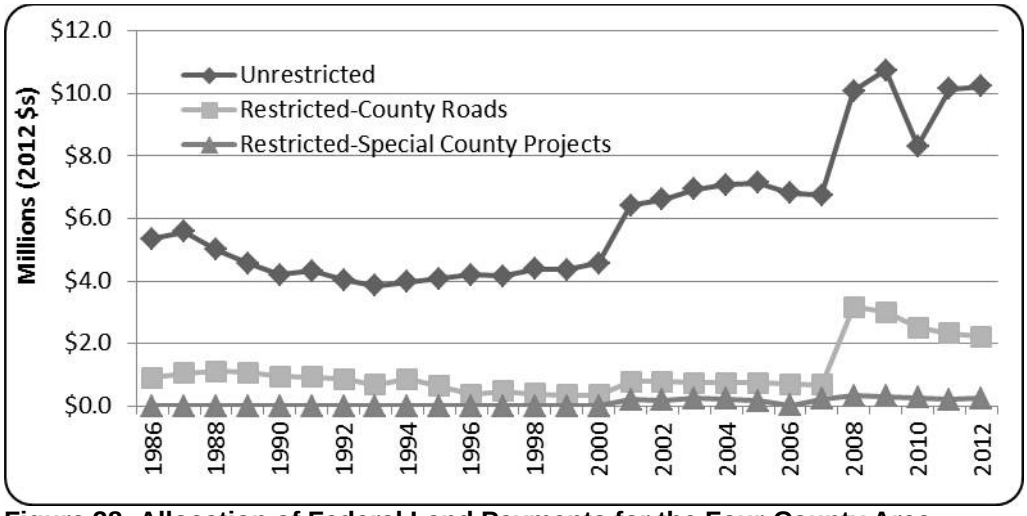


Figure 38: Allocation of Federal Land Payments for the Four-County Area

Four County Area Major Economic Sectors

Table 49 shows the changes in employment by industry between 1990 and 2000 and between 2001 and 2011 for the four-county area (Headwaters Economics, 2013a). Of the industries listed in the tables, agriculture, mining, manufacturing (including forest products), and government employment are traditionally sectors that are associated to Forest Service management. In addition for this analysis, travel and tourism will be included.

Table 49: Changes in Employment by Industry

Employment Sector	2001-2011	1990-2000
Total Employment	15.5%	52.3%
Nonservices related	-23.3%	41.6%
Farm	25.1%	8.4%
Forestry, fishing, and related activities*	-4.5%	62.2%
Mining (including fossil fuels)	65.8%	-25.3%
Construction	-25.6%	99.6%
Manufacturing^	-24.9%	17.0%
Services related	24.8%	61.5%
Utilities	5.7%	54.1%†
Wholesale trade	3.5%	49.7%
Retail trade	12.6%	47.5%
Transportation and warehousing	12.5%	---
Information	-24.8%	n/a
Finance and insurance‡	31.4%	68.6%

Employment Sector	2001-2011	1990-2000
Real estate and rental and leasing	67.9%	---
Services	---	70.7%
Professional and technical services	24.9%	---
Management of companies/enterprises	34.9%	---
Administrative and waste services	8.2%	---
Educational services	137.5%	---
Health care and social assistance	59.1%	---
Arts, entertainment, and recreation	34.3%	---
Accommodation and food services	16.5%	---
Other, except public administration	15.5%	---
Government	15.6%	23.0%

*Was called "agricultural services, forestry, fishing and other" in the 1990-2000 data.
^Was called "Manufacturing (including forest products)" in the 1990-2000 data.

Influence of Agriculture

Figure 39 shows that within the four-county area, agriculture, specifically farming, makes up less than one percent (0.4) of the total employment by industry (Headwaters Economics, 2013d). Additionally, in 2011 Pinal County had the largest percent (6.9) of total county earnings from farming, while Gila County had the smallest percent, with a deficit of approximately 0.2 percent (Headwaters Economics, 2013d).

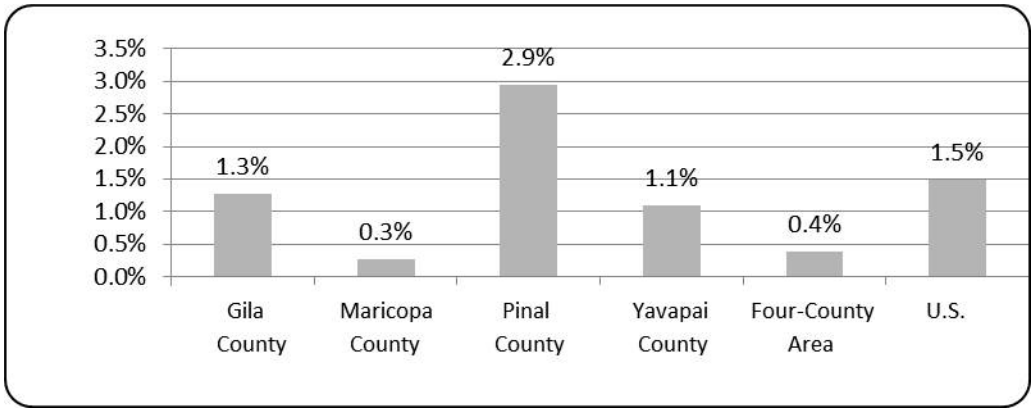


Figure 39: Employment Related to Farming as a Percent of Total Employment, 2011

Currently, there are about 100 grazing allotments on the Tonto National Forest. In some instances, a permittee may possess permits for multiple allotments. With the existing county data available, it is difficult to determine the relationship of the Tonto National Forest permitted agriculture uses to those for the four-county area.

For most of the forest, motor vehicles are essential to perform range management work. Use of ATVs, UTVs and full-sized 4X4 vehicles enable access to remote areas of rangeland and facilitate transport of tools used in range monitoring. Motor vehicles are also used by permittees to

transport livestock, build improvements, and monitor range condition. Motor vehicle use for range management activities is addressed in the individual permits issued to the permittee and are not anticipated to be effected by this travel management decision.

Influence of Mining

Figure 40 shows that within the four-county area, mining makes up less than one percent (0.31) of the total employment by industry (Headwaters Economics, 2013e). In 1998, mining represented 0.61 percent of the total employment for the four-county area; by 2011 mining employment decreased by nearly 50 percent (Headwaters Economics, 2013e).

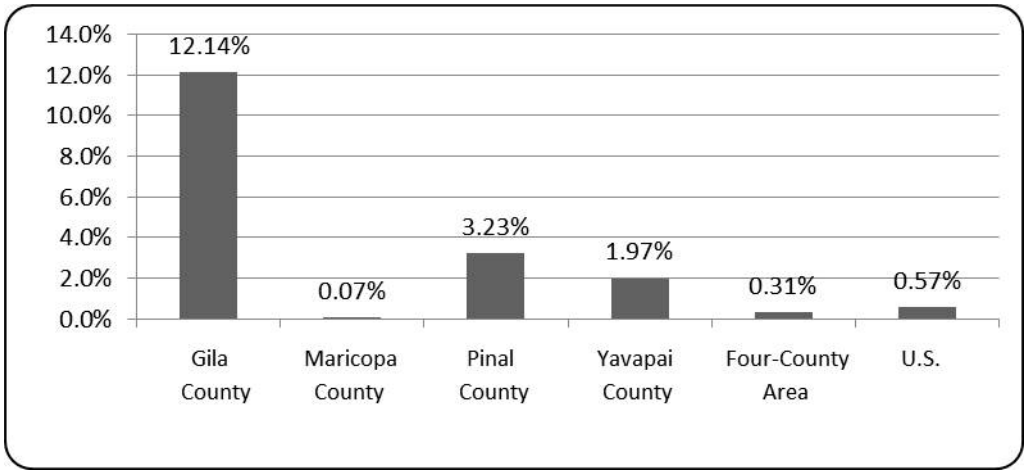


Figure 40: Employment Related to Mining as a Percent of Total Employment, 2011

There are currently four active and approved mines in operation on the Tonto National Forest, all within the Globe District. In addition, there are several hundred inactive mines across the forest. With the existing county data available, it is difficult to determine the relationship of the active mines on the Tonto National Forest to the information available for the four-county area for this activity.

In addition, if, at any point, an inactive mine is proposed to become active, the motorized accessibility would be analyzed separately for that project. Forest Service Manual, chapter 2813.14 describes the rights of access to a claim. “The right of reasonable access for purposes of prospecting, locating, and mining is provided by statute. Such access must be in accordance with the rules and regulations of the Forest Service. However, the rules and regulations may not be applied so as to prevent lawful mineral activities or to cause undue hardship on bona fide prospectors and miners.”

Motor vehicle use for mining activities is addressed separate from this project and are not anticipated to be effected by this travel management decision.

Influence of Forest Service Products

Figure 41 shows that within the four-county area, timber makes up less than one percent (0.31) of the total employment by industry, nearly half of the national average (Headwaters Economics, 2013g). In 1998, timber represented 0.72 percent of the total employment for the four-county

area; by 2011 timber employment decreased by more than 50 percent (Headwaters Economics, 2013g).

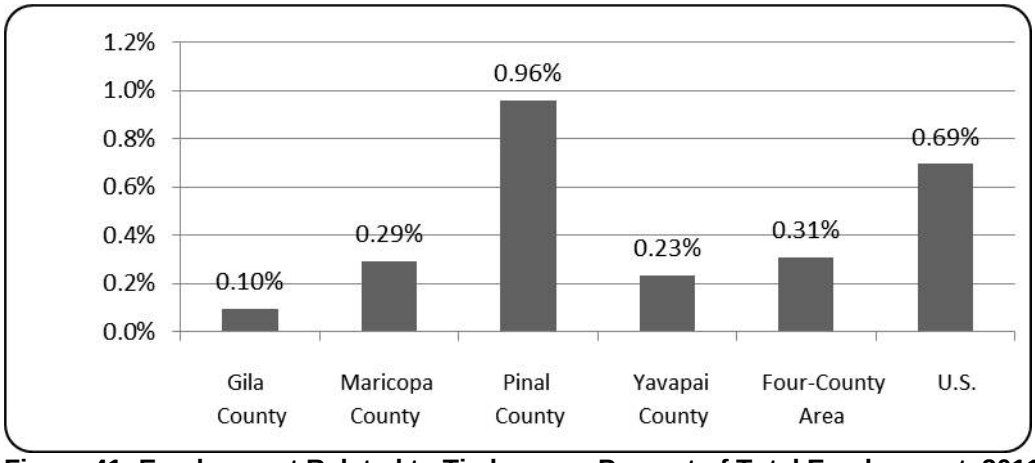


Figure 41: Employment Related to Timber as a Percent of Total Employment, 2011

Timber is one National Forest product that has the potential to affect county incomes. In fiscal year 2012, approximately 6,300 CCF (hundred cubic feet) of timber were harvested from the Tonto National Forest (resulting in approximately $51,000 in revenues). In addition, permits are issued for wood products, including fuelwood and Christmas trees. Christmas tree permits are sold each year through Big 5 Sporting Goods. In 2013, 950 permits were made available to the public for $15 each. Permits for personal-use firewood are sold at each district office. As of 2013, permits were $10 per cord, with a minimum of 2 cords. Permits allow collection of all species of tree that are dead and down and for standing dead juniper and cypress.

Influence of Government Employment

Government employment is often an important component of the overall mix of jobs in a town or county (Headwaters Economics, 2013f). This can be especially true of rural economies. Changes in government employment tend to track population trends. Local government often accounts for the majority of job growth in the government sector as additional services are demanded by a growing population. In the four-county area, government employment makes up approximately 11 percent of the total employment, similar to the national average of approximately 14 percent (Headwaters Economics, 2013f) (Table 50). In 1970, government jobs represented approximately 17 percent of total employment for the four-county area (Headwaters Economics, 2013f).

Table 50: Government Employment for 2011 by County, including Four-County Area and U.S.

Land Ownership	Gila County	Maricopa County	Pinal County	Yavapai County	Four County Area	U.S.
Government	23.6%	10.4%	27.5%	13.9%	11.2%	13.8%
Federal	2.3%	0.9%	2.4%	1.8%	1.0%	1.7%
Military	0.5%	0.6%	1.1%	0.6%	0.6%	1.2%
State and Local	20.8%	8.8%	24.1%	11.5%	9.5%	11.0%

Land Ownership	Gila County	Maricopa County	Pinal County	Yavapai County	Four County Area	U.S.
Private Sector	75.1%	89.4%	69.5%	85.0%	88.5%	84.7%
Total Employment	**21,367**	**2,180,128**	**75,214**	**79,564**	**2,356,273**	**175,834,700**

Influence of Travel and Tourism

Public lands can play a role in stimulating local employment by providing opportunities for recreation (Headwaters Economics, 2013i). Communities adjacent to public lands can benefit economically from visitors who spend money in hotels, restaurants, gift shops, and elsewhere. In addition, some migrants to communities with high levels of environmental and recreational amenities visit first as tourists and then return permanently with their families and businesses. Public lands can therefore also stimulate growth in nontourism sectors via in-migration. In the four-county area, travel and tourism make up approximately 17 percent of the total for private industry employment (Headwaters Economics, 2013i). From 1998 to 2011, industries associated with travel and tourism in the four-county increased by approximately 19 percent; during that same time period, nontravel and tourism industries in the four-county area increased by approximately 15 percent (Headwaters Economics, 2013i).

On the Tonto National Forest, there are currently 130 outfitting and guiding services with active special use permits that mostly focus on recreation opportunities. These services include hiking groups, motor vehicle tours, river access shuttles, rock climbing, and fishing and hunting guides. Most of these services depend on access of forest roads and motorized routes to provide the opportunity that they receive payment for.

In terms of the contribution associated with game and nongame management, it was estimated that nearly 58 million dollars came from hunting, fishing, and wildlife viewing[72]. However, based on the United States Census data aggregated by country, it is not possible to determine which counties directly benefited from this contribution.

Economic Contributions Associated with Motor Vehicle Use

In July 2006, the Arizona Motor Vehicle Division reported that approximately 230,000 all-terrain vehicles and cycles were titled or registered in Arizona. OHV decal sales for calendar year 2011 indicate that 481,823 vehicles less than 1,800 pounds were registered (Arizona State Parks, 2013). These figures do not include untitled OHVs, out of state visitors, or other OHVs that recreate in Arizona.

Sales of off-highway motorcycles and all-terrain vehicles (ATVs) in Arizona grew steadily from 1995 (a total of 3,518 motorcycles and 1,605 ATVs) to 2006 (a total of 10,189 motorcycles and 4,449 ATVs), resulting in a 623 percent increase (Arizona State Parks, 2009). In addition, the popularity of side-by-side vehicles (i.e., recreational off-highway vehicles, also called utility terrain vehicles) increased yearly since its introduction in 2001; by 2008, side by side vehicle sales surpassed ATV sales in Maricopa County (Arizona State Parks, 2009).

[72] For more information, see the Game and Nongame section of this chapter.

Environmental Justice

In 1994, President Clinton issued *Executive Order 12898*. This order mandates that all federal agencies analyze the potential for their actions to disproportionately affect minority and low-income populations. The Council on Environmental Quality (CEQ) issued supplemental guidance to assist agencies' compliance (CEQ 1997). The CEQ suggests the following criteria for identifying potential Environmental Justice populations:

- "Minority population: Minority populations should be identified where either: (a) the minority population of the affected area exceeds 50 percent or (b) the minority population percentage of the affected area is meaningfully greater than the minority population percentage in the general population or other appropriate unit of geographic analysis..."
- "Low-income population: Low-income populations in an affected area should be identified with the annual statistical poverty thresholds from the Bureau of the Census' Current Population Reports, Series P-60 on Income and Poverty. In identifying low-income populations, agencies may consider as a community either a group of individuals living in geographic proximity to one another, or a set of individuals (such as migrant workers or Native Americans[73]), where either type of group experiences common conditions of environmental exposure or effect."

Table 51 shows the distribution for race and ethnicity for the four-county area, along with visitors to the Tonto National Forest. In terms of the percentage of Hispanics or Latinos, their forest visitation representation is over half that of the four-county area. For the percentage of Blacks or African Americans, their forest visitation representation is nearly half that of the four-county area. For American Indians, Asians, and Native Hawaiians/Pacific Islanders, their forest visitation representation is greater to the Tonto National Forest than that of the four-county area as a whole.

Table 51: Distribution of Race/Ethnicity by Four-County Area and Tonto National Forest

Race	Four-County Area*	Tonto National Forest^
Hispanic or Latino (of any race)	28.4%	13.0%
White alone	60.2%	94.8%
Black or African American alone	4.4%	2.3%
American Indian alone	2.0%	3.9%
Asian alone	3.0%	2.4%
Native Hawaiian/Pacific Is. alone	0.2%	1.1%

* Data source: Headwaters Economics, 2013c
^ Data source: NVUM, 2008

With the exception of Hispanic or Latino populations, the population size and differences between the four county area and forest visitation would not likely disproportionately affect these groups. However, based on a survey targeting Arizonans that were actively involved in outdoor recreation (Arizona State Parks, 2013), less than ten percent identified themselves as Hispanic or

[73] A complete analysis of the effects of this project on Native American Tribes can be found in the Contemporary Indian Uses section of this chapter and the Contemporary Indian Uses Report found in the project record.

Latino. Based on this information, travel management would not likely disproportionately affect this group.

Another indicator for analyzing environmental justice is related to income, specifically those that live below the poverty level. Following the Office of Management and Budget's Directive 14, the Census Bureau uses a set of income thresholds that vary by family size and composition to detect who is poor (Headwaters Economics, 2013c). If the total income for a family or an unrelated individual falls below the relevant poverty threshold, then the family or an unrelated individual is classified as being "below the poverty level" (Headwaters Economics, 2013c). Current weighted average estimates indicate that the poverty threshold for unrelated individuals is $11, 722 annually and for household ranges from $14,960 (two people) to $47, 536 (nine people or more) (U.S. Census Bureau, accessed June 28, 2013).

In 2011 Arizona, approximately 12 percent of families had an income that was below the poverty level, a number that is one percent greater than the national average (United States Census, accessed June 28, 2013). For all people in Arizona during the same time period, approximately 16 percent of the population was below the poverty level, nearly two percent higher than the national average (United States Census, accessed June 28, 2013). In terms of the four-county area, the percentage for individuals below the poverty line is nearly identical, while families below the poverty is between the average for Arizona and the nation (Headwaters Economics, 2013c) (Figure 42). However, when individual counties in the four-county area are examined independently, Gila County individuals (20.9 percent) and families (12.9 percent) below the poverty level are greater than the four-county area, Arizona, and national averages.

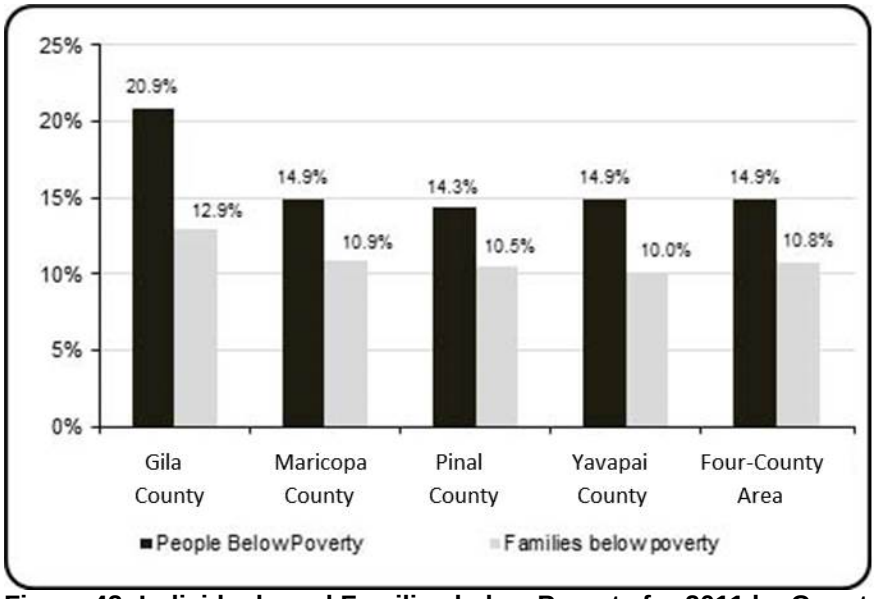


Figure 42: Individuals and Families below Poverty for 2011 by County and Four-County Area

With the exception of Gila County, poverty level differences across the four-county area, Arizona, and nationally is within one or two percent points, although the national average is the lowest in terms of percentages. The poverty rate for Gila County may merit environmental justice consideration, particularly where Forest Service management actions may affect employment, income, and other sources of economic well-being attached to the Forest.

Environmental Effects

This analysis determines the effects of travel management on the four countries adjacent to the Tonto National Forest (Gila, Maricopa, Pinal, and Yavapai) based on implementation of the four alternatives, the No Action, Alternative B, the Modified Proposed Action (Alternative C), and Alternative D. In addition, this analysis determines the effects of the four alternatives on current recreation demographics.

Assumptions and Methodology

Assumptions Associated with County Level Social Trends

Arizona's population is projected to increase, nearly doubling from 2010 to 2030[74]. With a projected population for 2030 of approximately 5.6 million people, it is reasonable to assume that visitation to the Tonto National Forest would also increase. However, without detailed information about whether or not the percentage increase for the forest would mirror that of the state is unclear.

Additionally, without a targeted survey or other forest and county specific data related to travel management, motor vehicle access on the Tonto National Forest is not likely to affect the demographics for either the four-county area or individual counties. Because of this, analysis of these demographics related to the four alternatives would likely not have any effect, either negative or positive.

Assumptions Associated with County Level Economic Trends[75]

Based on the data from Table 47, over half of the Gila County land base is within Forest Service boundaries, while a third of Yavapai County and less than 12 percent of Maricopa and Pinal Counties are within Forest Service Boundaries (Headwaters Economics, 2013h). Of the four counties adjacent to the forest, no other Forest Service land than the Tonto National Forest is within Maricopa County. A portion of the Pinal County is within the Coronado National Forest, while Yavapai and Gila Counties are within the Coconino National Forest. However, in counties where the land base is within more than one National Forest, the majority of that forest is the Tonto National Forest. Based on the data from Table 47, over half of the Gila County land base is within Forest Service boundaries, while a third of Yavapai County and less than 12 percent of Maricopa and Pinal Counties are within Forest Service Boundaries (Headwaters Economics, 2013h).

When it comes to the economic contribution of the Tonto National Forest to the Four-County Area, there are several mechanisms to take into consideration, including federal land payments, payments in lieu of taxes, and Forest Service Revenue Sharing. Figure 43 and Figure 44 show this contribution as a percentage of total general government revenue and of that percentage how much of the federal land base is represented by the Forest Service (Headwaters Economics, 2013b). For the four-county area, less than one percent of the total revenue (approximately $16 million) comes from federal lands, of which the Forest Service portion is approximately half. In Gila County, which has the greatest percentage of federal land within its land base (most of which

[74] According to U.S. Census Bureau website accessed on July 1, 2013.
[75] For more information about economic effects associated with hunting, fishing, and wildlife, see the Game and Nongame Species (Wildlife Related Recreation) section of this chapter.

is Forest Service) only 3.8 percent of the total revenue (approximately 5.2 million) comes from the federal land sources (Headwaters Economics, 2013j). Additionally, in 2012 the four-county area received approximately $2.2 million in federal land payments to offset the maintenance of country roads (Headwaters Economics, 2013j).

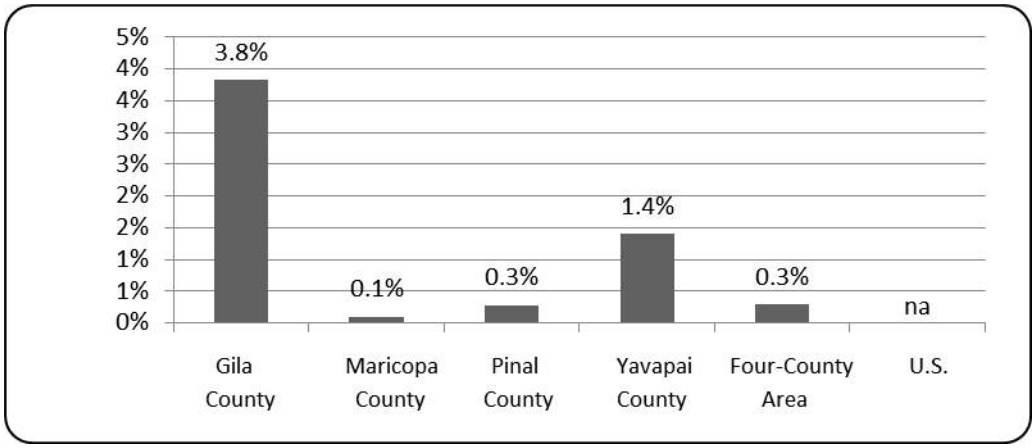


Figure 43: Federal Land Payments, Percent of Total General Government Revenue, Fiscal Year 2007

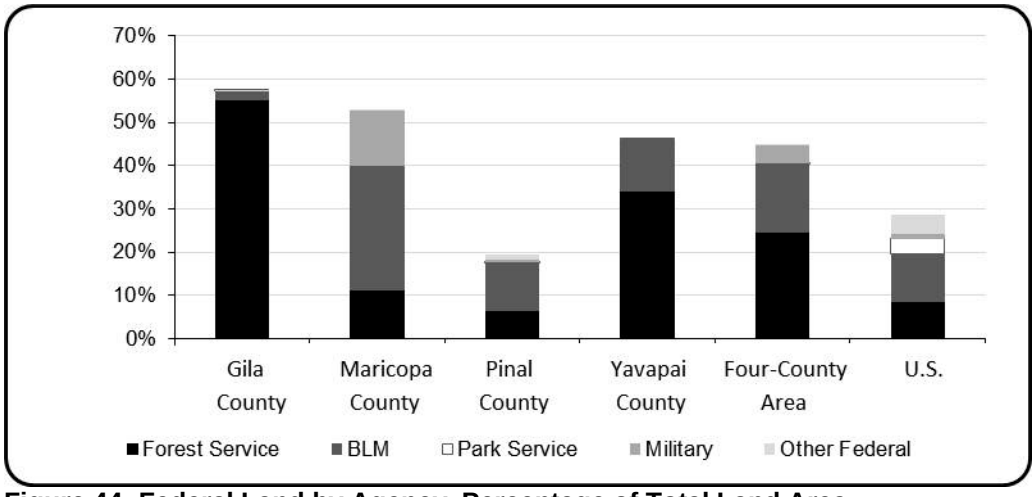


Figure 44: Federal Land by Agency, Percentage of Total Land Area

There are several other mechanisms where the federal government can contribute to counties that have federal land in their land base. The following are just a few, based on employment industries, for 2011:

- For agriculture (including farming), less than one percent of those employed are in this industry; the personal income from farm employment in the four-county area is approximately $546,000 (Headwaters Economics, 2013d).
- For mining, less than one percent of those employed are in this industry; the average annual wage for this industry in the four-county area is approximately $87,000 (Headwaters Economics, 2013e).

- For forest products related employment, less than one percent of those employed are in this industry; the average annual wage for this industry in the four-county area is approximately $38,000 (Headwaters Economics, 2013g).
- For government employment, approximately one percent of those employed are in this industry; the personal income from federal government jobs in the four-county area is approximately $2.6 million (Headwaters Economics, 2013f).

Decisions related to travel management, including the miles of roads and trails open to motor vehicle use, for the Tonto National Forest are not expected to affect any of four-county economic trends, including tourism and sales of off-road vehicles, because the contributions associated with the Tonto National Forest are such a small percent (less than five percent) of the overall economic contributions to the counties adjacent to the forest. In addition, areas open to motorized cross-country travel and permit zones are not expected to affect any of four-county economic trends, including tourism and sales of off-road vehicles, for the same reasons as roads and trails open to motor vehicle use.

It is understood that some individuals may be greatly affected by the Tonto National Forest's travel management decision, especially if that decision includes a greater decrease in motor vehicle use access. Without that level of quantitative data, the intensity that individuals may be affected cannot be determined. Because the effects of travel management on the four-county area, and even by individual counties, are so negligible, it is assumed that the four alternatives being analyzed would not have any effect, either negative or positive, on economic trends for Gila, Maricopa, Pinal, or Yavapai Counties.

Assumptions Associated with Forest Visitation Trends

As stated earlier in this document, when the 2008 NVUM survey was being administered, a total of 3,496 individuals were interviewed. To extrapolate the number of total visitors, traffic counters were also set up throughout the Tonto National Forest. As such, when the 2008 survey (U.S. Forest Service, 2012) results indicated that a certain percentage of the visitation participated in a specific activity or came from a certain area, it is not a percentage of the calculated visitors, but instead a weighted estimate to illustrate the trends associated with recreation on the Tonto National Forest.

As indicated earlier, nearly 22 percent of the Arizona population (Arizona State Parks, 2009), or approximately 1.4 million people[76] identified that they use motorized vehicle on trails for multiple purposes. Without more site specific data, it is unclear if the 22 percent would apply to the four-county area or the individual counties adjacent to the Tonto National Forest, as the data was gathered and extrapolated for the entire state. With the largest population base for the state within the Phoenix metropolitan area, there is a high probability that the percentage participating in motorized recreation on the adjacent Tonto National Forest is greater than the percentage for the state. But without data to support this observation, no analysis will be completed to determine the specific effects of travel management on the Tonto National Forest on 22 percent of the state's population.

[76] According to U.S. Census Bureau website accessed on July 1, 2013.

No Action (Alternative A)

This alternative acts as the baseline, allowing the decision maker to understand the effects of travel management if no decision is made. As indicated in Chapter 2 of the draft EIS, although there is a specific amount of roads open for motorized travel, many of the designated closed and decommissioned roads are currently open to motorized travel. Without knowing specifically which roads are currently open, the analysis for this alternative will be based on the existing road data, including the inconsistencies outlined in Chapter 2 of this document.

Direct and Indirect Effects

As indicated in the assumptions section of this report, the effects from travel management on the Tonto National Forest on the social and economic trends of the four-county area are negligible and cannot be quantitatively analyzed. As populations in Arizona increase, and the potential for a similar increase in motorized use, contributions related to motorized travel would be expected to also increase; however, since these contributions are so small to the overall economy of the four-county area, this increase is not likely to effect the overall economy or demographic distribution of the counties adjacent to the forest.

Environmental Justice Effects

In small towns within and adjacent to the Tonto National Forest, some individuals and families depend on the ability to gather fuelwood or hunt game species as a means of subsistence. These people may also be those that are below the poverty level, although there is no current data to indicate this direct connection. Often, the gathering of fuelwood and the retrieval of game requires the use of a motorized vehicle. Currently, forest users are able to get a permit to collect fuelwood in designated areas within the Globe, Payson, Pleasant, and Tonto Basin ranger districts. In addition, the Arizona Game and Fish Department issues hunting permits; and on the Payson and Pleasant Valley ranger districts cross-country travel is permitted, including for the retrieval of game. If the Tonto National Forest decides to take no action to implement the travel management rule, the ability to access these resources using a motor vehicle would continue.

There is no legal requirement to allow people with disabilities to use motor vehicles in areas that are closed to motor vehicle use. Restrictions on motor vehicle use that are applied consistently to everyone are not discriminatory. Generally, granting an exemption from designations for people with disabilities would not be consistent with the resource protection and other management objectives of travel management and would fundamentally alter the nature of the Forest Service's travel management program (*29 U.S.C. 794; 7 CFR 15e.103*).

Under section 504 of the *Rehabilitation Act of 1973*, no person with a disability can be denied participation in a Federal program that is available to all other people solely because of his or her disability. Consistent with *36 CFR 212.1, FSM 2353.05, and Title V, Section 507(c)*, of the *Americans With Disabilities Act*, wheelchairs and mobility devices, including those that are battery-powered, that are designed solely for use by a mobility-impaired person for locomotion and that are suitable for use in an indoor pedestrian area, are allowed on all National Forest System lands that are open to foot travel.

When it comes to accessing dispersed camping sites using a motor vehicle, the Payson and Pleasant Valley ranger districts allow everyone this opportunity, regardless of disability, and there is no charge to the forest visitor associated with this type of use. On the remaining four districts,

this type of access is not permitted, although there are several examples where it is currently happening on the ground based on disturbance. For those that would need motorized access (based the inability to pay for developed sites or disabilities) to disperse camp in these districts, they could be negatively affected; however, there is no site specific data to indicate the magnitude of this effect.

With the exception of dispersed camping, implementation of this alternative is not expected to affect persons with disabilities related to access and motor vehicle use.

Cumulative Effects

Because the direct and indirect effects, even those associated with environmental justice, are negligible under this alternative, and travel management decisions on adjacent forests that impact one or more counties in the four-county area still allow for fuelwood gathering and access for those persons with disabilities, there are no cumulative effects associated with social and economic trends.

Alternative B

This alternative proposes to decrease the current motorized route system by nearly half, not allow for the retrieval of game species via a motor vehicle, limits motorized access to designated dispersed camping sites, and decreases the distance off of a designated roads and motorized trails that motor vehicles can be used to gather fuelwood.

Direct and Indirect Effects

Although this alternative decreases motorized access on designated routes, does not allow the use of a motor vehicle to retrieve big game, and decreasing the area for permitted fuelwood gathering using a motor vehicle and limits dispersed camping to designated sites, the effects from travel management on the Tonto National Forest on the social and economic trends of the four-county area are negligible.

As populations in Arizona increase, and the potential for a similar increase in motorized use, contributions related to motorized travel would be expected to also increase; however, with the data available showing that these contributions are so small to the overall economy of the four-county area, this increase is not likely to effect the overall economy or demographic distribution of the counties adjacent to the forest.

Environmental Justice Effects

In this alternative, gathering fuelwood using a motorized vehicle is limited to within 300 feet of designated roads and motorized trails within fuelwood gathering permit areas. In the No Action Alternative, the area available for fuelwood gathering is approximately 1.35 million acres. In this alternative, that area is decreased to approximately 133,000 acres. As fuelwood becomes scarce in this corridor, permit holders may be unable to fuelwood[77]. For those that live below the poverty level that depend on fuelwood for household heating and cooking, this substantial decrease could

[77] A detailed account of fuelwood permits and gathering trends can be found in the Short-Term Uses and Long-Term Productivity section of this chapter.

disproportionately affect this segment of the population. Each year approximately 1,500 permits are issued and are for the Tonto National Forest only. However, no economic data is collected when a permit is issued. Thus, of the 1,500 permits issued yearly there is no way to determine what percentage of the permits is issued to those that live below the poverty line.

For those individuals that depend on game species to feed themselves or their family, potentially those living below the poverty level, this restriction could negatively affect this segment of the population if they rely on motor vehicles to retrieve game. However, since the Arizona Game and Fish Department does not currently offer a reduced rate license fee for those below the poverty level, nor do they track economic data on those applying for a license[78]; it is not possible to quantify these effects.

This alternative limits motorized access for dispersed camping to designated dispersed sites that are accessible by a designated road or motorized trail (approximately 65 acres total). This limitation has the potential to negatively affect those that would need motorized access (based the inability to pay for developed sites or disabilities) to disperse camp in these districts.

Cumulative Effects

Because the direct and indirect effects on the general population are negligible under this alternative, there are no cumulative effects associated with social and economic trends for the four-county area.

This alternative has the potential to negatively affect those below the poverty level, one of the potential Environmental Justice populations, if additional economic stressors are present, such as difficulty finding means for heating and cooking sources like personal use fuelwood. However, without detailed data that is currently not available, it is not possible to quantify this effect.

Alternative C

This alternative proposes to decrease the current motorized route system by about 1,400 miles, allow the use of a motor vehicle for the retrieval of game species up to one mile on both sides of all designated roads and motorized trails, limit the use of a motor vehicle to accesses dispersed camping up to 100 feet on both sides of all designated roads and motorized trails, and decreases the distance off of a designated roads and motorized trails that motor vehicles can be used to gather fuelwood to 300 feet on both sides of motorized routes within designated permitted areas.

Direct and Indirect Effects

Although this alternative decreases motorized access on designated routes and to retrieve big game while decreasing the area for permitted fuelwood gathering using a motor vehicle and the overall area allowed for motorized access of dispersed camping sites, the effects from travel management would be negligible. Additionally, the effect to the overall economy or demographic distribution of the counties adjacent to the forest would be the same as Alternative B.

[78] Information from Arizona Game and Fish Department hunting website accessed July 2, 2013.

Environmental Justice Effects

In this alternative, gathering fuelwood using a motorized vehicle is limited to within 300 feet on both sides of designated roads and motorized trails within fuelwood gathering permit areas, resulting in approximately 162,000 acres (a substantial decrease from the existing condition). Although the designated motorized route system would be different than Alternative B, the width of the permitted motorized gathering corridor (300 feet both sides) would be the same and would have the same effects to those that rely on fuelwood gathering for heating and cooking needs, often those that live below the poverty level.

In terms of hunting, this alternative would allow permitted hunters to retrieve elk and bear within one mile of designated roads and motorized trails. This results in approximately 1.3 million acres open, as opposed to approximately 704,000 acres open to motorized retrieval in the No Action Alternative. For those individuals that depend on game species to feed themselves or their family (potentially those living below the poverty level), this increase in motorized access could positively affect this segment of the population if they rely on motor vehicles to retrieve game. However, since the Arizona Game and Fish Department does not currently offer a reduced rate license fee for those below the poverty level, nor do they track economic data on those applying for a license[79], it is not possible to quantify these effects.

This alternative allows motorized access for dispersed within 100 feet on both sides of designated roads and motorized trails, resulting in approximately 91,000 acres open for accessing dispersed camping using a motor vehicle and allows use within all six ranger districts on the Tonto Nation Forest. This proposed change has the potential to positively affect those that would need motorized access (based the inability to pay for developed sites or disabilities) to disperse camp in these districts.

Cumulative Effects

Because the direct and indirect effects on the general population are negligible under this alternative, there are no cumulative effects associated with social and economic trends for the four-county area.

This alternative would have the same effects as Alternative B to those below the poverty level, one of the potential Environmental Justice populations, in terms of gathering fuelwood using a motor vehicle.

Alternative D

This alternative proposes to decrease the current motorized route system by about 100 miles, allow the use of a motor vehicle for the retrieval of game species up to one mile on both sides of all designated roads and motorized trails, limit the use of a motor vehicle to accesses dispersed camping up to 300 feet on both sides of all designated roads and motorized trails, and allow the use of a motor vehicles anywhere in the permitted fuelwood gathering area to gather fuelwood.

[79] Information from Arizona Game and Fish Department hunting website accessed July 2, 2013.

Direct and Indirect Effects

Although this alternative increases motorized access across the forest, the effects from travel management on the Tonto National Forest on the social and economic trends of the four-county area are negligible and cannot be quantitatively analyzed. Thus, the effects from this alternative are anticipated to be the same as those in Alternatives B and C.

Environmental Justice Effects

In this alternative, gathering fuelwood using a motorized vehicle would stay the same as the No Action Alternative, resulting in an area of approximately 1.35 million acres. Although this alternative proposes no change from the current conditions, it is not currently possible to determine if this area is large enough and distributed in such a manner as to not put undue hardship on those below the poverty level that depend on this resource to heat their house or cook their food.

In terms of hunting, this alternative would allow permitted hunters to retrieve elk, bear, and deer within the appropriate game units on the Tonto National Forest[80]. For those individuals that depend on game species to feed themselves or their family (potentially those living below the poverty level), this increase in motorized access could positively affect this segment of the population if they rely on motor vehicles to retrieve game. However, since the Arizona Game and Fish Department does not currently offer a reduced rate license fee for those below the poverty level, nor do they track economic data on those applying for a license[81]; it is not possible to quantify these effects.

This alternative allows motorized access within 300 feet on both sides of all designated roads and motorized trails, resulting in approximately 336,000 acres open for accessing dispersed camping using a motor vehicle and allows use within all six ranger districts on the Tonto nation forest. This proposed change has the potential to positively affect those that would need motorized access (based the inability to pay for developed sites or disabilities) to disperse camp in these districts.

Cumulative Effects

Because the direct and indirect effects on the general population are negligible under this alternative, there are no cumulative effects associated with social and economic trends for the four-county area.

Heritage Resources

Affected Environment

During the past 30 years, Tonto National Forest Heritage Resource specialists, permitted consultants, and volunteers, in compliance with Sections 106 and 110 of the 1966 *National Historic Preservation Act* (NHPA), as amended, have inventoried approximately 7 percent of nearly 3 million acres that comprise the Forest. Well over 10,000 archaeological, historical, and cultural sites (collectively known herein as cultural resources) have been recorded by that effort.

[80] For more information on game management units, please see the Game and Nongame Species section of this chapter.
[81] Information from Arizona Game and Fish Department hunting website accessed July 2, 2013.

Some inventoried sites date back to as much as 12,000 years ago. These sites range from simple artifact scatters to massive prehistoric masonry structures and cliff dwellings, from barely visible Apache camps to entire historic mining towns. Thirty-two of these sites have been listed on the National Register of Historic Places; thousands more have been determined to be eligible for listing. Based on the number and quality of sites recorded in this small percentage of the Forest, it is apparent that the Tonto National Forest has a very high density of significant archaeological sites overall. Many of these sites are fragile and easily damaged by motorized vehicles running over them and all of them are susceptible to further damage, and even loss, from erosion that often accompanies uncontrolled cross-country motorized travel. In addition to direct physical impacts to archaeological and historic sites, indirect impacts to the environmental context of these sites can result from both cross-country travel and high densities of established routes.

The Forest currently contains 4,959 miles of roads open to the public, many of which, owing to high archaeological and historical site density, have inevitably impacted a variety of cultural resources. Many of these roads originated in the late 19th century and have been in continual use ever since. Many more were built prior to the passage of the NHPA, and were constructed without regard for their potential impacts to archaeological or historic sites. As a result, hundreds of archaeological sites on the Tonto National Forest have been documented in the inventory as having been damaged by past road construction and maintenance activities.

In the past, looters used existing roads for access but often created roads to get to ruins by traveling cross-country, particularly as the availability of four wheel drive vehicles increased dramatically after World War II. As a result of this activity, heaviest in the period between 1950 and 1980, many ruins in proximity to roads were vandalized, looted, and damaged. Site condition in areas accessible by road prior to 1980 is generally poor, though vandalism and looting damage to sites on the Forest is not limited to these areas. Vandalism to sites within a few hundred meters of existing roads continues sporadically, but today many of those same roads, including those originally pioneered by pothunters, are used to monitor and protect those sites from further damage.

Visiting archaeological sites has long been a popular recreational pursuit on the Tonto National Forest; so that today we also protect sites for the public. The purposes for and attitudes about public visitation have changed drastically over the last few decades. Prior to enactment of the 1979 Archaeological Resources Protection Act (ARPA) and creation of the Arizona Site Stewards volunteer monitoring program in the 1980s, vandalism and looting of archaeological sites in central Arizona was widespread and highly destructive, but was considered acceptable behavior by many Americans who took pride in showing off their looted collections at county fairs and wrote articles about their adventures in the Sunday supplements and outdoor magazines. At least half the archaeological sites in the recorded inventory of the Tonto National Forest have suffered to one extent or another, some to the point of having been virtually destroyed by looters. However, since then, enforcement of the new law and its stiff penalties and the widespread use of the Site Stewards program have decreased vandalism and looting considerably, almost to the point of being eliminated, at least in heavily-visited parts of the Forest. Occasional incidents continue to be reported and investigated, but now tend to be located in more remote parts of the Forest and almost always involve casual, unfocused digging in sites that have already been extensively looted.

In 2010, a condition and damage assessment of 96 previously recorded archaeological sites on the Tonto National Forest was conducted as a volunteer project for the Forest by the Center for

Desert Archaeology (CDA) to provide data for this analysis (Hedquist and Ellison, 2010)[82]. This analysis was done to investigate the relationship between site damage and proximity to roads on the Tonto National Forest. Analysis of the amount of damage done over the last 35 years to sites within a sample of 225 sites on the Forest—all Priority Heritage Asset sites and sites with documented damage assessment—shows that there has been a dramatic reduction in the level of vandalism. Prior to 1979, estimates of damage to sites in the sample document a total volume of disturbance equivalent to approximately 24,880 cubic meters. Since that time, inspections and damage assessments for all sites in the sample document only a total of 1,884 cubic meters of disturbance. This is a 92.5 percent reduction in measurable disturbance to sites resulting from all forms of vandalism after 1979 and the passage of ARPA and the development of monitoring practices that include both regular Forest Service inspections, Site Steward monitoring, and reporting by Forest visitors.

An archaeological survey conducted in 2010 under contract for this analysis (Roberts and Mitchell, 2010), has been completed for a 50 foot (15 meters) wide corridor along 170 unclassified, unauthorized routes proposed at that time for designation as system roads and motorized trails, along with three OHV areas proposed for designation on Globe and Mesa ranger districts. This inventory was conducted under the guidelines established by the Protocol. It identified a total of 86 archaeological sites ranging in size and complexity from simple artifact scatters to multi-room masonry structures. Included were several historic sites and one or two that may reflect the use of the area by Yavapai and/or Apache in the last several centuries. But the vast majority of these sites were prehistoric, related to the Hohokam archaeological culture, and dating to various times between approximately 800 and 1400 A.D.

Desired Conditions

Management of motorized travel on the Tonto National Forest will protect and preserve cultural resources in their natural environment, provide recreational access for site visitation, provide Tribal access to traditional use and sacred sites, and reduce vandalism while facilitating law enforcement and other forms of protection.

Environmental Effects

Assumptions and Methodology

Analysis of the specific effects to cultural resources related to travel management can be complex and the potential effects may seem contradictory, and the solutions typically reflect that situation. Access can be both beneficial and detrimental depending on what aspects of preservation, management, and use of cultural resources are under discussion.

Cultural resources, depending on their nature and composition, are subject to several different types of impact from activities associated with motorized recreation and transportation. Archaeological and historic sites are irreplaceable and individually unique. Their integrity is wholly dependent on the contextual relationship between artifacts, architecture, and the environment in which they are found, something that cannot be recreated or restored once disturbed. They are also, by their very nature, previously affected, reduced by the transformation

[82] More information about this survey can be found in the Heritage Resource Report in the project record.

processes of erosion and decay from their original pristine state. Any effect to such sites, therefore, is cumulative; they can't grow back and their populations cannot rebound.

The Southwestern Region Programmatic Agreement between the Advisory Council on Historic Preservation, Forest Service Region 3 and the State Historic Preservation Officers (SHPOs) of New Mexico, Texas, Oklahoma and Arizona (1994, as amended 2003, hereafter referred to as the Programmatic Agreement) (U.S. Forest Service, R3, 2003-2007) recognizes this situation and accepts that continued use and routine maintenance of system roads and motorized trails, even where there are known historic properties or cultural resources, does not necessarily constitute an adverse effect to these properties when the proposed work is clearly confined to previously disturbed contexts and will not increase or expand this disturbance. Any maintenance or modification outside of their existing disturbance area of a road, that is the area that includes the roadbed itself and any ditches, cuts, or fills on either side (the road's "prism") or that would increase the existing disturbance or widen the prism is subject to Section 106 of the National Historic Preservation Act and so must avoid or mitigate any additional effects. Nevertheless, known instances of site damage from use or maintenance will go through the 106 process and adverse effects will be avoided or mitigated.

A nation-wide Forest Service policy for travel management route designation was developed in 2006 with the Advisory Council on Historic Preservation. In addition, Region 3 developed guidance for travel management route designation as Appendix I to the Region's Programmatic Agreement, Standard Consultation Protocol for Travel Management Route Designation (Protocol) (U.S. Forest Service, R3, 2003-2007). The protocol was developed in consultation with the New Mexico, Texas, Oklahoma and Arizona SHPOs, the Advisory Council, and tribes. The forests in Region 3 follow the protocol to meet their Section 106 responsibilities. Both the National Policy and the Region 3 protocol hold that a decision to designate a system of already existing roads and trails currently open for motor vehicle use will have little or no potential to affect historic properties. Adding new roads, trails, areas and other vehicular access-related facilities such as parking lots or pullouts and areas not already incorporated into the designated National Forest System of roads, such as unauthorized routes, may have such potential, however, and so must comply with section 106.

Assumptions Associated with Direct Effects

Direct effects to cultural resources, especially archaeological sites, can be generally defined as anything that results in removal of, displacement of, or damage to artifacts, features, or stratigraphic deposits of cultural material.

In the case of cultural resources which are considered eligible for inclusion in the National Register of Historic Places, direct effects can also include alterations of a property's setting or context. Unrestricted and uncontrolled motorized vehicular use off of National Forest System roads that result in erosion and changes in vegetative composition and density is an example of how motor vehicle use can alter the setting and geographic context of sites. In the case of traditional cultural properties and sacred places, additional considerations may include alterations in the presence or availability of particular plant species.

Direct impacts from motor vehicle recreation are generally considered to be those resulting from construction, use, and maintenance of facilities, such as campgrounds, picnic areas, roads, and parking lots. In this context, that would include the designation of an unauthorized route into a

designated road and motorized trail system and the use of that route, if it passes through the boundary of an archaeological or historic site or a traditional use or sacred place. It would also include designation of areas, which unlike designated routes, allow cross-country motorized travel.

According to the documentation in the archaeological site inventory for the Tonto, many sites on the Forest have already been damaged by OHV cross-country travel and dispersed motorized camping, evidenced by unauthorized roads, trails, tire tracks, fire rings, and trash being present. It is not known to what extent this has taken place, since such data has not been consistently recorded over the past 50 years. And sites have been inventoried by many different individuals and institutions. However, this damage is not uncommon, especially in the more popular camping areas. Some of this damage may also have come from motorized big game retrieval, but without specific evidence, a track through a site can't be differentiated between motorized big game retrieval and any other form of OHV cross-country activity.

Assumptions Associated with Indirect Effects

Indirect impacts to cultural resources come from activities associated with the use, particularly the recreational use, of roads and the activities people undertake once having accessed their destinations. The most commonly cited indirect effects are site contamination with modern trash and surface artifact displacement associated with camping and site visitation and the actual destruction of features, cultural deposits, and archaeological context by vandalism and looting. Camping and trash disposal are activities associated with roads that can be anticipated and planned for with various ways to minimize their effects.

However, as noted above, evidence and experience clearly show that the social and legal climate has changed regarding this activity since the passage of the *Archaeological Resources Protection Act* (ARPA) in 1979. What was once considered a harmless pastime or legitimate hobby is now generally recognized by the public, and by informed Forest visitors in particular, as an illegal activity that, at the very least, diminishes the legitimate recreational experience of visiting archaeological sites and robs us all of a part of our shared heritage. In this post-ARPA climate, vehicular access is not so much a threat to cultural resources as it is a means to provide that legitimate recreational experience and a tool for land managers to facilitate the protection and preservation of this resource. The primary threat from vehicular access today – much as it was prior to ARPA – is the physical damage to sites from road construction and uncontrolled cross-country travel. The relationship between roads and looting over the last century or so has been neither constant nor straightforward and simple proximity between motorized access and archaeological sites without accounting for the nature of the motorized use or the condition and characteristics of the sites is not an infallible indicator of a threat.

Reporting of vandalism, a key aspect of protection and law enforcement, is often a direct reflection of vehicular access. Forest Service personnel and volunteer monitors from the Arizona Site Stewards program report incidents at sites they can get to. Because of the change in attitudes post-ARPA, Forest visitors also report violations on a regular basis. The direct result of increased visitation and access by heritage professionals, law enforcement officers, volunteer monitors, and a concerned public has been a sharply reduced incidence of looting and vandalism of archaeological sites on the Tonto National Forest since the passage of ARPA in 1979.

And yet the attitude persists that making archaeological sites difficult to find or access is the best way to protect them, even going so far as to suggest that if it is difficult to monitor a site, then it would also be more difficult for vandals and looters to disturb that site. This is a fundamentally incorrect assumption for two reasons. First of all, pothunters and Site Stewards – the majority of our volunteer monitors, who are generally retired seniors – do not have the same levels of motivation and physical ability. Second, if it is more difficult to observe a site, it is therefore easier for a pothunter to avoid detection at that site. Limiting the ability to monitor sites merely guarantees the pothunter exclusive access to an area where he will have relative assurance of not being observed.

Indirect effects from the closing of motorized routes can include a reduction in the agency's ability to protect sites from vandalism and looting. They can also reduce accessibility of traditional resources and sacred areas to Tribal people.

Assumptions Associated with Unauthorized Routes and Decommissioned Roads

Under the Protocol, all newly designated roads, trails, corridors, and areas must comply with Section 106. If any cultural resources are found, the protection measures identified in the Protocol must be implemented to avoid or mitigate any impacts. Documentation is needed to demonstrate that either the route does not encounter any cultural resources or that any adverse effects have been resolved in compliance with section 106, just like any other ground-disturbing activity under the terms of the Programmatic Agreement. No new route can be designated or displayed on the MVUM without completing this process. Where mitigation is not feasible, the routes cannot be designated as open or included in the MVUM.

Mitigation of impacts to cultural resources resulting from the designation of motorized routes is best accomplished by avoidance. It can also be achieved by maximizing opportunities to localize recreational activities, especially those involving motor vehicle use, to those areas where cultural resources are least likely to be affected. Specific recommendations regarding particular routes will be developed upon analysis of the survey data and field inspection of site locations; routes may be realigned and relocated to avoid sites or they may, if potential impacts are too great or the terrain does not effectively allow relocation, be dropped from the proposal. Decommissioning unauthorized routes is outside the scope of this analysis and will require separate analyses and decisions.

Assumptions Associated with Areas Open to Motorized Cross-country Travel

Under the current Forest plan, the southern Ranger Districts, Cave Creek, Globe, Mesa, and Tonto Basin are closed to unrestricted cross-country motorized travel, but it is allowed on the Payson and Pleasant Valley Districts. Under the terms of the Protocol, designation of a specific area for unrestricted cross-country motorized access, like the designation of a previously unauthorized route, requires Section 106 consultation and, unless the specific exemptions under the protocol apply, must be surveyed, evaluated, and any effects to archaeological sites resolved under the protection measures established in the Protocol before they can be added to the MVUM.

Assumptions Associated with Permit Zones

There is currently only one permit zone on the Forest. Since travel in a permit zones is restricted to designated roads and by implementing the Travel Management Rule, motorized travel would only be permitted on designated roads, trails, and areas, the effects associated with permit zones will not be analyzed separate from the current and proposed motorized route system.

Assumptions Associated with Motorized Big Game Retrieval

Although specific documentation of impacts to sites due to motorized big game retrieval is not Although specific documentation of impacts to sites due to motorized big game retrieval is not readily available, it is unlikely that this activity in and of itself would have a significant effect on archaeological sites. The dispersed, short-term and non-repetitive nature of the impact, relatively few permits issued, limited duration of hunting seasons, and typically low hunter success rates on the Tonto National Forest, combined with a natural tendency to avoid riding or driving over difficult obstacles such as collapsed prehistoric masonry walls, suggests that the probability of damage to archaeological sites resulting from this activity would be low. Nevertheless, unrestricted cross-country OHV travel always has a potential for impacting archaeological sites, degrading traditional use areas, and disrupting traditional activities. Though it may be difficult to accurately quantify, authorizing or designating parameters for motorized big game retrieval may be a potential source of impact, especially where it opens up areas to legal cross-country travel that were previously restricted.

Assumptions Associated with Motorized Access for Dispersed Camping

Motorized access to dispersed camping locations, whether they are adjacent to roads and trails or located at a distance, has the same potential to impact cultural resources as any other type of cross country motorized travel. Since this seems to be a repetitive behavior as camp sites are used over and over again, this impact may be significant depending on the type of site and its environmental context. Management of motorized access to dispersed camping locations can be done in several ways: roadside parking without designated camping sites, designated camping sites with designated access routes, and designated corridors for motorized access to dispersed camping.

Roadside parking for access to dispersed campsites adjacent to roads is exempted under the Protocol and allowable under the current Plan on the northern districts where cross-country travel is currently allowed. This has been the traditional way that forest users have camped on all Districts of the Tonto National Forest. Because this activity typically takes place in heavily disturbed areas along edges of existing roads, there are few new threats to cultural resources. Nevertheless, if areas are found during routine monitoring where roadside parking is damaging cultural resources, then those areas may be designated as closed to parking if effects to cultural resources cannot be avoided or mitigated. Unauthorized routes that are to be designated can also be closed to parking, if archaeological inventory identifies the potential for impacts that cannot be resolved under the protection measures established in the Protocol.

Designated camping areas and motorized routes to access them and designated fixed distance corridors along system roads, even exempt roads, both require Section 106 consultation under the Protocol and, unless the specific exemptions under the protocol apply, must be surveyed,

evaluated, and any effects to archaeological sites resolved under the protection measures established in the Protocol before they can be added to the MVUM.

Assumptions Associated with Motor Vehicle Use for Fuelwood Gathering

Cross-country motorized travel is authorized as part of any permit to collect fuelwood, regardless of whether the District issuing is closed or open to such activity. As a permitted use, it is not considered to be in the same category as unrestricted cross-country travel and the permits include rules for motorized access into the permit areas that are designed to limit environmental damage. Also, firewood permit areas move around to prevent overuse, limiting the potential for repetitive impacts on any given permitted location. Generally, these permit areas are defined ahead of time and where cross–country travel is restricted, firewood areas may be subject to archaeological clearance, in which case it is common practice to modify permit boundaries to limit the exposure of archaeological sites to vehicular impacts. While the small numbers of permits, low potential for repetitive impacts, and limitations on access built into the permits reduce concerns for damage to archaeological sites, cross-country OHV travel always has a potential for impacting archaeological sites, degrading traditional use areas, and disrupting traditional activities.

Alternative A – Direct and Indirect Effects

Current conditions include a total of about 4,959 miles of Forest system roads open to the public and maintained for both high clearance and passenger vehicles. Cross-country motorized travel is allowed but is restricted to the higher elevation Payson and Pleasant Valley ranger districts. There are also about 672 miles of unauthorized routes that have been inventoried across the Forest, many of which are currently in use; there are also many more unauthorized routes resulting from cross-country travel than have been inventoried.

Cross-country Travel

Continued cross-country travel on Payson and Pleasant Valley ranger districts would result in continued damage to cultural resources. Enforcement of restrictions on uncontrolled motorized travel off of system roads on other ranger districts would reduce impacts to cultural resources.

Motor Vehicle Use for Big Game Retrieval

Although specific documentation of impacts to sites due to motorized big game retrieval is not readily available, it is unlikely that this activity in and of itself as currently experienced on the Forest, where cross-country travel is open on only two ranger districts, would have a significant effect on archaeological sites.

Motor Vehicle Use for Dispersed Camping

Continued vehicular access to dispersed camping on Payson and Pleasant Valley ranger districts outside the roadside zone covered by the Protocol would not reduce the potential for impacts, especially as many known dispersed camping sites are located well outside the roadside parking zone. Continued cross-country access to dispersed camping on the other districts, though not authorized, would continue to create a potential for impacts to cultural resources.

Motor Vehicle Use for Fuelwood Gathering

Cross-country travel for fuelwood gathering always has a potential for impacting archaeological sites, degrading traditional use areas, and disrupting traditional activities. The effects to archaeological sites may be mitigated somewhat by the conditions applied to all fuelwood permits, but the potential threat remains.

Alternative B – Direct and Indirect Effects

Designations of unauthorized routes and proposed cross-country areas are undertakings subject to compliance with the inventory, consultation, and protection requirements of the Protocol. Under the terms of the Protocol, before any route can be added to the MVUM, it must comply with Section 106. Any routes or areas that affect cultural resources and that have not had those effects resolved by protection measures of the Protocol would not appear on the MVUM and thus would not be open to the public.

Under this alternative, approximately 541 miles of the inventoried unauthorized routes would be closed. A total of about 50 miles of unauthorized routes would be added to the system and designated for motor vehicle use. The resulting motorized route system would total approximately 2,560 miles of designated roads and motorized trails open to the public, for a net reduction of 393 miles.

Approximately 1.96 miles (3.8 percent) of 50 foot wide corridors along those unclassified routes proposed for designation as roads or motorized trails in this alternative were inventoried by archaeological survey (Roberts and Mitchell, 2010). Since the survey was contracted, additional routes have been proposed for designation and some of the routes previously identified were dropped from consideration. Over 48 of the 50 miles of unauthorized routes proposed for designation still require inventory before they can be evaluated for addition to the MVUM. This additional archaeological survey, under the terms of the Protocol, would be phased in as funding becomes available. Of the four routes surveyed, two were encumbered by archaeological sites, the routes passing through them with varying degrees of disturbance. These routes would also be held from inclusion in the MVUM pending further analysis and the application of protective measures or they would be eliminated from the proposal if no suitable mitigation is feasible.

Areas Designated for Motor Vehicle Use

Compared to the current condition, by prohibiting travel off of designated routes and closing over 540 miles of unauthorized routes, this alternative would significantly reduce direct and indirect effects to cultural resources by restricting cross-country travel and by employing the protection measures identified in the Protocol. Any restriction or reduction of uncontrolled off-road travel would reduce impacts to cultural resources. It differs from the other alternatives primarily by closing nearly all unauthorized routes and eliminating all cross-country travel areas, including motorized big game retrieval.

In terms of the total number and nature of routes, effects on cultural resources from this alternative are significantly reduced compared to the current condition. By eliminating virtually all cross-country travel, including big game retrieval, it affords more protection to cultural resources from the direct effects of unregulated vehicular impacts than any other alternative.

Motor Vehicle Use for Big Game Retrieval

Since no motorized big game retrieval would be allowed under this alternative, there would be no effect on cultural resources.

Motor Vehicle Use for Dispersed Camping

Under this alternative, motorized access for dispersed camping would be limited to designated campsites and designated access routes. The protocol requires that any such designated areas or routes be subject to consultation and would require archaeological clearance prior to being added to the MVUM. Therefore, motorized access to dispersed camping under this alternative would have no direct effect on cultural resources.

Motor Vehicle Use for Fuelwood Gathering

Under current conditions, cross-country travel is allowed anywhere within the permit area. Under this alternative, such access is permitted only within 300 feet on both sides of designated motorized routes within the permit areas. This would reduce the potential for impacting archaeological sites, degrading traditional use areas, and disrupting traditional activities, but does not eliminate it.

Alternative C – Direct and Indirect Effects

Designations of unauthorized routes and proposed cross-country areas are undertakings subject to compliance with the inventory, consultation, and protection requirements of the Protocol. Under the terms of the Protocol, before any route can be added to the MVUM, any adverse effects the route may have on cultural resources would need to be avoided or mitigated and compliance with Section 106 documented. Any routes or areas that affect cultural resources and that have not had those effects resolved by protection measures of the Protocol would not appear on the MVUM and thus would not be open to the public.

Under this alternative, approximately 342 miles of existing unauthorized routes would be closed. A total of 330 miles of unauthorized roads and trails would be added to the system and designated for motor vehicle use. The resulting motorized route system would total about 3,570 miles of designated roads and motorized trails open to the public for a net increase from the current condition of over 617 miles, but would restrict cross-country travel to designated corridors and areas.

Approximately 124 miles (37.4 percent) of 50 foot wide corridors along those unclassified routes proposed for designation as roads or motorized trails in this alternative were inventoried by archaeological survey (Roberts and Mitchell, 2010). Since the survey was contracted additional routes have been proposed for designation and some of the routes previously identified were dropped from consideration. Approximately 206 of the 330 miles of unauthorized routes proposed for designation still require inventory before they can be evaluated for addition to the MVUM. This additional archaeological survey, under the terms of the Protocol, would be phased in as funding becomes available. Of the 117 routes surveyed, 13 were encumbered by archaeological sites, the routes passing through them with varying degrees of disturbance. These routes would also be held from inclusion in the MVUM pending further analysis and the application of protective measures or they would be eliminated from the proposal if no suitable mitigation is feasible.

The actual incidence of damage to sites identified by the survey is fairly low (only about 11 percent of the surveyed routes impacted archaeological sites), with most of the vehicular impacts associated with those routes that began as cross-country ATV and motorcycle trails but have widened over time. Since many of these routes have been in use for years, this does not suggest that their presence has led to any marked increase in vandalism. It is unlikely that designation of the proposed unauthorized routes would have a significant direct impact on cultural resources, particularly once protective measures are applied or the affected routes are dropped from consideration.

Areas Designated for Motor Vehicle Use

Under this alternative, 342 miles of unauthorized routes would be closed and cross–country travel prohibited other than limited motorized big game retrieval, and within four designated OHV areas and four "tot lots" where vehicular access would not be confined to specific routes, and cross country use would be allowed. Designated OHV areas and tot lots are subject to the same archaeological survey and clearance requirements as designated routes. Two of the tot lots have been surveyed and found to contain no cultural resources (Roberts and Mitchell, 2010; Howe and Nez, 2010); the other two remain to be inventoried. The 2010 archaeological survey (Roberts and Mitchell, 2010) examined the proposed Golf Course area and identified no cultural resources. The proposed Bartlett Lake, Roosevelt Lake, and Sycamore OHV areas have not been specifically surveyed for designation but are known to contain archaeological sites. Prior to designation, archaeological survey and additional Tribal consultation would need to be completed and the protection measures identified in the Protocol applied. Given the presence of known archaeological sites in these areas, there may well also be Tribal concerns. Therefore, it is likely that all of these areas would need to be modified and any necessary mitigation completed before their final designation and inclusion on the MVUM. Archaeological survey, under the terms of the Protocol, would be phased in as funding becomes available and areas added to subsequent versions of the MVUM as they acquire archaeological clearance.

Compared to the current condition, by prohibiting travel off of designated routes and outside of designated areas and by employing the protection measures identified in the Protocol where cross country travel would be permitted, this alternative would significantly reduce impacts to cultural resources.

Motor Vehicle Use for Big Game Retrieval

In this alternative, motorized big game retrieval would be allowed under this alternative for retrieving elk and bear within one mile of any designated motorized route, limited only by the presence of other closure orders and designated areas where motorized travel is not permitted. This would authorize limited cross-country travel on several Districts where it is currently prohibited. Specific documentation of impacts to sites due to motorized big game retrieval is not readily available and it is unlikely that this activity would have a significant effect on archaeological sites, given the low numbers of permits issued for these animals on the Forest relative to the large area involved and the short seasons in which it would take place, but the inclusion of authorized cross-country travel corridors for big game retrieval to this alternative diminishes the beneficial effect of extending the restriction of cross-country travel to the entire Forest. It allows the practice to continue on the high elevation Districts, at least within the designated corridors during elk and bear seasons, but while the overall area in acres may be reduced for the Forest as a whole, it allows limited legal cross-country travel on parts of the low

elevation Districts that were previously restricted from such use. However, none of the 1,293,178 acres proposed for inclusion in these corridors have been surveyed specifically for this purpose and conducting archaeological survey of this large an area is unfeasible since it is not possible to narrow the survey down owing to the randomness and unpredictability of the location and length of routes that might be used. It is anticipated that only about 209 legally harvested bear or elk would even be available for motorized retrieval, so the dispersed driving would be very limited. The impacts would be similar to district wide fuelwood gathering that is exempt from further Section 106 compliance under the PA. Authorization of motorized big game retrieval under this alternative would result in greater impacts to cultural resources than under Alternatives A and B, but it is not likely to be adverse.

Motor Vehicle Use for Dispersed Camping

Under Alternative C, cross-country motorized access to dispersed camping areas would be allowed within a 200 foot corridor (100 feet on each side) along all designated roads and motorized trails. Since designated corridors for dispersed camping access are areas wherein cross-country travel is allowed, they are subject to the same requirements under the Protocol as the proposed designated OHV areas. As a result, unless the specific exemptions under the protocol apply, they would not be available for inclusion on the MVUM until they have been surveyed and any necessary protective measures are applied and any mitigation is complete or they would be eliminated from the proposal if no suitable mitigation is feasible. Application of the Protocol would prevent impacts to cultural resources under this Alternative, but at present, none of the 91,391 acres proposed for inclusion in these corridors have been surveyed specifically for this purpose. Any additional archaeological survey, under the terms of the Protocol, would be phased in as funding becomes available and corridors would be added to subsequent versions of the MVUM as they acquire archaeological clearance.

Motor Vehicle Use for Fuelwood Gathering

Under this alternative, cross-country travel is permitted only within 300 feet of a designated motorized route within the permitted area, as in Alternative B. This would reduce the potential for impacting archaeological sites, degrading traditional use areas, and disrupting traditional activities, relative to the current condition, but does not eliminate it. Therefore, the potential for impact to cultural resources is the same as for Alternative B.

Alternative D – Direct and Indirect Effects

Designations of unauthorized routes and proposed cross-country areas are undertakings subject to compliance with the inventory, consultation, and protection requirements of the Protocol. Under the terms of the Protocol, before any route can be added to the MVUM, it must comply with Section 106, and any impacts that route may have inflicted on cultural resources would need to be avoided or mitigated. Any routes or areas that affect cultural resources and that have not had those effects resolved by protection measures of the Protocol would not appear on the MVUM and thus would not be open to the public.

Under this alternative, approximately 88 miles of existing unauthorized routes would be closed. A total of 584 miles of unauthorized roads and trails would be added to the system and designated for motor vehicle use. The resulting motorized route system would total about 4,867 miles of Forest system roads and motorized trails open to the public for a net increase from the current

condition of over 1915 miles, but would restrict cross-country travel to designated routes and areas.

Approximately 120 miles (20.5 percent) of 50 foot wide corridors along those unclassified routes proposed for designation as roads or motorized trails in this alternative were inventoried by archaeological survey (Roberts and Mitchell, 2010). Since the survey was contracted additional routes have been proposed for designation and some of the routes previously identified were dropped from consideration. Approximately 464 of the 584 miles of unauthorized routes proposed for designation still require inventory before they can be evaluated for addition to the MVUM. This additional archaeological survey, under the terms of the Protocol, would be phased in as funding becomes available. Of the 115 routes surveyed, 18 were encumbered by archaeological sites, the routes passing through them with varying degrees of disturbance. These routes would also be held from inclusion in the MVUM pending further analysis and the application of protective measures or they would be eliminated from the proposal if no suitable mitigation is feasible.

The actual incidence of damage to sites identified by the survey is fairly low (less than 16 percent of the surveyed routes impacted archaeological sites), with most of the vehicular impacts associated with those routes that began as cross-country ATV and motorcycle trails. Although many of these routes have been in use for years, there is no indication that their presence has led to any marked increase in vandalism. It is unlikely that designation of the proposed unauthorized routes would have a significant direct impact on cultural resources, particularly once protective measures are applied or the affected routes are dropped from consideration.

Compared to the current condition, by prohibiting travel off of designated routes, this alternative would reduce direct and indirect effects to cultural resources by restricting cross-country travel and by employing the protection measures identified in the Protocol, similar to the Proposed Action. It differs from Alternatives B and C primarily by increasing the number of motorized routes open to the public, and by opening up motorized big game retrieval to additional species and hunting units. As with the Proposed Action, any restriction or reduction of uncontrolled off-road travel would reduce impacts to cultural resources.

Areas Designated for Motor Vehicle Use

Under this alternative, 88 miles of unauthorized routes would be closed and cross–country travel prohibited other than that associated with CHAMP permits and within four designated OHV areas and four “tot lots” where vehicular access would not be confined to specific routes, and cross country use would be allowed. Designated OHV areas and tot lots are subject to the same archaeological survey and clearance requirements as designated routes. Two of the tot lots have been surveyed and found to contain no cultural resources (Roberts and Mitchell, 2010; Howe and Nez, 2010); the other two remain to be inventoried. The 2010 archaeological survey (Roberts and Mitchell, 2010) examined the proposed Golf Course area and identified no cultural resources. The proposed Bartlett Lake, Roosevelt Lake, and Sycamore OHV areas have not been specifically surveyed for designation but are known to contain archaeological sites. Prior to designation, archaeological survey and additional Tribal consultation would need to be completed and the protection measures identified in the Protocol applied. Given the presence of known archaeological sites in these areas, there may well also be Tribal concerns. Therefore, it is likely that all of these areas would need to be modified and any necessary mitigation completed before their final designation and inclusion on the MVUM. Archaeological survey, under the terms of the

Protocol, would be phased in as funding becomes available and areas added to subsequent versions of the MVUM as they acquire archaeological clearance.

Compared to the current condition, by prohibiting travel off of designated routes and outside of designated areas and by employing the protection measures identified in the Protocol, this alternative would significantly reduce impacts to cultural resources.

Motor Vehicle Use for Big Game Retrieval

In this alternative, motorized big game retrieval would be allowed under this alternative for retrieving mule deer, whitetail deer, elk, and bear and would be limited to a specified corridor along all designated motorized routes, one mile on both sides. It would also be limited by the presence of other closure orders and designated areas where motorized travel is not permitted. This would authorize cross-country travel on several ranger districts where it is currently prohibited. Specific documentation of impacts to sites due to motorized big game retrieval is not readily available and while it is unlikely that this activity would have a significant effect on archaeological sites. It is anticipated that only about 550 legally harvested bear, elk, whitetail deer, and mule deer would even be available for motorized retrieval, so the dispersed driving would be very limited. However, the authorization of cross-country travel for big game retrieval under this alternative would diminish the beneficial effect of extending the restriction of cross-country travel to the entire Forest. It allows the practice to continue on the high elevation ranger districts, at least during hunting seasons, and it allows limited legal cross-country travel on parts of the low elevation ranger districts that were previously restricted from such use. Overall, 2,068,208 acres would be open to potential impacts to cultural resources resulting from cross-country motorized travel. Since conducting archaeological survey of this large an area is unfeasible and since it is not possible to narrow the survey down owing to the randomness and unpredictability of the location and length of routes that might be used, authorization of motorized big game retrieval under this Alternative would result in greater impacts to cultural resources than any of the other alternatives. The impacts would be similar to district wide fuelwood gathering that is exempt from further Section 106 compliance under the PA. Authorization of motorized big game retrieval under this Alternative is not likely to adversely affect cultural resources.

Motor Vehicle Use for Dispersed Camping

Under Alternative D, cross-country motorized access to dispersed camping areas would be allowed within a 600 foot corridor (300 feet on each side) along all designated roads and motorized trails. Since designated corridors for dispersed camping access are areas wherein cross-country travel is allowed, they are subject to the same requirements under the Protocol as the proposed designated OHV areas. As a result, unless the specific exemptions under the protocol apply, they would not be available for inclusion on the MVUM until they have been surveyed and any necessary protective measures are applied and any mitigation is complete or they would be eliminated from the proposal if no suitable mitigation is feasible. Application of the Protocol would prevent impacts to cultural resources under this alternative, but at present, none of the 336,038 acres proposed for inclusion in these corridors have been surveyed specifically for this purpose. Any additional archaeological survey, under the terms of the Protocol, would be phased in as funding becomes available and corridors added to subsequent versions of the MVUM as they acquire archaeological clearance.

Motor Vehicle Use for Fuelwood Gathering

Under this alternative, cross-country travel is throughout the permitted area, and is no change from the current condition. Therefore, the potential for impact to cultural resources is the same as for alternative A.

Summary of Direct and Indirect Effects for Action Alternatives

All action alternatives examined here involve decommissioning some existing routes. Alternatives B, C, and D all include designation of previously unauthorized routes and Alternatives C and D further include authorization of areas where motorized use would be concentrated and not restricted to specific routes.

Toward this end, a number of unauthorized routes identified for inclusion in what was then the proposed action were surveyed in 2010 (Roberts and Mitchell, 2010). The results of this survey are summarized in Table 52.

Table 52: Archaeological Survey of Unauthorized Routes by Alternative

	Alternative B	Alternative C	Alternative D
Miles of Unclassified Routes Proposed for Designation	50.44	330.16	583.52
Number of Unauthorized Routes Inventoried by Archaeological Survey	3	117	115
Number of Miles Inventoried by Archaeological Survey	1.96	123.59	120.04
Number of Archaeological Sites Identified	3	21	29
Number of Routes Encumbered by Sites	1	13	18
Percentage of Surveyed Routes with Archaeological Sites	33	11.1	15.6
Number of Miles Remaining to be Surveyed	48.48	206.57	463.48

All three of these alternatives (Alternatives A, B, and C) significantly reduce direct and indirect impacts to cultural resources by restricting cross-country travel and by employing the guidelines and protection measures identified in the Protocol to the designation of motorized routes and areas and the designation of areas and corridors for dispersed camping. Indeed, given that mere proximity of motorized access does not appear to create an impact to cultural resources on the Tonto National Forest. Employment of the Protocol generally makes all three alternatives roughly the same in that regard. It is not expected that the implementation of any of the action alternatives would result in significant adverse effects to cultural resources. Indeed, all of the action alternatives provided, except the No Action Alternative, greatly reduce the risk of damages to cultural resources from uncontrolled and unauthorized cross-country motorized travel.

There is some potential for unforeseeable indirect impact to sites (e.g., illegal vandalism and looting) in all of the action alternatives, but increasing the number of routes available for access also increases the potential for protection based on efficient monitoring of archaeological site condition and law enforcement and increases potential for access to traditional resources and

places of significance for Tribes. Alternative D provides the most access and thus the greater potential for efficient site monitoring and Tribal access.

While the potential for impact to cultural resources resulting from motorized big game retrieval is relatively low, by expanding the area open to cross-country travel for that purpose beyond what is feasible to protect under the Protocol, alternatives C and D (especially alternative D) diminish the beneficial effect of extending the restriction of cross-country travel to the entire Forest. In this regard, alternative B is the only one that would eliminate those potential impacts.

Likewise, by restricting motorized access for firewood gathering, alternatives B and C would reduce – though not eliminate – the potential for impacts to cultural resources from that activity, while alternative D would not.

Cumulative Effects Associated with the Action Alternatives

As previously noted, archaeological sites are, by their very nature, previously affected, reduced by the transformation processes of erosion and decay from their original pristine state. Any effect to such sites, therefore, is cumulative. Many have also been affected by historic and recent human activity, including management activities undertaken by the Forest and resource use and extraction projects undertaken prior to the implementation of Section 106 of the National Historic Preservation Act. Such actions that are known to have affected archaeological sites on the Tonto National Forest include unrestricted livestock grazing, timber harvesting, road and trail construction, and a wide variety of recreational activities. There were also the decades of essentially unrestricted vandalism and looting. All of these activities have the potential to cause permanent damage to the structures, artifacts, and cultural deposits making up archaeological sites and many sites on the Forest bear the scars of damages resulting from them. The effects of unrestricted motorized cross-country travel have already been discussed in the current conditions.

Reasonably foreseeable actions that can affect cultural and historical and Tribally significant resources represent a continuation of the land use practices of the past: livestock grazing, fuels reduction and forest thinning, timber harvesting, mining, watershed improvements, recreation management (obliteration of social trails and dispersed campsites, construction and designation of trails and campsites), lands special use permits (new issuances and maintenance on existing structures), new road construction, and personal use activities such as fuelwood harvesting that often entail cross-country vehicular access. While these activities can directly and indirectly affect cultural and historical and Tribally significant resources as well as cause destruction or modification to their environmental contexts, these actions must comply with Section 106. They are planned to minimize (and when possible, to eliminate) effects to these properties and have measures designed to mitigate disturbance that may occur from project implementation. By applying the standards and protection measures in the Protocol and by eliminating cross-country travel and reducing the amount of land subject to ground disturbance by vehicle use, it is not expected that any of these alternatives would result in any significant increase in cumulative effects associated with cultural resources on the Tonto National Forest.

Illegal activities such as vandalism and looting by pothunters clearly affect cultural and historical and tribally significant resources. Since these activities are illegal, they cannot be predicted and so in the strictest sense are not foreseeable in any legal sense. Still, since these activities have been reduced in recent years but not entirely eradicated, they can be expected to continue at some level. They can be reduced by monitoring and law enforcement.

Contemporary Indian Uses

Affected Environment

Tonto National Forest contains many plant and animal species, water sources, minerals, and geographic landforms and places that have significance to contemporary Indian Tribes for their use in traditional economies, religious practices, or in Tribal and clan histories. For as much as three centuries prior to its being established in 1905, the Forest was part of a large area in central Arizona that was occupied by Apache and Yavapai peoples , some of whom continued to live on Forest land well into the Twentieth century. It also retains significance through affiliation into prehistory for the O'odham, Hopi, and Zuni peoples.

An important consideration in the fulfillment of the Forest Service mission is the trust relationship the Forest Service has with these Tribes and the potential impact Forest Service policy, program, and project decisions may have on them. The Tonto National Forest recognizes that several area Tribes have cultural ties to and knowledge about lands now managed by the Forest Service. Many tribal members regularly visit the Forest to harvest traditional plant resources such as acorns, piñon nuts, arroweed, agave, willow, cattails, and beargrass, to collect medicinal plants and mineral resources for personal and ceremonial uses, and to collect firewood. Currently, the policy regarding collection of forest resources by tribal members (in compliance with *American Indian Religious Freedom Act* and the U.S. Forest Service Policy toward American Indians and Alaska Natives (FSM 1563)) for the Tonto National Forest requires a permit for timber products to be used for religious purposes. No Forest Service permit is required for the collecting of minor quantities of medicinal and ceremonial plants, acorns, pinyon nuts, agave, tree boughs, water, plants, quartz crystals, other minerals, soil, invertebrate fossil remains, rocks, trees less than six feet in height, and other food plants or other resources for personal (noncommercial) use in traditional cultural or religious activities, provided those activities are in accordance with *Executive Order 13007*, applicable laws and regulations, and Forest Service policies regarding special forest products and botanical products. For tribal members, no artifacts, cultural items, or remains may be collected from archaeological sites without an ARPA (*Archaeological Resources Protection Act*) permit from the Forest. Motorized use for the gathering of forest resources is only allowed on designated roads. Tribal members also regularly visit traditional cultural properties and sacred sites on the Forest. Resource collection and site visitation are both activities that require motorized access, particularly for Tribal elders, who make up the majority of traditional practitioners. They use the existing roads to get to the places they want to go, but tend to conduct their activities on foot once they get there. The Tribes, therefore, wish to maintain access but also desire to protect important natural and cultural resources from damage, including that caused by construction of new roads and trails and by uncontrolled cross-country motor vehicle traffic. Roads on Cave Creek, Mesa, Globe, Payson, and Pleasant Valley ranger districts also access Tribal land adjacent to the Forest. Some of these roads are used by Tribal members to get to their activity areas on the Forest. Access to and maintenance of these roads is, therefore, a significant concern. On the other hand, these same roads are also seen as providing opportunities for trespass onto tribal lands by non-Tribal members.

Some general locations used by Tribal members to conduct traditional activities such as plant collection and religious rites on the Forest are known, but no specific locations were identified during scoping that are within the Area of Potential Effect (APE) for this analysis (the Tonto National Forest). It is known, however, that Tribal members utilize both designated and

unauthorized routes to access traditional resource gathering areas and sacred sites on the Tonto National Forest, typically using trucks and other full-size vehicles rather than ATVs or motorcycles. Such small scale, low frequency uses of the Forest by Tribal members are currently allowed without requiring permits except for the removal of timber products. Access is allowed on any designated road and timber removal permits do not authorize cross-country travel except on those Districts where it is currently allowed.

The Tribal consultation process for the Forest is guided through a variety of laws, Executive Orders, Memorandums, and case law. Some of those laws include: *National Historic Preservation Act* (NHPA) and subsequent amendments, *Archaeological Resources Protection Act, American Indian Religious Freedom Act, National Environmental Policy Act*, and *National Forest Management Act*. Executive Orders and Memorandum include 1994 Government-to-Government Relations with Native American Tribal Governments, *E.O. 13007 Accommodations of Sacred Sites*, and *E.O. 12898 Environmental Justice*. Depending on the specific location of an undertaking, the Forest routinely consults with between nine and thirteen Tribes regarding proposed projects and management policies. These Tribes are: Apache (San Carlos Apache Tribe, Tonto Apache Tribe, White Mountain Apache Tribe, and Yavapai-Apache Nation), Four Southern Tribes (Salt River Pima-Maricopa Indian Community, Gila River Indian Community, Ak Chin Indian Community, and the Tohono O'odham Nation), Hopi Tribe, Pueblo of Zuni, and Yavapai (Yavapai-Prescott Tribe, Fort McDowell Yavapai Nation, and Yavapai-Apache Nation). Consultation with these Tribes regarding Travel Management is ongoing[83].

Environmental Effects

Significant Tribal places, whether sacred sites or resource collecting areas, or places associated with clan or Tribal histories, are located throughout the Forest, though their specific locations often remain known only to Tribal members. They can be archaeological or historic sites, landmarks, or simply places on the landscape used for traditional activities. Like other heritage resources, they are subject to several different types of impact from activities associated with recreation and Forest management that can degrade their physical characteristics and disrupt the traditional or religious activities associated with them. Like archaeological and historic sites, they are irreplaceable and individually unique and their integrity is wholly dependent on the contextual relationship with the environment in which they are found, something that cannot be recreated or restored once disturbed. They are also, by their very nature, previously affected, reduced by any activities taking place there since the land passed out of their control. Any effect to such sites, therefore, is cumulative.

Direct effects to sacred sites and traditional use areas can be generally defined as anything that results in removal of, displacement of, or damage to the physical features of the landscape associated with the traditional use or alteration of the vegetative composition of the area in the case of collecting sites.

Unrestricted motorized travel off of system roads has the potential to create those kinds of impacts, as does the repeated use of unauthorized routes. Direct effects can include alterations of a sacred site's setting or context, sometimes to the extent that they are no longer recognizable and the various landscape features associated with their past use cannot be relocated. Unrestricted and

[83] Additional information specific to Tribal consultations regarding Travel Management can be found in the project record.

uncontrolled off-highway vehicular use that results in erosion and changes in vegetative composition and density or alterations in the presence or availability of particular plant species can be especially damaging to traditional collecting areas.

Indirect impacts can include modern trash contamination and the introduction of noise and light pollution from vehicles and camping and the presence of people and activities that may be seen as degrading to either the sacred nature of a place or to the experience of conducting traditional activities there. They can also take the form of conflicts with other recreational or economic uses that affect the ability of traditional practitioners to access these areas.

Assumptions and Methodology

Areas Designated for Motor Vehicle Use

Under the current Forest plan, the southern Ranger Districts (Cave Creek, Globe, Mesa, and Tonto Basin) are closed to unrestricted cross-country motorized travel, but it is allowed on the Payson and Pleasant Valley Districts. Under the terms of the Protocol, designation of a specific area for unrestricted cross-country motorized access, like the designation of a previously unauthorized route, requires Section 106 consultation and unless the specific exemptions in the protocol apply, they must be surveyed, evaluated, and any effects to cultural resources, including traditional cultural properties, resolved under the protection measures established in the Protocol before they can be added to the MVUM. As new information is developed, the MVUM may be modified to reflect any resolution of conflicts. Similar guidance for contemporary use areas, although not specifically covered by the protocol, is appropriate.

Permit Zones

There is currently only one permit zone on the Forest. Permit zones would create no impacts to contemporary Indian uses. As such, they will not be analyzed further.

Motor Vehicle Use for Big Game Retrieval

Although specific documentation of impacts to contemporary Indian uses due to motorized big game retrieval is not readily available, it is unlikely that this activity in and of itself would have a significant effect on them. The short-term, dispersed, and non-repetitive nature of the impact, relatively few permits issued, limited duration of hunting seasons, and typically low hunter success rates on the Tonto National Forest combine to minimize the potential for conflict[84]. Nevertheless, unrestricted cross-country OHV travel always has a potential degrading traditional use areas and disrupting traditional activities. Though it may be difficult to accurately quantify, authorizing or designating parameters for motorized big game retrieval may be a potential source of impact, especially where it opens up areas to legal cross-country travel that were previously restricted.

Motor Vehicle Use for Dispersed Camping

Restriction of motorized access to dispersed camping locations, whether they are adjacent to roads and motorized trails or located at a distance, has the potential to impact contemporary

[84] For more information about hunting and the quantitative data associated with it on the Tonto National Forest, see the Game and Nongame section of this chapter.

Indian uses since they often require short or long term stays on the Forest and typically do not involve formal campgrounds. Roadside parking for access to dispersed campsites adjacent to roads is exempted under the Protocol and allowable under the current Plan on the northern ranger districts where cross-country travel is currently allowed. This has been the traditional way that Tribal traditional practitioner users have camped on all ranger districts of the Tonto National Forest, but camp areas may also extend some distance from the roads in order to secure a degree of seclusion.

Motor Vehicle Use for Fuelwood Gathering

Cross-country motorized travel is authorized as part of any permit to collect fuelwood. As a permitted use, it is not considered to be in the same category as unrestricted cross-country travel and the permits include rules for motorized access into the permit areas that are designed to limit environmental damage. Also, fuelwood permit areas rotate to prevent overuse, limiting the potential for repetitive impacts on any given permitted location. Generally, these permit areas are defined ahead of time and where cross–country travel is restricted, fuelwood areas may be subject to archaeological clearance, in which case it is common practice to modify permit boundaries to limit the exposure of archaeological sites to vehicular impacts. While the small numbers of permits, low potential for repetitive impacts, and limitations on access built into the permits reduce concerns for damage to archaeological sites, cross-country OHV travel always has a potential for impacting archaeological sites, degrading traditional use areas, and disrupting traditional activities.

Alternative A – Direct and Indirect Effects

Access to areas that Tribal people have historically visited would not change under this alternative. Most traditional practitioners typically use full size vehicles rather than ATVs or motorcycles and occasionally drive them cross-country to facilitate resource gathering, especially for elderly traditional practitioners. Tribal people needing access to collection sites necessary for ceremonial activities and other traditional uses would continue to have the same opportunities to drive to collection sites. No Tribe has indicated that the current road system is inadequate for their continued use of the Forest. Retaining the road system as it is currently used would provide necessary access and allow traditional practitioners to continue to use the area. However, uncontrolled off-road travel would result in continued damage to sacred sites and traditional use areas and may inhibit or limit the use of such areas. Likewise, the potential remains for trespass onto reservation lands from uncontrolled and unclassified routes. While not strictly speaking a matter of contemporary Indian use, reduction of trespass onto adjacent reservations was identified in consultation as a concern.

Cross-country Travel

Continued cross-country travel on Payson and Pleasant Valley ranger districts would result in continued potential for impacting significant Tribal sites, degrading traditional use areas, and disrupting traditional activities. Enforcement of restrictions on uncontrolled motorized travel off of system roads on other ranger districts would reduce impacts to contemporary Indian uses.

Motor Vehicle Use for Big Game Retrieval

Although specific documentation of impacts to contemporary Indian uses due to motorized big game retrieval is not readily available, it is unlikely that this activity in and of itself as currently experienced on the Forest, where cross-country travel is open on only two ranger districts, would have a significant effect on contemporary Indian uses.

Motor Vehicle Use for Dispersed Camping

Continued vehicular access to dispersed camping will not impact the practice of contemporary Indian uses that involves camping. On the other hand, continued cross-country access to dispersed camping areas would continue to create a potential for impacts to sacred sites and traditional use areas.

Motor Vehicle Use for Fuelwood Gathering

Cross-country OHV travel for fuelwood gathering always has a potential for adversely affecting significant Tribal sites, degrading traditional use areas, and disrupting traditional activities. These effects may be mitigated somewhat by the conditions applied to all fuelwood permits, but the potential threat remains.

Alternative B – Direct and Indirect Effects

Under this alternative, approximately 541 miles of the inventoried unauthorized routes would not be added to the system. A total of about 50 miles of unauthorized routes would be added to the system and designated for motor vehicle use. The resulting motorized route system would total approximately 2,560 miles of Forest system roads and motorized trails open to the public, for a net reduction of 393 miles. It would also virtually eliminate all cross-country travel.

This alternative greatly reduces potential direct and indirect effects to sacred sites and traditional use areas by restricting cross-country travel, reducing the potential for trespass onto Tribal lands, and by employing protection measures to cultural resources and traditional cultural properties identified in the Protocol for any newly designated route, corridor, or area. In particular, restricting motorized vehicles to designated routes would reduce the potential for disruption of traditional cultural or religious activities. However, closure of some existing roads may reduce opportunities for traditional resource gathering, visitation of sacred and other traditionally significant sites and increase the need for non-motorized travel for elderly traditional practitioners. Likewise, eliminating cross-country motorized travel on the northern ranger districts and reducing the number of available motorized access routes throughout the Forest by closing unauthorized existing roads could reduce access to areas that Tribal people have historically visited without restraint. Tribal people needing motorized access to collection sites necessary for ceremonial activities and other traditional uses related to subsistence (e.g. medicinal or food plant gathering or fuelwood cutting) may have fewer opportunities to drive to collection sites with this alternative. Activities authorized under separate NEPA decisions, such as traditional gatherings, may be exempted from restrictions of the Travel Management Rule and an authorized Forest officer can allow specific limited-use authorization for cross-country motorized access or use of a road closed to the public under the terms of a permit for collection of such products.

Areas Designated for Motor Vehicle Use

Any restriction or reduction of uncontrolled off-road travel would reduce impacts to sacred sites and traditional use areas and would reduce the potential for trespass onto Tribal lands but may restrict motorized access for the practice of contemporary Indian uses.

Motor Vehicle Use for Big Game Retrieval

Since no motorized big game retrieval would be allowed under this alternative, there would be no effect on contemporary Indian uses. By excluding motorized big game retrieval, this alternative also further reduces potential direct and indirect effects to sacred sites and traditional use areas and reduces the potential for trespass onto Tribal lands.

Motor Vehicle Use for Dispersed Camping

Under this alternative, motorized access for dispersed camping would be limited to designated campsites and designated access routes. Assuming that these designated camping areas and routes include those used by Tribal people for access to sacred sites and traditional use areas, motorized access to dispersed camping under this alternative would have no direct effect on contemporary Indian uses. Of course, if the designated campsites and access routes did not include those traditionally used by Tribal members for these purposes, then this alternative could be seen as limiting Tribal Access.

Motor Vehicle Use for Fuelwood Gathering

Under current conditions, cross-country travel is allowed anywhere within the fuelwood permit area. Under this alternative, such access is permitted only within 300 feet on both sides of a designated motorized route within the permit area. This would reduce the potential for impacting sacred sites, degrading traditional use areas, and disrupting traditional activities, but does not eliminate it.

Alternative C – Direct and Indirect Effects

Under this alternative, approximately 342 miles of existing unauthorized routes would not be added to the system. A total of 330 miles of unauthorized roads and trails would be added to the system and designated for motor vehicle use. The resulting motorized route system would total about 3,570 miles of Forest system roads and motorized trails open to the public for a net increase from the current condition of over 617 miles, but would restrict cross-country travel to designated routes and areas.

This alternative greatly reduces potential direct and indirect effects to sacred sites and traditional use areas by restricting cross-country travel, reducing the potential for trespass onto Tribal lands, and by employing protection measures identified in the Protocol for any newly designated route, corridor, or area. In particular, restricting motorized vehicles to designated routes would reduce the potential for disruption of traditional cultural or religious activities. By the same token, particularly regarding motorized big game retrieval, it also has greater potential than Alternative B for motorized recreational activities to disrupt traditional activities sensitive to public intrusion and increases the potential for trespass onto tribal land.

Areas Designated for Motor Vehicle Use

Under this alternative, cross–country travel would be limited for motorized big game retrieval and within four designated OHV areas and four "tot lots" where vehicular access would not be confined to specific routes, and cross country use would be allowed. Designated OHV areas are subject to the same archaeological survey, Tribal consultation, and clearance requirements as designated routes. Two of the tot lots have been surveyed and found to contain no cultural resources (Roberts and Mitchell, 2010; Howe and Nez, 2010); the other two remain to be inventoried. The 2010 archaeological survey (Roberts and Mitchell, 2010) examined the proposed Golf Course area and identified no cultural resources. The proposed Bartlett Lake, Roosevelt Lake, and Sycamore OHV areas have not been specifically surveyed for designation but are known to contain archaeological sites; their status relative to the presence of sacred sites or traditional use areas is currently unknown. Prior to designation, compliance with section 106 and additional Tribal consultation would be completed and the protection measures identified in the Protocol applied to historic properties. Given the presence of known archaeological sites in these areas, there may well also be Tribal concerns. Therefore, it is likely that all of these areas would need to be modified and any necessary mitigation completed before their final designation and inclusion on the MVUM. Archaeological survey and ethnohistoric research (depending on the outcome of Tribal consultation) would be phased in as funding becomes available and areas added to subsequent versions of the MVUM as they acquire archaeological clearance.

Compared to the current condition, by prohibiting travel off of designated routes and outside of designated areas and by employing the protection measures similar to those identified in the Protocol, this alternative would significantly reduce potential impacts to sacred sites and traditional use areas. However, closure of some existing roads may reduce opportunities for resource gathering, visitation of sacred and other traditionally significant sites and increase the need for non-motorized travel for elderly traditional practitioners. Likewise, eliminating cross-country travel on the northern ranger districts and reducing the number of available access routes throughout the Forest by closing unauthorized routes could reduce access to areas that Tribal people have historically visited without restraint. Tribal people needing access to collection sites necessary for ceremonial activities and other traditional uses related to subsistence (e.g. medicinal or food plant gathering or fuelwood cutting) may have fewer opportunities to drive to collection sites with this alternative. This alternative does, however, provide more access opportunities for contemporary Indian uses than Alternative B

Motor Vehicle Use for Big Game Retrieval

Under this alternative, motorized big game retrieval would be allowed under this alternative for retrieving elk and bear within one mile on both sides of any designated motorized route, limited only by the presence of other closure orders and designated areas where motorized travel is not permitted. This would authorize cross-country travel on several districts where it is currently prohibited. Specific documentation of impacts to sites due to motorized big game retrieval is not readily available and it is unlikely that this activity would have a significant effect on contemporary Indian uses, given the low numbers of permits issued for these animals on the Forest relative to the large area involved and the short seasons in which it would take place. However, allowing motorized big game retrieval, even under the limited conditions of this alternative, does increase the potential for direct and indirect effects to sacred sites and traditional use areas and increases the potential for trespass onto Tribal lands above what would be associated with Alternative B, though it is unknown to what degree.

None of the 1,293,178 acres proposed for inclusion in these corridors have been surveyed specifically for this purpose and conducting archaeological or ethnohistoric survey of this large an area is unfeasible and since it is not possible to narrow the survey down owing to the randomness and unpredictability of the location and length of routes that might be used. The impacts would be similar to district wide fuelwood gathering that is exempt from further Section 106 compliance under the PA. Authorization of motorized big game retrieval under this alternative would result in greater potential impacts to contemporary Indian uses than under Alternatives A and B, but it is not likely to be adverse.

Motor Vehicle Use for Dispersed Camping

Under Alternative C cross-country motorized access to dispersed camping areas would be allowed within a 200 foot corridor (100 feet on each side) along all designated roads and motorized trails. Assuming that these designated camping corridors include those campsites used by Tribal people for access to sacred sites and traditional use areas, motorized access to dispersed camping under this alternative would have no direct effect on contemporary Indian uses. Since designated corridors for dispersed camping access are areas wherein cross-country travel is allowed, they are subject to the same requirements under the Protocol as the proposed designated OHV areas. As a result, , unless the specific exemptions under the protocol apply, they would not be available for inclusion on the MVUM until archaeological surveys and Tribal consultations have been done and any necessary protective measures are applied and any mitigation is complete or they would be eliminated from the proposal if no suitable mitigation is feasible. Application of the Protocol would prevent impacts to sacred sites and traditional use areas under this Alternative, but at present, none of the 91,391 acres proposed for inclusion in these corridors have been surveyed specifically for this purpose. Any archaeological survey and ethnohistoric research (depending on the outcome of Tribal consultation), would be phased in as funding becomes available and corridors would be added to subsequent versions of the MVUM as they acquire archaeological clearance.

Motor Vehicle Use for Fuelwood Gathering

Under this alternative, cross-country travel is permitted only within 300 feet on both sides of a designated motorized route, as in alternative B. This would reduce the potential for impacting sacred sites, degrading traditional use areas, and disrupting traditional activities, relative to the current condition, but does not eliminate it. Therefore, the potential for impact to cultural resources is the same as for alternative B.

Alternative D – Direct and Indirect Effects

Under this alternative, approximately 88 miles of existing unauthorized routes would not be added to the system. A total of 584 miles of unauthorized roads and trails would be added to the system and designated for motor vehicle use. The resulting motorized route system would total about 4,867 miles of Forest system roads and motorized trails open to the public for a net increase from the current condition of over 1,915 miles, but would restrict cross-country travel to designated routes and areas.

Except for the expansion of motorized big game retrieval, this alternative greatly reduces potential direct and indirect effects to sacred sites and traditional use areas by restricting cross-country travel, reducing the potential for trespass onto Tribal lands, and by employing protection

measures identified in the Protocol for any newly designated route, corridor, or area. In particular, restricting motorized vehicles to designated routes would reduce the potential for disruption of traditional cultural or religious activities.

This alternative, with the most proposed motorized access, particularly in regards to roads, would have the most potential for providing Tribal access to sacred and traditional places and resources. By the same token, it also has greater potential than the other alternatives for motorized recreational activities to disrupt traditional activities sensitive to public intrusion and increases the potential for trespass onto tribal land. Otherwise, effects on Tribal access to traditional resources and significant places under this alternative would be similar to what they would be under the alternative C.

Areas Designated for Motor Vehicle Use

Under this alternative, cross–country travel prohibited other than that associated with CHAMP permits and within four designated OHV areas and four "tot lots" where vehicular access would not be confined to specific routes, and cross country use would be allowed. Designated OHV areas and tot lots are subject to the same archaeological survey and clearance requirements as designated routes. Designated OHV areas are subject to the same archaeological survey, Tribal consultation, and clearance requirements as designated routes. Two of the tot lots have been surveyed and found to contain no cultural resources (Roberts and Mitchell, 2010; Howe and Nez, 2010); the other two remain to be inventoried. The 2010 archaeological survey (Roberts and Mitchell, 2010) examined the proposed Golf Course area and identified no cultural resources. The proposed Bartlett Lake, Roosevelt Lake, and Sycamore OHV areas have not been specifically surveyed for designation but are known to contain archaeological sites; their status relative to the presence of sacred sites or traditional use areas is currently unknown. Prior to designation, archaeological survey and additional Tribal consultation must be completed and the protection measures identified in the Protocol applied. Given the presence of known archaeological sites in these areas, there may well also be Tribal concerns. Therefore, it is likely that all of these areas would need to be modified and any necessary mitigation completed before their final designation and inclusion on the MVUM. Archaeological survey and ethnohistoric research (depending on the outcome of Tribal consultation), would be phased in as funding becomes available and areas added to subsequent versions of the MVUM as they acquire archaeological clearance.

Compared to the current condition, by prohibiting travel off of designated routes and outside of designated areas and by employing protection measures similar to those identified in the Protocol, this alternative would significantly reduce potential impacts to sacred sites and traditional use areas. However, closure of some existing roads may reduce opportunities for resource gathering, visitation of sacred and other traditionally significant sites and increase the need for non-motorized travel for elderly traditional practitioners. Likewise, eliminating cross-country travel on the northern ranger districts and reducing the number of available access routes throughout the Forest by closing unauthorized routes could reduce motorized access to areas that Tribal people have historically visited without restraint. Tribal people needing motorized access to collection sites necessary for ceremonial activities and other traditional uses related to subsistence (e.g. medicinal or food plant gathering or fuelwood cutting) may have fewer opportunities to drive to collection sites with this alternative. This alternative does, however, provide more access opportunities for contemporary Indian uses than Alternatives B and C.

Motor Vehicle Use for Big Game Retrieval

In addition to that associated with CHAMP permits, motorized big game retrieval would be allowed under this alternative for retrieving mule deer, whitetail deer, elk, and bear and would not be limited to a specified corridor along designated motorized routes. It would be limited only by the presence of other closure orders and designated areas where motorized travel is not permitted. This would authorize cross-country travel on several districts where it is currently prohibited. Specific documentation of impacts to sites due to motorized big game retrieval is not readily available and it is unlikely that this activity would have a significant effect on contemporary Indian uses, given the low numbers of permits issued for these animals on the Forest relative to the large area involved and the short seasons in which it would take place, but allowing essentially unrestricted motorized big game retrieval, does increase the potential for direct and indirect effects to sacred sites and traditional use areas and increases the potential for trespass onto Tribal lands well above even the elevated levels that would be associated with Alternative C, though it is unknown to what degree.

Since none of the 2,248,279 acres open to potential impacts have been surveyed specifically for this purpose and conducting archaeological or ethnohistoric survey of this large an area is unfeasible and since it is not possible to narrow the survey down owing to the randomness and unpredictability of the location and length of routes that might be used, authorization of motorized big game retrieval under this alternative would result in the greatest potential impacts to contemporary Indian uses than under alternatives A, B and C.

Motor Vehicle Use for Dispersed Camping

Under Alternative D, cross-country motorized access to dispersed camping areas would be allowed within a 600 foot corridor (300 feet on each side) along all designated roads and motorized trails. Assuming that these designated camping corridors include those campsites used by Tribal people for access to sacred sites and traditional use areas, motorized access to dispersed camping under this alternative would have no direct effect on contemporary Indian uses. Since designated corridors for dispersed camping access are areas wherein cross-country travel is allowed, they are subject to the same requirements under the Protocol as the proposed designated OHV areas. As a result, unless the specific exemptions under the protocol apply, they would not be available for inclusion on the MVUM until archaeological surveys and Tribal consultations have been done and any necessary protective measures are applied and any mitigation is complete or they would be eliminated from the proposal if no suitable mitigation is feasible. At present, none of the 336,038 acres proposed for inclusion in these corridors have been surveyed specifically for this purpose. Archaeological survey and ethnohistoric research (depending on the outcome of Tribal consultation), would be phased in as funding becomes available and corridors would be added to subsequent versions of the MVUM as they acquire archaeological clearance.

Motor Vehicle Use for Fuelwood Gathering

Under this alternative, cross-country travel is throughout the permitted area, as in alternative A. Therefore, the potential for impacting sacred sites, degrading traditional use areas, and disrupting traditional activities is the same as for alternative A.

Cumulative Effects Associated with Action Alternatives

From the time that control of those lands now comprising the Tonto National Forest left tribal hands, there has been a diminution of the number and quality of significant Tribal places throughout the Forest. Everything from homestead entry patents and land exchanges to mine development to reservoir inundation has reduced Tribal access to the land and its sacred and traditional places and in many cases destroyed them. Forest management activities from timber harvesting to livestock grazing to campground construction to road building have altered the landscape and vegetation of many of these areas, often eliminating the specific resources on which traditional uses were focused. Recreational use has had similar effects and introduced new conflicts with other user groups and further restrictions of access to traditional places. As these areas continue to disappear under reservoirs, into open pit mines, and under highways and campgrounds, preservation of those remaining areas and continued vehicular access to them, particularly for elder practitioners, has become paramount. Foreseeable Forest uses would differ little in the future from what they have been in the past and so would continue to reduce the number and quality of these places, though a renewed Forest Service commitment to protect sacred sites and traditional use areas may mitigate these losses somewhat. Therefore, despite the potential reduction in physical destruction under Alternatives B, C, and D and the potential improvement of access under some circumstances, the cumulative effect under all alternatives is the continued reduction or restriction of motorized access to traditional lands and resources by Tribal members.

Game and Nongame Species (Wildlife Related Recreation)

For the purposes of this analysis, wildlife related recreation is defined as hunting, fishing, and wildlife viewing. Wildlife related recreation is inherently tied to motorized recreation as all three activities generally require the use of motor vehicles to reach destinations to participate in each respective activity. This is especially true on public lands, like the Tonto National Forest. Motorized vehicles often provide the means for hunters and anglers to reach hunting or fishing areas as designated by the Arizona Game and Fish Department. Therefore, the use of motorized vehicles by wildlife related recreationists often contributes significantly to the ability of the Arizona Game and Fish Department to meet wildlife conservation objectives.

Specifically, the use of hunting as a wildlife management and wildlife conservation tool arose out of a movement, led by prominent hunters near the turn of the last century, to stop over-exploitation of wildlife by market hunters and the desire to have wildlife accessible to all people. Since then, hunters have contributed billions of dollars to wildlife management that benefit countless wildlife species. These funds support wildlife management agencies, which manage all wildlife species, not just those that are hunted. This unique and successful conservation paradigm is responsible for supporting a wide variety of conservation activities, including law enforcement, research, information and education, habitat management and acquisition, as well as wildlife population restoration and management. The importance of hunting to wildlife conservation in the broad sense is not tied simply to population control. Game populations are renewable resources that literally pay the bills for a far-reaching, comprehensive system of sustainable wildlife conservation that has proven itself superior to any other widely implemented model. (Heffelfinger, 2013; Mahoney, 2013)

Affected Environment

Arizona is rich in biological diversity, ranking among the top five states in the nation for the number of native bird, reptile, and mammal species, and in the top ten for overall diversity of vertebrates. Some nonnative species were established intentionally, as is the case with rainbow trout; while others such as quagga mussels have arrived as unwelcome or invasive species, and yet others appeared as they expanded their range. A few species, like the Mexican gray wolf and the California condor, were extirpated in Arizona, but have been reestablished through reintroduction programs (Arizona Game and Fish Department, 2012b).

The Tonto National Forest mirrors the state with rich biological diversity and numerous wildlife species which include 310 bird, 94 mammal, 55 reptile, 14 amphibian, 16 native fish, 28 nonnative fish, 3 special status invertebrates, and 24 special status plant species[85]. Wildlife habitat within the Tonto National Forest can be divided into 15 wildlife habitat categories based on the Tonto National Forest's potential natural vegetation layer. These habitat types represent wildlife habitat that can generally be associated with particular wildlife species and include Colorado Plateau grassland, cottonwood willow riparian forest, desert communities, interior chaparral, Madrean encinal woodland, Madrean pine-oak woodland, mixed broadleaf deciduous riparian forest, mixed conifer with aspen, piñon-juniper chaparral, piñon-juniper grassland, ponderosa pine – mild, semidesert grassland, sparsely vegetated, urban and other, and water. Wildlife habitat descriptions and acreages are listed in the wildlife specialist report of the project record.

Tonto National Forest, managed under the principles of multiple uses, plays a vital role in Arizona by supporting crucial wildlife habitat and maintaining Arizona's wildlife heritage as well as providing significant opportunities for wildlife related recreation and associated economic effects of such. Motorized access to public lands is important in maintaining funding for Arizona Game and Fish Department programs that support wildlife conservation. The Arizona Game and Fish Department uses hunting as a wildlife management tool and depends on hunting and angling access to public lands to meet identified objectives. Hunting on the Tonto National Forest includes: nine out of Arizona's ten big game species (elk, mule deer, whitetail deer, bighorn sheep, pronghorn, bear, mountain lion, turkey, and javelina), small game (quail, dove, tree squirrel, rabbit, and migratory birds), fur bearing mammals, and predatory mammals. The Tonto National Forest contains rivers, lakes, creeks, and ponds that offer diverse fishing opportunities. These include six out of eight of central Arizona's major reservoirs, two trout hatcheries, numerous coldwater fish streams, and two of Arizona's major rivers (Verde River and Salt River). Furthermore, the biological diversity of the Tonto National Forest provides a wide array of wildlife viewing opportunities.

Hunting Participation on the Tonto National Forest

Providing an accurate account of participation of hunting and fishing and other wildlife related recreation on the Tonto National Forest can be difficult. For example, determining the overall number of people interested in fishing or hunting statewide is relatively easy because people wishing to participate in those activities must purchase hunting or fishing licenses, but not all people who buy licenses hunt solely on the Tonto National Forest. To determine the number of hunters that may hunt on the Tonto National Forest, the Arizona Game and Fish Department relies

[85] For more information, see the Wildlife and Plant Habitat Resources section of this chapter.

heavily on a well-established hunter questionnaire program to estimate how many hunters hunt in a particular game management units and to provide information on game species harvest (Arizona Game and Fish Department, 2008). In the case of big game hunting, these licenses or tags are distributed via a lottery draw and the numbers of people who wish to participate far exceed those that are allowed to participate due to the need to regulate the number of animals harvested (Table 53[86]). For example, in 2011 there were 1,503 applicants (people wishing to participate) for only six desert bighorn sheep tags (people who actually participated) in Game Management Units[87] 22 and 24B on the Tonto National Forest. Most big game hunts have more applicants than the number of hunt permits available.

Table 53: Hunt Applicants and Permits Issued by GMU on Tonto National Forest in 2011

Species	Game Management Unit	Number of Authorized Permits	Number of 1st Choice Applicants
Whitetail Deer	21, 22, 23, 24A, 24B	3,975	4,917
Mule Deer	21, 22, 23, 24A, 24B	2,750	4,322
Any Antlered Deer	22, 23	275	579
Pronghorn	21	35	424
Elk	21, 22, 23, 24A	2,040	5,556
Turkey	22, 23, 24A	1,590	2,646
Javelina	21, 22, 23, 24A, 24B	4,420	5,207
Bighorn Sheep	22, 24B	6	1,503
Total		**15,091**	**25,158**

For bear hunting on the Tonto National Forest, the majority of bear hunting permits are issued during the fall hunt seasons that begin in August and run through the end of December. The five year average number of bear hunters on the Tonto National Forest is approximately 1,680 hunters and five year average black bear harvest is 69 animals. Contrary to management of the other big game species listed above, bear hunting permits (known as nonpermit-tags) are not issued through a lottery draw system but are available to hunters over the counter at any hunting license dealer. Bear harvest is not managed by limitation on hunting permits like deer and elk, but rather restrictions on harvest of the female segment of the bear population based on wildlife research and reproductive limitations of the species. Each game management unit has a predetermined level of acceptable female harvest for that area and when that harvest level is reached the game management unit is closed to bear hunting for that season.

Annual black bear harvest on the Tonto National Forest comprises approximately one quarter to one third of the statewide harvest for black bears. This level of harvest is consistent with black bear research that indicates that Arizona black bear abundance is greatest in central and southeastern Arizona. Black bear abundance is influenced by home range size of bears occupying

[86] Black bear is not included in this list because the majority of black bear hunts that occur on the Tonto National Forest do not require an individual to apply for a hunt, but rather the nonpermit-tag is available over the counter. The five-year average number of black bear hunters on the Tonto National Forest is approximately 1,680 hunters. This estimate is derived by taking the number of black bear nonpermit-tags sold statewide and multiplying by the percentage of black bear harvested on Tonto National Forest lands. This estimate assumes that the level of black bear harvest is directly proportional with the number of nonpermit-tags sold.

[87] For a map of the game management units on the Tonto National Forest, see Alternative A's description in Chapter 2.

that habitat; the smaller the home range the greater the abundance. Smallest home ranges of black bears in the southwestern United States were found in the Madrean evergreen woodland and interior chaparral habitats in the Mazatzal Mountains and just south of the Mogollon Rim indicating preferred habitat qualities and greater abundance in this area (Arizona Game and Fish Department, 2012a).

The majority of black bears harvested on the Tonto National Forest are harvested during the early fall from August through October. Most (57.6 percent) black bears harvested in Arizona between 1998 and 2002 were killed in areas located primarily south of the Mogollon Rim, and most (55 percent) were harvested in September (Arizona Game and Fish Department, 2012a). The harvest locations of bears on the Tonto National Forest are often at elevations less than 6,000 feet with temperatures sometimes exceeding 80 degrees Fahrenheit during those months. Average adult size of female black bears is 150 pounds and male bears are 275 pounds with some males weighing more than 400 pounds. Due to the conditions described above, the need for black bear hunters on the Tonto National Forest to retain the ability to use motorized vehicles to retrieve the legally harvested animal may be warranted. With the five year average black bear harvest on the Tonto National Forest being 69 animals and the estimated annual motorized big game retrievals for black bear estimated at 15 trips, effects on wildlife and wildlife habitat are likely nominal[88].

Although the Tonto National Forest receives the highest levels of expenditures for hunting of any National Forest in the Southwestern Region (American Sportfishing Association, 2006), data derived from the National Visitor Use Monitoring report for the Tonto National Forest indicates that 2.5 percent of visitors to the Tonto National Forest are hunters (U.S. Forest Service, 2012). These figures may further represent that the Tonto National Forest is one of the most highly visited National Forests in the United States with each recreational activity (e.g., hunting, hiking, boating) contributing significantly to the number of visits and economic effects when reported separately as a distinct recreational activity.

While the interest in participating in big game hunting has generally increased statewide, the same has not been observed with interest in small game hunting. Although data for small game hunter participation on the Tonto National Forest is not available, an annual quail hunter check station has been in operation on the Tonto National Forest near Punkin Center for nearly ten years. According to the data, hunter days for 2004 to 2005 were 169; for 2005 to 2006 were 218; for 2006 to 2007 were 94; there was no data for 2007 to 2008; for 2008 to 2009 were 102; and for 2009 to 2010 were 74. Data from this check station demonstrates a decline of small game hunter participation on the Tonto National Forest that is consistent with the statewide decline.

Angling Participation on the Tonto National Forest

Angling participation on the Tonto National Forest is the highest of any National Forest in Arizona due to the diversity of fishable waters on the Tonto National Forest and their proximity to the Phoenix Metropolitan Area (American Sportfishing Association, 2006; Pringle, 2004). This includes the Mogollon Rim area streams (East Verde River, Tonto Creek, Canyon Creek, etc.), the Salt River Lakes (Roosevelt, Apache, Canyon, and Saguaro), and the Verde River Lakes (Bartlett and Horseshoe) (Figure 45).

[88] For a more detailed account for these calculations, see Appendix A of the Arizona Game and Fish Department Report which is part of the project record.

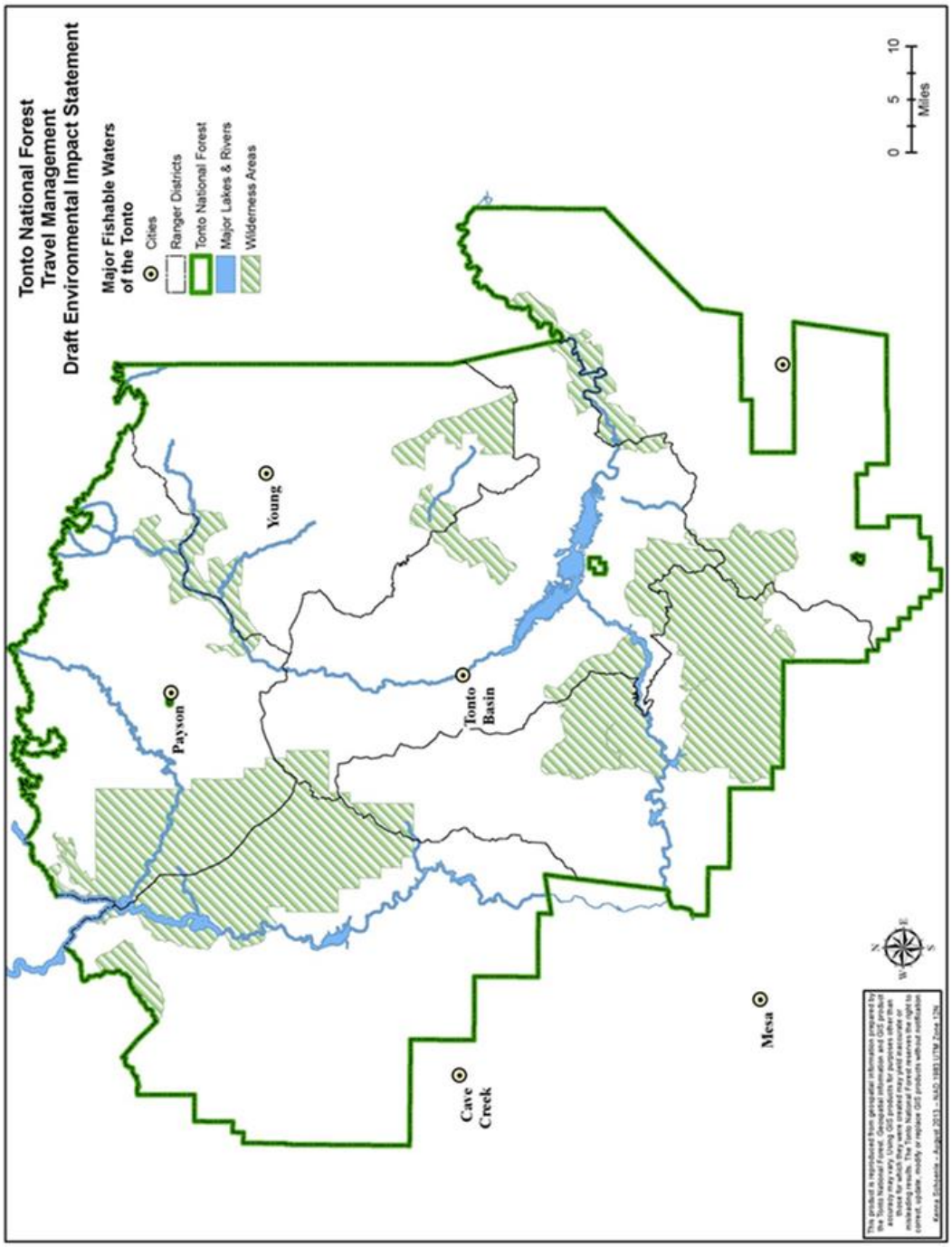


Figure 45: Map of Major Fishable Waters on the Tonto National Forest

These waters combined include a high diversity of sportfish species including; bass, trout, walleye, catfish, sunfish, and even opportunities to fish for native roundtail and headwater chub. In 2001 the Arizona Game and Fish Department did a statewide survey of angler use. Numbers derived from that survey indicate that there were 1,252,663 angler use days on the Tonto National Forest, making it one of the most heavily used fishing destinations in Arizona (Pringle 2004). On average Arizona anglers spent approximately 19 days fishing in 2001 (Pringle, 2004) and based on decrease in fishing license sales since 2001, it is believed to be even lower today. The major lakes on the Tonto National Forest (Roosevelt Lake, Bartlett Lake, Saguaro Lake, Canyon Lake, and Apache Lake make up five of the top eleven lakes in the state for highest angler use days. Data derived from the National Visitor Use Monitoring report for the Tonto National Forest indicates that 9.5 percent of visitors to the Tonto National Forest were anglers (U.S. Forest Service, 2012).

Economics Associated with Hunters and Anglers on the Tonto National Forest

The ability of the Arizona Game and Fish Department to adequately represent current public interests in wildlife is being tested by an ongoing societal shift in the way people value and interact with wildlife. The Arizona Game and Fish Department conserves game, sport fish, and nongame wildlife species, primarily using revenues from discretionary spending of customers relating to hunting and fishing license sales. Increasingly, fewer people are interested in hunting and fishing as a proportion of the entire population, yet there has been growth in other forms of wildlife-related recreation, such as wildlife viewing. Although valuable and contributory to local economies (U.S. Fish and Wildlife Service, 2012), wildlife viewing activities provide little direct revenue for the Arizona Game and Fish Department, but likely contribute significantly to local communities. Tied to these trends is the increasing interest in providing input in how wildlife is managed. People have many different preferences for wildlife-related recreation programs and services. Greater diversity in viewpoints has contributed to increased conflict, as well as contradictory social values among stakeholders (Arizona Game and Fish Department, 2012b).

Although economic data for angling on the Tonto National Forest is not specifically available, the statewide economic effect estimates that anglers spent $830 million, and contribute $1.1 billion to the state's economy (Pringle, 2004). Tonto National Forest angling economic data would be expected to be a high proportion of the statewide data based on the angling use days described above.

According to the 2006 report for State and National Economic Impacts of Fishing, Hunting and Wildlife-Related Recreation on U.S. Forest Service-Managed Lands (American Sportfishing Association) Tonto National Forest had the most expenditures for wildlife related recreation in the southwestern region:

- $24,350.674 for hunting;
- $21,583,552 for fishing; and
- $11,898,625 for wildlife viewing

Much of this information was obtained from the 2006 United States Fish and Wildlife Service National Survey of Fishing, Hunting and Wildlife-Associated Recreation (U.S. Fish and Wildlife Service, 2008) and the National Visitor Use Monitoring Program (U.S. Forest Service, 2012).

From 2000 to present, the Arizona Game and Fish Department has observed a relatively stable number of hunting licenses sold (Figure 46).

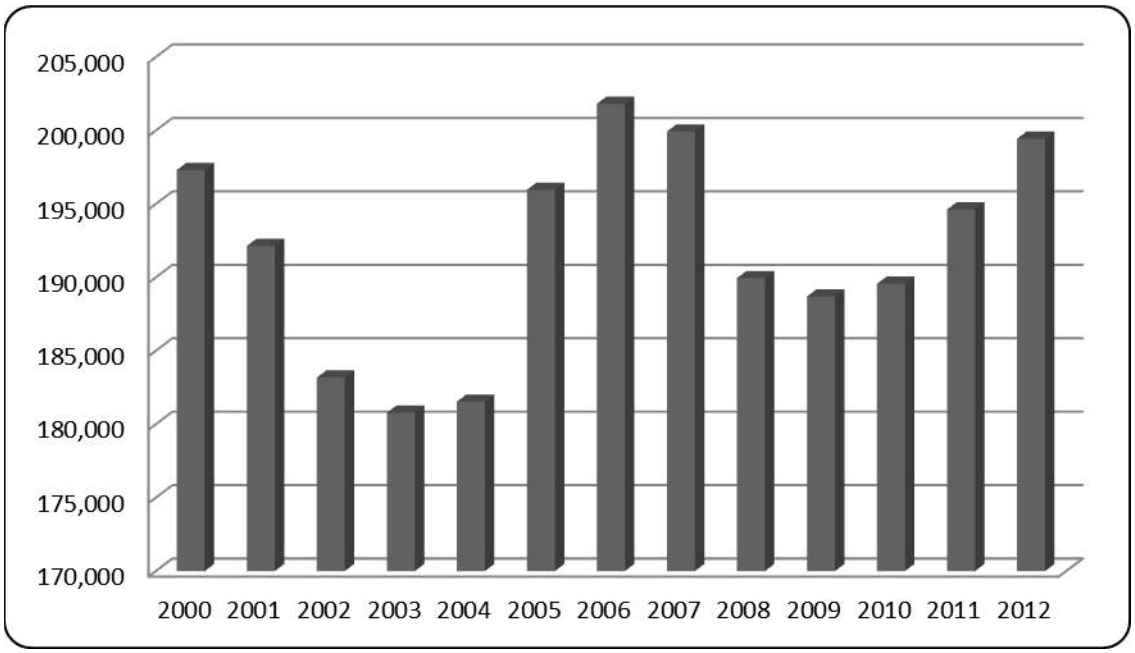


Figure 46: Arizona Hunting License Sales, 2000-2012

Fishing License sales over the years have steadily declined due to many factors including: change in demographics of Arizona's human population, economic issues, prolonged drought and weather patterns, wildfires, land management agency actions (e.g., closures, restrictions, fees, etc.), accessibility of waters, and availability of sportfish (Figure 47).

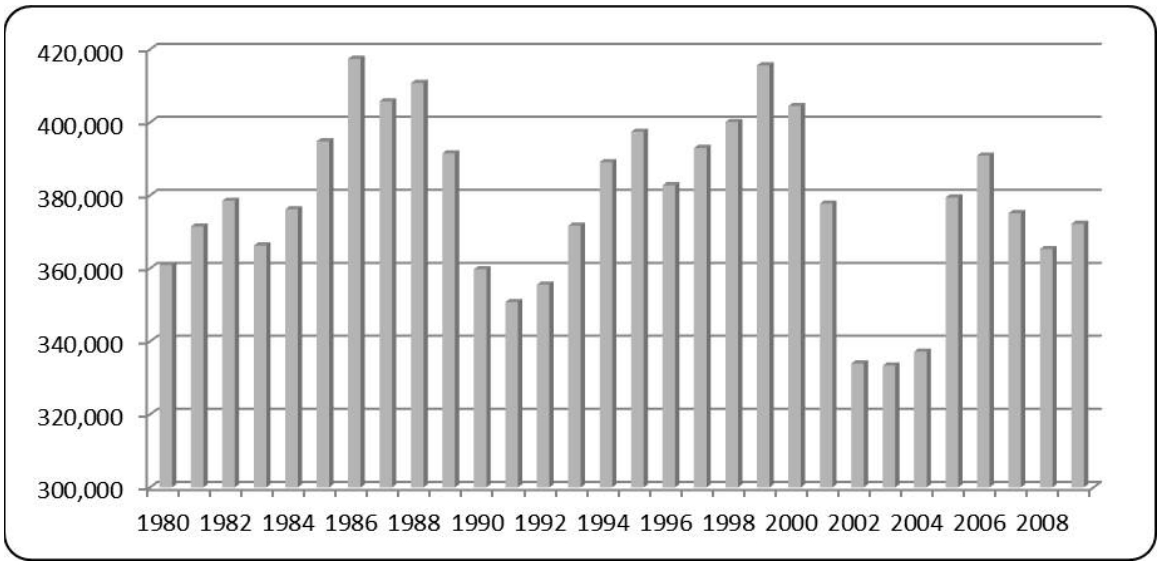


Figure 47: Arizona Fishing License Sales, 1980-2008

Environmental Effects

Assumptions

The assumptions used in this analysis include:

- Wildlife managed by the Arizona Game and Fish Department will be managed according to existing laws, regulations, and policy to protect these resources according to biological and societal conditions
- Motorized use on the Tonto National Forest will continue to increase consistent with growth in Arizona's population and such increases will affect wildlife and wildlife related recreation.
- Big game hunter harvest and subsequent motorized big game retrieval occurs equally across all land ownerships, habitat types, and topography within each game management unit.
- All areas within each game management unit on Tonto National Forest lands are open and available to hunting and motorized big game retrieval with the exception of federally designated wilderness.
- Hunters have equal opportunity to harvest animals and use motorized big game retrieval.
- The proportion of animals harvested by species is similar to the proportion of each game management unit that is available for motorized big game retrieval.
- Current laws, rules, regulations, orders prohibiting cross-country travel (subsequently motorized big game retrieval) on the Cave Creek, Mesa, Tonto Basin, and Globe ranger districts of the Tonto National Forest are adhered to by motorized recreationists.
- In regards to motorized dispersed camping, recreationists will continue camping in existing motorized dispersed camping sites for any restrictions placed on this activity that are greater than 100 feet from identified legal roads. For restrictions less than 100 feet from identified legal roads, recreationists will seek and create new motorized dispersed camping sites.
- Trends and numbers published in various surveys and publications about wildlife related recreation at the statewide level are similar to trends observed on the Tonto National Forest (e.g., 2006 and 2011 United States Fish and Wildlife Service National Survey of Fishing, Hunting, and Wildlife-Associated Recreation) (U.S. Fish and Wildlife Service, 2008 and 2012).
- The number of hunting and fishing licenses sold directly represents participation in the respective activity.
- Current levels of motorized travel on the Tonto National Forest have detrimental effects on wildlife populations particularly on fragile desert habitats.

The following assumptions were used for the hunting/angling motorized access analysis:

- There are no barriers to connectivity of Tonto National Forest roads and motorized trails open to the public with those outside of the Tonto National Forest boundary.

- There are no barriers to connectivity of Tonto National Forest roads and motorized trails within the Tonto National Forest boundaries.
- One mile is a reasonable distance for a hunter/angler to walk to access hunting/fishing areas from Tonto National Forest roads and motorized trails that are open to the public.
- Private lands within the Tonto National Forest boundary do not allow hunting.
- Hunters/anglers have equal access to alternative types of motor vehicles to allow motorized travel on all roads and motorized trails proposed to be open for the public
- Hunting/angling motorized travel demands are distributed evenly across the Tonto National Forest.
- Hunter/angler satisfaction in regards to reasonable motorized access on Tonto National Forest lands is highly variable on an individual basis and survey instruments are not available to provide quantitative estimates of such.
- Hunter/angler satisfaction in regards to dispersed motorized camping on Tonto National Forest lands is highly variable on an individual basis and survey instruments are not available to provide quantitative estimates of such.

Methodology

The primary method used to determine motorized travel effects on wildlife habitat and wildlife populations was personal communication with Arizona Game and Fish Department wildlife managers and wildlife biologists, who have worked on the Tonto National Forest for many years. Many of these wildlife professionals are familiar with the travel management history of the Tonto National Forest and have observed and documented the changes in wildlife populations and wildlife habitat over the last 10 to 20 years.

The methods used to describe effects on wildlife related recreation and associated economic effects include noting baseline economic data from the State and National Economic Effects of Fishing, Hunting and Wildlife-Related Recreation on U.S. Forest Service-Managed Lands report (American Sportfishing Association, 2006). A review of the Tonto National Forest Visitor Use Report was also included as it pertains to wildlife related recreation on the Tonto National Forest (U.S. Forest Service, 2012). In addition, data from the 2006 and 2011 United States Fish and Wildlife Service National Survey of Fishing, Hunting and Wildlife-Associated Recreation was used to infer trends from the state level to the Tonto National Forest (U.S. Fish and Wildlife Service, 2008 and 2012). Furthermore, personal communication with Arizona Game and Fish Department wildlife professionals was used to determine potential effects of each alternative. During this analysis, each individual Arizona Game and Fish Department Wildlife Manager on the Tonto National Forest was asked to assess the effect to wildlife and wildlife related recreation as it relates to travel management planning within each ranger district. Summary statements of these opinions are included in the effects analysis for each alternative.

Within each game management unit, the Arizona Game and Fish Department collects information about wildlife populations through wildlife surveys; information collected includes age and sex ratios, juvenile recruitment, population trends, etc. The Arizona Game and Fish Department uses a hunter harvest questionnaire program to collect data such as harvest, hunter success, hunter demand, hunter days, etc. The game management units that include portions of the Tonto National

Forest are GMU 21, 22, 23, 24A, 24B, and 37B. Most of this data is summarized annually in the Hunt Arizona report[89].

For hunter and angler participation rates, data was collected from various survey instruments including the Statewide survey of 2001 Arizona Anglers (Pringle, 2004), Arizona Game and Fish Department Small Game Participation Questionnaire (Arizona Game and Fish Department 2008), 2013 Statewide Comprehensive Outdoor Recreation Plan (Arizona State Parks, 2013), Hunt Arizona 2012 Edition (Arizona Game and Fish Department, 2012a), and personal communication with Arizona Game and Fish Department wildlife professionals[90].

As a measure of hunter and angler satisfaction with Tonto National Forest access to wildlife resources, a GIS modeling analysis was conducted to determine how much Tonto National Forest lands (acres) available for hunting and fishing may be lost or gained with each alternative. Under this analysis all private lands within the Tonto National Forest were removed from consideration. An assumption was made in regards to a baseline point of measurement; that one mile from an open road or motorized trail would result in reasonable access for hunters/anglers. This one mile buffer was placed on all roads and motorized trails proposed to be open for the public under each alternative. With each alternative, portions (acreages) of the Tonto National Forest would become accessible and portions of the Tonto National Forest would become inaccessible given the one mile buffer. The differences in these acreages are the basis for which to measure overall hunter/angler access on the Tonto National Forest and then subsequent hunter/angler satisfaction with their Tonto National Forest visit. The discussion of these differences is found within the effects analysis for each alternative.

Alternative A – No Action

Direct and Indirect Effects on Wildlife

Under this alternative, current management of motorized travel on the Tonto National Forest would continue. Existing road densities and motorized cross-country travel would continue to have detrimental effects to wildlife and wildlife habitat defeating the intent and purpose of the Travel Management Rule passed in 2005[91].

Direct and Indirect Effects on Wildlife Related Recreation and Associated Economic Effects

Under this alternative, the movement of environmental conditions (soil, water, wildlife, air, etc.) away from the desired future condition may occur. Under existing conditions and levels of motorized recreational use on the Tonto National Forest (U.S. Forest Service, 2012), natural resources would continue to deteriorate and not be sustainable for wildlife populations and their habitats[92]. The subsequent loss of wildlife may result in the Tonto National Forest not being a destination for those that enjoy visiting the Tonto National Forest for wildlife related recreation. Those communities that rely heavily upon Tonto National Forest visitation for wildlife related recreation may suffer from loss of revenue.

[89] Arizona Game and Fish Department hunting website
[90] For more information about these personal communications, see the Arizona Game and Fish Department Report in the project record.
[91] For more information, see Chapter 1 of this document.
[92] For more information, see the Wildlife and Plant Habitat Resources section of this chapter.

Under this alternative, approximately 2,050,400 acres (72 percent of the Tonto National Forest) would be available for walk-in wildlife related recreation access within one mile of roads and motorized trails open for public use. The existing level of motorized wildlife related recreational access (roads and motorized trails open to the public) appears to be sufficient for meeting Arizona Game and Fish Department wildlife management objectives and offers continued opportunities for recreationists that prefer to recreate in areas away from motorized travel as well.

Under this alternative the Cave Creek, Mesa, Globe, and Tonto Basin ranger districts would remain closed to cross-country travel and therefore motorized big game retrieval would not be permitted on those districts. This may affect those hunters that are not knowledgeable of the existing restriction, but the effect would be minimal as it is estimated that 550 hunters forestwide use motorized big game retrieval.

Alternative B

Direct and Indirect Effects on Wildlife

Under this alternative, movement towards desired future conditions for wildlife and wildlife habitat would occur as there would likely be less motorized disturbance to wildlife populations and wildlife habitats in areas where road closures take place and through the elimination of cross-country travel. The Arizona Game and Fish Department has historically been supportive of efforts by the Tonto National Forest to reduce road densities where they are deemed duplicative and from which a pattern of use has been analyzed and determined to be detrimental to wildlife resources. The general prohibition against cross-country travel would likely improve wildlife habitat for all species. Wildlife and wildlife habitat would likely improve within designated permit zones. For permit zones, it is likely that responsible motorized recreationists would respond by obtaining a permit for the area, other less responsible recreationists may abandon use of the area and recreate somewhere else that may be more detrimental to wildlife and wildlife habitat and into areas that have not already been heavily affected by motorized recreation. An appropriate balance of permit zones and nonpermit zones in heavy motorized use areas across ranger districts would allow the user to choose what motorized experience they desire. The significant restrictions to motorized dispersed camping (restricted to approximately 65 designated acres) may have positive effects to wildlife and wildlife habitat as there would be less motorized disturbance and less human effect on the environment. On the other hand, this reduction of motorized use and potential restriction on hunters' ability to find and harvest big game animals may lead to wildlife populations that are above population objectives and subsequent habitat damages.

Direct and Indirect Effects on Wildlife Related Recreation and Associated Economic Effects

Under this alternative, movement towards and away from desired future conditions for wildlife related recreation and associated economics may occur. The reduction in road density, elimination of cross-country travel, and reduction in motorized disturbance on wildlife may benefit wildlife related recreationists who prefer to recreate in areas away from motorized travel. On the other hand, the number of road closures (2,367 miles of decommissioned routes) may create confusion amongst recreationists when attempting to determine if particular roads are open or closed, particularly if adequate and reasonable signage is not maintained on the ground. Furthermore, if the requirement to possess a Motor Vehicle Use Map (MVUM) is not well established and/or the quality and scale of the MVUM does not provide enough information for a reasonable person to

determine whether a road is open or closed, may result in Tonto National Forest visitors not being satisfied with their visit. This potential confusion amongst wildlife related recreationists may turn them away from pursuing further wildlife related recreation and/or they may go elsewhere resulting in subsequent loss of economic effects.

In regards to permit zones, if wildlife and wildlife habitat improve as anecdotally observed on the Mesa Ranger District at Bulldog Canyon Permit Zone, wildlife related recreation may increase; otherwise in areas of the Tonto National Forest that suffer from heavy motorized use (e.g., Lower Sycamore, Sugarloaf, and lower section of Four Peaks Road), wildlife related recreationists tend to avoid these areas because wildlife is scarce due to degraded wildlife habitat conditions.

This alternative does not allow for any motorized big game retrieval and therefore, approximately 550 elk, deer, and bear hunters combined would annually be precluded from using a motor vehicle to retrieve their animal (Arizona Game and Fish Department, 2013b). This alternative eliminates the ability of the Arizona Game and Fish Department to implement the Challenged Hunter Access Mobility Permit (CHAMP) program. It is unknown as to how both groups of hunters may react to removal of these privileges, but they may stop hunting, change their hunting behavior, hunt somewhere else, and/or choose to violate the restriction. Under this alternative, approximately 1,813,400 acres (63 percent) of the Tonto National Forest) are available for walk-in wildlife related recreation access within one mile of roads and motorized trails open for public use. The level of motorized access (roads and motorized trails open to the public) may result in the Arizona Game and Fish Department not being able to meet big game harvest and wildlife management objectives at the game management unit level and subsequent statewide level. Control and management of large herbivore (ungulate) populations is a critical component of maintaining the Tonto National Forest's ecosystem. Public hunting has been the most effective tool for managing herbivore populations and often depends on reasonable motorized access to wildlife populations. The harvest and management objectives on the Tonto National Forest rely heavily on relatively predictable hunter harvest to reduce negative effects to vulnerable habitats. The ability to meet these objectives may be compromised with significant reductions in motorized access. As Arizona's hunters age (Arizona Game and Fish Department, 2012b), the need for motorized big game retrieval may increase to a point that harvest needs may not be met by hunter demand if those hunters choose not to harvest animals due to restrictions on motorized big game retrieval. Current demand for big game hunting on the Tonto National Forest does not indicate a decrease in demand for big game permits. A concern with the removal of motorized big game retrieval is the spoilage of meat before hunters are able to retrieve their animals. Retrieval by motorized means allows hunters to remove the meat in a more efficient manner than packing the meat out without the use of motorized vehicles. Many hunting seasons for deer, elk, and bear occur in the months of August, September, and October when ambient temperatures on the Tonto National Forest are relatively warm (70 to 80 degrees Fahrenheit) which may contribute to spoilage of meat.

In regards to motorized dispersed camping, this alternative allows for approximately 65 acres designated for such purposes. It is likely that restrictions of available campsites would result in a difficult situation for recreationists unable to locate a legal campsite during periods of high use such as hunting seasons or for anglers at Tonto National Forest lakes which allow motorized dispersed camping. This could lead to stratification of hunt structures resulting in more seasons with fewer permits to mitigate this issue. This, in turn, could lead to seasons occurring later in the fall and into the winter in order to meet management goals, which could result in the disruption of deer breeding season and exacerbate road damage during wet periods of the year. The restrictions

on dispersed motorized camping may lead to less hunting as dispersed motorized camping is the most common form of camping used by hunters on the Tonto National Forest.

The limitation on dispersed motorized camping under this alternative may force recreationists to those existing designated spur roads and campsites into close proximity to each other and potentially expanding the footprint of these camping areas. Depending on the locations of the designated campsites, it may affect the ability of the Tonto National Forest's hunters to reach wildlife populations that need population control through hunting in support of specific wildlife habitat objectives (e.g., Canyon Creek riparian area, removal of bears in wildland-urban interface areas, etc.). Furthermore, a significant portion of the Tonto National Forest's anglers use motorized dispersed camping to access fishing areas at Tonto National Forest lakes and streams. Depending on the location of the designated sites and the distance from these lakes and streams, anglers may react by not participating, choosing to participate somewhere else, and/or by choosing to violate provisions of the Plan. Specific locations on the Tonto National Forest where this negative effect on hunter and angler participation may be most evident is Fossil Creek corridor, East Verde River, Weber Creek, and the Lower Verde River near Box Bar. In addition to affecting those using the Tonto National Forest for hunting and fishing, closure of roads and motorized trails that lead to dispersed campsites may affect nonconsumptive users of wildlife.

It is expected under this alternative, that hunter and angler harvest and participation rates would decline, particularly as they relate to those hunters and anglers who wish to stay overnight on the Tonto National Forest at dispersed camping sites which would be significantly restricted. A quantitative analysis of this effect is not available, as it would be speculative in nature.

Alternative C

Direct and Indirect Effects on Wildlife

As with alternative B, movement towards desired future conditions for wildlife and wildlife habitat would occur with this alternative, as there would likely be less motorized disturbance to wildlife populations and wildlife habitats in areas where road closures take place and through the elimination of cross-country travel. The rate of movement towards desired future conditions may be slower than that of alternative B. Similar responses may occur to wildlife and wildlife habitat as those mentioned in alternative B with the exception that there are fewer restrictions to motorized dispersed camping (91,391 acres available in alternative C as compared to 65 acres in alternative B). The availability of motorized dispersed camping in this alternative would likely not have an effect on hunters' ability to find and harvest big game animals and subsequently wildlife populations objectives would likely remain within guidelines for sustainable wildlife habitat conditions.

Direct and Indirect Effects on Wildlife Related Recreation and Associated Economic Effects

The same or similar effects on wildlife related recreation as described in alternative B would occur with this alternative although effects would be less. The addition of OHV Areas at Bartlett Lake and Roosevelt Lake would legitimize existing use and wildlife related recreation would likely not be affected. As described in alternative B, permit zones may result in responsible motorized recreationists obtaining a permit for the area, while other less responsible recreationists may abandon use of the area and recreate somewhere else that may be more detrimental to

wildlife and wildlife habitat and into areas that have not already been heavily affected by motorized recreation. An appropriate balance of permit zones and areas which do not require a permit in heavy motorized use areas across the ranger districts would allow the user to choose what motorized experience they desire. St. Clair and Desert Vista permit zones are located immediately adjacent to each other on the Cave Creek Ranger District in an area heavily affected by motorized use; and therefore, the likelihood of displacement of existing motorized users somewhere else on the Tonto National Forest may be higher and associated effects to wildlife, wildlife habitat, and associated recreation may occur.

Under this alternative, motorized big game retrieval would be allowed for bear and elk hunters up to one mile from a designated road or trail. Therefore, approximately 341 deer hunters would annually be precluded from using a motor vehicle to retrieve their animal (Arizona Game and Fish Department, 2013b). The effects of this action would be similar as those described in Alternative B for motorized big game retrieval. Under this alternative approximately 2,081,500 acres (73 percent of the Tonto National Forest) are available for walk-in wildlife related recreation access within one mile of roads and motorized trails open for public use. This alternative allows for essentially the same level of motorized wildlife related recreational access (roads and motorized trails open to the public) as the existing condition from which would be sufficient for meeting Arizona Game and Fish Department wildlife management objectives. The Arizona Game and Fish Department Challenged Hunter Access Mobility Permit program would be retained under this alternative.

This alternative allows for motorized dispersed camping within 100 feet on each side of designated road and trails for approximately 91,390 acres available for such purposes. Although many dispersed camping sites may exist on short spur roads and trails beyond 100 feet, it is likely that this restriction would not create an environment where wildlife related recreationists are unable to locate a legal campsite during periods of high use, such as hunting seasons or for anglers at Tonto National Forest lakes which allow motorized dispersed camping.

It is expected that under this alternative, hunter and angler harvest and participation rates would remain relatively unchanged. A quantitative analysis of the effect on hunter and angler participation rates is not available, as it would be speculative in nature.

Alternative D

Direct and Indirect Effects on Wildlife

Under this alternative, current management of motorized travel on the Tonto National Forest would include approximately 4,900 miles of roads and motorized trails open to the public. Road densities and motorized travel on the Tonto National Forest would continue to have detrimental effects to wildlife and wildlife habitat defeating the intent and purpose of the Travel Management Rule passed in 2005. It is likely that under this alternative, the effects to wildlife and wildlife habitat would be similar to the existing conditions.

Direct and Indirect Effects on Wildlife Related Recreation and Associated Economic Effects

Under this alternative, the movement of environmental conditions (soil, water, wildlife, air, etc.) away from the desired future condition may occur. Under existing conditions and levels of

motorized recreational use on the Tonto National Forest (U.S. Forest Service, 2012), natural resources would continue to deteriorate and not be sustainable for wildlife populations and their habitats[93]. The subsequent loss of wildlife may result in the Tonto National Forest not being a destination for those who enjoy visiting the Tonto National Forest for wildlife related recreation. Those communities which rely heavily upon Tonto National Forest visitation for wildlife related recreation may suffer from loss of revenue.

In regards to motorized big game retrieval under this alternative, approximately 550 elk, deer, and bear hunters combined would annually be allowed to use a motor vehicle to retrieve their animal[94] within one mile on both sides of all designated motorized routes. This alternative allows for cross-country travel for motorized big game retrieval on four ranger districts (Cave Creek, Mesa, Tonto Basin, Globe) which previously have been closed for this activity. The effects to wildlife and wildlife habitat are likely nominal considering there is a low number of retrievals (550 trips) annually across the entire Forest. Effects would be greatest on those wildlife habitats found in the Sonoran Desert habitats because damage from motorized vehicles in that environment takes more time to recover. Effects on wildlife related recreation and associated economics for motorized big game retrieval would be nominal. Under this alternative approximately 2,204,500 acres (77 percent of the Tonto National Forest) are available for walk-in wildlife related recreation access within one mile of roads and motorized trails open for public use. This alternative allows for essentially the same level of motorized wildlife related recreational access (roads and motorized trails open to the public) as the existing condition which would be sufficient for meeting Arizona Fish and Game Department wildlife management objectives.

This alternative allows for motorized dispersed camping within 300 feet on each side of designated road and trails for approximately 336,000 acres available for such purposes. This restriction would not create an environment where wildlife related recreationists are unable to locate legal campsites during periods of high use, such as hunting seasons or for anglers at Tonto National Forest lakes which allow motorized dispersed camping. Recreationists would likely continue camping in existing motorized dispersed camping sites and therefore likely be little to no effects on wildlife or wildlife habitats.

It is expected that under this alternative, hunter and angler harvest and participation rates would remain relatively unchanged; although, as mentioned in the effects on wildlife, wildlife populations may decline over time due to motorized travel effects on individuals and habitats resulting in decreased satisfaction and reduced participation in hunting and angling. A quantitative analysis of this effect is not available as it would be speculative in nature.

Cumulative Effects

The cumulative effects analysis area for this project is the Tonto National Forest and in some cases other National Forests and lands open to the public for wildlife related recreation. Other National Forests and other lands open to the public for wildlife related recreation are included because the effects of this action may affect recreational use patterns across these lands. The past 20 to 30 years and the next 10 years are the primary focus for actions and events, because effects of motorized travel on the Tonto National Forest's wildlife and wildlife related recreation and

[93] For more information, see the Wildlife and Plant Habitat Resources section of this chapter.
[94] For more information, see Appendix A in the Arizona Game and Fish Department Report in the project record.

would be significant as they relate to the growth in human population over this period. In general, predictions about changes in wildlife related recreational use which may occur on the Tonto National Forest are difficult to make and somewhat speculative in nature. However, it would be reasonable to assume that under all alternatives, levels of motorized use would continue to increase along with population growth following current trends. It would also be reasonable to assume that motorized vehicle use patterns may change with time.

Past actions related to wildlife and wildlife related recreation within this analysis area have occurred regularly over the last 20 to 30 years and are too numerous to list. Some of these actions have been small, project specific actions such as construction of wildlife habitat improvement projects (e.g., water catchments, juniper thinning), while others have been large, landscape level changes to wildlife and wildlife related recreation such as the Cave Creek Complex Fire in 2005 that burned approximately 244,000 acres and the Willow Fire in 2004 that burned approximately 120,000 acres. Other past actions/occurrences with significant effects to wildlife and wildlife related recreation include elk population growth and expansion on the forest over the last 30 years, Tonto National Forest closure orders (target shooting) and subsequent changes to recreational behavior and use patterns, drought and other long-term weather patterns, fees associated with Tonto National Forest recreation (e.g., hunting/fishing licenses, Tonto Pass) and significant reduction in mule deer population.

Some proposed reasonable foreseeable actions related to wildlife and wildlife related recreation within the analysis area include: reauthorization of grazing allotments, fuels reduction projects and forest thinning (e.g., the Four Forest Restoration Initiative), watershed improvement projects, recreation management, special use permits, personal use activities, road construction (e.g., U.S. Highway 60, State Route 87, State Route 288), wildfires and fire management, continued increase in motorized use of the Tonto National Forest related to human population expansion, management of invasive aquatic species in the Salt River Lakes and other sites, law enforcement, human-wildlife conflicts, management of wildlife diseases, translocations and reintroductions of fish and wildlife.

Observed Effects on Wildlife and Wildlife Related Recreation after Implementation of Travel Management Plans on the Coconino and Kaibab national forests

The author discussed the effects on wildlife and wildlife related recreation as a result of implementation of a Travel Management Plans on the Coconino and Kaibab national forests with Arizona Game and Fish Department personnel involved in coordination with those Forests. Both the Coconino and Kaibab National Forest recently implemented Travel Management Plans and published motor vehicle use maps, and so observed effects may only include the initial year after implementation. The following anecdotally observed effects may be helpful with effects analysis on the Tonto National Forest:

- Prior to implementation of the Travel Management Plan and public distribution of the motor vehicle use map, the Coconino National Forest placed many numbered signs on roads/motorized trails which had not been previously signed for some time. Many of the roads/motorized trails, which were signed, were not opened in the Plan and not published on the motor vehicle use map. As a result, the public began using some of these numbered roads/motorized trails, effectively opening some areas which had not been previously open. In some cases this created negative effects on wildlife and created unlawful uses as the routes were not on the motor vehicle use map. In some cases,

Coconino National Forest and Arizona Game and Fish Department personnel have been retroactively pulling these signs since implementation.

- After publication of the motor vehicle use map some errors were detected, creating confusion among visitors.
- Some visitors became confused with what roads/motorized trails were open and were not able to easily detect what roads/motorized trails were open because the motor vehicle use map did not have topographic features.
- The Garmin and smart phone applications were received well by visitors and helped considerably with visitors in understanding open roads/motorized trails and locations of camping corridors.
- Some hunters expressed satisfaction with the creation of the "roadless or quiet areas" that were created with implementation of the Plan, yet became dissatisfied when they planned their hunting experience around these areas only to be disturbed by other hunters not following the motor vehicle use map. Other hunters were not satisfied.
- The Kaibab National Forest integrated existing spur roads and existing locations of campsites, whereas the Coconino National Forest used camping corridors. Some new campsites in previously undisturbed areas have been developed on the Coconino National Forest, as a result of visitors being forced into a camping corridor.
- Some hunters expressed dissatisfaction on the Coconino National Forest that they could not retrieve their animal by motorized means, while those gathering fuelwood were able to use motor vehicles cross-country to gather wood.

Alternative A - No Action

Under this alternative, current use of roads and motorized trails would continue to negatively affect wildlife populations and wildlife-related recreation may decline. Without a travel management plan to provide guidance to travel management on the Tonto National Forest, motorized use would likely continue to increase as the human population surrounding the Tonto National Forest grows. Some areas on the Tonto National Forest have already reached a level of motorized use that is not compatible with natural resource sustainability[95]. In these areas of the Tonto National Forest, wildlife populations have already been affected by loss of habitat and increased disturbance. Under this alternative, wildlife habitat damage may continue to expand into areas that remain relatively intact and insulated from the negative effects of mostly unregulated motorized recreation. Therefore, the cumulative effect of no action, in combination with reasonable foreseeable actions, would move wildlife populations and wildlife related recreation away from desired future conditions.

Alternative B

Under this alternative, effects on wildlife would be beneficial due to less motorized disturbance to wildlife populations and wildlife habitats in areas where road closures take place and through elimination of cross-country travel. It is unknown how quickly wildlife and wildlife habitat would respond favorably to this action. Many factors would determine the rate of improvement of wildlife populations and habitat including: weather patterns, how quickly the Tonto National

[95] For more information, see the Wildlife and Plant Habitat section of this document.

Forest could implement the action, the public's response and reaction to the action, and current status of wildlife populations. With the exception of elk populations (which have shown the ability to quickly increase and expand populations), other game species would likely not increase to a point beyond Arizona Game and Fish Department population objectives within 10 years after implementation of the action.

Effects on wildlife related recreation may be readily apparent soon after implementation of this action as recreationists become aware of the changes and choose to comply with the new regulations, choose to violate the new regulations, or choose to recreate somewhere else outside of Tonto National Forest boundaries. It could be reasonably assumed that hunters' ability to find and harvest game animals by motorized means may be negatively affected by this alternative, but it is unknown how quickly and/or if hunters would be able to change hunting patterns to meet harvest objectives set by the Arizona Game and Fish Department. If wildlife populations respond favorably and quickly to reduced motorized disturbance and less habitat damage on the Tonto National Forest, it is possible that there would be little change in hunters' ability to find and harvest game species, if the game species population expansion is commensurate with the loss of motorized access and occurs in areas which are still accessible.

The reduction in road density, elimination of cross-country travel, and reduction in motorized disturbance on wildlife may benefit wildlife related recreationists who prefer to recreate in areas away from motorized travel, but based on anecdotal observations from wildlife professionals in the Arizona Game and Fish Department, the use of motorized vehicles for wildlife related recreation has increased commensurate with the statewide increase in the use of motorized vehicles over the last 10 to 20 years (Arizona State Parks, 2013). This action may result in further regulation pertaining to wildlife related recreation. This additional burden upon recreationists to remain legitimate may create conversion of those wildlife related recreationists to other forms of recreation and the subsequent loss of economic effects.

This alternative does not allow for any motorized big game retrieval; and therefore, approximately 550 elk, deer, and bear hunters combined would annually be precluded from using a motor vehicle to retrieve their animal. This alternative also effectively eliminates implementation of the Arizona Game and Fish Department's Challenged Hunter Access Mobility Permit program (CHAMP). It is unknown how these hunters may react to removal of this privilege, but they may stop hunting, hunt somewhere else, or choose to violate the restriction. Under this alternative approximately 1,813,400 acres (63 percent of the Tonto National Forest) are available for walk-in wildlife related recreation access within one mile of roads and motorized trails open for public use. Cumulative effects of this action may result in replacement of big game hunters that rely heavily on motorized big game retrieval with those hunters that do not rely on it.

In regards to motorized dispersed camping, this alternative only allows for approximately 65 acres designated for such purposes. It is likely that restrictions of available campsites would result in a difficult situation for recreationists unable to locate a legal campsite during periods of high use such as hunting seasons or for anglers at Forest Lakes which allow motorized dispersed camping. The restrictions on dispersed motorized camping may lead to less hunting as dispersed motorized camping is the most common form of camping used by hunters on the Tonto National Forest.

It is expected that under this alternative, hunter and angler harvest and participation rates would decline, particularly as they relate to those hunters and anglers who wish to stay overnight on the

Tonto National Forest because dispersed camping site would be significantly restricted. Effects would likely extend to nonconsumptive wildlife related recreationists, who prefer to camp in undeveloped sites. A cumulative quantitative analysis of this effect is not available, as it would be speculative in nature.

Alternative C

Under this alternative the cumulative effects on wildlife and wildlife related recreation would be moderate and beneficial in movement towards the desired future condition. Specifically, the elimination of cross-country travel and designation of open roads and motorized trails would be beneficial for wildlife and make the Tonto National Forest consistent in regards to the prohibition of cross-country travel. Restrictions outlined in the alternative on dispersed motorized camping, motorized big-game retrieval, and permit zones are not likely to change wildlife related recreation significantly. This action may initially raise frustration and confusion with wildlife related recreationists similar to any forestwide change in regulations, but not likely to adversely affect hunter and angler participation rates.

Alternative D

It is likely that under this alternative, effects to wildlife and wildlife habitat would move away from desired future conditions. In the short term (less than five years) there would likely be minimal effect to wildlife related recreation; but in the long term (20 to 30 years), it is likely that the undesirable effects of increasing motorized travel on wildlife populations and habitat may create an environment where the level of motorized recreation is not sustainable with managing desirable populations of wildlife. Should this level be obtained, it is likely that the Tonto National Forest would no longer be a destination for those involved in wildlife related recreation and associated economic effects would be lost.

Law Enforcement

The Tonto National Forest is not increasing in size, but there is an ever-increasing demand for the finite resources, including those related to recreation use[96]. Thus it defies logic to expect the resource to do anything but deteriorate, because the current management plan has been unsuccessful in sufficiently protecting the resources. In addition, the stance of allowing an activity just because it was historically allowed is not a valid concept, especially for human safety and forest protection. Since 1970, the population of Maricopa County (which includes the Phoenix metropolitan area) has increased nearly 300 percent (Headwaters Economics, 2013b) and is currently approximately 3.8 million (Headwaters Economics, 2013a). From 1995 to 2006, sales of off-highway motorcycles and all-terrain vehicles (ATVs) in Arizona increased approximately 623 percent (Arizona State Parks, 2009). However, the size of the Tonto National Forest has remained fairly constant at nearly 3 million acres. Simultaneously, a significant amount of Arizona State Trust Land has been sold and developed around the Phoenix Metropolitan area, which eliminated some of the motorized recreational opportunities there.

Because of the increase in potential motorized users visiting the Tonto National Forest, more than one enforcement tool would be necessary. At a minimum, the following would be needed:

[96] For more detail about these increases, see the Recreation Specialist Report and Socioeconomic Report in the project record.

- A map that is readable. This action may include multiple maps or a map for every ranger district in order to get the level of detail necessary to inform the public.
- Signs on the routes done in a consistent manner.
- Barriers/obliteration of decommissioned/closed/unavailable to the public roads.
- Training and meetings among staff and law enforcement officers and cooperators to ensure consistent understanding of the plan.

Existing Conditions

Currently, the proliferation of unauthorized roads and trails on the desert ranger districts (Cave Creek, Mesa, Tonto Basin, and Globe) of the Tonto National Forest cannot be denied[97].

In many cases, Forest Service employees have not been successful in adequately posting and/or identifying (on the ground) these unauthorized roads and trails to the public. Once they have been established through repeated use the public is often unable to tell unauthorized roads and trails from authorized Forest Service System routes. Typically these unauthorized trails start as a single set of motorcycle or ATV tracks of minimal width (10 to 50 inches) and grow wider and deeper as more vehicles drive on it until they eventually accommodate full-sized vehicles (6 to 8 feet in width). In many cases, when signs are installed indicating a road or trail was closed to motorized vehicles, the signs are often illegally removed, destroyed or otherwise rendered unreadable. There is significant motive for someone who wants to drive a vehicle in an area that is posted closed, to remove the signs indicating motor vehicles use is prohibited. Once this is done, the area appears to be open as it is not marked closed.

From a legal standpoint, we (Forest Service Law Enforcement Officers) are obligated to ensure a "reasonable person" knew or should have known that they were operating off of a designated road or trail or in a location or manner that is contrary to rules or laws. Currently, this is extremely difficult to do. Removal of the signs coupled with building new unauthorized access points around signs and physical barriers contributes to the difficulty in prosecuting persons operating motor vehicles on these roads and areas. Those forest visitors who want to follow the laws and regulations could easily end up on an unauthorized route or closed road unintentionally.

On June 19, 2013, the governor of Arizona signed *House Bill 2551* into law, which among other things seems to inhibit state and local law enforcement officials from enforcing off-highway vehicle (OHV) laws and driving off-road violations on the National Forests in Arizona. Some agencies have announced positions that are even more restrictive than this law. There is an exception whereby Arizona Game and Fish Department officers **MAY** enforce regulations in situations where they deem habitat damage has occurred. There are also some differences in interpreting the law. That said, it could effectively reduce the typical commissioned patrol as it relates to motorized travel on the Tonto National Forest to nine ranger district law enforcement officers and one supervisor. There are a number of noncommissioned Forest Service employees who also conduct limited enforcement activities (referred to as forest protection officers).

[97] For more information, see Appendix A of the Law Enforcement Report in the project record.

Environmental Effects

Assumptions

The best chance of successfully enforcing any measure, regardless of the issue, is for the majority to understand the importance of the measure and thus want to comply. As it relates to the travel management planning, successful enforcement requires, at a minimum:

- The majority of the public to understand the importance of the management plan, the rules of the management plan and have a desire to comply with those rules. The number of Forest Service law enforcement officials is small in comparison to the number of forest visitors, which means it is extremely difficult to educate the public in the field and to achieve compliance.
- State and local agencies must also understand the importance of the plan and be willing and active partners in implementing the plan.

It is inconceivable that unlimited access to all user groups for all activities would be sustainable. It is almost guaranteed that concessions would need to be made by almost all interested parties, no matter the alternative selected for managing motorized travel. With that in mind, the single most important factor in enforcing the plan would be for those parties to understand the need for management.

Alternative A (No Action)

Roads and Trails Open to Motorized Travel

Under current conditions, the proliferation of unauthorized roads and trails is obvious in many places throughout the Tonto National Forest[98]. Given population growth and increased numbers of off highway motor vehicles, it is illogical to assume the proliferation of unauthorized roads would decline or cease under the current management scheme. Currently, almost 700 miles of unauthorized roads and trails have been identified on the forest. This is not the entire amount of unauthorized roads; it is only what we have identified.

One area that has been successful in preventing or reducing significant road proliferation, because of success in enforcing where motor vehicles may and may not go is the Bulldog Canyon Permit Area[99] on the Mesa Ranger District. This is the only area on the forest currently managed this way. The permit is free, but in order to get the combination to access the area, the public is required to come in and sign the permit or fill it out online. When they get the permit, they are provided with gate combinations, rules, and a map of the authorized roads.

In the last five years, law enforcement officers and Forest Protection Officers have documented 443 violation notices, warning notices and incident reports on Tonto National Forest for driving off-road (*36 CFR 261.56*) (Table 54). Of those, 151 (34 percent) occurred in the Bulldog Canyon Permit Area. Of those total incidents, there were 242 violation notices issued and 94 (39 percent) were issued in the Bulldog Canyon Permit Area. At approximately 34,720 acres, the Bulldog Canyon Permit Area constitutes approximately 1.2 percent of the total Tonto National Forest land base and 1.5 percent of nonwilderness land area. While it is not a foolproof system, the law

[98] For more information, see Appendix A of the Law Enforcement Report in the project record
[99] For more information about this area, see Chapter 2, Alternative A description.

enforcement officers have been much more successful in enforcing off-road violations in this area. In recent years, this area has endured much less impact than adjacent areas on the same ranger district. This is likely due to a combination of reduced visitation, because of the permit requirement, an increased awareness of what is allowed and what is not, and increased enforcement success. This permit area may effectively increase usage on other adjacent areas by persons who either do not want to get a permit or do not know how.

Table 54: Violation Notices, Warnings, and Incident Reports for Tonto National Forest, including Bulldog Canyon OHV Area

Year	Violation Notices	Warnings	Incident Reports	Total
2008 Bulldog Canyon	11	7	6	24
2008 Rest of Tonto NF	18	18	35	71
2008 Total	**29**	**25**	**41**	**95**
2009 Bulldog Canyon	19	7	0	26
2009 Rest of Tonto NF	38	19	16	73
2009 Total	**57**	**26**	**16**	**99**
2010 Bulldog Canyon	9	1	3	13
2010 Rest of Tonto NF	27	9	12	48
2010 Total	**36**	**10**	**15**	**61**
2011 Bulldog Canyon	25	7	12	44
2011 Rest of Tonto NF	29	8	7	44
2011 Total	**54**	**15**	**19**	**88**
2012 Bulldog Canyon	18	2	3	23
2012 Rest of Tonto NF	25	9	11	45
2012 Total	**43**	**11**	**14**	**68**
2013 Bulldog Canyon	12	7	2	21
2013 Rest of Tonto NF	11	3	6	20
2013 Total	**23**	**10**	**8**	**41**
2008 – 2013 Bulldog Canyon	94	31	26	151
2008 – 2013 Rest of Tonto NF	148	66	78	292
2008 – 2013 Total	**242**	**97**	**104**	**443**

Other areas of apparent success have been Forest Order closures due to large fires and subsequent flooding issues, such as the Saint Clair and Bushnell Tanks areas, on the Cave Creek and Mesa ranger districts. These areas have been fenced and gated off, which has almost eliminated motor vehicle access all together.

Motorized Cross-country Travel

In the northern districts (Payson and Pleasant Valley ranger districts), the impacts of off-road activity are not as obvious. Off-road travel is permitted on these ranger districts as long as it does not result in resource damage. Enforcement is dependent on establishing that damage occurred. Determining if damage was done is sometimes subjective and can be a point of contention. Fuelwood cutting and collecting is common on these districts and big game retrieval does occur. There may or may not be road and trail proliferation as an unintended consequence of using motor vehicles to travel cross country, while conducting these permitted activities. While the unauthorized trail may eventually constitute damage, it is difficult to hold individuals responsible. The enforcement program of Tonto National Forest does not have data to indicate the significance of cross-country travel on these ranger districts.

We also have an inconsistency with cross-country travel/off road travel in the Bartlett Lake and Roosevelt Lake Recreation areas where we currently allow motorized travel and dispersed camping below the high water mark at both lakes when the water levels are low enough to accommodate vehicular travel even though off road travel is not otherwise permitted on those ranger districts.

Permit Zones

As already indicated, the Bulldog Canyon OHV Area is the only permit zone under current conditions. It constitutes the one area where we have been much more successful in preventing or reducing significant road proliferation and have successfully enforced driving off road violations.

Motor Vehicle Use for Big Game Retrieval

Motorized big game retrieval is authorized on the Payson and Pleasant Valley ranger districts as long as it does not cause resource damage. While not considered a significant issue from a law enforcement standpoint, there have been cases of individuals not understanding the restrictions and that big game retrieval does not apply to wilderness areas nor does it allow for driving off road to pursue animals prior to their harvest. The CHAMP permit (for hunters with disabilities) allows qualifying persons with the permit to use their motor vehicle off designated roads to wait for big game and to retrieve big game as long as it is not in conflict with other laws is currently honored on Tonto National Forest. Investigation of cross-country travel offenses in areas where big game retrieval is authorized is more complicated because of the requirement to establish that the cross-country travel did not occur due to big game retrieval.

It is virtually impossible to measure how often, if ever, motorized big game retrieval has an unintended consequence of creating an authorized trail/route. That being said, it is entirely plausible that someone witnessing either the act of motorized big game retrieval or the tracks of the vehicle afterwards would believe that driving cross-country was legal or that driving along those tracks was legal. This could result in establishing an unauthorized route. “Track following” is one of the mechanisms by which unauthorized routes are created in the desert ranger districts. This is somewhat mitigated by the lower volume of OHV activity on these ranger districts and especially in places and times where motorized recovery of big game does occur.

Motor Vehicle Use for Dispersed Camping

Repeated use of motor vehicles at dispersed sites does cause some degradation of the site in many cases. Often resource damage is not only associated with the motor vehicle usage in the site, but also from the route created when the motor vehicle leaves a designated route to access the site. Some damage to vegetation and cultural resources does occur at dispersed campsites[100]. Users may trim trees for tents and camper access as well as firewood. It should be noted that these activities sometimes occur in developed recreation sites as well. Dispersed sites also have been established by the public without regard to archaeological resources and there are probably some sites that have caused cultural resource damage.

In addition, the Tonto National Forest does not have any existing dispersed camping corridors. As a general rule, we allow dispersed camping throughout the forest, and we typically face the same enforcement issues with the routes to and from dispersed campsite as we do with travelling on unauthorized/user-created roads. If a reasonable person cannot tell that the route to the campsite is unauthorized, it is extremely difficult to justify enforcement action against that person. The fact that the sites exist is prima facie evidence that the public uses them. As indicated earlier in this report, it is much easier to do enforcement when the public wants to comply with the rules. Since the public has already demonstrated they want to use these sites, if we can get them designated, proper enforcement would be the simplest for this option and reduce the likelihood of increased resource damage due to motorized access to dispersed camping areas. We have an inconsistency with the application of the rule under our current management structure where we allow cross-country/off road travel in the Bartlett Lake and Roosevelt Lake Recreation Areas.

Additional Information Pertaining to Motor Vehicle Use Designation

Use of motor vehicles is not restricted for fuelwood gathering, as long as it is conducted in a designated area at designated time and the person has a valid permit. Determining if a violation has occurred requires law enforcement personnel to establish whether the cross-country motor vehicle usage was conducted legally under the conditions of either valid fuelwood gathering activity, big game retrieval, or dispersed camping. This does complicate investigations and requires additional time and effort.

Alternative B

Roads and Trails Designated for Motor Vehicle Use

Under this alternative, the reduction in miles of roads would likely have both positive and negative effects associated with law enforcement. The positive results from fewer roads to travel for enforcement reasons, but would also potentially cause a higher violation rate because it would be an unpalatable option for much of the public. The magnitude and/or interaction of those impacts are hard to determine, but in general the less the majority of the public likes the alternative, the more difficult it is to get compliance.

[100] For more information, see the Heritage Resources and Wildlife and Plant Habitat Resources sections of this chapter.

Areas Designated for Motor Vehicle Use

Under this alternative, cross-country travel would no longer be allowed in general on the Payson and Pleasant Valley ranger districts. Fuelwood gathering would be allowed within 300 feet of open routes in existing gathering areas. This could simplify enforcement somewhat considering someone would have very little defense if they were travelling cross country. However, the challenge of getting the public accustomed to the new rules, since cross-country travel has been allowed previously, would be a negative aspect of this alternative.

Permit Zones

The Bulldog Canyon Permit area is the only permit zone we have currently. Under this alternative, we would add four additional permit areas: Sycamore and The Rolls on the Mesa Ranger District and St. Clair and Desert Vista on the Cave Creek Ranger District. Tonto National Forest law enforcement personnel have been much more successful in citing and prosecuting illegal off road motorized travel in the existing permit zone (Bulldog Canyon) than the rest of the forest. As a general rule, adding the other permit areas would likely increase our effectiveness in those areas as well. The reasons for the increased success are likely a combination of several factors. In order to get the combination to enter the area, the public must sign for the permit, which clearly indicates what roads and trails are legal to operate motor vehicles, and thus they have been "duly noticed" about what is illegal motorized travel. Law enforcement officers would be more likely to patrol the area given that they can take action against those who are not complying with the permit than they would be to patrol areas that have been so seriously degraded that it is almost impossible to prove illegal off road travel enough to take corrective action.

There is potential for negative effects associated with the added permit zones from an enforcement standpoint. A percentage of recreationists on the forest are not willing to go get a permit, even if it is free. This is based on public comments made in the field[101] and the change in usage patterns based on observation of the existing permit zone. The result of those restrictive areas would either lead users to become noncompliant and enter the permit area illegally or they would recreate in a different area. If we increase the permit areas as suggested, it would likely push more motor vehicle activity into areas that currently do not have that level of motor vehicle activity. The overall objective of enforcement is not to write more tickets but to be effective enough to deter violations and thus help protect the resource from increased damage under the travel management plan. While the permit zone is more effective in clear cut enforcement as the user has been duly noticed and has an understandable map of where they may and may not go, it is difficult to determine what affect these permit zones would have on adjacent resources.

The proposed Sycamore Area is very seriously degraded and many of the trails are "braided" to the point of being difficult to differentiate between the original route and unauthorized routes. In addition, controlling access into that area would be especially difficult as the terrain does not lend itself well to providing any natural barriers. Currently it provides an opportunity for the afore-mentioned portion of the public that does not wish to get a permit. For those reasons, I estimate that it would be difficult to conduct efficient or successful enforcement in that area.

[101] The Tonto National Forest Patrol Captain has personally been told by members of the public that they do not want to get a permit and do not want to mess with it. They would rather have freedom to recreate as they please.

Motor Vehicle Use for Big Game Retrieval

The Arizona Game and Fish Department has provided statistics which indicate motorized big game retrieval is not a commonly practiced activity and is probably not one of the leading causes of resource damage caused by motorized travel[102]. Then logic would dictate that not allowing motorized big game retrieval under this alternative would not create a significant law enforcement burden. In addition, no user group (whether it is big game hunters, bird watchers, or any of the other activities that the public participates in on public land) would have the ability to legally drive cross-country to participate in their activity.

Motor Vehicle Use for Dispersed Camping

Under this alternative, motorized access for dispersed camping would be limited to designated dispersed sites which are accessible by a designated road or motorized trail. Enforcement under this plan would be a process that would need to be expanded over the years. It would take a significant amount of work to identify, document, get archaeological clearances for, and post all of the appropriate dispersed camping sites with suitable motorized access. Illegal dispersed camping would be difficult to enforce until we accomplished those tasks sufficiently. If we assume that the historically used existing dispersed sites would constitute the vast majority of the total dispersed sites, the long term effect would be beneficial from an enforcement stand point for the following reasons. The public has already demonstrated their willingness to use those dispersed sites or they would not exist. Their willingness to use the sites is the equivalent of voluntary compliance and likely the easiest option to enforce. The overall management objective is to provide dispersed camping opportunity, while protecting the resource and this alternative accomplishes that. The vast majority of those sites would be familiar to both Forest Service law enforcement officers and Arizona Game and Fish enforcement officers. The primary enforcers of the rules and laws would typically have a thorough understanding of use patterns and would likely be critical in developing and refining the list of dispersed sites over the initial few years.

Additional Information Pertaining to Motor Vehicle Use Designation

Under this alternative, fuelwood cutting and gathering would be restricted to within 300 feet on both sides of an open route. This could present some confusion and difficulty when determining whether or not a motor vehicle is within the 300 foot buffer. First the measurement has to be taken (or estimated) and as part of that it has to be determined from what point on the open route to take the measurement. This could prove challenging on some of the very winding routes. It may require some increased diligence to make sure there is not a closer point from somewhere further along the route and also to determine if the vehicle must be within 300 foot of the route they used to get the location or from any open route.

Alternative C

Roads and Trails Designated for Motor Vehicle Use

Under this alternative there would be more miles of public access, but significantly more of it would be motorized trails. While enforcement of the *Code of Federal Regulations (36 CFR 212.5)* are fairly clear on designated roads, it is unclear how state motor vehicle code (with the

[102] For more information, see the Game and Nongame section of this chapter.

exception related to driving intoxicated and reckless driving which apply everywhere) would be applied to motorized trails. In general terms, it would take some time and effort to educate the public on the significance of motorized trails and how to tell them from roads. The increase in the administrative use only roads and trails would cause some enforcement complications, because the public may not understand why access is limited to only certain users. The overall amount of roads and trails miles accessible to the public would likely garner public support and thus achieve more voluntary compliance, which is the preferred condition for enforcement strategy.

Areas Designated for Motor Vehicle Use

Under this alternative, motorized cross-country travel would be limited to eight areas: Bartlett Lake (Cave Creek Ranger District); Golf Course (Globe Ranger District); Roosevelt Lake (Tonto Basin Ranger District); Sycamore (Mesa Ranger District), and four proposed “tot lots” totaling approximately 12 acres. From enforcement standpoint, having the designated areas allowing cross-country travel would be simpler to understand and may also serve to protect the resources in the remainder of the forest. Clearly a certain user group exists that demands this type of recreational opportunity. Providing some limited opportunity for cross-country travel may result in fewer attempts at cross-country travel in the other areas of the forest.

Providing tot lots (areas exclusively for beginner or children riders) is a needed management alternative. Segregating those riders from the other areas would give the public a much safer environment to train the beginning riders and allow educational efforts to be more focused on those areas with the hope of increasing safety and compliance for the generations to come.

Under current conditions, we have an inconsistency in dealing with cross-country travel/off road travel in the Bartlett Lake and Roosevelt Lake Recreation Areas, where we currently allow cross-country motorized travel (in districts where it is prohibited) from the current water level to the high water mark when the water levels are low enough to accommodate vehicular travel. This alternative would address that inconsistency, but may have an unintended effect of having more cross-country travel in those locations than we already do, which may result in user conflicts between campers and recreational riders. Additional restrictions on recreational riding in these two areas would likely be needed to prevent the conflicts. It is also noted that the actual area would change with the water levels in those reservoirs and it can cause some confusion and hazards for the public. Changing water levels may prevent travel along portions of Bartlett Lake at certain points. This means persons coming off the Forest Road 42/532 complex may not be able to exit along Bartlett Lake. It also means that people may get stuck on Bartlett Flats, if the water level rises rapidly. Within the last ten years, I have witnessed Bartlett Lake levels rise a vertical foot per day on at least two occasions. This can prevent safe exit of vehicles and trailers for persons camping along the shore.

Permit Zones

Under this alternative, there would be four permit zones, which would increase the permit areas from 34,720 acres to approximately 117,000 acres which is approximately 5 percent of the nonwilderness lands of the Tonto National Forest. The Bulldog Canyon Permit Area is the only current permit zone. It constitutes the one area where we have been much more successful in preventing or reducing significant road proliferation and have successfully enforced driving off road violations. The permit is free, but in order to get the combination to access the area, the public is required to come in and sign the permit. When they receive the permit they are provided

with gate combinations, rules, and a map of the authorized roads. While it is not a foolproof system, the Tonto National Forest Law Enforcement and Investigations has been much more successful in enforcing off-road violations. It is likely that it has endured much less impact than adjacent areas on the same ranger district. This is likely due to a combination of reduced visitation because of the permit requirement, an increased awareness of what is allowed and what is not, and increased enforcement success.

Adding the other three permit zones would likely increase the resource protection in those areas as well. Two of the areas are on the Cave Creek Ranger District and the office is located on Bartlett Dam Road, which is the Primary access route to the St Clair and one of the primary routes to the Desert Vista permit areas. This should serve to increase the public's opportunity to obtain permits and explanations of them. Likewise both Forest Service law enforcement officers and Arizona Game and Fish Department deputies would access this road network regularly, since it is the only access to Bartlett and Horseshoe Lake Recreation areas, which would put them in close proximity to patrol the permit areas.

Motor Vehicle Use for Big Game Retrieval

Motorized big game retrieval is proposed to be allowed within one mile from designated routes to retrieve elk and bear as long as the area is not closed to motorized traffic for some other reason, such as designated wilderness. Creating a one-mile buffer around all the designated routes would likely encompass almost all the area of suitable bear and elk habitat that is not in wilderness. This would likely remove the need for law enforcement officers to measure the one mile distance, which makes determination of that element of the crime easier, but they may have to follow a vehicle for the entire distance to determine if they are conducting cross-country travel for the purpose of retrieving an elk or bear. I do not foresee a significant issue with the hunters engaging in that much off road travel based on the statistics given by the Arizona Game and Fish Department. The potential issue would be the appearance of special treatment given to hunters and the attempts of others to use that to conceal or justify their cross-country travel.

It is virtually impossible to measure how often, if ever, motorized big game retrieval has an unintended consequence of creating an authorized trail/route. That being said, it is entirely plausible that someone witnessing either the act of motorized big game retrieval or the tracks of the vehicle afterwards would believe that driving cross-country was legal or that driving along the tracks witnessed was legal. This could result in establishing an unauthorized route. "Track following" is one of the mechanisms by which unauthorized routes are created in the desert ranger districts. This is somewhat mitigated by the lower volume of OHV activity on these ranger districts.

The CHAMP permit (for hunters with disabilities) allows qualifying persons with the permit to use their motor vehicle off designated roads to wait for big game and to retrieve big game as long as it is not in conflict with other laws is currently honored on Tonto National Forest. Investigation of cross-country travel offenses in areas where big game retrieval is authorized would be more complicated because of the requirement to establish that the cross-country travel did not occur due to big game retrieval.

Motor Vehicle Use for Dispersed Camping

Repeated use of motor vehicles at dispersed sites does cause some degradation of the site in many cases. Often resource damage is not only associated with the motor vehicle usage in the site, but also from the route created, when the motor vehicle leaves a designated route to access the site. Some damage to vegetation and cultural resources does occur at dispersed campsites, but it is likely that camping corridors with a 100 foot buffer on each side along those routes would result in more damage as people would be potentially disallowed from camping in existing sites and would have to explore, select, and likely improve another location within the buffer. How much damage would occur depends largely on if the existing campsites within the corridors are sufficient to accommodate the demand for campsites. As of this time, there is not sufficient information to determine this; however, resource protection is one of the most important functions of law enforcement and forest protection officers. Damage from motorized travel to and from dispersed campsites could be difficult to prove and is more likely to occur within this corridor than within designated locations. The enforcement issues stem from proving the distance from a designated route and determining if the cross-country travel in our developed recreation sites is a result of legal dispersed camping activity or not. The entire camping corridor would have to have archaeological clearances. Users may trim trees for tents and camper access as well as firewood, and they may dig pits and move rocks for fire rings. It should be noted that these activities sometimes occur

Additional Information Pertaining to Motor Vehicle Use Designation

Use of motor vehicles for fuelwood gathering would be restricted to a distance of 300 feet on both sides from a route within permitted areas. This requires law enforcement officers to make a determination of distance from the route, and complicates enforcement somewhat. For example, where exactly to take the measurement, what instrument to use (if any), and how precise do we expect the public to be would all need to be taken into consideration.

Alternative D

Roads and Trails Designated for Motor Vehicle Use

Under this alternative there would be approximately 1,500 more miles for motorized access than alternative C. In addition, more of these miles would retain the road designation. This would have minimal effects on law enforcement. It would, however, reduce the frequency of patrol on some of those roads and trails because of the increased mileage to patrol.

Areas Designated for Motor Vehicle Use

This alternative is identical to alternative C for areas open to motorized cross-country travel and would have the same effects.

Permit Zones

This alternative includes no change in existing condition as it relates to permit zones, resulting in only the Bulldog Canyon Permit Zone being proposed. Bulldog Canyon Permit Area is the only permit zone under current conditions. As a result, the effects are identical to alternative A for permit zones.

Motor Vehicle Use for Big Game Retrieval

This alternative would allow cross-country travel to retrieve deer, bear, and elk forestwide except wilderness and other existing closures. This would not likely significantly increase cross-country travel for big game retrieval. It might significantly increase the burden of proving violators that really are not attempting to retrieve big game but claim they are. It might also significantly increase the likelihood of inadvertently creating unauthorized routes. The soils in the desert ranger districts that this alternative opens up do not recover from vehicular travel very well. The tracks of someone retrieving big game are more visible for a longer time and the volume of vehicles on these ranger districts is higher all of which increase the likelihood of inadvertently causing an unauthorized route due to track following.

Motor Vehicle Use for Dispersed Camping

Repeated use of motor vehicles at dispersed sites does cause some degradation of the site in many cases. Often resource damage is not only associated with the motor vehicle usage in the site, but also from the route created when the motor vehicle leaves a designated route to access the site. Some damage to vegetation and cultural resources does occur at dispersed campsites, but it is likely that camping corridors with a 300 foot buffer on both sides along those routes would result in more damage as people would be potentially disallowed from camping in existing sites and would have to explore, select, and likely improve another location within the buffer. How much damage would occur depends largely on if the existing campsites within the corridors are sufficient to accommodate the demand. As of this time, there is not sufficient information to determine this. The enforcement issues stem from proving the distance from a designated route and determining if the cross-country travel is a result of legal dispersed camping activity or not. The entire camping corridor would need to have archaeological clearances. In addition, persons may trim trees for tents and camper access as well as firewood, and they may dig pits and move rocks for fire rings. It should be noted that these activities sometimes occur in our developed recreation sites as well.

Additional Information Pertaining to Motor Vehicle Use Designation

Like with the existing condition, use of motor vehicles is not restricted for fuelwood gathering as long as it is conducted in a designated area at designated time and the person has a valid permit. Determining if a violation has occurred requires law enforcement personnel to establish whether the cross-country motor vehicle usage was conducted legally under the conditions of either valid fuelwood gathering activity, big game retrieval, or dispersed camping. This could complicate investigations and may require additional time and effort.

Wildlife and Plant Habitat Resources

This section summarizes existing conditions and effects from all alternatives to threatened and endangered species, critical habitats and critical habitats considered, Forest Service sensitive species, other animal species considered, management indicator species, and migratory bird priority species that may occur or may have habitat within the project area.

Threatened, Endangered, Candidate, and Sensitive Species

Wildlife on the Tonto National Forest is managed by maintaining habitat to support viable populations of all native vertebrate and invertebrate species and other desirable species as required by the National Forest Management Act (NFMA) of 1976 (*P.L. 94-588*). Other regulations provide for specific management of special status species based on their designations under various statutes, policies, and plans for which the Forest Service is required to comply.

Affected Environment

Tonto National Forest, managed under the principles of multiple uses, plays a vital role in Arizona by supporting crucial wildlife habitat and maintaining Arizona's wildlife heritage as well as providing significant opportunities for wildlife related recreation and associated economic effects. Owing to the diversity of habitats, the forest has a rich biological diversity and numerous wildlife species which include 310 birds, 94 mammals including 9 big game wildlife species, 55 reptiles, 14 amphibians, 16 native fishes, 28 non-native fishes. In addition, there are 3 special status invertebrates, and 24 special status plant species. Some non-native species were established intentionally, as is the case with rainbow trout; while others such as quagga mussels have arrived as unwelcome or invasive species, and yet others appeared as they expanded their range. A few species, like the Mexican gray wolf and the California condor, were extirpated in Arizona but have been re-established through reintroduction programs (Arizona Game and Fish Department, 2012b). Motorized access across the Tonto National Forest is an important aspect of wildlife related recreational pursuits such as bird watching, big game wildlife viewing, hunting, and fishing[103].

Mammals: Small mammals such as bats, squirrels, rats, and mice contribute to most of the mammal diversity within Tonto National Forest. Larger mammals are hunted as game, such as American elk, mule deer, white-tailed deer, javelina, and black bear[104].

Birds: Birds within the Tonto National Forest breed, migrate, or seasonally occur within the forest. Nearctic migratory birds, those species that nest in North America and migrate south to Central America, South America, and Caribbean for the winter, are of special concern because of their declining populations[105].

Reptiles: Tonto National Forest supports 23 lizard, 29 snake, and 3 Chelonian species[106].

Amphibians: Tonto National Forest supports 6 species of toads, 6 species of frogs, 1 species of salamander, and 1 non-native bullfrog species. These water-dependent amphibians occur in or near springs, livestock tanks, streams, and rivers within the forest[107].

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[103] For more information about the management of wildlife related recreation, see the Game and Nongame section of this chapter.
[104] Refer to the Tonto National Forest mammal checklist for a complete list of mammals within the forest (U.S. Forest Service, 2008).
[105] Refer to the Tonto National Forest bird checklist for a complete list of birds within the forest (U.S. Forest Service, 2011).
[106] Refer to the Tonto National Forest reptile and amphibian checklist for a complete list of reptiles within the forest (U.S. Forest Service, 2008).
[107] Ibid

Fish: The Tonto National Forest has a diverse fish fauna that inhabits approximately 500 miles of streams that flow on the Forest. There are 14 native stream-dwelling fishes and about 7 stream-dwelling nonnative sport fish on the forest. All native fishes found on the Tonto National Forest are rare and are declining locally and range wide. These native fish species range from the Sonoran desert zone to mixed conifer zone[108].

Wildlife habitat within Tonto National Forest can be divided into 12 wildlife habitat categories based on potential natural vegetation types (PNVT). PNVT categories are coarse-scale groupings of ecosystem types that share similar geography, vegetation, and historic ecosystem disturbances such as fire, drought, and native herbivory. This classification most closely matches habitat descriptions that other previous documents use, including the original habitat classification within the 1985 Tonto National Forest Plan (Forest Plan) and wildlife habitat types used in the forest wildlife checklists. It is important to use consistent wildlife habitat classifications because: 1) it allows for comparison of wildlife habitat changes relative to when the Forest Plan was written and 2) it allows the travel management effects to wildlife habitat to be translated to impacts to particular wildlife species. As such, PNVTs represent wildlife habitat types that can generally be associated with particular wildlife species. PNVT is used to reflect both the current wildlife habitat conditions and the expected vegetation cover type to develop following disturbances such as fire. Table 55 describes each PNVT and identifies the acreage of each PNVT present on the forest.

Table 55: Description and Acreage of Potential Natural Vegetation Types Present on Forest

Potential Natural Vegetation Type	Acres of PNVT on Forest	Description of PNVT
Pinyon-juniper chaparral	814,777.88	Mostly found on lower slopes of mountains and in upland rolling hills at approximately 4,500 to 7,500 ft. in elevation. Most common pine is the Colorado piñon (*Pinus edulis*), occurring in limited areas. One-seed juniper (*Juniperus monosperma*) is most common in Arizona and New Mexico; however, there are areas with Utah juniper *(J. osteosperma*), alligator juniper (*J. deppeana*), and Rocky Mountain juniper (*J. scopulorum*). In addition, annual and perennial grasses and graminoids, forbs, half-shrubs and shrubs can be found beneath the woodland overstory.
Desert communities	725,990.92	Lowest elevations on the Tonto NF on all slope ranges. At its upper elevational limit it is bounded by semi-desert grasslands. The Desert Communities PNVT consists of several Existing Vegetation Dominance Types including: Triangle Bursage (*Ambrosia deltoidea*), Creosote Bush (*Larrea tridentata var. tridentata*), Yellow Paloverde (*Parkinsonia microphylla*), Jojoba (*Simmondsia chinensis*), Velvet Mesquite (*Prosopis velutina*), and Evergreen and Deciduous Shrubs Mixed. Important overstory plant species (in addition to those named above) include saguaro (*Carnegiea gigantea*), ocotillo (*Fouquieria splendens*), and various pricklypear and cholla species (*Opuntia spp.*).

[108] Refer to the Tonto National Forest fish checklist for a complete list of fish within the forest (U.S. Forest Service, 2008).

Potential Natural Vegetation Type	Acres of PNVT on Forest	Description of PNVT
Semi-desert grassland	394,195.66	Dominant grassland associations/types are black grama (*Bouteloua eriopoda*) grassland, blue grama/hairy grama (*B. hirsuta*) grassland, tobossa (*Hilaria mutica*) grassland, giant sacaton (*Sporobolus wrightii*) grassland and mixed native perennial grassland. Shrubs also occupy these grasslands and their abundance and species composition also varies.
Ponderosa pine - mild	250,220.91	Widespread on the Forests and represents the largest wildlife habitat type occurring at elevations ranging from 6,000 to 9,000 ft on igneous, metamorphic, and sedimentary parent soils with good aeration and drainage, and across elevational and moisture gradients. The dominant species in this system is Ponderosa pine (*Pinus ponderosa*). Other trees, such as Gambel oak, Douglas-fir, piñon pine, and junipers may be present. There is typically a shrubby understory mixed with grasses and forbs, although this type sometimes occurs as savannah with extensive grasslands interspersed between widely spaced clumps or individual trees. This system is adapted to drought during the growing season, and has evolved several mechanisms to tolerate frequent, low intensity surface fires.
Interior chaparral	280,763.30	Mountain foothills and lower slopes where low-elevation desert landscapes transition into wooded evergreens. Interior chaparral consists of mixed shrub associations including but not limited to the following species: Manzanita (*Arctostaphylos* spp.), desert ceanothus (*Ceanothus greggii*), mountain mahogany (*Cercocarpus montanus*), silktassles (*Garrya* spp.), Stansbury cliffrose (*Purshia stansburiana*), shrub live oak (*Quercus turbinella*), and sumacs (*Rhus* spp.).
Pinyon-juniper grassland	204,136.68	Mostly found on lower slopes of mountains and in upland rolling hills at approximately 4,500 to 7,500 ft. in elevation. Most common pine is the Colorado piñon (*Pinus edulis*), occurring in limited areas. One-seed juniper (*Juniperus monosperma*) is most common in Arizona and New Mexico; however, there are areas with Utah juniper *(J. osteosperma*), alligator juniper (*J. deppeana*), and Rocky Mountain juniper (*J. scopulorum*). In addition, annual and perennial grasses and graminoids, forbs, half-shrubs and shrubs can be found beneath the woodland overstory.
Mixed conifer with aspen	58,385.76	The highest elevations on the Tonto NF between 5,800 and 7,900 feet. It is bounded on its lower limit by ponderosa pine forests and, occasionally, by Madrean evergreen woodlands or chaparral. The only Existing Vegetation Dominance Type on the Tonto NF is the Mixed Conifer Map Unit. This Map Unit and the entire PNVT are highly variable in that the Mixed Conifer on the Tonto NF is found in both the Low Sun Cold (LSC) (LSC 6, <1, +1) climatic gradient and the Low Sun Mile (LSM) (LSM, 6, -1) gradient. These types will respond differently to disturbance. The LSC Mixed Conifer contains Gamble Oak without evergreen oaks while the LMS Mixed Conifer contains evergreen oaks (Arizona White Oak and Emory Oak) and usually alligator juniper. Dominant and co-dominant vegetation varies in elevation and moisture availability. In the lower and drier elevation portions within this wildlife habitat type, Douglas fir (*Pseudotsuga menziesii*) and ponderosa pine (*Pinus ponderosa*) may co-dominate. In higher and moister areas white fir (*Abies concolor*) may be co-dominant with Douglas fir. The understory vegetation is comprised of a wide variety of shrubs, grasses, graminoids (sedges, etc.), and forbs; the compositions depends on soil type, aspect, elevation, disturbance history and other factors.

Potential Natural Vegetation Type	Acres of PNVT on Forest	Description of PNVT
Madrean encinal woodland	48,181.76	Occurs on foothills, canyons, bajadas and plateaus between the semi-desert grasslands and Madrean pine-oak woodlands. This category is dominated by Madrean evergreen oaks such as Arizona white oak (*Quercus arizonica*), Emory oak (*Quercus emoryi*), gray oak (*Quercus grisea*), Mexican blue oak (*Quercus oblongifolia*), and Toumey oak (*Quercus toumeyi*). Madrean pine, Arizona cypress, pinyon and juniper trees and interior chaparral species may be present, but do not co-dominate. The ground cover is dominated by warm-season grasses such as threeawns (*Aristida* spp.), blue grama (*Bouteloua gracilis*), sideoats grama (*Bouteloua curtipendula*), Rothrock grama (Bouteloua rothrockii), Arizona cottontop (*Digitaria californica*), plains lovegrass (*Eragrostis intermedia*), curly-mesquite (*Hilaria belangeri*), green sprangletop (*Leptochloa dubia*), muhly grasses (*Muhlenbergia* spp.), or Texas bluestem (*Schizachyrium cirratum*). Historically this vegetation type had over 10% tree canopy cover, with the exception of early, post-fire plant communities
Cottonwood-willow riparian forest	41,228.82	Lower elevations along rivers and streams in unconstrained valley bottoms. Dominant woody species include cottonwood spp. (*Populus* spp.), willow species (*Salix* spp.), and mesquite spp. (*Prosopis* spp.). Various grasses and forbs are also present. Many of the areas with this wildlife habitat type have experienced an increase in invasive species such as salt cedars (*Tamarix* spp.), and Russian olive (*Elaeagnus angustifolius*). The vegetation is dependent upon on seasonal flooding and high water tables for germination, growth and survivorship of the woody dominants. This wildlife habitat is probably the least accurate in describing its current condition. A variety of negative impacts (for example, grazing, climate change, falling water tables, recreation) will probably prevent this wildlife habitat returning back to its original condition. This wildlife habitat type has more mesquite, baccharis, and disturbed ground than cottonwood and willow.
Mixed broadleaf deciduous riparian forest	17,731.10	Located in the Madrean and Chihuahuan provinces, mixed broadleaf deciduous riparian forests are found along rivers and streams starting at low elevations (approximately 4,000 ft.) and climbing up to montane elevations of approximately 9,000 ft. The vegetation is a mix of riparian woodlands and shrublands with a variety of vegetation associations. The dominant vegetation is likely to depend upon a suite of site-specific characteristics including elevation, substrate, stream gradient, and depth to groundwater. For example, one vegetation association is dominated by bigtooth maple (*Acer grandidentatum*) with mixed stands of Gambel oak (*Quercus gambelii*), some scattered conifers and possibly some aspen (*Populus tremuloides*). Other sites can be dominated by a mixture of the following woody species: boxelder (*Acer negundo*), cottonwoods (*Populus angustifolia and P. fremontii*), Arizona sycamore (*Platanus wrightii*), velvet ash (*Fraxinus velutina*), Arizona walnut (*Juglans major*), Arizona cypress (*Cupressus arizonica*), and willows species (*Salix* spp.). The forest often contains several species of oak and conifers (*Pinus* and *Juniperus*) from upstream and adjacent uplands. Exotic species such as Russian olive and salt cedar are common in some stands, especially at lower elevations. Vegetation can be dependent upon annual or periodic flooding for growth and reproduction, especially at lower elevations.
Mines	428.85	Disturbed, developed areas with sparse vegetation

Potential Natural Vegetation Type	Acres of PNVT on Forest	Description of PNVT
Water	28,989.16	Reservoirs and large rivers. The map boundary of the reservoirs and large rivers used to calculate overlapping routes, areas, or corridors are not entirely accurate. Consequently routes, areas, or corridors may appear to occur in "water" wildlife habitat. Most routes, areas, or corridors are near lake shores (for example, marinas). In less frequent instances, these areas may be temporary lake beds. Consequently, this "water" wildlife habitat my represent transitory but important riparian wildlife habitat.

Environmental Effects

Methodology for Analysis

Whenever possible, species-specific habitat and locality data were used for analysis. Forest-specific Geographic Information System (GIS) data were used for riparian and wetland habitat. Additionally, using species-habitat relationships, data were queried by Potential Natural Vegetation Type (PNVT) to help with analysis of effects to species' habitats. Within the Forest boundary, PNVTs were derived from aggregated Forest Terrestrial Ecosystem Survey (TES) Ecological Units on the Forest and Southwest Regional Gap Analysis Project (SWReGAP) (Steinke 2007). PNVTs are ecological units based biophysical settings and depict the potential vegetation type that would dominate a site under historic fire regimes and biological processes (Lee and Smith, 2006).

Extent and density of roads by type is derived from the Forest GIS database and reflects the on the ground road length and design. Forest miles by road type used determined through a GIS-based analysis using available data. Roads under Forest Service authorization were analyzed as direct and indirect effects; roads on Forest Service lands not under Forest Service authorization were included in cumulative effects analysis. Many unauthorized roads are not digitized into the Forest GIS data layer. It is unknown how many miles of unauthorized routes actually exist on-the-ground that are not currently identified in the Forest GIS layer, but it is estimated to be very high and expanding every year due to increased motorized vehicular use on the Forest.

Species occurrence data was obtained from various sources, including the Arizona Game and Fish Department's Heritage Data Management System, species-based habitat mapping, survey data, and incidental observations as represented in the forest GIS database. Where site-specific information was lacking, information from knowledgeable individuals was used to plot expected species distributions. Ultimately, the analysis of effects of each alternative for each species utilizes the same data sets resulting in a relative comparison of project impacts among alternatives, even if other unknown impacts were present.

Analysis Factors

In the analysis, there is no distinction made between the different types of roads (public, administrative, etc.) since there is no way to quantify the difference in impacts between types. Administrative roads are those roads that are not open to the public, and will not be depicted on the motorized vehicle use maps given to the public. Typical permitted administrative uses

authorized by the Forest Service in writing include: range improvements, ceremonial gathering by tribes, outfitter and guide services, maintenance of utility corridors, administrative use by other state or federal agencies, or special use permit events.

Lakes, reservoirs, rivers, springs, and perennial streams are aquatic habitat for fish, amphibians, reptiles, and invertebrates. Roads within 300 feet of aquatic wildlife habitat or roads crossings perennial streams could potentially impact aquatic wildlife habitat, because road use could disturb channel banks or the road prism could funnel sediments into aquatic habitat.

The metric "road density" is used to give a general and relative assessment of potential road impacts to perennial streams. The Forest Service developed the Watershed Condition Framework (WCF) which is intended to provide a consistent way to evaluate watershed condition at both the National and forest levels (U.S. Forest Service, 2011b). One of the indicators for the watershed condition classification process is "roads and trails." This indicator represents 15 percent of the overall watershed condition assessment. The road density attribute is rated good, fair, or poor depending on road density per square mile within a watershed. The road density rating is good if road density is less than 1 mile per square mile, fair if road density ranges from 1 to 2.4 miles per square mile, and poor if road density is greater than 2.4 miles per square mile. Density of roads and trails within each threatened, endangered, and sensitive (TES) species habitats and within designated critical habitats for each alternative is assessed for potential effects.

Road density data are presented because road impacts may be masked by total mileages when not comparing the mileages relative to the occurrence of that impacted habitat within Tonto National Forest. For example, although the total road mileages that are included in the no action alternative in riparian forests are small, there are relatively few acres of riparian forests. Consequently, the resultant road density would be relatively higher than in other more abundant wildlife habitats.

The wildlife data is imperfect, but it is the best available data available to analyze the impacts of road designation to wildlife species. The wildlife observational data is not complete, and therefore it is not possible to know absolutely whether an individual occurs near added roads. That is, an absence of data of a species near a road may simply mean that the area was not surveyed, but the individual may still occur in the area.

To attempt to compensate for this, habitat modeling data for wildlife species is also used to evaluate the potential impacts of road designations. Arizona Game and Fish Department created these data from Heritage Data Management System data, breeding bird atlas data, Southwest Regional Gap habitat models, Arizona Game and Fish Department internal occurrence data, and expert opinion on habitat parameters. These habitat models tend to overestimate the current extent of federally-listed-species habitat, describing historic/potential habitat rather than suitable/occupied habitat.

Additionally, within motorized big game retrieval corridors, hunters who have legally killed particular game species are allowed to travel off-road from a designated public route to retrieve their harvest.

The area where hunters will retrieve their harvest depends on several factors:

- Game species habitat: if the game species habitat does not occur in an area, it is not expected that cross-country travel would occur in that area.

- Proposed and designated public routes: public routes are where hunters could originate cross-country travel to retrieve the harvest.
- Areas permitted for motorized cross-country: this does not include land not managed by the Forest Service.

Habitat

Table 56 identifies the miles of roads and road density within each PNVT for each alternative, as well as the acreage of each PNVT impacted by the five analysis factors under each alternative.

Table 56: Miles of Roads and Road Density in Each PNVT and Acres of Each PNVT Impacted by Five Analysis Factors under Each Alternative

Analysis Factor	Alternative A	Alternative B	Alternative C	Alternative D
Pinyon-juniper Chaparral (814,777.88 acres forestwide)				
Roads and trails open to public use (miles)	721.47	425.52	573.95	703.87
Road density (miles per square mile)	0.60	0.37	0.48	0.59
Areas open to motorized cross-country travel (acres)	271,584.35	0.00	0.00	0.00
Big game retrieval using motorized vehicles (acres)	271,584.35	0.00	340,423.39	374,607.87
Access of dispersed camping using motorized vehicles (acres)	271,584.35	6.09	12,640.21	48,485.13
Additional Information Pertaining to motor vehicle use (personal use fuelwood gathering) (acres)	329,724.25	23,689.81	31,556.84	329,724.25
Desert Communities (725,990.92 acres forestwide)				
Roads and trails open to public use (miles)	581.57	246.49	396.36	520.48
Road density (miles per square mile)	0.58	0.29	0.42	0.53
Areas open to motorized cross-country travel (acres)	1,316.76	0.00	1,403.92	1,403.92
Big game retrieval using motorized vehicles (acres)	1,316.76	0.00	32,665.11	240,445.02
Access of dispersed camping using motorized vehicles (acres)	1,316.76	10.65	10,191.79	36,880.42
Additional Information Pertaining to motor vehicle use (personal use fuelwood gathering) (acres)	71,843.67	7,057.36	8,566.65	71,843.67
Semi-desert Grassland (394,195.66 acres forestwide)				
Roads and trails open to public use (miles)	277	169.77	225.54	274.63
Road density (miles per square mile)	0.46	0.29	0.38	0.46
Areas open to motorized cross-country	9,353.35	0.00	0.00	0.00

Analysis Factor	Alternative A	Alternative B	Alternative C	Alternative D
travel (acres)				
Big game retrieval using motorized vehicles (acres)	9,353.35	0.00	43,468.11	94,612.74
Access of dispersed camping using motorized vehicles (acres)	9,353.35	4.86	4,835.76	17,154.51
Additional Information Pertaining to motor vehicle use (personal use fuelwood gathering) (acres)	63,352.21	8,093.00	9,867.08	63,352.21
Ponderosa Pine Mild (250,220.91 acres forestwide)				
Roads and trails open to public use (miles)	1,764.47	857.25	1,255.32	1,725.44
Road density (miles per square mile)	4.67	2.35	3.37	4.57
Areas open to motorized cross-country travel (acres)	371,855.52	0.00	0.00	0.00
Big game retrieval using motorized vehicles (acres)	371,855.52	0.00	388,939.49	402,943.85
Access of dispersed camping using motorized vehicles (acres)	371,855.52	24.5	24,495.67	104,934.92
Personal use fuelwood gathering) (acres)	192,151.48	28,887.13	34,832.02	192,151.48
Interior Chaparral (280,763.30 acres forestwide)				
Roads and trails open to public use (miles)	210.81	105.32	155.55	210.12
Road density (miles per square mile)	0.50	0.26	0.38	0.50
Areas open to motorized cross-country travel (acres)	8,150.13	0.00	0.00	0.00
Big game retrieval using motorized vehicles (acres)	8,150.13	0.00	83,038.16	93,604.62
Access of dispersed camping using motorized vehicles (acres)	8,150.13	0.97	3,373.60	13,178.38
Personal use fuelwood gathering) (acres)	60,441.98	4,184.27	5,979.93	60,441.98
Pinyon-juniper Grassland (204,136.68 acres forestwide)				
Roads and trails open to public use (miles)	285.74	177.86	233.14	279.68
Road density (miles per square mile)	1.01	0.67	0.84	0.99
Areas open to motorized cross-country travel (acres)	53,162.35	0.00	0.00	0.00
Big game retrieval using motorized vehicles (acres)	53,162.35	0.00	63,069.28	93,521.69
Access of dispersed camping using motorized vehicles (acres)	53,162.35	2.29	5,640.58	19,164.07

Analysis Factor	Alternative A	Alternative B	Alternative C	Alternative D
Personal use fuelwood gathering) (acres)	88,257.26	11,215.39	13,950.02	88,257.26
Mixed Conifer with Aspen (58,385.76 acres forestwide)				
Roads and trails open to public use (miles)	286.34	137.91	212.02	257.04
Road density (miles per square mile)	3.31	1.68	2.50	2.99
Areas open to motorized cross-country travel (acres)	144,130.17	0.00	0.00	0.00
Big game retrieval using motorized vehicles (acres)	144,130.17	0.00	103,095.21	117,697.66
Access of dispersed camping using motorized vehicles (acres)	144,130.17	0.72	3,166.15	14,721.38
Personal use fuelwood gathering) (acres)	50,305.85	2,969.17	3,199.41	50,305.85
Madrean Encinal Woodland (48,181.76 acres forestwide)				
Roads and trails open to public use (miles)	62.81	30.66	50.82	58.47
Road density (miles per square mile)	0.83	0.41	0.68	0.78
Areas open to motorized cross-country travel (acres)	18,186.98	0.00	0.00	0.00
Big game retrieval using motorized vehicles (acres)	18,186.98	0.00	20,647.21	20,929.68
Access of dispersed camping using motorized vehicles (acres)	18,186.98	0.35	996.6	3,549.79
Personal use fuelwood gathering) (acres)	19,479.61	1,866.32	2,566.50	19,479.61
Cottonwood Willow Riparian Forest (41,228.82 acres forestwide)				
Roads and trails open to public use (miles)	444.29	197.48	278.72	393.59
Road density (miles per square mile)	7.09	3.26	4.52	6.30
Areas open to motorized cross-country travel (acres)	361.68	0.00	1,203.52	1,203.52
Big game retrieval using motorized vehicles (acres)	361.68	0.00	7,433.39	83,545.95
Access of dispersed camping using motorized vehicles (acres)	361.68	24.38	5,685.39	20,150.43
Personal use fuelwood gathering) (acres)	15,232.85	3,074.44	4,322.89	15,232.85
Mixed Broadleaf Deciduous Riparian Forest (17,731.10 acres forestwide)				
Roads and trails open to public use (miles)	7	166.51	213.95	256.91
Road density (miles per square mile)	9.84	6.35	8.06	9.61

Analysis Factor	Alternative A	Alternative B	Alternative C	Alternative D
Areas open to motorized cross-country travel (acres)	33,825.25	0.00	0.00	0.00
Big game retrieval using motorized vehicles (acres)	33,825.25	0.00	31,018.73	43,281.90
Access of dispersed camping using motorized vehicles (acres)	33,825.25	3.74	4,345.57	14,381.01
Personal use fuelwood gathering) (acres)	25,846.11	5,777.20	7,117.99	25,846.11
Mines (428.85 acres forestwide)				
Roads and trails open to public use (miles)	0.01	0.00	0.00	0.00
Road density (miles per square mile)	0.01	0.00	0.00	0.00
Areas open to motorized cross-country travel (acres)	0.00	0.00	0.00	0.00
Big game retrieval using motorized vehicles (acres)	0.00	0.00	< 0.01	2.34
Access of dispersed camping using motorized vehicles (acres)	0.00	0.00	0.1	0.16
Personal use fuelwood gathering) (acres)	0.74	0.16	0.16	0.74
Water (28,989.16 acres forestwide)				
Roads and trails open to public use (miles)	24.01	13.47	14.43	23.54
Road density (miles per square mile)	0.56	0.33	0.35	0.55
Areas open to motorized cross-country travel (acres)	0.00	0.00	10,984.43	10,984.43
Big game retrieval using motorized vehicles (acres)	0.00	0.00	7.1	79,943.05
Access of dispersed camping using motorized vehicles (acres)	0.00	0.00	368.34	2,202.42
Personal use fuelwood gathering) (acres)	210.93	44.57	49.72	210.93

General Effects of Motorized Routes and Associated Uses

Routes and their associated use can have a variety of impacts to wildlife and wildlife habitat. Habitat impacts from routes and their associated use include: habitat degradation (for example, edge effects and spread of non-natives), fragmentation, and increased fire risk. Routes impact individual animals through impeding movement (barriers), causing mortality (vehicle collisions, diseases), and causing disturbance (noise)[109].

[109] More detailed information associated with these effects can be found in the draft Biological Evaluation Report in the project record.

Cumulative Effects Common to All Species

Past, present, and reasonably foreseeable actions that are relevant to TES species and critical habitats are described below for all alternatives. The cumulative effects analysis area for TES species and critical habitats is the forest boundary.

This cumulative effects analysis does not attempt to quantify the effects of past human actions by adding up all prior actions on an action-by-action basis. In order to understand the contribution of past actions to the cumulative effects of the proposed action and alternatives, this analysis relies on current environmental conditions as a proxy for the impacts of past and present actions. This is because existing conditions reflect the aggregate impact of all prior human actions and natural events that are difficult to quantify that have affected the environment and might contribute to cumulative effects. Existing conditions are a result of past and present impacts to wildlife resources.

This analysis focuses on the cumulative impact of those reasonably foreseeable actions that are relevant in assessing the impacts of designating a system of motorized use on TES species and critical habitats. Although almost all Forest and private or other governmental actions may have some relevancy, this report specifically considers those that are most relevant toward resulting in a cumulative impact to TES species and critical habitats.

Projects on the forests schedule of proposed action for the period of April 2014 through June 2014 were considered for the cumulative effects analysis as reasonably foreseeable actions.

Reasonably foreseeable actions that could affect TES species and critical habitats are land exchanges, reauthorization of livestock grazing allotments, mining and exploratory drilling, fuels reduction projects, forest thinning, watershed/vegetation regeneration and habitat improvement, roadway material source pits, recreation management, special use permits (maintenance of existing structures, approval of group organization camps), personal use activities, and new road construction. While these activities can directly and indirectly affect TES species and as well as cause destruction or modification to critical habitats, these actions are planned to minimize (and when possible, to eliminate) effects to TES species and critical habitats above current conditions and have mitigation measures and Best Management Practices designed to mitigate disturbances that may occur from project implementation.

Some projects may be considered cumulative actions because they may result in impacts to critical habitats and thus to TES species associated with the primary constituent elements within a PNVT and designated critical habitat, such as renewal of livestock grazing permits that would reduce herbaceous ground cover. Other projects that may be considered as cumulative actions have not resulted or are not expected to result in a measureable impact to TES species and critical habitats as they have been designed to completely avoid or minimize impacts to sensitive species and critical habitat resources by including design criteria or mitigations measures such as timing restrictions.

Projects involving forest thinning and prescribed fire treatments likely contribute to effects to TES species and critical habitats. Although the effects of fuels reduction and thinning projects are mitigated to reduce the effects on TES species and critical habitats, they still result in modification of vegetation which can affect foraging, nesting, roosting, hiding, and thermal cover, and daily and seasonal movements. Recently completed or ongoing planning for restoration and fuels management projects include: Salt River Allotments Vegetative Management project, Mesa

vegetation regeneration and habitat improvement project, and the Haigler fuels analysis. Fuels reduction projects may have short-term impacts on wildlife from disturbance (during implementation) and habitat degradation (up to 3 years after treatment), but generally improve TES species and critical habitats over the long-term (from one to ten or more years after project implementation) by decreasing the potential for high-intensity wildfire (Strom and Fulé, 2007) and improving the productivity and biodiversity of vegetation on which TES species depend (Griffis *et al.*, 2001).

Unauthorized and unmanaged dispersed recreation, while not continuous across the Tonto National Forest like grazing or across large areas like fuels reduction and thinning projects, can result in adverse impacts to TES species and critical habitats. Roads, trails, dispersed camping areas, and the use of these by forest users could denude vegetation and compact soils; disturb vegetation to which some species may be attached; crush eggs and insects; and collapse burrows which can crush individuals; alter and fragment habitat; increase sedimentation into aquatic systems; visually and aurally disturb animals during critical periods such as breeding, and harass individuals through collection or handling.

Legal and illegal personal use activities, particularly fuelwood harvesting, affects TES species and critical habitats. The removal of dead and down wood can result in the loss of habitat for invertebrates, small mammals, and reptiles; all of which are important prey items and habitats for some TES species and critical habitats. The removal of snags not only can affect prey species like invertebrates and reptiles; it also results in the loss of bat roosting habitat and bird nesting and roosting habitat. Fuelwood harvesting could result in the removal of large Gambel's oak trees, which are important for some TES species that nest in their natural cavities and could be tied to the presence of roads. Studies have shown there is an observable decrease in standing and downed large dead trees within near proximity to open roads (Wisdom and Bate, 2008).

All action alternatives would reduce adverse impacts to TES species and critical habitats resources forest-wide by reducing motorized cross-country travel outside of camping, wood gathering and motorized big game retrieval corridors. The miles of open roads will decrease in almost all PNVTs. Although all alternatives would reduce overall motorized vehicle disturbance, action alternatives may increase the intensity of effects to TES species and critical habitats within camping and wood gathering corridors. All effects—direct, indirect, and cumulative—are evaluated to come to determinations of effects for MIS resources in this report.

Federally Listed Species

Lesser Long-nosed Bat

The lesser long-nosed bat is found in desert scrub habitat with agave and columnar cacti present as food plants at an elevation range of 1,600 to 11,500 feet. Two resources are critical for this species: suitable day roosts and adequate concentrations of food plants. Day roosts are typically caves and abandoned mines. Lesser long-nosed bats will also use night roosts for short periods to digest meals. Night roosts may include day roosts as well as other caves, mines, rock crevices, trees, shrubs, and occasionally abandoned buildings.

There are no confirmed reports of individuals on the Forest. The closest confirmed lesser-long nosed roost is a cave on tribal lands south of Casa Grande (Bill Burger, personal communications) about 65 miles away from Tonto National Forest. Thus, no data are available for lesser long-nosed bat occurrences on the forest. Therefore, the following analysis by alternative is based on

availability of suitable habitat using PNVT (i.e., desert communities) to determine where suitable habitat is present. This metric overestimates amount of suitable habitat as suitable roosts, as well as agaves and columnar cacti, are not present in all areas of desert communities.

Alternative A—Direct and Indirect Effects

Roads and Trails Open to Motorized Travel

Approximately 4,958.58 miles of roads and no trails would be open to the public for motorized travel if Alternative A was implemented. Currently, there are approximately 581.57 miles of open roads and motorized trails (with a road density of 0.58 miles per square mile) within potential habitat for the lesser long-nosed bat on the Forest. The current level of impact is expected to continue if Alternative A is implemented.

Areas Designated for Motor Vehicle Use

Cross-country motorized travel would continue unrestricted within the Payson and Pleasant Valley ranger districts and in other ranger districts where authorized on approximately 703,618.39 acres. Currently, approximately 1,316.76 acres of desert community habitat is impacted by cross-country motorized travel. Motorized use within or adjacent to potential habitat for the lesser long-nosed bat has the potential to influence behavior, survival, reproduction and distribution of lesser long-nosed bat, as well as to alter habitat. The current level of impact is expected to continue if Alternative A is implemented.

Motor Vehicle Use for Big Game Retrieval

Cross-country motorized travel for big game retrieval would continue unrestricted within the Payson and Pleasant Valley ranger districts and in other ranger districts where authorized on approximately 703,618.39 acres. Currently, approximately 1,316.76 acres of desert community habitat is impacted by motorized big game retrieval. Motorized use within or adjacent to potential habitat for the lesser long-nosed bat has the potential to influence behavior, survival, reproduction and distribution of lesser long-nosed bat, as well as to alter habitat. The number of retrieval trips across the Forest is estimated to be 550 total trips in and out on an annual basis, spread over 703,618 acres; few of these trips are anticipated to occur in lesser long-nosed bat habitat. The current level of impact is expected to continue if Alternative A is implemented.

Motor Vehicle Use for Dispersed Camping

Dispersed camping using motorized vehicles would continue unrestricted within the Payson and Pleasant Valley ranger districts and in other ranger districts where authorized on approximately 703,618.39 acres. Currently, approximately 1,316.76 acres of desert community habitat is impacted by dispersed camping using motor vehicles. Motorized use within or adjacent to potential habitat for the lesser long-nosed bat has the potential to influence behavior, survival, reproduction and distribution of lesser long-nosed bat, as well as to alter habitat. The current level of impact is expected to continue if Alternative A is implemented.

Motor Vehicle Use for Fuelwood Gathering

Cross-country motorized travel for fuelwood gathering would continue within the Globe, Payson, Pleasant Valley, and Tonto Basin ranger districts on approximately 1,345,997.76 acres. Currently,

approximately 71,843.67 acres of desert community habitat is impacted by cross-country motorized travel for fuelwood gathering. Motorized use within or adjacent to potential habitat for the lesser long-nosed bat has the potential to influence behavior, survival, reproduction and distribution of lesser long-nosed bat, as well as to alter habitat. The current level of impact is expected to continue if Alternative A is implemented.

Alternative B—Direct and Indirect Effects

Roads and Trails Open to Motorized Travel

Approximately 2,559.57 miles of roads and trails would be open to the public for motorized travel if this alternative was implemented. There would be approximately 246.49 miles of open roads and motorized trails (with a road density of 0.29 miles per square mile) within potential habitat for the lesser long-nosed bat on the Forest under this alternative. This would be a reduction in the amount of roads and motorized trails open to the public in potential habitat for the lesser long-nosed bat, and would benefit the species by reducing impacts to foraging habitat, such as crushing of potential food plants and compaction of the soil.

Areas Designated for Motor Vehicle Use

Cross-country motorized use would be eliminated forestwide if Alternative B was implemented. No cross-country motorized use within potential habitat for the lesser long-nosed bat on the forest would be allowed under Alternative B. The level of impact to potential habitat for the lesser long-nosed bat would be the same as current conditions.

Motor Vehicle Use for Big Game Retrieval

Motorized big game retrieval would be eliminated forestwide if Alternative B was implemented. No potential habitat for the lesser long-nosed bat would be affected by motorized big game retrieval. The level of impact to potential habitat for the lesser long-nosed bat would be the same as current conditions.

Motor Vehicle Use for Dispersed Camping

Dispersed camping using motor vehicles would be restricted to 414 designated sites, impacting approximately 65.45 acres if this alternative was implemented. Approximately 10.65 acres of desert community habitat would be impacted by dispersed camping using motor vehicles under this alternative. This would be a major reduction in dispersed camping within potential habitat for the lesser long-nosed bat on the forest, and would benefit the species by reducing impacts to foraging habitat, such as crushing of potential food plants and compaction of the soil.

Motor Vehicle Use for Fuelwood Gathering

Cross-country motorized travel for fuelwood gathering would be permitted within 300 feet of a road in the Globe, Payson, Pleasant Valley, and Tonto Basin ranger districts on approximately 132,568.44 acres. Approximately 7,057.36 acres of desert community habitat would be impacted by fuelwood gathering using motor vehicles under this alternative. This would be a major reduction in cross-country motorized travel for fuelwood gathering within potential habitat for the lesser long-nosed bat on the Forest, and would benefit the species by reducing impacts to foraging habitat, such as crushing of potential food plants and compaction of the soil.

Alternative C—Direct and Indirect Effects

Roads and Trails Open to Motorized Travel

Approximately 3,569.52 miles of roads and trails would be open to the public for motorized travel if this alternative was implemented. There would be approximately 396.36 miles of open roads and motorized trails (with a road density of 0.42 miles per square mile) within potential habitat for the lesser long-nosed bat on the forest under this alternative. This would be a reduction in the amount of roads and motorized trails open to the public within potential habitat for the lesser long-nosed bat on the forest, and would benefit the species by reducing impacts to foraging habitat, such as crushing of potential food plants and compaction of the soil.

Areas Designated for Motor Vehicle Use

Motorized cross-country travel would be restricted to 6,790.37 acres in designated areas at Bartlett Lake (Cave Creek Ranger District), Golf Course (Globe Ranger District), Roosevelt Lake (Tonto Basin Ranger District), and Sycamore (Mesa Ranger District) and tot lots if this alternative is implemented. Approximately 1,403.92 acres of desert community habitat would be impacted by motorized cross-country travel under this alternative. This would be a slight increase in authorized cross-country motorized use within potential habitat for the lesser long-nosed bat on the forest. The level of impact to potential habitat for lesser long-nosed bat would be nearly the same as current conditions.

Motor Vehicle Use for Big Game Retrieval

Motorized big game retrieval would be allowed within 1 mile of roads and motorized trails, impacting approximately 1,293,178.12 acres if this alternative is implemented. Approximately 32,665.11 acres of desert community habitat would be impacted by motorized big game retrieval under this alternative. This would be a major increase in authorized motorized big game retrieval within potential habitat for the lesser long-nosed bat on the Forest, and could result in additional impacts to the species by increasing impacts to foraging habitat, such as crushing of potential food plants and compaction of the soil. However, the number of retrieval trips across the forest is estimated to be 209 total trips in and out on an annual basis, spread over 1,293,178 acres; few of these trips are anticipated to occur in lesser long-nosed bat habitat.

Motor Vehicle Use for Dispersed Camping

Dispersed camping using motor vehicles would be restricted to areas within 100 feet of roads and motorized trails, impacting approximately 91,391.29 acres if this alternative is implemented. Approximately 10,191.79 acres of desert community habitat would be impacted by dispersed camping using motor vehicles under this alternative. This would be a major increase in dispersed camping using motor vehicles within potential habitat for the lesser long-nosed bat on the forest, and could result in additional impacts to the species by increasing impacts to foraging habitat, such as crushing of potential food plants and compaction of the soil.

Motor Vehicle Use for Fuelwood Gathering

Cross-country motorized travel for fuelwood gathering would be permitted within 300 feet of a road in the Globe, Payson, Pleasant Valley, and Tonto Basin ranger districts on approximately 161,784.64 acres. Approximately 8,566.65 acres of desert community habitat would be impacted by fuelwood gathering using motor vehicles under this alternative. This is a major reduction in

cross-country motorized travel for fuelwood gathering within potential habitat for the lesser long-nosed bat on the Forest, and would benefit the species by reducing impacts to foraging habitat, such as crushing of potential food plants and compaction of the soil.

Alternative D—Direct and Indirect Effects

Roads and Trails Open to Motorized Travel

Approximately 3,569.52 miles of roads and trails would be open to the public for motorized travel if this alternative was implemented. There would be approximately 396.36 miles of open roads and motorized trails (with a road density of 0.42 miles per square mile) within potential habitat for the lesser long-nosed bat on the forest under this alternative. This would be a reduction in the amount of roads and motorized trails open to the public within potential habitat for the lesser long-nosed bat on the Forest, and would benefit the species by reducing impacts to foraging habitat, such as crushing of potential food plants and compaction of the soil.

Areas Designated for Motor Vehicle Use

Motorized cross-country travel would be restricted to 6,790.37 acres in designated areas at Bartlett Lake (Cave Creek Ranger District), Golf Course (Globe Ranger District), Roosevelt Lake (Tonto Basin Ranger District), and Sycamore (Mesa Ranger District) and tot lots if this alternative is implemented. Approximately 1,403.92 acres of desert community habitat would be impacted by motorized cross-country travel under this alternative. This would be a slight increase in authorized cross-country motorized use within potential habitat for the lesser long-nosed bat on the forest. The level of impact to potential habitat for lesser long-nosed bat would be nearly the same as current conditions.

Motor Vehicle Use for Big Game Retrieval

Motorized big game retrieval would be allowed within 1 mile of roads and motorized trails, impacting approximately 1,293,178.12 acres if this alternative is implemented. Approximately 32,665.11 acres of desert community habitat would be impacted by motorized big game retrieval under this alternative. This would be a major increase in authorized motorized big game retrieval within potential habitat for the lesser long-nosed bat on the forest, and could result in additional impacts to the species by increasing impacts to foraging habitat, such as crushing of potential food plants and compaction of the soil. However, the number of retrieval trips across the forest is estimated to be 209 total trips in and out on an annual basis, spread over 1,293,178 acres; few of these trips are anticipated to occur in lesser long-nosed bat habitat.

Motor Vehicle Use for Dispersed Camping

Dispersed camping using motor vehicles would be restricted to areas within 100 feet of roads and motorized trails, impacting approximately 91,391.29 acres if this alternative is implemented. Approximately 10,191.79 acres of desert community habitat would be impacted by dispersed camping using motor vehicles under this alternative. This would be a major increase in dispersed camping using motor vehicles within potential habitat for the lesser long-nosed bat on the forest, and could result in additional impacts to the species by increasing impacts to foraging habitat, such as crushing of potential food plants and compaction of the soil.

Motor Vehicle Use for Fuelwood Gathering

Cross-country motorized travel for fuelwood gathering would be permitted within 300 feet of a road in the Globe, Payson, Pleasant Valley, and Tonto Basin ranger districts on approximately 161,784.64 acres. Approximately 8,566.65 acres of desert community habitat would be impacted by fuelwood gathering using motor vehicles under this alternative. This is a major reduction in cross-country motorized travel for fuelwood gathering within potential habitat for the lesser long-nosed bat on the forest, and would benefit the species by reducing impacts to foraging habitat, such as crushing of potential food plants and compaction of the soil.

Ocelot

The ocelot is found in Desert scrub communities in Arizona. The universal habitat component is presence of dense cover of at least 75 percent canopy cover up to 95 percent cover. Prey for the ocelot includes rabbits, small rodents, and birds. No desert shrub habitat with dense canopy cover occurs on the Tonto National Forest. However, ocelots incidentally occur in the forest.

Alternative A—Direct and Indirect Effects

Roads and Trails Open to Motorized Travel

Approximately 4,958.58 miles of roads and no trails would be open to the public for motorized travel if this alternative was implemented. Currently, there are no open roads or motorized trails within ocelot habitat on the Forest. Current condition would continue if Alternative A was implemented, so no new effects would occur.

Areas Designated for Motor Vehicle Use

Cross-country motorized travel would continue unrestricted within the Payson and Pleasant Valley ranger districts and in other ranger districts where authorized on approximately 703,618.39 acres. Currently, no suitable habitat for the ocelot is impacted by cross-country motorized travel. Therefore, no effects from motorized cross-country travel are anticipated under Alternative A.

Motor Vehicle Use for Big Game Retrieval

Cross-country motorized travel for big game retrieval would continue unrestricted within the Payson and Pleasant Valley ranger districts and in other ranger districts where authorized on approximately 703,618.39 acres. Currently, no suitable habitat for the ocelot is impacted by motorized big game retrieval. Therefore, no effects from motorized travel for big game retrieval are anticipated under Alternative A.

Motor Vehicle Use for Dispersed Camping

Dispersed camping using motorized vehicles would continue unrestricted within the Payson and Pleasant Valley ranger districts and in other ranger districts where authorized on approximately 703,618.39 acres. Currently, no suitable habitat for the ocelot is impacted by dispersed camping using motorized vehicles. Therefore, no effects from dispersed camping using motorized vehicles are anticipated under Alternative A.

Motor Vehicle Use for Fuelwood Gathering

Cross-country motorized travel for fuelwood gathering would continue within the Globe, Payson, Pleasant Valley, and Tonto Basin ranger districts on approximately 1,345,997.76 acres. Currently, 7.72 acres of habitat where an ocelot was previously found is impacted by cross-country motorized travel for fuelwood gathering. Motorized use within or adjacent to ocelot habitat has the potential to influence behavior, survival, reproduction and distribution of the ocelot, as well as to alter habitat. The current level of impact is expected to continue if Alternative A is implemented.

Alternative B—Direct and Indirect Effects

Roads and Trails Open to Motorized Travel

Approximately 2,559.57 miles of roads and trails would be open to the public for motorized travel if Alternative B was implemented. There would be no open roads or motorized trails under this alternative in ocelot habitat on the Forest. The level of impact would be the same as current conditions.

Areas Designated for Motor Vehicle Use

Cross-country motorized use would be eliminated forestwide if Alternative B was implemented. No ocelot habitat would be affected by cross-country motorized use. The level of impact to ocelot habitat would be the same as current conditions.

Motor Vehicle Use for Big Game Retrieval

Motorized big game retrieval would be eliminated forestwide if Alternative B was implemented. No ocelot habitat would be affected by motorized big game retrieval. The level of impact to ocelot habitat would be the same as current conditions.

Motor Vehicle Use for Dispersed Camping

Dispersed camping using motor vehicles would be restricted to 414 designated sites, impacting approximately 65.45 acres if Alternative B was implemented. No suitable habitat for the ocelot would be impacted by dispersed camping using motorized vehicles under this alternative. The level of impact would be the same as current conditions.

Motor Vehicle Use for Fuelwood Gathering

Cross-country motorized travel for fuelwood gathering would be permitted within 300 feet of a road in the Globe, Payson, Pleasant Valley, and Tonto Basin ranger districts on approximately 132,568.44 acres under Alternative B. There would be 6.94 acres in the area where an ocelot was previously observed on the forest impacted by fuelwood gathering using motor vehicles. This would be a slight reduction in fuelwood gathering within this area.

Alternative C—Direct and Indirect Effects

Roads and Trails Open to Motorized Travel

Approximately 3,569.52 miles of roads and trails would be open to the public for motorized travel if this alternative was implemented. There would be no open roads or motorized trails within ocelot habitat on the Forest under Alternative C. The level of impact would be the same as current conditions.

Areas Designated for Motor Vehicle Use

Motorized cross-country travel would be restricted to 6,790.37 acres in designated areas at Bartlett Lake (Cave Creek Ranger District), Golf Course (Globe Ranger District), Roosevelt Lake (Tonto Basin Ranger District), and Sycamore (Mesa Ranger District) and tot lots if this alternative is implemented. No suitable habitat for the ocelot would be impacted by motorized cross-country travel under Alternative C. The level of impact would be the same as current conditions.

Motor Vehicle Use for Big Game Retrieval

Motorized big game retrieval would be allowed within 1 mile of roads and motorized trails, impacting approximately 1,293,178.12 acres if Alternative C is implemented. There would be 5.13 acres in the area where an ocelot was previously observed on the Forest impacted by motorized big game retrieval. This would be an increase in motorized big game retrieval within this area. However, the number of retrieval trips across the Forest is estimated to be 209 total trips in and out on an annual basis, spread over 1,293,178 acres; few if any of these trips are anticipated to occur in the area where an ocelot was previously observed on the Forest.

Motor Vehicle Use for Dispersed Camping

Dispersed camping using motor vehicles would be restricted to areas within 100 feet of roads and motorized trails, impacting approximately 91,391.29 acres if Alternative C is implemented. There would be 2.90 acres in the area where an ocelot was previously observed on the Forest impacted by dispersed camping using motor vehicles. This would be an increase in dispersed camping using motor vehicles within this area.

Motor Vehicle Use for Fuelwood Gathering

Cross-country motorized travel for fuelwood gathering would be permitted within 300 feet of a road in the Globe, Payson, Pleasant Valley, and Tonto Basin ranger districts on approximately 161,784.64 acres. There would be 6.94 acres in the area where an ocelot was previously observed on the Forest impacted by fuelwood gathering using motor vehicles. This would be a slight reduction in fuelwood gathering within this area.

Alternative D—Direct and Indirect Effects

Roads and Trails Open to Motorized Travel

Approximately 4,859.34 miles of roads and trails would be open to the public for motorized travel if Alternative D was implemented. There would be no open roads or motorized trails within

suitable habitat for the ocelot on the Forest. The level of impact would be the same as current conditions.

Areas Designated for Motor Vehicle Use

Motorized cross-country travel would be restricted to 6,790.37 acres in designated areas at Bartlett Lake (Cave Creek Ranger District), Golf Course (Globe Ranger District), Roosevelt Lake (Tonto Basin Ranger District), and Sycamore (Mesa Ranger District) and tot lots if Alternative D is implemented. No suitable habitat for the ocelot would be impacted by motorized cross-country travel under this alternative. The level of impact would be the same as current conditions.

Motor Vehicle Use for Big Game Retrieval

Motorized big game retrieval would be allowed within 1 mile of roads and motorized trails, impacting approximately 2,068,208.36 acres if Alternative D is implemented. There would be 7.72 acres in the area where an ocelot was previously observed on the Forest impacted by motorized big game retrieval. This would be an increase in fuelwood gathering within this area. However, the number of retrieval trips across the Forest is estimated to be 550 total trips in and out on an annual basis, spread over 2,068,208 acres; few if any of these trips are anticipated to occur in the area where an ocelot was previously observed on the Forest.

Motor Vehicle Use for Dispersed Camping

Dispersed camping using motor vehicles would be restricted to areas within 300 feet of roads and motorized trails, impacting approximately 336,037.85 acres if Alternative D is implemented. There would be 6.94 acres in the area where an ocelot was previously observed on the Forest impacted by dispersed camping using motor vehicles. This would be an increase in dispersed camping using motor vehicles within this area.

Motor Vehicle Use for Fuelwood Gathering

Cross-country motorized travel for fuelwood gathering would continue unrestricted in areas currently permitted for fuelwood gathering, impacting approximately 1,345,997.76 acres. There would be 7.72 acres in the area where an ocelot was previously observed on the Forest impacted by motorized travel for fuelwood gathering. Because there is no change from Alternative A, the current level of impact is expected to continue if Alternative D is implemented.

Southwestern Willow Flycatcher and Critical Habitat

The southwestern willow flycatcher is found in cottonwood/willow and tamarisk vegetation communities along rivers and streams at elevations below 8,500 feet. Nesting southwestern willow flycatchers prefer dense riparian thickets in areas where perennial flow, surface water, or saturated soil is present from April through September. In most riverine situations, associated channels are wide and shallow with a well-defined floodplain and a broad valley. Streams are slightly entrenched with well-defined meanders and riffle/pool bed features. Quiet water dominates, as in backwaters, pools, beaver ponds, or non-riffle stream stretches.

Vegetative species composition and structure varies across the range of the southwestern willow flycatcher. The variation ranges from homogeneous patches of one or several species with a single canopy layer to heterogeneous patches of numerous species with existing under, mid, and

over stories. Canopy covers are consistently high (greater than 90 percent) throughout the range (Spencer et al. 1996). In the Verde Valley, nesting willow flycatchers occur in tamarisk and mixed riparian habitats. Patch width of breeding sites in both tamarisk and mixed riparian habitat types tend to be more linear, varying from 460 feet to 1,640 feet in maximum width (Sferra *et al.*, 1995). Overstory canopies average between 50 and 55 feet tall (Spencer *et al.*, 1996). Patch size varies from 5 to 121 acres in mixed riparian and tamarisk (Spencer *et al.*, 1996).

The southwestern willow flycatcher is found in all ranger districts, and breeds in Cave Creek, Globe, Payson, and Tonto Basin ranger districts. Critical habitat for the southwestern willow flycatcher is designated in Cave Creek, Globe, Payson, and Tonto Basin ranger districts.

Alternative A—Direct and Indirect Effects

Roads and Trails Open to Motorized Travel

Use of roads and motorized trails can increase access near riparian zones, increase sedimentation into streams, cause damage to riparian vegetation, and increase the potential for spreading invasive plants. The presence and noise of vehicles within close proximity to nesting sites could cause aural and visual disturbance to nesting flycatchers. Currently, there are approximately 47.96 miles of open roads and motorized trails (with a road density of 2.56 miles per square mile) within southwestern willow flycatcher occupied habitat on the Forest. There are approximately 47.44 miles of open roads and motorized trails (with a road density of 2.45 miles per square mile) within southwestern willow flycatcher critical habitat on the Forest. Current conditions would continue if this alternative was implemented, so no new effects are anticipated.

Areas Designated for Motor Vehicle Use

Cross-country motorized travel would continue unrestricted within the Payson and Pleasant Valley ranger districts and in other ranger districts where authorized on approximately 703,618.39 acres. Unrestricted cross-country motorized travel can increase access near riparian zones, increase sedimentation into streams, cause damage to riparian vegetation, and increase the potential for spreading invasive plants. The presence and noise of vehicles within close proximity to nesting sites could cause aural and visual disturbance to nesting flycatchers. Currently, approximately 320.32 acres of southwestern willow flycatcher occupied habitat and approximately 219.60 acres of southwestern willow flycatcher critical habitat on the Forest are impacted by cross-country motorized travel. Motorized use within or adjacent to southwestern willow flycatcher occupied habitat has the potential to influence behavior, survival, reproduction and distribution of southwestern willow flycatcher, as well as to alter habitat. The current level of impact is expected to continue if Alternative A is implemented.

Motor Vehicle Use for Big Game Retrieval

Cross-country motorized travel for big game retrieval would continue unrestricted within the Payson and Pleasant Valley ranger districts and in other ranger districts where authorized on approximately 703,618.39 acres. Cross-country motorized travel for big game retrieval can increase access near riparian zones, increase sedimentation into streams, cause damage to riparian vegetation, and increase the potential for spreading invasive plants. The presence and noise of vehicles within close proximity to nesting sites could cause aural and visual disturbance to nesting flycatchers. Currently, approximately 320.32 acres of southwestern willow flycatcher occupied habitat and approximately 219.60 acres of southwestern willow flycatcher critical

habitat on the Forest are impacted by cross-country motorized travel for big game retrieval. Motorized use within or adjacent to southwestern willow flycatcher habitat has the potential to influence behavior, survival, reproduction and distribution of southwestern willow flycatcher, as well as to alter habitat. However, effects from noise and human disturbance are expected to be minimal to non-existent because the season of use would not overlap the time of year this species is present on the Tonto NF. In addition, any effects to habitat are expected to be minimal because Arizona Game and Fish Department regulations state that hunters cannot drive through riparian areas in a manner that causes damage to the habitat. Furthermore, the number of retrieval trips across the Forest is estimated to be 550 total trips in and out on an annual basis, spread over 703,618 acres; few of these trips are anticipated to occur in flycatcher habitat. The current level of impact is expected to continue if Alternative A is implemented.

Motor Vehicle Use for Dispersed Camping

Dispersed camping using motorized vehicles would continue unrestricted within the Payson and Pleasant Valley ranger districts and in other ranger districts where authorized on approximately 703,618.39 acres. Dispersed camping using motorized vehicles can increase access near riparian zones, increase sedimentation into streams, cause damage to riparian vegetation, and increase the potential for spreading invasive plants. The presence and noise of vehicles within close proximity to nesting sites could cause aural and visual disturbance to nesting flycatchers. Currently, approximately 320.32 acres of southwestern willow flycatcher occupied habitat and approximately 219.60 acres of southwestern willow flycatcher critical habitat on the Forest are impacted by dispersed camping using motor vehicles. Motorized use within or adjacent to southwestern willow flycatcher habitat has the potential to influence behavior, survival, reproduction and distribution of southwestern willow flycatcher, as well as to alter habitat. The current level of impact is expected to continue if Alternative A is implemented.

Motor Vehicle Use for Fuelwood Gathering

Cross-country motorized travel for fuelwood gathering would continue within the Globe, Payson, Pleasant Valley, and Tonto Basin ranger districts on approximately 1,345,997.76 acres. Cross-country motorized travel for fuelwood gathering can increase access near riparian zones, increase sedimentation into streams, cause damage to riparian vegetation, and increase the potential for spreading invasive plants. The presence and noise of vehicles within close proximity to nesting sites could cause aural and visual disturbance to nesting flycatchers. Currently, approximately 1,186.66 acres of southwestern willow flycatcher occupied habitat is impacted by cross-country motorized travel for fuelwood gathering; no southwestern willow flycatcher critical habitat on the Forest is currently impacted. Motorized use within or adjacent to southwestern willow flycatcher habitat has the potential to influence behavior, survival, reproduction and distribution of southwestern willow flycatcher, as well as to alter habitat. The current level of impact is expected to continue if Alternative A is implemented.

Alternative B—Direct and Indirect Effects

Roads and Trails Open to Motorized Travel

Approximately 2,559.57 miles of roads and trails would be open to the public for motorized travel if this alternative was implemented. There would be approximately 19.38 miles of open roads and motorized trails (with a road density of 1.03 miles per square mile) within southwestern willow flycatcher occupied habitat and approximately 15.09 miles of open roads and motorized

trails (with a road density of 0.78 miles per square mile) within southwestern willow flycatcher critical habitat on the Forest under Alternative B. This would be a decrease in the amount of roads and motorized trails open to the public in southwestern willow flycatcher habitat and critical habitat, and would benefit the species by reducing access near riparian zones, reducing sedimentation into streams, reducing damage to riparian vegetation by vehicles, and reducing the spread of invasive plants.

Areas Designated for Motor Vehicle Use

Cross-country motorized use would be eliminated Forest-wide if Alternative B was implemented. No cross-country motorized use within southwestern willow flycatcher habitat or critical habitat on the Forest would be allowed under Alternative B. This would be a reduction in authorized cross-country motorized use within southwestern willow flycatcher habitat and critical habitat on the Forest, and would benefit the species by reducing access near riparian zones, reducing sedimentation into streams, reducing damage to riparian vegetation by vehicles, and reducing the spread of invasive plants.

Motor Vehicle Use for Big Game Retrieval

Motorized big game retrieval would be eliminated Forest-wide if Alternative B was implemented. No cross-country motorized use within southwestern willow flycatcher habitat or critical habitat on the Forest would be allowed under Alternative B. This would be a reduction in motorized big game retrieval within southwestern willow flycatcher habitat and critical habitat on the Forest, and would benefit the species by reducing access near riparian zones, reducing sedimentation into streams, reducing damage to riparian vegetation by vehicles, and reducing the spread of invasive plants.

Motor Vehicle Use for Dispersed Camping

Dispersed camping using motor vehicles would be restricted to 414 designated sites, impacting approximately 65.45 acres if this alternative was implemented. There would be approximately 3.61 acres of southwestern willow flycatcher occupied habitat impacted by dispersed camping using motor vehicles under Alternative B; no critical habitat would be impacted. This would be a decrease in dispersed camping within southwestern willow flycatcher occupied habitat and critical habitat on the Forest, and would benefit the species by reducing access near riparian zones, reducing sedimentation into streams, reducing damage to riparian vegetation by vehicles, and reducing the spread of invasive plants.

Motor Vehicle Use for Fuelwood Gathering

Cross-country motorized travel for fuelwood gathering would be permitted within 300 feet of a road in the Globe, Payson, Pleasant Valley, and Tonto Basin ranger districts on approximately 132,568.44 acres. There would be approximately 165.58 acres of southwestern willow flycatcher occupied habitat impacted by fuelwood gathering using motor vehicles under Alternative B. This would be a decrease in cross-country motorized travel for fuelwood gathering within southwestern willow flycatcher occupied habitat on the Forest, and would benefit the species by reducing access near riparian zones, reducing sedimentation into streams, reducing damage to riparian vegetation by vehicles, and reducing the spread of invasive plants. No critical habitat would be impacted, which is the same as current conditions.

Alternative C—Direct and Indirect Effects

Roads and Trails Open to Motorized Travel

Approximately 3,569.52 miles of roads and trails would be open to the public for motorized travel if this alternative was implemented. There would be approximately 30.87 miles of open roads and motorized trails (with a road density of 1.65 miles per square mile) within southwestern willow flycatcher occupied habitat and approximately 28.15 miles of open roads and motorized trails (with a road density of 1.46 miles per square mile) within southwestern willow flycatcher critical habitat on the Forest under Alternative C. This would be a decrease in the amount of roads and motorized trails open to the public in southwestern willow flycatcher occupied habitat and critical habitat, and would benefit the species by reducing access near riparian zones, reducing sedimentation into streams, reducing damage to riparian vegetation by vehicles, and reducing the spread of invasive plants.

Areas Designated for Motor Vehicle Use

Motorized cross-country travel would be restricted to 6,790.37 acres in designated areas at Bartlett Lake (Cave Creek Ranger District), Golf Course (Globe Ranger District), Roosevelt Lake (Tonto Basin Ranger District), and Sycamore (Mesa Ranger District) and tot lots if this Alternative C is implemented. There would be approximately 879.35 acres of southwestern willow flycatcher occupied habitat impacted by motorized cross-country travel under Alternative C; no critical habitat would be impacted. This would be a decrease in authorized cross-country motorized use within southwestern willow flycatcher occupied habitat and critical habitat on the Forest, and would benefit the species by reducing access near riparian zones, reducing sedimentation into streams, reducing damage to riparian vegetation by vehicles, and reducing the spread of invasive plants.

Motor Vehicle Use for Big Game Retrieval

Motorized big game retrieval would be allowed within 1 mile of roads and motorized trails, impacting approximately 1,293,178.12 acres if this alternative is implemented. There would be approximately 355.96 acres of southwestern willow flycatcher occupied habitat impacted by motorized big game retrieval under Alternative C. This would be a slight increase in authorized motorized big game retrieval within southwestern willow flycatcher occupied habitat on the Forest, and could increase access near riparian zones, increase sedimentation into streams, cause additional damage to riparian vegetation, and increase the potential for spreading invasive plants. Approximately 15.22 acres of southwestern willow flycatcher critical habitat on the Forest would be impacted by motorized big game retrieval. This would be a major decrease in authorized motorized big game retrieval in southwestern willow flycatcher critical habitat and could reduce impacts within critical habitat. Effects from noise and human disturbance are expected to be minimal to non-existent because the season of use would not overlap the time of year this species is present on the Tonto NF. In addition, any effects to habitat are expected to be minimal because Arizona Game and Fish Department regulations state that hunters cannot drive through riparian areas in a manner that causes damage to the habitat. Furthermore, the number of retrieval trips across the Forest is estimated to be 209 total trips in and out on an annual basis, spread over 1,293,178 acres; few of these trips are anticipated to occur in flycatcher habitat.

Motor Vehicle Use for Dispersed Camping

Dispersed camping using motor vehicles would be restricted to areas within 100 feet of roads and motorized trails, impacting approximately 91,391.29 acres if this alternative is implemented. There would be approximately 476.07 acres of southwestern willow flycatcher occupied habitat and approximately 323.54 acres of southwestern willow flycatcher critical habitat impacted by dispersed camping using motor vehicles under Alternative C. This would be an increase in dispersed camping using motor vehicles within southwestern willow flycatcher occupied habitat and critical habitat on the Forest, and could result in impacts by increasing access near riparian zones, increasing sedimentation into streams, causing additional damage to riparian vegetation, and increasing the potential for spreading invasive plants.

Motor Vehicle Use for Fuelwood Gathering

Cross-country motorized travel for fuelwood gathering would be permitted within 300 feet of a road in the Globe, Payson, Pleasant Valley, and Tonto Basin ranger districts on approximately 161,784.64 acres. There would be approximately 321.51 acres of southwestern willow flycatcher occupied habitat impacted by fuelwood gathering using motor vehicles under Alternative C. This would be a decrease in cross-country motorized travel for fuelwood gathering within southwestern willow flycatcher occupied habitat, and would benefit the species by reducing access near riparian zones, reducing sedimentation into streams, reducing damage to riparian vegetation by vehicles, and reducing the spread of invasive plants. No critical habitat would be impacted, which would be the same as current conditions.

Alternative D—Direct and Indirect Effects

Roads and Trails Open to Motorized Travel

Approximately 4,859.34 miles of roads and trails would be open to the public for motorized travel if this alternative was implemented. There would be approximately 45.00 miles of open roads and motorized trails (with a road density of 2.40 miles per square mile) within southwestern willow flycatcher occupied habitat and approximately 45.91 miles of open roads and motorized trails (with a road density of 2.37 miles per square mile) impacted within southwestern willow flycatcher critical habitat on the Forest under Alternative D. This would be a slight decrease in the amount of roads and motorized trails open to the public in southwestern willow flycatcher occupied habitat and critical habitat, and could benefit the species by reducing access near riparian zones, reducing sedimentation into streams, reducing damage to riparian vegetation by vehicles, and reducing the spread of invasive plants.

Areas Designated for Motor Vehicle Use

Motorized cross-country travel would be restricted to 6,790.37 acres in designated areas at Bartlett Lake (Cave Creek Ranger District), Golf Course (Globe Ranger District), Roosevelt Lake (Tonto Basin Ranger District), and Sycamore (Mesa Ranger District) and tot lots if this alternative is implemented. There would be approximately 879.35 acres of southwestern willow flycatcher occupied habitat and approximately 405.36 acres of southwestern willow flycatcher critical habitat on the Forest impacted by motorized cross-country travel under Alternative D. This would be an increase in authorized cross-country motorized use within southwestern willow flycatcher occupied habitat and critical habitat on the Forest, and could result in impacts by increasing access near riparian zones, increasing sedimentation into streams, causing additional damage to riparian vegetation, and increasing the potential for spreading invasive plants.

Motor Vehicle Use for Big Game Retrieval

Motorized big game retrieval would be allowed within 1 mile of roads and motorized trails, impacting approximately 2,068,208.36 acres if Alternative D is implemented. There would be approximately 10,075.19 acres of southwestern willow flycatcher occupied habitat and approximately 8,241.80 acres of southwestern willow flycatcher critical habitat on the Forest impacted by motorized big game retrieval under Alternative D. This would be a major increase in authorized motorized big game retrieval within southwestern willow flycatcher occupied habitat and critical habitat on the Forest, and could result in impacts by increasing access near riparian zones, increasing sedimentation into streams, causing additional damage to riparian vegetation, and increasing the potential for spreading invasive plants. Effects from noise and human disturbance are expected to be minimal to non-existent because the season of use would not overlap the time of year this species is present on the Tonto National Forest. In addition, any effects to habitat are expected to be minimal because Arizona Game and Fish Department regulations state that hunters cannot drive through riparian areas in a manner that causes damage to the habitat. Furthermore, the number of retrieval trips across the Forest is estimated to be 550 total trips in and out on an annual basis, spread over 2,068,208 acres; few of these trips are anticipated to occur in flycatcher habitat.

Motor Vehicle Use for Dispersed Camping

Dispersed camping using motor vehicles would be restricted to areas within 300 feet of roads and motorized trails, impacting approximately 336,037.85 acres if this alternative is implemented. There would be approximately 1,783.47 acres of southwestern willow flycatcher occupied habitat and approximately 1,444.85 acres of southwestern willow flycatcher critical habitat on the Forest impacted by dispersed camping using motor vehicles under Alternative D. This would be a major increase in dispersed camping using motor vehicles within southwestern willow flycatcher occupied habitat and critical habitat on the Forest, and could result in impacts by increasing access near riparian zones, increasing sedimentation into streams, causing additional damage to riparian vegetation, and increasing the potential for spreading invasive plants.

Motor Vehicle Use for Fuelwood Gathering

Cross-country motorized travel for fuelwood gathering would continue unrestricted in areas currently permitted for fuelwood gathering, impacting approximately 1,345,997.76 acres. There would be approximately 1,186.66 acres of southwestern willow flycatcher occupied habitat and no critical habitat impacted by cross-country motorized travel for fuelwood gathering under this alternative. Because there is no change from Alternative A, the current level of impact is expected to continue if Alternative D is implemented.

Mexican Spotted Owl and Critical Habitat

The Mexican spotted owl (MSO) occupies steep slopes with mixed conifer and ponderosa pine/Gambel oak vegetation types, usually characterized by high canopy closure, high stem density, multi-layered canopies within the stand, numerous snags, and downed woody material. This species is found at an elevation range of 4,100 to 9,000 feet.

MSOs are nocturnal predators that feed primarily on small mammals. They are “perch and pounce” predators that locate prey from an elevated perch by sight or sound, then pounce on the prey and capture it with their talons. They consume a variety of prey throughout their range, but

commonly eat small and medium sized rodents such as woodrats, peromyscid mice, and microtine voles. They also eat bats, birds, reptiles, and arthropods.

On the forest, the MSO is found in Globe, Mesa, Payson, Pleasant Valley, and Tonto Basin ranger districts. Critical habitat for the MSO is designated in all ranger districts. Portions of two recovery units occur within Tonto National Forest: the Upper Gila Mountain Recovery Unit and the Basin and Range-West Recovery Unit.

Alternative A—Direct and Indirect Effects

Roads and Trails Open to Motorized Travel

Approximately 4,958.58 miles of roads and no trails would be open to the public for motorized travel if Alternative A was implemented. Currently, there are approximately 4.84 miles of open roads and motorized trails (with a road density of 2.24 miles per square mile) within MSO occupied habitat on the Forest. There are approximately 74.01 miles of open roads and motorized trails (with a road density of 1.04 miles per square mile) within PACs and approximately 14.73 miles of open roads and motorized trails (with a road density of 0.98 miles per square mile) within core areas on the Forest. Currently, approximately 1,077.98 miles of open roads and motorized trails (with a road density of 1.54 miles per square mile) are present within MSO critical habitat on the Forest. The current level of impact is expected to continue if Alternative A is implemented.

Areas Designated for Motor Vehicle Use

Cross-country motorized travel would continue unrestricted within the Payson and Pleasant Valley ranger districts and in other ranger districts where authorized on approximately 703,618.39 acres. Currently, approximately 1,257.20 acres of MSO occupied habitat, 28,752.97 acres of MSO PACs, 6,577.17 acres of MSO core areas, and 194,545.38 acres of MSO critical habitat are impacted by cross-country motorized travel. Motorized use within or adjacent to MSO habitat has the potential to influence behavior, survival, reproduction and distribution of MSO, as well as to alter habitat. The current level of impact is expected to continue if Alternative A is implemented.

Motor Vehicle Use for Big Game Retrieval

Cross-country motorized travel for big game retrieval would continue unrestricted within the Payson and Pleasant Valley ranger districts and in other ranger districts where authorized on approximately 703,618.39 acres. Currently, approximately 1,257.20 acres of MSO occupied habitat, 28,752.97 acres of PACs, 6,577.17 acres of core areas, and 194,545.38 acres of critical habitat are impacted by motorized big game retrieval. Motorized use within or adjacent to MSO habitat has the potential to influence behavior, survival, reproduction and distribution of MSO, as well as to alter habitat. The number of retrieval trips across the Forest is estimated to be 550 total trips in and out on an annual basis, spread over 703,618 acres; few of these trips are anticipated to occur in MSO habitat. The current level of impact is expected to continue if Alternative A is implemented.

Motor Vehicle Use for Dispersed Camping

Dispersed camping using motorized vehicles would continue unrestricted within the Payson and Pleasant Valley ranger districts and in other ranger districts where authorized on approximately 703,618.39 acres. Currently, 1,257.20 acres of MSO occupied habitat, 28,752.97 acres of PACs, 6,577.17 acres of core areas, and 194,545.38 acres of critical habitat are impacted by dispersed camping using motor vehicles. Motorized use within or adjacent to MSO habitat has the potential to influence behavior, survival, reproduction and distribution of MSO, as well as to alter habitat. The current level of impact is expected to continue if Alternative A is implemented.

Motor Vehicle Use for Fuelwood Gathering

Cross-country motorized travel for fuelwood gathering would continue within the Globe, Payson, Pleasant Valley, and Tonto Basin ranger districts on approximately 1,345,997.76 acres. According to Forest data, no MSO occupied habitat or PACs are impacted by cross-country motorized travel for fuelwood gathering, while approximately 457.78 acres of core areas and 181,279.92 acres of critical habitat are impacted, though there appears to be an error within the data as PACs would have to be impacted if core areas are impacted (i.e., core areas are always delineated within PACs). Motorized use within or adjacent to MSO habitat has the potential to influence behavior, survival, reproduction and distribution of MSO, as well as to alter habitat. The current level of impact is expected to continue if Alternative A is implemented.

Alternative B—Direct and Indirect Effects

Roads and Trails Open to Motorized Travel

Approximately 2,559.57 miles of roads and trails would be open to the public for motorized travel if this alternative was implemented. There would be approximately 0.90 miles of open roads and motorized trails (with a road density of 0.42 miles per square mile) within MSO occupied habitat, 7.48 miles of open roads and motorized trails (with a road density of 0.10 miles per square mile) within PACs, 1.53 miles of roads and motorized trails (with a road density of 0.10 miles per square mile) would be open to the public within core areas, and 512.18 miles of roads and motorized trails would be open to the public (with a road density of 0.73 miles per square mile) within MSO critical habitat on the Forest under Alternative B. This would be a decrease in the amount of roads and motorized trails open to the public in MSO occupied habitat, PACs, core areas, and critical habitat, and would be beneficial to the species by reducing the potential for noise disturbance from motorized vehicles.

Areas Designated for Motor Vehicle Use

Cross-country motorized use would be eliminated Forest-wide if this Alternative B was implemented. No cross-country motorized use within MSO occupied habitat, PACs, core areas, or critical habitat on the Forest would be allowed under Alternative B. This would be a reduction in authorized cross-country motorized use within MSO occupied habitat, PACs, core areas, and critical habitat on the Forest, and would benefit the species by reducing the potential for noise disturbance from motorized vehicles and disturbance due to human presence, as well as habitat degradation.

Motor Vehicle Use for Big Game Retrieval

Motorized big game retrieval would be eliminated Forest-wide if Alternative B was implemented. No cross-country motorized use MSO occupied habitat, PACs, core areas, or critical habitat on the Forest would be allowed under Alternative B. This would be a reduction in authorized cross-country motorized use within MSO occupied habitat, PACs, core areas, and critical habitat on the Forest, and would benefit the species by reducing the potential for noise disturbance from motorized vehicles and disturbance due to human presence, as well as habitat degradation.

Motor Vehicle Use for Dispersed Camping

Dispersed camping using motor vehicles would be restricted to 414 designated sites, impacting approximately 65.45 acres if Alternative B was implemented. No currently occupied MSO occupied habitat would be impacted by dispersed camping using motor vehicles under this alternative; however, approximately 0.72 acres of PACs, 0.01 acres of core areas, and 10.64 acres of MSO critical habitat on the Forest would be impacted by dispersed camping using motor vehicles. This would be a major reduction in dispersed camping in MSO occupied habitat, PACs, core areas, and critical habitat, and would benefit the species by reducing impacts associated with noise disturbance from motor vehicles, reducing disturbance due to human presence, and reducing habitat degradation.

Motor Vehicle Use for Fuelwood Gathering

Cross-country motorized travel for fuelwood gathering would be permitted within 300 feet of a road in the Globe, Payson, Pleasant Valley, and Tonto Basin ranger districts on approximately 132,568.44 acres. No MSO occupied habitat or PACs would be impacted by fuelwood gathering using motor vehicles under Alternative B; the level of impact would be the same as current conditions. No core areas and approximately 15,880.43 acres of critical habitat on the Forest would be impacted by cross-country motorized travel for fuelwood gathering; this would be a decrease in cross-country motorized travel for fuelwood gathering in these areas, and would benefit the species by reducing impacts associated with noise disturbance from motor vehicles, reducing disturbance due to human presence, and reducing habitat degradation. However, because of the large amount of critical habitat in which fuelwood gathering would be allowed, impacts to critical habitat could be substantial. Collection of downed wood for fuelwood could impact one of the primary constituent elements (PCE) of critical habitat related to maintenance of adequate prey species, specifically the PCE requiring high volumes of fallen trees and other woody debris. Therefore, while motorized travel for fuelwood gathering under Alternative B is expected to benefit the MSO by reducing potential impacts where the species is known to occur, this alternative is likely to adversely affect designated critical habitat in areas where the species is currently not known to occur.

Alternative C—Direct and Indirect Effects

Roads and Trails Open to Motorized Travel

Approximately 3,569.52 miles of roads and trails would be open to the public on the Forest for motorized travel if Alternative C was implemented. There would be approximately 1.76 miles of open roads and motorized trails (with a road density of 0.81 miles per square mile) within MSO occupied habitat, 43.08 miles of open roads and motorized trails (with a road density of 0.60 miles per square mile) within MSO PACs, 7.01 miles of roads and motorized trails (with a road density of 0.47 miles per square mile) would be open to the public within MSO core areas,

and 768.47 miles of roads and motorized trails would be open to the public (with a road density of 1.10 miles per square mile) within MSO critical habitat on the Forest under Alternative C. This would be a decrease in the amount of roads and motorized trails open to the public in MSO occupied habitat, PACs, core areas, and critical habitat, and would benefit the species by reducing impacts associated with noise disturbance from motor vehicles, reducing disturbance due to human presence, and reducing habitat degradation.

Areas Designated for Motor Vehicle Use

Motorized cross-country travel would be restricted to 6,790.37 acres of the Forest in designated areas at Bartlett Lake (Cave Creek Ranger District), Golf Course (Globe Ranger District), Roosevelt Lake (Tonto Basin Ranger District), and Sycamore (Mesa Ranger District) and tot lots if this alternative is implemented. No MSO occupied habitat, PACs, core areas, or critical habitat would be impacted by motorized cross-country travel under Alternative C. This would be a decrease in authorized cross-country motorized use within MSO occupied habitat, PACs, core areas, and critical habitat on the Forest, and would benefit the species by reducing impacts associated with noise disturbance from motor vehicles, reducing disturbance due to human presence, and reducing habitat degradation.

Motor Vehicle Use for Big Game Retrieval

Motorized big game retrieval would be allowed within 1 mile of roads and motorized trails, impacting approximately 1,293,178.12 acres of the Forest if this alternative is implemented. Approximately 1,257.48 acres of MSO occupied habitat, 30,042.96 acres of MSO PACs, 6,728.28 acres of MSO core areas, and 294,865.76 acres of MSO critical habitat would be impacted by motorized big game retrieval under Alternative C. The level of impact to MSO occupied habitat would be the same as current conditions, while there would be an increase in motorized big game retrieval in critical habitat, and a slight increase in PACs and core areas. This could result in additional impacts to the MSO by increasing noise disturbance from motor vehicles, increasing disturbance due to human presence, and increasing habitat degradation. However, effects from noise and human disturbance are expected to be minimal because the hunting season would not overlap the breeding season for this species. Furthermore, the number of retrieval trips across the Forest is estimated to be 209 total trips in and out on an annual basis, spread over 1,293,178 acres; few of these trips are anticipated to occur in MSO habitat.

Motor Vehicle Use for Dispersed Camping

Dispersed camping using motor vehicles would be restricted to areas within 100 feet of roads and motorized trails, impacting approximately 91,391.29 acres if this alternative is implemented. Approximately 35.71 acres of MSO occupied habitat, 660.40 acres of MSO PACs, 128.06 acres of MSO core areas, and 13,990.52 acres of MSO critical habitat on the Forest would be impacted by dispersed camping using motor vehicles under Alternative C. This would be a major decrease in dispersed camping using motor vehicles within MSO occupied habitat, PACs, core areas, and critical habitat on the Forest, and would benefit the species by reducing impacts associated with noise disturbance from motor vehicles, reducing disturbance due to human presence, and reducing habitat degradation.

Motor Vehicle Use for Fuelwood Gathering

Motorized travel for fuelwood gathering would be permitted within 300 feet of a road in the Globe, Payson, Pleasant Valley, and Tonto Basin ranger districts on approximately 161,784.64 acres. No MSO occupied habitat, PACs, or core areas would be impacted by fuelwood gathering using motor vehicles under Alternative C; the level of impact would be the same as current conditions. There would be 20,951.29 acres of critical habitat on the Forest impacted by motorized travel for fuelwood gathering. This would be a decrease in motorized travel for fuelwood gathering in these areas, and would benefit the species by reducing impacts associated with noise disturbance from motor vehicles, reducing disturbance due to human presence, and reducing habitat degradation.

Alternative D—Direct and Indirect Effects

Roads and Trails Open to Motorized Travel

Under Alternative D, 4,859.34 miles of roads and trails would be open to the public for motorized travel. There would be approximately 4.25 miles of open roads and motorized trails (with a road density of 1.97 miles per square mile) within MSO occupied habitat, approximately 71.28 miles of open roads and motorized trails (with a road density of 1.00 miles per square mile) within MSO PACs, approximately 14.48 miles of open roads and motorized trails (with a road density of 0.96 miles per square mile) within MSO core areas, and approximately 1,036.82 miles of open roads and motorized trails (with a road density of 1.48 miles per square mile) within MSO critical habitat on the Forest under Alternative D. This would be a slight reduction in the amount of roads and motorized trails open to the public in MSO occupied habitat, PACs, core areas, and critical habitat, and would benefit the species by reducing impacts associated with noise disturbance from motor vehicles, reducing disturbance due to human presence, and reducing habitat degradation.

Areas Designated for Motor Vehicle Use

Motorized cross-country travel would be restricted to 6,790.37 acres in designated areas at Bartlett Lake (Cave Creek Ranger District), Golf Course (Globe Ranger District), Roosevelt Lake (Tonto Basin Ranger District), and Sycamore (Mesa Ranger District) and tot lots if this alternative is implemented. No MSO occupied habitat, PACs, core areas, or critical habitat would be impacted by motorized cross-country travel under Alternative D. This would be a decrease in authorized cross-country motorized use within MSO occupied habitat, PACs, core areas, and critical habitat on the Forest, and would benefit the species by reducing impacts associated with noise disturbance from motor vehicles, reducing disturbance due to human presence, and reducing habitat degradation.

Motor Vehicle Use for Big Game Retrieval

Motorized big game retrieval would be allowed within 1 mile of roads and motorized trails, impacting approximately 2,068,208.36 acres if this alternative is implemented. Approximately 1,257.20 acres of MSO occupied habitat would be impacted by motorized big game retrieval under Alternative D; the level of impact would be the same as current conditions (i.e., under Alternative A). There would be approximately 32,686.17 acres of MSO PACs, 7,169.20 acres of core areas, and 324,398.42 acres of critical habitat on the Forest impacted by motorized big game retrieval. This would be an increase in motorized big game retrieval in MSO PACs, core areas, and critical habitat, and could result in additional impacts to the species by increasing noise disturbance from motor vehicles, increasing disturbance due to human presence, and increasing

habitat degradation. However, effects from noise and human disturbance are expected to be minimal to non-existent because the hunting season would not overlap the breeding season for this species. Furthermore, the number of retrieval trips across the Forest is estimated to be 550 total trips in and out on an annual basis, spread over 2,068,208 acres; few of these trips are anticipated to occur in MSO habitat.

Motor Vehicle Use for Dispersed Camping

Dispersed camping using motor vehicles would be restricted to areas within 300 feet of roads and motorized trails, impacting approximately 336,037.85 acres if this alternative is implemented. There would be approximately 312.49 acres of MSO occupied habitat, 4,460.83 acres of PACs, 969.91 acres of core areas, and 59,516.06 acres of critical habitat impacted by dispersed camping using motor vehicles under Alternative D. This would be a decrease in dispersed camping using motor vehicles within MSO occupied habitat, PACs, core areas, and critical habitat on the Forest, and would benefit the species by reducing impacts associated with noise disturbance from motor vehicles, reducing disturbance due to human presence, and reducing habitat degradation.

Motor Vehicle Use for Fuelwood Gathering

Cross-country motorized travel for fuelwood gathering would continue unrestricted in areas currently permitted for fuelwood gathering, impacting approximately 1,345,997.76 acres. No MSO occupied habitat or PACs would be impacted by cross-country motorized travel for fuelwood gathering under this alternative. There would be 457.78 acres of MSO core areas and 181,279.92 acres of MSO critical habitat on the Forest impacted by cross-country motorized travel for fuelwood gathering. Because there is no change from Alternative A, the current level of impact is expected to continue if Alternative D is implemented.

Yuma Clapper Rail

The Yuma clapper rail lives and nests in freshwater marshes where moist to wet soil and dense vegetation, predominately bulrush and cattails, at least 40 centimeters (15.7 inches) in height, occurs (Todd 1986; Eddleman and Conway, 1998). This species is found at elevations below 4,500 feet.

Tonto National Forest is at the fringe of the Yuma clapper rail's range. Within the forest, habitat for this species is found in the Cave Creek (Verde River south of Needle Rock), Mesa (Goldfield), and Tonto Basin (Tonto Creek at Roosevelt Lake) ranger districts. No specific data are available for Yuma clapper rail occurrences on the Tonto National Forest. Therefore, the following analysis by alternative is based on data for potential habitat. A total of 16.56 acres of Yuma clapper rail potential habitat is present on the forest.

Alternative A—Direct and Indirect Effects

Roads and Trails Open to Motorized Travel

Approximately 4,958.58 miles of roads and no trails would be open to the public for motorized travel if this alternative was implemented. Currently, there are approximately 14.87 miles of open roads and motorized trails (with a road density of 574.69 miles per square mile) within Yuma clapper rail potential habitat on the Forest. The current level of impact is expected to continue if Alternative A is implemented.

Areas Designated for Motor Vehicle Use

Cross-country motorized travel would continue unrestricted within the Payson and Pleasant Valley ranger districts and in other ranger districts where authorized on approximately 703,618.39 acres. Currently, no Yuma clapper rail potential habitat is impacted by cross-country motorized travel. Motorized use within or adjacent to Yuma clapper rail potential habitat has the potential to influence behavior, survival, reproduction and distribution of Yuma clapper rail, as well as to alter habitat. The current level of impact is expected to continue if Alternative A is implemented.

Motor Vehicle Use for Big Game Retrieval

Cross-country motorized travel for big game retrieval would continue unrestricted within the Payson and Pleasant Valley ranger districts and in other ranger districts where authorized on approximately 703,618.39 acres. Currently, no Yuma clapper rail potential habitat is impacted by motorized big game retrieval. Motorized use within or adjacent to Yuma clapper rail potential habitat has the potential to influence behavior, survival, reproduction and distribution of Yuma clapper rail, as well as to alter habitat. The number of retrieval trips across the Forest is estimated to be 550 total trips in and out on an annual basis, spread over 703,618 acres; none of these trips are anticipated to occur in Yuma clapper rail habitat. The current level of impact is expected to continue if Alternative A is implemented.

Motor Vehicle Use for Dispersed Camping

Dispersed camping using motorized vehicles would continue unrestricted within the Payson and Pleasant Valley ranger districts and in other ranger districts where authorized on approximately 703,618.39 acres. Currently, no Yuma clapper rail potential habitat is impacted by dispersed camping using motor vehicles. Motorized use within or adjacent to Yuma clapper rail potential habitat has the potential to influence behavior, survival, reproduction and distribution of Yuma clapper rail, as well as to alter habitat. The current level of impact is expected to continue if Alternative A is implemented.

Motor Vehicle Use for Fuelwood Gathering

Cross-country motorized travel for fuelwood gathering would continue within the Globe, Payson, Pleasant Valley, and Tonto Basin ranger districts on approximately 1,345,997.76 acres. Currently, no Yuma clapper rail potential habitat is impacted by cross-country motorized travel for fuelwood gathering. Motorized use within or adjacent to Yuma clapper rail potential habitat has the potential to influence behavior, survival, reproduction and distribution of Yuma clapper rail, as well as to alter habitat. The current level of impact is expected to continue if Alternative A is implemented.

Alternative B—Direct and Indirect Effects

Roads and Trails Open to Motorized Travel

Approximately 2,559.57 miles of roads and trails would be open to the public for motorized travel if this alternative was implemented. There would be approximately 9.39 miles of open roads and motorized trails (with a road density of 362.90 miles per square mile) within Yuma clapper rail potential habitat on the Forest under this alternative. This would be a reduction in the amount of roads and motorized trails open to the public in Yuma clapper rail potential habitat and

would be beneficial to the species by reducing access near riparian zones, reducing sedimentation into streams, and reducing the spread of invasive plants.

Areas Designated for Motor Vehicle Use

Cross-country motorized use would be eliminated forestwide if Alternative B was implemented. No Yuma clapper rail habitat would be affected by cross-country motorized use. The level of impact to Yuma clapper rail habitat would be the same as current conditions.

Motor Vehicle Use for Big Game Retrieval

Motorized big game retrieval would be eliminated forestwide if Alternative B was implemented. No Yuma clapper rail habitat would be affected by motorized big game retrieval. The level of impact to Yuma clapper rail habitat would be the same as current conditions.

Motor Vehicle Use for Dispersed Camping

Dispersed camping using motor vehicles would be restricted to 414 designated sites, impacting approximately 65.45 acres if this alternative was implemented. No Yuma clapper rail potential habitat would be impacted by dispersed camping using motor vehicles under this alternative. The level of impact would be the same as current conditions.

Motor Vehicle Use for Fuelwood Gathering

Cross-country motorized travel for fuelwood gathering would be permitted within 300 feet of a road in the Globe, Payson, Pleasant Valley, and Tonto Basin ranger districts on approximately 132,568.44 acres. No Yuma clapper rail potential habitat would be impacted by fuelwood gathering using motor vehicles under this alternative. The level of impact would be the same as current conditions.

Alternative C—Direct and Indirect Effects

Roads and Trails Open to Motorized Travel

Approximately 3,569.52 miles of roads and trails would be open to the public for motorized travel if this alternative was implemented. There would be approximately 11.53 miles of open roads and motorized trails (with a road density of 445.60 miles per square mile) within Yuma clapper rail potential habitat on the Forest under this alternative. This would be a reduction in the amount of roads and motorized trails open to the public in Yuma clapper rail potential habitat and would be beneficial to the species by reducing access near riparian zones, reducing sedimentation into streams, and reducing the spread of invasive plants.

Areas Designated for Motor Vehicle Use

Motorized cross-country travel would be restricted to 6,790.37 acres in designated areas at Bartlett Lake (Cave Creek Ranger District), Golf Course (Globe Ranger District), Roosevelt Lake (Tonto Basin Ranger District), and Sycamore (Mesa Ranger District) and tot lots if this alternative is implemented. No Yuma clapper rail potential habitat would be impacted by motorized cross-country travel under this alternative. The level of impact would be the same as current conditions.

Motor Vehicle Use for Big Game Retrieval

Motorized big game retrieval would be allowed within 1 mile of roads and motorized trails, impacting approximately 1,293,178.12 acres if this alternative is implemented. No Yuma clapper rail potential habitat would be impacted by motorized big game retrieval under this alternative. The number of retrieval trips across the Forest is estimated to be 209 total trips in and out on an annual basis, spread over 1,293,178 acres; none of these trips are anticipated to occur in Yuma clapper rail habitat. The level of impact would be the same as current conditions.

Motor Vehicle Use for Dispersed Camping

Dispersed camping using motor vehicles would be restricted to areas within 100 feet of roads and motorized trails, impacting approximately 91,391.29 acres if this alternative is implemented. Approximately 45.37 acres of Yuma clapper rail potential habitat would be impacted by dispersed camping using motor vehicles under this alternative. This would be an increase in dispersed camping using motor vehicles within Yuma clapper rail potential habitat on the Forest and could result in additional impacts to the species by increasing access near riparian zones, increasing sedimentation into streams, increasing damage to riparian vegetation by vehicles, and increasing the spread of invasive plants.

Motor Vehicle Use for Fuelwood Gathering

Cross-country motorized travel for fuelwood gathering would be permitted within 300 feet of a road in the Globe, Payson, Pleasant Valley, and Tonto Basin ranger districts on approximately 161,784.64 acres. No Yuma clapper rail potential habitat would be impacted by fuelwood gathering using motor vehicles under this alternative. The level of impact would be the same as current conditions.

Alternative D—Direct and Indirect Effects

Roads and Trails Open to Motorized Travel

Approximately 4,859.34 miles of roads and trails would be open to the public for motorized travel if this alternative was implemented. There would be approximately 9.06 miles of open roads and motorized trails (with a road density of 350.14 miles per square mile) within Yuma clapper rail potential habitat on the Forest under this alternative. This would be a reduction in the amount of roads and motorized trails open to the public in Yuma clapper rail potential habitat and would be beneficial to the species by reducing access near riparian zones, reducing sedimentation into streams, and reducing the spread of invasive plants.

Areas Designated for Motor Vehicle Use

Motorized cross-country travel would be restricted to 6,790.37 acres in designated areas at Bartlett Lake (Cave Creek Ranger District), Golf Course (Globe Ranger District), Roosevelt Lake (Tonto Basin Ranger District), and Sycamore (Mesa Ranger District) and tot lots if Alternative D is implemented. No Yuma clapper rail potential habitat would be impacted by motorized cross-country travel under this alternative. The level of impact would be the same as current conditions.

Motor Vehicle Use for Big Game Retrieval

Motorized big game retrieval would be allowed within 1 mile of roads and motorized trails, impacting approximately 2,068,208.36 acres if Alternative D is implemented. There would be 1,997.81 acres of Yuma clapper rail potential habitat impacted by motorized big game retrieval under this alternative. This would be a major increase in authorized motorized big game retrieval within Yuma clapper rail potential habitat on the Forest and could result in additional impacts to the species by increasing access near riparian zones, increasing sedimentation into streams, increasing damage to riparian vegetation by vehicles, and increasing the spread of invasive plants. However, effects from noise and human disturbance are expected to be minimal to non-existent because the season of use would not overlap the breeding season. In addition, any effects to habitat are expected to be minimal because Arizona Game and Fish Department regulations state that hunters cannot drive through riparian areas in a manner that causes damage to the habitat. Furthermore, the number of retrieval trips across the Forest is estimated to be 550 total trips in and out on an annual basis, spread over 2,068,208 acres; few of these trips are anticipated to occur in Yuma clapper rail habitat.

Motor Vehicle Use for Dispersed Camping

Dispersed camping using motor vehicles would be restricted to areas within 300 feet of roads and motorized trails, impacting approximately 336,037.85 acres if this alternative is implemented. Approximately 199.72 acres of Yuma clapper rail potential habitat would be impacted by dispersed camping using motor vehicles under this alternative. This would be an increase in dispersed camping using motor vehicles within Yuma clapper rail potential habitat on the Forest and could result in additional impacts to the species by increasing access near riparian zones, increasing sedimentation into streams, increasing damage to riparian vegetation by vehicles, and increasing the spread of invasive plants.

Motor Vehicle Use for Fuelwood Gathering

Cross-country motorized travel for fuelwood gathering would continue unrestricted in areas currently permitted for fuelwood gathering, impacting approximately 1,345,997.76 acres. No Yuma clapper rail Arizona Game and Fish Department this alternative. Because there is no change from Alternative A, the current level of impact is expected to continue if this alternative is implemented.

Western Yellow-billed Cuckoo

The western yellow-billed cuckoo is associated with large tracts of undisturbed low-elevation riparian deciduous forests consisting of mature trees (typically cottonwood) with a vegetative understory component of shrubs and smaller young trees, especially where mesquite bosques occur in the uplands.

On Tonto National Forest, the western yellow-billed cuckoo is found in the Cave Creek, Mesa, Globe, and Tonto Basin ranger districts along the Verde and Lower Salt rivers and Tonto and Pinto creeks. A proposed rule for western yellow-billed cuckoo proposed critical habitat is currently being prepared by the US Fish and Wildlife Service (USFWS). According to USFWS (S. Sferra, pers. comm., 2014), probable locations for proposed critical habitat include:

- Verde River upstream from Horseshoe Reservoir to just north of Isler Flat.

- Verde River downstream from Bartlett Dam to the town of Rio Verde but may stop near Needlerock.
- Pinto Creek north of Highway 60. It starts at the boundary of Gila and Pinal counties and extends down to near Roosevelt Lake where the riparian vegetation ends.
- Salt River inflow to Roosevelt Lake upstream to where it intersects with Highway 288. There is a sharp left turn on the highway there.
- Pinal Creek reach that starts north of Horseshoe ben wash and extends downstream to where the vegetation ends.
- Tonto Creek from Quartz ledge canyon downstream to inflow of Roosevelt Lake.

Alternative A—Direct and Indirect Effects

Roads and Trails Open to Motorized Travel

Approximately 4,958.58 miles of roads and no trails would be open to the public for motorized travel if this alternative was implemented. Currently, there are approximately 14.32 miles of open roads and motorized trails (with a road density of 2.46 miles per square mile) within western yellow-billed cuckoo occupied habitat on the Forest. Critical habitat will most likely be in the same areas as occupied habitat, and the number of roads and road density within critical habitat, once proposed, would be similar. The current level of impact is expected to continue if Alternative A is implemented.

Areas Designated for Motor Vehicle Use

Cross-country motorized travel would continue unrestricted within the Payson and Pleasant Valley ranger districts and in other ranger districts where authorized on approximately 703,618.39 acres. Currently, 232.03 acres of western yellow-billed cuckoo occupied habitat is impacted by cross-country motorized travel. Critical habitat will most likely be in the same areas as occupied habitat, and potential effects to critical habitat, once proposed, from cross-country motorized travel would be similar. Motorized use within or adjacent to western yellow-billed cuckoo habitat has the potential to influence behavior, survival, reproduction and distribution of western yellow-billed cuckoo, as well as to alter habitat. The current level of impact is expected to continue if Alternative A is implemented.

Motor Vehicle Use for Big Game Retrieval

Cross-country motorized travel for big game retrieval would continue unrestricted within the Payson and Pleasant Valley ranger districts and in other ranger districts where authorized on approximately 703,618.39 acres. Currently, 232.03 acres of western yellow-billed cuckoo occupied habitat is impacted by motorized big game retrieval. Critical habitat will most likely be in the same areas as occupied habitat, and potential effects to critical habitat, once proposed, from motorized big game retrieval would be similar. Motorized use within or adjacent to western yellow-billed cuckoo habitat has the potential to influence behavior, survival, reproduction and distribution of western yellow-billed cuckoo, as well as to alter habitat. However, effects from noise and human disturbance are expected to be minimal to non-existent because the season of use would not overlap the breeding season. In addition, any effects to habitat are expected to be minimal because Arizona Game and Fish Department regulations state that hunters cannot drive through riparian areas in a manner that causes damage to the habitat. Furthermore, the number of

retrieval trips across the Forest is estimated to be 550 total trips in and out on an annual basis, spread over 703,618 acres; few of these trips are anticipated to occur in western yellow-billed cuckoo habitat. The current level of impact is expected to continue if Alternative A is implemented.

Motor Vehicle Use for Dispersed Camping

Dispersed camping using motorized vehicles would continue unrestricted within the Payson and Pleasant Valley ranger districts and in other ranger districts where authorized on approximately 703,618.39 acres. Currently, 232.03 acres of western yellow-billed cuckoo occupied habitat is impacted by dispersed camping using motor vehicles. Critical habitat will most likely be in the same areas as occupied habitat, and potential effects to critical habitat, once proposed, from dispersed camping using motor vehicles would be similar. Motorized use within or adjacent to western yellow-billed cuckoo habitat has the potential to influence behavior, survival, reproduction and distribution of western yellow-billed cuckoo, as well as to alter habitat. The current level of impact is expected to continue if Alternative A is implemented.

Motor Vehicle Use for Fuelwood Gathering

Cross-country motorized travel for fuelwood gathering would continue within the Globe, Payson, Pleasant Valley, and Tonto Basin ranger districts on approximately 1,345,997.76 acres. Currently, 602.43 acres of western yellow-billed cuckoo occupied habitat is impacted by cross-country motorized travel for fuelwood gathering. Critical habitat will most likely be in the same areas as occupied habitat, and potential effects to critical habitat, once proposed, from dispersed camping using motor vehicles would be similar. Motorized use within or adjacent to western yellow-billed cuckoo habitat has the potential to influence behavior, survival, reproduction and distribution of western yellow-billed cuckoo, as well as to alter habitat. The current level of impact is expected to continue if Alternative A is implemented.

Alternative B—Direct and Indirect Effects

Roads and Trails Open to Motorized Travel

Approximately 2,559.57 miles of roads and trails would be open to the public for motorized travel if this alternative was implemented. There would be approximately 6.62 miles of open roads and motorized trails (with a road density of 1.14 miles per square mile) within western yellow-billed cuckoo occupied habitat on the Forest under Alternative B. This would be a reduction in the amount of roads and motorized trails open to the public in western yellow-billed cuckoo occupied habitat and would benefit the species by reducing access near riparian zones, reducing sedimentation into streams, and reducing activities within line of site of cuckoos which may cause flushing, premature fledging, or site abandonment. Critical habitat will most likely be in the same areas as occupied habitat, and the number of roads and road density within critical habitat, once proposed, would be similar.

Areas Designated for Motor Vehicle Use

Cross-country motorized use would be eliminated forestwide if Alternative B was implemented. No cross-country motorized use within western yellow-billed cuckoo occupied habitat on the Forest would be allowed under Alternative B. This would be a reduction in authorized cross-country motorized use within western yellow-billed cuckoo occupied habitat on the Forest, and

would benefit the species by reducing access near riparian zones, reducing sedimentation into streams, reducing damage to riparian vegetation by vehicles, and reducing activities within line of site of cuckoos which may cause flushing, premature fledging, or site abandonment.

Motor Vehicle Use for Big Game Retrieval

Motorized big game retrieval would be eliminated forestwide if Alternative B was implemented. No cross-country motorized use within western yellow-billed cuckoo occupied habitat on the Forest would be allowed under Alternative B. This would be a reduction in motorized big game retrieval within western yellow-billed cuckoo habitat on the Forest, and would benefit the species by reducing access near riparian zones, reducing sedimentation into streams, reducing damage to riparian vegetation by vehicles, and reducing activities within line of site of cuckoos which may cause flushing, premature fledging, or site abandonment.

Motor Vehicle Use for Dispersed Camping

Dispersed camping using motor vehicles would be restricted to 414 designated sites, impacting approximately 65.45 acres if Alternative B was implemented. Approximately 0.18 acres of western yellow-billed cuckoo occupied habitat would be impacted by dispersed camping using motor vehicles under this alternative. This would be a major reduction in dispersed camping within western yellow-billed cuckoo occupied habitat on the Forest and would be beneficial to the species by reducing access near riparian zones, reducing sedimentation into streams, reducing damage to riparian vegetation by vehicles, and reducing activities within line of site of cuckoos which may cause flushing, premature fledging, or site abandonment. Critical habitat will most likely be in the same areas as occupied habitat, and potential effects to critical habitat, once proposed, from dispersed camping using motor vehicles would be similar.

Motor Vehicle Use for Fuelwood Gathering

Cross-country motorized travel for fuelwood gathering would be permitted within 300 feet of a road in the Globe, Payson, Pleasant Valley, and Tonto Basin ranger districts on approximately 132,568.44 acres. Approximately 66.27 acres of western yellow-billed cuckoo occupied habitat would be impacted by fuelwood gathering using motor vehicles under Alternative B. This would be a major reduction in cross-country motorized travel for fuelwood gathering within western yellow-billed cuckoo occupied habitat on the Forest and would be beneficial to the species by reducing access near riparian zones, reducing sedimentation into streams, reducing damage to riparian vegetation by vehicles, and reducing activities within line of site of cuckoos which may cause flushing, premature fledging, or site abandonment. Critical habitat will most likely be in the same areas as occupied habitat, and potential effects to critical habitat, once proposed, from fuelwood gathering using motor vehicles would be similar.

Alternative C—Direct and Indirect Effects

Roads and Trails Open to Motorized Travel

Approximately 3,569.52 miles of roads and trails would be open to the public for motorized travel if this alternative was implemented. There would be approximately 10.55 miles of open roads and motorized trails (with a road density of 1.81 miles per square mile) within western yellow-billed cuckoo occupied habitat on the Forest under Alternative C. This would be a reduction in the amount of roads and motorized trails open to the public in western yellow-billed

cuckoo occupied habitat and would be beneficial to the species by reducing access near riparian zones, reducing sedimentation into streams, and reducing activities within line of site of cuckoos which may cause flushing, premature fledging, or site abandonment. Critical habitat will most likely be in the same areas as occupied habitat, and the number of roads and road density within critical habitat, once proposed, would be similar.

Areas Designated for Motor Vehicle Use

Motorized cross-country travel would be restricted to 6,790.37 acres in designated areas at Bartlett Lake (Cave Creek Ranger District), Golf Course (Globe Ranger District), Roosevelt Lake (Tonto Basin Ranger District), and Sycamore (Mesa Ranger District) and tot lots if this alternative is implemented. Approximately 0.44 acres of western yellow-billed cuckoo occupied habitat would be impacted by motorized cross-country travel under Alternative C. This would be a major decrease in authorized cross-country motorized use within western yellow-billed cuckoo occupied habitat on the Forest and would be beneficial to the species by reducing access near riparian zones, reducing sedimentation into streams, reducing damage to riparian vegetation by vehicles, and reducing activities within line of site of cuckoos which may cause flushing, premature fledging, or site abandonment. Critical habitat will most likely be in the same areas as occupied habitat, and potential effects to critical habitat, once proposed, from cross-country motorized travel would be similar.

Motor Vehicle Use for Big Game Retrieval

Motorized big game retrieval would be allowed within 1 mile of roads and motorized trails, impacting approximately 1,293,178.12 acres if this alternative is implemented. Approximately 117.67 acres of western yellow-billed cuckoo occupied habitat would be impacted by motorized big game retrieval under Alternative C. This would be a reduction in authorized motorized big game retrieval within western yellow-billed cuckoo occupied habitat on the Forest and would be beneficial to the species by reducing access near riparian zones, reducing sedimentation into streams, reducing damage to riparian vegetation by vehicles, and reducing activities within line of site of cuckoos which may cause flushing, premature fledging, or site abandonment. Critical habitat will most likely be in the same areas as occupied habitat, and potential effects to critical habitat, once proposed, from motorized big game retrieval would be similar. However, effects from noise and human disturbance are expected to be minimal to non-existent because the season of use would not overlap the breeding season. In addition, any effects to habitat are expected to be minimal because Arizona Game and Fish Department regulations state that hunters cannot drive through riparian areas in a manner that causes damage to the habitat. Furthermore, the number of retrieval trips across the Forest is estimated to be 209 total trips in and out on an annual basis, spread over 1,293,178 acres; few of these trips are anticipated to occur in western yellow-billed cuckoo habitat.

Motor Vehicle Use for Dispersed Camping

Dispersed camping using motor vehicles would be restricted to areas within 100 feet of roads and motorized trails, impacting approximately 91,391.29 acres if this alternative is implemented. Approximately 133.51 acres of western yellow-billed cuckoo occupied habitat would be impacted by dispersed camping using motor vehicles under Alternative C. This would be a decrease in dispersed camping using motor vehicles within western yellow-billed cuckoo habitat on the Forest and would be beneficial to the species by reducing access near riparian zones, reducing

sedimentation into streams, reducing damage to riparian vegetation by vehicles, and reducing activities within line of site of cuckoos which may cause flushing, premature fledging, or site abandonment. Critical habitat will most likely be in the same areas as occupied habitat, and potential effects to critical habitat, once proposed, from dispersed camping using motor vehicles would be similar.

Motor Vehicle Use for Fuelwood Gathering

Cross-country motorized travel for fuelwood gathering would be permitted within 300 feet of a road in the Globe, Payson, Pleasant Valley, and Tonto Basin ranger districts on approximately 161,784.64 acres. Approximately 188.48 acres of western yellow-billed cuckoo occupied habitat would be impacted by fuelwood gathering using motor vehicles under Alternative C. This would be a reduction in cross-country motorized travel for fuelwood gathering within western yellow-billed cuckoo occupied habitat and would be beneficial to the species by reducing access near riparian zones, reducing sedimentation into streams, reducing damage to riparian vegetation by vehicles, and reducing activities within line of site of cuckoos which may cause flushing, premature fledging, or site abandonment. Critical habitat will most likely be in the same areas as occupied habitat, and potential effects to critical habitat, once proposed, from fuelwood gathering using motor vehicles would be similar.

Alternative D—Direct and Indirect Effects

Roads and Trails Open to Motorized Travel

Approximately 4,859.34 miles of roads and trails would be open to the public for motorized travel if this alternative was implemented. There would be approximately 14.32 miles of open roads and motorized trails (with a road density of 2.46 miles per square mile) within western yellow-billed cuckoo occupied habitat on the Forest under Alternative D. The level of impact would be the same as current conditions. Critical habitat will most likely be in the same areas as occupied habitat, and the number of roads and road density within critical habitat, once proposed, would be similar.

Areas Designated for Motor Vehicle Use

Motorized cross-country travel would be restricted to 6,790.37 acres in designated areas at Bartlett Lake (Cave Creek Ranger District), Golf Course (Globe Ranger District), Roosevelt Lake (Tonto Basin Ranger District), and Sycamore (Mesa Ranger District) and tot lots if this alternative is implemented. Approximately 0.44 acres of western yellow-billed cuckoo occupied habitat would be impacted by motorized cross-country travel under Alternative D. This would be a major reduction in authorized cross-country motorized use within western yellow-billed cuckoo occupied habitat on the Forest and would be beneficial to the species by reducing access near riparian zones, reducing sedimentation into streams, reducing damage to riparian vegetation by vehicles, and reducing activities within line of site of cuckoos which may cause flushing, premature fledging, or site abandonment. Critical habitat will most likely be in the same areas as occupied habitat, and potential effects to critical habitat, once proposed, from cross-country motorized travel would be similar.

Motor Vehicle Use for Big Game Retrieval

Motorized big game retrieval would be allowed within 1 mile of roads and motorized trails, impacting approximately 2,068,208.36 acres if this alternative is implemented. Approximately 2,872.82 acres of western yellow-billed cuckoo occupied habitat would be impacted by motorized big game retrieval under Alternative D. This would be a major increase in authorized motorized big game retrieval within western yellow-billed cuckoo occupied habitat on the Forest and could result in additional impacts to the species by increasing access near riparian zones, increasing sedimentation into streams, increasing damage to riparian vegetation by vehicles, and increasing activities within line of site of cuckoos which may cause flushing, premature fledging, or site abandonment. Critical habitat will most likely be in the same areas as occupied habitat, and potential effects to critical habitat, once proposed, from motorized big game retrieval would be similar. However, effects from noise and human disturbance are expected to be minimal to non-existent because the season of use would not overlap the breeding season. In addition, any effects to habitat are expected to be minimal because Arizona Game and Fish Department regulations state that hunters cannot drive through riparian areas in a manner that causes damage to the habitat. Furthermore, the number of retrieval trips across the Forest is estimated to be 550 total trips in and out on an annual basis, spread over 2,068,208 acres; few of these trips are anticipated to occur in western yellow-billed cuckoo habitat.

Motor Vehicle Use for Dispersed Camping

Dispersed camping using motor vehicles would be restricted to areas within 300 feet of roads and motorized trails, impacting approximately 336,037.85 acres if this alternative is implemented. Approximately 530.25 acres of western yellow-billed cuckoo occupied habitat would be impacted by dispersed camping using motor vehicles under Alternative D. This would be an increase in dispersed camping using motor vehicles within western yellow-billed cuckoo occupied habitat on the Forest and could result in additional impacts to the species by increasing access near riparian zones, increasing sedimentation into streams, increasing damage to riparian vegetation by vehicles, and increasing activities within line of site of cuckoos which may cause flushing, premature fledging, or site abandonment. Critical habitat will most likely be in the same areas as occupied habitat, and potential effects to critical habitat, once proposed, from dispersed camping using motor vehicles would be similar.

Motor Vehicle Use for Fuelwood Gathering

Cross-country motorized travel for fuelwood gathering would continue unrestricted in areas currently permitted for fuelwood gathering, impacting approximately 1,345,997.76 acres. Approximately 602.43 acres of western yellow-billed cuckoo occupied habitat would be impacted by cross-country motorized travel for fuelwood gathering under Alternative D. Because there is no change from Alternative A, the current level of impact is expected to continue if this alternative is implemented. Critical habitat will most likely be in the same areas as occupied habitat, and potential effects to critical habitat, once proposed, from fuelwood gathering using motor vehicles would be similar.

Narrow-headed Gartersnake and Proposed Critical Habitat

The narrow-headed gartersnake is the most aquatic of gartersnakes, seldom found far from quiet, rocky pools in large streams and rivers. It is a riparian obligate species, found along and below the Mogollon Rim at elevations ranging from 2,200 to 8,000 feet. This species is strongly

associated with clear, rocky streams using predominately pool and riffle habitat that includes cobbles and boulders.

On the Tonto National Forest, the narrow-headed gartersnake has been found in the Cave Creek, Mesa, Globe, and Tonto Basin ranger districts. Critical habitat for the narrow-headed gartersnake is proposed on the forest.

Alternative A—Direct and Indirect Effects

Roads and Trails Open to Motorized Travel

Approximately 4,958.58 miles of roads and no trails would be open to the public for motorized travel if this alternative was implemented. Currently, there are 1.46 miles of open roads and motorized trails (with a road density of 2.88 miles per square mile) within narrow-headed gartersnake occupied habitat and 79.01 miles of open roads and motorized trails (with a road density of 1.69 miles per square mile) within narrow-headed gartersnake proposed critical habitat on the Forest. The current level of impact is expected to continue if Alternative A is implemented.

Areas Designated for Motor Vehicle Use

Cross-country motorized travel would continue unrestricted within the Payson and Pleasant Valley ranger districts and in other ranger districts where authorized on approximately 703,618.39 acres. Currently, 105.19 acres of narrow-headed gartersnake occupied habitat and 10,079.43 acres of narrow-headed gartersnake proposed critical habitat are impacted by cross-country motorized travel. Motorized use within or adjacent to narrow-headed gartersnake habitat has the potential to influence behavior, survival, reproduction and distribution of narrow-headed gartersnake, as well as to alter habitat. The current level of impact is expected to continue if Alternative A is implemented.

Motor Vehicle Use for Big Game Retrieval

Cross-country motorized travel for big game retrieval would continue unrestricted within the Payson and Pleasant Valley ranger districts and in other ranger districts where authorized on approximately 703,618.39 acres. Currently, 105.19 acres of narrow-headed gartersnake occupied habitat and 10,079.43 acres of narrow-headed gartersnake proposed critical habitat on the Forest are impacted by motorized big game retrieval. Motorized use within or adjacent to narrow-headed gartersnake habitat has the potential to influence behavior, survival, reproduction and distribution of narrow-headed gartersnake, as well as to alter habitat. However, any effects to habitat are expected to be minimal because Arizona Game and Fish Department regulations state that hunters cannot drive through riparian areas in a manner that causes damage to the habitat. Furthermore, the number of retrieval trips across the Forest is estimated to be 550 total trips in and out on an annual basis, spread over 703,618 acres; few of these trips are anticipated to occur in narrow-headed gartersnake habitat. The current level of impact is expected to continue if Alternative A is implemented.

Motor Vehicle Use for Dispersed Camping

Dispersed camping using motorized vehicles would continue unrestricted within the Payson and Pleasant Valley ranger districts and in other ranger districts where authorized on approximately 703,618.39 acres. Currently, 105.19 acres of narrow-headed gartersnake occupied habitat and

10,079.43 acres of narrow-headed gartersnake proposed critical habitat on the Forest are impacted by dispersed camping using motor vehicles. Motorized use within or adjacent to narrow-headed gartersnake habitat has the potential to influence behavior, survival, reproduction and distribution of narrow-headed gartersnake, as well as to alter habitat. The current level of impact is expected to continue if Alternative A is implemented.

Motor Vehicle Use for Fuelwood Gathering

Cross-country motorized travel for fuelwood gathering would continue within the Globe, Payson, Pleasant Valley, and Tonto Basin ranger districts on approximately 1,345,997.76 acres. Currently, 97.75 acres of narrow-headed gartersnake occupied habitat and 9,456.81 acres of narrow-headed gartersnake proposed critical habitat on the Forest are impacted by cross-country motorized travel for fuelwood gathering. Motorized use within or adjacent to narrow-headed gartersnake habitat has the potential to influence behavior, survival, reproduction and distribution of narrow-headed gartersnake, as well as to alter habitat. The current level of impact is expected to continue if Alternative A is implemented.

Alternative B—Direct and Indirect Effects

Roads and Trails Open to Motorized Travel

Approximately 2,559.57 miles of roads and trails would be open to the public for motorized travel if this alternative was implemented. There would be 1.07 miles of open roads and motorized trails (with a road density of 2.11 miles per square mile) within narrow-headed gartersnake occupied habitat and 55.99 miles of open roads and motorized trails (with a road density of 1.20 miles per square mile) within narrow-headed gartersnake proposed critical habitat on the Forest under Alternative B. This would be a reduction in the amount of roads and motorized trails open to the public in narrow-headed gartersnake occupied habitat and critical habitat, and would be beneficial to the species by reducing access near riparian zones, reducing sedimentation into streams, reducing the potential spread of nonnative aquatic organisms and diseases, and reducing the potential for forest users to handle/collect garter snakes.

Areas Designated for Motor Vehicle Use

Cross-country motorized use would be eliminated Forest-wide if Alternative B was implemented. No cross-country motorized use within narrow-headed gartersnake occupied habitat or proposed critical habitat on the Forest would be allowed under Alternative B. This would be a reduction in authorized cross-country motorized use within narrow-headed gartersnake occupied habitat and proposed critical habitat on the Forest, and would benefit the species by reducing access near riparian zones, reducing sedimentation into streams, reducing damage to riparian vegetation by vehicles, reducing the potential spread of nonnative aquatic organisms and diseases, and reducing the potential for forest users to handle/collect garter snakes.

Motor Vehicle Use for Big Game Retrieval

Motorized big game retrieval would be eliminated Forest-wide if Alternative B was implemented. No cross-country motorized use within narrow-headed gartersnake occupied habitat or proposed critical habitat on the Forest would be allowed under Alternative B. This would be a reduction in motorized big game retrieval within narrow-headed gartersnake occupied habitat and proposed critical habitat on the Forest, and would benefit the species by reducing access near riparian

zones, reducing sedimentation into streams, reducing damage to riparian vegetation by vehicles, reducing the potential spread of nonnative aquatic organisms and diseases, and reducing the potential for forest users to handle/collect garter snakes.

Motor Vehicle Use for Dispersed Camping

Dispersed camping using motor vehicles would be restricted to 414 designated sites, impacting approximately 65.45 acres if Alternative B was implemented. No narrow-headed gartersnake occupied habitat and 0.76 acre of narrow-headed gartersnake proposed critical habitat on the Forest would be impacted by dispersed camping using motor vehicles under Alternative B. This would be a major reduction in dispersed camping within narrow-headed gartersnake occupied habitat and critical habitat, and would be beneficial to the species by reducing access near riparian zones, reducing sedimentation into streams, reducing damage to riparian vegetation by vehicles, reducing the potential spread of nonnative aquatic organisms and diseases, and reducing the potential for forest users to handle/collect garter snakes.

Motor Vehicle Use for Fuelwood Gathering

Cross-country motorized travel for fuelwood gathering would be permitted within 300 feet of a road in the Globe, Payson, Pleasant Valley, and Tonto Basin ranger districts on approximately 132,568.44 acres. There would be 22.21 acres of narrow-headed gartersnake occupied habitat and 1,217.24 acres of narrow-headed gartersnake proposed critical habitat on the Forest impacted by fuelwood gathering using motor vehicles under Alternative B. This would be a reduction in cross-country motorized travel for fuelwood gathering within narrow-headed gartersnake occupied habitat and critical habitat, and would be beneficial to the species by reducing access near riparian zones, reducing sedimentation into streams, reducing damage to riparian vegetation by vehicles, reducing the potential spread of nonnative aquatic organisms and diseases, and reducing the potential for forest users to handle/collect garter snakes.

Alternative C—Direct and Indirect Effects

Roads and Trails Open to Motorized Travel

Approximately 3,569.52 miles of roads and trails would be open to the public for motorized travel if this alternative was implemented. There would be 1.46 miles of open roads and motorized trails (with a road density of 2.88 miles per square mile) within narrow-headed gartersnake occupied habitat and 67.06 miles of open roads and motorized trails (with a road density of 1.43 miles per square mile) within narrow-headed gartersnake proposed critical habitat on the Forest under Alternative C. This would the same as current conditions.

Areas Designated for Motor Vehicle Use

Motorized cross-country travel would be restricted to 6,790.37 acres in designated areas at Bartlett Lake (Cave Creek Ranger District), Golf Course (Globe Ranger District), Roosevelt Lake (Tonto Basin Ranger District), and Sycamore (Mesa Ranger District) and tot lots if this alternative is implemented. No narrow-headed gartersnake occupied habitat or critical habitat would be impacted by motorized cross-country travel under Alternative C. This would be a reduction in authorized motorized cross-country use within narrow-headed gartersnake occupied habitat on the Forest and would be beneficial to the species by reducing access near riparian zones, reducing sedimentation into streams, reducing damage to riparian vegetation by vehicles,

reducing the potential spread of nonnative aquatic organisms and diseases, and reducing the potential for forest users to handle/collect garter snakes.

Motor Vehicle Use for Big Game Retrieval

Motorized big game retrieval would be allowed within 1 mile of roads and motorized trails, impacting approximately 1,293,178.12 acres if this alternative is implemented. There would be 106.37 acres of narrow-headed gartersnake occupied habitat and 9,544.93 acres of narrow-headed gartersnake proposed critical habitat on the Forest impacted by motorized big game retrieval under Alternative C. This would be a slight increase in authorized motorized big game retrieval within narrow-headed gartersnake occupied habitat and a slight decrease in authorized motorized big game retrieval in narrow-headed gartersnake proposed critical habitat on the Forest. Impacts would be nearly the same as current conditions. However, any effects to habitat are expected to be minimal because Arizona Game and Fish Department regulations state that hunters cannot drive through riparian areas in a manner that causes damage to the habitat. Furthermore, the number of retrieval trips across the Forest is estimated to be 209 total trips in and out on an annual basis, spread over 1,293,178 acres; few of these trips are anticipated to occur in narrow-headed gartersnake habitat.

Motor Vehicle Use for Dispersed Camping

Dispersed camping using motor vehicles would be restricted to areas within 100 feet of roads and motorized trails, impacting approximately 91,391.29 acres if this alternative is implemented. There would be 16.13 acres of narrow-headed gartersnake occupied habitat and 767.04 acres of narrow-headed gartersnake proposed critical habitat on the Forest impacted by dispersed camping using motor vehicles under Alternative C. This would be a reduction in dispersed camping using motor vehicles within narrow-headed gartersnake occupied habitat and critical habitat on the Forest, and would be beneficial to the species by reducing access near riparian zones, reducing sedimentation into streams, reducing damage to riparian vegetation by vehicles, reducing the potential spread of nonnative aquatic organisms and diseases, and reducing the potential for forest users to handle/collect garter snakes.

Motor Vehicle Use for Fuelwood Gathering

Cross-country motorized travel for fuelwood gathering would be permitted within 300 feet of a road in the Globe, Payson, Pleasant Valley, and Tonto Basin ranger districts on approximately 161,784.64 acres. There would be 29.42 acres of narrow-headed gartersnake occupied habitat and 1,534.27 acres of narrow-headed gartersnake proposed critical habitat on the Forest impacted by fuelwood gathering using motor vehicles under Alternative C. This would be a reduction in cross-country motorized travel for fuelwood gathering within narrow-headed gartersnake occupied habitat and critical habitat on the Forest, and would be beneficial to the species by reducing access near riparian zones, reducing sedimentation into streams, reducing damage to riparian vegetation by vehicles, reducing the potential spread of nonnative aquatic organisms and diseases, and reducing the potential for forest users to handle/collect garter snakes.

Alternative D—Direct and Indirect Effects

Roads and Trails Open to Motorized Travel

Approximately 4,859.34 miles of roads and trails would be open to the public for motorized travel if this alternative was implemented. There would be 1.46 miles of open roads and motorized trails (with a road density of 2.88 miles per square mile) within narrow-headed gartersnake occupied habitat and 77.54 miles of open roads and motorized trails (with a road density of 1.66 miles per square mile) within narrow-headed gartersnake proposed critical habitat on the Forest under Alternative D. The level of impact to narrow-headed gartersnake occupied habitat would be the same as current conditions, while there would be a slight reduction in the amount of roads and motorized trails open to the public in the narrow-headed gartersnake proposed critical habitat.

Areas Designated for Motor Vehicle Use

Motorized cross-country travel would be restricted to 6,790.37 acres in designated areas at Bartlett Lake (Cave Creek Ranger District), Golf Course (Globe Ranger District), Roosevelt Lake (Tonto Basin Ranger District), and Sycamore (Mesa Ranger District) and tot lots if this alternative is implemented. No narrow-headed gartersnake occupied habitat or critical habitat would be impacted by motorized cross-country travel under Alternative D. This would be a reduction in authorized motorized cross-country use within narrow-headed gartersnake occupied habitat on the Forest and would be beneficial to the species by reducing access near riparian zones, reducing sedimentation into streams, reducing damage to riparian vegetation by vehicles, reducing the potential spread of nonnative aquatic organisms and diseases, and reducing the potential for forest users to handle/collect garter snakes.

Motor Vehicle Use for Big Game Retrieval

Motorized big game retrieval would be allowed within 1 mile of roads and motorized trails, impacting approximately 2,068,208.36 acres if this alternative is implemented. Approximately 261.24 acres of narrow-headed gartersnake occupied habitat and 13,203.33 acres of narrow-headed gartersnake proposed critical habitat on the Forest would be impacted by motorized big game retrieval under Alternative D. This would be an increase in authorized motorized big game retrieval within narrow-headed gartersnake occupied habitat and critical habitat on the Forest and could result in additional impacts to the species by increasing access near riparian zones, increasing sedimentation into streams, increasing damage to riparian vegetation by vehicles, increasing the potential spread of nonnative aquatic organisms and diseases, and increasing the potential for forest users to handle/collect garter snakes. However, any effects to habitat are expected to be minimal because Arizona Game and Fish Department regulations state that hunters cannot drive through riparian areas in a manner that causes damage to the habitat. Furthermore, the number of retrieval trips across the Forest is estimated to be 550 total trips in and out on an annual basis, spread over 2,068,208 acres; few of these trips are anticipated to occur in narrow-headed gartersnake habitat.

Motor Vehicle Use for Dispersed Camping

Dispersed camping using motor vehicles would be restricted to areas within 300 feet of roads and motorized trails, impacting approximately 336,037.85 acres if this alternative is implemented. There would be 48.88 acres of narrow-headed gartersnake occupied habitat and 2,567.85 acres of narrow-headed gartersnake proposed critical habitat on the Forest impacted by dispersed camping

using motor vehicles under Alternative D. This would be a reduction in dispersed camping using motor vehicles within narrow-headed gartersnake occupied habitat and critical habitat on the Forest and would be beneficial to the species by reducing access near riparian zones, reducing sedimentation into streams, reducing damage to riparian vegetation by vehicles, reducing the potential spread of nonnative aquatic organisms and diseases, and reducing the potential for forest users to handle/collect garter snakes.

Motor Vehicle Use for Fuelwood Gathering

Cross-country motorized travel for fuelwood gathering would continue unrestricted in areas currently permitted for fuelwood gathering, impacting approximately 1,345,997.76 acres. There would be 97.75 acres of narrow-headed gartersnake occupied habitat and 9,456.81 acres of narrow-headed gartersnake proposed critical habitat on the Forest impacted by cross-country motorized travel for fuelwood gathering under Alternative D. Because there is no change from Alternative A, the current level of impact is expected to continue if this alternative is implemented.

Northern Mexican Gartersnake and Proposed Critical Habitat

The northern Mexican gartersnake is a riparian obligate species that is usually found in or near streams and ponds in canyons up to 6,200 feet in elevation. This garter snake is most closely linked to shallow slow-moving or impounded waters, though it also occurs in other aquatic environments. The northern Mexican garter snake is also found in wetlands, cienegas, stock tanks, large river riparian woodlands, and streamside gallery forests. The elevation range for this species is 130–8,497 feet. The northern Mexican garter snake's diet consists of leopard frogs, toads, tadpoles, various native fishes and lizards and small rodents which are taken during occasional terrestrial forays. The northern Mexican gartersnake is found in all ranger districts on Tonto National Forest and is its proposed critical habitat.

Alternative A—Direct and Indirect Effects

Roads and Trails Open to Motorized Travel

Approximately 4,958.58 miles of roads and no trails would be open to the public for motorized travel if this alternative was implemented. Currently, there are 1.31 miles of open roads and motorized trails (with a road density of 2.04 miles per square mile) within northern Mexican gartersnake occupied habitat and 22.39 miles of open roads and motorized trails (with a road density of 1.01 miles per square mile) within northern Mexican gartersnake proposed critical habitat on the Forest. The current level of impact is expected to continue if Alternative A is implemented.

Areas Designated for Motor Vehicle Use

Cross-country motorized travel would continue unrestricted within the Payson and Pleasant Valley ranger districts and in other ranger districts where authorized on approximately 703,618.39 acres. Currently, 62.95 acres of northern Mexican gartersnake occupied habitat and 1,716.52 acres of northern Mexican gartersnake proposed critical habitat on the Forest are impacted by cross-country motorized travel. Motorized use within or adjacent to northern Mexican gartersnake habitat has the potential to influence behavior, survival, reproduction and

distribution of northern Mexican gartersnake, as well as to alter habitat. The current level of impact is expected to continue if Alternative A is implemented.

Motor Vehicle Use for Big Game Retrieval

Cross-country motorized travel for big game retrieval would continue unrestricted within the Payson and Pleasant Valley ranger districts and in other ranger districts where authorized on approximately 703,618.39 acres. Currently, 62.95 acres of northern Mexican gartersnake occupied habitat and 1,716.52 acres of northern Mexican gartersnake proposed critical habitat on the Forest are impacted by motorized big game retrieval. Motorized use within or adjacent to northern Mexican gartersnake habitat has the potential to influence behavior, survival, reproduction and distribution of northern Mexican gartersnake, as well as to alter habitat. However, any effects to habitat are expected to be minimal because Arizona Game and Fish Department regulations state that hunters cannot drive through riparian areas in a manner that causes damage to the habitat. Furthermore, the number of retrieval trips across the Forest is estimated to be 550 total trips in and out on an annual basis, spread over 703,618 acres; few of these trips are anticipated to occur in northern Mexican gartersnake habitat. The current level of impact is expected to continue if Alternative A is implemented.

Motor Vehicle Use for Dispersed Camping

Dispersed camping using motorized vehicles would continue unrestricted within the Payson and Pleasant Valley ranger districts and in other ranger districts where authorized on approximately 703,618.39 acres. Currently, 62.95 acres of northern Mexican gartersnake occupied habitat and 1,716.52 acres of northern Mexican gartersnake proposed critical habitat on the Forest are impacted by dispersed camping using motor vehicles. Motorized use within or adjacent to northern Mexican gartersnake habitat has the potential to influence behavior, survival, reproduction and distribution of northern Mexican gartersnake, as well as to alter habitat. The current level of impact is expected to continue if Alternative A is implemented.

Motor Vehicle Use for Fuelwood Gathering

Cross-country motorized travel for fuelwood gathering would continue within the Globe, Payson, Pleasant Valley, and Tonto Basin ranger districts on approximately 1,345,997.76 acres. Currently, 9.98 acres of northern Mexican gartersnake occupied habitat and 1,116.75 acres of northern Mexican gartersnake proposed critical habitat on the Forest are impacted by cross-country motorized travel for fuelwood gathering. Motorized use within or adjacent to northern Mexican gartersnake habitat has the potential to influence behavior, survival, reproduction and distribution of northern Mexican gartersnake, as well as to alter habitat. The current level of impact is expected to continue if Alternative A is implemented.

Alternative B—Direct and Indirect Effects

Roads and Trails Open to Motorized Travel

Approximately 2,559.57 miles of roads and trails would be open to the public for motorized travel if this alternative was implemented. There would be 0.68 miles of open roads and motorized trails (with a road density of 1.06 miles per square mile) within northern Mexican gartersnake occupied habitat and 15.81 miles of open roads and motorized trails (with a road density of 0.72 miles per square mile) within northern Mexican gartersnake proposed critical

habitat on the Forest under Alternative B. This would be a reduction in the amount of roads and motorized trails open to the public in northern Mexican gartersnake occupied habitat and proposed critical habitat, and would be beneficial to the species by reducing access near riparian zones, reducing sedimentation into streams, reducing the potential spread of nonnative aquatic organisms and diseases, reducing the potential for forest users to handle/collect garter snakes, and reducing disturbance to foraging forays into the uplands.

Areas Designated for Motor Vehicle Use

Cross-country motorized use would be eliminated forestwide if Alternative B was implemented. No cross-country motorized use within northern Mexican gartersnake occupied habitat or proposed critical habitat on the Forest would be allowed under Alternative B. This would be a reduction in authorized cross-country motorized use within northern Mexican gartersnake occupied habitat and proposed critical habitat on the Forest, and would benefit the species by reducing access near riparian zones, reducing sedimentation into streams, reducing damage to riparian vegetation by vehicles, reducing the potential spread of nonnative aquatic organisms and diseases, reducing the potential for forest users to handle/collect garter snakes, and reducing disturbance to foraging forays into the uplands.

Motor Vehicle Use for Big Game Retrieval

Motorized big game retrieval would be eliminated forestwide if Alternative B was implemented. No cross-country motorized use within northern Mexican gartersnake occupied habitat or proposed critical habitat on the Forest would be allowed under Alternative B. This would be a reduction in motorized big game retrieval within northern Mexican gartersnake occupied habitat and proposed critical habitat on the Forest, and would benefit the species by reducing access near riparian zones, reducing sedimentation into streams, reducing damage to riparian vegetation by vehicles, reducing the potential spread of nonnative aquatic organisms and diseases, reducing the potential for forest users to handle/collect garter snakes, and reducing disturbance to foraging forays into the uplands.

Motor Vehicle Use for Dispersed Camping

Dispersed camping using motor vehicles would be restricted to 414 designated sites, impacting 65.45 acres if this alternative was implemented. No northern Mexican gartersnake occupied habitat and 0.18 acres of northern Mexican gartersnake proposed critical habitat on the Forest would be impacted by dispersed camping using motor vehicles under Alternative B. This would be a reduction in dispersed camping within northern Mexican gartersnake occupied habitat and proposed critical habitat, and would be beneficial to the species by reducing access near riparian zones, reducing sedimentation into streams, reducing damage to riparian vegetation by vehicles, reducing the potential spread of nonnative aquatic organisms and diseases, reducing the potential for forest users to handle/collect garter snakes, and reducing disturbance to foraging forays into the uplands.

Motor Vehicle Use for Fuelwood Gathering

Cross-country motorized travel for fuelwood gathering would be permitted within 300 feet of a road in the Globe, Payson, Pleasant Valley, and Tonto Basin ranger districts on approximately 132,568.44 acres. No northern Mexican gartersnake occupied habitat and 169.50 acres of

northern Mexican gartersnake proposed critical habitat on the Forest would be impacted by fuelwood gathering using motor vehicles under Alternative B. This would be a reduction in cross-country motorized travel for fuelwood gathering within northern Mexican gartersnake occupied habitat and proposed critical habitat, and would be beneficial to the species by reducing access near riparian zones, reducing sedimentation into streams, reducing damage to riparian vegetation by vehicles, reducing the potential spread of nonnative aquatic organisms and diseases, reducing the potential for forest users to handle/collect garter snakes, and reducing disturbance to foraging forays into the uplands.

Alternative C—Direct and Indirect Effects

Roads and Trails Open to Motorized Travel

Approximately 3,569.52 miles of roads and trails would be open to the public for motorized travel if this alternative was implemented. There would be 0.86 miles of open roads and motorized trails (with a road density of 2.04 miles per square mile) within northern Mexican gartersnake occupied habitat and 18.27 miles of open roads and motorized trails (with a road density of 0.83 miles per square mile) within northern Mexican gartersnake proposed critical habitat on the Forest under Alternative C. This would be a reduction in the amount of roads and motorized trails open to the public in northern Mexican gartersnake occupied habitat and critical habitat, and would be beneficial to the species by reducing access near riparian zones, reducing sedimentation into streams, reducing the potential spread of nonnative aquatic organisms and diseases, reducing the potential for forest users to handle/collect garter snakes, and reducing disturbance to foraging forays into the uplands.

Areas Designated for Motor Vehicle Use

Motorized cross-country travel would be restricted to 6,790.37 acres in designated areas at Bartlett Lake (Cave Creek Ranger District), Golf Course (Globe Ranger District), Roosevelt Lake (Tonto Basin Ranger District), and Sycamore (Mesa Ranger District) and tot lots if this alternative is implemented. No northern Mexican gartersnake occupied habitat or critical habitat would be impacted by motorized cross-country travel under Alternative C. This would be a reduction in authorized cross-country motorized use within northern Mexican gartersnake occupied habitat on the Forest and would be beneficial to the species by reducing access near riparian zones, reducing sedimentation into streams, reducing damage to riparian vegetation by vehicles, reducing the potential spread of nonnative aquatic organisms and diseases, reducing the potential for forest users to handle/collect garter snakes, and reducing disturbance to foraging forays into the uplands.

Motor Vehicle Use for Big Game Retrieval

Motorized big game retrieval would be allowed within 1 mile of roads and motorized trails, impacting 1,293,178.12 acres if this alternative is implemented. There would be 9.98 acres of northern Mexican gartersnake occupied habitat and 1,505.01 acres of northern Mexican gartersnake proposed critical habitat on the Forest impacted by motorized big game retrieval under Alternative C. This would be a reduction in authorized motorized big game retrieval within northern Mexican gartersnake occupied habitat on the Forest and would be beneficial to the species by reducing access near riparian zones, reducing sedimentation into streams, reducing damage to riparian vegetation by vehicles, reducing the potential spread of nonnative aquatic organisms and diseases, reducing the potential for forest users to handle/collect garter snakes, and

reducing disturbance to foraging forays into the uplands. However, any effects to habitat are expected to be minimal because Arizona Game and Fish Department regulations state that hunters cannot drive through riparian areas in a manner that causes damage to the habitat. Furthermore, the number of retrieval trips across the Forest is estimated to be 209 total trips in and out on an annual basis, spread over 1,293,178 acres; few of these trips are anticipated to occur in northern Mexican gartersnake habitat.

Motor Vehicle Use for Dispersed Camping

Dispersed camping using motor vehicles would be restricted to areas within 100 feet of roads and motorized trails, impacting 91,391.29 acres if Alternative C is implemented. There would be 27.71 acres of northern Mexican gartersnake occupied habitat and 219.24 acres of northern Mexican gartersnake proposed critical habitat on the Forest impacted by dispersed camping using motor vehicles under Alternative C. This would be a decrease in dispersed camping using motor vehicles within northern Mexican gartersnake occupied habitat on the Forest and would be beneficial to the species by reducing access near riparian zones, reducing sedimentation into streams, reducing damage to riparian vegetation by vehicles, reducing the potential spread of nonnative aquatic organisms and diseases, reducing the potential for forest users to handle/collect garter snakes, and reducing disturbance to foraging forays into the uplands.

Motor Vehicle Use for Fuelwood Gathering

Cross-country motorized travel for fuelwood gathering would be permitted within 300 feet of a road in the Globe, Payson, Pleasant Valley, and Tonto Basin ranger districts on 161,784.64 acres. No northern Mexican gartersnake occupied habitat and 174.36 acres of northern Mexican gartersnake proposed critical habitat on the Forest would be impacted by fuelwood gathering using motor vehicles under Alternative C. This would be a reduction in cross-country motorized travel for fuelwood gathering within northern Mexican gartersnake occupied habitat and critical habitat, and would be beneficial to the species by reducing access near riparian zones, reducing sedimentation into streams, reducing damage to riparian vegetation by vehicles, reducing the potential spread of nonnative aquatic organisms and diseases, reducing the potential for forest users to handle/collect garter snakes, and reducing disturbance to foraging forays into the uplands.

Alternative D—Direct and Indirect Effects

Roads and Trails Open to Motorized Travel

There would be 4,859.34 miles of roads and trails open to the public for motorized travel if this alternative was implemented. There would be 1.31 miles of open roads and motorized trails (with a road density of 2.04 miles per square mile) within northern Mexican gartersnake occupied habitat and 22.32 miles of open roads and motorized trails (with a road density of 1.01 miles per square mile) within northern Mexican gartersnake proposed critical habitat on the Forest under Alternative D. The level of impact to habitat would be the same as current conditions while there would be a slight decrease in the amount of roads and motorized trails open to the public in northern Mexican gartersnake proposed critical habitat.

Areas Designated for Motor Vehicle Use

Motorized cross-country travel would be restricted to 6,790.37 acres in designated areas at Bartlett Lake (Cave Creek Ranger District), Golf Course (Globe Ranger District), Roosevelt Lake (Tonto Basin Ranger District), and Sycamore (Mesa Ranger District) and tot lots if this alternative is implemented. No northern Mexican gartersnake occupied habitat or proposed critical habitat would be impacted by motorized cross-country travel under Alternative D. This would be a reduction in authorized cross-country motorized use within northern Mexican gartersnake occupied habitat and proposed critical habitat on the Forest, and would be beneficial to the species by reducing access near riparian zones, reducing sedimentation into streams, reducing damage to riparian vegetation by vehicles, reducing the potential spread of nonnative aquatic organisms and diseases, reducing the potential for forest users to handle/collect garter snakes, and reducing disturbance to foraging forays into the uplands.

Motor Vehicle Use for Big Game Retrieval

Motorized big game retrieval would be allowed within 1 mile of roads and motorized trails, impacting approximately 2,068,208.36 acres if Alternative D is implemented. There would be 400.57 acres of northern Mexican gartersnake occupied habitat and 5,545.09 acres of northern Mexican gartersnake proposed critical habitat on the Forest impacted by motorized big game retrieval under Alternative D. This would be an increase in authorized motorized big game retrieval within northern Mexican gartersnake occupied habitat and proposed critical habitat on the Forest and could result in additional impacts to the species by increasing access near riparian zones, increasing sedimentation into streams, increasing damage to riparian vegetation by vehicles, increasing the potential spread of nonnative aquatic organisms and diseases, increasing the potential for forest users to handle/collect garter snakes, and increasing disturbance to foraging forays into the uplands. However, any effects to habitat are expected to be minimal because Arizona Game and Fish Department regulations state that hunters cannot drive through riparian areas in a manner that causes damage to the habitat. Furthermore, the number of retrieval trips across the Forest is estimated to be 550 total trips in and out on an annual basis, spread over 2,068,208 acres; few of these trips are anticipated to occur in northern Mexican gartersnake habitat.

Motor Vehicle Use for Dispersed Camping

Dispersed camping using motor vehicles would be restricted to areas within 300 feet of roads and motorized trails, impacting approximately 336,037.85 acres if this alternative is implemented. There would be 85.39 acres of northern Mexican gartersnake occupied habitat and 832.83 acres of northern Mexican gartersnake proposed critical habitat on the Forest impacted by dispersed camping using motor vehicles under Alternative D. This would be an increase in dispersed camping using motor vehicles within northern Mexican gartersnake occupied habitat and a decrease within proposed critical habitat on the Forest, and could result in additional impacts to the species by increasing access near riparian zones, increasing sedimentation into streams, increasing damage to riparian vegetation by vehicles, increasing the potential spread of nonnative aquatic organisms and diseases, increasing the potential for forest users to handle/collect garter snakes, and increasing disturbance to foraging forays into the uplands.

Motor Vehicle Use for Fuelwood Gathering

Cross-country motorized travel for fuelwood gathering would continue unrestricted in areas currently permitted for fuelwood gathering, impacting approximately 1,345,997.76 acres. There would be 9.98 acres of northern Mexican gartersnake occupied habitat and 1,116.75 acres of northern Mexican gartersnake proposed critical habitat on the Forest impacted by cross-country motorized travel for fuelwood gathering under Alternative D. Because there is no change from Alternative A, the current level of impact is expected to continue if this alternative is implemented.

Chiricahua Leopard Frog and Critical Habitat

The Chiricahua leopard frog (CLF) is a habitat generalist, breeding in slack waters in a variety of natural and man-made aquatic systems, including found in streams, rivers, backwaters, ponds, and stock tanks that are mostly free from introduced fish, crayfish, and bullfrogs. Habitat heterogeneity is thought to be important in providing habitat for the frog's different life stages and seasonal requirements. The elevation range of the CLF is 3,300 to 8,900 feet.

On the Tonto National Forest, the CLF is found in the Payson and Pleasant Valley ranger districts. Historically, this species occurred on the Globe Ranger District, but it has been extirpated.

Critical habitat is designated in Payson and Pleasant Valley ranger districts. All critical habitat within the forest is within Recovery Unit 5. There are 2 management units consisting of Unit 24 (Crouch, Gentry, and Cherry Creeks, and Parallel Canyon) and Unit 25 (Ellison and Lewis Creeks).

Alternative A—Direct and Indirect Effects

Roads and Trails Open to Motorized Travel

Approximately 4,958.58 miles of roads and no trails would be open to the public for motorized travel if this alternative was implemented. Currently, there are 6.80 miles of open roads and motorized trails (with a road density of 4.90 miles per square mile) within CLF occupied habitat and 3.44 miles of open roads and motorized trails (with a road density of 4.38 miles per square mile) within CLF critical habitat on the Forest. Current condition would continue if Alternative A was implemented, so no new effects would occur.

Areas Designated for Motor Vehicle Use

Cross-country motorized travel would continue unrestricted within the Payson and Pleasant Valley ranger districts and in other ranger districts where authorized on approximately 703,618.39 acres. Currently, 746.14 acres of CLF occupied habitat and 417.19 acres of CLF critical habitat on the Forest are impacted by cross-country motorized travel. Motorized use within or adjacent to CLF habitat has the potential to influence behavior, survival, reproduction and distribution of CLF, as well as to alter habitat. The current level of impact is expected to continue if Alternative A is implemented.

Motor Vehicle Use for Big Game Retrieval

Cross-country motorized travel for big game retrieval would continue unrestricted within the Payson and Pleasant Valley ranger districts and in other ranger districts where authorized on

approximately 703,618.39 acres. Currently, 746.14 acres of CLF occupied habitat and 417.19 acres of CLF critical habitat on the Forest are impacted by motorized big game retrieval. Motorized use within or adjacent to CLF habitat has the potential to influence behavior, survival, reproduction and distribution of CLF, as well as to alter habitat. However, any effects to habitat are expected to be minimal because Arizona Game and Fish Department regulations state that hunters cannot drive through riparian areas in a manner that causes damage to the habitat. Furthermore, the number of retrieval trips across the Forest is estimated to be 550 total trips in and out on an annual basis, spread over 703,618 acres; few of these trips are anticipated to occur in CLF habitat. The current level of impact is expected to continue if Alternative A is implemented.

Motor Vehicle Use for Dispersed Camping

Dispersed camping using motorized vehicles would continue unrestricted within the Payson and Pleasant Valley ranger districts and in other ranger districts where authorized on approximately 703,618.39 acres. Currently, 746.14 acres of CLF occupied habitat and 417.19 acres of CLF critical habitat on the Forest are impacted by dispersed camping using motor vehicles. Motorized use within or adjacent to CLF habitat has the potential to influence behavior, survival, reproduction and distribution of CLF, as well as to alter habitat. The current level of impact is expected to continue if Alternative A is implemented.

Motor Vehicle Use for Fuelwood Gathering

Cross-country motorized travel for fuelwood gathering would continue within the Globe, Payson, Pleasant Valley, and Tonto Basin ranger districts on approximately 1,345,997.76 acres. Currently, 134.64 acres of CLF occupied habitat and 110.41 acres of CLF critical habitat on the Forest are impacted by cross-country motorized travel for fuelwood gathering. Motorized use within or adjacent to CLF habitat has the potential to influence behavior, survival, reproduction and distribution of CLF, as well as to alter habitat. The current level of impact is expected to continue if Alternative A is implemented.

Alternative B—Direct and Indirect Effects

Roads and Trails Open to Motorized Travel

Approximately 2,559.57 miles of roads and trails would be open to the public for motorized travel if this alternative was implemented. There would be 4.73 miles of open roads and motorized trails (with a road density of 3.41 miles per square mile) within CLF occupied habitat and 2.84 miles of open roads and motorized trails (with a road density of 3.62 miles per square mile) within CLF critical habitat on the Forest under Alternative B. This would be a reduction in the amount of roads and motorized trails open to the public in CLF occupied habitat and critical habitat, and would benefit the species by reducing access to sites, reducing erosion and sedimentation into stock tanks, reducing disturbance to dispersal habitat and dispersing frogs, reducing the potential spread of nonnative aquatic organisms and diseases, and reducing the potential for forest users to handle/collect frogs.

Areas Designated for Motor Vehicle Use

Cross-country motorized use would be eliminated Forest-wide if Alternative B was implemented. No cross-country motorized use within CLF habitat and critical habitat on the Forest would be

allowed under Alternative B. This would be a reduction in authorized cross-country motorized use within CLF occupied habitat and critical habitat on the Forest, and would benefit the species by reducing access to sites, reducing erosion and sedimentation into stock tanks, reducing disturbance to dispersal habitat and dispersing frogs, reducing damage to shoreline and aquatic habitat by vehicles, reducing the potential spread of nonnative aquatic organisms and diseases, and reducing the potential for forest users to handle/collect frogs.

Motor Vehicle Use for Big Game Retrieval

Motorized big game retrieval would be eliminated Forest-wide if Alternative B was implemented. No cross-country motorized use within CLF habitat and critical habitat on the Forest would be allowed under Alternative B. This would be a reduction in motorized big game retrieval within CLF occupied habitat and critical habitat on the Forest, and would benefit the species by reducing access to sites, reducing erosion and sedimentation into stock tanks, reducing disturbance to dispersal habitat and dispersing frogs, reducing damage to shoreline and aquatic habitat by vehicles, reducing the potential spread of nonnative aquatic organisms and diseases, and reducing the potential for forest users to handle/collect frogs.

Motor Vehicle Use for Dispersed Camping

Dispersed camping using motor vehicles would be restricted to 414 designated sites, impacting approximately 65.45 acres if this alternative was implemented. There would be 0.16 acres of CLF occupied habitat and no CLF critical habitat impacted by dispersed camping using motor vehicles under Alternative B. This would be a reduction in dispersed camping within CLF occupied habitat and critical habitat, and would benefit the species by reducing access to sites, reducing erosion and sedimentation into stock tanks, reducing disturbance to dispersal habitat and dispersing frogs, reducing damage to shoreline and aquatic habitat by vehicles, reducing the potential spread of nonnative aquatic organisms and diseases, and reducing the potential for forest users to handle/collect frogs.

Motor Vehicle Use for Fuelwood Gathering

Cross-country motorized travel for fuelwood gathering would be permitted within 300 feet of a road in the Globe, Payson, Pleasant Valley, and Tonto Basin ranger districts on 132,568.44 acres. There would be 33.90 acres of CLF occupied habitat and 32.88 acres of CLF critical habitat on the Forest impacted by fuelwood gathering using motor vehicles under Alternative B. This would be a reduction in cross-country motorized travel for fuelwood gathering within CLF occupied habitat and critical habitat, and would benefit the species by reducing access to sites, reducing erosion and sedimentation into stock tanks, reducing disturbance to dispersal habitat and dispersing frogs, reducing damage to shoreline and aquatic habitat by vehicles, reducing the potential spread of nonnative aquatic organisms and diseases, and reducing the potential for forest users to handle/collect frogs.

Alternative C—Direct and Indirect Effects

Roads and Trails Open to Motorized Travel

Approximately 3,569.52 miles of roads and trails would be open to the public for motorized travel if this alternative was implemented. There would be 5.37 miles of open roads and motorized trails (with a road density of 3.87 miles per square mile) within CLF occupied habitat

and 2.85 miles of open roads and motorized trails (with a road density of 3.63 miles per square mile) within CLF critical habitat on the Forest under Alternative C. This would be a reduction in the amount of roads and motorized trails open to the public in CLF occupied habitat and critical habitat, and would benefit the species by reducing access to sites, reducing erosion and sedimentation into stock tanks, reducing disturbance to dispersal habitat and dispersing frogs, reducing the potential spread of nonnative aquatic organisms and diseases, and reducing the potential for forest users to handle/collect frogs.

Areas Designated for Motor Vehicle Use

Motorized cross-country travel would be restricted to 6,790.37 acres in designated areas at Bartlett Lake (Cave Creek Ranger District), Golf Course (Globe Ranger District), Roosevelt Lake (Tonto Basin Ranger District), and Sycamore (Mesa Ranger District) and tot lots if this alternative is implemented. No CLF occupied habitat or critical habitat would be impacted by motorized cross-country travel under Alternative C. This would be a decrease in authorized cross-country motorized use within CLF occupied habitat and critical habitat on the Forest, and would benefit the species by reducing access to sites, reducing erosion and sedimentation into stock tanks, reducing disturbance to dispersal habitat and dispersing frogs, reducing damage to shoreline and aquatic habitat by vehicles, reducing the potential spread of nonnative aquatic organisms and diseases, and reducing the potential for forest users to handle/collect frogs.

Motor Vehicle Use for Big Game Retrieval

Motorized big game retrieval would be allowed within 1 mile of roads and motorized trails, impacting approximately 1,293,178.12 acres if this alternative is implemented. There would be 740.44 acres of CLF occupied habitat and 417.19 acres of CLF critical habitat on the Forest impacted by motorized big game retrieval under Alternative C. This would be a slight decrease in authorized motorized big game retrieval within CLF occupied habitat and the same level of impact as current conditions within critical habitat on the Forest. However, any effects to habitat are expected to be minimal because Arizona Game and Fish Department regulations state that hunters cannot drive through riparian areas in a manner that causes damage to the habitat. Furthermore, the number of retrieval trips across the Forest is estimated to be 209 total trips in and out on an annual basis, spread over 1,293,178 acres; few of these trips are anticipated to occur in CLF habitat.

Motor Vehicle Use for Dispersed Camping

Dispersed camping using motor vehicles would be restricted to areas within 100 feet of roads and motorized trails, impacting approximately 91,391.29 acres if this alternative is implemented. There would be 60.54 acres of CLF occupied habitat and 54.53 acres of CLF critical habitat on the Forest impacted by dispersed camping using motor vehicles under Alternative C. This would be a decrease in dispersed camping using motor vehicles within CLF occupied habitat and critical habitat on the Forest, and would benefit the species by reducing access to sites, reducing erosion and sedimentation into stock tanks, reducing disturbance to dispersal habitat and dispersing frogs, reducing damage to shoreline and aquatic habitat by vehicles, reducing the potential spread of nonnative aquatic organisms and diseases, and reducing the potential for forest users to handle/collect frogs.

Motor Vehicle Use for Fuelwood Gathering

Cross-country motorized travel for fuelwood gathering would be permitted within 300 feet of a road in the Globe, Payson, Pleasant Valley, and Tonto Basin ranger districts on approximately 161,784.64 acres. There would be 57.24 acres of CLF occupied habitat and 37.14 acres of CLF critical habitat on the Forest impacted by fuelwood gathering using motor vehicles under Alternative C. This would be a reduction in cross-country motorized travel for fuelwood gathering within CLF occupied habitat and critical habitat, and would benefit the species by reducing access to sites, reducing erosion and sedimentation into stock tanks, reducing disturbance to dispersal habitat and dispersing frogs, reducing damage to shoreline and aquatic habitat by vehicles, reducing the potential spread of nonnative aquatic organisms and diseases, and reducing the potential for forest users to handle/collect frogs.

Alternative D—Direct and Indirect Effects

Roads and Trails Open to Motorized Travel

Approximately 4,859.34 miles of roads and trails would be open to the public for motorized travel if this alternative was implemented. There would be 6.80 miles of open roads and motorized trails (with a road density of 4.90 miles per square mile) within CLF occupied habitat and 3.44 miles of open roads and motorized trails (with a road density of 4.38 miles per square mile) within CLF critical habitat on the Forest under Alternative D. The level of impact would be the same as current conditions.

Areas Designated for Motor Vehicle Use

Motorized cross-country travel would be restricted to 6,790.37 acres in designated areas at Bartlett Lake (Cave Creek Ranger District), Golf Course (Globe Ranger District), Roosevelt Lake (Tonto Basin Ranger District), and Sycamore (Mesa Ranger District) and tot lots if this alternative is implemented. No CLF occupied habitat or critical habitat would be impacted by motorized cross-country travel under Alternative D. This would be a reduction in authorized cross-country motorized use within CLF occupied habitat and critical habitat on the Forest, and would benefit the species by reducing access to sites, reducing erosion and sedimentation into stock tanks, reducing disturbance to dispersal habitat and dispersing frogs, reducing damage to shoreline and aquatic habitat by vehicles, reducing the potential spread of nonnative aquatic organisms and diseases, and reducing the potential for forest users to handle/collect frogs.

Motor Vehicle Use for Big Game Retrieval

Motorized big game retrieval would be allowed within 1 mile of roads and motorized trails, impacting approximately 2,068,208.36 acres if this alternative is implemented. There would be 740.44 acres of CLF occupied habitat and 417.19 acres of CLF critical habitat on the Forest impacted by motorized big game retrieval under Alternative D. This would be a slight decrease in authorized motorized big game retrieval within CLF occupied habitat and the same level of impact as current conditions within critical habitat on the Forest. However, any effects to habitat are expected to be minimal because Arizona Game and Fish Department regulations state that hunters cannot drive through riparian areas in a manner that causes damage to the habitat. Furthermore, the number of retrieval trips across the Forest is estimated to be 550 total trips in and out on an annual basis, spread over 2,068,208 acres; few of these trips are anticipated to occur in CLF habitat.

Motor Vehicle Use for Dispersed Camping

Dispersed camping using motor vehicles would be restricted to areas within 300 feet of roads and motorized trails, impacting approximately 336,037.85 acres if Alternative D is implemented. There would be 303.80 acres of CLF occupied habitat and 153.40 acres of CLF critical habitat on the Forest impacted by dispersed camping using motor vehicles under Alternative D. This would be a reduction in dispersed camping using motor vehicles within CLF occupied habitat on the Forest, while it would be an increase of this activity in CLF critical habitat on the Forest. This could result in additional impacts to the species by increasing access to sites, increasing erosion and sedimentation into stock tanks, increasing disturbance to dispersal habitat and dispersing frogs, increasing damage to shoreline and aquatic habitat by vehicles, increasing the potential spread of nonnative aquatic organisms and diseases, and increasing the potential for forest users to handle/collect frogs

Motor Vehicle Use for Fuelwood Gathering

Cross-country motorized travel for fuelwood gathering would continue unrestricted in areas currently permitted for fuelwood gathering, impacting approximately 1,345,997.76 acres. There would be 134.64 acres of CLF occupied habitat and 110.41 acres of CLF critical habitat on the Forest impacted by cross-country motorized travel for fuelwood gathering under Alternative D. Because there is no change from Alternative A, the current level of impact is expected to continue if this alternative is implemented.

Gila Chub and Critical Habitat

The Gila chub inhabits pools, springs, backwaters, and streams at elevations from 2,000 to 5,500 feet.

The Gila chub has been extirpated from Tonto National Forest. Formerly, this species was found in Silver Creek in the Cave Creek Ranger District), and in Mineral Creek in the Globe and Tonto Basin ranger districts. Augmentations are planned for Silver Creek. Critical habitat for the Gila chub is designated on the forest in Cave Creek and Globe ranger districts.

Alternative A—Direct and Indirect Effects

Roads and Trails Open to Motorized Travel

Approximately 4,958.58 miles of roads and no trails would be open to the public for motorized travel if this alternative was implemented. Currently, there are 0.42 miles of open roads and motorized trails (with a road density of 17.40 miles per square mile) within Gila chub occupied habitat and 0.68 miles of open roads and motorized trails (with a road density of 1.26 miles per square mile) within Gila chub critical habitat on the Forest. Current condition would continue if Alternative A was implemented, so no new effects would occur.

Areas Designated for Motor Vehicle Use

Cross-country motorized travel would continue unrestricted within the Payson and Pleasant Valley ranger districts and in other ranger districts where authorized on approximately 703,618.39 acres. Currently, no Gila chub occupied habitat or critical habitat is impacted by cross-country motorized travel. Motorized use within or adjacent to Gila chub habitat has the potential to

influence behavior, survival, reproduction and distribution of Gila chub, as well as to alter habitat. The current level of impact is expected to continue if Alternative A is implemented.

Motor Vehicle Use for Big Game Retrieval

Cross-country motorized travel for big game retrieval would continue unrestricted within the Payson and Pleasant Valley ranger districts and in other ranger districts where authorized on approximately 703,618.39 acres. Based on the Forest assessment of where vehicles are expected to be driven compared to data for the species, no Gila chub occupied habitat or critical habitat is impacted by motorized big game retrieval. Motorized use within or adjacent to Gila chub habitat has the potential to influence behavior, survival, reproduction and distribution of Gila chub, as well as to alter habitat. The number of retrieval trips across the Forest is estimated to be 550 total trips in and out on an annual basis, spread over 703,618 acres; few of these trips are anticipated to occur in Gila chub habitat. The current level of impact is expected to continue if Alternative A is implemented.

Motor Vehicle Use for Dispersed Camping

Dispersed camping using motorized vehicles would continue unrestricted within the Payson and Pleasant Valley ranger districts and in other ranger districts where authorized on approximately 703,618.39 acres. Currently, no Gila chub occupied habitat or critical habitat is impacted by dispersed camping using motor vehicles. Motorized use within or adjacent to Gila chub habitat has the potential to influence behavior, survival, reproduction and distribution of Gila chub, as well as to alter habitat. The current level of impact is expected to continue if Alternative A is implemented.

Motor Vehicle Use for Fuelwood Gathering

Cross-country motorized travel for fuelwood gathering would continue within the Globe, Payson, Pleasant Valley, and Tonto Basin ranger districts on approximately 1,345,997.76 acres. Currently, no Gila chub occupied habitat is impacted by cross-country motorized travel for fuelwood gathering, though 132.68 acres of Gila chub critical habitat is impacted on the Forest. Motorized use within or adjacent to Gila chub habitat has the potential to influence behavior, survival, reproduction and distribution of Gila chub, as well as to alter habitat. The current level of impact is expected to continue if Alternative A is implemented.

Alternative B—Direct and Indirect Effects

Roads and Trails Open to Motorized Travel

Approximately 2,559.57 miles of roads and trails would be open to the public for motorized travel if this alternative was implemented. There would be approximately 0.05 of open roads and motorized trails (with a road density of 2.07 miles per square mile) within Gila chub occupied habitat and 0.68 miles of open roads and motorized trails (with a road density of 1.26 miles per square mile) would be impacted within Gila chub critical habitat on the Forest under Alternative B. This would be a reduction in the amount of roads and motorized trails open to the public in Gila chub occupied habitat, and the level of impact to critical habitat would be the same as current conditions. This would benefit the species by reducing access near riparian zones, reducing sedimentation into streams, and reducing the potential spread of nonnative aquatic organisms and diseases.

Areas Designated for Motor Vehicle Use

Cross-country motorized use would be eliminated Forest-wide if Alternative B was implemented. No cross-country motorized use within Gila chub occupied habitat and critical habitat on the Forest would be allowed under Alternative B. This would be a reduction in authorized cross-country motorized use within Gila chub occupied habitat and critical habitat on the Forest, and would benefit the species by reducing access near riparian zones, reducing sedimentation into streams, and reducing the potential spread of nonnative aquatic organisms and diseases.

Motor Vehicle Use for Big Game Retrieval

Motorized big game retrieval would be eliminated Forest-wide if Alternative B was implemented. No cross-country motorized use within Gila chub occupied habitat and critical habitat on the Forest would be allowed under Alternative B. This would be a reduction in motorized big game retrieval within Gila chub occupied habitat and critical habitat on the Forest, and would benefit the species by reducing access near riparian zones, reducing sedimentation into streams, and reducing the potential spread of nonnative aquatic organisms and diseases.

Motor Vehicle Use for Dispersed Camping

Dispersed camping using motor vehicles would be restricted to 414 designated sites, impacting approximately 65.45 acres if this alternative was implemented. No Gila chub occupied habitat or critical habitat would be impacted by dispersed camping using motor vehicles under Alternative B. The level of impact would be the same as current conditions.

Motor Vehicle Use for Fuelwood Gathering

Cross-country motorized travel for fuelwood gathering would be permitted within 300 feet of a road in the Globe, Payson, Pleasant Valley, and Tonto Basin ranger districts on approximately 132,568.44 acres. No Gila chub occupied habitat and 12.05 acres of Gila chub critical habitat on the Forest would be impacted by fuelwood gathering using motor vehicles under Alternative B. The level of impact to occupied habitat would be the same as current conditions while there would be a reduction in cross-country motorized travel for fuelwood gathering within Gila chub critical habitat on the Forest.

Alternative C—Direct and Indirect Effects

Roads and Trails Open to Motorized Travel

Approximately 3,569.52 miles of roads and trails would be open to the public for motorized travel if this alternative was implemented. There would be 0.05 miles of open roads and motorized trails (with a road density of 2.07 miles per square mile) within Gila chub occupied habitat and 0.68 miles of open roads and motorized trails (with a road density of 1.26 miles per square mile) within Gila chub critical habitat on the Forest under Alternative C. The level of impact to critical habitat would be the same as current conditions, while this would be a reduction in the amount of open roads and motorized trails in Gila chub occupied habitat, and would benefit the species by reducing access near riparian zones, reducing sedimentation into streams, and reducing the potential spread of nonnative aquatic organisms and diseases.

Areas Designated for Motor Vehicle Use

Motorized cross-country travel would be restricted to 6,790.37 acres in designated areas at Bartlett Lake (Cave Creek Ranger District), Golf Course (Globe Ranger District), Roosevelt Lake (Tonto Basin Ranger District), and Sycamore (Mesa Ranger District) and tot lots if Alternative C is implemented. No Gila chub occupied habitat or critical habitat would be impacted by motorized cross-country travel under this alternative. The level of impact would be the same as current conditions.

Motor Vehicle Use for Big Game Retrieval

Motorized big game retrieval would be allowed within 1 mile of roads and motorized trails, impacting approximately 1,293,178.12 acres if Alternative C is implemented. Based on the Forest assessment of where vehicles are expected to be driven compared to data for the species, no Gila chub occupied habitat and 12.44 acres of Gila chub critical habitat on the Forest would be impacted by motorized big game retrieval under this alternative. The level of impact to occupied habitat would be the same as current conditions, while this would be an increase in authorized motorized big game retrieval in Gila chub critical habitat. The number of retrieval trips across the Forest is estimated to be 209 total trips in and out on an annual basis, spread over 1,293,178 acres; few of these trips are anticipated to occur in Gila chub habitat.

Motor Vehicle Use for Dispersed Camping

Dispersed camping using motor vehicles would be restricted to areas within 100 feet of roads and motorized trails, impacting approximately 91,391.29 acres if this alternative is implemented. There would be 0.61 acres of Gila chub occupied habitat and 13.42 acres of Gila chub critical habitat on the Forest impacted by dispersed camping using motor vehicles under Alternative C. This would be an increase in dispersed camping using motor vehicles within Gila chub occupied habitat and critical habitat on the Forest and could result in additional impacts to the species by increasing access near riparian zones, increasing sedimentation into streams, and increasing the potential spread of nonnative aquatic organisms and diseases.

Motor Vehicle Use for Fuelwood Gathering

Cross-country motorized travel for fuelwood gathering would be permitted within 300 feet of a road in the Globe, Payson, Pleasant Valley, and Tonto Basin ranger districts on approximately 161,784.64 acres. No Gila chub occupied habitat and 12.05 acres of Gila chub critical habitat on the Forest would be impacted by fuelwood gathering using motor vehicles under Alternative C. The level of impact to occupied habitat would be the same as current conditions, while this would be a reduction in fuelwood gathering using motor vehicles in Gila chub critical habitat.

Alternative D—Direct and Indirect Effects

Roads and Trails Open to Motorized Travel

Approximately 4,859.34 miles of roads and trails would be open to the public for motorized travel if this alternative was implemented. There would be 0.42 miles of open roads and motorized trails (with a road density of 17.40 miles per square mile) within Gila chub occupied habitat and 0.68 miles of open roads and motorized trails (with a road density of 1.26 miles per square mile) impacted within Gila chub critical habitat on the Forest under Alternative D. The level of impact would be the same as current conditions.

Areas Designated for Motor Vehicle Use

Motorized cross-country travel would be restricted to 6,790.37 acres in designated areas at Bartlett Lake (Cave Creek Ranger District), Golf Course (Globe Ranger District), Roosevelt Lake (Tonto Basin Ranger District), and Sycamore (Mesa Ranger District) and tot lots if this alternative is implemented. No Gila chub occupied habitat or critical habitat would be impacted by motorized cross-country travel under Alternative D. The level of impact would be the same as current conditions.

Motor Vehicle Use for Big Game Retrieval

Motorized big game retrieval would be allowed within 1 mile of roads and motorized trails, impacting approximately 2,068,208.36 acres if this alternative is implemented. Based on the Forest assessment of where vehicles are expected to be driven compared to data for the species, there would be 15.45 acres of Gila chub occupied habitat and 346.05 acres of Gila chub critical habitat on the Forest impacted by motorized big game retrieval under Alternative D. This would be an increase in authorized motorized big game retrieval within Gila chub occupied habitat and critical habitat on the Forest, and could result in additional impacts to the species by increasing access near riparian zones, increasing sedimentation into streams, and increasing the potential spread of nonnative aquatic organisms and diseases. However, any effects to habitat are expected to be minimal because Arizona Game and Fish Department regulations state that hunters cannot drive through riparian areas in a manner that causes damage to the habitat. Furthermore, the number of retrieval trips across the Forest is estimated to be 550 total trips in and out on an annual basis, spread over 2,068,208 acres; few of these trips are anticipated to occur in Gila chub habitat.

Motor Vehicle Use for Dispersed Camping

Dispersed camping using motor vehicles would be restricted to areas within 300 feet of roads and motorized trails, impacting approximately 336,037.85 acres if Alternative D is implemented. There would be 7.13 acres of Gila chub occupied habitat and 44.81 acres of Gila chub critical habitat on the Forest impacted by dispersed camping using motor vehicles under Alternative D. This would be an increase in dispersed camping using motor vehicles within Gila chub occupied habitat and critical habitat on the Forest and could result in additional impacts to the species by increasing access near riparian zones, increasing sedimentation into streams, and increasing the potential spread of nonnative aquatic organisms and diseases.

Motor Vehicle Use for Fuelwood Gathering

Cross-country motorized travel for fuelwood gathering would continue unrestricted in areas currently permitted for fuelwood gathering, impacting approximately 1,345,997.76 acres. No Gila chub occupied habitat and 132.68 acres of Gila chub critical habitat on the Forest would be impacted by cross-country motorized travel for fuelwood gathering under Alternative D. Because there is no change from Alternative A, the current level of impact is expected to continue if this alternative is implemented.

Loach Minnow and Critical Habitat

The loach minnow is a benthic species of small to large perennial streams with swift, shallow water over cobble and gravel. Recurrent flooding and a natural hydrograph are important. This species is found at elevations below 8,000 feet.

The loach minnow has been extirpated from Tonto National Forest. However, the Arizona Game and Fish Department stocked 1,500 plus fish in Fossil Creek in the late 2000s. Loach minnow critical habitat is designated on Cave Creek and Payson ranger districts.

Alternative A—Direct and Indirect Effects

Roads and Trails Open to Motorized Travel

Approximately 4,958.58 miles of roads and no trails would be open to the public for motorized travel if this alternative was implemented. Currently, there are no open roads and motorized trails within loach minnow occupied habitat or critical habitat on the Forest. Current condition would continue if Alternative A was implemented, so no new effects would occur.

Areas Designated for Motor Vehicle Use

Cross-country motorized travel would continue unrestricted within the Payson and Pleasant Valley ranger districts and in other ranger districts where authorized on approximately 703,618.39 acres. Currently, no loach minnow occupied habitat or critical habitat is impacted by cross-country motorized travel. Motorized use within or adjacent to loach minnow habitat has the potential to influence behavior, survival, reproduction and distribution of loach minnow, as well as to alter habitat. The current level of impact is expected to continue if Alternative A is implemented.

Motor Vehicle Use for Big Game Retrieval

Cross-country motorized travel for big game retrieval would continue unrestricted within the Payson and Pleasant Valley ranger districts and in other ranger districts where authorized on approximately 703,618.39 acres. Based on the Forest assessment of where vehicles are expected to be driven compared to data for the species, no loach minnow occupied habitat or critical habitat is impacted by motorized big game retrieval. Motorized use within or adjacent to loach minnow habitat has the potential to influence behavior, survival, reproduction and distribution of loach minnow, as well as to alter habitat. However, the number of retrieval trips across the Forest is estimated to be 550 total trips in and out on an annual basis, spread over 703,618 acres; few of these trips are anticipated to occur in loach minnow habitat. The current level of impact is expected to continue if Alternative A is implemented.

Motor Vehicle Use for Dispersed Camping

Dispersed camping using motorized vehicles would continue unrestricted within the Payson and Pleasant Valley ranger districts and in other ranger districts where authorized on approximately 703,618.39 acres. Currently, no loach minnow occupied habitat or critical habitat is impacted by dispersed camping using motor vehicles. Motorized use within or adjacent to loach minnow habitat has the potential to influence behavior, survival, reproduction and distribution of loach minnow, as well as to alter habitat. The current level of impact is expected to continue if Alternative A is implemented.

Motor Vehicle Use for Fuelwood Gathering

Cross-country motorized travel for fuelwood gathering would continue within the Globe, Payson, Pleasant Valley, and Tonto Basin ranger districts on approximately 1,345,997.76 acres. Currently, no loach minnow occupied habitat or critical habitat is impacted by cross-country motorized travel for fuelwood gathering. Motorized use within or adjacent to loach minnow habitat has the potential to influence behavior, survival, reproduction and distribution of loach minnow, as well as to alter habitat. The current level of impact is expected to continue if Alternative A is implemented.

Alternative B—Direct and Indirect Effects

Roads and Trails Open to Motorized Travel

Approximately 2,559.57 miles of roads and trails would be open to the public for motorized travel if this alternative was implemented. There would be no open roads and motorized trails within loach minnow occupied habitat or critical habitat on the Forest under Alternative B. The level of impact would be the same as current conditions.

Areas Designated for Motor Vehicle Use

Cross-country motorized use would be eliminated Forest-wide if Alternative B was implemented. No loach minnow occupied habitat or critical habitat would be affected by cross-country motorized use. The level of impact to loach minnow occupied habitat and critical habitat would be the same as current conditions.

Motor Vehicle Use for Big Game Retrieval

Motorized big game retrieval would be eliminated Forest-wide if Alternative B was implemented. No loach minnow occupied habitat or critical habitat would be affected by motorized big game retrieval. The level of impact to loach minnow habitat and critical habitat would be the same as current conditions.

Motor Vehicle Use for Dispersed Camping

Dispersed camping using motor vehicles would be restricted to 414 designated sites, impacting approximately 65.45 acres if this alternative was implemented. No loach minnow occupied habitat or critical habitat would be impacted by dispersed camping using motor vehicles under Alternative B. The level of impact would be the same as current conditions.

Motor Vehicle Use for Fuelwood Gathering

Cross-country motorized travel for fuelwood gathering would be permitted within 300 feet of a road in the Globe, Payson, Pleasant Valley, and Tonto Basin ranger districts on approximately 132,568.44 acres. No loach minnow occupied habitat or critical habitat would be impacted by fuelwood gathering using motor vehicles under Alternative B. The level of impact would be the same as current conditions.

Alternative C—Direct and Indirect Effects

Roads and Trails Open to Motorized Travel

Approximately 3,569.52 miles of roads and trails would be open to the public for motorized travel if this alternative was implemented. There would be no open roads and motorized trails within loach minnow occupied habitat or critical habitat on the Forest under Alternative C. The level of impact would be the same as current conditions.

Areas Designated for Motor Vehicle Use

Motorized cross-country travel would be restricted to 6,790.37 acres in designated areas at Bartlett Lake (Cave Creek Ranger District), Golf Course (Globe Ranger District), Roosevelt Lake (Tonto Basin Ranger District), and Sycamore (Mesa Ranger District) and tot lots if this alternative is implemented. No loach minnow occupied habitat or critical habitat would be impacted by motorized cross-country travel under Alternative C. The level of impact would be the same as current conditions.

Motor Vehicle Use for Big Game Retrieval

Motorized big game retrieval would be allowed within 1 mile of roads and motorized trails, impacting approximately 1,293,178.12 acres if this alternative is implemented. Based on the Forest assessment of where vehicles are expected to be driven compared to data for the species, no loach minnow occupied habitat or critical habitat would be impacted by motorized big game retrieval under Alternative C. The number of retrieval trips across the Forest is estimated to be 209 total trips in and out on an annual basis, spread over 1,293,178 acres; none of these trips are anticipated to occur in loach minnow habitat. The level of impact would be the same as current conditions.

Motor Vehicle Use for Dispersed Camping

Dispersed camping using motor vehicles would be restricted to areas within 100 feet of roads and motorized trails, impacting approximately 91,391.29 acres if this alternative is implemented. No loach minnow occupied habitat or critical habitat would be impacted by dispersed camping using motor vehicles under Alternative C. The level of impact would be the same as current conditions.

Motor Vehicle Use for Fuelwood Gathering

Cross-country motorized travel for fuelwood gathering would be permitted within 300 feet of a road in the Globe, Payson, Pleasant Valley, and Tonto Basin ranger districts on approximately 161,784.64 acres. No loach minnow occupied habitat or critical habitat would be impacted by fuelwood gathering using motor vehicles under Alternative C. The level of impact would be the same as current conditions.

Alternative D—Direct and Indirect Effects

Roads and Trails Open to Motorized Travel

Approximately 4,859.34 miles of roads and trails would be open to the public for motorized travel if this alternative was implemented. There would be no open roads and motorized trails within loach minnow occupied habitat or critical habitat on the Forest under Alternative D. The level of impact would be the same as current conditions.

Areas Designated for Motor Vehicle Use

Motorized cross-country travel would be restricted to 6,790.37 acres in designated areas at Bartlett Lake (Cave Creek Ranger District), Golf Course (Globe Ranger District), Roosevelt Lake (Tonto Basin Ranger District), and Sycamore (Mesa Ranger District) and tot lots if this alternative is implemented. No loach minnow occupied habitat or critical habitat would be impacted by motorized cross-country travel under Alternative D. The level of impact would be the same as current conditions.

Motor Vehicle Use for Big Game Retrieval

Motorized big game retrieval would be allowed within 1 mile of roads and motorized trails, impacting approximately 2,068,208.36 acres if this alternative is implemented. Based on the Forest analysis of data for the species and where vehicles are expected to be driven, no loach minnow occupied habitat or critical habitat would be impacted by motorized big game retrieval under Alternative D. The number of retrieval trips across the Forest is estimated to be 550 total trips in and out on an annual basis, spread over 2,068,208 acres; none of these trips are anticipated to occur in loach minnow occupied habitat. The level of impact would be the same as current conditions.

Motor Vehicle Use for Dispersed Camping

Dispersed camping using motor vehicles would be restricted to areas within 300 feet of roads and motorized trails, impacting approximately 336,037.85 acres if Alternative D is implemented. No loach minnow occupied habitat or critical habitat would be impacted by dispersed camping using motor vehicles under Alternative D. The level of impact would be the same as current conditions.

Motor Vehicle Use for Fuelwood Gathering

Cross-country motorized travel for fuelwood gathering would continue unrestricted in areas currently permitted for fuelwood gathering, impacting approximately 1,345,997.76 acres. No loach minnow occupied habitat or critical habitat would be impacted by cross-country motorized travel for fuelwood gathering under Alternative D. Because there is no change from Alternative A, the current level of impact is expected to continue if this alternative is implemented.

Colorado Pikeminnow

The Colorado pikeminnow inhabits warm, swift, turbid mainstem rivers, preferring eddies and pools. This species is found at elevations below 4,000 feet. On the Tonto National Forest, the Colorado pikeminnow is found on the Cave Creek, Globe, and Tonto Basin ranger districts.

Alternative A—Direct and Indirect Effects

Roads and Trails Open to Motorized Travel

Approximately 4,958.58 miles of roads and no trails would be open to the public for motorized travel if this alternative was implemented. Currently, there are approximately 0.63 miles of open roads and motorized trails (with a road density of 0.20 miles per square mile) within Colorado pikeminnow occupied habitat on the Forest. Current condition would continue if Alternative A was implemented, so no new effects would occur.

Areas Designated for Motor Vehicle Use

Cross-country motorized travel would continue unrestricted within the Payson and Pleasant Valley ranger districts and in other ranger districts where authorized on approximately 703,618.39 acres. Currently, no Colorado pikeminnow occupied habitat is impacted by cross-country motorized travel. Motorized use within or adjacent to Colorado pikeminnow habitat has the potential to influence behavior, survival, reproduction and distribution of Colorado pikeminnow, as well as to alter habitat. The current level of impact is expected to continue if Alternative A is implemented.

Motor Vehicle Use for Big Game Retrieval

Cross-country motorized travel for big game retrieval would continue unrestricted within the Payson and Pleasant Valley ranger districts and in other ranger districts where authorized on approximately 703,618.39 acres. Based on the Forest assessment of where vehicles are expected to be driven compared to data for the species, no Colorado pikeminnow occupied habitat is impacted by motorized big game retrieval. Motorized use within or adjacent to Colorado pikeminnow habitat has the potential to influence behavior, survival, reproduction and distribution of Colorado pikeminnow, as well as to alter habitat. However, the number of retrieval trips across the Forest is estimated to be 550 total trips in and out on an annual basis, spread over 703,618 acres; none of these trips are anticipated to occur in Colorado pikeminnow habitat. The current level of impact is expected to continue if Alternative A is implemented.

Motor Vehicle Use for Dispersed Camping

Dispersed camping using motorized vehicles would continue unrestricted within the Payson and Pleasant Valley ranger districts and in other ranger districts where authorized on approximately 703,618.39 acres. Currently, no Colorado pikeminnow occupied habitat is impacted by dispersed camping using motor vehicles. Motorized use within or adjacent to Colorado pikeminnow habitat has the potential to influence behavior, survival, reproduction and distribution of Colorado pikeminnow, as well as to alter habitat. The current level of impact is expected to continue if Alternative A is implemented.

Motor Vehicle Use for Fuelwood Gathering

Cross-country motorized travel for fuelwood gathering would continue within the Globe, Payson, Pleasant Valley, and Tonto Basin ranger districts on approximately 1,345,997.76 acres. Currently, no Colorado pikeminnow occupied habitat is impacted by cross-country motorized travel for fuelwood gathering. Motorized use within or adjacent to Colorado pikeminnow habitat has the potential to influence behavior, survival, reproduction and distribution of Colorado pikeminnow, as well as to alter habitat. The current level of impact is expected to continue if Alternative A is implemented.

Alternative B—Direct and Indirect Effects

Roads and Trails Open to Motorized Travel

Approximately 2,559.57 miles of roads and trails would be open to the public for motorized travel if this alternative was implemented. There would be no open roads and motorized trails within Colorado pikeminnow occupied habitat on the Forest under this alternative. This would be a reduction in the amount of roads and motorized trails open to the public in Colorado

pikeminnow occupied habitat and could benefit the species by reducing access near riparian zones, reducing sedimentation into streams, and reducing the potential spread of nonnative aquatic organisms and diseases.

Areas Designated for Motor Vehicle Use

Cross-country motorized use would be eliminated Forest-wide if Alternative B was implemented. No Colorado pikeminnow occupied habitat would be affected by cross-country motorized use. The level of impact to Colorado pikeminnow occupied habitat would be the same as current conditions.

Motor Vehicle Use for Big Game Retrieval

Motorized big game retrieval would be eliminated Forest-wide if Alternative B was implemented. No Colorado pikeminnow occupied habitat would be affected by motorized big game retrieval. The level of impact to Colorado pikeminnow occupied habitat would be the same as current conditions.

Motor Vehicle Use for Dispersed Camping

Dispersed camping using motor vehicles would be restricted to 414 designated sites, impacting approximately 65.45 acres if this alternative was implemented. No Colorado pikeminnow occupied habitat would be impacted by dispersed camping using motor vehicles under this alternative. The level of impact would be the same as current conditions.

Motor Vehicle Use for Fuelwood Gathering

Cross-country motorized travel for fuelwood gathering would be permitted within 300 feet of a road in the Globe, Payson, Pleasant Valley, and Tonto Basin ranger districts on approximately 132,568.44 acres. No Colorado pikeminnow occupied habitat would be impacted by fuelwood gathering using motor vehicles under this alternative. The level of impact would be the same as current conditions.

Alternative C—Direct and Indirect Effects

Roads and Trails Open to Motorized Travel

Approximately 3,569.52 miles of roads and trails would be open to the public for motorized travel if this alternative was implemented. There would be no open roads and motorized trails within Colorado pikeminnow occupied habitat on the Forest under this alternative. The level of impact would be the same as current conditions.

Areas Designated for Motor Vehicle Use

Motorized cross-country travel would be restricted to 6,790.37 acres in designated areas at Bartlett Lake (Cave Creek Ranger District), Golf Course (Globe Ranger District), Roosevelt Lake (Tonto Basin Ranger District), and Sycamore (Mesa Ranger District) and tot lots if this alternative is implemented. No Colorado pikeminnow occupied habitat would be impacted by motorized cross-country travel under this alternative. The level of impact would be the same as current conditions.

Motor Vehicle Use for Big Game Retrieval

Motorized big game retrieval would be allowed within 1 mile of roads and motorized trails, impacting approximately 1,293,178.12 acres if this alternative is implemented. Based on the Forest assessment of where vehicles are expected to be driven compared to data for the species, no Colorado pikeminnow occupied habitat would be impacted by motorized big game retrieval under this alternative. The number of retrieval trips across the Forest is estimated to be 209 total trips in and out on an annual basis, spread over 1,293,178 acres; none of these trips are anticipated to occur in Colorado pikeminnow habitat. The level of impact would be the same as current conditions.

Motor Vehicle Use for Dispersed Camping

Dispersed camping using motor vehicles would be restricted to areas within 100 feet of roads and motorized trails, impacting approximately 91,391.29 acres if this alternative is implemented. No Colorado pikeminnow occupied habitat would be impacted by dispersed camping using motor vehicles under this alternative. The level of impact would be the same as current conditions.

Motor Vehicle Use for Fuelwood Gathering

Cross-country motorized travel for fuelwood gathering would be permitted within 300 feet of a road in the Globe, Payson, Pleasant Valley, and Tonto Basin ranger districts on approximately 161,784.64 acres. No Colorado pikeminnow occupied habitat would be impacted by fuelwood gathering using motor vehicles under this alternative. The level of impact would be the same as current conditions.

Alternative D—Direct and Indirect Effects

Roads and Trails Open to Motorized Travel

Approximately 4,859.34 miles of roads and trails would be open to the public for motorized travel if this alternative was implemented. There would be approximately 0.63 miles of open roads and motorized trails (with a road density of 0.20 miles per square mile) within Colorado pikeminnow occupied habitat on the Forest under this alternative. The level of impact would be the same as current conditions.

Areas Designated for Motor Vehicle Use

Motorized cross-country travel would be restricted to 6,790.37 acres in designated areas at Bartlett Lake (Cave Creek Ranger District), Golf Course (Globe Ranger District), Roosevelt Lake (Tonto Basin Ranger District), and Sycamore (Mesa Ranger District) and tot lots if this alternative is implemented. No Colorado pikeminnow occupied habitat would be impacted by motorized cross-country travel under this alternative. The level of impact would be the same as current conditions.

Motor Vehicle Use for Big Game Retrieval

Motorized big game retrieval would be allowed within 1 mile of roads and motorized trails, impacting approximately 2,068,208.36 acres if this alternative is implemented. Approximately 1,157.17 acres of Colorado pikeminnow occupied habitat would be impacted by motorized big game retrieval under this alternative. This would be a major increase in authorized motorized big

game retrieval within Colorado pikeminnow occupied habitat on the Forest and could result in additional impacts to the species by increasing access near riparian zones, increasing sedimentation into streams, and increasing the potential spread of nonnative aquatic organisms and diseases. However, any effects to habitat are expected to be minimal because Arizona Game and Fish Department regulations state that hunters cannot drive through riparian areas in a manner that causes damage to the habitat. Furthermore, the number of retrieval trips across the Forest is estimated to be 550 total trips in and out on an annual basis, spread over 2,068,208 acres; few of these trips are anticipated to occur in Colorado pikeminnow habitat.

Motor Vehicle Use for Dispersed Camping

Dispersed camping using motor vehicles would be restricted to areas within 300 feet of roads and motorized trails, impacting approximately 336,037.85 acres if this alternative is implemented. Approximately 20.10 acres of Colorado pikeminnow occupied habitat would be impacted by dispersed camping using motor vehicles under this alternative. This would be an increase in dispersed camping using motor vehicles within Colorado pikeminnow occupied habitat on the Forest and could result in additional impacts to the species by increasing access near riparian zones, increasing sedimentation into streams, and increasing the potential spread of nonnative aquatic organisms and diseases.

Motor Vehicle Use for Fuelwood Gathering

Cross-country motorized travel for fuelwood gathering would continue unrestricted in areas currently permitted for fuelwood gathering, impacting approximately 1,345,997.76 acres. No Colorado pikeminnow occupied habitat would be impacted by cross-country motorized travel for fuelwood gathering under this alternative. Because there is no change from Alternative A, the current level of impact is expected to continue if this alternative is implemented.

Desert Pupfish

The desert pupfish inhabits shallow springs, small streams, and marshes at elevations below 4,000 feet. This species tolerates saline and warm water. On the Tonto National Forest, the desert pupfish is found in the Mesa Ranger District.

Alternative A—Direct and Indirect Effects

Roads and Trails Open to Motorized Travel

Approximately 4,958.58 miles of roads and no trails would be open to the public for motorized travel if this alternative was implemented. Currently, there are approximately 0.01 miles of open roads and motorized trails (with a road density of 0.30 miles per square mile) within desert pupfish occupied habitat on the Forest. Current condition would continue if Alternative A was implemented, so no new effects would occur.

Areas Designated for Motor Vehicle Use

Cross-country motorized travel would continue unrestricted within the Payson and Pleasant Valley ranger districts and in other ranger districts where authorized on approximately 703,618.39 acres. No desert pupfish occupied habitat is impacted by cross-country motorized travel. Motorized use within or adjacent to desert pupfish habitat has the potential to influence

behavior, survival, reproduction and distribution of desert pupfish, as well as to alter habitat. The current level of impact is expected to continue if Alternative A is implemented.

Motor Vehicle Use for Big Game Retrieval

Cross-country motorized travel for big game retrieval would continue unrestricted within the Payson and Pleasant Valley ranger districts and in other ranger districts where authorized on approximately 703,618.39 acres. Based on the Forest assessment of where vehicles are expected to be driven compared to data for the species, no desert pupfish occupied habitat is impacted by motorized big game retrieval. Motorized use within or adjacent to desert pupfish habitat has the potential to influence behavior, survival, reproduction and distribution of desert pupfish, as well as to alter habitat. However, the number of retrieval trips across the Forest is estimated to be 550 total trips in and out on an annual basis, spread over 703,618 acres; none of these trips are anticipated to occur in desert pupfish habitat. The current level of impact is expected to continue if Alternative A is implemented.

Motor Vehicle Use for Dispersed Camping

Dispersed camping using motorized vehicles would continue unrestricted within the Payson and Pleasant Valley ranger districts and in other ranger districts where authorized on approximately 703,618.39 acres. Currently, no desert pupfish occupied habitat is impacted by dispersed camping using motor vehicles. Motorized use within or adjacent to desert pupfish habitat has the potential to influence behavior, survival, reproduction and distribution of desert pupfish, as well as to alter habitat. The current level of impact is expected to continue if Alternative A is implemented.

Motor Vehicle Use for Fuelwood Gathering

Cross-country motorized travel for fuelwood gathering would continue within the Globe, Payson, Pleasant Valley, and Tonto Basin ranger districts on approximately 1,345,997.76 acres. Currently, no desert pupfish occupied habitat is impacted by cross-country motorized travel for fuelwood gathering. Motorized use within or adjacent to desert pupfish habitat has the potential to influence behavior, survival, reproduction and distribution of desert pupfish, as well as to alter habitat. The current level of impact is expected to continue if Alternative A is implemented.

Alternative B—Direct and Indirect Effects

Roads and Trails Open to Motorized Travel

Approximately 2,559.57 miles of roads and trails would be open to the public for motorized travel if this alternative was implemented. There would be approximately 0.01 miles of open roads and motorized trails (with a road density of 0.30 miles per square mile) within desert pupfish occupied habitat on the Forest under Alternative B. The level of impact would be the same as current conditions.

Areas Designated for Motor Vehicle Use

Cross-country motorized use would be eliminated forestwide if Alternative B was implemented. No desert pupfish occupied habitat would be affected by cross-country motorized use. The level of impact to desert pupfish habitat would be the same as current conditions.

Motor Vehicle Use for Big Game Retrieval

Motorized big game retrieval would be eliminated forestwide if Alternative B was implemented. No desert pupfish occupied habitat would be affected by motorized big game retrieval. The level of impact to desert pupfish habitat would be the same as current conditions.

Motor Vehicle Use for Dispersed Camping

Dispersed camping using motor vehicles would be restricted to 414 designated sites, impacting approximately 65.45 acres if this alternative was implemented. No desert pupfish occupied habitat would be impacted by dispersed camping using motor vehicles under this alternative. The level of impact would be the same as current conditions.

Motor Vehicle Use for Fuelwood Gathering

Cross-country motorized travel for fuelwood gathering would be permitted within 300 feet of a road in the Globe, Payson, Pleasant Valley, and Tonto Basin ranger districts on approximately 132,568.44 acres. No desert pupfish occupied habitat would be impacted by fuelwood gathering using motor vehicles under this alternative. The level of impact would be the same as current conditions.

Alternative C—Direct and Indirect Effects

Roads and Trails Open to Motorized Travel

Approximately 3,569.52 miles of roads and trails would be open to the public for motorized travel if this alternative was implemented. There would be approximately 0.01 miles of open roads and motorized trails (with a road density of 0.30 miles per square mile) within desert pupfish occupied habitat on the Forest under this alternative. The level of impact would be the same as current conditions.

Areas Designated for Motor Vehicle Use

Motorized cross-country travel would be restricted to 6,790.37 acres in designated areas at Bartlett Lake (Cave Creek Ranger District), Golf Course (Globe Ranger District), Roosevelt Lake (Tonto Basin Ranger District), and Sycamore (Mesa Ranger District) and tot lots if this alternative is implemented. No desert pupfish occupied habitat would be impacted by motorized cross-country travel under Alternative C. The level of impact would be the same as current conditions.

Motor Vehicle Use for Big Game Retrieval

Motorized big game retrieval would be allowed within 1 mile of roads and motorized trails, impacting approximately 1,293,178.12 acres if this alternative is implemented. Approximately 0.48 acres of desert pupfish occupied habitat would be impacted by motorized big game retrieval under this alternative. This would be an increase in authorized motorized big game retrieval within desert pupfish occupied habitat on the Forest, and could result in additional impacts to the species by increasing access near riparian zones, increasing sedimentation into streams, and increasing the potential spread of nonnative aquatic organisms and diseases. However, any effects to habitat are expected to be minimal because Arizona Game and Fish Department regulations

state that hunters cannot drive through riparian areas in a manner that causes damage to the habitat. Furthermore, the number of retrieval trips across the Forest is estimated to be 209 total trips in and out on an annual basis, spread over 1,293,178 acres; few of these trips are anticipated to occur in desert pupfish habitat.

Motor Vehicle Use for Dispersed Camping

Dispersed camping using motor vehicles would be restricted to areas within 100 feet of roads and motorized trails, impacting approximately 91,391.29 acres if this alternative is implemented. No desert pupfish occupied habitat would be impacted by dispersed camping using motor vehicles under this alternative. The level of impact would be the same as current conditions.

Motor Vehicle Use for Fuelwood Gathering

Cross-country motorized travel for fuelwood gathering would be permitted within 300 feet of a road in the Globe, Payson, Pleasant Valley, and Tonto Basin ranger districts on approximately 161,784.64 acres. No desert pupfish occupied habitat would be impacted by fuelwood gathering using motor vehicles under this alternative. The level of impact would be the same as current conditions.

Alternative D—Direct and Indirect Effects

Roads and Trails Open to Motorized Travel

Approximately 4,859.34 miles of roads and trails would be open to the public for motorized travel if this alternative was implemented. There would be approximately 0.01 miles of open roads and motorized trails (with a road density of 0.30 miles per square mile) within desert pupfish occupied habitat on the Forest under this alternative. The level of impact would be the same as current conditions.

Areas Designated for Motor Vehicle Use

Motorized cross-country travel would be restricted to 6,790.37 acres in designated areas at Bartlett Lake (Cave Creek Ranger District), Golf Course (Globe Ranger District), Roosevelt Lake (Tonto Basin Ranger District), and Sycamore (Mesa Ranger District) and tot lots if this alternative is implemented. No desert pupfish occupied habitat would be impacted by motorized cross-country travel under this alternative. The level of impact would be the same as current conditions.

Motor Vehicle Use for Big Game Retrieval

Motorized big game retrieval would be allowed within 1 mile of roads and motorized trails, impacting approximately 2,068,208.36 acres if Alternative D is implemented. Approximately 5.71 acres of desert pupfish occupied habitat would be impacted by motorized big game retrieval under this alternative. This would be an increase in authorized motorized big game retrieval within desert pupfish occupied habitat on the Forest and could result in additional impacts to the species by increasing access near riparian zones, increasing sedimentation into streams, and increasing the potential spread of nonnative aquatic organisms and diseases. However, any effects to habitat are expected to be minimal because Arizona Game and Fish Department regulations state that hunters cannot drive through riparian areas in a manner that causes damage to the

habitat. Furthermore, the number of retrieval trips across the Forest is estimated to be 550 total trips in and out on an annual basis, spread over 2,068,208 acres; few of these trips are anticipated to occur in desert pupfish habitat.

Motor Vehicle Use for Dispersed Camping

Dispersed camping using motor vehicles would be restricted to areas within 300 feet of roads and motorized trails, impacting approximately 336,037.85 acres if this alternative is implemented. Approximately 2.28 acres of desert pupfish occupied habitat would be impacted by dispersed camping using motor vehicles under this alternative. This would be an increase in dispersed camping using motor vehicles within desert pupfish occupied habitat on the Forest and could result in additional impacts to the species by increasing access near riparian zones, increasing sedimentation into streams, and increasing the potential spread of nonnative aquatic organisms and diseases.

Motor Vehicle Use for Fuelwood Gathering

Cross-country motorized travel for fuelwood gathering would continue unrestricted in areas currently permitted for fuelwood gathering, impacting approximately 1,345,997.76 acres. No desert pupfish occupied habitat would be impacted by cross-country motorized travel for fuelwood gathering under this alternative. Because there is no change from Alternative A, the current level of impact is expected to continue if this alternative is implemented.

Spikedace and Critical Habitat

The spikedace inhabits medium to large perennial streams with moderate to swift velocity waters over cobble and gravel substrate. Recurrent flooding and a natural hydrograph are important to withstanding invasion of exotic species. This species is found at elevations below 6,000 feet.

The spikedace was extirpated on the Tonto National Forest. However, Arizona Game and Fish Department stocked 1,000 spikedace into Fossil Creek between 2007 and 2009. Critical habitat is designated on Tonto National Forest in Cave Creek, Payson, Pleasant Valley, and Tonto Basin ranger districts.

Alternative A—Direct and Indirect Effects

Roads and Trails Open to Motorized Travel

Approximately 4,958.58 miles of roads and no trails would be open to the public for motorized travel if this alternative was implemented. Currently, there are no open roads and motorized trails within spikedace occupied habitat and 23.40 miles of open roads and motorized trails (with a road density of 1.91 miles per square mile) within spikedace critical habitat on the Forest. The current level of impact is expected to continue if Alternative A is implemented.

Areas Designated for Motor Vehicle Use

Cross-country motorized travel would continue unrestricted within the Payson and Pleasant Valley ranger districts and in other ranger districts where authorized on approximately 703,618.39 acres. Currently, 11.10 acres of spikedace occupied habitat and 842.27 acres of spikedace critical habitat on the Forest are impacted by cross-country motorized travel. Motorized use within or adjacent to spikedace habitat has the potential to influence behavior, survival,

reproduction and distribution of spikedace, as well as to alter habitat. The current level of impact is expected to continue if Alternative A is implemented.

Motor Vehicle Use for Big Game Retrieval

Cross-country motorized travel for big game retrieval would continue unrestricted within the Payson and Pleasant Valley ranger districts and in other ranger districts where authorized on approximately 703,618.39 acres. Currently, 11.10 acres of spikedace occupied habitat and 842.27 acres of spikedace critical habitat on the Forest are impacted by motorized big game retrieval. Motorized use within or adjacent to spikedace habitat has the potential to influence behavior, survival, reproduction and distribution of spikedace, as well as to alter habitat. However, any effects to habitat are expected to be minimal because Arizona Game and Fish Department regulations state that hunters cannot drive through riparian areas in a manner that causes damage to the habitat. Furthermore, the number of retrieval trips across the Forest is estimated to be 550 total trips in and out on an annual basis, spread over 703,618 acres; few of these trips are anticipated to occur in spikedace habitat. The current level of impact is expected to continue if Alternative A is implemented.

Motor Vehicle Use for Dispersed Camping

Dispersed camping using motorized vehicles would continue unrestricted within the Payson and Pleasant Valley ranger districts and in other ranger districts where authorized on approximately 703,618.39 acres. Currently, 11.10 acres of spikedace occupied habitat and 842.27 acres of spikedace critical habitat on the Forest are impacted by dispersed camping using motor vehicles. Motorized use within or adjacent to spikedace habitat has the potential to influence behavior, survival, reproduction and distribution of spikedace, as well as to alter habitat. The current level of impact is expected to continue if Alternative A is implemented.

Motor Vehicle Use for Fuelwood Gathering

Cross-country motorized travel for fuelwood gathering would continue within the Globe, Payson, Pleasant Valley, and Tonto Basin ranger districts on approximately 1,345,997.76 acres. Currently, no spikedace occupied habitat and 1,066.02 acres of spikedace critical habitat on the Forest is impacted by cross-country motorized travel for fuelwood gathering. Motorized use within or adjacent to spikedace habitat has the potential to influence behavior, survival, reproduction and distribution of spikedace, as well as to alter habitat. The current level of impact is expected to continue if Alternative A is implemented.

Alternative B—Direct and Indirect Effects

Roads and Trails Open to Motorized Travel

Approximately 2,559.57 miles of roads and trails would be open to the public for motorized travel if this alternative was implemented. There would be no open roads and motorized trails within spikedace occupied habitat and 9.32 miles of open roads and motorized trails (with a road density of 0.76 miles per square mile) within spikedace critical habitat on the Forest under Alternative B. The level of impact to occupied habitat would be the same as current conditions, while this would be a reduction in the amount of roads and motorized trails open to the public in spikedace critical habitat.

Areas Designated for Motor Vehicle Use

Cross-country motorized use would be eliminated forestwide if Alternative B was implemented. No cross-country motorized use within spikedace occupied habitat and critical habitat on the Forest would be allowed under Alternative B. This would be a reduction in authorized cross-country motorized use within spikedace occupied habitat and critical habitat on the Forest, and would benefit the species by reducing access near riparian zones, reducing sedimentation into streams, and reducing the potential spread of nonnative aquatic organisms and diseases.

Motor Vehicle Use for Big Game Retrieval

Motorized big game retrieval would be eliminated forestwide if Alternative B was implemented. No cross-country motorized use within spikedace occupied habitat and critical habitat on the Forest would be allowed under Alternative B. This would be a reduction in motorized big game retrieval within spikedace occupied habitat and critical habitat on the Forest, and would benefit the species by reducing access near riparian zones, reducing sedimentation into streams, and reducing the potential spread of nonnative aquatic organisms and diseases.

Motor Vehicle Use for Dispersed Camping

Dispersed camping using motor vehicles would be restricted to 414 designated sites, impacting approximately 65.45 acres if this alternative was implemented. No spikedace occupied habitat or critical habitat would be impacted by dispersed camping using motor vehicles under this alternative. This would be a reduction in dispersed camping within spikedace occupied habitat and critical habitat, and would benefit the species by reducing access near riparian zones, reducing sedimentation into streams, and reducing the potential spread of nonnative aquatic organisms and diseases.

Motor Vehicle Use for Fuelwood Gathering

Cross-country motorized travel for fuelwood gathering would be permitted within 300 feet of a road in the Globe, Payson, Pleasant Valley, and Tonto Basin ranger districts on approximately 132,568.44 acres. No spikedace occupied habitat and 65.73 acres of spikedace critical habitat on the Forest would be impacted by fuelwood gathering using motor vehicles under this alternative. The level of impact to occupied habitat would be the same as current conditions, while this would be a reduction in motorized travel for fuelwood gathering within spikedace critical habitat.

Alternative C—Direct and Indirect Effects

Roads and Trails Open to Motorized Travel

Approximately 3,569.52 miles of roads and trails would be open to the public for motorized travel if this alternative was implemented. There would be no open roads and motorized trails within spikedace occupied habitat and 12.93 miles of open roads and motorized trails (with a road density of 1.06 miles per square mile) within spikedace critical habitat on the Forest under Alternative C. The level of impact to occupied habitat would be the same as current conditions, while this would be a reduction in the amount of roads and motorized trails open to the public in spikedace critical habitat.

Areas Designated for Motor Vehicle Use

Motorized cross-country travel would be restricted to 6,790.37 acres in designated areas at Bartlett Lake (Cave Creek Ranger District), Golf Course (Globe Ranger District), Roosevelt Lake (Tonto Basin Ranger District), and Sycamore (Mesa Ranger District) and tot lots if this alternative is implemented. No spikedace occupied habitat or critical habitat would be impacted by motorized cross-country travel under Alternative C. This would be a reduction in authorized cross-country motorized use within spikedace occupied habitat and critical habitat, and would benefit the species by reducing access near riparian zones, reducing sedimentation into streams, and reducing the potential spread of nonnative aquatic organisms and diseases.

Motor Vehicle Use for Big Game Retrieval

Motorized big game retrieval would be allowed within 1 mile of roads and motorized trails, impacting approximately 1,293,178.12 acres if this alternative is implemented. Based on the Forest assessment of where vehicles are expected to be driven compared to data for the species, no spikedace occupied habitat and 693.07 acres of spikedace critical habitat on the Forest would be impacted by motorized big game retrieval under Alternative C. This would be a reduction in authorized motorized big game retrieval within spikedace occupied habitat and critical habitat on the Forest, and would benefit the species by reducing access near riparian zones, reducing sedimentation into streams, and reducing the potential spread of nonnative aquatic organisms and diseases. Any effects to habitat are expected to be minimal because Arizona Game and Fish Department regulations state that hunters cannot drive through riparian areas in a manner that causes damage to the habitat. Furthermore, the number of retrieval trips across the Forest is estimated to be 209 total trips in and out on an annual basis, spread over 1,293,178 acres; few of these trips are anticipated to occur in spikedace habitat.

Motor Vehicle Use for Dispersed Camping

Dispersed camping using motor vehicles would be restricted to areas within 100 feet of roads and motorized trails, impacting approximately 91,391.29 acres if this alternative is implemented. No spikedace occupied habitat and 137.76 acres of spikedace critical habitat on the Forest would be impacted by dispersed camping using motor vehicles under Alternative C. This would be a reduction in dispersed camping using motor vehicles within spikedace occupied habitat and critical habitat on the Forest, and would benefit the species by reducing access near riparian zones, reducing sedimentation into streams, and reducing the potential spread of nonnative aquatic organisms and diseases.

Motor Vehicle Use for Fuelwood Gathering

Cross-country motorized travel for fuelwood gathering would be permitted within 300 feet of a road in the Globe, Payson, Pleasant Valley, and Tonto Basin ranger districts on approximately 161,784.64 acres. No spikedace occupied habitat and 80.52 acres of spikedace critical habitat on the Forest would be impacted by fuelwood gathering using motor vehicles under Alternative C. The level of impact to occupied habitat would be the same as current conditions, while this would be a major decrease in fuelwood gathering using motor vehicles in spikedace critical habitat.

Alternative D—Direct and Indirect Effects

Roads and Trails Open to Motorized Travel

Approximately 4,859.34 miles of roads and trails would be open to the public for motorized travel if Alternative D was implemented. There would be no open roads and motorized trails within spikedace occupied habitat and 22.43 miles of open roads and motorized trails (with a road density of 1.83 miles per square mile) would be impacted within spikedace critical habitat on the Forest under Alternative D. The level of impact to occupied habitat would be the same as current conditions, while this would be a slight reduction in the amount of roads and motorized trails open to the public in spikedace critical habitat.

Areas Designated for Motor Vehicle Use

Motorized cross-country travel would be restricted to 6,790.37 acres in designated areas at Bartlett Lake (Cave Creek Ranger District), Golf Course (Globe Ranger District), Roosevelt Lake (Tonto Basin Ranger District), and Sycamore (Mesa Ranger District) and tot lots if Alternative D is implemented. No spikedace occupied habitat or critical habitat would be impacted by motorized cross-country travel under this alternative. The level of impact to occupied habitat would be the same as current conditions, while this would be a major reduction in authorized cross-country motorized use in spikedace critical habitat.

Motor Vehicle Use for Big Game Retrieval

Motorized big game retrieval would be allowed within 1 mile of roads and motorized trails, impacting approximately 2,068,208.36 acres if this alternative is implemented. There would be 9.36 acres of spikedace occupied habitat and 4,867.23 acres of spikedace critical habitat on the Forest impacted by motorized big game retrieval under Alternative D. This would be a decrease in authorized motorized big game retrieval within spikedace occupied habitat on the Forest, and would benefit the species by reducing access near riparian zones, reducing sedimentation into streams, and reducing the potential spread of nonnative aquatic organisms and diseases. This would be an increase in authorized motorized big game retrieval within spikedace critical habitat on the Forest. Any effects to habitat are expected to be minimal because Arizona Game and Fish Department regulations state that hunters cannot drive through riparian areas in a manner that causes damage to the habitat. Furthermore, the number of retrieval trips across the Forest is estimated to be 550 total trips in and out on an annual basis, spread over 2,068,208 acres; few of these trips are anticipated to occur in spikedace habitat.

Motor Vehicle Use for Dispersed Camping

Dispersed camping using motor vehicles would be restricted to areas within 300 feet of roads and motorized trails, impacting approximately 336,037.85 acres if this alternative is implemented. No spikedace occupied habitat and 730.98 acres of spikedace critical habitat on the Forest would be impacted by dispersed camping using motor vehicles under Alternative D. This would be a decrease in dispersed camping using motor vehicles within spikedace occupied habitat and critical habitat on the Forest, and would benefit the species by reducing access near riparian zones, reducing sedimentation into streams, and reducing the potential spread of nonnative aquatic organisms and diseases.

Motor Vehicle Use for Fuelwood Gathering

Cross-country motorized travel for fuelwood gathering would continue unrestricted in areas currently permitted for fuelwood gathering, impacting approximately 1,345,997.76 acres. No spikedace occupied habitat and 1,066.02 acres of spikedace critical habitat on the Forest would be impacted by cross-country motorized travel for fuelwood gathering under Alternative D. Because there is no change from Alternative A, the current level of impact is expected to continue if this alternative is implemented.

Razorback Sucker and Critical Habitat

The razorback sucker inhabits riverine and lacustrine areas, generally not in fast moving water and may use backwaters. This species is found at elevations below 6,000 feet.

On Tonto National Forest, the razorback sucker is found in Cave Creek, Tonto Basin, and Globe ranger districts. In addition, Arizona Game and Fish Department stocked razorback suckers in Fossil Creek in the late 2000s.

Critical habitat is designated on Tonto National Forest in Cave Creek, Globe, Payson, and Tonto Basin ranger districts.

Alternative A—Direct and Indirect Effects

Roads and Trails Open to Motorized Travel

Approximately 4,958.58 miles of roads and no trails would be open to the public for motorized travel if this alternative was implemented. Currently, there are approximately 1.33 miles of open roads and motorized trails (with a road density of 0.42 miles per square mile) within razorback sucker occupied habitat and 0.71 miles of open roads and motorized trails (with a road density of 0.16 miles per square mile) within razorback sucker critical habitat on the Forest. The current level of impact is expected to continue if Alternative A is implemented.

Areas Designated for Motor Vehicle Use

Cross-country motorized travel would continue unrestricted within the Payson and Pleasant Valley ranger districts and in other ranger districts where authorized on approximately 703,618.39 acres. Currently, 5.21 acres of razorback sucker occupied habitat and 5,982.79 acres of razorback sucker critical habitat on the Forest are impacted by cross-country motorized travel. Motorized use within or adjacent to razorback sucker habitat has the potential to influence behavior, survival, reproduction and distribution of razorback sucker, as well as to alter habitat. The current level of impact is expected to continue if Alternative A is implemented.

Motor Vehicle Use for Big Game Retrieval

Cross-country motorized travel for big game retrieval would continue unrestricted within the Payson and Pleasant Valley ranger districts and in other ranger districts where authorized on approximately 703,618.39 acres. Currently, 5.21 acres of razorback sucker occupied habitat and 5,982.79 acres of razorback sucker critical habitat on the Forest are impacted by motorized big game retrieval. Motorized use within or adjacent to razorback sucker habitat has the potential to influence behavior, survival, reproduction and distribution of razorback sucker, as well as to alter habitat. However, any effects to habitat are expected to be minimal because Arizona Game and

Fish Department regulations state that hunters cannot drive through riparian areas in a manner that causes damage to the habitat. Furthermore, the number of retrieval trips across the Forest is estimated to be 550 total trips in and out on an annual basis, spread over 703,618 acres; few of these trips are anticipated to occur in razorback sucker habitat. The current level of impact is expected to continue if Alternative A is implemented.

Motor Vehicle Use for Dispersed Camping

Dispersed camping using motorized vehicles would continue unrestricted within the Payson and Pleasant Valley ranger districts and in other ranger districts where authorized on approximately 703,618.39 acres. Currently, 5.21 acres of razorback sucker occupied habitat and 5,982.79 acres razorback sucker critical habitat on the Forest are impacted by dispersed camping using motor vehicles. Motorized use within or adjacent to razorback sucker habitat has the potential to influence behavior, survival, reproduction and distribution of razorback sucker, as well as to alter habitat. The current level of impact is expected to continue if Alternative A is implemented.

Motor Vehicle Use for Fuelwood Gathering

Cross-country motorized travel for fuelwood gathering would continue within the Globe, Payson, Pleasant Valley, and Tonto Basin ranger districts on approximately 1,345,997.76 acres. Currently, 7.72 acres of razorback sucker occupied habitat and 101.84 acres of razorback sucker critical habitat on the Forest are impacted by cross-country motorized travel for fuelwood gathering. Motorized use within or adjacent to razorback sucker habitat has the potential to influence behavior, survival, reproduction and distribution of razorback sucker, as well as to alter habitat. The current level of impact is expected to continue if Alternative A is implemented.

Alternative B—Direct and Indirect Effects

Roads and Trails Open to Motorized Travel

Approximately 2,559.57 miles of roads and trails would be open to the public for motorized travel if this alternative was implemented. There would be approximately 0.34 miles of open roads and motorized trails (with a road density of 0.11 miles per square mile) within razorback sucker occupied habitat and no roads and motorized trails would be open to the public within razorback sucker critical habitat on the Forest under Alternative B. This would be a reduction in the amount of roads and motorized trails open to the public in razorback sucker occupied habitat and critical habitat, and would benefit the species by reducing access near riparian zones, reducing sedimentation into streams, and reducing the potential spread of nonnative aquatic organisms and diseases.

Areas Designated for Motor Vehicle Use

Cross-country motorized use would be eliminated forestwide if Alternative B was implemented. No cross-country motorized use within razorback sucker occupied habitat and critical habitat on the Forest would be allowed under Alternative B. This would be a reduction in authorized cross-country motorized use within razorback sucker occupied habitat and critical habitat on the Forest, and would benefit the species by reducing access near riparian zones, reducing sedimentation into streams, and reducing the potential spread of nonnative aquatic organisms and diseases.

Motor Vehicle Use for Big Game Retrieval

Motorized big game retrieval would be eliminated forestwide if Alternative B was implemented. No cross-country motorized use within razorback sucker occupied habitat and critical habitat on the Forest would be allowed under Alternative B. This would be a reduction in motorized big game retrieval within razorback sucker occupied habitat and critical habitat on the Forest, and would benefit the species by reducing access near riparian zones, reducing sedimentation into streams, and reducing the potential spread of nonnative aquatic organisms and diseases.

Motor Vehicle Use for Dispersed Camping

Dispersed camping using motor vehicles would be restricted to 414 designated sites, impacting approximately 65.45 acres if this alternative was implemented. No razorback sucker occupied habitat or critical habitat would be impacted by dispersed camping using motor vehicles under this alternative. This would be a reduction in dispersed camping within razorback sucker occupied habitat and critical habitat on the Forest, and would benefit the species by reducing access near riparian zones, reducing sedimentation into streams, and reducing the potential spread of nonnative aquatic organisms and diseases.

Motor Vehicle Use for Fuelwood Gathering

Cross-country motorized travel for fuelwood gathering would be permitted within 300 feet of a road in the Globe, Payson, Pleasant Valley, and Tonto Basin ranger districts on approximately 132,568.44 acres. Approximately 6.91 acres of razorback sucker occupied habitat and 1.83 acres of razorback sucker critical habitat on the Forest would be impacted by fuelwood gathering using motor vehicles under Alternative B. This would be a reduction in cross-country motorized travel for fuelwood gathering within razorback sucker occupied habitat and critical habitat on the Forest, and would benefit the species by reducing access near riparian zones, reducing sedimentation into streams, and reducing the potential spread of nonnative aquatic organisms and diseases.

Alternative C—Direct and Indirect Effects

Roads and Trails Open to Motorized Travel

Approximately 3,569.52 miles of roads and trails would be open to the public for motorized travel if this alternative was implemented. There would be 0.71 miles of open roads and motorized trails (with a road density of 0.22 miles per square mile) within razorback sucker occupied habitat and no open roads and motorized trails within razorback sucker critical habitat on the Forest under Alternative C. This would be a reduction in the amount of roads and motorized trails open to the public in razorback sucker occupied habitat and critical habitat, and would benefit the species by reducing access near riparian zones, reducing sedimentation into streams, and reducing the potential spread of nonnative aquatic organisms and diseases.

Areas Designated for Motor Vehicle Use

Motorized cross-country travel would be restricted to 6,790.37 acres in designated areas at Bartlett Lake (Cave Creek Ranger District), Golf Course (Globe Ranger District), Roosevelt Lake (Tonto Basin Ranger District), and Sycamore (Mesa Ranger District) and tot lots if this alternative is implemented. No razorback sucker occupied habitat or critical habitat would be impacted by motorized cross-country travel under Alternative C. This would be a decrease in

authorized cross-country motorized use within razorback sucker occupied habitat and critical habitat on the Forest, and would benefit the species by reducing access near riparian zones, reducing sedimentation into streams, and reducing the potential spread of nonnative aquatic organisms and diseases.

Motor Vehicle Use for Big Game Retrieval

Motorized big game retrieval would be allowed within 1 mile of roads and motorized trails, impacting approximately 1,293,178.12 acres if this alternative is implemented. Approximately 10.40 acres of razorback sucker occupied habitat and 35.08 acres of razorback sucker critical habitat on the Forest would be impacted by motorized big game retrieval under Alternative C. This would be a major reduction in authorized motorized big game retrieval in razorback sucker critical habitat. However, this would be an increase in authorized motorized big game retrieval within razorback sucker occupied habitat on the Forest and could result in additional impacts to the species by increasing access near riparian zones, increasing sedimentation into streams, and increasing the potential spread of nonnative aquatic organisms and diseases. Any effects to habitat are expected to be minimal because Arizona Game and Fish Department regulations state that hunters cannot drive through riparian areas in a manner that causes damage to the habitat. Furthermore, the number of retrieval trips across the Forest is estimated to be 209 total trips in and out on an annual basis, spread over 1,293,178 acres; few of these trips are anticipated to occur in razorback sucker habitat.

Motor Vehicle Use for Dispersed Camping

Dispersed camping using motor vehicles would be restricted to areas within 100 feet of roads and motorized trails, impacting approximately 91,391.29 acres if this alternative is implemented. There would be 4.66 acres of razorback sucker occupied habitat and 1.08 acres of razorback sucker critical habitat on the Forest impacted by dispersed camping using motor vehicles under Alternative C. This would be a decrease in dispersed camping using motor vehicles within razorback sucker occupied habitat and critical habitat on the Forest, and would benefit the species by reducing access near riparian zones, reducing sedimentation into streams, and reducing the potential spread of nonnative aquatic organisms and diseases.

Motor Vehicle Use for Fuelwood Gathering

Cross-country motorized travel for fuelwood gathering would be permitted within 300 feet of a road in the Globe, Payson, Pleasant Valley, and Tonto Basin ranger districts on approximately 161,784.64 acres. Approximately 6.91 acres of razorback sucker occupied habitat and 1.83 acres of razorback sucker critical habitat on the Forest would be impacted by fuelwood gathering using motor vehicles under Alternative C. This would be a decrease in cross-country motorized travel for fuelwood gathering within razorback sucker occupied habitat and critical habitat on the Forest, and would benefit the species by reducing access near riparian zones, reducing sedimentation into streams, and reducing the potential spread of nonnative aquatic organisms and diseases.

Alternative D—Direct and Indirect Effects

Roads and Trails Open to Motorized Travel

Approximately 4,859.34 miles of roads and trails would be open to the public for motorized travel if this alternative was implemented. There would be 1.33 miles of open roads and motorized trails (with a road density of 0.42 miles per square mile) within razorback sucker occupied habitat and 0.71 miles of open roads and motorized trails (with a road density of 0.16 miles per square mile) within razorback sucker critical habitat on the Forest under Alternative D. The level of impact would be the same as current conditions.

Areas Designated for Motor Vehicle Use

Motorized cross-country travel would be restricted to 6,790.37 acres in designated areas at Bartlett Lake (Cave Creek Ranger District), Golf Course (Globe Ranger District), Roosevelt Lake (Tonto Basin Ranger District), and Sycamore (Mesa Ranger District) and tot lots if this alternative is implemented. No razorback sucker occupied habitat or critical habitat would be impacted by motorized cross-country travel under Alternative D. This would be a decrease in authorized cross-country motorized use within razorback sucker occupied habitat and critical habitat on the Forest, and would benefit the species by reducing access near riparian zones, reducing sedimentation into streams, and reducing the potential spread of nonnative aquatic organisms and diseases.

Motor Vehicle Use for Big Game Retrieval

Motorized big game retrieval would be allowed within 1 mile of roads and motorized trails, impacting approximately 2,068,208.36 acres if this alternative is implemented. There would be 1,180.01 acres of razorback sucker occupied habitat and 1,311.57 acres of razorback sucker critical habitat on the Forest impacted by motorized big game retrieval under Alternative D. This would be a decrease in authorized motorized big game retrieval within razorback sucker critical habitat on the Forest, while it would be a major increase in authorized motorized big game retrieval within razorback sucker occupied habitat on the Forest, and could result in additional impacts to the species by increasing access near riparian zones, increasing sedimentation into streams, and increasing the potential spread of nonnative aquatic organisms and diseases. However, any effects to habitat are expected to be minimal because Arizona Game and Fish Department regulations state that hunters cannot drive through riparian areas in a manner that causes damage to the habitat. Furthermore, the number of retrieval trips across the Forest is estimated to be 550 total trips in and out on an annual basis, spread over 2,068,208 acres; few of these trips are anticipated to occur in razorback sucker habitat.

Motor Vehicle Use for Dispersed Camping

Dispersed camping using motor vehicles would be restricted to areas within 300 feet of roads and motorized trails, impacting approximately 336,037.85 acres if this alternative is implemented. There would be 37.34 acres of razorback sucker occupied habitat and 39.23 acres of razorback sucker critical habitat on the Forest impacted by dispersed camping using motor vehicles under Alternative D. This would be an increase in dispersed camping using motor vehicles within razorback sucker occupied habitat on the Forest and could result in additional impacts to the species by increasing access near riparian zones, increasing sedimentation into streams, and increasing the potential spread of nonnative aquatic organisms and diseases. This would be a

major decrease in dispersed camping using motor vehicles within razorback sucker critical habitat on the Forest.

Motor Vehicle Use for Fuelwood Gathering

Cross-country motorized travel for fuelwood gathering would continue unrestricted in areas currently permitted for fuelwood gathering, impacting approximately 1,345,997.76 acres. There would be 7.72 acres of razorback sucker occupied habitat and 101.84 acres of razorback sucker critical habitat on the Forest impacted by cross-country motorized travel for fuelwood gathering under Alternative D. Because there is no change from Alternative A, the current level of impact is expected to continue if this alternative is implemented.

Gila Topminnow

The Gila topminnow inhabits slow moving low gradient streams, springs, and backwaters at elevations below 4,000 feet.

On Tonto National Forest, the Gila topminnow is found in Cave Creek, Globe, Mesa, and Tonto Basin ranger districts.

Alternative A—Direct and Indirect Effects

Roads and Trails Open to Motorized Travel

Approximately 4,958.58 miles of roads and no trails would be open to the public for motorized travel if this alternative was implemented. Currently, there are approximately 0.39 miles of open roads and motorized trails (with a road density of 2.75 miles per square mile) within Gila topminnow occupied habitat on the Forest. The current level of impact is expected to continue if Alternative A is implemented.

Areas Designated for Motor Vehicle Use

Cross-country motorized travel would continue unrestricted within the Payson and Pleasant Valley ranger districts and in other ranger districts where authorized on approximately 703,618.39 acres. Currently, no Gila topminnow occupied habitat is impacted by cross-country motorized travel. Motorized use within or adjacent to Gila topminnow habitat has the potential to influence behavior, survival, reproduction and distribution of Gila topminnow, as well as to alter habitat. The current level of impact is expected to continue if Alternative A is implemented.

Motor Vehicle Use for Big Game Retrieval

Cross-country motorized travel for big game retrieval would continue unrestricted within the Payson and Pleasant Valley ranger districts and in other ranger districts where authorized on approximately 703,618.39 acres. Based on the Forest assessment of where vehicles are expected to be driven compared to data for the species, no Gila topminnow occupied habitat is impacted by motorized big game retrieval. Motorized use within or adjacent to Gila topminnow habitat has the potential to influence behavior, survival, reproduction and distribution of Gila topminnow, as well as to alter habitat. However, any effects to habitat are expected to be minimal because Arizona Game and Fish Department regulations state that hunters cannot drive through riparian areas in a manner that causes damage to the habitat. Furthermore, the number of retrieval trips across the Forest is estimated to be 550 total trips in and out on an annual basis, spread over 703,618 acres;

few of these trips are anticipated to occur in Gila topminnow habitat. The current level of impact is expected to continue if Alternative A is implemented.

Motor Vehicle Use for Dispersed Camping

Dispersed camping using motorized vehicles would continue unrestricted within the Payson and Pleasant Valley ranger districts and in other ranger districts where authorized on approximately 703,618.39 acres. Currently, no Gila topminnow occupied habitat is impacted by dispersed camping using motor vehicles. Motorized use within or adjacent to Gila topminnow habitat has the potential to influence behavior, survival, reproduction and distribution of Gila topminnow, as well as to alter habitat. The current level of impact is expected to continue if Alternative A is implemented.

Motor Vehicle Use for Fuelwood Gathering

Cross-country motorized travel for fuelwood gathering would continue within the Globe, Payson, Pleasant Valley, and Tonto Basin ranger districts on approximately 1,345,997.76 acres. Currently, 6.49 acres of Gila topminnow occupied habitat is impacted by cross-country motorized travel for fuelwood gathering. Motorized use within or adjacent to Gila topminnow habitat has the potential to influence behavior, survival, reproduction and distribution of Gila topminnow, as well as to alter habitat. The current level of impact is expected to continue if Alternative A is implemented.

Alternative B—Direct and Indirect Effects

Roads and Trails Open to Motorized Travel

Approximately 2,559.57 miles of roads and trails would be open to the public for motorized travel if this alternative was implemented. There would be approximately 0.02 miles of open roads and motorized trails (with a road density of 0.14 miles per square mile) within Gila topminnow occupied habitat on the Forest under this alternative. This would be a reduction in the amount of roads and motorized trails open to the public in Gila topminnow occupied habitat, and would benefit the species by reducing access near riparian zones, reducing sedimentation into streams, and reducing the potential spread of nonnative aquatic organisms and diseases.

Areas Designated for Motor Vehicle Use

Cross-country motorized use would be eliminated forestwide if Alternative B was implemented. No Gila topminnow occupied habitat would be affected by cross-country motorized use. The level of impact to Gila topminnow occupied habitat would be the same as current conditions.

Motor Vehicle Use for Big Game Retrieval

Motorized big game retrieval would be eliminated forestwide if Alternative B was implemented. No Gila topminnow occupied habitat would be affected by motorized big game retrieval. The level of impact to Gila topminnow occupied habitat would be the same as current conditions.

Motor Vehicle Use for Dispersed Camping

Dispersed camping using motor vehicles would be restricted to 414 designated sites, impacting approximately 65.45 acres if this alternative was implemented. No Gila topminnow occupied

habitat would be impacted by dispersed camping using motor vehicles under this alternative. The level of impact would be the same as current conditions.

Motor Vehicle Use for Fuelwood Gathering

Cross-country motorized travel for fuelwood gathering would be permitted within 300 feet of a road in the Globe, Payson, Pleasant Valley, and Tonto Basin ranger districts on approximately 132,568.44 acres. No Gila topminnow occupied habitat would be impacted by fuelwood gathering using motor vehicles under this alternative. This would be a reduction in cross-country motorized travel for fuelwood gathering within Gila topminnow occupied habitat on the Forest, and would benefit the species by reducing access near riparian zones, reducing sedimentation into streams, and reducing the potential spread of nonnative aquatic organisms and diseases.

Alternative C—Direct and Indirect Effects

Roads and Trails Open to Motorized Travel

Approximately 3,569.52 miles of roads and trails would be open to the public for motorized travel if this alternative was implemented. There would be approximately 0.02 miles of open roads and motorized trails (with a road density of 0.14 miles per square mile) within Gila topminnow occupied habitat on the Forest under this alternative. This would be a reduction in the amount of roads and motorized trails open to the public in Gila topminnow occupied habitat, and would benefit the species by reducing access near riparian zones, reducing sedimentation into streams, and reducing the potential spread of nonnative aquatic organisms and diseases.

Areas Designated for Motor Vehicle Use

Motorized cross-country travel would be restricted to 6,790.37 acres in designated areas at Bartlett Lake (Cave Creek Ranger District), Golf Course (Globe Ranger District), Roosevelt Lake (Tonto Basin Ranger District), and Sycamore (Mesa Ranger District) and tot lots if this alternative is implemented. No Gila topminnow occupied habitat would be impacted by motorized cross-country travel under this alternative. The level of impact would be the same as current conditions.

Motor Vehicle Use for Big Game Retrieval

Motorized big game retrieval would be allowed within 1 mile of roads and motorized trails, impacting approximately 1,293,178.12 acres if this alternative is implemented. Approximately 32.45 acres of Gila topminnow occupied habitat would be impacted by motorized big game retrieval under this alternative. This would be an increase in authorized motorized big game retrieval within Gila topminnow occupied habitat on the Forest and could result in additional impacts to the species by increasing access near riparian zones, increasing sedimentation into streams, and increasing the potential spread of nonnative aquatic organisms and diseases. However, any effects to habitat are expected to be minimal because Arizona Game and Fish Department regulations state that hunters cannot drive through riparian areas in a manner that causes damage to the habitat. Furthermore, the number of retrieval trips across the Forest is estimated to be 209 total trips in and out on an annual basis, spread over 1,293,178 acres; few of these trips are anticipated to occur in Gila topminnow habitat.

Motor Vehicle Use for Dispersed Camping

Dispersed camping using motor vehicles would be restricted to areas within 100 feet of roads and motorized trails, impacting approximately 91,391.29 acres if this alternative is implemented. No Gila topminnow occupied habitat would be impacted by dispersed camping using motor vehicles under this alternative. The level of impact would be the same as current conditions.

Motor Vehicle Use for Fuelwood Gathering

Cross-country motorized travel for fuelwood gathering would be permitted within 300 feet of a road in the Globe, Payson, Pleasant Valley, and Tonto Basin ranger districts on approximately 161,784.64 acres. No Gila topminnow occupied habitat would be impacted by fuelwood gathering using motor vehicles under this alternative. This would be a reduction in cross-country motorized travel for fuelwood gathering within Gila topminnow occupied habitat, and would benefit the species by reducing access near riparian zones, reducing sedimentation into streams, and reducing the potential spread of nonnative aquatic organisms and diseases.

Alternative D—Direct and Indirect Effects

Roads and Trails Open to Motorized Travel

Approximately 4,859.34 miles of roads and trails would be open to the public for motorized travel if this alternative was implemented. There would be approximately 0.35 miles of open roads and motorized trails (with a road density of 2.46 miles per square mile) within Gila topminnow occupied habitat on the Forest under Alternative D. This would be a slight reduction in the amount of roads and motorized trails open to the public in Gila topminnow occupied habitat, with impacts nearly the same as current conditions.

Areas Open to Motorized Cross-country Travel

Motorized cross-country travel would be restricted to 6,790.37 acres in designated areas at Bartlett Lake (Cave Creek Ranger District), Golf Course (Globe Ranger District), Roosevelt Lake (Tonto Basin Ranger District), and Sycamore (Mesa Ranger District) and tot lots if this alternative is implemented. No Gila topminnow occupied habitat would be impacted by motorized cross-country travel under Alternative D. The level of impact would be the same as current conditions.

Motor Vehicle Use for Big Game Retrieval

Motorized big game retrieval would be allowed within 1 mile of roads and motorized trails, impacting approximately 2,068,208.36 acres if this alternative is implemented. Approximately 58.42 acres of Gila topminnow occupied habitat would be impacted by motorized big game retrieval under Alternative D. This would be an increase in authorized motorized big game retrieval within Gila topminnow occupied habitat on the Forest, and could result in additional impacts to the species by increasing access near riparian zones, increasing sedimentation into streams, and increasing the potential spread of nonnative aquatic organisms and diseases. However, any effects to habitat are expected to be minimal because Arizona Game and Fish Department regulations state that hunters cannot drive through riparian areas in a manner that causes damage to the habitat. Furthermore, the number of retrieval trips across the Forest is estimated to be 550 total trips in and out on an annual basis, spread over 2,068,208 acres; few of these trips are anticipated to occur in Gila topminnow habitat.

Motor Vehicle Use for Dispersed Camping

Dispersed camping using motor vehicles would be restricted to areas within 300 feet of roads and motorized trails, impacting approximately 336,037.85 acres if this alternative is implemented. Approximately 8.05 acres of Gila topminnow occupied habitat would be impacted by dispersed camping using motor vehicles under Alternative D. This would be an increase in dispersed camping using motor vehicles within Gila topminnow occupied habitat on the Forest, and could result in additional impacts to the species by increasing access near riparian zones, increasing sedimentation into streams, and increasing the potential spread of nonnative aquatic organisms and diseases.

Motor Vehicle Use for Fuelwood Gathering

Cross-country motorized travel for fuelwood gathering would continue unrestricted in areas currently permitted for fuelwood gathering, impacting approximately 1,345,997.76 acres. Approximately 6.49 acres of Gila topminnow occupied habitat would be impacted by cross-country motorized travel for fuelwood gathering under Alternative D. Because there is no change from Alternative A, the current level of impact is expected to continue if this alternative is implemented.

Arizona Cliffrose

The Arizona cliffrose is found in nutrient-deficient, calcareous limy-tuff soils derived from Tertiary lacustrine deposits at elevations of 2,100–2,700 feet. On Tonto National Forest, the Arizona cliffrose is found in the Cave Creek Ranger District near Horseshoe Lake.

Alternative A—Direct and Indirect Effects

Roads and Trails Open to Motorized Travel

Approximately 4,958.58 miles of roads and no trails would be open to the public for motorized travel if this alternative was implemented. Currently, there are no open roads and motorized trails within Arizona cliffrose habitat on the Forest. Current condition would continue if Alternative A was implemented, so no new effects would occur.

Areas Designated for Motor Vehicle Use

Cross-country motorized travel would continue unrestricted within the Payson and Pleasant Valley ranger districts and in other ranger districts where authorized on approximately 703,618.39 acres. Currently, no Arizona cliffrose habitat is impacted by cross-country motorized travel. Motorized use within or adjacent to Arizona cliffrose habitat could crush individual plants or alter habitat. The current level of impact is expected to continue if Alternative A is implemented.

Motor Vehicle Use for Big Game Retrieval

Cross-country motorized travel for big game retrieval would continue unrestricted within the Payson and Pleasant Valley ranger districts and in other ranger districts where authorized on approximately 703,618.39 acres. Currently, no Arizona cliffrose habitat is impacted by motorized big game retrieval. Motorized use within or adjacent to Arizona cliffrose habitat could crush individual plants or alter habitat. The number of retrieval trips across the Forest is estimated to be

550 total trips in and out on an annual basis, spread over 703,618 acres; few of these trips are anticipated to occur in Arizona cliffrose habitat. The current level of impact is expected to continue if Alternative A is implemented.

Motor Vehicle Use for Dispersed Camping

Dispersed camping using motorized vehicles would continue unrestricted within the Payson and Pleasant Valley ranger districts and in other ranger districts where authorized on approximately 703,618.39 acres. Currently, no Arizona cliffrose habitat is impacted by dispersed camping using motor vehicles. Motorized use within or adjacent to Arizona cliffrose habitat could crush individual plants or alter habitat. The current level of impact is expected to continue if Alternative A is implemented.

Motor Vehicle Use for Fuelwood Gathering

Cross-country motorized travel for fuelwood gathering would continue within the Globe, Payson, Pleasant Valley, and Tonto Basin ranger districts on approximately 1,345,997.76 acres. Currently, no Arizona cliffrose habitat is impacted by cross-country motorized travel for fuelwood gathering. Motorized use within or adjacent to Arizona cliffrose habitat could crush individual plants or alter habitat. The current level of impact is expected to continue if Alternative A is implemented.

Alternative B—Direct and Indirect Effects

Roads and Trails Open to Motorized Travel

Approximately 2,559.57 miles of roads and trails would be open to the public for motorized travel if this alternative was implemented. There would be no open roads and motorized trails within Arizona cliffrose habitat on the Forest under Alternative B. The level of impact would be the same as current conditions.

Areas Designated for Motor Vehicle Use

Cross-country motorized use would be eliminated forestwide if Alternative B was implemented. No Arizona cliffrose habitat would be affected by cross-country motorized use. The level of impact to Arizona cliffrose habitat would be the same as current conditions.

Motor Vehicle Use for Big Game Retrieval

Motorized big game retrieval would be eliminated forestwide if Alternative B was implemented. No Arizona cliffrose habitat would be affected by motorized big game retrieval. The level of impact to Arizona cliffrose habitat would be the same as current conditions.

Motor Vehicle Use for Dispersed Camping

Dispersed camping using motor vehicles would be restricted to 414 designated sites, impacting approximately 65.45 acres if this alternative was implemented. No Arizona cliffrose habitat would be impacted by dispersed camping using motor vehicles under Alternative B. The level of impact would be the same as current conditions.

Motor Vehicle Use for Fuelwood Gathering

Cross-country motorized travel for fuelwood gathering would be permitted within 300 feet of a road in the Globe, Payson, Pleasant Valley, and Tonto Basin ranger districts on approximately 132,568.44 acres. No Arizona cliffrose habitat would be impacted by fuelwood gathering using motor vehicles under Alternative B. The level of impact would be the same as current conditions.

Alternative C—Direct and Indirect Effects

Roads and Trails Open to Motorized Travel

Approximately 3,569.52 miles of roads and trails would be open to the public for motorized travel if this alternative was implemented. There would be no open roads and motorized trails within Arizona cliffrose habitat on the Forest under Alternative C. The level of impact would be the same as current conditions.

Areas Designated for Motor Vehicle Use

Motorized cross-country travel would be restricted to 6,790.37 acres in designated areas at Bartlett Lake (Cave Creek Ranger District), Golf Course (Globe Ranger District), Roosevelt Lake (Tonto Basin Ranger District), and Sycamore (Mesa Ranger District) and tot lots if Alternative C is implemented. No Arizona cliffrose habitat would be impacted by motorized cross-country travel under this alternative. The level of impact would be the same as current conditions.

Motor Vehicle Use for Big Game Retrieval

Motorized big game retrieval would be allowed within 1 mile of roads and motorized trails, impacting approximately 1,293,178.12 acres if this alternative is implemented. No Arizona cliffrose habitat would be impacted by motorized big game retrieval under Alternative C. The number of retrieval trips across the Forest is estimated to be 209 total trips in and out on an annual basis, spread over 1,293,178 acres; none of these trips are anticipated to occur in Arizona cliffrose habitat. The level of impact would be the same as current conditions.

Motor Vehicle Use for Dispersed Camping

Dispersed camping using motor vehicles would be restricted to areas within 100 feet of roads and motorized trails, impacting approximately 91,391.29 acres if this alternative is implemented. No Arizona cliffrose habitat would be impacted by dispersed camping using motor vehicles under Alternative C. The level of impact would be the same as current conditions.

Motor Vehicle Use for Fuelwood Gathering

Cross-country motorized travel for fuelwood gathering would be permitted within 300 feet of a road in the Globe, Payson, Pleasant Valley, and Tonto Basin ranger districts on approximately 161,784.64 acres. No Arizona cliffrose habitat would be impacted by fuelwood gathering using motor vehicles under Alternative C. The level of impact would be the same as current conditions.

Alternative D—Direct and Indirect Effects

Roads and Trails Open to Motorized Travel

Approximately 4,859.34 miles of roads and trails would be open to the public for motorized travel if this alternative was implemented. There would be no open roads and motorized trails within Arizona cliffrose habitat on the Forest under Alternative D. The level of impact would be the same as current conditions.

Areas Designated for Motor Vehicle Use

Motorized cross-country travel would be restricted to 6,790.37 acres in designated areas at Bartlett Lake (Cave Creek Ranger District), Golf Course (Globe Ranger District), Roosevelt Lake (Tonto Basin Ranger District), and Sycamore (Mesa Ranger District) and tot lots if this alternative is implemented. No Arizona cliffrose habitat would be impacted by motorized cross-country travel under Alternative D. The level of impact would be the same as current conditions.

Motor Vehicle Use for Big Game Retrieval

Motorized big game retrieval would be allowed within 1 mile of roads and motorized trails, impacting approximately 2,068,208.36 acres if this alternative is implemented. Approximately 20.70 acres of Arizona cliffrose habitat would be impacted by motorized big game retrieval under Alternative D. This would be an increase in authorized motorized big game retrieval within Arizona cliffrose habitat on the Forest and could result in additional impacts to the species by increasing crushing of foliage or root system and increasing injury or mortality of individual plants or groups of plants. However, the number of retrieval trips across the Forest is estimated to be 550 total trips in and out on an annual basis, spread over 2,068,208 acres; few of these trips are anticipated to occur in Arizona cliffrose habitat.

Motor Vehicle Use for Dispersed Camping

Dispersed camping using motor vehicles would be restricted to areas within 300 feet of roads and motorized trails, impacting approximately 336,037.85 acres if this alternative is implemented. No Arizona cliffrose habitat would be impacted by dispersed camping using motor vehicles under Alternative D. The level of impact would be the same as current conditions.

Motor Vehicle Use for Fuelwood Gathering

Cross-country motorized travel for fuelwood gathering would continue unrestricted in areas currently permitted for fuelwood gathering, impacting approximately 1,345,997.76 acres. No Arizona cliffrose habitat would be impacted by cross-country motorized travel for fuelwood gathering under Alternative D. Because there is no change from Alternative A, the current level of impact is expected to continue if this alternative is implemented.

Arizona Hedgehog Cactus

Arizona hedgehog cactus is typically associated with interior chaparral and madrean evergreen woodland communities. A few plants may extend into the transition zones with upper Sonoran desert and beyond into ponderosa pine type between approximately 3,300 to 5,700 feet. This species occurs on parent materials of igneous origin, primarily Schultze Granite and Apache Leap

Tuff (Dacite); plants occurring on Pinal schist and Pioneer formations are found in proximity to the preferred parent materials and where the formations are expressed as exposed bedrock.

The Arizona hedgehog cactus is found on Tonto National Forest in Globe and possibly Mesa ranger districts. This species has been documented from Queen Creek east of Superior to Pinto Valley and north of Superior, into the Superstition Wilderness; it is also found in the Pinal Mountains south of Globe and the Mescal Mountains south of Tonto National Forest.

Alternative A—Direct and Indirect Effects

Roads and Trails Open to Motorized Travel

Approximately 4,958.58 miles of roads and no trails would be open to the public for motorized travel if this alternative was implemented. Currently, there are approximately 11.62 miles of open roads and motorized trails (with a road density of 5.74 miles per square mile) within Arizona hedgehog cactus occupied habitat on the Forest. The current level of impact is expected to continue if Alternative A is implemented.

Areas Designated for Motor Vehicle Use

Cross-country motorized travel would continue unrestricted within the Payson and Pleasant Valley ranger districts and in other ranger districts where authorized on approximately 703,618.39 acres. Currently, no Arizona hedgehog cactus occupied habitat is impacted by cross-country motorized travel. Motorized use within or adjacent to Arizona hedgehog cactus habitat could crush individual plants or alter habitat although this would be minimized due to the preferred rocky and steep habitat this subspecies is associated with. The current level of impact is expected to continue if Alternative A is implemented.

Motor Vehicle Use for Big Game Retrieval

Cross-country motorized travel for big game retrieval would continue unrestricted within the Payson and Pleasant Valley ranger districts and in other ranger districts where authorized on approximately 703,618.39 acres. Currently, no Arizona hedgehog cactus occupied habitat is impacted by motorized big game retrieval. Motorized use within or adjacent to Arizona hedgehog cactus habitat could crush individual plants or alter habitat. However, the number of retrieval trips across the Forest is estimated to be 550 total trips in and out on an annual basis, spread over 703,618 acres; none of these trips are anticipated to occur in Arizona hedgehog cactus habitat. The current level of impact is expected to continue if Alternative A is implemented.

Motor Vehicle Use for Dispersed Camping

Dispersed camping using motorized vehicles would continue unrestricted within the Payson and Pleasant Valley ranger districts and in other ranger districts where authorized on approximately 703,618.39 acres. Currently, no Arizona hedgehog cactus occupied habitat is impacted by dispersed camping using motor vehicles. Motorized use within or adjacent to Arizona hedgehog cactus habitat could crush individual plants or alter habitat. The current level of impact is expected to continue if Alternative A is implemented.

Motor Vehicle Use for Fuelwood Gathering

Cross-country motorized travel for fuelwood gathering would continue within the Globe, Payson, Pleasant Valley, and Tonto Basin ranger districts on approximately 1,345,997.76 acres. Currently, 762.76 acres of Arizona hedgehog cactus occupied habitat is impacted by cross-country motorized travel for fuelwood gathering. Motorized use within or adjacent to Arizona hedgehog cactus habitat could crush individual plants or alter habitat. The current level of impact is expected to continue if Alternative A is implemented.

Alternative B—Direct and Indirect Effects

Roads and Trails Open to Motorized Travel

Approximately 2,559.57 miles of roads and trails would be open to the public for motorized travel if this alternative was implemented. There would be approximately 10.18 miles of open roads and motorized trails (with a road density of 5.03 miles per square mile) within Arizona hedgehog cactus occupied habitat on the Forest under this alternative. This would be a slight reduction in the amount of roads and motorized trails open to the public in Arizona hedgehog cactus occupied habitat on the Forest, and the level of impact to Arizona hedgehog cactus occupied habitat would be nearly the same as current conditions.

Areas Designated for Motor Vehicle Use

Cross-country motorized use would be eliminated forestwide if Alternative B was implemented. No Arizona hedgehog cactus occupied habitat would be affected by cross-country motorized use. The level of impact to Arizona hedgehog cactus occupied habitat would be the same as current conditions.

Motor Vehicle Use for Big Game Retrieval

Motorized big game retrieval would be eliminated forestwide if Alternative B was implemented. No Arizona hedgehog cactus occupied habitat would be affected by motorized big game retrieval. The level of impact to Arizona hedgehog cactus habitat would be the same as current conditions.

Motor Vehicle Use for Dispersed Camping

Dispersed camping using motor vehicles would be restricted to 414 designated sites, impacting approximately 65.45 acres if this alternative was implemented. No Arizona hedgehog cactus occupied habitat would be impacted by dispersed camping using motor vehicles under this alternative. The level of impact would be the same as current conditions.

Motor Vehicle Use for Fuelwood Gathering

Cross-country motorized travel for fuelwood gathering would be permitted within 300 feet of a road in the Globe, Payson, Pleasant Valley, and Tonto Basin ranger districts on approximately 132,568.44 acres. Approximately 242.66 acres of Arizona hedgehog cactus occupied habitat would be impacted by fuelwood gathering using motor vehicles under this alternative. This would be a reduction in cross-country motorized travel for fuelwood gathering within Arizona hedgehog cactus occupied habitat on the Forest, and would benefit the species by reducing crushing of stems or root system and reducing injury or mortality of individual plants or groups of plants.

Alternative C—Direct and Indirect Effects

Roads and Trails Open to Motorized Travel

Approximately 3,569.52 miles of roads and trails would be open to the public for motorized travel if this alternative was implemented. There would be approximately 10.72 miles of open roads and motorized trails (with a road density of 5.30 miles per square mile) within Arizona hedgehog cactus occupied habitat on the Forest under this alternative. This would be a slight reduction in the amount of roads and motorized trails open to the public in Arizona hedgehog cactus occupied habitat and the level of impact would be nearly the same as current conditions.

Areas Designated for Motor Vehicle Use

Motorized cross-country travel would be restricted to 6,790.37 acres in designated areas at Bartlett Lake (Cave Creek Ranger District), Golf Course (Globe Ranger District), Roosevelt Lake (Tonto Basin Ranger District), and Sycamore (Mesa Ranger District) and tot lots if this alternative is implemented. No Arizona hedgehog cactus occupied habitat would be impacted by motorized cross-country travel under this alternative. The level of impact would be the same as current conditions.

Motor Vehicle Use for Big Game Retrieval

Motorized big game retrieval would be allowed within 1 mile of roads and motorized trails, impacting approximately 1,293,178.12 acres if this alternative is implemented. Approximately 912.36 acres of Arizona hedgehog cactus occupied habitat would be impacted by motorized big game retrieval under this alternative. This would be a major increase in authorized motorized big game retrieval within Arizona hedgehog cactus occupied habitat on the Forest, and could result in additional impacts to the species by increasing crushing of stems or root system and increasing injury or mortality of individual plants or groups of plants. However, the number of retrieval trips across the Forest is estimated to be 209 total trips in and out on an annual basis, spread over 1,293,178 acres; few of these trips are anticipated to occur in Arizona hedgehog cactus habitat.

Motor Vehicle Use for Dispersed Camping

Dispersed camping using motor vehicles would be restricted to areas within 100 feet of roads and motorized trails, impacting approximately 91,391.29 acres if this alternative is implemented. Approximately 107.11 acres of Arizona hedgehog cactus occupied habitat would be impacted by dispersed camping using motor vehicles under this alternative. This would be a major increase in dispersed camping using motor vehicles within Arizona hedgehog cactus occupied habitat on the Forest, and could result in additional impacts to the species by increasing crushing of stems or root system and increasing injury or mortality of individual plants or groups of plants.

Motor Vehicle Use for Fuelwood Gathering

Cross-country motorized travel for fuelwood gathering would be permitted within 300 feet of a road in the Globe, Payson, Pleasant Valley, and Tonto Basin ranger districts on approximately 161,784.64 acres. Approximately 249.58 acres of Arizona hedgehog cactus occupied habitat would be impacted by fuelwood gathering using motor vehicles under this alternative. This would be a reduction in cross-country motorized travel for fuelwood gathering within Arizona hedgehog cactus occupied habitat, and would benefit the species by reducing crushing of stems or root system and reducing injury or mortality of individual plants or groups of plants.

Alternative D—Direct and Indirect Effects

Roads and Trails Open to Motorized Travel

Approximately 4,859.34 miles of roads and trails would be open to the public for motorized travel if this alternative was implemented. There would be approximately 11.60 miles of open roads and motorized trails (with a road density of 5.73 miles per square mile) within Arizona hedgehog cactus occupied habitat on the Forest under this alternative. This would be a very slight reduction in the amount of roads and motorized trails open to the public in Arizona hedgehog cactus occupied habitat and the level of impact would be nearly the same as current conditions.

Areas Designated for Motor Vehicle Use

Motorized cross-country travel would be restricted to 6,790.37 acres in designated areas at Bartlett Lake (Cave Creek Ranger District), Golf Course (Globe Ranger District), Roosevelt Lake (Tonto Basin Ranger District), and Sycamore (Mesa Ranger District) and tot lots if this alternative is implemented. No Arizona hedgehog cactus occupied habitat would be impacted by motorized cross-country travel under this alternative. The level of impact would be the same as current conditions.

Motor Vehicle Use for Big Game Retrieval

Motorized big game retrieval would be allowed within 1 mile of roads and motorized trails, impacting approximately 2,068,208.36 acres if Alternative D is implemented. Approximately 1,033.34 acres of Arizona hedgehog cactus occupied habitat would be impacted by motorized big game retrieval under this alternative. This would be a major increase in authorized motorized big game retrieval within Arizona hedgehog cactus occupied habitat on the Forest, and could result in additional impacts to the species by increasing crushing of stems or root system and increasing injury or mortality of individual plants or groups of plants. However, the number of retrieval trips across the Forest is estimated to be 550 total trips in and out on an annual basis, spread over 2,068,208 acres; few of these trips are anticipated to occur in Arizona hedgehog cactus habitat.

Motor Vehicle Use for Dispersed Camping

Dispersed camping using motor vehicles would be restricted to areas within 300 feet of roads and motorized trails, impacting approximately 336,037.85 acres if this alternative is implemented. Approximately 330.04 acres of Arizona hedgehog cactus occupied habitat would be impacted by dispersed camping using motor vehicles under this alternative. This would be an increase in dispersed camping using motor vehicles within Arizona hedgehog cactus occupied habitat on the Forest, and could result in additional impacts to the species by increasing crushing of stems or root system and increasing injury or mortality of individual plants or groups of plants.

Motor Vehicle Use for Fuelwood Gathering

Cross-country motorized travel for fuelwood gathering would continue unrestricted in areas currently permitted for fuelwood gathering, impacting approximately 1,345,997.76 acres. Approximately 762.76 acres of Arizona hedgehog cactus occupied habitat would be impacted by cross-country motorized travel for fuelwood gathering under this alternative. Because there is no change from Alternative A, the current level of impact is expected to continue if this alternative is implemented.

Federal Candidate Species

Headwater Chub

The headwater chub can be found in medium-sized streams in large, deep pools often associated with cover such as undercut banks or deep places created by trees or rocks at elevations of 3,000–6,700 feet. The headwater chub on Tonto National Forest is on the Tonto Basin, Payson, and Pleasant Valley ranger districts.

Alternative A—Direct and Indirect Effects

Roads and Trails Open to Motorized Travel

Approximately 4,958.58 miles of roads and no trails would be open to the public for motorized travel if this alternative was implemented. Currently, there are approximately 11.62 miles of open roads and motorized trails (with a road density of 5.74 miles per square mile) within Arizona hedgehog cactus occupied habitat on the Forest. The current level of impact is expected to continue if Alternative A is implemented.

Areas Designated for Motor Vehicle Use

Cross-country motorized travel would continue unrestricted within the Payson and Pleasant Valley ranger districts and in other ranger districts where authorized on approximately 703,618.39 acres. Currently, no Arizona hedgehog cactus occupied habitat is impacted by cross-country motorized travel. Motorized use within or adjacent to Arizona hedgehog cactus habitat could crush individual plants or alter habitat although this would be minimized due to the preferred rocky and steep habitat this subspecies is associated with. The current level of impact is expected to continue if Alternative A is implemented.

Motor Vehicle Use for Big Game Retrieval

Cross-country motorized travel for big game retrieval would continue unrestricted within the Payson and Pleasant Valley ranger districts and in other ranger districts where authorized on approximately 703,618.39 acres. Currently, no Arizona hedgehog cactus occupied habitat is impacted by motorized big game retrieval. Motorized use within or adjacent to Arizona hedgehog cactus habitat could crush individual plants or alter habitat. However, the number of retrieval trips across the Forest is estimated to be 550 total trips in and out on an annual basis, spread over 703,618 acres; none of these trips are anticipated to occur in Arizona hedgehog cactus habitat. The current level of impact is expected to continue if Alternative A is implemented.

Motor Vehicle Use for Dispersed Camping

Dispersed camping using motorized vehicles would continue unrestricted within the Payson and Pleasant Valley ranger districts and in other ranger districts where authorized on approximately 703,618.39 acres. Currently, no Arizona hedgehog cactus occupied habitat is impacted by dispersed camping using motor vehicles. Motorized use within or adjacent to Arizona hedgehog cactus habitat could crush individual plants or alter habitat. The current level of impact is expected to continue if Alternative A is implemented.

Motor Vehicle Use for Fuelwood Gathering

Cross-country motorized travel for fuelwood gathering would continue within the Globe, Payson, Pleasant Valley, and Tonto Basin ranger districts on approximately 1,345,997.76 acres. Currently, 762.76 acres of Arizona hedgehog cactus occupied habitat is impacted by cross-country motorized travel for fuelwood gathering. Motorized use within or adjacent to Arizona hedgehog cactus habitat could crush individual plants or alter habitat. The current level of impact is expected to continue if Alternative A is implemented.

Alternative B—Direct and Indirect Effects

Roads and Trails Open to Motorized Travel

Approximately 2,559.57 miles of roads and trails would be open to the public for motorized travel if this alternative was implemented. There would be approximately 10.18 miles of open roads and motorized trails (with a road density of 5.03 miles per square mile) within Arizona hedgehog cactus occupied habitat on the Forest under this alternative. This would be a slight reduction in the amount of roads and motorized trails open to the public in Arizona hedgehog cactus occupied habitat on the Forest, and the level of impact to Arizona hedgehog cactus occupied habitat would be nearly the same as current conditions.

Areas Designated for Motor Vehicle Use

Cross-country motorized use would be eliminated forestwide if Alternative B was implemented. No Arizona hedgehog cactus occupied habitat would be affected by cross-country motorized use. The level of impact to Arizona hedgehog cactus occupied habitat would be the same as current conditions.

Motor Vehicle Use for Big Game Retrieval

Motorized big game retrieval would be eliminated forestwide if Alternative B was implemented. No Arizona hedgehog cactus occupied habitat would be affected by motorized big game retrieval. The level of impact to Arizona hedgehog cactus habitat would be the same as current conditions.

Motor Vehicle Use for Dispersed Camping

Dispersed camping using motor vehicles would be restricted to 414 designated sites, impacting approximately 65.45 acres if this alternative was implemented. No Arizona hedgehog cactus occupied habitat would be impacted by dispersed camping using motor vehicles under this alternative. The level of impact would be the same as current conditions.

Motor Vehicle Use for Fuelwood Gathering

Cross-country motorized travel for fuelwood gathering would be permitted within 300 feet of a road in the Globe, Payson, Pleasant Valley, and Tonto Basin ranger districts on approximately 132,568.44 acres. Approximately 242.66 acres of Arizona hedgehog cactus occupied habitat would be impacted by fuelwood gathering using motor vehicles under this alternative. This would be a reduction in cross-country motorized travel for fuelwood gathering within Arizona hedgehog cactus occupied habitat on the Forest, and would benefit the species by reducing crushing of stems or root system and reducing injury or mortality of individual plants or groups of plants.

Alternative C—Direct and Indirect Effects

Roads and Trails Open to Motorized Travel

Approximately 3,569.52 miles of roads and trails would be open to the public for motorized travel if this alternative was implemented. There would be approximately 10.72 miles of open roads and motorized trails (with a road density of 5.30 miles per square mile) within Arizona hedgehog cactus occupied habitat on the Forest under this alternative. This would be a slight reduction in the amount of roads and motorized trails open to the public in Arizona hedgehog cactus occupied habitat and the level of impact would be nearly the same as current conditions.

Areas Designated for Motor Vehicle Use

Motorized cross-country travel would be restricted to 6,790.37 acres in designated areas at Bartlett Lake (Cave Creek Ranger District), Golf Course (Globe Ranger District), Roosevelt Lake (Tonto Basin Ranger District), and Sycamore (Mesa Ranger District) and tot lots if this alternative is implemented. No Arizona hedgehog cactus occupied habitat would be impacted by motorized cross-country travel under this alternative. The level of impact would be the same as current conditions.

Motor Vehicle Use for Big Game Retrieval

Motorized big game retrieval would be allowed within 1 mile of roads and motorized trails, impacting approximately 1,293,178.12 acres if this alternative is implemented. Approximately 912.36 acres of Arizona hedgehog cactus occupied habitat would be impacted by motorized big game retrieval under this alternative. This would be a major increase in authorized motorized big game retrieval within Arizona hedgehog cactus occupied habitat on the Forest, and could result in additional impacts to the species by increasing crushing of stems or root system and increasing injury or mortality of individual plants or groups of plants. However, the number of retrieval trips across the Forest is estimated to be 209 total trips in and out on an annual basis, spread over 1,293,178 acres; few of these trips are anticipated to occur in Arizona hedgehog cactus habitat.

Motor Vehicle Use for Dispersed Camping

Dispersed camping using motor vehicles would be restricted to areas within 100 feet of roads and motorized trails, impacting approximately 91,391.29 acres if this alternative is implemented. Approximately 107.11 acres of Arizona hedgehog cactus occupied habitat would be impacted by dispersed camping using motor vehicles under this alternative. This would be a major increase in dispersed camping using motor vehicles within Arizona hedgehog cactus occupied habitat on the Forest, and could result in additional impacts to the species by increasing crushing of stems or root system and increasing injury or mortality of individual plants or groups of plants.

Motor Vehicle Use for Fuelwood Gathering

Cross-country motorized travel for fuelwood gathering would be permitted within 300 feet of a road in the Globe, Payson, Pleasant Valley, and Tonto Basin ranger districts on approximately 161,784.64 acres. Approximately 249.58 acres of Arizona hedgehog cactus occupied habitat would be impacted by fuelwood gathering using motor vehicles under this alternative. This would be a reduction in cross-country motorized travel for fuelwood gathering within Arizona hedgehog cactus occupied habitat, and would benefit the species by reducing crushing of stems or root system and reducing injury or mortality of individual plants or groups of plants.

Alternative D—Direct and Indirect Effects

Roads and Trails Open to Motorized Travel

Approximately 4,859.34 miles of roads and trails would be open to the public for motorized travel if this alternative was implemented. There would be approximately 11.60 miles of open roads and motorized trails (with a road density of 5.73 miles per square mile) within Arizona hedgehog cactus occupied habitat on the Forest under this alternative. This would be a very slight reduction in the amount of roads and motorized trails open to the public in Arizona hedgehog cactus occupied habitat and the level of impact would be nearly the same as current conditions.

Areas Designated for Motor Vehicle Use

Motorized cross-country travel would be restricted to 6,790.37 acres in designated areas at Bartlett Lake (Cave Creek Ranger District), Golf Course (Globe Ranger District), Roosevelt Lake (Tonto Basin Ranger District), and Sycamore (Mesa Ranger District) and tot lots if this alternative is implemented. No Arizona hedgehog cactus occupied habitat would be impacted by motorized cross-country travel under this alternative. The level of impact would be the same as current conditions.

Motor Vehicle Use for Big Game Retrieval

Motorized big game retrieval would be allowed within 1 mile of roads and motorized trails, impacting approximately 2,068,208.36 acres if Alternative D is implemented. Approximately 1,033.34 acres of Arizona hedgehog cactus occupied habitat would be impacted by motorized big game retrieval under this alternative. This would be a major increase in authorized motorized big game retrieval within Arizona hedgehog cactus occupied habitat on the Forest, and could result in additional impacts to the species by increasing crushing of stems or root system and increasing injury or mortality of individual plants or groups of plants. However, the number of retrieval trips across the Forest is estimated to be 550 total trips in and out on an annual basis, spread over 2,068,208 acres; few of these trips are anticipated to occur in Arizona hedgehog cactus habitat.

Motor Vehicle Use for Dispersed Camping

Dispersed camping using motor vehicles would be restricted to areas within 300 feet of roads and motorized trails, impacting approximately 336,037.85 acres if this alternative is implemented. Approximately 330.04 acres of Arizona hedgehog cactus occupied habitat would be impacted by dispersed camping using motor vehicles under this alternative. This would be an increase in dispersed camping using motor vehicles within Arizona hedgehog cactus occupied habitat on the Forest, and could result in additional impacts to the species by increasing crushing of stems or root system and increasing injury or mortality of individual plants or groups of plants.

Motor Vehicle Use for Fuelwood Gathering

Cross-country motorized travel for fuelwood gathering would continue unrestricted in areas currently permitted for fuelwood gathering, impacting approximately 1,345,997.76 acres. Approximately 762.76 acres of Arizona hedgehog cactus occupied habitat would be impacted by cross-country motorized travel for fuelwood gathering under this alternative. Because there is no change from Alternative A, the current level of impact is expected to continue if this alternative is implemented.

Roundtail Chub

Roundtail Chub can be found in cool to warm waters of rivers and streams, often occupying the deepest pools and eddies of large streams at elevations of 1,000 to 7,500 feet. On the Tonto National Forest, the roundtail chub is on all ranger districts.

Alternative A—Direct and Indirect Effects

Roads and Trails Open to Motorized Travel

Approximately 4,958.58 miles of roads and no trails would be open to the public for motorized travel if this alternative was implemented. Currently, there are approximately 26.98 miles of open roads and motorized trails (with a road density of 2.87 miles per square mile) within roundtail chub occupied habitat on the Forest. The current level of impact is expected to continue if Alternative A is implemented.

Areas Designated for Motor Vehicle Use

Cross-country motorized travel would continue unrestricted within the Payson and Pleasant Valley ranger districts and in other ranger districts where authorized on approximately 703,618.39 acres. Currently, 425.47 acres of roundtail chub occupied habitat is impacted by cross-country motorized travel. Motorized use within or adjacent to roundtail chub habitat has the potential to influence behavior, survival, reproduction and distribution of roundtail chub, as well as to alter habitat. The current level of impact is expected to continue if Alternative A is implemented.

Motor Vehicle Use for Big Game Retrieval

Cross-country motorized travel for big game retrieval would continue unrestricted within the Payson and Pleasant Valley ranger districts and in other ranger districts where authorized on approximately 703,618.39 acres. Currently, 425.47 acres of roundtail chub occupied habitat is impacted by motorized big game retrieval. Motorized use within or adjacent to roundtail chub habitat has the potential to influence behavior, survival, reproduction and distribution of roundtail chub, as well as to alter habitat. However, any effects to habitat are expected to be minimal because Arizona Game and Fish Department regulations state that hunters cannot drive through riparian areas in a manner that causes damage to the habitat. Furthermore, the number of retrieval trips across the Forest is estimated to be 550 total trips in and out on an annual basis, spread over 703,618 acres; few of these trips are anticipated to occur in roundtail chub habitat. The current level of impact is expected to continue if Alternative A is implemented.

Motor Vehicle Use for Dispersed Camping

Dispersed camping using motorized vehicles would continue unrestricted within the Payson and Pleasant Valley ranger districts and in other ranger districts where authorized on approximately 703,618.39 acres. Currently, 425.47 acres of roundtail chub occupied habitat is impacted by dispersed camping using motor vehicles. Motorized use within or adjacent to roundtail chub habitat has the potential to influence behavior, survival, reproduction and distribution of roundtail chub, as well as to alter habitat. The current level of impact is expected to continue if Alternative A is implemented.

Motor Vehicle Use for Fuelwood Gathering

Cross-country motorized travel for fuelwood gathering would continue within the Globe, Payson, Pleasant Valley, and Tonto Basin ranger districts on approximately 1,345,997.76 acres. Currently, 461.26 acres of roundtail chub occupied habitat is impacted by cross-country motorized travel for fuelwood gathering. Motorized use within or adjacent to roundtail chub habitat has the potential to influence behavior, survival, reproduction and distribution of roundtail chub, as well as to alter habitat. The current level of impact is expected to continue if Alternative A is implemented.

Alternative B—Direct and Indirect Effects

Roads and Trails Open to Motorized Travel

Approximately 2,559.57 miles of roads and trails would be open to the public for motorized travel if this alternative was implemented. There would be approximately 8.64 miles of open roads and motorized trails (with a road density of 0.92 miles per square mile) within roundtail chub occupied habitat on the Forest under this alternative. This would be a reduction in the amount of roads and motorized trails open to the public in roundtail chub occupied habitat and would be beneficial to the roundtail chub by decreasing access near riparian zones, reducing sedimentation into streams, and reducing the potential spread of nonnative aquatic organisms and diseases.

Areas Designated for Motor Vehicle Use

Cross-country motorized use would be eliminated forestwide if Alternative B was implemented. No roundtail chub occupied habitat would be affected by cross-country motorized use. This would be a reduction in authorized cross-country motorized use within roundtail chub occupied habitat, and would benefit the species by decreasing access near riparian zones, reducing sedimentation into streams, and reducing the potential spread of nonnative aquatic organisms and diseases.

Motor Vehicle Use for Big Game Retrieval

Motorized big game retrieval would be eliminated forestwide if Alternative B was implemented. No roundtail chub occupied habitat would be affected by motorized big game retrieval. This would be a reduction in motorized big game retrieval within roundtail chub occupied habitat, and would benefit the species by decreasing access near riparian zones, reducing sedimentation into streams, and reducing the potential spread of nonnative aquatic organisms and diseases.

Motor Vehicle Use for Dispersed Camping

Dispersed camping using motor vehicles would be restricted to 414 designated sites, impacting approximately 65.45 acres if this alternative was implemented. Approximately 0.05 acres of roundtail chub occupied habitat would be impacted by dispersed camping using motor vehicles under this alternative. This would be a major reduction in dispersed camping within the Forest. This would be beneficial to the roundtail chub by decreasing access near riparian zones, reducing sedimentation into streams, and reducing the potential spread of nonnative aquatic organisms and diseases.

Motor Vehicle Use for Fuelwood Gathering

Cross-country motorized travel for fuelwood gathering would be permitted within 300 feet of a road in the Globe, Payson, Pleasant Valley, and Tonto Basin ranger districts on approximately 132,568.44 acres. Approximately 61.78 acres of roundtail chub occupied habitat would be impacted by fuelwood gathering using motor vehicles under this alternative. This would be a major reduction in cross-country motorized travel for fuelwood gathering within the Forest. This would be beneficial to the roundtail chub by decreasing access near riparian zones, reducing sedimentation into streams, and reducing the potential spread of nonnative aquatic organisms and diseases.

Alternative C—Direct and Indirect Effects

Roads and Trails Open to Motorized Travel

Approximately 3,569.52 miles of roads and trails would be open to the public for motorized travel if this alternative was implemented. There would be approximately 12.19 miles of open roads and motorized trails (with a road density of 1.29 miles per square mile) within roundtail chub occupied habitat on the Forest under this alternative. This would be a reduction in the amount of roads and motorized trails open to the public in roundtail chub occupied habitat, and would be beneficial to the species by decreasing access near riparian zones, reducing sedimentation into streams, and reducing the potential spread of nonnative aquatic organisms and diseases.

Areas Designated for Motor Vehicle Use

Motorized cross-country travel would be restricted to 6,790.37 acres in designated areas at Bartlett Lake (Cave Creek Ranger District), Golf Course (Globe Ranger District), Roosevelt Lake (Tonto Basin Ranger District), and Sycamore (Mesa Ranger District) and tot lots if this alternative is implemented. No roundtail chub occupied habitat would be impacted by motorized cross-country travel under this alternative. This would be a slight increase in authorized cross-country motorized use within roundtail chub occupied habitat on the Forest.

Motor Vehicle Use for Big Game Retrieval

Motorized big game retrieval would be allowed within 1 mile of roads and motorized trails, impacting approximately 1,293,178.12 acres if this alternative is implemented. Approximately 263.93 acres of roundtail chub occupied habitat would be impacted by motorized big game retrieval under this alternative. This would be a decrease in authorized motorized big game retrieval within roundtail chub occupied habitat on the Forest. This would be beneficial to the roundtail chub by decreasing access near riparian zones, reducing sedimentation into streams, and reducing the potential spread of nonnative aquatic organisms and diseases. Any effects to habitat are expected to be minimal because Arizona Game and Fish Department regulations state that hunters cannot drive through riparian areas in a manner that causes damage to the habitat. Furthermore, the number of retrieval trips across the Forest is estimated to be 209 total trips in and out on an annual basis, spread over 1,293,178 acres; few of these trips are anticipated to occur in roundtail chub habitat.

Motor Vehicle Use for Dispersed Camping

Dispersed camping using motor vehicles would be restricted to areas within 100 feet of roads and motorized trails, impacting approximately 91,391.29 acres if this alternative is implemented. Approximately 51.85 acres of roundtail chub occupied habitat would be impacted by dispersed camping using motor vehicles under this alternative. This would be a decrease in dispersed camping using motor vehicles within roundtail chub occupied habitat on the Forest. This would be beneficial to the roundtail chub by decreasing access near riparian zones, reducing sedimentation into streams, and reducing the potential spread of nonnative aquatic organisms and diseases.

Motor Vehicle Use for Fuelwood Gathering

Cross-country motorized travel for fuelwood gathering would be permitted within 300 feet of a road in the Globe, Payson, Pleasant Valley, and Tonto Basin ranger districts on approximately 161,784.64 acres. Approximately 76.78 acres of roundtail chub occupied habitat would be impacted by fuelwood gathering using motor vehicles under this alternative. This would be a major reduction in cross-country motorized travel for fuelwood gathering within roundtail chub occupied habitat on the Forest, and would benefit the species by decreasing access near riparian zones, reducing sedimentation into streams, and reducing the potential spread of nonnative aquatic organisms and diseases.

Alternative D—Direct and Indirect Effects

Roads and Trails Open to Motorized Travel

Approximately 4,859.34 miles of roads and trails would be open to the public for motorized travel if this alternative was implemented. There would be approximately 16.68 miles of open roads and motorized trails (with a road density of 1.77 miles per square mile) within roundtail chub occupied habitat on the Forest under this alternative. This would be a reduction in the amount of roads and motorized trails open to the public in roundtail chub occupied habitat, and would benefit the species by decreasing access near riparian zones, reducing sedimentation into streams, and reducing the potential spread of nonnative aquatic organisms and diseases.

Areas Designated for Motor Vehicle Use

Motorized cross-country travel would be restricted to 6,790.37 acres in designated areas at Bartlett Lake (Cave Creek Ranger District), Golf Course (Globe Ranger District), Roosevelt Lake (Tonto Basin Ranger District), and Sycamore (Mesa Ranger District) and tot lots if this alternative is implemented. No roundtail chub occupied habitat would be impacted by motorized cross-country travel under this alternative.

Motor Vehicle Use for Big Game Retrieval

Motorized big game retrieval would be allowed within 1 mile of roads and motorized trails, impacting approximately 2,068,208.36 acres if this alternative is implemented. Approximately 1,929.91 acres of roundtail chub occupied habitat would be impacted by motorized big game retrieval under this alternative. This would be an increase in authorized motorized big game retrieval within roundtail chub occupied habitat on the Forest, and could result in additional impacts to the species by decreasing access near riparian zones, reducing sedimentation into streams, and reducing the potential spread of nonnative aquatic organisms and diseases. However,

any effects to habitat are expected to be minimal because Arizona Game and Fish Department regulations state that hunters cannot drive through riparian areas in a manner that causes damage to the habitat. Furthermore, the number of retrieval trips across the Forest is estimated to be 550 total trips in and out on an annual basis, spread over 2,068,208 acres; few of these trips are anticipated to occur in roundtail chub habitat.

Motor Vehicle Use for Dispersed Camping

Dispersed camping using motor vehicles would be restricted to areas within 300 feet of roads and motorized trails, impacting approximately 336,037.85 acres if this alternative is implemented. Approximately 390.83 acres of roundtail chub occupied habitat would be impacted by dispersed camping using motor vehicles under this alternative. This would be a decrease in dispersed camping using motor vehicles within roundtail chub habitat on the Forest, and would benefit the species by decreasing access near riparian zones, reducing sedimentation into streams, and reducing the potential spread of nonnative aquatic organisms and diseases.

Motor Vehicle Use for Fuelwood Gathering

Cross-country motorized travel for fuelwood gathering would continue unrestricted in areas currently permitted for fuelwood gathering, impacting approximately 1,345,997.76 acres. Approximately 461.26 acres of roundtail chub occupied habitat would be impacted by cross-country motorized travel for fuelwood gathering under this alternative. Because there is no change from Alternative A, the current level of impact is expected to continue if this alternative is implemented.

Morafka's Desert Tortoise

Morafka's desert tortoise inhabits rocky slopes and bajadas of Mojave and Sonoran desert scrub habitats at elevations ranging from 500 to 5,300 feet.

Morafka's desert tortoise occurs on Tonto National Forest in Cave Creek, Globe, and Tonto Basin ranger districts.

Alternative A—Direct and Indirect Effects

Roads and Trails Open to Motorized Travel

Approximately 4,958.58 miles of roads and no trails would be open to the public for motorized travel if this alternative was implemented. Currently, there are approximately 47.49 miles of open roads and motorized trails (with a road density of 1.60 miles per square mile) within Morafka's desert tortoise occupied habitat on the Forest. Current condition would continue if Alternative A was implemented, so no new effects would occur.

Areas Designated for Motor Vehicle Use

Cross-country motorized travel would continue unrestricted within the Payson and Pleasant Valley ranger districts and in other ranger districts where authorized on approximately 703,618.39 acres. Currently, no Morafka's desert tortoise occupied habitat is impacted by cross-country motorized travel. Motorized use within or adjacent to Morafka's desert tortoise habitat has the potential to influence behavior, survival, reproduction and distribution of Morafka's desert

tortoise, as well as to alter habitat. The current level of impact is expected to continue if Alternative A is implemented.

Motor Vehicle Use for Big Game Retrieval

Cross-country motorized travel for big game retrieval would continue unrestricted within the Payson and Pleasant Valley ranger districts and in other ranger districts where authorized on approximately 703,618.39 acres. Currently, no Morafka's desert tortoise occupied habitat is impacted by motorized big game retrieval. Motorized use within or adjacent to Morafka's desert tortoise habitat has the potential to influence behavior, survival, reproduction and distribution of Morafka's desert tortoise, as well as to alter habitat. The number of retrieval trips across the Forest is estimated to be 550 total trips in and out on an annual basis, spread over 703,618 acres; none of these trips are anticipated to occur in Morafka's desert tortoise habitat. The current level of impact is expected to continue if Alternative A is implemented.

Motor Vehicle Use for Dispersed Camping

Dispersed camping using motorized vehicles would continue unrestricted within the Payson and Pleasant Valley ranger districts and in other ranger districts where authorized on approximately 703,618.39 acres. Currently, no Morafka's desert tortoise occupied habitat is impacted by dispersed camping using motor vehicles. Motorized use within or adjacent to Morafka's desert tortoise habitat has the potential to influence behavior, survival, reproduction and distribution of Morafka's desert tortoise, as well as to alter habitat. The current level of impact is expected to continue if Alternative A is implemented.

Motor Vehicle Use for Fuelwood Gathering

Cross-country motorized travel for fuelwood gathering would continue within the Globe, Payson, Pleasant Valley, and Tonto Basin ranger districts on approximately 1,345,997.76 acres. Currently, 224.00 acres of Morafka's desert tortoise occupied habitat is impacted by cross-country motorized travel for fuelwood gathering. Motorized use within or adjacent to Morafka's desert tortoise habitat has the potential to influence behavior, survival, reproduction and distribution of Morafka's desert tortoise, as well as to alter habitat. The current level of impact is expected to continue if Alternative A is implemented.

Alternative B—Direct and Indirect Effects

Roads and Trails Open to Motorized Travel

Approximately 2,559.57 miles of roads and trails would be open to the public for motorized travel if Alternative B was implemented. There would be approximately 23.35 miles of open roads and motorized trails (with a road density of 0.79 miles per square mile) within Morafka's desert tortoise occupied habitat on the Forest under this alternative. This would be a reduction in the amount of roads and motorized trails open to the public in Morafka's desert tortoise occupied habitat, and would benefit the species by reducing road densities through habitat, reducing barriers to movement, and allowing for increased movement.

Areas Designated for Motor Vehicle Use

Cross-country motorized use would be eliminated forestwide if Alternative B was implemented. No Morafka's desert tortoise occupied habitat would be affected by cross-country motorized use. The level of impact to Morafka's desert tortoise occupied habitat would be the same as current conditions.

Motor Vehicle Use for Big Game Retrieval

Motorized big game retrieval would be eliminated forestwide if Alternative B was implemented. No Morafka's desert tortoise occupied habitat would be affected by motorized big game retrieval. The level of impact to Morafka's desert tortoise occupied habitat would be the same as current conditions.

Motor Vehicle Use for Dispersed Camping

Dispersed camping using motor vehicles would be restricted to 414 designated sites, impacting approximately 65.45 acres if Alternative B was implemented. Approximately 0.18 acres of Morafka's desert tortoise occupied habitat would be impacted by dispersed camping using motor vehicles under this alternative. This would be a slight increase in dispersed camping within Morafka's desert tortoise occupied habitat, with impacts nearly the same as current conditions.

Motor Vehicle Use for Fuelwood Gathering

Cross-country motorized travel for fuelwood gathering would be permitted within 300 feet of a road in the Globe, Payson, Pleasant Valley, and Tonto Basin ranger districts on approximately 132,568.44 acres. Approximately 60.04 acres of Morafka's desert tortoise occupied habitat would be impacted by fuelwood gathering using motor vehicles under Alternative B. This would be a reduction in cross-country motorized travel for fuelwood gathering within Morafka's desert tortoise occupied habitat and would benefit the species by reducing the potential for tortoises to be injured or killed and reducing the potential for motorized vehicles to collapse burrows used by tortoises.

Alternative C—Direct and Indirect Effects

Roads and Trails Open to Motorized Travel

Approximately 3,569.52 miles of roads and trails would be open to the public for motorized travel if this alternative was implemented. There would be approximately 35.44 miles of open roads and motorized trails (with a road density of 1.20 miles per square mile) within Morafka's desert tortoise occupied habitat on the Forest under Alternative C. This would be a reduction in the amount of roads and motorized trails open to the public in Morafka's desert tortoise occupied habitat, and would benefit the species by reducing road densities through habitat, reducing barriers to movement, and allowing for increased movement.

Areas Designated for Motor Vehicle Use

Motorized cross-country travel would be restricted to 6,790.37 acres in designated areas at Bartlett Lake (Cave Creek Ranger District), Golf Course (Globe Ranger District), Roosevelt Lake (Tonto Basin Ranger District), and Sycamore (Mesa Ranger District) and tot lots if this alternative is implemented. Approximately 150.96 acres of Morafka's desert tortoise occupied

habitat would be impacted by motorized cross-country travel under Alternative C. This would be an increase in authorized cross-country motorized use within Morafka's desert tortoise occupied habitat on the Forest and could result in additional impacts to the species by increasing the potential for tortoises to be injured or killed and increasing the potential for motorized vehicles to collapse burrows used by tortoises.

Motor Vehicle Use for Big Game Retrieval

Motorized big game retrieval would be allowed within 1 mile of roads and motorized trails, impacting approximately 1,293,178.12 acres if this alternative is implemented. Approximately 2,442.67 acres of Morafka's desert tortoise occupied habitat would be impacted by motorized big game retrieval under Alternative C. This would be a major increase in authorized motorized big game retrieval within Morafka's desert tortoise occupied habitat on the Forest and could result in additional impacts to the species by increasing the potential for tortoises to be injured or killed and increasing the potential for motorized vehicles to collapse burrows used by tortoises. However, the number of retrieval trips across the Forest is estimated to be 209 total trips in and out on an annual basis, spread over 1,293,178 acres; few of these trips are anticipated to occur in Morafka's desert tortoise habitat.

Motor Vehicle Use for Dispersed Camping

Dispersed camping using motor vehicles would be restricted to areas within 100 feet of roads and motorized trails, impacting approximately 91,391.29 acres if this alternative is implemented. Approximately 770.19 acres of Morafka's desert tortoise occupied habitat would be impacted by dispersed camping using motor vehicles under Alternative C. This would be an increase in dispersed camping using motor vehicles within Morafka's desert tortoise occupied habitat on the Forest and could result in additional impacts to the species by increasing the potential for tortoises to be injured or killed and increasing the potential for motorized vehicles to collapse burrows used by tortoises.

Motor Vehicle Use for Fuelwood Gathering

Cross-country motorized travel for fuelwood gathering would be permitted within 300 feet of a road in the Globe, Payson, Pleasant Valley, and Tonto Basin ranger districts on approximately 161,784.64 acres. Approximately 105.67 acres of Morafka's desert tortoise occupied habitat would be impacted by fuelwood gathering using motor vehicles under Alternative C. This would be a reduction in cross-country motorized travel for fuelwood gathering within Morafka's desert tortoise occupied habitat and would benefit the species by reducing the potential for tortoises to be injured or killed and reducing the potential for motorized vehicles to collapse burrows used by tortoises.

Alternative D—Direct and Indirect Effects

Roads and Trails Open to Motorized Travel

Approximately 4,859.34 miles of roads and trails would be open to the public for motorized travel if this alternative was implemented. There would be approximately 45.11 miles of open roads and motorized trails (with a road density of 1.52 miles per square mile) within Morafka's desert tortoise occupied habitat on the Forest under Alternative D. This would be a slight

reduction in the amount of roads and motorized trails open to the public in Morafka's desert tortoise occupied habitat, with impacts nearly the same as current conditions.

Areas Designated for Motor Vehicle Use

Motorized cross-country travel would be restricted to 6,790.37 acres in designated areas at Bartlett Lake (Cave Creek Ranger District), Golf Course (Globe Ranger District), Roosevelt Lake (Tonto Basin Ranger District), and Sycamore (Mesa Ranger District) and tot lots if this alternative is implemented. Approximately 150.96 acres of Morafka's desert tortoise occupied habitat would be impacted by motorized cross-country travel under Alternative D. This would be an increase in authorized cross-country motorized use within Morafka's desert tortoise occupied habitat on the Forest and could result in additional impacts to the species by increasing the potential for tortoises to be injured or killed and increasing the potential for motorized vehicles to collapse burrows used by tortoises.

Motor Vehicle Use for Big Game Retrieval

Motorized big game retrieval would be allowed within 1 mile of roads and motorized trails, impacting approximately 2,068,208.36 acres if this alternative is implemented. Approximately 12,110.72 acres of Morafka's desert tortoise occupied habitat would be impacted by motorized big game retrieval under Alternative D. This would be a major increase in authorized motorized big game retrieval within Morafka's desert tortoise occupied habitat on the Forest and could result in additional impacts to the species by increasing the potential for tortoises to be injured or killed and increasing the potential for motorized vehicles to collapse burrows used by tortoises. However, the number of retrieval trips across the Forest is estimated to be 550 total trips in and out on an annual basis, spread over 2,068,208 acres; few of these trips are anticipated to occur in Morafka's desert tortoise habitat.

Motor Vehicle Use for Dispersed Camping

Dispersed camping using motor vehicles would be restricted to areas within 300 feet of roads and motorized trails, impacting approximately 336,037.85 acres if this alternative is implemented. Approximately 2,545.10 acres of Morafka's desert tortoise occupied habitat would be impacted by dispersed camping using motor vehicles under Alternative D. This would be a major increase in dispersed camping using motor vehicles within Morafka's desert tortoise occupied habitat on the Forest and could result in additional impacts to the species by increasing the potential for tortoises to be injured or killed and increasing the potential for motorized vehicles to collapse burrows used by tortoises.

Motor Vehicle Use for Fuelwood Gathering

Cross-country motorized travel for fuelwood gathering would continue unrestricted in areas currently permitted for fuelwood gathering, impacting approximately 1,345,997.76 acres. Approximately 224.01 acres of Morafka's desert tortoise occupied habitat would be impacted by cross-country motorized travel for fuelwood gathering under Alternative D. Because there is no change from Alternative A, the current level of impact is expected to continue if this alternative is implemented.

Forest Sensitive Species

Forest sensitive species are those species that are not federally-listed, but the Forest Service is concerned about viability of the species. The goal for forest sensitive species is to prevent the species from becoming threatened or endangered because of Forest Service actions. Table 57 identifies forest sensitive species on the Tonto National Forest.

Table 57: Species Considered Sensitive on the Tonto National Forest

Common Name	Scientific Name
Bat, Allen's lappet-browed	*Idionycteris phyllotis*
Bat, pale townsend's big-eared	*Corynorhinus townsendii pallescens*
Bat, spotted	*Euderma maculatum*
Bat, western red	*Lasiurus blossevillii*
Falcon, American peregrine	*Falco peregrinus anatum*
Flycatcher, sulphur-bellied	*Myiodynastes luteiventris*
Goshawk, northern	*Accipiter gentilis*
Junco, yellow-eyed	*Junco phaeonotus*
Lizard, Bezy's night	*Xantusia bezyi*
Frog, lowland leopard	*Rana yavapaiensis*
Frog, western barking	*Eleutherodactylus augusti cactorum*
Sucker, desert	*Catostomus clarki*
Sucker, Sonora	*Catostomus insignis*
Beetle, Parker's cylloepus riffle	*Cylloepus parkeri*
Caddisfly, a	*Wormaldia planae*
Mayfly, a	*Fallceon eatoni*
Midge, netwing	*Agathon arizonicus*
Springsnail, Fossil	*Pyrgulopsis simplex*
Agave, Hohokam	*Agave murpheyi*
Agave, Tonto basin	*Agave delamateri*
Breadroot, Verde	*Pediomelum verdiensis*
Buckwheat, Ripley wild	*Eriogonum ripleyi*
Bugbane, Arizona	*Cimicifuga arizonica*

Common Name	Scientific Name
Dock, blumer's	*Rumex orthoneurus*
Fleabane, Fish Creek	*Erigeron piscaticus*
Fleabane, Mogollon	*Erigeron anchana*
Groundsel, Toumey	*Packera neomexicana var. toumeyi (=Senecio n. var. t.)*
Mallow, Pima indian	*Abutilon parishii*
Milkwort, Hualapai	*Polygala rusbyi*
Phlox, Arizona	*Phlox amabilis*
Rockdaisy, Fish Creek	*Perityle saxicola*
Rockdaisy, Salt River	*Perityle gilensis var. salensis*
Root, Arizona alum	*Heuchera glomerulata*
Root, Eastwood alum	*Heuchera eastwoodiae*
Sage, Galiuro	*Salvia amissa*
Sandwort, Mt. Dellenbaugh	*Arenaria aberrans*
Sedge, Chihuahuan	*Carex chihuahuensis*
Sedge, Cochise	*Carex ultra (=C.spissa var. ultra)*
Snapdragon, mapleleaf false	*Mabrya acerifolia (=Maurandya a.)*
Vetch, horseshoe deer	*Lotus mearnsii var. equisolensis*
Woodfern, Aravaipa	*Thelypteris puberula var. sonorensis*

Direct and Indirect Effects for all Alternatives

For all of the action alternatives, along with the no action, there is likely to be either no impact to the species—in situations where the habitat would not be effected by the proposed activities—or there may be effects to individuals of the species, but is not likely to result in a trend toward federal listing or loss of viability[110].

Management Indicator Species

The Forest Service is required to maintain viable populations of native and desired non-native species by evaluating a project's effects on selected management indicator species (MIS). Management indicator species are defined as: "Plant and animal species, communities, or special

[110] For a more detailed account of the effects to each species and their habitat, see the Biological Evaluation Report in the project record.

habitats selected for emphasis in planning, and which are monitored during forest plan implementation in order to assess the effects of management activities on their populations and the populations of other species with similar habitat needs which they may represent" (FSM 2620.5).

In order to meet the National Forest Management Act requirement to maintain viable populations of native and desired non-native species, MIS were selected based on a variety of criteria. In general, MIS were selected to serve as barometers of management effects on other species with similar habitat requirements. The Tonto National Forest has 29 MIS, which consist mostly of birds, to represent 30 habitat features. This section is a Forest level analysis composed of a description of current habitat and population trends of each MIS population, an interpretation of changes in populations and habitat trends since implementation of the 1985 Tonto National Forest Plan (Forest Plan) in relation to potential affects to MIS from implementation of the designated system of roads and trails. A forestwide assessment entitled *Management Indicator Species Status Report* (Klein *et al.,* 2005) summarizes current knowledge of population and habitat trends for MIS on the Tonto National Forest.

Affected Environment

Because currently there is no geographically based vegetation data from the original 1985 Forest Plan, it is difficult to compare the project's impact to the vegetation layer developed for implementation of the Forest Plan. Consequently, the most recent PNVT GIS layer was utilized to determine the project's impact on MIS resources.

Table 58 includes all 29 MIS, the habitat features they represent, the relationship between the vegetation types used in the 1985 Forest Plan and PNVT, and the current habitat and population trends on the Tonto National Forest[111] (Klein *et al.,* 2005).

[111] For a more detailed account for each species, their habitat, distribution, and the habitat and population trend, see the Management Indicator Species report in the project record.

Table 58: Habitat Types and Trends for Management Indicator Species on the Tonto National Forest

Species	Indicator of	Related Vegetation Type in Current Forest Plan	Vegetation Type Used in Current Analysis	Acres of PNVT on Forest analyzed*	Acres of Vegetation Type on Forest	Habitat Trend	Population Trend
Elk (*Cervus elaphus*)	General forest conditions	Ponderosa pine, mixed conifer	Ponderosa Pine Forest (Mild), Mixed Conifer (with Aspen)	308,607	308, 619	Static	Stable
Turkey (*Meleagris gallopavo*)	Vertical diversity – forest mix	Ponderosa pine, mixed conifer	Ponderosa Pine Forest (Mild), Mixed Conifer (with Aspen)	308,607	308,619	Static	Stable
Pygmy Nuthatch (*Sitta pygmaea*)	Old growth pine	Ponderosa pine, mixed conifer	Ponderosa Pine Forest (Mild), Mixed Conifer (with Aspen)	308,607	308,619	Static	Decrease
Violet-green Swallow (*Tachycineta thalassina*)	Cavity-nesting habitat	Ponderosa pine, mixed conifer	Ponderosa Pine Forest (Mild), Mixed Conifer (with Aspen)	308,607	308,619	Static	Decrease
Western Bluebird (*Sialia mexicana*)	Forest openings	Ponderosa pine, mixed conifer	Ponderosa Pine Forest (Mild), Mixed Conifer (with Aspen)	308,607	308,619	Static	Stable
Hairy Woodpecker (*Picoides villosus*)	Snags	Ponderosa pine, mixed conifer	Ponderosa Pine Forest (Mild), Mixed Conifer (with Aspen)	308,607	308,619	Static	Stable
Northern Goshawk (*Accipiter gentilis*)	Vertical diversity	Ponderosa pine, mixed conifer	Ponderosa Pine Forest (Mild), Mixed Conifer (with Aspen)	308,607	308,619	Static	Decrease
Abert's Squirrel (*Sciurus arizonensis*)	Successional stages of pine	Ponderosa pine, mixed conifer	Ponderosa Pine Forest (Mild), Mixed Conifer (with Aspen)	308,607	308,619	Static	Decrease
Ash-throated Flycatcher (*Myiarchus tyrannulus*)	Ground cover	Pinyon-juniper (PJ) and chaparral	PJ Chaparral, PJ Grassland, Madrean Encinal Woodland, Interior Chaparral	1,347,860	1,347,919	Static	Stable

Species	Indicator of	Related Vegetation Type in Current Forest Plan	Vegetation Type Used in Current Analysis	Acres of PNVT on Forest analyzed*	Acres of Vegetation Type on Forest	Habitat Trend	Population Trend
Gray Vireo (*Vireo vicinior*)	Tree density	Pinyon-juniper and chaparral	PJ Chaparral, PJ Grassland, Madrean Encinal Woodland, Interior Chaparral	1,347,860	1,347,919	Static	Decrease
Townsend's Solitaire (*Myadestes townsendi*)	Juniper berry production	Pinyon-juniper and chaparral	PJ Chaparral, PJ Grassland, Madrean Encinal Woodland, Interior Chaparral	1,347,860	1,347,919	Static	Stable
Juniper (Plain) Titmouse (*Beaolophus ridgwayi*)	General woodland conditions	Pinyon-juniper and chaparral	PJ Chaparral, PJ Grassland, Madrean Encinal Woodland, Interior Chaparral	1,347,860	1,347,919	Static	Decrease
Northern (Common) Flicker (*Colaptes auratus*)	Snags	Pinyon-juniper and chaparral	PJ Chaparral, PJ Grassland, Madrean Encinal Woodland, Interior Chaparral	1,347,860	1,347,919	Static	Stable
Spotted Towhee (*Pipilo maculates*)	Successional stages of pinyon-juniper	Pinyon-juniper and chaparral	PJ Chaparral, PJ Grassland, Madrean Encinal Woodland, Interior Chaparral	1,347,860	1,347,919	Static	Stable
Spotted Towhee (*Pipilo maculates*)	Shrub density	Pinyon-juniper and chaparral	PJ Chaparral, PJ Grassland, Madrean Encinal Woodland, Interior Chaparral	1,347,860	1,347,919	Static	Stable
Black-chinned Sparrow (*Spizella atrogularis*)	Shrub diversity	Pinyon-juniper and chaparral	PJ Chaparral, PJ Grassland, Madrean Encinal Woodland, Interior Chaparral	1,347,860	1,347,919	Static	Stable
Savannah Sparrow (*Passerculus sandwichen-sis*)	Grass species diversity	Desert grassland	Semidesert Grassland	394,196	316,894	Upward/ static	Stable

Species	Indicator of	Related Vegetation Type in Current Forest Plan	Vegetation Type Used in Current Analysis	Acres of PNVT on Forest analyzed*	Acres of Vegetation Type on Forest	Habitat Trend	Population Trend
Horned Lark (*Eremophila alpestris*)	Vegetation aspect	Desert grassland	Semidesert Grassland	394,196	316,894	Upward/ static	Decrease
Black-throated Sparrow (*Amphispiza bilineata*)	Shrub diversity	Desert scrub	Desert Communities	725,991	727,127	Downward/ static	Stable
Canyon Towhee (*Pipilo fuscus*)	Ground cover	Desert scrub	Desert Communities	725,991	727,127	Downward/ static	Decrease
Bald Eagle (*Halaeetus leucocepha-lus*)	General riparian	Low elevation riparian	Cottonwood Willow Riparian Forest	41,229	41,247	No change	Stable
Bell's Vireo (*Vireo bellii*)	Well-developed understory	Low elevation riparian	Cottonwood Willow Riparian Forest	41,229	41,247	No change	Decrease
Summer Tanager (*Piranga rubra*)	Tall, mature trees	Low elevation riparian	Cottonwood Willow Riparian Forest	41,229	41,247	No change	Decrease
Hooded Oriole (*Icterus cucullatus*)	Medium-sized Trees	Low elevation riparian	Cottonwood Willow Riparian Forest	41,229	41,247	No change	Stable
Hairy Woodpecker (*Picoides villosus*)	Snags, cavities	High elevation Riparian	Mixed Broadleaf Deciduous Riparian Forest	17,731	17,732	No change	Stable
Arizona Gray Squirrel (*Sciurus arizonensis*)	General riparian	High elevation Riparian	Mixed Broadleaf Deciduous Riparian Forest	17,731	17,732	No change	Stable
Warbling Vireo (*Vireo gilvus*)	Tall overstory	High elevation Riparian	Mixed Broadleaf Deciduous Riparian Forest	17,731	17,732	No change	Stable
Western Wood Pewee (*Contopus sordidulus*)	Medium overstory	High elevation Riparian	Mixed Broadleaf Deciduous Riparian Forest	17,731	17,732	No change	Decrease

Species	Indicator of	Related Vegetation Type in Current Forest Plan	Vegetation Type Used in Current Analysis	Acres of PNVT on Forest analyzed*	Acres of Vegetation Type on Forest	Habitat Trend	Population Trend
Common Black Hawk (*Buteogallus anthracinus*)	Riparian streamside	High elevation Riparian	Mixed Broadleaf Deciduous Riparian Forest	17,731	17,732	No change	Decrease
Macro-invertebrates	Water quality	Temporary riparian, marsh, littoral vegetation	Water	28,989	N/A†	N/A	N/A

*PNVT acres analyzed do not include private lands located within the Tonto NF boundary but do include designated roadless and wilderness areas.
^NA =If there is no data for a particular PNVT for either an element or an alternative then there is no action occurring within that area

Potential natural vegetation categories are coarse-scale groupings of ecosystem types that share similar geography, vegetation, and historic ecosystem disturbances such as fire, drought, and native herbivory. The potential natural vegetation type GIS layer is considered the best available layer to reflect both the current wildlife habitat conditions and the expected vegetation cover type for the life of this project. Although there may be areas that have burned to alter the potential natural vegetation layer, most of the potential natural vegetation layer accurately reflects the current vegetation conditions.

Environmental Effects

Methodology for Analysis

Analysis of project effects for MIS focuses on habitat changes within potential natural vegetation types (PNVT), which are MIS associated habitats. Achievement of the future expected habitat conditions would be indicated by the maintenance or increased occurrence and density of MIS across the forest.

Data Limitations and Inaccuracies

The PNVT analysis was originally conducted in 2010 as a basis for the preparation of an Environmental Assessment. During the continuing analyses there may have been assumptions made that are not fully documented and embedded in all analyses in the PNVT and species data layers. For instance in not all locations do the boundaries of the PNVT layer match the forest boundary data layer. Additionally during the analysis timeline riparian areas, water bodies, and perennial streams layers have been updated. As the acreage and boundaries of these vegetation types shifted, ecotones between adjacent upland vegetation types may not accurately reflect this realignment in all cases. As an example, data discrepancies of revised acres the ponderosa pine/mixed conifer PNVT was estimated to be 283,204 acres in 1985 for implementation of the Tonto National Forest Plan. During data analyses conducted for the 2005 Management Indicator Status Report the 1985 ponderosa pine/mixed conifer PNVT was revised to an estimated 423,241 acres and the 2005 ponderosa pine/mixed conifer PNVT acres estimated to be 421, 138 acres, depicting a stable trend. During the 2010 revision of the PNVT data base, the ponderosa pine/mixed conifer PNVT was estimated at 308, 607.67 acres. Analyses estimated acres of ponderosa pine/mixed conifer PNVT in Alternative A that would be designated open to motorized cross country travel is at 515, 985.69 acres or 167 percent larger than the estimated forest wide ponderosa pine/mixed conifer PNVT acres. These data inconsistencies make direct comparison of habitat changes since implementation of the Forest Plan inseparable from enhancements in GIS and other data collection mechanisms.

For the purposes of determining effects to MIS resources from implementation of the Tonto National Forest Travel Management Plan it is assumed the 2005 revised MIS Status Report to be the most current knowledge of population and habitat trends for MIS resources. For comparison of alternatives it is assumed that the 2010 PNVT forest wide PNVT data to be most current. All alternatives are compared to the forest wide PNVT acre estimates. In instances where the acres analyzed for an alternative is greater than forest wide acres a reduction in acres proposed for each analysis factor and therefore percent of forest wide acres, is considered a have beneficial effect to MIS resources. As an example, forest wide acres of ponderosa pine/mixed conifer PNVT acres that would be open to motorized cross-country travel to be 308,606.67 acres while Alternative A analyses 515,985.69 (167 percent) acres as open to motorized cross-country travel.

Alternative C analyses 492,034.70 (159 percent) of forest wide acres as open to motorized cross-country travel. Alternative C is considered to have a greater beneficial effect to MIS resources than Alternative A due to acres and percent of forest wide acres decreases under Alternative C.

The data reviewed and utilized in this analysis is the best available data the Tonto National Forest currently has. GIS data and habitat modeling conducted for this analysis is a representation of what is actually occurring on the ground and as such, there is always the likelihood of error.

Direct and Indirect Effects—All Alternatives

Some level of impact is occurring to MIS resources wherever motorized vehicle travel is allowed. Factors such as habitats and species present, density of species, location of travel in relation to important habitats, time of year or even time of day, amount of vehicle travel, and a myriad of other factors could apply in determining what and to what extent impacts are occurring.

Vehicle use can affect MIS species through: 1) loss of habitat due to conversion of native vegetation to a particular road/trail surface (paved, gravel, dirt); 2) fragmentation of habitats due to a road and trail system development; 3) interruption in migratory patterns of MIS species to reach breeding habitat or winter range habitat; and 4) lack of habitat use by MIS species due to disturbance caused by vehicle use (Gucinski *et al.*, 2000).

Under any alternative the direct loss of habitat from the conversion of native vegetation to roads and trails would generally be considered minor. Currently, the Tonto National Forest has management jurisdiction for approximately 5,000 miles of system roads spread across the approximate 4,632 square miles of forest system lands. Currently road density is approximately 1.07 miles of forest road per square mile of forest system lands. While the totals of direct habitat loss are considered to be relatively low and overall watersheds and hydrologic regimes would be considered as substantially intact (Potyondy and Geier, 2011), MIS species may avoid using the undisturbed habitat adjacent to the road due to disturbance while the road is in use (Rowland *et al.*, 2005).

Each alternative includes permit zone(s), which are a discrete area where effects from OHV use could negatively impact resources, but complete exclusion to the area by OHV use would not be desirable. In a permit zone, cross-country travel is not allowed. Instead, motorized vehicle users are required to obtain a permit to access the area, which would have locked gates and barriers restricting non-permitted access. The potential effects to MIS species are assessed by the addition or decommissioning of roads within each specific PNVT within each permit zone in relation to the total miles of designated road within each permit zone in total with all designated roads. This would not have a singular unique effect due to the permit zone designation. Currently there is one permit zone on the Tonto National Forest.

Each alternative would allow for some degree of vehicle use for fuelwood gathering for personal use. The Tonto National Forest generates 400,000 to 500,000 cubic feet of available dead and down fuelwood annually. The forest allows for the harvest of dead standing juniper and cypress up to 18 inch diameter at the base and dead standing pine up to 12 inch diameter at 4.5 feet above the ground annually. It is expected that snags and dead and downed wood would be found mostly in the forested PNVTs.

Available fuelwood is the result of both natural occurring events and Tonto National Forest management activities. Natural events or disturbances that result in the creation of fuelwood

include but are not limited to wildfire, insect outbreaks, droughts, and heavy snowfalls. These typically occur to varying degrees across the forest in an extremely random pattern. Areas affected can range from small scattered patches to large landscape scales. Resulting fuel loads are also extremely variable, ranging from high concentrations of mortality and breakage to very light and scattered accumulations.

Management activities that generate available fuelwood include prescribed fire, range improvement cuttings, timber stand improvement cuttings, and restoration activities. After these treatments are completed, slash and associated breakage becomes available for fuelwood gathering. Treatment areas range in size from 50 to 1,000 acres or more in size. Treatments are usually followed several years later by prescribed fire to reduce the increased fuel load to more manageable levels reducing the intensity of the prescribed fire making it easier to manage. Access to fuelwood gathering areas is currently provided by both system and non-system roads and often extends for great distances away from roads and trails.

Fuelwood gathering during the spring and summer is concentrated near system roads where concentrations of fuelwood can be seen from the vehicle. Available fuelwood in these areas can quickly become depleted requiring fuelwood gatherers to scout the surrounding terrain to find wood. As areas where disturbances have occurred are located, fuelwood gatherers begin to move off roads and trails to take advantage of these concentrations.

Under Alternatives A and D fuelwood gathering practice would continue, allowing personal use fuelwood gatherers to spread out across the permitted areas to obtain their wood. Alternatives B and C would restrict the use of motorized vehicles for fuelwood gathering to within 300 feet on both sides of designated roads and trails. This can lead to concentrated use in some areas, effectively removing all available dead and down and dead standing fuelwood. In areas further away from the roads and trails, concentrations of dead and down fuel would start to accumulate over time, increasing the risk of uncharacteristically intense fire behavior. Historically, forest system roadsides are mostly cleared of dead and down fuelwood each year by late August, five months into the nine month season, coinciding with the primary nesting season of neotropical birds. This analysis assumes that wood cutters will rarely physically haul wood over 100 feet from a vehicle and frequently use old skid trails or gaps in the forest to work their vehicles into the forest a considerable distance where they can load wood directly into their vehicles. While most of the wood cutters that receive a fuelwood permit would stay within 300 feet of designated routes, the more experienced cutters rarely cut near the road, and regularly venture beyond 300 feet. A conservative estimate of these wood cutters would be 30 percent of regular permit holders or approximately 300 individuals.

All alternatives would include some allowances for the use of motorized vehicle for dispersed camping. Use of motor vehicles off forest system roads to access campsites is a popular activity on the Tonto National Forest. In some instances, forest visitors park their vehicles at trailheads or roadside locations and hike to their camping spots. Others will drive cross-country to their desired camping spot, often with a recreational vehicle or camping trailer. Frequently-used dispersed campsites, where evidence of past use exists, are located along both forest system roads and unauthorized routes throughout the Tonto National Forest.

Currently, the distance traveled from existing roads to frequently-used dispersed campsites can vary depending on the terrain and proximity to water and shade trees. Based on knowledge from Forest Service law enforcement officers and Arizona Game and Fish Department Wildlife

Managers, most of these dispersed campsites are within 300 feet of an existing road, including sites on the four ranger districts where cross-country travel is currently prohibited. On the northern two ranger districts (Payson and Pleasant Valley), driving cross-country has been permitted regardless of the distance from an existing road. On the four southern ranger districts (Cave Creek, Globe, Mesa, and Tonto Basin), driving off road is prohibited unless posted open. Fuelwood gathered for campfires within the immediate areas of dispersed campsites may reduce logs and snags. Prolonged and persistent pedestrian and vehicle presence at dispersed campsite could reduce grass and shrub understory vegetation and prevent natural vegetation regeneration.

Each alternative would include some level of motorized vehicle use for big game retrieval. Within motorized big game retrieval corridors, hunters who have legally killed particular game species are allowed to travel off-road from a designated public route to retrieve their harvest. Several considerations determine where and how many acres are potentially impacted by motorized big game retrieval: 1) where hunters are allowed to hunt (game management units); 2) proposed and existing public roads; 3) the distance hunters would be allowed to drive cross-country to pick-up their harvest; and 4) elk, bear, mule deer and whitetail deer habitat within game management units where big game hunts are authorized. There are portions of seven game management units totaling 2,883,758 acres within the Tonto National Forest. Elk hunts are permitted in four game management units with open hunting seasons beginning in August with various specific hunts occurring through December. These game management units are comprised of 2,242,458 acres with elk habitat located primarily in the northern portions of the game management units. Mule deer and whitetail deer hunts occur in all seven game management units with archery hunts authorized in August and December and firearms seasons occurring in late October through portions of November and December. It is assumed that deer hunters would hunt in essentially all habitats within the game management units. Bear hunts are permitted in five game management units comprised of 2,844,394 acres with black bear habitat located primarily in the northern portions of the game management units. Bear hunts could occur in August through December of each year.

Arizona Game and Fish Department has estimated the number of annual, motorized harvests for these four big game animals under consideration for motorized big game retrieval for each action alternative. These estimates rely on the assumption that 30 percent of successful hunters would use their motor vehicle to retrieve their harvest. Arizona Game and Fish Department estimates the total number of trips annually would be 193 for elk and 15 for bear, 135 for mule deer and 206 for whitetail deer. The general hunting season for elk, bear, mule deer, and whitetail deer occurs from August to December. Consequently, motorized big game retrieval is not anticipated to measurably disturb breeding birds, which nesting occurs generally from April through August each year. It is also anticipated that a hunter would make one to two passes through a route to retrieve big game. One to two passes is not expected to destroy many annual plants. Webb (1983) found that after a single pass, annual plants on an OHV route remained intact, but most were destroyed after ten passes. It is expected that perennial plants are more robust and are likely to also sustain the one to two passes that a hunter would make to retrieve their harvest. The habitat will likely recover from one to two passes from a motorized vehicle.

Disturbance related to travel management is largely a result of human intrusion and modification of existing habitats. Disturbance may be in the form of noise, human presence, or anything that causes displacement, avoidance, stress or other behavioral responses such as chainsaw noise, gunshots that create a startle response, consistent intrusions that alter foraging patterns, temporary intrusions that cause avoidance. It can also include disturbance to habitat features or loss of

habitat for some species, such as occurs when rutting in wet meadows changes hydrology, compacts soils or injures or kills individual plants or animals. Roads and trails facilitate human access into wildlife habitats. People who use open routes, habitat adjacent to open routes, and cross-country travel areas could incidentally trample or dislodge nestlings or eggs of some breeding bird species that nest on the ground or shrubs. Alternatives that have more closed routes, fewer open routes, and smaller cross-country travel areas are expected to have less direct impact to MIS species. Open routes can lead to more fuelwood harvesting, which could decrease the amount of dead and downed wood affecting cavity nesting habitat and habitat for raptor prey species. Human presence, and human-created unfamiliar or proximate noise disturbance, may displace MIS species from preferred habitats. MIS species could be exposed to high levels of traffic noise, visual disturbance from passing vehicles, and the risk of collision with motorized vehicles. Traffic noise can reduce the distance over which acoustic signals such as song can be detected, an effect known as acoustic interference or masking (Parris and Schneider, 2008). Consequently, less motorized vehicle use means fewer direct impacts (disturbances and mortality) and indirect impacts (habitat degradation due to camping and wood gathering).

Indirect effects of motorized vehicle travel include such road use effects as habitat fragmentation, traffic causing vertebrate avoidance or road kill; and additional facilitation effects, such as over hunting, which can increase with road access (Gucinski *et al.*, 2000). Creating roads and trails (of any kind) diminishes habitat connectivity, increases the proportion of edge to interior habitat, and decreases patch size of habitats including OHV routes, represent a principal factor contributing to habitat fragmentation at various scales. Both paved roads and OHV routes—ranging from 4-lane paved highways to two-track routes less than 3 meters (3.3 yards) wide—that separate once-continuous habitat can disrupt the movement and dispersal of many wildlife species between and within habitats (Reed *et al.*, 1996; Forman *et al.*, 2003; Meffe and Carroll, 1997; Swihart and Slade, 1984; Brody and Pelton, 1989; Yanes *et al.*, 1995; Lovallo and Anderson, 1996; Clevenger, 1998; Forman and Alexander, 1998; Jackson and Griffen, 1998, all as cited in Ouren *et al.*, 2007).

The measurement of disturbance impacts to MIS species resulting from human intrusion is driven by the frequency and location of human activity. The presence of roads and trails does not necessarily correspond to the level of recreational human use. For this analysis, the action alternatives with fewer roads and trails open to motorized use would likely concentrate human disturbance impacts into smaller areas, which could increase disturbance impacts in those areas (especially in popular camping areas or on motorized trails) but would decrease disturbance impacts in other areas of the Tonto National Forest.

Designated motorized vehicle use corridors of 300 feet from roads for dispersed camping, big game retrieval, and personal use fuelwood gathering would increase the direct and indirect disturbance and habitat fragmentation effects of roads, as discussed above. Assuming a relatively constant number of forest users, fewer miles of designated corridors would mean more concentrated areas of camping, fuelwood gathering, and big game retrieval and a continued proliferation of dispersed campsites in those areas. More miles of designated corridors would mean campers; fuel wood gatherers and big game retrieval could be more widely dispersed. Therefore, the magnitude of impacts from motorized vehicle corridors would depend in part on the miles or acres of designated corridors under each alternative. Motorized vehicle corridors would have similar effects as open roads, motorized trails, and open areas including disturbance and intrusion into habitat, possibly reducing areas of secure habitat for some MIS species.

In general, those alternatives with more miles of open roads and motorized trails would create more opportunity for adverse impacts to MIS species from roads and road use. These impacts include human disturbance caused by noise and physical intrusion. Impacts to hunting may occur due to increased hunter access further into game habitat on open roads and trails. Harvest of down logs and snags by Forest visitors is anticipated to increase at higher road densities.

The effects on MIS species are primarily from indirect actions incidental to the route (camping, fuelwood gathering) because the effects (existing route prism) have already occurred. The exceptions are those from motorized big game retrieval and fuelwood gathering routes where new routes are created.

Cumulative Effects—All Alternatives

Past, present and reasonably foreseeable actions that are relevant to MIS resources are described below for all alternatives. The cumulative effects analysis area for MIS resources is the Forest boundary.

This cumulative effects analysis does not attempt to quantify the effects of past human actions by adding up all prior actions on an action-by-action basis. In order to understand the contribution of past actions to the cumulative effects of the proposed action and alternatives, this analysis relies on current environmental conditions as a proxy for the impacts of past and present actions. This is because existing conditions reflect the aggregate impact of all prior human actions and natural events that are difficult to quantify that have affected the environment and might contribute to cumulative effects. Existing conditions are a result of past and present impacts to wildlife resources.

This analysis focuses on the cumulative impact of those reasonably foreseeable actions that are relevant in assessing the impacts of designating a system of motorized use on MIS and their habitats. Although almost all forest and private or other governmental actions may have some relevancy, this analysis specifically considers those that are most relevant toward resulting in a cumulative impact to MIS and their habitats.

Projects on the Tonto National Forest's Schedule of Proposed Action for the period of April 2014 through June 2014 were considered for the cumulative effects analysis as reasonably foreseeable actions.

Reasonably foreseeable actions that could affect MIS resources are land exchanges, reauthorization of livestock grazing allotments, mining and exploratory drilling, fuels reduction projects, forest thinning, watershed/vegetation regeneration and habitat improvement, roadway material source pits, recreation management, special use permits (maintenance of existing structures, approval of group organization camps), personal use activities, and new road construction. While these activities can directly and indirectly affect MIS species as well as cause destruction or modification to MIS habitats, these actions are planned to minimize (and when possible, to eliminate) effects to MIS species and their habitat above current conditions and have mitigation measures and Best Management Practices designed to mitigate disturbances that may occur from project implementation.

Some projects may be considered cumulative actions because they may result in impacts to PNVT and thus to MIS associated with a primary constituent element within a PNVT, such as renewal of livestock grazing permits that would reduce herbaceous ground cover. Other projects

that may be considered as cumulative actions have not resulted or are not expected to result in a measureable impact to MIS resources as they have been designed to completely avoid or minimize impacts to MIS resources by including design criteria or mitigations such as timing restrictions.

Projects involving forest thinning and prescribed fire treatments likely contribute to effects to MIS resources. Although the effects of fuels reduction and thinning projects are mitigated to reduce the effects on MIS resources, they still result in modification of vegetation which can affect foraging, nesting, roosting, hiding and thermal cover, and daily and seasonal movements. Recently completed or ongoing planning for restoration and fuels management projects include: Salt River Allotments Vegetative Management project, Mesa vegetation regeneration and habitat improvement project, and the Haigler fuels analysis. Fuels reduction projects may have short-term impacts on wildlife from disturbance (during implementation) and habitat degradation (up to 3 years after treatment), but generally improve MIS resources over the long-term (from one to ten or more years after project implementation) by decreasing the potential for high-intensity wildfire (Strom and Fulé, 2007) and improving the productivity and biodiversity of vegetation on which MIS depend (Griffis *et al.,* 2001).

Unauthorized and unmanaged dispersed recreation, while not continuous across the Tonto NF like grazing or across large areas like fuels reduction and thinning projects, can result in adverse impacts to MIS resources. Roads, trails, dispersed camping areas, and the use of these by forest users could denude vegetation and compact soils; disturb vegetation to which some species may be attached; crush eggs and insects; and collapse burrows which can crush individuals; alter and fragment habitat; increase sedimentation into aquatic systems; visually and aurally disturb animals during critical periods such as breeding, and harass individuals through collection or handling.

Legal and illegal personal use activities, particularly fuelwood harvesting, affects wildlife and their habitat. The removal of dead and down wood can result in the loss of habitat for invertebrates, small mammals, and reptiles; all of which are important prey items for some MIS. The removal of snags not only can affect prey species like invertebrates and reptiles; it also results in the loss of bat roosting habitat and bird nesting and roosting habitat. Fuelwood harvesting could result in the removal of large, Gambel oak trees which are important for MIS species that nest in their natural cavities and could be tied to the presence of roads, and studies have shown there is an observable decrease in standing and downed large dead trees within near proximity to open roads (Wisdom and Bate, 2008).

All action alternatives would reduce adverse impacts to MIS resources forest-wide by reducing motorized cross-country travel outside of camping, wood gathering and motorized big game retrieval corridors. The miles of open roads will decrease in almost all PNVTs. Although all alternatives would reduce overall motorized vehicle disturbance, action alternatives may increase the intensity of effects to MIS resources within dispersed camping and wood gathering corridors.

Indicators of Ponderosa Pine Forest Mild and Mixed Conifer with Aspen

Ponderosa pine forest mild and mixed conifer with aspen vegetation types are indicators for elk, turkey, pygmy nuthatch, violet-green swallow, western bluebird, hairy woodpecker, northern goshawk, and Abert’s squirrel.

Table 59 identifies the amount of habitat of Ponderosa Pine Forest Mild and Mixed Conifer with Aspen that is impacted by each of the five elements under each alternative[112].

Table 59: Total Acres of Ponderosa Pine Forest Mild and Mixed Conifer with Aspen Habitat Impacted under Each Alternative

Elements	Forestwide	Alternative A	Alternative B	Alternative C	Alternative D
Roads and trails open to public use (miles)	2,604.54	2,050.81 (79%)	995.16 (38%)	1,467.34 (56%)	1,982.48 (76%)
Road Density (miles per square mile)		4.4	2.2	3.1	4.2
Areas open to motorized cross-country travel (acres)	308,606.67	515,985.69 (167%)	0 (0%)	0 (0%)	0 (0%)
Big game retrieval using motorized vehicles (acres)	308,606.67	515,985.69 (167%)	0 (0%)	492,034.7 (159%)	520,641.51 (169%)
Access of dispersed camping using motorized vehicles (acres)	308,606.67	515,985.69 (167%)	25.22 (<1%)	27,661.82 (9%)	119,656.3 (39%)
Additional Information Pertaining to motor vehicle use (personal use fuelwood gathering) (acres)	308,606.67	242,457.33 (79%)	31,856.3 (10%)	38,031.43 (12%)	242,457.33 (79%)

Elk

The elk is an indicator species for general forest conditions in ponderosa pine/mixed conifer with aspen PNVT.

Alternative A—Direct and Indirect Effects

The effect of road construction and maintenance is the conversion of native habitat to non-vegetated road ways and is a linear loss of elk habitat to total miles of roadways within elk habitat. The primary effect of roads to elk is habitat fragmentation and reduction in forest cover to a level that it no longer functions effectively as elk habitat. Direct and indirect loss of elk habitat from road construction will vary across the landscape however a rough overall estimate of habitat loss of 5 acres per linear mile of road is often applied (Rowland *et al*., 2005). Alternative A would designate 2,051 miles of roads and trail open to public use which could reduce elk habitat effectiveness by 10,255 acres.

[112] For percentages in the table that are greater than 100 percent, see the information in Data Limitations and Inaccuracies in this section for more information.

Alternative B—Direct and Indirect Effects

Under this alternative, impacts would be reduced due to the limited amount of roads within the PNVT. Direct and indirect loss of elk habitat from road construction will vary across the landscape however a rough overall estimate of habitat loss of 5 acres per linear mile of road is often applied (Rowland et al 2005). Alternative B would designate 995 miles of roads and trail open to public use which could reduce elk habitat effectiveness by 3,980 acres, a 61 percent decrease in potential effects to elk habitat from Alternative A. Impacts such as OHV and motor vehicle use for big game retrieval (MBGR) use would not be allowed under this alternative thus this would have more beneficial effects on general forest conditions for the elk when compared to Alternative A. There would be impacts on habitat elements in localized areas (where camping and fire wood gathering occurs), but would be reduced due to the limited amount of roads within the PNVT. Based on these effects, Alternative B improves elk habitat quality over Alternative A.

Alternative C—Direct and Indirect Effects

Under this alternative, impacts would be reduced due to limited amount of roads within the PNVT. Direct and indirect loss of elk habitat from road construction will vary across the landscape however a rough overall estimate of habitat loss of 5 acres per linear mile of road is often applied (Rowland et al 2005). Alternative C would designate 1,467 miles of roads and trails open to public use which could reduce elk habitat effectiveness by 5,868 acres, a 43 percent decrease in potential effects to elk habitat from Alternative A and a 47 percent increase from Alternative B. There would be impacts on habitat elements in localized areas (where camping, fire wood gathering, MBGR, and OHV areas are designated), but would be reduced due to limited amount of roads within the PNVT when compared to Alternative A but would have more of an effect on habitat when compared to Alternative B. Alternative C improves elk habitat quality over Alternative A but improves elk habitat quality less than Alternative B. Alternative C would have a beneficial effect to general forest conditions when compared to current baseline conditions.

Alternative D—Direct and Indirect Effects

Under this alternative, impacts would be reduced due to limited amount of roads within the PNVT. Direct and indirect loss of elk habitat from road construction will vary across the landscape however a rough overall estimate of habitat loss of 5 acres per linear mile of road is often applied (Rowland et al 2005). Alternative D would designate 1,982 miles of roads and trails open to public use which could reduce elk habitat effectiveness by 7,928 acres, a 23 percent decrease in potential effects to elk habitat from Alternative A and a 100 percent increase from Alternative B and a 35 percent increase from Alternative C. There would be impacts on habitat elements in localized areas (where camping, fire wood gathering, MBGR, and OHV areas are designated), but would be reduced due to limited amount of roads within the PNVT when compared to Alternative A but would have greater potential affect when compared to Alternative B and Alternative C. Alternative D improves elk habitat quality more than Alternative A and improves elk habitat quality to a lesser extent when compared to Alternative B and Alternative C. This Alternative would have a beneficial effect to general forest conditions when compared to current baseline conditions.

Turkey

The turkey is an indicator species for vertical diversity - forest mix within the ponderosa pine mild and mixed conifer with aspen PNVT.

Alternative A—Direct and Indirect Effects

The impact of roads and trails designated for public use on wildlife can be pervasive and long lasting and when the disruption from motorized vehicle travel is severe wildlife populations may be reduced below the natural carrying capacity of the land (Webb and Wilshire, 1883). The effect of road construction and maintenance is the conversion of native habitat to non-vegetated road ways and is a linear direct loss of ponderosa pine forest and mixed conifer with Aspen PNVT to total miles of roadways within turkey habitat. Both large snags and large downed trees are important elements to vertical diversity of ponderosa pine indicator habitat for the turkey. Under the No Action alternative, continued unrestricted off-road motorized travel and use of roads and motorized trails for dispersed camping, big game retrieval and fuelwood gathering would continue in the ponderosa pine forest mild and mixed conifer with aspen PNVT. The primary effect of roads to turkeys may be destruction of nesting, feeding and roosting habitat, creation of barriers to movement and in influencing patterns of population dispersal and habitat use provided by the vertical diversity of the ponderosa pine forest mild and mixed conifer with aspen type from the effects of motorized vehicle travel. Direct and indirect effects to turkey habitat from motorized vehicle use would increase with increased miles of designated roadways and authorized use. Alternative A would designate 2,605 miles of roads and trail open to public use which could affect turkey habitat.

Alternative B—Direct and Indirect Effects

Under this alternative direct and indirect effects to turkey populations and habitat from roads and travels designed for public use would be reduced by 61 percent when compared to Alternative A. Effects to turkey populations and habitat from OHV and MBGR use not be permitted and thus this would have beneficial effect on turkey populations and habitat above Alternative A. There would be impacts on habitat elements in localized areas where camping and fire wood gathering would be designated but would be reduced to less than 1 percent and 10 percent respectively of forest-wide acres within the ponderosa pine mild and mixed conifer with aspen as compared to 167 percent and 79 percent respectively of acres designated in Alternative A. Alternative B improves turkey habitat quality more than what would be expected with Alternative A.

Alternative C—Direct and Indirect Effects

Under this alternative direct and indirect effects to turkey populations and habitat from roads and travels designed for public use would be reduced by 28 percent when compared to Alternative A. Effects to turkey populations and habitat from motorized cross-country travel would not be permitted and thus this would have beneficial effect on turkey populations and habitat above Alternative A and similar effects as Alternative B. Alternative C would designate dispersed camping on approximately 9 percent of forest wide ponderosa pine forest mild and mixed conifer with aspen PNVT as compared to 167 percent in Alternative A and less than 1 percent in Alternative B. Alternative C would permit fuelwood gathering on 12 percent of forest wide ponderosa pine forest mild and mixed conifer with aspen PNVT compared to 79 percent in

Alternative A and 10 percent of Alternative C. Alternative C would improve turkey habitat quality more than Alternative A but less than Alternative B.

Alternative D—Direct and Indirect Effects

Under this alternative, direct and indirect effects to turkey populations and habitat from roads and trails designed for public use are similar to Alternative A with a road density of 4.2 miles of roads per square mile of ponderosa pine forest mild and mixed conifer with aspen PNVT. Effects to turkey populations and habitat from motorized cross-country travel would not be permitted and thus this would have a beneficial effect on turkey populations and habitat above Alternative A and similar affects as Alternative B and Alternative C. Alternative D would designate dispersed camping on approximately 39 percent of forest wide ponderosa pine forest mild and mixed conifer with aspen PNVT as compared to 167 percent in Alternative A and would designate greater areas for dispersed camping than Alternative B and Alternative C. Alternative D would be similar to Alternative A for permitted fuelwood gathering on 79 percent of forest wide ponderosa pine forest mild and mixed conifer with aspen PNVT compared to 10 percent in Alternative B and 12 percent in Alternative C. Alternative D would improve turkey habitat quality over Alternative A but less than what would be expected from Alternative B and Alternative C.

Pygmy Nuthatch

The pygmy nuthatch is an indicator species for old growth pine within the ponderosa pine mild and mixed conifer with aspen PNVT.

Alternative A—Direct and Indirect Effects

The direct effect of roads and trails designated for public use and associated road maintenance is the conversion of native habitat to non-vegetated road ways and is a linear direct loss of ponderosa pine forest and mixed conifer with Aspen PNVT to total miles of roadways within pygmy nuthatch habitat. Alternative A would designate 4.4 miles of road per square mile of ponderosa pine forest mild and mixed conifer with aspen PNVT, the highest permitted road density of all alternatives. However, Alternative A is not anticipated to have measurable effects to current old growth pine and conifer forest and therefore habitat quality for pygmy nuthatch populations. Alternative A would permit continued unrestricted off-road motorized travel and use of roads and motorized trails for dispersed camping, big game retrieval and fuelwood gathering throughout the ponderosa pine forest mild and mixed conifer with aspen PNVT. Primary effects to pygmy nuthatch from Alternative A would be effects of disturbance from noise from motor vehicle use, dispersed camping, fuel wood gathering, and motorized big game retrieval. Effects to pygmy nuthatch habitat from motorized vehicle use would increase with increased miles of designated roadways and authorized use. Alternative A would designate 2,051 miles of roads and trail open to public use which could have effects to pygmy nuthatch trend due to habitat degradation.

Alternative B—Direct and Indirect Effects

Under this alternative, direct and indirect effects of roads and trails open to motorized public use would be reduced to 2.2 miles of roads per square mile of ponderosa pine forest mild and mixed conifer with aspen PNVT a 50 percent reduction in road density from Alternative A. Alternative B is not anticipated to have measurable effects to current old growth pine and conifer forest and

therefore habitat quality for pygmy nuthatch populations. Alternative B would not designate motorized cross country travel, motorized big game retrieval and would limit dispersed camping to less than 1 percent of ponderosa pine forest mild and mixed conifer with aspen PNVT. Effects to pygmy nuthatch due to disturbance from noise from motor vehicle use would be reduced under this alternative and would have beneficial effects to pygmy nuthatch populations as compared to Alternative A. There would be impacts on habitat elements in localized areas (where camping and fire wood gathering is permitted), but would be reduced due to limited amount of roads within the PNVT. Alternative B increases pygmy nuthatch habitat quality over Alternative A.

Alternative C—Direct and Indirect Effects

Under this alternative, direct and indirect effects of roads and trails open to motorized public use would be reduced to 3.1 miles of roads per square mile of ponderosa pine forest mild and mixed conifer with aspen PNVT, a 30 percent reduction in road density from Alternative A and a 41 percent increase in road density compared to Alternative B. Alternative C is not anticipated to have measurable effects to current old growth pine and conifer forest and therefore habitat quality for pygmy nuthatch populations. Alternative C would not authorize motorized cross country travel, but would permit motorized big game retrieval similar to Alternative A and would limit dispersed camping to less than 9 percent of ponderosa pine forest mild and mixed conifer with aspen PNVT and would be similar to Alternative B in permitted fuelwood gathering. Effects to pygmy nuthatch due to disturbance from noise from motor vehicle use would be reduced under this alternative compared to Alternative A and would have increased direct effects from noise disturbance compared to Alternative B. Alternative C would increase pygmy nuthatch habitat quality over Alternative A but would be less effective at improving habitat quality than Alternative B.

Alternative D—Direct and Indirect Effects

Under this alternative, direct and indirect effects of roads and trails open to motorized public use would be similar to Alternative A designating 4.2 miles of roads per square mile of ponderosa pine forest mild and mixed conifer with aspen PNVT, a 90 percent increase in road density from Alternative B and a 35 percent increase in road density compared to Alternative C. Alternative D is not anticipated to have measurable effects to current old growth pine and conifer forest and therefore habitat quality for pygmy nuthatch populations. Alternative D would not authorize motorized cross country travel similar to Alternative A, but would permit motorized big game retrieval and fuelwood gathering similar to Alternative A and would limit dispersed camping to less than 39 percent of ponderosa pine forest mild and mixed conifer with aspen PNVT. Direct effects to pygmy nuthatch due to disturbance from noise from motor vehicle use would be reduced under this alternative compared to Alternative A only from designated dispersed camping and would increase effects compared to Alternative B and Alternative C. Alternative D would increases pygmy nuthatch habitat quality over Alternative A but would improve pygmy nuthatch habitat quality less than Alternative B and Alternative C.

Violet-green Swallow

The violet-green swallow is an indicator species for cavity nesting habitat within the ponderosa pine mild and mixed conifer with aspen PNVT.

Alternative A—Direct and Indirect Effects

The effects of roads and trails designated for public use and associated road maintenance is the conversion of native habitat to non-vegetated road ways and is a linear direct loss of ponderosa pine forest and mixed conifer with Aspen PNVT to total miles of roadways within violet-green swallow habitat which would affect cavity nesting habitat. Alternative A would designate 4.4 miles of road per square mile of ponderosa pine forest mild and mixed conifer with aspen PNVT, the highest permitted road density of all alternatives. However, roads and trails designated for public use in Alternative A is not anticipated to have measurable effects to current cavity nesting habitat and therefore habitat quality for violet-green swallow populations. Alternative A would permit continued unrestricted off-road motorized travel, use of roads and motorized trails for dispersed camping, on 167 percent of forest-wide ponderosa pine forest mild and mixed conifer with aspen PNVT and fuelwood gathering on 79 percent of forest-wide ponderosa pine forest mild and mixed conifer with aspen PNVT. These elements would have a direct effect to cavity nesting habitat from harvest of snags for fuelwood and campfires if removal occurred during the breeding season directly impacting nesting birds. Alternative A may lower snag density below Forest Plan objectives of 2 to 3 snags per acre, in localized areas but may not reduce snag density below Forest Plan objectives of 180 snags per 100 acres across the PNVT. Primary effects to violet-green swallow from Alternative A would be effects to cavity nesting habitat, disturbance from noise from motor vehicle use, dispersed camping, fuel wood gathering, and motorized big game retrieval. Direct and Indirect effects to violet-green swallow habitat from motorized vehicle use would increase with increased miles of designated roadways and authorized use. Alternative A would designate 2,051 miles of roads and trail open to public use which could have negatively affect pygmy nuthatch trend due to habitat loss or degradation.

Alternative B—Direct and Indirect Effects

Under this alternative, direct and indirect effects of roads and trails open to motorized public use would be reduced to 2.2 miles of roads per square mile of ponderosa pine forest mild and mixed conifer with aspen PNVT a 50 percent reduction in road density from Alternative A. Alternative B is not anticipated to have measurable effect to current cavity nesting habitat and therefore habitat quality for violet-green swallow populations. Alternative B would not designate motorized cross country travel, motorized big game retrieval and would limit dispersed camping to less than 1 percent of ponderosa pine forest mild and mixed conifer with aspen PNVT. Alternative B is not anticipated to reduce snag density below Forest Plan objectives of 2 to 3 snags per acre with the exception of limited campsites and fuelwood gathering areas, and would not reduce snag density below Forest Plan objectives of 180 snags per 100 acres across the PNVT. Effects to violet-green swallows due to disturbance from noise from motor vehicle use would be reduced under this alternative and would have beneficial effects to violet-green swallow populations as compared to Alternative A. There would be impacts on habitat elements in localized areas (where camping and fire wood gathering is permitted), but would be reduced due to limited amount of roads within the PNVT. Alternative B improves violet-green swallow habitat quality over Alternative A.

Alternative C—Direct and Indirect Effects

Under this alternative, effects of roads and trails open to motorized public use would be reduced to 3.1 miles of roads per square mile of ponderosa pine forest mild and mixed conifer with aspen PNVT, a 30 percent reduction in road density from Alternative A and a 41 percent increase in road density compared to Alternative B. Alternative C is not anticipated to have measurable

effects to cavity nesting habitat and therefore habitat quality for violet-green swallow populations. Alternative C is not anticipated to reduce snag density below Forest Plan objectives of 2 to 3 snags per acre with the exception of limited campsites and fuelwood gathering areas, and would not reduce snag density below Forest Plan objectives of 180 snags per 100 acres across the PNVT. Alternative C would not authorize motorized cross country travel, but would permit motorized big game retrieval similar to Alternative A and would limit dispersed camping to less than 9 percent of ponderosa pine forest mild and mixed conifer with aspen PNVT and would be similar to Alternative B in permitted fuelwood gathering. Effects to violet-green swallows due to disturbance from noise from motor vehicle use would be reduced under this alternative compared to Alternative A and would increase effects compared to Alternative B. Alternative C would improve violet-green swallow habitat quality over Alternative A but would be less than what would occur from Alternative B.

Alternative D—Direct and Indirect Effects

Under this alternative, effects of roads and trails open to motorized public use would be similar to Alternative A designating 4.2 miles of roads per square mile of ponderosa pine forest mild and mixed conifer with aspen PNVT, a 90 percent increase in road density from Alternative B and a 35 percent increase in road density compared to Alternative C. Alternative D is not anticipated to have measurable effects to current nesting habitat and therefore habitat quality for violet-green swallow populations. Alternative D would not authorize motorized cross country travel similar to Alternative A, but would permit motorized big game retrieval and fuelwood gathering similar to Alternative A and would limit dispersed camping to less than 39 percent of ponderosa pine forest mild and mixed conifer with aspen PNVT. Effects to violet-green swallow due to disturbance from noise from motor vehicle use would be reduced under this alternative compared to Alternative A only from designated dispersed camping and would increase effects compared to Alternative B and Alternative C. Alternative D would improve violet-green swallow habitat quality over Alternative A but would be less than what is expected from Alternative B and Alternative C.

Western Bluebird

The western blue bird is an indicator species for forest openings within the ponderosa pine mild and mixed conifer with aspen PNVT.

Alternative A—Direct and Indirect Effects

The effect of roads and trails designated for public use and associated road maintenance is the conversion of native habitat to non-vegetated road ways and is a linear direct loss of ponderosa pine forest and mixed conifer with Aspen PNVT to total miles of roadways within western blue bird habitat which would affect forest openings. Alternative A would designate 4.4 miles of road per square mile of ponderosa pine forest mild and mixed conifer with aspen PNVT, the highest permitted road density of all alternatives. However, roads and trails designated for public use in Alternative A is not anticipated to have measurable effects to forest openings from current baseline conditions and therefore habitat quality for western blue bird populations. Alternative A would permit continued unrestricted off-road motorized travel, use of roads and motorized trails for dispersed camping, on 167 percent of forest-wide ponderosa pine forest mild and mixed conifer with aspen PNVT and fuelwood gathering on 79 percent of forest-wide ponderosa pine forest mild and mixed conifer with aspen PNVT. Primary effects to western blue bird habitat

quality from Alternative A would be the effect of disturbance from noise from motor vehicle use, dispersed camping, fuel wood gathering, and motorized big game retrieval. Effects to western blue bird habitat from motorized vehicle use would increase with increased miles of designated roadways and authorized use, particularly dispersed camping which increase disturbance in forest opening adjacent to designed roads for motorized public use. Alternative A would designate 2,051 miles of roads and trail open to public use which could negatively affect western blue bird trend due to habitat loss or degradation.

Alternative B—Direct and Indirect Effects

Under this alternative, effects of roads and trails open to motorized public use would be reduced to 2.2 miles of roads per square mile of ponderosa pine forest mild and mixed conifer with aspen PNVT a 50 percent reduction in road density from Alternative A. Alternative B is not anticipated to have measurable effects to current forest openings and therefore habitat quality for western bluebird populations. Alternative B would not designate motorized cross country travel, motorized big game retrieval and would limit dispersed camping to less than 1 percent of ponderosa pine forest mild and mixed conifer with aspen PNVT. Effects to western bluebirds due to disturbance from noise from motor vehicle use and dispersed camping would be reduced under this alternative and would have beneficial effects to western bluebird habitat quality as compared to Alternative A. There would be impacts on habitat elements in localized areas (where motorized dispersed camping and fire wood gathering is permitted), but would be reduced due to limited amount of roads within the PNVT. Alternative B would improve western bluebird habitat quality more than Alternative A since road density in this PNVT is lower.

Alternative C—Direct and Indirect Effects

Under this alternative, effects of roads and trails open to motorized public use would be reduced to 3.1 miles of roads per square mile of ponderosa pine forest mild and mixed conifer with aspen PNVT, a 30 percent reduction in road density from Alternative A and a 41 percent increase in road density compared to Alternative B. Alternative C is not anticipated to have measurable effects to forest openings and therefore habitat quality for western bluebird populations. Alternative C would not authorize motorized cross country travel, but would permit motorized big game retrieval similar to Alternative A and would limit dispersed camping to less than 9 percent of ponderosa pine forest mild and mixed conifer with aspen PNVT and would be similar to Alternative B in permitted fuelwood gathering. Effects to western bluebird habitat quality due to disturbance from noise from motor vehicle use and dispersed camping would be reduced under this alternative compared to Alternative A and would increase effects compared to Alternative B. Alternative C would improve western bluebird habitat quality over Alternative A but would be less than what would occur from Alternative B.

Alternative D—Direct and Indirect Effects

Under this alternative, effects of roads and trails open to motorized public use would be similar to Alternative A designating 4.2 miles of roads per square mile of ponderosa pine forest mild and mixed conifer with aspen PNVT, a 90 percent increase in road density from Alternative B and a 35 percent increase in road density compared to Alternative C. Alternative D is not anticipated to have measurable effects to forest openings and therefore habitat quality for western bluebird populations. Alternative D would not authorize motorized cross country travel similar to Alternative A, Alternative B and Alternative C, but would permit motorized big game retrieval

and fuelwood gathering similar to Alternative A and would limit dispersed camping to less than 39 percent of ponderosa pine forest mild and mixed conifer with aspen PNVT. Effects to western bluebird habitat quality due to disturbance from noise from motor vehicle use and dispersed camping would be reduced under this alternative compared to Alternative A and would increase effects to western bluebird habitat quality compared to Alternative B and Alternative C. Alternative D would improve western bluebird habitat quality over Alternative A but would be less than what would occur from Alternative B and Alternative C.

Hairy Woodpecker

The hairy woodpecker is an indicator species for snags within the ponderosa pine mild and mixed conifer with aspen PNVT.

Alternative A—Direct and Indirect Effects

The effect of motorized public use of roadways and continued maintenance that would remove snags that may have posed a hazard to motorist using these roads and results in the conversion of native habitat to non-vegetated roadways and would include a linear direct loss of snags within ponderosa pine forest mild and mixed conifer with Aspen PNVT in relation to total miles of roadways within the PNVT. Large snags are important elements to cavity nesting birds associated with ponderosa pine indicator habitat for the hairy woodpecker. Alternative A would continue unrestricted off-road motorized travel and use of roads and motorized trails for dispersed camping, big game retrieval, and fuelwood gathering would continue in the ponderosa pine forest mild and mixed conifer with aspen PNVT. The primary effect of Alternative A to hairy woodpecker habitat quality would be destruction of snag habitat due harvest of standing dead wood for campfire use and personal fuelwood gathering in proximity to roadways designated for motorized public use with the PNVT. Alternative A may reduce snag density below Forest Plan objectives of 2 to 3 snags per acre within areas designated for motorized vehicle use but is not anticipated to reduce snag density below Forest Plan objectives of 180 snags per 100 acres across the PNVT. Effects to hairy woodpecker habitat quality include disturbance from noise from motor vehicle use, dispersed camping, fuel wood gathering, and motorized big game retrieval. Effects to hairy woodpecker habitat from motorized vehicle use would increase with increased miles of designated roadways and authorized use, particularly dispersed camping and fuelwood gathering which increase disturbance to snag habitat adjacent to designed roads for motorized public use. Alternative A would designate 2,051 miles of roads and trails open to public use which could have direct and indirect effects to hairy woodpecker population trend. Direct and indirect effects to hairy woodpecker habitat from motorized vehicle use would increase with increased miles of designated roadways and authorized use. Alternative A would designate 2,605 miles of roads and trail open to public use which could affect hairy woodpecker habitat.

Alternative B—Direct and Indirect Effects

Under this alternative, effects of roads and trails open to motorized public use would be reduced to 2.2 miles of roads per square mile of ponderosa pine forest mild and mixed conifer with aspen PNVT a 50 percent reduction in road density from Alternative A and would result in reduced removal of snags that may pose a hazard to roadways and camping sites. Alternative B is not anticipated to have measurable effects to current snag habitat and therefore habitat quality for hairy woodpecker populations. Alternative B may reduce snag density below Forest Plan objectives of 2 to 3 snags per acre within limited campsites and fuelwood gathering areas but is

not anticipated to reduce snag density below Forest Plan objectives of 180 snags per 100 acres across the PNVT. Alternative B would not designate motorized cross country travel, or motorized big game retrieval and would limit dispersed camping to less than 1 percent of ponderosa pine forest mild and mixed conifer with aspen PNVT. Effects to hairy woodpecker habitat quality would include destruction of snag habitat in proximity to dispersed camp sites and fuelwood gathering adjacent to designated roads. Effects to hairy woodpecker habitat due to disturbance from noise from motor vehicle use, motorized dispersed camping, and fuelwood gathering would be reduced under this alternative and would have beneficial effects to hairy woodpecker habitat quality as compared to Alternative A. There would be impacts on habitat elements in localized areas (where camping and fire wood gathering is permitted), but would be reduced due to limited amount of roads within the PNVT. Alternative B improves hairy woodpecker habitat quality more than what would occur with Alternative A.

Alternative C—Direct and Indirect Effects

Under this alternative, effects of roads and trails open to motorized public use would be reduced to 3.1 miles of roads per square mile of ponderosa pine forest mild and mixed conifer with aspen PNVT, a 30 percent reduction in road density from Alternative A and a 41 percent increase in road density compared to Alternative B. Alternative C is not anticipated to have measurable effects to snap habitat and therefore habitat quality for hairy woodpecker populations. Alternative C may reduce snag density below Forest Plan objectives of 2 to 3 snags per acre within limited campsites and fuelwood gathering areas but is not anticipated to reduce snag density below Forest Plan objectives of 180 snags per 100 acres across the PNVT. Alternative C would reduce the need for removal of snags that pose a hazard to roadways and camping areas. Alternative C would not authorize motorized cross country travel, but would permit motorized big game retrieval similar to Alternative A and would limit dispersed camping to less than 9 percent of ponderosa pine forest mild and mixed conifer with aspen PNVT and would be similar to Alternative B in permitted fuelwood gathering. Effects to hairy woodpecker habitat quality would include destruction of snag habitat in proximity to dispersed camp sites and fuelwood gathering adjacent to designated roads. Effects to hairy woodpecker habitat due to disturbance from noise from motor vehicle use, dispersed camping and fuelwood gathering would be reduced under this alternative compared to Alternative A, but would increase effects to hairy woodpecker habitat quality compared to Alternative B. Alternative C would improve hairy woodpecker habitat quality over Alternative A but is less than what would occur from Alternative B.

Alternative D—Direct and Indirect Effects

Under this alternative, effects of roads and trails open to motorized public use would be similar to Alternative A designating 4.2 miles of roads per square mile of ponderosa pine forest mild and mixed conifer with aspen PNVT, a 90 percent increase in road density from Alternative B and a 35 percent increase in road density compared to Alternative C and would increase need for removal of snags that pose a hazard to roadways and camping areas. Alternative D is not anticipated to have measurable direct effect to snag habitat and therefore habitat quality for hairy woodpecker populations. Alternative D may reduce snag density below Forest Plan objectives of 2 to 3 snags per acre within dispersed camping areas and fuelwood gathering areas but is not anticipated to reduce snag density below Forest Plan objectives of 180 snags per 100 acres across the PNVT. Alternative D would not authorize motorized cross country travel similar to Alternative A, Alternative B and Alternative C, but would permit motorized big game retrieval and fuelwood gathering similar to Alternative A and would limit dispersed camping to less than

39 percent of ponderosa pine forest mild and mixed conifer with aspen PNVT. Effects to hairy woodpecker habitat quality would include destruction of snag habitat in proximity to dispersed camp sites and fuelwood gathering adjacent to designated roads. Effects to hairy woodpecker habitat due to disturbance from noise from motor vehicle use, dispersed camping and fuelwood gathering would be reduced under this alternative compared to Alternative A, but would increase effects to hairy woodpecker habitat quality compared to Alternative B and Alternative C.

Northern Goshawk

The northern goshawk is an indicator species for vertical diversity within the ponderosa pine mild and mixed conifer with aspen.

Alternative A—Direct and Indirect Effects

The effects of motorized public use of roadways and continued maintenance consists of the conversion of native habitat to non-vegetated road ways and is a linear direct loss of ponderosa pine forest and mixed conifer with Aspen PNVT to total miles of roadways within northern goshawk habitat. Both large trees, variable understory and large downed trees are important elements to vertical diversity of ponderosa pine indicator habitat for the northern goshawk providing nesting, perching, and prey species habitat. Alternative A would continue to authorize unrestricted off-road motorized travel and use of roads and motorized trails for dispersed camping, big game retrieval, and fuelwood gathering in the ponderosa pine forest mild and mixed conifer with aspen PNVT. The primary effects of roads to northern goshawk habitat quality would be destruction of prey species habitat due harvest of down logs and wood for campfire use and personal fuelwood gathering in proximity to roadways designated for motorized public use with the PNVT. Effects to northern goshawk habitat quality include disturbance from noise from motor vehicle use, dispersed camping, fuel wood gathering, and motorized big game retrieval. Effects to hairy woodpecker habitat from motorized vehicle use would increase with increased miles of designated roadways and authorized use adjacent to designed roads for motorized public use. Alternative A would designate 2,051 miles of roads and trails open to public use which could have effects to northern goshawk population trends. Direct and indirect effects to northern goshawk habitat from motorized vehicle use would increase with increased miles of designated roadways and authorized use. Alternative A would designate 2,605 miles of roads and trail open to public use which could affect northern goshawk habitat quality.

Alternative B—Direct and Indirect Effects

Under this alternative, effects of roads and trails open to motorized public use would be reduced to 2.2 miles of roads per square mile of ponderosa pine forest mild and mixed conifer with aspen PNVT a 50 percent reduction in road density from Alternative A and would result in reduce effects forest vegetation structural diversity. Alternative B is not anticipated to have measurable effects to current forest structure therefore habitat quality for northern goshawk populations. Alternative B would not designate motorized cross country travel, or motorized big game retrieval and would limit dispersed camping to less than 1 percent of ponderosa pine forest mild and mixed conifer with aspen PNVT. Effects to northern goshawk habitat quality would include harvest of down logs and destruction of understory habitat for prey species in proximity to dispersed camp sites and fuelwood gathering adjacent to designated roads. Effects to northern goshawk habitat due to noise disturbance from motor vehicle use, motorized dispersed camping, and fuelwood gathering would be reduced under this alternative and would have beneficial effects

to northern goshawk habitat quality as compared to Alternative A. There would be impacts on habitat elements in localized areas (where motorized dispersed camping and fire wood gathering is permitted), but would be reduced due to limited amount of roads within the PNVT. Alternative B improves northern goshawk habitat quality over Alternative A.

Alternative C—Direct and Indirect Effects

Under this alternative, effects of roads and trails open to motorized public use would be reduced to 3.1 miles of roads per square mile of ponderosa pine forest mild and mixed conifer with aspen PNVT, a 30 percent reduction in road density from Alternative A and a 41 percent increase in road density compared to Alternative B. Alternative C is not anticipated to have measurable effects to current forest structure and therefore habitat quality for northern goshawk populations. Alternative C would result in reduce effects to forest vegetation structural diversity as compared to Alternative A. Alternative C would not authorize motorized cross country travel, but would permit motorized big game retrieval similar to Alternative A and would limit dispersed camping to less than 9 percent of ponderosa pine forest mild and mixed conifer with aspen PNVT and would be similar to Alternative B in permitted fuelwood gathering. Effects to northern goshawk habitat quality would include harvest of down logs and destruction of understory habitat for prey species in proximity to dispersed camp sites and fuelwood gathering adjacent to designated roads. Effects to northern goshawk habitat due to noise disturbance from motor vehicle use, dispersed camping and fuelwood gathering would be reduced under this alternative and would have beneficial effects to northern goshawk habitat quality as compared to Alternative A but would increase effects to northern goshawk habitat quality compared to Alternative B. There would be impacts on habitat elements in localized areas (where camping and fire wood gathering is permitted), but would be reduced due to limited amount of roads within the PNVT. Alternative C improves northern goshawk habitat quality over Alternative A, but less than what would be expected with Alternative B.

Alternative D—Direct and Indirect Effects

Under this alternative, effects of roads and trails open to motorized public use would be similar to Alternative A designating 4.2 miles of roads per square mile of ponderosa pine forest mild and mixed conifer with aspen PNVT, a 90 percent increase in road density from Alternative B and a 35 percent increase in road density compared to Alternative C. Alternative D is not anticipated to have measurable effects to current forest structure and therefore habitat quality for northern goshawk populations. Alternative D would result in reduce effects to forest vegetation structural diversity as compared to Alternative A. Alternative D would not authorize motorized cross country travel, but would permit motorized big game retrieval similar to Alternative A and would limit dispersed camping to 39 percent of ponderosa pine forest mild and mixed conifer with aspen PNVT and would be similar to Alternative B in permitted fuelwood gathering. Effects to northern goshawk habitat quality would include harvest of down logs and destruction of understory habitat for prey species in proximity to dispersed camp sites and fuelwood gathering adjacent to designated roads. Effects to northern goshawk habitat due to noise disturbance from motor vehicle use, dispersed camping and fuelwood gathering would be reduced under this alternative compared to Alternative A and would have beneficial effects to northern goshawk habitat quality as compared to Alternative A but would increase effects to northern goshawk habitat quality compared to Alternative B and Alternative C. There would be impacts on habitat elements in localized areas (where camping and fire wood gathering is permitted), but would be reduced due to limited amount of roads within the PNVT. Alternative D improves northern goshawk habitat

quality over Alternative A, but less than what would be expected with Alternative B and Alternative C.

Abert's Squirrel

The Abert's squirrel is an indicator species for successional stages of pine within the ponderosa pine mild and mixed conifer with aspen PNVT.

Alternative A—Direct and Indirect Effects

The effects of motorized public use of roadways and continued maintenance consists of the conversion of native habitat to non-vegetated road ways and is a linear direct loss of ponderosa pine forest and mixed conifer with Aspen PNVT to total miles of roadways within Abert's squirrel habitat. Diversity of forest structural stages include variable tree maturity and understory with litter that are important elements to vertical diversity of ponderosa pine indicator habitat for the Abert's squirrel providing nesting, and foraging habitat. Alternative A would continue to authorize unrestricted off-road motorized travel and use of roads and motorized trails for dispersed camping, big game retrieval, and fuelwood gathering in the ponderosa pine forest mild and mixed conifer with aspen PNVT. The primary indirect effect of roads to Abert's squirrel habitat quality would be destruction of understory and litter habitat due harvest of downlogs and wood for campfire use and personal fuelwood gathering and potential hunter harvest of Abert's squirrel throughout the PNVT in proximity to roadways designated roads and trails for motorized public use with the PNVT. Effects to Abert's squirrel habitat quality could include disturbance from noise from motor vehicle use, dispersed camping, fuel wood gathering, and motorized big game retrieval. Effects to Abert's squirrel habitat from motorized vehicle use would increase with increased miles of designated roadways and authorized use adjacent to designed roads for motorized public use. Alternative A would designate 2,051 miles of roads and trails open to public use which could have effects to Abert's squirrel population trends.

Alternative B—Direct and Indirect Effects

Under this alternative, effects of roads and trails open to motorized public use would be reduced to 2.2 miles of roads per square mile of ponderosa pine forest mild and mixed conifer with aspen PNVT a 50 percent reduction in road density from Alternative A and would result in reduce effects forest structural stages. Alternative B is not anticipated to have measurable effects to current forest structure therefore habitat quality for Abert's squirrel populations. Alternative B would not designate motorized cross country travel, or motorized big game retrieval and would limit dispersed camping to less than 1 percent of ponderosa pine forest mild and mixed conifer with aspen PNVT. Effects to Abert's squirrel habitat quality would include destruction of understory and litter habitat due harvest of downlogs and wood for campfire use and personal fuelwood in proximity to roadways designated roads and trails for motorized public use with the PNVT. Effects to Abert's squirrel habitat due to noise disturbance from motor vehicle use, dispersed camping and fuelwood gathering would be reduced under this alternative and would have beneficial effects to Abert's squirrel habitat quality as compared to Alternative A. There would be impacts on habitat elements in localized areas (where camping and fire wood gathering is permitted), but would be reduced due to limited amount of roads within the PNVT. Alternative B improves Abert's squirrel habitat quality over Alternative A.

Alternative C—Direct and Indirect Effects

Under this alternative, effects of roads and trails open to motorized public use would be reduced to 3.1 miles of roads per square mile of ponderosa pine forest mild and mixed conifer with aspen PNVT, a 30 percent reduction in road density from Alternative A and a 41 percent increase in road density compared to Alternative B. Alternative C is not anticipated to have measurable effects to current forest structural stages and therefore habitat quality for Abert's squirrel populations. Alternative C would result in reduced effects to forest vegetation structural diversity as compared to Alternative A. Alternative C would not authorize motorized cross country travel, but would permit motorized big game retrieval similar to Alternative A and would limit dispersed camping to less than 9 percent of ponderosa pine forest mild and mixed conifer with aspen PNVT and would be similar to Alternative B in permitted fuelwood gathering. Effects to Abert's squirrel habitat quality would be destruction of understory and litter habitat due harvest of downlogs and wood for campfire use and personal fuelwood gathering and potential hunter harvest of Abert's squirrel throughout the PNVT in proximity to roadways designated roads and trails for motorized public use with the PNVT. Effects to Abert's squirrel habitat due to noise disturbance from motor vehicle use, dispersed camping and fuelwood gathering would be reduced under this alternative and would have beneficial effects to Abert's squirrel habitat quality as compared to Alternative A but would increase effects to Abert's squirrel habitat quality compared to Alternative B. There would be impacts on habitat elements in localized areas (where camping and fire wood gathering is permitted), but would be reduced due to limited amount of roads within the PNVT. Alternative C improves Abert's squirrel habitat quality over Alternative A.

Alternative D—Direct and Indirect Effects

Under this alternative, effects of roads and trails open to motorized public use would be similar to Alternative A designating 4.2 miles of roads per square mile of ponderosa pine forest mild and mixed conifer with aspen PNVT, a 90 percent increase in road density from Alternative B and a 35 percent increase in road density compared to Alternative C. Alternative D is not anticipated to have measurable effects to current forest structural stages and therefore habitat quality for Abert's squirrel populations. Alternative D would result in reduce effects to forest vegetation structural diversity as compared to Alternative A. Alternative D would not authorize motorized cross country travel, but would permit motorized big game retrieval similar to Alternative A and would limit dispersed camping to 39 percent of ponderosa pine forest mild and mixed conifer with aspen PNVT and would be similar to Alternative B in permitted fuelwood gathering. Effects to Abert's squirrel habitat quality would include destruction of understory and litter habitat due harvest of downlogs and wood for campfire use and personal fuelwood gathering and potential hunter harvest of Abert's squirrel throughout the PNVT in proximity to roadways designated roads and trails for motorized public use with the PNVT. Effects to Abert's squirrel habitat due to noise disturbance from motor vehicle use, dispersed camping and fuelwood gathering would be reduced under this alternative and would have beneficial effects to Abert's squirrel habitat quality as compared to Alternative A but would increase effects to Abert's squirrel habitat quality compared to Alternative B and compared to Alternative C. There would be impacts on habitat elements in localized areas (where camping and fire wood gathering is permitted), but would be reduced due to limited amount of roads within the PNVT. Alternative D improves Abert's squirrel habitat quality over Alternative A, but would increase effects to Abert;s squirrel habitat quality compared to Alternative B and Alternative C.

Cumulative Effects to Ponderosa Pine Forest Mild and Mixed Conifer with Aspen Species

The ponderosa pine forest mild and mixed conifer with aspen vegetation types provide habitat for elk, turkey, pygmy nuthatch, violet-green swallow, western bluebird, hairy woodpecker, northern goshawk, and Abert's squirrel.

Alternative A

Alternative A would potentially result in a long-term cumulative decrease in forest structural stages, snags, and large downed woody debris. This alternative would cumulatively contribute to a decrease in key habitat components such as snags and large woody debris, old growth forests, cavity nesting habitat, forest opening, and general forest conditions that are expected to be at risk from increased future demand for use of forest resources. Alternative A would continue wood and forest product harvesting, dispersed camping, motorized cross-country travel and unlimited motorized big game retrieval within the ponderosa pine forest mild and mixed conifer with aspen PNVT. Motorized use of roads and trails may result in cumulative effects to the PNVT when other Tonto National Forest activities such as land exchanges, reauthorization of livestock grazing allotments, mining and exploratory drilling, fuels reduction projects, forest thinning, watershed/vegetation regeneration and habitat improvement, roadway material source pits, recreation management, personal use activities, and new road construction. Use of roads and motorized trails, cross-country travel and dispersed camping could cause noise disturbance within all structural stages of the PNVT and could result in cumulative effects to habitat quality to MIS species. The cumulative effects of Tonto NF activities are expected to maintain designated roads at an approximate overall density of 4.4 miles of road per square mile of ponderosa pine forest mild and mixed conifer with aspen PNVT. Road densities in excess of 2.4 miles of roads per square mile of forest habitat may have a higher probability of impaired watershed function (Potyondy and Geier, 2010) and is not anticipated to have a measurable and detectible effect on habitat quality of the ponderosa pine forest mild and mixed conifer with aspen PNVT.

Alternative B

There would be no effects to forest structural stage diversity, snags, and large downed woody debris quantity and habitat quality in the ponderosa pine forest mild and mixed conifer with aspen PNVT. While this alternative may result in some improvement to habitat quality, it would be unlikely that these changes would impact reproductive success to the degree that forestwide population change would occur. Overall, this alternative is not expected to change forestwidehabitat or population trends for ponderosa pine forest mild and mixed conifer with aspen PNVT. The effects of this alternative may combine with other activities to result in a beneficial cumulative effect to ponderosa pine forest mild and mixed conifer with aspen PNVT habitat quality over a much broader area. For example areas open to cross-country motorized travel would be permitted on 167 percent of the forest-wide PNVT, while Alternative would not permit motorized cross country travel. The cumulative effects of Alternative B in relation to Tonto NF activities are expected to maintain designated roads at an approximate overall density of 2.2 miles of road per square mile of ponderosa pine forest mild and mixed conifer with aspen PNVT. Road densities in excess of 1 mile to 2.4 miles of road per square miles of 2.4 miles of roads per square mile of forest habitat may have a higher probability of a functioning at risk watershed or a watershed in fair condition supported by Tonto NF Plan or analysis and data

(Potyondy and Geier, 2010) and is not anticipated to have a measurable and detectible effect on habitat quality of the ponderosa pine forest mild and mixed conifer with aspen PNVT.

Alternative C

This alternative is expected to result in an overall effect of decreasing impacts to the ponderosa pine forest mild and mixed conifer with aspen PNVT and decreasing disturbance to the species that use it for habitat compared to Alternative A but increase potential habitat quality effects when compared to Alternative B. This alternative may result in effects to the quality of this habitat by changing the patterns of habitat available (reduced fragmentation from road use) and potentially affecting the abundance of key habitat elements such as large snags or large downed trees. This alternative‘s reduction of roads to 3.1 miles of road per square miles of the ponderosa pine forest mild and mixed conifer with aspen PNVT and may have a higher probability of impaired watershed function (Potyondy and Geier, 2010) but is not anticipated to have a measurable and detectible effect on habitat quality of the ponderosa pine forest mild and mixed conifer with aspen PNVT. Alternative C would not change the amount or age class distribution of indicator habitat. Habitat quality could improve, given the elimination of cross-country travel and reductions in the amount of open roads, motorized trails, and MBGR, lessening disturbance to MIS. When combined with other Tonto NF activities the cumulative effects of Alternative C may combine with other activities to result in a beneficial cumulative effect to ponderosa pine forest mild and mixed conifer dependent MIS species over a much broader area. For example Alternative A would permit motorized cross-country travel, motorized big game retrieval, and fuelwood gathering on 167 percent of the forest-wide PNVT, while Alternative C would be similar to Alternative A for motorized big game retrieval it would reduce dispersed camping to 9 percent of PNVT acres and fuelwood gathering to 12 percent of PNVT acres. The cumulative effects of Alternative C are not anticipated to have a measurable and detectible effect on habitat quality or the species that use the ponderosa pine forest mild and mixed conifer with aspen PNVT for habitat.

Alternative D

Alternative D would not change the amount or vegetation structural stage of MIS habitat in the ponderosa pine forest mild and mixed conifer with aspen PNVT. Factors that would improve habitat quality include the elimination of cross-country travel and reductions in the amount of acres of dispersed camping lessening disturbance to MIS. Public use roadways would be similar to Alternative A, MBGR, and fuelwood gathering would also be similar to Alternative A providing little improvement in habitat quality compared to the No Action Alternative. Factors that moderate any improvement in habitat quality include maintaining an overall road density of 4.2 miles of open roads per square mile of PNVT, camping and MBGR corridors over a large amount of the PNVT. While this alternative may result in some improvements and some negative impacts to habitat quality, it would be unlikely that these changes would impact reproductive success to the degree that Forest-wide population change would occur. Overall, this alternative is not expected to change Forest-wide habitat or population trends for ponderosa pine forest mild and mixed conifer with aspen MIS species, but would provide fewer benefits and have greater impacts from disturbance compared to Alternative B and Alternative C. The effects of this alternative may combine with other activities to result in a beneficial cumulative effect to ponderosa pine dependent MIS species over a similar area as Alternative A .The cumulative effects of Alternative D are not anticipated to have a measurable and detectible effect on habitat

quality or the species that use the ponderosa pine forest mild and mixed conifer with aspen PNVT for habitat.

Indicators of Pinyon-Juniper Chaparral, Pinyon-Juniper Grassland, Madrean Encinal Woodland, and Interior Chaparral

The pinyon-juniper chaparral, pinyon-juniper grassland, madrean encinal woodland, and interior chaparral vegetation types are indicators for the ash-throated flycatcher, gray vireo, Townsend's solitaire, juniper titmouse, northern flicker, spotted towhee, and black-chinned sparrow.

Table 60 identifies the amount of habitat that is impacted by each of the five elements under each alternative.

Table 60: Total acres of Pinyon-Juniper Chaparral, Pinyon-Juniper Grassland, Madrean Encinal Woodland, and Interior Chaparral Habitat Impacted under Each Alternative

Elements	Forestwide	Alternative A	Alternative B	Alternative C	Alternative D
Roads and trails open to public use (miles)	1,759.79	1,280.83 (73%)	739.36 (42%)	1013.46 (58%)	1,252.14 (71%)
Road Density (miles per square miles)		0.65	0.39	0.52	0.71
Areas open to motorized cross-country travel (acres)	1,347,859.62	351,083.81 (26%)	0 (0%)	0 (0%)	0 (0%)
Big game retrieval using motorized vehicles (acres)	1,347,859.62	351,083.81 (26%)	0 (0%)	507,178.04 (38%)	582,663.86 (43%)
Access of dispersed camping using motorized vehicles (acres)	1,347,859.62	351,083.81 (26%)	9.7 (<1%)	22,650.99 (2%)	84,377.37 (6%)
Additional Information Pertaining to motor vehicle use (personal use fuelwood gathering) (acres)	1,347,859.62	497,903.1 (37%)	40,955.79 (3%)	54,053.29 (4%)	497,903.1 (37%)

Ash-throated Flycatcher

The ash-throated is an indicator species for ground cover within Pinyon-Juniper Chaparral, Pinyon-Juniper Grassland, Madrean Encinal Woodland, and Interior Chaparral PNVT.

Alternative A—Direct and Indirect Effects

The effects of motorized public use of roadways and continued maintenance consists of the conversion of native habitat to non-vegetated road ways and is a linear direct loss of pinyon-juniper chaparral grassland, pinyon-juniper madrean encinal woodland and interior chaparral (P-J) PNVT total miles of roadways within ash-throated flycatcher habitat. Diversity of forest

structural stages includes variable tree maturity necessary for cavity nesting habitat and understory with litter that are important elements to ground cover diversity of P-J PNVT indicator habitat for the ash-throated flycatcher providing foraging habitat. Alternative A would designate 0.65 miles of roads per mile of P-J PNVT. Road densities of less than 1 mile per square mile habitat would be an indicator of watershed in good condition (Potyondy and Geier, 2010). Alternative A would continue to authorize unrestricted off-road motorized travel, motorized big game retrieval, dispersed camping and fuelwood harvest on 26 percent of PNVT acres. The primary effect of roads to ash-throated flycatcher habitat quality would be destruction of understory vegetation and ground cover from harvest of down logs and wood for campfire use, fuelwood gathering and dispersed camping throughout the PNVT in proximity to roadways designated roads and trails for motorized public use with the PNVT. Effects to ash-throated flycatcher habitat quality could include disturbance from noise from motor vehicle use, dispersed camping, fuel wood gathering, and motorized big game retrieval. Effects to ash-throated flycatcher habitat from motorized vehicle use would increase with increased miles of designated roadways and authorized use adjacent to designed roads for motorized public use. Alternative A would designate 1,281 miles of roads and trails open to public use which could have an effect to ash-throated flycatcher habitat but is not anticipated to have a measurable and detectible effect on habitat quality of the P-J PNVT.

Alternative B—Direct and Indirect Effects

Under this alternative, effects of roads and trails open to motorized public use would be reduced to 0.39 miles of roads per square mile of P-J PNVT a 40 percent reduction in road density from Alternative A and would result in reduce effects P-J structural stages including ground cover. Road densities of less than 1 mile per square mile habitat would be an indicator of watershed in good condition (Potyondy and Geier, 2010).Alternative B is not anticipated to have measurable effects to current P-J structure therefore habitat quality for ash-throated flycatcher populations. Alternative B would not designate motorized cross country travel, or motorized big game retrieval and would limit dispersed camping to less than 1 percent of P-J PNVT and fuelwood gathering to 3 percent of P-J PNVT. Effects to ash-throated flycatcher habitat quality would include destruction of understory and litter habitat due harvest of downlogs and wood for campfire use and personal fuelwood in proximity to roadways designated roads and trails for motorized public use with the PNVT. Effects to ash-throated flycatcher habitat due to noise disturbance from motor vehicle use, dispersed camping and fuelwood gathering would be reduced under this alternative and would have beneficial effects to ash-throated flycatcher habitat quality as compared to Alternative A. There would be impacts on habitat elements in localized areas (where camping and fire wood gathering is permitted), but would be reduced due to limited amount of roads within the PNVT. Alternative B improves ash-throated flycatcher habitat quality over Alternative A, but is not anticipated to have a measurable and detectible effect on habitat quality of the P-J PNVT.

Alternative C—Direct and Indirect Effects

Under this alternative, effects of roads and trails open to motorized public use would be reduced to 0.52 miles of roads per square mile of P-J PNVT a 20 percent reduction in road density from Alternative A and a 33 percent increase in road density from Alternative B. Alternative C would result in reduce effects to P-J structural stages including ground cover compared to Alternative A but would increase effects to ash-throated flycatcher habitat quality compared to Alternative B. Road densities of less than 1 mile per square mile habitat would be an indicator of watershed in

good condition (Potyondy and Geier, 2010).Alternative C is not anticipated to have measurable effects to current P-J structure therefore habitat quality for ash-throated flycatcher populations. Alternative C would not designate motorized cross country travel, and would limit dispersed camping to 2 percent of P-J PNVT and fuelwood gathering to 4 percent of P-J PNVT and motorized big game retrieval to 38 percent of P-J PNVT. Effects to ash-throated flycatcher habitat quality would include destruction of understory and litter habitat due harvest of downlogs and wood for campfire use and personal fuelwood in proximity to roadways designated roads and trails for motorized public use with the PNVT. Effects to ash-throated flycatcher habitat due to noise disturbance from motor vehicle use, dispersed camping and fuelwood gathering would be reduced under this alternative and would have beneficial effects to ash-throated flycatcher habitat quality as compared to Alternative A but would increase effects to ash-throated flycatcher habitat quality compared to Alternative B. There would be impacts on habitat elements in localized areas (where camping and fire wood gathering is permitted), but would be reduced due to limited amount of roads within the PNVT. Alternative C improves ash-throated flycatcher habitat quality over Alternative A, but increases habitat quality less than Alternative B. Alternative C is not anticipated to have a measurable and detectible effect on habitat quality of the P-J PNVT.

Alternative D—Direct and Indirect Effects

Under this alternative, effects of roads and trails open to motorized public use would be increased to 0.71 miles of roads per square mile of P-J PNVT a 9 percent increase in road density from Alternative A and a 82 percent increase in road density from Alternative B and a 36 percent increase in road density from Alternative C. Alternative D would result in increased effects to ash-throated flycatcher habitat quality to P-J structural stages including ground cover compared to Alternative A, Alternative B and Alternative C. Road densities of less than 1 mile per square mile habitat would be an indicator of watershed in good condition (Potyondy and Geier, 2010). Alternative D is not anticipated to have measurable effects to current P-J structure therefore habitat quality for ash-throated flycatcher populations. Alternative D would not designate motorized cross country travel, and would increase motorized big game retrieval over all alternatives, be similar in designated areas for fuelwood gathering to Alternative A, would increase fuelwood gathering areas from Alternative B and Alternative C and would limit dispersed camping to 6 percent of P-J PNVT. Effects to ash-throated flycatcher habitat quality would include destruction of understory and litter habitat due harvest of downlogs and wood for campfire use and personal fuelwood in proximity to designated roads and trails for motorized public use with the PNVT. Effects to ash-throated flycatcher habitat due to noise disturbance from dispersed camping would be reduced compared to Alternative A, and increased compared to Alternative B and Alternative C. Effects to ash-throated flycatcher habitat from fuelwood gathering would be similar to Alternative A, greater than Alternative B and Alternative C. Effects from motorized big game retrieval would be greater than all other alternatives. There would be impacts on habitat elements in localized areas (where camping and fire wood gathering is permitted), but would be reduced due to limited amount of roads within the PNVT. Alternative D decreases ash-throated flycatcher habitat quality over Alternative A, Alternative B and Alternative C. Alternative D is not anticipated to have a measurable and detectible effect on habitat quality of the P-J PNVT.

Gray Vireo

The Gray vireo is an indicator species for tree density within Pinyon-Juniper Chaparral, Pinyon-Juniper Grassland, Madrean Encinal Woodland, and Interior Chaparral PNVT.

Alternative A—Direct and Indirect Effects

The effects of motorized public use of roadways and continued maintenance consists of the conversion of native habitat to non-vegetated road ways and is a linear direct loss of pinyon-juniper chaparral grassland, pinyon-juniper madrean encinal woodland and interior chaparral (P-J) PNVT total miles of roadways within gray vireo habitat. Diversity of forest structural stages includes variable tree maturity and density that are important elements to ground cover diversity of P-J PNVT indicator habitat for the gray vireo. Alternative A would designate 0.65 miles of roads per mile of P-J PNVT. Road densities of less than 1 mile per square mile habitat would be an indicator of watershed in good condition (Potyondy and Geier, 2010). Alternative A would continue to authorize unrestricted off-road motorized travel, motorized big game retrieval, dispersed camping and fuelwood harvest on 26 percent of PNVT acres. There are no effects anticipated to green tree density in Alternative A. Effects to gray vireo habitat quality would be destruction of understory vegetation and ground cover that may limit tree germination and growth and reduce tree density in areas permitted for motorized vehicle use throughout the PNVT. Effects to gray vireo habitat quality could include disturbance from noise from motor vehicle use, dispersed camping, fuel wood gathering, and motorized big game retrieval. Effects to gray vireo habitat from motorized vehicle use would increase with increased miles of designated roadways and authorized use adjacent to designed roads for motorized public use. Alternative A would designate 1,281 miles of roads and trails open to public use which could have effects to gray vireo flycatcher habitat but is not anticipated to have a measurable and detectible effect on habitat quality of the P-J PNVT.

Alternative B—Direct and Indirect Effects

Under this alternative, effects of roads and trails open to motorized public use would be reduced to 0.39 miles of roads per square mile of P-J PNVT a 40 percent reduction in road density from Alternative A and would result in reduce effects P-J structural stages including tree density. Road densities of less than 1 mile per square mile habitat would be an indicator of watershed in good condition (Potyondy and Geier, 2010). Alternative B is not anticipated to have measurable effects to current P-J structure therefore habitat quality for gray vireo populations. Alternative B would not designate motorized cross country travel, or motorized big game retrieval and would limit dispersed camping to less than 1 percent of P-J PNVT and fuelwood gathering to 3 percent of P-J PNVT. Effects to gray vireo habitat quality would include destruction of understory and litter habitat reducing tree germination, and ultimately tree density in proximity to roadways designated roads and trails for motorized public use with the PNVT. Effects to gray vireo habitat due to noise disturbance from motor vehicle use, dispersed camping and fuelwood gathering would be reduced under this alternative and would have beneficial effects to gray vireo habitat quality as compared to Alternative A. There would be impacts on habitat elements in localized areas (where camping and fire wood gathering is permitted), but would be reduced due to limited amount of roads within the PNVT. Alternative B improves gray vireo habitat quality over Alternative A, but is not anticipated to have a measurable and detectible effect on habitat quality of the P-J PNVT.

Alternative C—Direct and Indirect Effects

Under this alternative, effects of roads and trails open to motorized public use would be reduced to 0.52 miles of roads per square mile of P-J PNVT a 20 percent reduction in road density from Alternative A and a 33 percent increase in road density from Alternative B. Alternative C would

result in reduce effects to P-J structural stages including tree density compared to Alternative A and would increase effects to gray vireo habitat quality compared to Alternative B. Road densities of less than 1 mile per square mile habitat would be an indicator of watershed in good condition (Potyondy and Geier, 2010). Alternative C is not anticipated to have measurable effects to current P-J structure therefore habitat quality for gray vireo flycatcher populations. Alternative C would not designate motorized cross country travel, and would limit dispersed camping to 2 percent of P-J PNVT and fuelwood gathering to 4 percent of P-J PNVT and motorized big game retrieval to 38 percent of P-J PNVT. Effects to gray vireo habitat quality would include destruction of understory and litter habitat reducing tree germination and ultimately tree density in proximity to roadways designated roads and trails for motorized public use with the PNVT. Effects to gray vireo habitat due to noise disturbance from motor vehicle use, dispersed camping and fuelwood gathering would be reduced under this alternative and would have beneficial effects to gray vireo habitat quality as compared to Alternative A but would have less of a positive effect on habitat quality compared to Alternative B. There would be impacts on habitat elements in localized areas (where camping and fire wood gathering is permitted), but would be reduced due to limited amount of roads within the PNVT. Alternative C improves gray vireo habitat quality over Alternative A, but less than what would be expected from Alternative B. Alternative C is not anticipated to have a measurable and detectible effect on habitat quality of the P-J PNVT.

Alternative D—Direct and Indirect Effects

Under this alternative, effects of roads and trails open to motorized public use would be increased to 0.71 miles of roads per square mile of P-J PNVT a 9 percent increase in road density from Alternative A and a 82 percent increase in road density from Alternative B and a 36 percent increase in road density from Alternative C. Alternative D would result in increased effects to gray vireo habitat quality to P-J structural stages including tree density compared to Alternative A, Alternative B and Alternative C. Road densities of less than 1 mile per square mile habitat would be an indicator of watershed in good condition (Potyondy and Geier, 2010). Alternative D is not anticipated to have measurable effects to current P-J structure including tree density therefore habitat quality for gray vireo populations. Alternative D would not designate motorized cross country travel, and would increase motorized big game retrieval over all alternatives, be similar in designated areas for fuelwood gathering to Alternative A, would increase fuelwood gathering areas from Alternative B and Alternative C and would limit dispersed camping to 6 percent of P-J PNVT. Effects to gray vireo habitat quality would include destruction of understory and litter habitat reducing tree germination and ultimately tree density in proximity to designated roads and trails for motorized public use with the PNVT. Effects to gray vireo habitat due to noise disturbance from dispersed camping would be reduced compared to Alternative A, and increased compared to Alternative B and Alternative C. Effects to gray vireo habitat from fuelwood gathering would be similar to Alternative A, greater than Alternative B and Alternative C. Effects from motorized big game retrieval would be greater than all other alternatives. There would be impacts on habitat elements in localized areas (where camping and fire wood gathering is permitted), but would be reduced due to limited amount of roads within the PNVT. Alternative D decreases gray vireo habitat quality over Alternative A, Alternative B and Alternative C. Alternative D is not anticipated to have a measurable and detectible effect on habitat quality of the P-J PNVT.

Townsend's Solitaire

The Townsend's solitaire is an indicator species for juniper berry production within Pinyon-Juniper Chaparral, Pinyon-Juniper Grassland, Madrean Encinal Woodland, and Interior Chaparral PNVT.

Alternative A—Direct and Indirect Effects

The effects of motorized public use of roadways and continued maintenance consists of the conversion of native habitat to non-vegetated road ways and is a linear direct loss of pinyon-juniper chaparral grassland, pinyon-juniper madrean encinal woodland and interior chaparral (P-J PNVT) total miles of roadways within Townsend's solitaire habitat. Diversity of forest structural stages includes variable tree maturity necessary for juniper berry production that is an important element to indicator habitat for the Townsend's solitaire in providing foraging habitat. Alternative A would designate 0.65 miles of roads per mile of P-J PNVT. Road densities of less than 1 mile per square mile habitat would be an indicator of watershed in good condition (Potyondy and Geier, 2010). Alternative A would continue to authorize unrestricted off-road motorized travel, motorized big game retrieval, dispersed camping and fuelwood harvest on 26 percent of PNVT acres. The primary effect of Alternative A to Townsend's solitaire habitat quality would be from effects to Townsend's solitaire habitat quality and would include disturbance from noise from motor vehicle use, dispersed camping, fuel wood gathering and motorized big game retrieval. Effects to Townsend's solitaire habitat from motorized vehicle use would increase with increased miles of designated roadways and authorized use adjacent to designed roads for motorized public use. Alternative A would designate 1,281 miles of roads and trails open to public use which could have effects to Townsend's solitaire habitat but is not anticipated to have a measurable and detectible effect on habitat quality of the P-J PNVT.

Alternative B—Direct and Indirect Effects

The effects of motorized public use of roadways and continued maintenance consists of the conversion of native habitat to non-vegetated road ways and is a linear direct loss of pinyon-juniper chaparral grassland, pinyon-juniper madrean encinal woodland and interior chaparral (P-J PNVT) total miles of roadways within Townsend's solitaire habitat. Diversity of forest structural stages includes variable tree maturity necessary for juniper berry production that is an important element to indicator habitat for the Townsend's solitaire in providing foraging habitat. Alternative B would designate 0.39 miles of roads per mile of P-J PNVT, a 40 reduction in road density compared to Alternative A. Road densities of less than 1 mile per square mile habitat would be an indicator of watershed in good condition (Potyondy and Geier, 2010). Alternative B is not anticipated to have measurable effects to current P-J structure therefore habitat quality for Townsend's solitaire populations. Alternative B would not designate motorized cross country travel, or motorized big game retrieval and would limit dispersed camping to less than 1 percent of P-J PNVT and fuelwood gathering to 3 percent of P-J PNVT. The primary effect of Alternative B to Townsend's solitaire habitat quality would be from effects to Townsend's solitaire habitat quality and would include disturbance from noise from motor vehicle use, dispersed camping and fuel wood gathering. Effects to Townsend's solitaire habitat from motorized vehicle use would increase with increased miles of designated roadways and authorized use adjacent to designed roads for motorized public use. Alternative B would designate 739 miles of roads and trails open to public use which could have effects to Townsend's solitaire habitat, a reduction of 42 percent

from Alternative A but is not anticipated to have a measurable and detectible effect on habitat quality of the P-J PNVT.

Alternative C—Direct and Indirect Effects

Under this alternative, effects of roads and trails open to motorized public use would be reduced to 0.52 miles of roads per square mile of P-J PNVT a 20 percent reduction in road density from Alternative A and a 33 percent increase in road density from Alternative B. Alternative C would result in reduce effects to P-J structural stages including juniper berry production compared to Alternative A but would increase effects to Townsend's solitaire habitat quality compared to Alternative B. Road densities of less than 1 mile per square mile habitat would be an indicator of watershed in good condition (Potyondy and Geier, 2010). Alternative C is not anticipated to have measurable effects to current P-J structure or juniper berry production therefore habitat quality for Townsend's solitaire populations. Alternative C would not designate motorized cross country travel, and would limit dispersed camping to 2 percent of P-J PNVT and fuelwood gathering to 4 percent of P-J PNVT and motorized big game retrieval to 38 percent of P-J PNVT. Effects to Townsend's solitaire habitat quality would include noise disturbance from motor vehicle use, dispersed camping and fuelwood gathering and would be reduced under this alternative and would have beneficial effects to Townsend's solitaire habitat quality as compared to Alternative A but would increase effects to Townsend's solitaire habitat quality from motorized big game retrieval when compared to Alternative A. Alternative C would increase effects to Townsend's solitaire habitat quality from effects of motor vehicle use, dispersed camping and fuelwood gathering compared to Alternative B. There would be impacts on habitat elements in localized areas (where camping, motorized big game retrieval and fire wood gathering is permitted), but would be reduced due to limited amount of roads within the PNVT. Alternative C improves Townsend's solitaire habitat quality over Alternative A, but less than what would occur with Alternative B. Alternative C is not anticipated to have a measurable and detectible effect on habitat quality of the P-J PNVT.

Alternative D—Direct and Indirect Effects

Under this alternative, effects of roads and trails open to motorized public use would be increased to 0.71 miles of roads per square mile of P-J PNVT a 9 percent increase in road density from Alternative A and a 82 percent increase in road density from Alternative B and a 36 percent increase in road density from Alternative C. Alternative D would result in increased effects to Townsend's solitaire habitat quality to P-J structural stages including juniper berry production compared to Alternative A, Alternative B and Alternative C. Road densities of less than 1 mile per square mile habitat would be an indicator of watershed in good condition (Potyondy and Geier, 2010). Alternative D is not anticipated to have measurable effects to current P-J structure therefore habitat quality for Townsend's solitaire populations. Alternative D would not designate motorized cross country travel, and would increase motorized big game retrieval over all alternatives, be similar in designated areas for fuelwood gathering to Alternative A, and reduce dispersed camping to 6 percent of P-J PNVT. Effects to Townsend's solitaire habitat quality would include noise disturbance from dispersed camping, motorized big game retrieval, and dispersed camping. Alternative D effects to Townsend's solitaire habitat quality would be increased compared to Alternative A, Alternative B, and Alternative C. Effects to Townsend's solitaire habitat from fuelwood gathering would be similar to Alternative A, greater than Alternative B and Alternative C. There would be impacts on habitat elements in localized areas (where camping and fire wood gathering is permitted), but would be reduced due to limited

amount of roads within the PNVT. Alternative D decreases Townsend's Solitaire habitat quality over Alternative A, Alternative B and Alternative C. Alternative D is not anticipated to have a measurable and detectible effect on habitat quality of the P-J PNVT.

Juniper Titmouse

The juniper titmouse is an indicator species for general woodland conditions within Pinyon-Juniper Chaparral, Pinyon-Juniper Grassland, Madrean Encinal Woodland, and Interior Chaparral PNVT.

Alternative A—Direct and Indirect Effects

The effects of motorized public use of roadways and continued maintenance consists of the conversion of native habitat to non-vegetated road ways and is a linear direct loss of pinyon-juniper chaparral grassland, pinyon-juniper madrean encinal woodland and interior chaparral (P-J) PNVT total miles of roadways within juniper titmouse habitat. General woodland conditions are composed of variable woodland tree species and structural stage with shrub and grass understory habitat that are important element to indicator habitat for the juniper titmouse. Alternative A would designate 0.65 miles of roads per mile of P-J PNVT. Road densities of less than 1 mile per square mile habitat would be an indicator of watershed in good condition (Potyondy and Geier, 2010). Alternative A would continue to authorize unrestricted off-road motorized travel, motorized big game retrieval, dispersed camping and fuelwood harvest on 26 percent of PNVT acres. The primary effect of Alternative A to juniper titmouse habitat quality would be from effects to general woodland conditions and would include disturbance from noise from motor vehicle use, dispersed camping, fuel wood gathering and motorized big game retrieval. Effects to juniper titmouse habitat would include harvest of down logs, reduction of grass and shrub understory from fuelwood harvest and dispersed camping. Motorized vehicle use would increase with increased miles of designated roadways and authorized use adjacent to designed roads for motorized vehicle use. Alternative A would designate 1,281 miles of roads and trails open to motorized public use which could have effects to juniper titmouse habitat but is not anticipated to have a measurable and detectible effect on habitat quality of the P-J PNVT.

Alternative B—Direct and Indirect Effects

The effects of motorized public use of roadways and continued maintenance consists of the conversion of native habitat to non-vegetated road ways and is a linear direct loss of pinyon-juniper chaparral grassland, pinyon-juniper madrean encinal woodland and interior chaparral (P-J) PNVT total miles of roadways within juniper titmouse habitat. General woodland conditions are composed of variable woodland tree species and structural stages with shrub and grass understory habitat that are important elements to indicator habitat for the juniper titmouse. Alternative B would designate 0.39 miles of roads per mile of P-J PNVT, a 40 percent reduction in road density compared to Alternative A. Road densities of less than 1 mile per square mile habitat would be an indicator of watershed in good condition (Potyondy and Geier, 2010). Alternative B is not anticipated to have measurable effects to current P-J structure therefore habitat quality for juniper titmouse populations. Alternative B would not designate motorized cross country travel, or motorized big game retrieval and would limit dispersed camping to less than 1 percent of P-J PNVT and fuelwood gathering to 3 percent of P-J PNVT. The primary effect of Alternative B to juniper titmouse habitat quality would be from effects to general woodland conditions and would include disturbance from noise from motorized vehicle use of roads and

trails, dispersed camping, and fuel wood gathering. Effects to juniper titmouse habitat would include harvest of down logs, reduction of grass and shrub understory from fuelwood harvest and dispersed camping. Effects to juniper titmouse habitat from motorized vehicle use would increase with increased miles of designated roadways and authorized use adjacent to designed roads for motorized public use. Alternative B would designate 739 miles of roads and trails open to public use which could have effects to juniper titmouse habitat, a reduction of 42 percent reduction in motorized roads and trails from Alternative A but is not anticipated to have a measurable and detectible effect on habitat quality of the P-J PNVT.

Alternative C—Direct and Indirect Effects

Under this alternative, effects of roads and trails open to motorized public use would be reduced to 0.52 miles of roads per square mile of P-J PNVT a 20 percent reduction in road density from Alternative A and a 33 percent increase in road density from Alternative B. Alternative C would result in reduce effects to general woodland conditions compared to Alternative A but would increase effects to juniper titmouse habitat quality compared to Alternative B. Road densities of less than 1 mile per square mile habitat would be an indicator of watershed in good condition (Potyondy and Geier 2010).Alternative C is not anticipated to have measurable effects to current general woodland habitat conditions therefore habitat quality for juniper titmouse populations. Alternative C would not designate motorized cross country travel, and would limit dispersed camping to 2 percent of P-J PNVT and fuelwood gathering to 4 percent of P-J PNVT and motorized big game retrieval to 38 percent of P-J PNVT. Effects to juniper titmouse habitat quality would include noise disturbance from motor vehicle use, dispersed camping and fuelwood gathering and would be reduced under this alternative and would have beneficial effects to juniper titmouse habitat quality as compared to Alternative A but would increase effects to juniper titmouse habitat quality from motorized big game retrieval when compared to Alternative A. Alternative C would increase effects to juniper titmouse habitat quality from effects of motor vehicle use, dispersed camping and fuelwood gathering compared to Alternative B. There would be impacts on habitat elements in localized areas (where camping, motorized big game retrieval and fire wood gathering is permitted), but would be reduced due to limited amount of roads within the PNVT. Alternative C improves juniper titmouse habitat quality over Alternative A, but less than what would occur from Alternative B. Alternative C is not anticipated to have a measurable and detectible effect on habitat quality of the P-J PNVT.

Alternative D—Direct and Indirect Effects

Under this alternative, effects of roads and trails open to motorized public use would be increased to 0.71 miles of roads per square mile of P-J PNVT a 9 percent increase in road density from Alternative A and a 82 percent increase in road density from Alternative B and a 36 percent increase in road density from Alternative C. Alternative D would result in increased effects to juniper titmouse habitat quality to general woodland conditions compared to Alternative A, Alternative B and Alternative C. Road densities of less than 1 mile per square mile habitat would be an indicator of watershed in good condition (Potyondy and Geier, 2010). Alternative D is not anticipated to have measurable effects to current general woodland conditions therefore habitat quality for juniper titmouse populations. Alternative D would not designate motorized cross country travel, and would increase motorized big game retrieval over all alternatives, be similar in designated areas for fuelwood gathering to Alternative A, and reduce dispersed camping to 6 percent of P-J PNVT. The primary effect of Alternative D to juniper titmouse habitat quality would be from effects to general woodland conditions and would include disturbance from noise

from motor vehicle use, dispersed camping, fuel wood gathering and motorized big game retrieval. Effects to juniper titmouse habitat would include harvest of down logs, reduction of grass and shrub understory from fuelwood harvest and dispersed camping. Alternative D effects to juniper titmouse habitat quality would be increased compared to Alternative A, Alternative B, and Alternative C. Effects to juniper titmouse habitat from fuelwood gathering would be similar to Alternative A, greater than Alternative B and Alternative C. There would be impacts on habitat elements in localized areas (where camping and fire wood gathering is permitted), but would be reduced due to limited amount of roads within the PNVT. Alternative D decreases juniper titmouse habitat quality over Alternative A, Alternative B and Alternative C. Alternative D is not anticipated to have a measurable and detectible effect on habitat quality of the P-J PNVT.

Northern Flicker

The northern flicker is an indicator species for snags within Pinyon-Juniper Chaparral, Pinyon-Juniper Grassland, Madrean Encinal Woodland, and Interior Chaparral PNVT.

Alternative A—Direct and Indirect Effects

The effects of motorized public use of roadways and continued maintenance consists of the conversion of native habitat to non-vegetated road ways and is a linear direct loss of pinyon-juniper chaparral grassland, pinyon-juniper madrean encinal woodland and interior chaparral (P-J) PNVT total miles of roadways within northern flicker habitat. General woodland conditions are composed of variable woodland tree species that meet Forest Plan guidelines for snag habitat that is an important element to indicator habitat for the northern flicker. Alternative A would designate 0.65 miles of roads per mile of P-J PNVT. Road densities of less than 1 mile per square mile habitat would be an indicator of watershed in good condition (Potyondy and Geier 2010). Alternative A would continue to authorize unrestricted off-road motorized travel, motorized big game retrieval, dispersed camping and fuelwood harvest on 26 percent of PNVT acres. The primary effect of Alternative A to northern flicker habitat quality would be from effects caused by the harvest of snags for personal fuelwood gathering and campfires from dispersed camping. Alternative A may lower snag density below Forest Plan objectives of 2 to 3 snags per acre, in localized areas but may not reduce snag density below Forest Plan objectives of 180 snags per 100 acres across the PNVT. Effects to northern flicker habitat quality would include disturbance from noise from motor vehicle use, dispersed camping, fuel wood gathering, and motorized big game retrieval. Motorized vehicle use would increase with increased miles of designated roadways and authorized use adjacent to designed roads for motorized vehicle use. Alternative A would designate 1,281 miles of roads and trails open to motorized public use which could have direct and indirect effects to northern flicker habitat but is not anticipated to have a measurable and detectible effect on habitat quality of the P-J PNVT.

Alternative B—Direct and Indirect Effects

The effects of motorized public use of roadways and continued maintenance consists of the conversion of native habitat to non-vegetated road ways and is a linear direct loss of pinyon-juniper chaparral grassland, pinyon-juniper madrean encinal woodland and interior chaparral (P-J) PNVT total miles of roadways within northern flicker habitat. General woodland conditions are composed of variable woodland tree species and structural stages that meet Forest Plan guidelines for snag habitat that are important elements to indicator habitat for the northern flicker. Alternative B would designate 0.39 miles of roads per mile of P-J PNVT, a 40 percent reduction

in road density compared to Alternative A. Road densities of less than 1 mile per square mile habitat would be an indicator of watershed in good condition (Potyondy and Geier, 2010). Alternative B is not anticipated to have measurable effects to current P-J structure and snag density therefore habitat quality for northern flicker populations. Alternative B is not anticipated to lower snag density below Forest Plan objectives of 2 to 3 snags per acre, and would not reduce snag density below Forest Plan objectives of 180 snags per 100 acres across the PNVT. Alternative B would not designate motorized cross country travel, or motorized big game retrieval and would limit dispersed camping to less than 1 percent of P-J PNVT and fuelwood gathering to 3 percent of P-J PNVT. The primary effect of Alternative B to northern flicker habitat quality would be from effects caused by the harvest of snags for personal fuelwood gathering and campfires from dispersed camping. Effects to northern flicker habitat quality would include disturbance from noise from motor vehicle use of designated roads and trails, fuelwood gathering and dispersed camping. Effects to northern flicker habitat from motorized vehicle use would increase with increased miles of designated roadways and authorized use adjacent to designed roads for motorized public use. Alternative B would designate 739 miles of roads and trails open to public use which could have effects to northern flicker habitat, a reduction of 42 percent in motorized roads and trails from Alternative A, but is not anticipated to have a measurable and detectible effect on habitat quality of the P-J PNVT.

Alternative C—Direct and Indirect Effects

Under this alternative, effects of roads and trails open to motorized public use would be reduced to 0.52 miles of roads per square mile of P-J PNVT a 20 percent reduction in road density from Alternative A and a 33 percent increase in road density from Alternative B. Alternative C would result in reduce effects to snag density within the PNVT compared to Alternative A but would increase effects to northern flicker habitat quality compared to Alternative B. Road densities of less than 1 mile per square mile habitat would be an indicator of watershed in good condition (Potyondy and Geier, 2010).Alternative C is not anticipated to have measurable effects to current snag density across the PNVT therefore habitat quality for northern flicker populations. Alternative C would not designate motorized cross country travel, and would limit dispersed camping to 2 percent of P-J PNVT and fuelwood gathering to 4 percent of P-J PNVT and motorized big game retrieval to 38 percent of P-J PNVT. Alternative C is not anticipated to lower snag density below Forest Plan objectives of 2 to 3 snags per acre, and not reduce snag density below Forest Plan objectives of 180 snags per 100 acres across the PNVT. Effects to northern flicker habitat quality would include noise disturbance from motor vehicle use, dispersed camping, and fuelwood gathering and would be reduced under this alternative and would have beneficial effects to juniper titmouse habitat quality as compared to Alternative A but would increase effects to juniper titmouse habitat quality from motorized big game retrieval when compared to Alternative A. The primary effect of Alternative C to northern flicker habitat quality would be from effects caused by the harvest of snags for personal fuelwood gathering and campfires from dispersed camping. Effects to northern flicker habitat quality would include disturbance from noise from motor vehicle use of designated roads and trails, fuelwood gathering, motorized big game retrieval and dispersed camping. Effects to northern flicker habitat from motorized vehicle use would increase with increased miles of designated roadways and authorized use adjacent to designed roads for motorized public use. There would be impacts on habitat elements in localized areas (where camping, motorized big game retrieval and fire wood gathering is permitted), but would be reduced due to limited amount of roads within the PNVT. Alternative C improves northern flicker habitat quality over Alternative A, but less than what

would be expectedfrom Alternative B. Alternative C is not anticipated to have a measurable and detectible effect on habitat quality of the P-J PNVT.

Alternative D—Direct and Indirect Effects

Under this alternative, effects of roads and trails open to motorized public use would be increased to 0.71 miles of roads per square mile of P-J PNVT a 9 percent increase in road density from Alternative A and a 82 percent increase in road density from Alternative B and a 36 percent increase in road density from Alternative C. Alternative D would result in increased effects to northern flicker habitat quality to snag density compared to Alternative A, Alternative B and Alternative C. Road densities of less than 1 mile per square mile habitat would be an indicator of watershed in good condition (Potyondy and Geier, 2010). Alternative D is not anticipated to lower snag density below Forest Plan objectives of 2 to 3 snags per acre, and not reduce snag density below Forest Plan objectives of 180 snags per 100 acres across the PNVT therefore habitat quality for northern flicker populations. Alternative D would not designate motorized cross country travel, and would increase motorized big game retrieval over all alternatives, be similar in designated areas for fuelwood gathering to Alternative A, and reduce dispersed camping to 6 percent of P-J PNVT. The primary effect of Alternative D to northern flicker habitat quality would be from effects caused by the harvest of snags for personal fuelwood gathering and campfires from dispersed camping. Effects to northern flicker habitat quality would include disturbance from noise from motor vehicle use of designated roads and trails, fuelwood gathering, motorized big game retrieval and dispersed camping. Effects to northern flicker habitat from motorized vehicle use would increase with increased miles of designated roadways and authorized use adjacent to designed roads for motorized public use. Alternative D road effects would have the greatest negative impact on habitat quality after Alternative A and the road system proposed with Alternative B would have the least negative impact followed by Alternative C. Effects to northern flicker habitat from fuelwood gathering would be similar to Alternative A, greater than Alternative B and Alternative C. There would be impacts on habitat elements in localized areas (where camping and fire wood gathering is permitted), but would be reduced due to limited amount of roads within the PNVT. Alternative D decreases northern flicker habitat quality over Alternative A, Alternative B and Alternative C. Alternative D is not anticipated to have a measurable and detectible effect on habitat quality of the P-J PNVT.

Spotted Towhee

The spotted towhee is an indicator species for successional stages of pinyon-juniper within Pinyon-Juniper Chaparral, Pinyon-Juniper Grassland, Madrean Encinal Woodland, and Interior Chaparral PNVT.

Alternative A—Direct and Indirect Effects

The effects of motorized public use of roadways and continued maintenance consists of the conversion of native habitat to non-vegetated road ways and is a linear direct loss of pinyon-juniper chaparral grassland, pinyon-juniper madrean encinal woodland and interior chaparral (P-J) PNVT total miles of roadways within spotted towhee habitat. Diversity of woodland structural stages includes variable tree maturity necessary for presence of all successional stages and a variable to dense shrub understory with litter that are important elements to P-J PNVT indicator habitat for the spotted towhee. Alternative A would designate 0.65 miles of roads per mile of P-J PNVT. Road densities of less than 1 mile per square mile habitat would be an indicator of

watershed in good condition (Potyondy and Geier, 2010). Alternative A would continue to authorize unrestricted off-road motorized travel, motorized big game retrieval, dispersed camping and fuelwood harvest on 26 percent of PNVT acres. The primary effect of Alternative A to spotted towhee habitat quality would be from effects caused by disturbance from noise from motor vehicle use, dispersed camping, fuel wood gathering, and motorized big game retrieval. Effects to spotted towhee habitat quality would include reduction or loss of shrub understory habitat from fuelwood gathering and dispersed camping. Effects to spotted towhee habitat quality from motorized vehicle use of designated roads and trails would increase with increased miles of designated roadways and authorized use adjacent to designed roads for motorized vehicle use. Alternative A would designate 1,281 miles of roads and trails open to motorized public use which could have effects to spotted towhee habitat but is not anticipated to have a measurable and detectible effect on habitat quality of the P-J PNVT.

Alternative B—Direct and Indirect Effects

The effects of motorized public use of roadways and continued maintenance consists of the conversion of native habitat to non-vegetated road ways and is a linear direct loss of pinyon-juniper chaparral grassland, pinyon-juniper madrean encinal woodland and interior chaparral (P-J) PNVT total miles of roadways within spotted towhee habitat. Diversity of woodland structural stages includes variable tree maturity necessary for presence of all successional stages and a variable to dense shrub understory with litter that are important elements to P-J PNVT indicator habitat for the spotted towhee.. Alternative B would designate 0.39 miles of roads per mile of P-J PNVT, a 40 percent reduction in road density compared to Alternative A. Road densities of less than 1 mile per square mile habitat would be an indicator of watershed in good condition (Potyondy and Geier, 2010). Alternative B is not anticipated to have measurable effects to current P-J structure and shrub understory density therefore habitat quality for spotted towhee populations. Alternative B would not designate motorized cross country travel, or motorized big game retrieval and would limit dispersed camping to less than 1 percent of P-J PNVT and fuelwood gathering to 3 percent of P-J PNVT. The primary effect of Alternative B to spotted towhee habitat quality would be from effects caused by disturbance from noise from motor vehicle use, dispersed camping, fuel wood gathering, and motorized big game retrieval. Effects to spotted towhee habitat quality would include reduction or loss of shrub understory habitat from fuelwood gathering and dispersed camping. Effects to spotted towhee habitat quality from motorized vehicle use of designated roads and trails would increase with increased miles of designated roadways and authorized use adjacent to designed roads for motorized vehicle use. Alternative B would designate 739 miles of roads and trails open to public use which could have effects to spotted towhee habitat, a reduction of 42 percent in motorized roads and trails from Alternative A, but is not anticipated to have a measurable and detectible effect on habitat quality of the P-J PNVT.

Alternative C—Direct and Indirect Effects

Under this alternative, effects of roads and trails open to motorized public use would be reduced to 0.52 miles of roads per square mile of P-J PNVT a 20 percent reduction in road density from Alternative A and a 33 percent increase in road density from Alternative B. Alternative C would result in reduced effects to woodland successional stages and variable to dense shrub understories with litter that are important elements to P-J PNVT indicator habitat for the spotted towhee compared to Alternative A but would increase effects to spotted towhee habitat quality compared to Alternative B. Road densities of less than 1 mile per square mile habitat would be an indicator

of watershed in good condition (Potyondy and Geier, 2010).Alternative C is not anticipated to have measurable effects to current successional stages and variable to dense shrub understories across the PNVT therefore habitat quality for spotted towhee populations. Alternative C would not designate motorized cross country travel, and would limit dispersed camping to 2 percent of P-J PNVT and fuelwood gathering to 4 percent of P-J PNVT and motorized big game retrieval to 38 percent of P-J PNVT. The primary effect of Alternative C to spotted towhee habitat quality would be from effects caused by disturbance from noise from motor vehicle use, dispersed camping, fuel wood gathering, and motorized big game retrieval. Effects to spotted towhee habitat quality would include reduction or loss of shrub understory habitat from fuelwood gathering and dispersed camping. Effects to spotted towhee habitat quality from motorized vehicle use of designated roads and trails would increase with increased miles of designated roadways and authorized use adjacent to designed roads for motorized vehicle use. Effects to spotted towhee habitat quality under this alternative would be beneficial to spotted towhee habitat quality as compared to Alternative A but would increase effects to spotted towhee habitat quality from motorized big game retrieval when compared to Alternative A. Effects to spotted towhee habitat from motorized vehicle use would increase with increased miles of designated roadways and authorized use adjacent to designed roads for motorized public use. There would be impacts on habitat elements in localized areas (where camping, and fuelwood gathering is permitted), but would be reduced due to limited amount of roads within the PNVT. Alternative C improves spotted towhee habitat quality over Alternative A, but less than what is expected from Alternative B. Alternative C is not anticipated to have a measurable and detectible effect on habitat quality of the P-J PNVT.

Alternative D—Direct and Indirect Effects

Under this alternative, effects of roads and trails open to motorized public use would be increased to 0.71 miles of roads per square mile of P-J PNVT a 9 percent increase in road density from Alternative A and a 82 percent increase in road density from Alternative B and a 36 percent increase in road density from Alternative C. Alternative D would result in increased effects to spotted towhee habitat quality from effects to woodland successional stages and variable to dense shrub understories with litter that are important elements to P-J PNVT indicator habitat for the spotted towhee compared to Alternative A, Alternative B and Alternative C. Road densities of less than 1 mile per square mile habitat would be an indicator of watershed in good condition (Potyondy and Geier, 2010). Alternative D is not anticipated to have measurable effects to current woodland successional stages and variable to dense shrub understories with litter across the PNVT and therefore habitat quality for spotted towhee populations. Alternative D would not designate motorized cross country travel, and would increase motorized big game retrieval over all alternatives, be similar in designated areas for fuelwood gathering to Alternative A, and reduce dispersed camping to 6 percent of P-J PNVT. The primary effect of Alternative D to spotted towhee habitat quality would be from effects caused by disturbance from noise from motor vehicle use, dispersed camping, fuel wood gathering, and motorized big game retrieval. Effects to spotted towhee habitat quality would include reduction or loss of shrub understory habitat from fuelwood gathering and dispersed camping. Effects to spotted towhee habitat quality from motorized vehicle use of designated roads and trails would increase with increased miles of designated roadways and authorized use adjacent to designed roads for motorized vehicle use. Alternative D effects to spotted towhee habitat quality would be increased compared to Alternative A, Alternative B, and Alternative C. Effects to spotted towhee habitat from fuelwood gathering would be similar to Alternative A, greater than Alternative B and Alternative C. There

would be impacts on habitat elements in localized areas (where camping and fire wood gathering is permitted), but would be reduced due to limited amount of roads within the PNVT. Alternative D decreases spotted towhee habitat quality over Alternative A, Alternative B and Alternative C. Alternative D is not anticipated to have a measurable and detectible effect on habitat quality of the P-J PNVT.

Black-chinned Sparrow

The black-chinned sparrow is an indicator species for shrub density within Pinyon-Juniper Chaparral, Pinyon-Juniper Grassland, Madrean Encinal Woodland, and Interior Chaparral PNVT.

Alternative A—Direct and Indirect Effects

The effects of motorized public use of roadways and continued maintenance consists of the conversion of native habitat to non-vegetated road ways and is a linear direct loss of pinyon-juniper chaparral grassland, pinyon-juniper madrean encinal woodland and interior chaparral (P-J) PNVT total miles of roadways within black-chinned sparrow habitat. Diversity of woodland structural stages includes variable tree maturity with a variable to dense, diverse shrub understory that is important elements to P-J PNVT indicator habitat for the black-chinned sparrow. Alternative A would designate 0.65 miles of roads per mile of P-J PNVT. Road densities of less than 1 mile per square mile habitat would be an indicator of watershed in good condition (Potyondy and Geier, 2010). Alternative A would continue to authorize unrestricted off-road motorized travel, motorized big game retrieval, dispersed camping and fuelwood harvest on 26 percent of PNVT acres. The primary effect of Alternative A to black-chinned sparrow habitat quality would be from effects caused by disturbance from noise from motorized vehicle use of roads and trails, dispersed camping, fuel wood gathering and motorized big game retrieval. Effects to black-chinned sparrow habitat quality would include reduction or loss of shrub habitat component from fuelwood gathering and dispersed camping. Effects to black chinned sparrow habitat quality from motorized vehicle use of designated roads and trails would increase with increased miles of designated roadways and authorized use adjacent to designed roads for motorized vehicle use. Alternative A would designate 1,281 miles of roads and trails open to motorized public use which could have effects to black-chinned sparrow habitat but is not anticipated to have a measurable and detectible effect on habitat quality of the P-J PNVT.

Alternative B—Direct and Indirect Effects

The effects of motorized public use of roadways and continued maintenance consists of the conversion of native habitat to non-vegetated road ways and is a linear direct loss of pinyon-juniper chaparral grassland, pinyon-juniper madrean encinal woodland and interior chaparral (P-J) PNVT total miles of roadways within black-chinned sparrow habitat. Diversity of woodland structural stages includes variable tree maturity and variable to dense, diverse shrub habitat necessary with litter that is an important element to P-J PNVT indicator habitat for the black-chinned sparrow. Alternative B would designate 0.39 miles of roads per mile of P-J PNVT, a 40 percent reduction in road density compared to Alternative A. Road densities of less than 1 mile per square mile habitat would be an indicator of watershed in good condition (Potyondy and Geier, 2010). Alternative B is not anticipated to have measurable effects to current P-J structure and shrub understory diversity and density therefore habitat quality for black-chinned sparrow populations. Alternative B would not designate motorized cross country travel, or motorized big game retrieval and would limit dispersed camping to less than 1 percent of P-J PNVT and

fuelwood gathering to 3 percent of P-J PNVT. The primary effect of Alternative B to black-chinned sparrow habitat quality would be from effects caused by disturbance from noise from motorized vehicle use of roads and trails, dispersed camping, fuel wood gathering and motorized big game retrieval. Effects to black-chinned sparrow habitat quality would include reduction or loss of the shrub habitat component from fuelwood gathering and dispersed camping. Effects to black chinned sparrow habitat quality from motorized vehicle use of designated roads and trails would increase with increased miles of designated roadways and authorized use adjacent to designed roads for motorized vehicle use. Alternative B would designate 739 miles of roads and trails open to public use which could have effects to black-chinned sparrow habitat, a reduction of 42 percent in motorized roads and trails from Alternative A, but is not anticipated to have a measurable and detectible effect on habitat quality of the P-J PNVT.

Alternative C—Direct and Indirect Effects

Under this alternative, effects of roads and trails open to motorized public use would be reduced to 0.52 miles of roads per square mile of P-J PNVT a 20 percent reduction in road density from Alternative A and a 33 percent increase in road density from Alternative B. Alternative C would result in reduced effects to variable to dense shrub understories with litter that are important elements to P-J PNVT indicator habitat for the black-chinned sparrow compared to Alternative A but would increase effects to black-chinned sparrow habitat quality compared to Alternative B. Road densities of less than 1 mile per square mile habitat would be an indicator of watershed in good condition (Potyondy and Geier, 2010).Alternative C is not anticipated to have measurable effects to current variable to dense shrub understories across the PNVT therefore habitat quality for black-chinned sparrow populations. Alternative C would not designate motorized cross country travel, and would limit dispersed camping to 2 percent of P-J PNVT and fuelwood gathering to 4 percent of P-J PNVT and motorized big game retrieval to 38 percent of P-J PNVT. The primary effect of Alternative C to black-chinned sparrow habitat quality would be from effects caused by disturbance from noise from motorized vehicle use of roads and trails, dispersed camping, fuel wood gathering and motorized big game retrieval. Effects to black-chinned sparrow habitat quality would include reduction or loss of the shrub habitat component from fuelwood gathering and dispersed camping. Effects to black-chinned sparrow habitat quality from motorized vehicle use of designated roads and trails would increase with increased miles of designated roadways and authorized use adjacent to designed roads for motorized vehicle use. Effects to black-chinned sparrow habitat quality under this alternative would be beneficial to habitat quality compared to Alternative A but would increase effects to black-chinned sparrow habitat quality from motorized big game retrieval when compared to Alternative A. Effects to black-chinned sparrow habitat from motorized vehicle use would increase with increased miles of designated roadways and authorized use adjacent to designed roads for motorized public use. There would be impacts on habitat elements in localized areas (where camping, and fuelwood gathering is permitted), but would be reduced due to limited amount of roads within the PNVT. Alternative C improves black-chinned sparrow habitat quality over Alternative A, but less than what is expected with Alternative B. Alternative C is not anticipated to have a measurable and detectible effect on habitat quality of the P-J PNVT.

Alternative D—Direct and Indirect Effects

Under this alternative, effects of roads and trails open to motorized public use would be increased to 0.71 miles of roads per square mile of P-J PNVT a 9 percent increase in road density from Alternative A and a 82 percent increase in road density from Alternative B and a 36 percent

increase in road density from Alternative C. Alternative D would result in increased effects to black-chinned sparrow habitat quality from effects to the shrub with litter habitat component that is an important element to P-J PNVT indicator habitat for the black-chinned sparrow compared to Alternative A, Alternative B and Alternative C. Road densities of less than 1 mile per square mile habitat would be an indicator of watershed in good condition (Potyondy and Geier, 2010). Alternative D is not anticipated to have measurable effects to current shrub density and diversity across the PNVT and therefore habitat quality for black-chinned sparrow populations. Alternative D would not designate motorized cross country travel, and would increase motorized big game retrieval over all alternatives, be similar in designated areas for fuelwood gathering to Alternative A, and reduce dispersed camping to 6 percent of P-J PNVT. The primary effect of Alternative D to black-chinned sparrow habitat quality would be from effects caused by disturbance from noise from motorized vehicle use of roads and trails, dispersed camping, fuel wood gathering and motorized big game retrieval. Effects to black-chinned sparrow habitat quality would include reduction or loss of the shrub habitat component from fuelwood gathering and dispersed camping. Effects to black-chinned sparrow habitat quality from motorized vehicle use of designated roads and trails would increase with increased miles of designated roadways and authorized use adjacent to designed roads for motorized vehicle use. Alternative D effects to black-chinned habitat quality would be increased compared to Alternative A, Alternative B, and Alternative C. Effects to black-chinned sparrow habitat from fuelwood gathering would be similar to Alternative A, greater than Alternative B and Alternative C. There would be impacts on habitat elements in localized areas (where camping and fire wood gathering is permitted), but would be reduced due to limited amount of roads within the PNVT. Alternative D decreases black-chinned sparrow habitat quality over Alternative A, Alternative B and Alternative C. Alternative D is not anticipated to have a measurable and detectible effect on habitat quality of the P-J PNVT.

Cumulative Effects to Pinyon-Juniper Chaparral, Pinypon-Juniper Grassland, Madrean Encinal Woodland, and Juniper Chaparral Species

The pinyon-juniper chaparral, pinypon-juniper grassland, madrean encinal woodland, and juniper chaparral vegetation types provide habitat for the ash-throated flycatcher, gray vireo, Townsend's solitaire, juniper titmouse, northern flicker, spotted towhee, and black-chinned sparrow

Alternative A

Alternative A would potentially result in a long-term cumulative decrease in Pinyon-Juniper Chaparral, Pinypon-Juniper Grassland, Madrean Encinal Woodland, and Juniper Chaparral (P-J) PNVT structural stages, ground cover, shrubs, snags, and large downed woody debris. This alternative would cumulatively contribute to a decrease in key habitat components such as snags and large woody debris, cavity nesting habitat, shrub diversity and density, and general woodland conditions that are expected to be at risk from increased future demand for use of forest resources. Alternative A would continue wood and forest product harvesting, dispersed camping, motorized cross-country travel and unlimited motorized big game retrieval within the P-J PNVT. Motorized use of roads and trails may result in cumulative effects to the PNVT when other Tonto National Forest activities such as land exchanges, reauthorization of livestock grazing allotments, mining and exploratory drilling, fuels reduction projects, forest thinning, watershed/vegetation regeneration and habitat improvement, roadway material source pits, recreation management, personal use activities, and new road construction. Use of roads and motorized trails, cross-country travel and dispersed camping could cause noise disturbance within all structural stages of

the PNVT and could result in cumulative effects to habitat quality to MIS species. The cumulative effects of Tonto National Forest activities are expected to maintain designated roads at an approximate overall density of 0.65 miles of road per square mile of P-J PNVT. Road densities of less than 1 mile per square mile habitat would be an indicator of watersheds in good condition (Potyondy and Geier, 2010) and therefore is not anticipated to have a measurable and detectible effect on habitat quality of the P-J PNVT.

Alternative B

There would be no effects to forest structural stage diversity, ground cover, shrubs, snags, and large downed woody debris and habitat quality in the P-J PNVT. While this alternative may result in some improvement to habitat quality, it would be unlikely that these changes would impact reproductive success to the degree that forestwide population change would occur. Overall, this alternative is not expected to change forestwide habitat or population trends for the P-J PNVT. The effects of this alternative may combine with other activities to result in a beneficial cumulative effect to P-J PNVT habitat quality over a much broader area. For example areas open to cross-country motorized travel would be permitted on 167 percent of the forestwide PNVT, while Alternative B would not permit motorized cross country travel. The cumulative effects of Alternative B in relation to Tonto National Forest activities are expected to maintain designated roads at an approximate overall density of 0.39 miles of road per square mile of P-J PNVT. Road densities of less than 1 mile per square mile habitat would be an indicator of watersheds in good condition (Potyondy and Geier, 2010) and therefore is not anticipated to have a measurable and detectible effect on habitat quality of the P-J PNVT).

Alternative C

This alternative is expected to result in an overall effect of decreasing impacts to P-J PNVT and decreasing disturbance to the species that use it for habitat compared to Alternative A but increase potential habitat quality effects when compared to Alternative B. This alternative may result in effects to the quality of this habitat by changing the patterns of habitat available (reduced fragmentation from road use) and potentially affecting the abundance of key habitat elements such as snags and large woody debris, cavity nesting habitat, shrub diversity and density, and general woodland conditions. This alternative‘s reduction of roads to 0.52 miles of road per square miles of the P-J PNVT. Road densities of less than 1 mile per square mile habitat would be an indicator of watersheds in good condition (Potyondy and Geier, 2010) and therefore is not anticipated to have a measurable and detectible effect on habitat quality of the P-J PNVT). Alternative C would not change the amount or age class distribution of indicator habitat over the P-J PNVT. Habitat quality could improve, given the elimination of cross-country travel and reductions in the amount of open roads, motorized trails, and MBGR, lessening disturbance to MIS. When combined with other Tonto National Forest activities the cumulative effects of Alternative C may combine with other activities to result in a beneficial cumulative effect to P-J PNVT dependent MIS species over a much broader area. Alternative C would increase motorized bog game retrieval from Alternative A, would reduce dispersed camping to 9 percent of PNVT acres and fuelwood gathering to 12 percent of PNVT acres. The cumulative effects of Alternative C are not anticipated to have a measurable and detectible effect on habitat quality or the species that use P-J PNVT for habitat.

Alternative D

Alternative D would not change the amount or vegetation structural stage, ground cover, shrubs, snags, and large downed woody debris of MIS habitat in the P-J PNVT. Factors that would improve habitat quality include the elimination of cross-country travel and reductions in the amount of acres of dispersed camping lessening disturbance to MIS. Motorized vehicle use of roads and trails would be increased to 0.71 miles of road per mile of P-J PNVT a 9 percent increase from Alternative A, an 82 percent increase from Alternative B and a 36 percent increase from Alternative C. Fuelwood gathering would be similar to Alternative A and MBGR would be increased above all alternatives providing little improvement in habitat quality from current baseline conditions. Factors that moderate any improvement in habitat quality include maintaining an overall road density of 0.71 miles of open roads per square mile of PNVT, fuelwood gathering and MBGR corridors over a large amount of the PNVT. While this alternative may result in some improvements and some negative impacts to habitat quality, it would be unlikely that these changes would impact reproductive success to the degree that woodland-wide MIS species population change would occur. Overall, this alternative is not expected to change Forest-wide habitat or population trends but would provide fewer benefits and have greater impacts from disturbance compared to Alternative B and Alternative C. The effects of this alternative may combine with other activities to result in a beneficial cumulative effect to woodland dependent MIS species over a similar area as Alternative A through eliminating motorized cross-country travel. The cumulative effects of Alternative D are not anticipated to have a measurable and detectible effect on habitat quality or the species that use the ponderosa pine forest mild and mixed conifer with aspen PNVT for habitat.

Indicators of Semidesert Grassland

The semidesert grassland vegetation types are indicators for savannah sparrow and horned lark. Table 61 identifies the amount of habitat of semidesert grassland that is impacted by each of the five elements under each alternative.

Table 61: Total acres of Semidesert Grassland Habitat Impacted under Each Alternative

Elements	Forestwide	Alternative A	Alternative B	Alternative C	Alternative D
Roads and trails open to public use (miles)	376.91	277 (73%)	169.77 (45%)	225.54 (60%)	274.63 (73%)
Road density (miles per square mile)		0.46	0.29	0.38	0.46
Areas open to motorized cross-country travel (acres)	394,195.66	9,353.35 (2%)	0 (0%)	0 (0%)	0 (0%)
Big game retrieval using motorized vehicles (acres)	394,195.66	9,353.35 (2%)	0 (0%)	43,468.11 (11%)	94,612.74 (24%)
Access of dispersed camping using motorized vehicles (acres)	394,195.66	9,353.35 (2%)	4.86 (<1%)	4,835.76 (1%)	17,154.51 (4%)

Elements	Forestwide	Alternative A	Alternative B	Alternative C	Alternative D
Additional Information Pertaining to motor vehicle use (personal use fuelwood gathering) (acres)	394,195.66	63,352.21 (16%)	8,093 (2%)	9,867.08 (3%)	63,352.21 (16%)

Savannah Sparrow

The savannah sparrow is an indicator species for grass species diversity within semi-desert grassland PNVT.

Alternative A—Direct and Indirect Effects

The effects of motorized public use of roadways and continued maintenance consists of the conversion of native habitat to non-vegetated road ways and is a linear direct loss of semidesert grassland PNVT total miles of roadways within savannah sparrow habitat. Diversity of grassland habitats includes a grass understory with diverse species composition with litter that is an important element to diversity of grass species in the semidesert grassland PNVT indicator habitat for the savannah sparrow. Alternative A would designate 277 miles of roads as open to motorized public use, a reduction of 27 percent from current public use roads and trails and would designate a road density of 0.46 miles of roads per mile of semidesert grassland PNVT. Road densities of less than 1 mile per square mile habitat would be an indicator of watershed in good condition (Potyondy and Geier, 2010). Alternative A would continue to authorize motorized cross-country travel, motorized big game retrieval and dispersed camping on 2 percent of the semidesert grassland PNVT and fuelwood harvest on 16 percent of PNVT acres. The primary direct effect of roads to savannah sparrow habitat quality would be destruction of grass understory and ground cover from harvest of down logs and wood for campfire use, fuelwood gathering and dispersed camping throughout the PNVT in proximity to roadways designated roads and trails for motorized public use with the PNVT. Effects to savannah sparrow habitat quality could include disturbance from noise from motor vehicle use, dispersed camping, fuel wood gathering, and motorized big game retrieval. Effects to savannah sparrow habitat from motorized vehicle use would increase with increased miles of designated roadways and authorized use adjacent to designed roads for motorized public use. Alternative A would designate 277 miles of roads and trails open to public use which could have direct and indirect effects to savannah sparrow habitat but is not anticipated to have a measurable and detectible effect on habitat quality of the semidesert grassland PNVT.

Alternative B—Direct and Indirect Effects

The effects of motorized public use of roadways and continued maintenance consists of the conversion of native habitat to non-vegetated road ways and is a linear direct loss of semidesert grassland PNVT total miles of roadways within savannah sparrow habitat. Diversity of grassland habitats includes a grass understory with diverse species composition with litter that is an important element to diversity of grass species in the semidesert grassland PNVT indicator habitat for the savannah sparrow. Alternative B would designate 170 miles of roads as open to motorized public use, a reduction of 38 percent reduction form Alternative A and would designate

a road density of 0.0.29 miles of roads per mile of semidesert grassland PNVT. Road densities of less than 1 mile per square mile habitat would be an indicator of watershed in good condition (Potyondy and Geier, 2010). Alternative B would continue to authorize dispersed camping on less than 1 percent of the semidesert grassland PNVT and fuelwood harvest on 2 percent of PNVT acres. Alternative B would not authorize MBGRor motorized cross-country travel. The primary direct effect of roads to savannah sparrow habitat quality would be destruction of grass understory and ground cover from harvest of down logs and wood for fuelwood gathering and dispersed camping throughout the PNVT in proximity to roadways designated roads and trails for motorized public use with the PNVT. Effects to savannah sparrow habitat quality could include disturbance from noise from motor vehicle use of roads and trails, dispersed camping, and fuel wood gathering. Effects to savannah sparrow habitat from motorized vehicle use would increase with increased miles of designated roadways and authorized use adjacent to designed roads for motorized public use. Alternative B would designate 170 miles of roads and trails open to public use which could have direct and indirect effects to savannah sparrow habitat but is not anticipated to have a measurable and detectible effect on habitat quality of the P-J PNVT.

Alternative C—Direct and Indirect Effects

The effects of motorized public use of roadways and continued maintenance consists of the conversion of native habitat to non-vegetated road ways and is a linear direct loss of semidesert grassland PNVT total miles of roadways within savannah sparrow habitat. Diversity of grassland habitats includes a grass understory with diverse species composition with litter that is an important element to diversity of grass species in the semidesert grassland PNVT indicator habitat for the savannah sparrow. Alternative C would designate 226 miles of roads as open to motorized public use, a reduction of 18 percent from Alternative A and a 33 percent increase in miles of designated road and trails from Alternative B. Alternative C would designate a road density of 0.38 miles of roads per mile of semidesert grassland PNVT. Road densities of less than 1 mile per square mile habitat would be an indicator of watershed in good condition (Potyondy and Geier, 2010). Alternative C would continue to authorize dispersed camping on 1 percent of the semidesert grassland PNVT and fuelwood harvest on 3 percent of PNVT acres. MBGR would be authorized on 11 percent of semidesert PNVT a 450 percent increase in MBGR from Alternative A. Alternative C would not authorize motorized cross-country travel. The primary effect of roads to savannah sparrow habitat quality would be destruction of grass understory and ground cover from harvest of down logs and wood for fuelwood gathering and dispersed camping throughout the PNVT in proximity to roadways designated roads and trails for motorized public use with the PNVT. Effects to savannah sparrow habitat quality could include disturbance from noise from motor vehicle use of roads and trails, dispersed camping, and fuel wood gathering. Effects to savannah sparrow habitat from motorized vehicle use would increase with increased miles of designated roadways and authorized use adjacent to designed roads for motorized public use. Alternative C would decrease effects to savannah sparrow habitat from Alternative A primarily from not permitting motorized cross-country travel and would increase effects to savannah sparrow habitat from Alternative B. Alternative C would designate 226 miles of roads and trails open to public use which could have direct and indirect effects to savannah sparrow habitat but is not anticipated to have a measurable and detectible effect on habitat quality of the P-J PNVT.

Alternative D—Direct and Indirect Effects

The effects of motorized public use of roadways and continued maintenance consists of the conversion of native habitat to non-vegetated road ways and is a linear direct loss of semidesert grassland PNVT total miles of roadways within savannah sparrow habitat. Diversity of grassland habitats includes a grass understory with diverse species composition with litter that is an important element to diversity of grass species in the semidesert grassland PNVT indicator habitat for the savannah sparrow. Alternative D would designate 275 miles of roads as open to motorized public use, similar to Alternative A, a 62 percent increase from Alternative B and a 21 percent increase in miles of designated road and trails from Alternative C. Alternative D would designate a road density of 0.46 miles of roads per mile of semidesert grassland PNVT similar to Alternative A. Road densities of less than 1 mile per square mile habitat would be an indicator of watershed in good condition (Potyondy and Geier, 2010). Alternative D would continue to authorize dispersed camping on 4 percent of the semidesert grassland PNVT; greater than any alternative and fuelwood harvest on 16 percent of PNVT acres similar to Alternative A. MBGR would be authorized on 24 percent of semidesert PNVT; greater than any alternative. Alternative D would not authorize motorized cross-country travel. The primary direct effect of roads to savannah sparrow habitat quality would be destruction of grass understory and ground cover from harvest of down logs and wood for fuelwood gathering and dispersed camping throughout the PNVT in proximity to roadways designated roads and trails for motorized public use with the PNVT. Effects to savannah sparrow habitat quality could include disturbance from noise from motor vehicle use of roads and trails, dispersed camping, and fuel wood gathering. Effects to savannah sparrow habitat from motorized vehicle use would increase with increased miles of designated roadways and authorized use adjacent to designed roads for motorized public use. Alternative D would decrease effects to savannah sparrow habitat from Alternative A primarily from not permitting motorized cross-country travel and would increase effects to savannah sparrow habitat from Alternative B and Alternative C. Alternative D would designate 275 miles of roads and trails open to public use which could have direct and indirect effects to savannah sparrow habitat but is not anticipated to have a measurable and detectible effect on habitat quality of the P-J PNVT.

Horned Lark

The horned lark is an indicator species for vegetation aspect within semi-desert grassland PNVT.

Alternative A—Direct and Indirect Effects

The effects of motorized public use of roadways and continued maintenance consists of the conversion of native habitat to non-vegetated road ways and is a linear direct loss of semidesert grassland PNVT total miles of roadways within horned lark habitat. Diversity of grassland habitats includes a grass understory with diverse species composition and areas of bare ground that is an important element to the semidesert grassland PNVT indicator habitat for the horned lark. Alternative A would designate 277 miles of roads as open to motorized public use, a reduction of 27 percent from current public use roads and trails and would designate a road density of 0.46 miles of roads per mile of semidesert grassland PNVT. Road densities of less than 1 mile per square mile habitat would be an indicator of watershed in good condition (Potyondy and Geier, 2010). Alternative A would continue to authorize motorized cross-country travel, motorized big game retrieval and dispersed camping on 2 percent of the semidesert grassland PNVT and fuelwood harvest on 16 percent of PNVT acres. Effects to horned lark habitat quality

could include disturbance from noise from motor vehicle use, dispersed camping, fuel wood gathering, and motorized big game retrieval. Effects to horned lark habitat from motorized vehicle use would increase with increased miles of designated roadways and authorized use adjacent to designed roads for motorized public use. Alternative A would designate 277 miles of roads and trails open to public use which could have effects to horned lark habitat but is not anticipated to have a measurable and detectible effect on habitat quality of the P-J PNVT.

Alternative B—Direct and Indirect Effects

The effects of motorized public use of roadways and continued maintenance consists of the conversion of native habitat to non-vegetated road ways and is a linear direct loss of semidesert grassland PNVT total miles of roadways within horned lark habitat. Diversity of grassland habitats includes a grass understory with diverse species composition and areas of bare ground that is an important element to the semidesert grassland PNVT indicator habitat for the horned lark. Alternative B would designate 170 miles of roads as open to motorized public use, a reduction of 38 percent from Alternative A and would designate a road density of 0.29 miles of roads per mile of semidesert grassland PNVT. Road densities of less than 1 mile per square mile habitat would be an indicator of watershed in good condition (Potyondy and Geier, 2010). Alternative B would continue to authorize dispersed camping on less than 1 percent of the semidesert grassland PNVT and fuelwood harvest on 2 percent of PNVT acres. Alternative B would not authorize MBGR or motorized cross-country travel. Effects to horned lark habitat quality could include disturbance from noise from motor vehicle use of roads and trails, dispersed camping, and fuel wood gathering. Effects to horned lark habitat from motorized vehicle use would increase with increased miles of designated roadways and authorized use adjacent to designed roads for motorized public use. Alternative B would designate 170 miles of roads and trails open to public use which could have direct and indirect effects to savannah sparrow habitat but is not anticipated to have a measurable and detectible effect on habitat quality of the P-J PNVT.

Alternative C—Direct and Indirect Effects

The effects of motorized public use of roadways and continued maintenance consists of the conversion of native habitat to non-vegetated road ways and is a linear direct loss of semidesert grassland PNVT total miles of roadways within horned lark habitat. Diversity of grassland habitats includes a grass understory with diverse species composition and areas of bare ground that is an important element to the semidesert grassland PNVT indicator habitat for the horned lark. Alternative C would designate 226 miles of roads as open to motorized public use, a reduction of 18 percent reduction from Alternative A and a 33 percent increase in miles of designated road and trails from Alternative B. Alternative C would designate a road density of 0.38 miles of roads per mile of semidesert grassland PNVT. Road densities of less than 1 mile per square mile habitat would be an indicator of watershed in good condition (Potyondy and Geier, 2010). Alternative C would continue to authorize dispersed camping on 1 percent of the semidesert grassland PNVT and fuelwood harvest on 3 percent of PNVT acres. MBGR would be authorized on 11 percent of semidesert PNVT a 450 percent increase in MBGR from Alternative A. Alternative C would not authorize motorized cross-country travel. The primary indirect effect of roads to horned lark habitat quality would be destruction of grass understory and ground cover from harvest of down logs and wood for fuelwood gathering and dispersed camping throughout the PNVT in proximity to roadways designated roads and trails for motorized public use with the PNVT. Effects to horned lark habitat quality could include disturbance from noise from motor

vehicle use of roads and trails, dispersed camping, and fuel wood gathering. Effects to horned lark habitat from motorized vehicle use would increase with increased miles of designated roadways and authorized use adjacent to designed roads for motorized public use. Alternative C would decrease effects to horned lark habitat from Alternative A primarily from not permitting motorized cross-country travel and would increase effects to savannah sparrow habitat from Alternative B. Alternative C would designate 226 miles of roads and trails open to public use which could have effects to horned lark habitat but is not anticipated to have a measurable and detectible effect on habitat quality of the P-J PNVT.

Alternative D—Direct and Indirect Effects

The effects of motorized public use of roadways and continued maintenance consists of the conversion of native habitat to non-vegetated road ways and is a linear direct loss of semidesert grassland PNVT total miles of roadways within horned lark habitat. Diversity of grassland habitats includes a grass understory with diverse species composition and areas of bare ground that is an important element to the semidesert grassland PNVT indicator habitat for the horned lark. Alternative D would designate 226 miles of roads as open to motorized public use, a reduction of 18 percent reduction from Alternative A and a 33 percent increase in miles of designated road and trails from Alternative B and a 21 percent increase in miles of designated road and trails from Alternative C. Alternative D would designate a road density of 0.46 miles of roads per mile of semidesert grassland PNVT similar to Alternative A. Road densities of less than 1 mile per square mile habitat would be an indicator of watershed in good condition (Potyondy and Geier, 2010). Alternative D would continue to authorize dispersed camping on 4 percent of the semidesert grassland PNVT; greater than any alternative and fuelwood harvest on 16 percent of PNVT acres similar to Alternative A. MBGR would be authorized on 24 percent of semidesert PNVT; greater than any alternative. Alternative D would not authorize motorized cross-country travel. The primary indirect effect of roads to horned lark habitat quality would be destruction of grass understory and ground cover from harvest of down logs and wood for fuelwood gathering and dispersed camping throughout the PNVT in proximity to roadways designated roads and trails for motorized public use with the PNVT. Effects to horned lark habitat quality could include disturbance from noise from motor vehicle use of roads and trails, dispersed camping, and fuel wood gathering. Effects to horned lark habitat from motorized vehicle use would increase with increased miles of designated roadways and authorized use adjacent to designed roads for motorized public use. Alternative D would decrease effects to horned lark habitat from Alternative A primarily from not permitting motorized cross-country travel and would increase effects to horned lark habitat from Alternative B and Alternative C. Alternative D would designate 275 miles of roads and trails open to public use which could have direct and indirect effects to horned lark habitat but is not anticipated to have a measurable and detectible effect on habitat quality of the P-J.

Cumulative Effects to Semidesert Grassland

Alternative A

Alternative A would potentially result in a long-term cumulative decrease in the semidesert grassland PNVT structural stages, shrub and grass understory ground cover with some bare ground. This alternative would cumulatively contribute to a decrease in key habitat components such as, shrub and grass understory ground cover with some bare ground, and general semidesert

grassland habitat conditions that are expected to be at risk from increased future demand for use of forest resources. Alternative A would continue wood and forest product harvesting, dispersed camping, motorized cross-country travel and unlimited motorized big game retrieval within the semidesert grassland PNVT. Motorized use of roads and trails may result in cumulative effects to the PNVT when other Tonto National Forest activities such as land exchanges, reauthorization of livestock grazing allotments, mining and exploratory drilling, watershed/vegetation regeneration and habitat improvement, roadway material source pits, recreation management, personal use activities, and new road construction. Use of roads and motorized trails, cross-country travel and dispersed camping could cause noise disturbance within all structural stages of the PNVT and could result in cumulative effects to habitat quality to MIS species. The cumulative effects of Tonto National Forest activities are expected to maintain designated roads at an approximate overall density of 0.46 miles of road per square mile of the semidesert grassland PNVT. Road densities of less than 1 mile per square mile habitat would be an indicator of watersheds in good condition (Potyondy and Geier, 2010) and therefore is not anticipated to have a measurable and detectible effect on habitat quality of the semidesert grassland PNVT.

Alternative B

There would be no direct effects to semidesert grassland structural stage diversity, perennial grass ground cover, shrubs, and habitat quality in the semidesert grassland PNVT. While this alternative may result in some improvement to habitat quality, it would be unlikely that these changes would impact reproductive success to the degree that forestwide population change would occur. Overall, this alternative is not expected to change forestwide habitat or population trends for the semidesert grassland PNVT. The effects of this alternative may combine with other activities to result in a beneficial cumulative effect to semidesert grassland PNVT habitat quality over a much of the PNVT through elimination of motorized cross country travel, reduced dispersed camping, MBGR and fuelwood gathering. The cumulative effects of Alternative B in relation to Tonto National Forest activities are expected to maintain designated roads at an approximate overall density of 0.29 miles of road per square mile of semidesert grassland PNVT. Road densities of less than 1 mile per square mile habitat would be an indicator of watersheds in good condition (Potyondy and Geier, 2010) and therefore is not anticipated to have a measurable and detectible effect on habitat quality of the semidesert grassland PNVT.

Alternative C

This alternative is expected to result in an overall effect of decreasing impacts to semidesert grassland PNVT and decreasing disturbance to the species that use it for habitat compared to Alternative A but increase potential habitat quality effects when compared to Alternative B. This alternative may result in effects to the quality of this habitat by potentially affecting the abundance of key habitat elements such as structural stage, shrub and grass understory ground cover with some bare ground and general semidesert grassland conditions. This alternative‘s reduction of roads to 0.38 miles of road per square miles of the semidesert grassland PNVT would decrease potential effects to semidesert grassland PVNT from Alternative A and increase effects to the PNVT from Alternative B. Road densities of less than 1 mile per square mile habitat would be an indicator of watersheds in good condition (Potyondy and Geier, 2010) and therefore is not anticipated to have a measurable and detectible effect on habitat quality of the semidesert grassland PNVT. Alternative C would not change the amount or distribution of indicator habitat over the semidesert grassland PNVT. Habitat quality could improve, given the elimination of cross-country travel and reductions in the amount of open roads and motorized trails, and

dispersed camping, lessening disturbance to MIS. Factors that moderate any improvements in habitat quality include increasing MBGR to 11 percent of the semidesert grassland PNVT. When combined with other Tonto National Forest activities the cumulative effects of Alternative C may combine with other activities to result in a beneficial cumulative effect to semidesert grassland PNVT dependent MIS species over a much broader area. Alternative C would increase MBGR from Alternative A, would reduce dispersed camping to 1 percent of PNVT acres and fuelwood gathering to 3 percent of PNVT acres. The cumulative effects of Alternative C are not anticipated to have a measurable and detectible effect on habitat quality or the species that use semidesert grassland PNVT for habitat.

Alternative D

Alternative D would not change the amount or vegetation structural stage, shrub and grass understory ground cover with some bare ground and general semidesert grassland PNVT. Factors that would improve habitat quality include the elimination of cross-country travel lessening disturbance to MIS. Motorized vehicle use of roads and trails would be increased to 0.46 miles of road per mile of semidesert grassland PNVT similar to Alternative A, an 59 percent increase from Alternative B and a 21 percent increase from Alternative C. Fuelwood gathering would be similar to Alternative A and MBGR would be increased above all alternatives providing little improvement in habitat quality from current baseline conditions. Factors that moderate any improvement in habitat quality include maintaining an overall road density of 0.46 miles of open roads per square mile of PNVT, fuelwood gathering and MBGR corridors over a large amount of the PNVT. While this alternative may result in some improvements and some negative impacts to habitat quality, it would be unlikely that these changes would impact reproductive success to the degree that woodland-wide MIS species population change would occur. Overall, this alternative is not expected to change forestwide habitat or population trends but would provide fewer benefits and have greater impacts from disturbance compared to Alternative B and Alternative C. The effects of this alternative may combine with other activities to result in a beneficial cumulative effect to semidesert grassland dependent MIS species over a similar area as Alternative A through eliminating motorized cross-country travel. The cumulative effects of Alternative D are not anticipated to have a measurable and detectible effect on habitat quality or the species that use the semidesert grassland PNVT for habitat.

Indicators of Desert Communities

The desert community vegetation type is an indicator for the black-throated sparrow and canyon towhee.

Table 62 identifies the amount of habitat of Desert Communities that is impacted by each of the five elements under each alternative.

Table 62: Total acres of Desert Communities Habitat Impacted under Each Alternative

Elements	Forestwide	Alternative A	Alternative B	Alternative C	Alternative D
Roads and trails open to public use (miles)	810.23	581.57 (72%)	246.49 (30%)	396.36 (49%)	520.48 (64%)
Road density (miles per square mile)		0.58	0.29	0.42	0.53

Elements	Forestwide	Alternative A	Alternative B	Alternative C	Alternative D
Areas open to motorized cross-country travel (acres)	725,990.92	1,316.76 (<1%)	0 (0%)	1,403.92 (<1%)	1,403.92 (0%)
Big game retrieval using motorized vehicles (acres)	725,990.92	1,316.76 (<1%)	0 (0%)	32,665.11 (4%)	240,445.02 (33%)
Access of dispersed camping using motorized vehicles (acres)	725,990.92	1,316.76 (<1%)	10.65 (<1%)	10,191.79 (1%)	36,880.42 (5%)
Additional Information Pertaining to motor vehicle use (personal use fuelwood gathering) (acres)	725,990.92	71,843.67 (10%)	7,057.36 (1%)	8,566.65 (1%)	71,843.67 (1%)

Black-throated Sparrow

The black-throated sparrow is an indicator species for shrub density within desert communities PNVT.

Alternative A—Direct and Indirect Effects

The effects of motorized public use of roadways and continued maintenance consists of the conversion of native habitat to non-vegetated road ways and is a linear direct loss of desert communities PNVT total miles of roadways within black-throated sparrow habitat. Diversity of desert community habitats includes shrublands with diverse species composition with grass-forb understory with litter that is an important element to diversity of desert communities PNVT indicator habitat for the black-throated sparrow. Alternative A would designate 582 miles of roads as open to motorized public use, a reduction of 28 percent from current public use roads and trails and would designate a road density of 0.58 miles of roads per mile of desert communities PNVT. Road densities of less than 1 mile per square mile habitat would be an indicator of watershed in good condition (Potyondy and Geier, 2010). Alternative A would continue to authorize motorized cross-country travel, motorized big game retrieval and dispersed camping on less than percent of the desert communities PNVT and fuelwood harvest on 10 percent of PNVT acres. The primary direct effect of roads to black-throated sparrow habitat quality would be destruction of shrublands and ground cover from harvest of down logs and wood for campfire use, fuelwood gathering and dispersed camping throughout the PNVT in proximity to roadways designated roads and trails for motorized public use with the PNVT. Effects to black-throated sparrow habitat quality could include disturbance from noise from motor vehicle use, dispersed camping, fuel wood gathering, and motorized big game retrieval. Effects to black-throated sparrow habitat from motorized vehicle use would increase with increased miles of designated roadways and authorized use adjacent to designed roads for motorized public use. Alternative A would designate 582 miles of roads and trails open to public use which could have direct and indirect effects to black-throated sparrow habitat but is not anticipated to have a measurable and detectible effect on habitat quality of the P-J PNVT.

Alternative B—Direct and Indirect Effects

The effects of motorized public use of roadways and continued maintenance consists of the conversion of native habitat to non-vegetated road ways and is a linear direct loss of desert communities PNVT total miles of roadways within black-throated sparrow habitat. Diversity of desert community habitats includes shrublands with diverse species composition with grass-forb understory with litter that is an important element to diversity of desert communities PNVT indicator habitat for the black-throated sparrow. Alternative B would designate 246 miles of roads as open to motorized public use, a reduction of 58 percent reduction from Alternative A and would designate a road density of 0.29 miles of roads per mile of desert communities PNVT a reduction in road density of 50 percent from Alternative A. Road densities of less than 1 mile per square mile habitat would be an indicator of watershed in good condition (Potyondy and Geier, 2010). Alternative B would not authorize motorized cross-country travel, or MBGR. Alternative B would authorize continue to authorize dispersed camping and fuelwood gathering on 1 percent of the desert communities PNVT. The primary direct effect of roads to black-throated sparrow habitat quality would be destruction of shrublands and ground cover from harvest of down logs and wood for campfire use, fuelwood gathering and dispersed camping throughout the PNVT in proximity to roadways designated roads and trails for motorized public use with the PNVT. Effects to black-throated sparrow habitat quality could include disturbance from noise from motor vehicle use, dispersed camping, and fuel wood gathering. Effects to black-throated sparrow habitat from motorized vehicle use would increase with increased miles of designated roadways and authorized use adjacent to designed roads for motorized public use. Alternative B would designate 246 miles of roads and trails open to public use and would increase black-throated sparrow habitat quality over Alternative A. Alternative B have could have direct and indirect effects to black-throated sparrow habitat but is not anticipated to have a measurable and detectible effect on habitat quality of the P-J PNVT.

Alternative C—Direct and Indirect Effects

The effects of motorized public use of roadways and continued maintenance consists of the conversion of native habitat to non-vegetated road ways and is a linear direct loss of desert communities PNVT total miles of roadways within black-throated sparrow habitat. Diversity of desert community habitats includes shrublands with diverse species composition with grass-forb understory with litter that is an important element to diversity of desert communities PNVT indicator habitat for the black-throated sparrow. Alternative C would designate 396 miles of roads as open to motorized public use, a reduction of 32 percent from Alternative A and a 61 percent increase in roads and trails open to public use from Alternative B. Alternative C would designate a road density of 0.42 miles of roads per mile of desert communities PNVT a reduction in road density of 28 percent from Alternative A and would increase road density by 45 percent from Alternative B. Road densities of less than 1 mile per square mile habitat would be an indicator of watershed in good condition (Potyondy and Geier, 2010). Alternative C would authorize motorized cross-country travel, dispersed camping, and fuelwood gathering on 1 percent of the PNVT and would authorize MBGR on 4 percent of desert communities. The primary direct effect of roads to black-throated sparrow habitat quality would be destruction of shrublands and ground cover from harvest of down logs and wood for campfire use, fuelwood gathering and dispersed camping throughout the PNVT in proximity to roadways designated roads and trails for motorized public use with the PNVT. Effects to black-throated sparrow habitat quality could include disturbance from noise from motor vehicle use of roads and trails, cross-country travel, dispersed camping, and fuel wood gathering. Effects to black-throated sparrow habitat from

motorized vehicle use would increase with increased miles of designated roadways and authorized use adjacent to designed roads for motorized public use. Alternative C would designate 396 miles of roads and trails open to public use and would increase black-throated sparrow habitat quality over Alternative A and would decrease black-throated sparrow habitat quality from Alternative B. Alternative C have could have direct and indirect effects to black-throated sparrow habitat but is not anticipated to have a measurable and detectible effect on habitat quality of the P-J PNVT.

Alternative D—Direct and Indirect Effects

The effects of motorized public use of roadways and continued maintenance consists of the conversion of native habitat to non-vegetated road ways and is a linear direct loss of desert communities PNVT total miles of roadways within black-throated sparrow habitat. Diversity of desert community habitats includes shrublands with diverse species composition with grass-forb understory with litter that is an important element to diversity of desert communities PNVT indicator habitat for the black-throated sparrow. Alternative D would designate 520 miles of roads as open to motorized public use, a reduction of 11 percent from Alternative A, a 111 percent increase in roads and trails open to public use from Alternative B and an increase of 31 percent from Alternative C. Alternative D would designate a road density of 0.53 miles of roads per mile of desert communities PNVT a reduction in road density of 8 percent from Alternative A and would increase road density by 83 percent from Alternative B and a 26 percent increase in road density from Alternative C. Road densities of less than 1 mile per square mile habitat would be an indicator of watershed in good condition (Potyondy and Geier, 2010). Alternative D would authorize motorized cross-country travel on 1 percent of the PNVT, authorize MBGR on 33 percent of PNVT acres greater than any alternative, and dispersed camping 5 percent of PNVT acres, greater than any alternative and fuelwood gathering on 10 percent of PNVT acres similar to Alternative A. The primary direct effect of roads to black-throated sparrow habitat quality would be destruction of shrublands and ground cover from harvest of down logs and wood for campfire use, fuelwood gathering, and dispersed camping throughout the PNVT in proximity to roadways designated roads and trails for motorized public use with the PNVT. Effects to black-throated sparrow habitat quality could include disturbance from noise from motor vehicle use of roads and trails, cross-country travel, dispersed camping, and fuel wood gathering. Effects to black-throated sparrow habitat from motorized vehicle use would increase with increased miles of designated roadways and authorized use adjacent to designed roads for motorized public use. Alternative D would designate 520 miles of roads and trails open to public use and would decrease black-throated sparrow habitat quality over all alternatives. Alternative D have could have direct and indirect effects to black-throated sparrow habitat but is not anticipated to have a measurable and detectible effect on habitat quality of the P-J PNVT.

Canyon Towhee

The canyon towhee is an indicator species for ground cover within desert communities PNVT.

Alternative A—Direct and Indirect Effects

The effects of motorized public use of roadways and continued maintenance consists of the conversion of native habitat to non-vegetated road ways and is a linear direct loss of desert communities PNVT total miles of roadways within canyon towhee habitat. Diversity of desert community habitats includes shrublands with diverse species composition with grass-forb

understory with litter providing ground cover that is an important element to diversity of desert communities PNVT indicator habitat for the canyon towhee. Alternative A would designate 582 miles of roads as open to motorized public use, a reduction of 28 percent from current public use roads and trails and would designate a road density of 0.58 miles of roads per mile of desert communities PNVT. Road densities of less than 1 mile per square mile habitat would be an indicator of watershed in good condition (Potyondy and Geier, 2010). Alternative A would continue to authorize motorized cross-country travel, motorized big game retrieval and dispersed camping on less than 1 percent of the desert communities PNVT and fuelwood harvest on 10 percent of PNVT acres. The primary direct effect of roads to canyon towhee habitat quality would be destruction of ground cover from harvest of down logs and wood for campfire use, fuelwood gathering and dispersed camping throughout the PNVT in proximity to roadways designated roads and trails for motorized public use with the PNVT. Effects to canyon towhee habitat quality could include disturbance from noise from motor vehicle use, dispersed camping, fuel wood gathering, and motorized big game retrieval. Effects to canyon towhee habitat from motorized vehicle use would increase with increased miles of designated roadways and authorized use adjacent to designed roads for motorized public use. Alternative A would designate 582 miles of roads and trails open to public use which could have direct and indirect effects to canyon towhee habitat but is not anticipated to have a measurable and detectible effect on habitat quality of the P-J PNVT.

Alternative B—Direct and Indirect Effects

The effects of motorized public use of roadways and continued maintenance consists of the conversion of native habitat to non-vegetated road ways and is a linear direct loss of desert communities PNVT total miles of roadways within canyon towhee habitat. Diversity of desert community habitats includes shrublands with diverse species composition with grass-forb understory with litter providing ground cover that is an important element to diversity of desert communities PNVT indicator habitat for the canyon towhee. Alternative B would designate 246 miles of roads as open to motorized public use, a reduction of 58 percent from Alternative A and would designate a road density of 0.29 miles of roads per mile of desert communities PNVT a reduction in road density of 50 percent from Alternative A. Road densities of less than 1 mile per square mile habitat would be an indicator of watershed in good condition (Potyondy and Geier, 2010). Alternative B would not authorize motorized cross-country travel, or MBGR. Alternative B would authorize continue to authorize dispersed camping and fuelwood gathering on 1 percent of the desert communities PNVT. The primary direct effect of roads to canyon towhee habitat quality would be destruction of ground cover from harvest of down logs and wood for campfire use, fuelwood gathering and dispersed camping throughout the PNVT in proximity to roadways designated roads and trails for motorized public use with the PNVT. Effects to canyon towhee habitat quality could include disturbance from noise from motor vehicle use, dispersed camping, and fuel wood gathering. Effects to canyon towhee habitat from motorized vehicle use would increase with increased miles of designated roadways and authorized use adjacent to designed roads for motorized public use. Alternative B would designate 246 miles of roads and trails open to public use and would increase canyon towhee habitat quality over Alternative A. Alternative B have could have direct and indirect effects to canyon towhee habitat but is not anticipated to have a measurable and detectible effect on habitat quality of the desert communities PNVT.

Alternative C—Direct and Indirect Effects

The effects of motorized public use of roadways and continued maintenance consists of the conversion of native habitat to non-vegetated road ways and is a linear direct loss of desert communities PNVT total miles of roadways within canyon towhee habitat. Diversity of desert community habitats includes shrublands with diverse species composition with grass-forb understory with litter providing ground cover that is an important element to diversity of desert communities PNVT indicator habitat for the canyon towhee. Alternative C would designate 396 miles of roads as open to motorized public use, a reduction of 32 percent reduction from Alternative A and a 61 percent increase in roads and trails open to public use from Alternative B. Alternative C would designate a road density of 0.42 miles of roads per mile of desert communities PNVT a reduction in road density of 28 percent from Alternative A and would increase road density by 45 percent from Alternative B. Road densities of less than 1 mile per square mile habitat would be an indicator of watershed in good condition (Potyondy and Geier, 2010). Alternative C would authorize motorized cross-country travel, dispersed camping, and fuelwood gathering on 1 percent of the PNVT and would authorize MBGR on 4 percent of desert communities. The primary direct effect of roads to canyon towhee habitat quality would be destruction of ground cover from harvest of down logs and wood for campfire use, fuelwood gathering and dispersed camping throughout the PNVT in proximity to roadways designated roads and trails for motorized public use with the PNVT. Effects to canyon towhee habitat quality could include disturbance from noise from motor vehicle use of roads and trails, cross-country travel, dispersed camping, and fuel wood gathering. Effects to canyon towhee habitat from motorized vehicle use would increase with increased miles of designated roadways and authorized use adjacent to designed roads for motorized public use. Alternative C would designate 396 miles of roads and trails open to public use and would increase canyon towhee habitat quality over Alternative A and would decrease canyon towhee habitat quality from Alternative B. Alternative C could have direct and indirect effects to canyon towhee habitat but is not anticipated to have a measurable and detectible effect on habitat quality of the desert communities PNVT.

Alternative D—Direct and Indirect Effects

The effects of motorized public use of roadways and continued maintenance consists of the conversion of native habitat to non-vegetated road ways and is a linear direct loss of desert communities PNVT total miles of roadways within canyon towhee habitat. Diversity of desert community habitats includes shrublands with diverse species composition with grass-forb understory with litter providing ground cover that is an important element to diversity of desert communities PNVT indicator habitat for the canyon towhee. Alternative D would designate 520 miles of roads as open to motorized public use, a reduction of 11 percent from Alternative A, a 111 percent increase in roads and trails open to public use from Alternative B and an increase of 31 percent from Alternative C. Alternative D would designate a road density of 0.53 miles of roads per mile of desert communities PNVT a reduction in road density of 8 percent from Alternative A and would increase road density by 83 percent from Alternative B and a 26 percent increase in road density from Alternative C. Road densities of less than 1 mile per square mile habitat would be an indicator of watershed in good condition (Potyondy and Geier, 2010). Alternative D would authorize motorized cross-country travel on 1 percent of the PNVT, authorize MBGR on 33 percent of PNVT acres greater than any alternative, and dispersed camping 5 percent of PNVT acres, greater than any alternative and fuelwood gathering on 10 percent of PNVT acres similar to Alternative A. The primary direct effect of roads to canyon

towhee habitat quality would be destruction of shrublands and ground cover from harvest of down logs and wood for campfire use, fuelwood gathering, and dispersed camping throughout the PNVT in proximity to roadways designated roads and trails for motorized public use with the PNVT. Effects to canyon towhee habitat quality could include disturbance from noise from motor vehicle use of roads and trails, cross-country travel, dispersed camping, and fuel wood gathering. Effects to canyon towhee habitat from motorized vehicle use would increase with increased miles of designated roadways and authorized use adjacent to designed roads for motorized public use. Alternative D would designate 520 miles of roads and trails open to public use and would decrease canyon towhee habitat quality over all alternatives. Alternative D have could have direct and indirect effects to canyon towhee habitat but is not anticipated to have a measurable and detectible effect on habitat quality of the desert communities PNVT.

Cumulative Effects to Desert Communities

Alternative A

Alternative A would potentially result in a long-term cumulative decrease in the desert communities PNVT shrubs structural stages, and grass understory ground cover. This alternative would cumulatively contribute to a decrease in key habitat components such as, shrub and grass understory and ground cover, and general semidesert grassland habitat conditions that are expected to be at risk from increased future demand for use of forest resources. Alternative A would continue wood and forest product harvesting, dispersed camping, motorized cross-country travel and unlimited motorized big game retrieval within the desert communities PNVT. Motorized use of roads and trails may result in cumulative effects to the PNVT when other Tonto National Forest activities such as land exchanges, reauthorization of livestock grazing allotments, mining and exploratory drilling, watershed/vegetation regeneration and habitat improvement, roadway material source pits, recreation management, personal use activities, and new road construction. Use of roads and motorized trails, cross-country travel and dispersed camping could cause noise disturbance within all structural stages of the PNVT and could result in cumulative effects to habitat quality to MIS species. The cumulative effects of Tonto National Forest activities are expected to maintain designated roads at an approximate overall density of 0.58 miles of road per square mile of the desert communities PNVT. Road densities of less than 1 mile per square mile habitat would be an indicator of watersheds in good condition (Potyondy and Geier, 2010) and therefore is not anticipated to have a measurable and detectible effect on habitat quality of the desert communities PNVT.

Alternative B

There would be no direct effects to desert communities structural stage diversity, perennial grass ground cover, shrubs, and habitat quality to desert communities PNVT MIS. While this alternative may result in some improvement to habitat quality, it would be unlikely that these changes would impact reproductive success to the degree that forestwide population change would occur. Overall, this alternative is not expected to change forestwide habitat or population trends for the desert communities PNVT MIS. The effects of this alternative may combine with other activities to result in a beneficial cumulative effect to desert communities PNVT habitat quality over a much of the PNVT through elimination of motorized cross country travel, MBGR and reduced dispersed camping and fuelwood gathering. The cumulative effects of Alternative B in relation to Tonto National Forest activities are expected to maintain designated roads at an

approximate overall density of 0.29 miles of road per square mile of desert grassland PNVT. Road densities of less than 1 mile per square mile habitat would be an indicator of watersheds in good condition (Potyondy and Geier, 2010) and therefore is not anticipated to have a measurable and detectible effect on habitat quality of the desert communities PNVT.

Alternative C

This alternative is expected to result in an overall effect of decreasing impacts to desert communites PNVT and decreasing disturbance to the species that use it for habitat compared to Alternative A but increase potential habitat quality effects when compared to Alternative B. This alternative may result in effects to the quality of this habitat by potentially affecting the abundance of key habitat elements such as structural stage, shrub and grass understory ground cover and general desert communities conditions. This alternative‘s reduction of roads to 0.42 miles of road per square miles of the desert communities PNVT would decrease potential effects to desert communities PNVT from Alternative A and increase effects to the PNVT from Alternative B. Road densities of less than 1 mile per square mile habitat would be an indicator of watersheds in good condition (Potyondy and Geier, 2010) and therefore is not anticipated to have a measurable and detectible effect on habitat quality of the desert communities PNVT. Alternative C would not change the amount or distribution of indicator habitat over the desert communities PNVT. Habitat quality could improve, given the reduction in the amount of open roads and motorized trails, and maintaining cross-country travel, dispersed camping, and fuel wood gathering comparable to Alternative A but increased over Alternative B. Factors that moderate any improvements in habitat quality include increasing MBGR to 4 percent of the desert communities PNVT. When combined with other Tonto National Forest activities the cumulative effects of Alternative C may combine with other activities to result in a beneficial cumulative effect to desert communities PNVT dependent MIS species over a much broader area. Alternative C would increase MBGR from Alternative A and decrease MBGR from Alternative B, and would be similar to Alternative A in authorized dispersed camping, and cross-country travel and would reduce fuelwood gathering and increase cross-country travel, MBGR and dispersed camping from Alternative B. The cumulative effects of Alternative C are not anticipated to have a measurable and detectible effect on habitat quality or the species that use desert communities PNVT for habitat.

Alternative D

Alternative D would not change the amount or vegetation structural stage, shrub, and grass understory ground cover with some bare ground and general desert communities PNVT. Cross-country travel would be authorized in Alternative D. Alternative D would authorize MBGR and dispersed camping on greater habitat acres than any alternative and would maintain fuelwood gathering similar to Alternative A and on more habitat than Alternative B and Alternative C. Motorized vehicle use of roads and trails would be increased to 0.53 miles of road per mile of desert communities PNVT similar to Alternative A, an 83 percent increase from Alternative B and a 26 percent increase from Alternative C. Fuelwood gathering would be similar to Alternative A and MBGR would be increased above all alternatives providing little improvement in habitat quality from current baseline conditions. Factors that moderate any improvement in habitat quality include maintaining an overall road density of 0.53 miles of open roads per square mile of PNVT, fuelwood gathering and MBGR corridors over a large amount of the PNVT. While this alternative may result in negative impacts to habitat quality, it would be unlikely that these changes would impact reproductive success to the degree that woodland-wide MIS species

population change would occur. Overall, this alternative is not expected to change forestwide habitat or population trends but would provide fewer benefits and have greater impacts from disturbance compared to Alternative A, Alternative B and Alternative C. The cumulative effects of Alternative D are not anticipated to have a measurable and detectible effect on habitat quality or the species that use the semidesert grassland PNVT for habitat.

Indicators of Cottonwood Willow Riparian Forest

The Cottonwood Willow Riparian vegetation type is an indicator for the bald eagle, bell's vireo, summer tanager, and hooded oriole.

Table 63 identifies the amount of habitat of Cottonwood Willow Riparian Forest that is impacted by each of the five elements under each alternative[113].

Table 63: Total Acres of Cottonwood Willow Riparian Forest Habitat Impacted under Each Alternative

Elements	Forestwide	Alternative A	Alternative B	Alternative C	Alternative D
Roads and trails open to public use (miles)	488.95	444.29 (91%)	197.48 (40%)	278.72 (57%)	393.59 (80%)
Road density (miles per square mile)		7.09	3.26	4.52	6.30
Areas open to motorized cross-country travel (acres)	41,228.82	361.68 (1%)	0 (0%)	1,203.52 (3%)	1,203.52 (3%)
Big game retrieval using motorized vehicles (acres)	41,228.82	361.68 (1%)	0 (0%)	7,433.39 (18%)	83,545.95 (203%)
Access of dispersed camping using motorized vehicles (acres)	41,228.82	361.68 (1%)	24.38 (<1%)	5,685.39 (14%)	20,150.43 (49%)
Additional Information Pertaining to motor vehicle use (personal use fuelwood gathering) (acres)	41,228.82	15,232.85 (37%)	3,074.44 (7%)	4,322.89 (10%)	15,232.85 (37%)

Bald Eagle

The bald eagle is an indicator species for general riparian habitat within the cottonwood willow riparian forest PNVT.

[113] For percentages in the table that are greater than 100 percent, see the information in Data Limitations and Inaccuracies in this section for more information.

Alternative A—Direct and Indirect Effects

The effects of motorized public use of roadways and continued maintenance consists of the conversion of native habitat to non-vegetated road ways and is a linear direct loss of cottonwood willow riparian forest PNVT total miles of roadways within bald eagle habitat. Diversity of cottonwood willow riparian forest habitats includes a variety of riparian tree species with varying structural stages and height diversity and diverse grass-forb understory with litter providing ground cover that is an important element to diversity of cottonwood willow PNVT indicator habitat for the bald eagle. Alternative A would designate 444 miles of roads as open to motorized public use, a reduction of 91 percent of current public use roads and trails and would designate a road density of 7.1 miles of roads per mile of cottonwood willow riparian forest PNVT. Road densities in excess of 2.4 miles per square mile habitat would be an indicator of watershed with higher probability that hydrologic regime is altered and could be in poor condition (Potyondy and Geier, 2010). Alternative A would continue to authorize motorized cross-country travel, MBGR and dispersed camping on 1 percent of the cottonwood willow riparian forest PNVT and fuelwood harvest on 37 percent of PNVT acres. The primary effects to bald eagle habitat quality could include disturbance from noise from motor vehicle use of roads and trails, motorized cross-country travel, dispersed camping, fuel wood gathering and MBGR. Effects to canyon bald eagle habitat quality from motorized vehicle use would increase with increased miles of designated roadways and authorized use adjacent to designed roads for motorized public use. Alternative A would designate 444 miles of roads and trails open to public use which could have effects to bald eagle habitat but is not anticipated to have a measurable and detectible effect on habitat quality of the cottonwood willow riparian forest PNVT.

Alternative B—Direct and Indirect Effects

The effects of motorized public use of roadways and continued maintenance consists of the conversion of native habitat to non-vegetated road ways and is a linear direct loss of cottonwood willow riparian forest PNVT total miles of roadways within bald eagle habitat. Diversity of cottonwood willow riparian forest habitats includes variety of riparian tree species with varying structural stages and height diversity and diverse grass-forb understory with litter providing ground cover that is an important element to diversity of cottonwood willow PNVT indicator habitat for the bald eagle. Alternative B would designate 197 miles of roads as open to motorized public use, a reduction of 55 percent reduction from Alternative A and would designate a road density of 3.26 miles of roads per mile of cottonwood willow riparian forest PNVT a reduction in road density of 54 percent from Alternative A. Road densities in excess of 2.4 miles per square mile habitat would be an indicator of watershed with higher probability that hydrologic regime is altered and could be in poor condition (Potyondy and Geier, 2010). Alternative B would not authorize motorized cross-country travel, or MBGR. Alternative B would authorize continue to authorize dispersed camping on less than 1 percent of PNVT acres and fuelwood gathering on 7 percent of the cottonwood willow riparian forest PNVT. The primary effects to bald eagle habitat quality could include disturbance from noise from motor vehicle use of roads and trails, dispersed camping, and fuel wood gathering. Effects to bald eagle habitat quality from motorized vehicle use would increase with increased miles of designated roadways and authorized use adjacent to designed roads for motorized public use. Alternative B would designate 197 miles of roads and trails open to public use and would increase bald eagle habitat quality over Alternative A. Alternative B have could have effects to bald eagle habitat but is not anticipated to have a measurable and detectible effect on habitat quality of the P-J PNVT.

Alternative C—Direct and Indirect Effects

The effects of motorized public use of roadways and continued maintenance consists of the conversion of native habitat to non-vegetated road ways and is a linear direct loss of cottonwood willow riparian forest PNVT total miles of roadways within bald eagle habitat. Diversity of cottonwood willow riparian forest habitats includes variety of riparian tree species with varying structural stages and height diversity and diverse grass-forb understory with litter providing ground cover that is an important element to diversity of cottonwood willow riparian forest PNVT indicator habitat for the bald eagle. Alternative C would designate 279 miles of roads as open to motorized public use, a reduction of 37 percent reduction from Alternative A and a 41 percent increase in roads and trails open to public use from Alternative B. Alternative C would designate a road density of 4.52 miles of roads per mile of cottonwood willow riparian forest PNVT a reduction in road density of 36 percent from Alternative A and would increase road density by 38 percent from Alternative B. Road densities in excess of 2.4 miles per square mile habitat would be an indicator of watershed with higher probability that hydrologic regime is altered and could be in poor condition (Potyondy and Geier, 2010). Alternative C would authorize motorized cross-country travel on 3 percent on PNVT acres, dispersed camping on 14 percent on PNVT acres and fuelwood gathering on 10 percent of the PNVT, and would authorize MBGR on 18 percent of desert cottonwood willow riparian forest. The primary effects to bald eagle habitat quality could include disturbance from noise from motor vehicle use of roads and trails, dispersed camping, and fuel wood gathering. Effects to bald eagle habitat quality from motorized vehicle use would increase with increased miles of designated roadways and authorized use adjacent to designed roads for motorized public use. Alternative C would designate 279 miles of roads and trails open to public use and would be similar to effects as Alternative A and would decrease bald eagle habitat quality from Alternative B. Alternative C have could have effects to bald eagle habitat quality but is not anticipated to have a measurable and detectible effect on habitat quality of the cottonwood willow riparian forest PNVT.

Alternative D—Direct and Indirect Effects

The effects of motorized public use of roadways and continued maintenance consists of the conversion of native habitat to non-vegetated road ways and is a linear direct loss of cottonwood willow riparian forest PNVT total miles of roadways within bald eagle habitat. Diversity of cottonwood willow riparian forest habitats includes variety of riparian tree species with varying structural stages and height diversity and diverse grass-forb understory with litter providing ground cover that is an important element to diversity of cottonwood willow riparian forest PNVT indicator habitat for the bald eagle. Alternative D would designate 394 miles of roads as open to motorized public use, a reduction of 11 percent reduction from Alternative A, a 99 percent increase in roads and trails open to public use from Alternative B and an increase of 41 percent from Alternative C. Alternative D would designate a road density of 6.30 miles of roads per mile of cottonwood willow riparian forest PNVT a reduction in road density of 11 percent from Alternative A and would increase road density by 93 percent from Alternative B and a 39 percent increase in road density from Alternative C. Road densities in excess of 2.4 miles per square mile habitat would be an indicator of watershed with higher probability that hydrologic regime is altered and could be in poor condition (Potyondy and Geier, 2010). Alternative D would authorize motorized cross-country travel on 3 percent of the PNVT, authorize MBGR on 203 percent of PNVT acres greater than any alternative, and dispersed camping 49 percent of PNVT acres, greater than any alternative and fuelwood gathering on 37 percent of PNVT acres similar to Alternative A. The primary effects to bald eagle habitat quality could include disturbance from

noise from motor vehicle use of roads and trails, dispersed camping, and fuel wood gathering. Effects to bald eagle habitat quality from motorized vehicle use would increase with increased miles of designated roadways and authorized use adjacent to designed roads for motorized public use. Alternative D would designate 394 miles of roads and trails open to public use and would be similar to effects as Alternative A and would decrease bald eagle habitat quality from Alternative B and Alternative C. Alternative D could have effects to bald eagle habitat quality but is not anticipated to have a measurable and detectible effect on habitat quality of the cottonwood willow riparian forest PNVT.

Bell's Vireo

The Bell's vireo is an indicator species for well-developed understory within the cottonwood willow riparian forest PNVT.

Alternative A—Direct and Indirect Effects

The effects of motorized public use of roadways and continued maintenance consists of the conversion of native habitat to non-vegetated road ways and is a linear direct loss of cottonwood willow riparian forest PNVT total miles of roadways within Bell's vireo habitat. Diversity of cottonwood willow riparian forest habitats includes a variety of riparian tree species with varying structural stages and height diversity and diverse grass-forb understory with litter providing well developed understory that is an important element to diversity of cottonwood willow PNVT indicator habitat for the Bell's vireo. Alternative A would designate 444 miles of roads as open to motorized public use, a reduction of 91 percent of current public use roads and trails and would designate a road density of 7.1 miles of roads per mile of cottonwood willow riparian forest PNVT. Road densities in excess of 2.4 miles per square mile habitat would be an indicator of watershed with higher probability that hydrologic regime is altered and could be in poor condition (Potyondy and Geier, 2010). Alternative A would continue to authorize motorized cross-country travel, MBGR and dispersed camping on 1 percent of the cottonwood willow riparian forest PNVT and fuelwood harvest on 37 percent of PNVT acres. The primary effects to Bell's vireo habitat quality could include disturbance from noise from motor vehicle use of roads and trails, motorized cross-country travel, dispersed camping, fuel wood gathering and MBGR. Effects to Bell's vireo habitat quality from motorized vehicle use would increase with increased miles of designated roadways and authorized use adjacent to designed roads for motorized public use. Alternative A would designate 444 miles of roads and trails open to public use which could have effects to Bell's vireo habitat quality but is not anticipated to have a measurable and detectible effect on habitat quality of the cottonwood willow riparian forest PNVT.

Alternative B—Direct and Indirect Effects

The effects of motorized public use of roadways and continued maintenance consists of the conversion of native habitat to non-vegetated road ways and is a linear direct loss of cottonwood willow riparian forest PNVT total miles of roadways within Bell's vireo habitat. Diversity of cottonwood willow riparian forest habitats includes variety of riparian tree species with varying structural stages and height diversity and diverse grass-forb understory with litter providing well developed understory that is an important element to diversity of cottonwood willow PNVT indicator habitat for the Bell's vireo. Alternative B would designate 197 miles of roads as open to motorized public use, a reduction of 55 percent reduction from Alternative A and would designate a road density of 3.26 miles of roads per mile of cottonwood willow riparian forest PNVT a

reduction in road density of 54 percent from Alternative A. Road densities in excess of 2.4 miles per square mile habitat would be an indicator of watershed with higher probability that hydrologic regime is altered and could be in poor condition (Potyondy and Geier, 2010). Alternative B would not authorize motorized cross-country travel, or MBGR. Alternative B would continue to authorize dispersed camping on less than 1 percent of PNVT acres and fuelwood gathering on 7 percent of the cottonwood willow riparian forest PNVT. Effects to cottonwood willow riparian forest would be due to destruction or removal of shrub and understory vegetation from dispersed camping and fuelwood gathering. The primary effect to Bell's vireo habitat quality could include disturbance from noise from motor vehicle use of roads and trails, dispersed camping, and fuel wood gathering. Effects to Bell's vireo habitat quality from motorized vehicle use would increase with increased miles of designated roadways and authorized use adjacent to designed roads for motorized public use. Alternative B would designate 197 miles of roads and trails open to public use and would increase Bell's vireo habitat quality over Alternative A. Alternative B have could have direct and indirect effects to Bell's vireo habitat but is not anticipated to have a measurable and detectible effect on habitat quality of the cottonwood willow riparian forest PNVT.

Alternative C—Direct and Indirect Effects

The effects of motorized public use of roadways and continued maintenance consists of the conversion of native habitat to non-vegetated road ways and is a linear direct loss of cottonwood willow riparian forest PNVT total miles of roadways within Bell's vireo habitat. Diversity of cottonwood willow riparian forest habitats includes variety of riparian tree species with varying structural stages and height diversity and diverse grass-forb understory with litter providing well developed understory that is an important element to diversity of cottonwood willow PNVT indicator habitat for the Bell's vireo. Alternative C would designate 279 miles of roads as open to motorized public use, a reduction of 37 percent reduction from Alternative A and a 41 percent increase in roads and trails open to public use from Alternative B. Alternative C would designate a road density of 4.52 miles of roads per mile of cottonwood willow riparian forest PNVT a reduction in road density of 36 percent from Alternative A and would increase road density by 38 percent from Alternative B. Road densities in excess of 2.4 miles per square mile habitat would be an indicator of watershed with higher probability that hydrologic regime is altered and could be in poor condition (Potyondy and Geier, 2010). Alternative C would authorize motorized cross-country travel on 3 percent on PNVT acres, dispersed camping on 14 percent on PNVT acres and fuelwood gathering on 10 percent of the PNVT, and would authorize MBGR on 18 percent of cottonwood willow riparian forest communities. Effects to cottonwood willow riparian forest would be due to destruction or removal of shrub and understory vegetation from dispersed camping and fuelwood gathering. The primary effects to Bell's vireo habitat quality could include disturbance from noise from motor vehicle use of roads and trails, dispersed camping, and fuel wood gathering. Effects to Bell's vireo habitat quality from motorized vehicle use would increase with increased miles of designated roadways and authorized use adjacent to designed roads for motorized public use. Alternative C would designate 279 miles of roads and trails open to public use and would be similar to effects as Alternative A and would decrease Bell's vireo habitat quality from Alternative B. Alternative C could have direct and indirect effects to Bell's vireo habitat quality but is not anticipated to have a measurable and detectible effect on habitat quality of the cottonwood willow riparian forest PNVT.

Alternative D—Direct and Indirect Effects

The effects of motorized public use of roadways and continued maintenance consists of the conversion of native habitat to non-vegetated road ways and is a linear direct loss of cottonwood willow riparian forest PNVT total miles of roadways within Bell's vireo habitat. Diversity of cottonwood willow riparian forest habitats includes variety of riparian tree species with varying structural stages and height diversity and diverse grass-forb understory with litter providing well developed understory that is an important element to diversity of cottonwood willow riparian forest PNVT indicator habitat for the Bell's vireo. Alternative D would designate 394 miles of roads as open to motorized public use, a reduction of 11 percent from Alternative A, a 99 percent increase in roads and trails open to public use from Alternative B and an increase of 41 percent from Alternative C. Alternative D would designate a road density of 6.30 miles of roads per mile of desert communities PNVT a reduction in road density of 11 percent from Alternative A and would increase road density by 93 percent from Alternative B and a 39 percent increase in road density from Alternative C. Road densities in excess of 2.4 miles per square mile habitat would be an indicator of watershed with higher probability that hydrologic regime is altered and could be in poor condition (Potyondy and Geier, 2010). Alternative D would authorize motorized cross-country travel on 3 percent of the PNVT, authorize MBGR on 203 percent of PNVT acres greater than any alternative, and dispersed camping 49 percent of PNVT acres, greater than any alternative and fuelwood gathering on 37 percent of PNVT acres similar to Alternative A. Effects to cottonwood willow riparian forest would be due to destruction or removal of shrub and understory vegetation from dispersed camping and fuelwood gathering. The primary effects to Bell's vireo habitat quality could include disturbance from noise from motor vehicle use of roads and trails, dispersed camping, and fuel wood gathering. Effects to Bell's vireo habitat quality from motorized vehicle use would increase with increased miles of designated roadways and authorized use adjacent to designed roads for motorized public use. Alternative D would designate 394 miles of roads and trails open to public use and would be similar to effects as Alternative A and would decrease Bell's vireo habitat quality from Alternative B and Alternative C. Alternative D could have direct and indirect effects to Bell's vireo habitat quality but is not anticipated to have a measurable and detectible effect on habitat quality of the cottonwood willow riparian forest PNVT.

Summer Tanager

The summer tanager is an indicator species for tall, mature trees within the cottonwood willow riparian forest PNVT.

Alternative A—Direct and Indirect Effects

The effects of motorized public use of roadways and continued maintenance consists of the conversion of native habitat to non-vegetated road ways and is a linear direct loss of cottonwood willow riparian forest PNVT total miles of roadways within summer tanager habitat. Diversity of cottonwood willow riparian forest habitats includes a variety of riparian tree species with varying structural stages and height diversity including tall, mature trees that are an important element to diversity of cottonwood willow PNVT indicator habitat for the summer tanager. Alternative A would designate 444 miles of roads as open to motorized public use, a reduction of 91 percent of current public use roads and trails and would designate a road density of 7.1 miles of roads per mile of cottonwood willow riparian forest PNVT. Road densities in excess of 2.4 miles per square mile habitat would be an indicator of watershed with higher probability that hydrologic regime is

altered and could be in poor condition (Potyondy and Geier, 2010). Alternative A would continue to authorize motorized cross-country travel, MBGR and dispersed camping on 1 percent of the cottonwood willow riparian forest PNVT and fuelwood harvest on 37 percent of PNVT acres. The primary effects to summer tanager habitat quality could include disturbance from noise from motor vehicle use of roads and trails, motorized cross-country travel, dispersed camping, fuelwood gathering and MBGR. Effects to summer tanager habitat quality from motorized vehicle use would increase with increased miles of designated roadways and authorized use adjacent to designed roads for motorized public use. Alternative A would designate 444 miles of roads and trails open to public use which could have effects to summer tanager habitat quality but is not anticipated to have a measurable and detectible effect on habitat quality of the cottonwood willow riparian forest PNVT.

Alternative B—Direct and Indirect Effects

The effects of motorized public use of roadways and continued maintenance consists of the conversion of native habitat to non-vegetated road ways and is a linear direct loss of cottonwood willow riparian forest PNVT total miles of roadways within summer tanager habitat. Diversity of cottonwood willow riparian forest habitats includes variety of riparian tree species with varying structural stages and height diversity including tall, mature trees that are an important element to diversity of cottonwood willow PNVT indicator habitat for the summer tanager. Alternative B would designate 197 miles of roads as open to motorized public use, a reduction of 55 percent reduction from Alternative A and would designate a road density of 3.26 miles of roads per mile of cottonwood willow riparian forest PNVT a reduction in road density of 54 percent from Alternative A. Road densities in excess of 2.4 miles per square mile habitat would be an indicator of watershed with higher probability that hydrologic regime is altered and could be in poor condition (Potyondy and Geier, 2010). Alternative B would not authorize motorized cross-country travel, or MBGR. Alternative B would continue to authorize dispersed camping on less than 1 percent of PNVT acres and fuelwood gathering on 7 percent of the cottonwood willow riparian forest PNVT. The primary effects to summer tanager habitat quality could include disturbance from noise from motor vehicle use of roads and trails, dispersed camping, and fuelwood gathering. Effects to summer tanager habitat quality from motorized vehicle use would increase with increased miles of designated roadways and authorized use adjacent to designed roads for motorized public use. Alternative B would designate 197 miles of roads and trails open to public use and would increase summer tanager habitat quality over Alternative A. Alternative B have could have effects to summer tanager habitat but is not anticipated to have a measurable and detectible effect on habitat quality of the cottonwood willow riparian forest PNVT.

Alternative C—Direct and Indirect Effects

The effects of motorized public use of roadways and continued maintenance consists of the conversion of native habitat to non-vegetated road ways and is a linear direct loss of cottonwood willow riparian forest PNVT total miles of roadways within summer tanager habitat. Diversity of cottonwood willow riparian forest habitats includes variety of riparian tree species with varying structural stages and height diversity including tall, mature trees that are an important element to diversity of cottonwood willow PNVT indicator habitat for the summer tanager. Alternative C would designate 279 miles of roads as open to motorized public use, a reduction of 37 percent reduction from Alternative A and a 41 percent increase in roads and trails open to public use from Alternative B. Alternative C would designate a road density of 4.52 miles of roads per mile of cottonwood willow riparian forest PNVT a reduction in road density of 36 percent from

Alternative A and would increase road density by 38 percent from Alternative B. Road densities in excess of 2.4 miles per square mile habitat would be an indicator of watershed with higher probability that hydrologic regime is altered and could be in poor condition (Potyondy and Geier, 2010). Alternative C would authorize motorized cross-country travel on 3 percent on PNVT acres, dispersed camping on 14 percent on PNVT acres and fuelwood gathering on 10 percent of the PNVT, and would authorize MBGR on 18 percent of cottonwood willow riparian forest communities. The primary effects to summer tanager habitat quality could include disturbance from noise from motor vehicle use of roads and trails, motorized cross-country travel, dispersed camping, fuelwood gathering and MBGR. Effects to summer tanager habitat quality from motorized vehicle use would increase with increased miles of designated roadways and authorized use adjacent to designed roads for motorized public use. Alternative C would designate 279 miles of roads and trails open to public use and would be similar to effects as Alternative A and would decrease summer tanager habitat quality from Alternative B. Alternative C could have effects to summer tanager habitat quality but is not anticipated to have a measurable and detectible effect on habitat quality of the cottonwood willow riparian forest PNVT.

Alternative D—Direct and Indirect Effects

The effects of motorized public use of roadways and continued maintenance consists of the conversion of native habitat to non-vegetated road ways and is a linear direct loss of cottonwood willow riparian forest PNVT total miles of roadways within summer tanager habitat. Diversity of cottonwood willow riparian forest habitats includes variety of riparian tree species with varying structural stages and height diversity including tall, mature trees that are an important element to diversity of cottonwood willow PNVT indicator habitat for the summer tanager. Alternative D would designate 394 miles of roads as open to motorized public use, a reduction of 11 percent from Alternative A, a 99 percent increase in roads and trails open to public use from Alternative B and an increase of 41 percent from Alternative C. Alternative D would designate a road density of 6.30 miles of roads per mile of cottonwood willow riparian forest PNVT a reduction in road density of 11 percent from Alternative A and would increase road density by 93 percent from Alternative B and a 39 percent increase in road density from Alternative C. Road densities in excess of 2.4 miles per square mile habitat would be an indicator of watershed with higher probability that hydrologic regime is altered and could be in poor condition (Potyondy and Geier, 2010). Alternative D would authorize motorized cross-country travel on 3 percent of the PNVT, authorize MBGR on 203 percent of PNVT acres greater than any alternative, and dispersed camping 49 percent of PNVT acres, greater than any alternative and fuelwood gathering on 37 percent of PNVT acres similar to Alternative A. The primary effects to summer tanager habitat quality could include disturbance from noise from motor vehicle use of roads and trails, motorized cross-country travel, dispersed camping, fuelwood gathering and MBGR. Effects to summer tanager habitat quality from motorized vehicle use would increase with increased miles of designated roadways and authorized use adjacent to designed roads for motorized public use Alternative D would designate 394 miles of roads and trails open to public use and would be similar to effects as Alternative A and would decrease summer tanager habitat quality from Alternative B and Alternative C. Alternative D could have effects to summer tanager habitat quality but is not anticipated to have a measurable and detectible effect on habitat quality of the cottonwood willow riparian forest PNVT.

Hooded Oriole

The Hooded Oriole is an indicator species for medium sized trees within the cottonwood willow riparian forest PNVT.

Alternative A—Direct and Indirect Effects

The effects of motorized public use of roadways and continued maintenance consists of the conversion of native habitat to non-vegetated road ways and is a linear direct loss of cottonwood willow riparian forest PNVT total miles of roadways within hooded oriole habitat. Diversity of cottonwood willow riparian forest habitats includes a variety of riparian tree species with varying structural stages and height diversity including medium size trees that are an important element to diversity of cottonwood willow PNVT indicator habitat for the hooded oriole. Alternative A would designate 444 miles of roads as open to motorized public use, a reduction of 91 percent of current public use roads and trails and would designate a road density of 7.1 miles of roads per mile of cottonwood willow riparian forest PNVT. Road densities in excess of 2.4 miles per square mile habitat would be an indicator of watershed with higher probability that hydrologic regime is altered and could be in poor condition (Potyondy and Geier, 2010). Alternative A would continue to authorize motorized cross-country travel, MBGR and dispersed camping on 1 percent of the cottonwood willow riparian forest PNVT and fuelwood harvest on 37 percent of PNVT acres. The primary effects to hooded oriole habitat quality could include disturbance from noise from motor vehicle use of roads and trails, motorized cross-country travel, dispersed camping, fuelwood gathering and MBGR. Effects to hooded oriole habitat quality from motorized vehicle use would increase with increased miles of designated roadways and authorized use adjacent to designed roads for motorized public use. Alternative A would designate 444 miles of roads and trails open to public use which could have effects to hooded oriole habitat quality but is not anticipated to have a measurable and detectible effect on habitat quality of the cottonwood willow riparian forest PNVT.

Alternative B—Direct and Indirect Effects

The effects of motorized public use of roadways and continued maintenance consists of the conversion of native habitat to non-vegetated road ways and is a linear direct loss of cottonwood willow riparian forest PNVT total miles of roadways within hooded oriole habitat. Diversity of cottonwood willow riparian forest habitats includes variety of riparian tree species with varying structural stages and height diversity including medium size trees that are an important element to diversity of cottonwood willow PNVT indicator habitat for the hooded oriole. Alternative B would designate 197 miles of roads as open to motorized public use, a reduction of 55 percent reduction from Alternative A and would designate a road density of 3.26 miles of roads per mile of cottonwood willow riparian forest PNVT a reduction in road density of 54 percent from Alternative A. Road densities in excess of 2.4 miles per square mile habitat would be an indicator of watershed with higher probability that hydrologic regime is altered and could be in poor condition (Potyondy and Geier, 2010). Alternative B would not authorize motorized cross-country travel, or MBGR. Alternative B would continue to authorize dispersed camping on less than 1 percent of PNVT acres and fuelwood gathering on 7 percent of the cottonwood willow riparian forest PNVT. The primary effects to hooded oriole habitat quality could include disturbance from noise from motor vehicle use of roads and trails, dispersed camping, and fuelwood gathering. Effects to hooded oriole habitat quality from motorized vehicle use would increase with increased miles of designated roadways and authorized use adjacent to designed roads for motorized public

use. Alternative B would designate 197 miles of roads and trails open to public use and would increase hooded oriole habitat quality over Alternative A. Alternative B have could have effects to hooded oriole habitat but is not anticipated to have a measurable and detectible effect on habitat quality of the cottonwood willow riparian forest PNVT.

Alternative C—Direct and Indirect Effects

The effects of motorized public use of roadways and continued maintenance consists of the conversion of native habitat to non-vegetated road ways and is a linear direct loss of cottonwood willow riparian forest PNVT total miles of roadways within hooded oriole habitat. Diversity of cottonwood willow riparian forest habitats includes variety of riparian tree species with varying structural stages and height diversity including medium size trees that are an important element to diversity of cottonwood willow PNVT indicator habitat for the hooded oriole. Alternative C would designate 279 miles of roads as open to motorized public use, a reduction of 37 percent reduction from Alternative A and a 41 percent increase in roads and trails open to public use from Alternative B. Alternative C would designate a road density of 4.52 miles of roads per mile of cottonwood willow riparian forest PNVT a reduction in road density of 36 percent from Alternative A and would increase road density by 38 percent from Alternative B. Road densities in excess of 2.4 miles per square mile habitat would be an indicator of watershed with higher probability that hydrologic regime is altered and could be in poor condition (Potyondy and Geier, 2010). Alternative C would authorize motorized cross-country travel on 3 percent on PNVT acres, dispersed camping on 14 percent on PNVT acres and fuelwood gathering on 10 percent of the PNVT, and would authorize MBGR on 18 percent of cottonwood willow riparian forest communities. The primary effects to hooded oriole habitat quality could include disturbance from noise from motor vehicle use of roads and trails, motorized cross-country travel, dispersed camping, fuelwood gathering and MBGR. Effects to hooded oriole habitat quality from motorized vehicle use would increase with increased miles of designated roadways and authorized use adjacent to designed roads for motorized public use. Alternative C would designate 279 miles of roads and trails open to public use and would be similar to effects as Alternative A and would decrease hooded oriole quality from Alternative B. Alternative C could have effects to hooded oriole habitat quality but is not anticipated to have a measurable and detectible effect on habitat quality of the cottonwood willow riparian forest PNVT.

Alternative D—Direct and Indirect Effects

The effects of motorized public use of roadways and continued maintenance consists of the conversion of native habitat to non-vegetated road ways and is a linear direct loss of cottonwood willow riparian forest PNVT total miles of roadways within hooded oriole habitat. Diversity of cottonwood willow riparian forest habitats includes variety of riparian tree species with varying structural stages and height diversity including medium size trees that are an important element to diversity of cottonwood willow PNVT indicator habitat for the hooded oriole. Alternative D would designate 394 miles of roads as open to motorized public use, a reduction of 11 percent from Alternative A, a 99 percent increase in roads and trails open to public use from Alternative B and an increase of 41 percent from Alternative C. Alternative D would designate a road density of 6.30 miles of roads per mile of cottonwood willow riparian forest PNVT a reduction in road density of 11 percent from Alternative A and would increase road density by 93 percent from Alternative B and a 39 percent increase in road density from Alternative C. Road densities in excess of 2.4 miles per square mile habitat would be an indicator of watershed with higher probability that hydrologic regime is altered and could be in poor condition (Potyondy and Geier,

2010). Alternative D would authorize motorized cross-country travel on 3 percent of the PNVT, authorize MBGR on 203 percent of PNVT acres greater than any alternative, and dispersed camping 49 percent of PNVT acres, greater than any alternative and fuelwood gathering on 37 percent of PNVT acres similar to Alternative A. The primary effects to hooded oriole habitat quality could include disturbance from noise from motor vehicle use of roads and trails, motorized cross-country travel, dispersed camping, fuelwood gathering and MBGR. Effects to hooded oriole habitat quality from motorized vehicle use would increase with increased miles of designated roadways and authorized use adjacent to designed roads for motorized public use. Alternative D would designate 394 miles of roads and trails open to public use and would be similar to effects as Alternative A and would decrease hooded oriole habitat quality from Alternative B and Alternative C. Alternative D could have effects to hooded oriole habitat quality but is not anticipated to have a measurable and detectible effect on habitat quality of the cottonwood willow riparian forest PNVT.

Cumulative Effects to Cottonwood Willow Riparian Forest Species

Alternative A

Alternative A would potentially result in a long-term cumulative decrease in the cottonwood willow riparian forest PNVT structural stages, tree heights and a well-developed understory. This alternative would cumulatively contribute to a decrease in key habitat components such as a well-developed understory, and general cottonwood willow riparian forest habitat conditions that are expected to be at risk from increased future demand for use of forest resources. Alternative A would continue wood and forest product harvesting, dispersed camping, motorized cross-country travel and unlimited motorized big game retrieval within the cottonwood willow riparian forest PNVT. Motorized use of roads and trails may result in cumulative effects to the PNVT when other Tonto National Forest activities such as land exchanges, reauthorization of livestock grazing allotments, mining and exploratory drilling, watershed/vegetation regeneration and habitat improvement, roadway material source pits, recreation management, personal use activities, and new road construction. Use of roads and motorized trails, cross-country travel and dispersed camping could cause noise disturbance within all structural stages of the PNVT and could result in cumulative effects to habitat quality to MIS species. The cumulative effects of Tonto National Forest activities are expected to maintain designated roads at an approximate overall density of 0.7.09 miles of road per square mile of the cottonwood willow riparian forest PNVT. Road densities in excess of 2.4 miles per square mile habitat would be an indicator of watershed with higher probability that hydrologic regime is altered and could be in poor condition (Potyondy and Geier, 2010). Alternative A is not anticipated to have a measurable and detectible effect on habitat quality of the cottonwood willow riparian forest PNVT.

Alternative B

There would have no direct effects to cottonwood willow riparian forest structural stage diversity, tree height, well developed understory, and habitat quality to cottonwood willow riparian forest PNVT MIS. While this alternative may result in some improvement to habitat quality, it would be unlikely that these changes would impact reproductive success to the degree that forestwide population change would occur. Overall, this alternative is not expected to change forestwide habitat or population trends for the cottonwood willow riparian forest PNVT MIS. The effects of this alternative may combine with other activities to result in a beneficial cumulative effect to

cottonwood willow riparian forest PNVT habitat quality over a much of the PNVT through elimination of motorized cross country travel, MBGR and reduced dispersed camping and fuelwood gathering. The cumulative effects of Alternative B in relation to Tonto National Forest activities are expected to maintain designated roads at an approximate overall density of 3.26 miles of road per square mile of cottonwood willow riparian forest PNVT. Road densities in excess of 2.4 miles per square mile habitat would be an indicator of watershed with higher probability that hydrologic regime is altered and could be in poor condition (Potyondy and Geier, 2010).Alternative B would have a beneficial effect to cottonwood willow riparian forest compared to Alternative A, however it is not anticipated to have a measurable and detectible effect on habitat quality of the cottonwood willow riparian forest PNVT.

Alternative C

This alternative is expected to result in an overall effect of decreasing impacts to the cottonwood willow riparian forest PNVT and decreasing disturbance to the species that use it for habitat compared to Alternative A but increase potential habitat quality effects when compared to Alternative B. This alternative may result in effects to the quality of this habitat by potentially affecting the abundance of key habitat elements such a well-developed understory and general the cottonwood willow riparian forest conditions. This alternative‘s reduction of roads to 4.25 miles of road per square miles of the cottonwood willow riparian forest PNVT would decrease potential effects to the cottonwood willow riparian forest PNVT from Alternative A and increase effects to the PNVT from Alternative B. Road densities in excess of 2.4 miles per square mile habitat would be an indicator of watershed with higher probability that hydrologic regime is altered and could be in poor condition (Potyondy and Geier, 2010). Alternative C would not change the amount or distribution of indicator habitat over the cottonwood willow riparian forest PNVT. Habitat quality could improve, given the reduction in the amount of open roads and motorized trails, and maintaining cross-country travel, dispersed camping, and fuel wood gathering comparable to Alternative A but increased over Alternative B. Factors that moderate any improvements in habitat quality include increasing MBGR to 4 percent of the cottonwood willow riparian forest PNVT. When combined with other Tonto National Forest activities the cumulative effects of Alternative C may combine with other activities to result in a beneficial cumulative effect to cottonwood willow riparian forest PNVT dependent MIS species over a much broader area. Alternative C would increase MBGR from Alternative A and decrease MBGR from Alternative B, and would be similar to Alternative A in authorized dispersed camping, and cross-country travel and would reduce fuelwood gathering and increase cross-country travel, MBGR and dispersed camping from Alternative B. The cumulative effects of Alternative C are not anticipated to have a measurable and detectible effect on habitat quality or the species that use cottonwood willow riparian forest PNVT for habitat.

Alternative D

Alternative D would not change the amount or vegetation structural stage, tree heights and a well-developed understory in the cottonwood willow riparian forest PNVT. Cross-country travel would be authorized in Alternative D. Alternative D would authorize MBGR and dispersed camping on greater habitat acres than any alternative and would maintain fuelwood gathering similar to Alternative A and on more habitat than Alternative B and Alternative C. Motorized vehicle use of roads and trails would be increased to 6.30 miles of road per mile of desert communities PNVT similar to Alternative A, an 11 percent decrease from Alternative A, an38 percent increase from Alternative B and a 39 percent increase from Alternative C. Fuelwood gathering would be similar

to Alternative A and MBGR would be increased above all alternatives providing little improvement in habitat quality from current baseline conditions. Factors that moderate any improvement in habitat quality include maintaining an overall road density of 6.30 miles of open roads per square mile of PNVT, fuelwood gathering and MBGR corridors over a large amount of the PNVT. While this alternative may result in negative impacts to habitat quality, it would be unlikely that these changes would impact reproductive success to the degree that cottonwood willow riparian forest MIS species population change would occur. Overall, this alternative is not expected to change forestwide habitat or population trends but would provide fewer benefits and have greater impacts from disturbance compared to Alternative A, Alternative B and Alternative C. The cumulative effects of Alternative D are not anticipated to have a measurable and detectible effect on habitat quality or the species that use the cottonwood willow riparian forest PNVT for habitat.

Indicators of Mixed Broadleaf Deciduous Riparian Forest

The mixed broadleaf deciduous riparian forest vegetation type is an indicator for the hairy woodpecker, Arizona gray squirrel, warbling vireo, western wood pewee, and common black hawk.

Table 64 identifies the amount of habitat of mixed broadleaf deciduous riparian forest that is impacted by each of the five elements under each alternative[114].

Table 64: Total acres of Mixed Broadleaf Deciduous Riparian Forest Habitat Impacted under Each Alternative

Elements	Forestwide	Alternative A	Alternative B	Alternative C	Alternative D
Roads and trails open to public use (miles)	337.82	262.74 (78%)	166.51 (49%)	213.95 (63%)	256.91 (76%)
Road density (miles per square mile)		9.84	6.35	8.06	9.61
Areas open to motorized cross-country travel (acres)	17,731.10	33,825.25 (191%)	0 (0%)	0 (0%)	0 (0%)
Big game retrieval using motorized vehicles (acres)	17,731.10	33,825.25 (191%)	0 (0%)	31,018.73 (175%)	43,281.9 (244%)
Access of dispersed camping using motorized vehicles (acres)	17,731.10	33,825.25 (191%)	3.74 (<1%)	4,345.57 (25%)	14,381.01 (81%)
Additional Information Pertaining to motor vehicle use (personal use fuelwood gathering) (acres)	17,731.10	25,846.11 (146%)	5,777.2 (33%)	7,117.99 (40%)	25,846.11 (146%)

[114] For percentages in the table that are greater than 100 percent, see the information in Data Limitations and Inaccuracies in this section for more information.

Hairy Woodpecker

The hairy woodpecker is an indicator species for snags and cavities within the mixed broadleaf deciduous riparian forest PNVT.

Alternative A—Direct and Indirect Effects

Effects to the hairy woodpecker for this vegetation type are the same as those found under indicators of ponderosa pine and mixed conifer with aspen vegetation type found earlier in this section.

Alternative B—Direct and Indirect Effects

Effects to the hairy woodpecker for this vegetation type are the same as those found under indicators of ponderosa pine and mixed conifer with aspen vegetation type found earlier in this section.

Alternative C—Direct and Indirect Effects

Effects to the hairy woodpecker for this vegetation type are the same as those found under indicators of ponderosa pine and mixed conifer with aspen vegetation type found earlier in this section.

Alternative D—Direct and Indirect Effects

Effects to the hairy woodpecker for this vegetation type are the same as those found under indicators of ponderosa pine and mixed conifer with aspen vegetation type found earlier in this section.

Arizona Gray Squirrel

The Arizona gray squirrel is an indicator species for general riparian habitat within the mixed broadleaf deciduous riparian forest PNVT.

Alternative A—Direct and Indirect Effects

The effects of motorized public use of roadways and continued maintenance consists of the conversion of native habitat to non-vegetated road ways and is a linear direct loss of mixed broadleaf deciduous riparian forest PNVT total miles of roadways within Arizona gray squirrel habitat. Diversity of mixed broadleaf deciduous riparian forest habitats includes a variety of riparian tree species with varying structural stages and height diversity and diverse grass-forb understory with litter providing ground cover that is an important element to general mixed broadleaf deciduous riparian forest PNVT indicator habitat for the Arizona gray squirrel. Alternative A would designate 338 miles of roads and trails open to motorized public use, 78 percent of current public use roads and trails in the mixed broadleaf deciduous riparian PNVT and would designate a road density of 9.84 miles of roads per mile of mixed broadleaf deciduous riparian PNVT. Road densities in excess of 2.4 miles per square mile habitat would be an indicator of watershed with higher probability that hydrologic regime is altered and could be in poor condition (Potyondy and Geier, 2010). Alternative A would continue to authorize motorized cross-country travel, MBGR and dispersed camping on 191 percent of the mixed broadleaf

deciduous riparian forest PNVT and fuelwood harvest on 146 percent of PNVT acres. Effects to mixed broadleaf deciduous riparian forest PNVT would be due to destruction and disturbance of shrub understory and ground cover vegetation from dispersed camping and fuelwood gathering. The primary effects to Arizona gray squirrel habitat quality could include disturbance from noise from motor vehicle use of roads and trails, motorized cross-country travel, dispersed camping, fuel wood gathering and MBGR. Effects to Arizona gray squirrel habitat quality from motorized vehicle use would increase with increased miles of designated roadways and authorized use adjacent to designed roads for motorized public use. Alternative A would designate 263 miles of roads and trails open to public use which could have direct and indirect effects to Arizona gray squirrel habitat but is not anticipated to have a measurable and detectible effect on habitat quality of the mixed broadleaf deciduous riparian forest PNVT.

Alternative B—Direct and Indirect Effects

The effects of motorized public use of roadways and continued maintenance consists of the conversion of native habitat to non-vegetated road ways and is a linear direct loss of mixed broadleaf deciduous riparian forest PNVT total miles of roadways within Arizona gray squirrel habitat. Diversity of mixed broadleaf deciduous riparian forest habitats includes variety of riparian tree species with varying structural stages and height diversity shrub and ground cover components that are an important element to diversity of mixed broadleaf deciduous riparian forest PNVT indicator habitat for the Arizona gray squirrel. Alternative B would designate 167 miles of roads as open to motorized public use, a reduction of 36 percent reduction from Alternative A and would designate a road density of 6.35 miles of roads per mile of cottonwood mixed broadleaf deciduous riparian forest PNVT a reduction in road density of 35 percent from Alternative A. Road densities in excess of 2.4 miles per square mile habitat would be an indicator of watershed with higher probability that hydrologic regime is altered and could be in poor condition (Potyondy and Geier, 2010). Alternative B would not authorize motorized cross-country travel, or MBGR. Alternative B would continue to authorize dispersed camping on less than 1 percent of PNVT acres and fuelwood gathering on 33 percent of the mixed broadleaf deciduous riparian forest PNVT. Effects to mixed broadleaf deciduous riparian forest PNVT would be due to destruction and disturbance of shrub understory and ground cover vegetation from dispersed camping and fuelwood gathering. The primary effects to Arizona gray squirrel habitat quality could include disturbance from noise from motor vehicle use of roads and trails, motorized cross-country travel, dispersed camping, fuel wood gathering and MBGR. Effects to Arizona gray squirrel habitat quality from motorized vehicle use would increase with increased miles of designated roadways and authorized use adjacent to designed roads for motorized public use. Alternative B would designate 167 miles of roads and trails open to public use and would increase Arizona gray squirrel habitat quality over Alternative A. Alternative B have could have direct and indirect effects to Arizona gray squirrel habitat but is not anticipated to have a measurable and detectible effect on habitat quality of the cottonwood willow riparian forest PNVT.

Alternative C—Direct and Indirect Effects

The effects of motorized public use of roadways and continued maintenance consists of the conversion of native habitat to non-vegetated road ways and is a linear direct loss of mixed broadleaf deciduous riparian forest PNVT total miles of roadways within Arizona gray squirrel habitat. Diversity of mixed broadleaf deciduous riparian forest habitats includes variety of riparian tree species with varying structural stages and height diversity with a tall overstory

component that are an important elements to diversity of mixed broadleaf deciduous riparian forest PNVT indicator habitat for the Arizona gray squirrel. Alternative C would designate 214 miles of roads as open to motorized public use, a reduction of 19 percent reduction from Alternative A and a 28 percent increase in roads and trails open to public use from Alternative B. Alternative C would designate a road density of 8.06 miles of roads per mile of mixed broadleaf deciduous riparian forest habitats PNVT a reduction in road density of 18 percent from Alternative A and would increase road density by 27 percent from Alternative B. Road densities in excess of 2.4 miles per square mile habitat would be an indicator of watershed with higher probability that hydrologic regime is altered and could be in poor condition (Potyondy and Geier, 2010). Alternative C would not authorize motorized cross-country travel. Alternative C would authorize MBGR on 175 percent of PNVT acres, dispersed camping on 25 percent of the PNVT and fuelwood gathering on 40 percent of the PNVT. Effects to mixed broadleaf deciduous riparian forest PNVT would be due to destruction and disturbance of shrub understory and ground cover vegetation from dispersed camping and fuelwood gathering. The primary effects to Arizona gray squirrel habitat quality could include disturbance from noise from motor vehicle use of roads and trails, motorized cross-country travel, dispersed camping, fuel wood gathering and MBGR. Effects to Arizona gray squirrel habitat quality from motorized vehicle use would increase with increased miles of designated roadways and authorized use adjacent to designed roads for motorized public use. Alternative C would designate 214 miles of roads and trails open to public use and would increase Arizona gray squirrel habitat quality over Alternative A primarily from not authorizing motorized cross-country travel and would decrease Arizona gray squirrel habitat quality from Alternative B. Alternative C could have direct and indirect effects to Arizona gray squirrel habitat quality but is not anticipated to have a measurable and detectible effect on habitat quality of the mixed broadleaf deciduous riparian forest PNVT.

Alternative D—Direct and Indirect Effects

The effects of motorized public use of roadways and continued maintenance consists of the conversion of native habitat to non-vegetated road ways and is a linear direct loss of mixed broadleaf deciduous riparian forest PNVT total miles of roadways within Arizona gray squirrel habitat. Diversity of mixed broadleaf deciduous riparian forest habitats includes a variety of riparian tree species with varying structural stages and height diversity, shrub and ground cover components that are an important element to diversity of mixed broadleaf deciduous riparian forest PNVT indicator habitat for the Arizona gray squirrel. Alternative D would designate 257 miles of roads as open to motorized public use, a reduction of 2 percent from Alternative A, a 54 percent increase in roads and trails open to public use from Alternative B and an increase of 19 percent increase from Alternative C. Alternative D would designate a road density of 9.61 miles of roads per mile of mixed broadleaf deciduous riparian forest PNVT a reduction in road density of 2 percent from Alternative A and would increase road density by 51 percent from Alternative B and a 19 percent increase in road density from Alternative C. Road densities in excess of 2.4 miles per square mile habitat would be an indicator of watershed with higher probability that hydrologic regime is altered and could be in poor condition (Potyondy and Geier, 2010). Alternative D would not authorize motorized cross-country travel. Alternative D would authorize MBGR on 244 percent of PNVT acres greater than any alternative, and dispersed camping 49 percent of PNVT acres, greater than any alternative. Alternative A would authorize dispersed camping on 81 percent of PNVT acres a 57 percent reduction from Alternative A but would increase dispersed camping over Alternative B and Alternative C. Alternative D would authorize fuelwood gathering on 146 percent of PNVT acres similar to Alternative A. Effects to mixed

broadleaf deciduous riparian forest PNVT would be due to destruction and disturbance of shrub understory and ground cover vegetation from dispersed camping and fuelwood gathering. The primary effects to Arizona gray squirrel habitat quality could include disturbance from noise from motor vehicle use of roads and trails, motorized cross-country travel, dispersed camping, fuel wood gathering and MBGR. Effects to Arizona gray squirrel habitat quality from motorized vehicle use would increase with increased miles of designated roadways and authorized use adjacent to designed roads for motorized public use. Alternative D would designate 257 miles of roads and trails open to public use and would be similar to effects as Alternative A and would decrease Arizona gray squirrel habitat quality from Alternative B and Alternative C. Alternative D could have direct and indirect effects to Arizona gray squirrel habitat quality but is not anticipated to have a measurable and detectible effect on habitat quality of the cottonwood willow riparian forest PNVT.

Warbling Vireo

The warbling vireo is an indicator species for tall overstory within the mixed broadleaf deciduous riparian forest PNVT.

Alternative A—Direct and Indirect Effects

The effects of motorized public use of roadways and continued maintenance consists of the conversion of native habitat to non-vegetated road ways and is a linear direct loss of mixed broadleaf deciduous riparian forest PNVT total miles of roadways within warbling vireo habitat. Diversity of mixed broadleaf deciduous riparian forest habitats includes a variety of riparian tree species with varying structural stages and height diversity with tall overstory component that is an important element to general mixed broadleaf deciduous riparian forest PNVT indicator habitat for the warbling vireo. Alternative A would designate 338 miles of roads and trails open to motorized public use, 78 percent of current public use roads and trails in the mixed broadleaf deciduous riparian PNVT and would designate a road density of 9.84 miles of roads per mile of mixed broadleaf deciduous riparian PNVT. Road densities in excess of 2.4 miles per square mile habitat would be an indicator of watershed with higher probability that hydrologic regime is altered and could be in poor condition (Potyondy and Geier, 2010). Alternative A would continue to authorize motorized cross-country travel, MBGR and dispersed camping on 191 percent of the mixed broadleaf deciduous riparian forest PNVT and fuelwood harvest on 146 percent of PNVT acres. Alternative A is not anticipated to effect tall overstory habitat component of the mixed broadleaf riparian forest PNVT. The primary effects to warbling vireo habitat quality could include disturbance from noise from motor vehicle use of roads and trails, motorized cross-country travel, dispersed camping, fuel wood gathering and MBGR. Effects to warbling vireo habitat quality from motorized vehicle use would increase with increased miles of designated roadways and authorized use adjacent to designed roads for motorized public use. Alternative A would designate 263 miles of roads and trails open to public use which could have indirect effect to warbling vireo habitat but is not anticipated to have a measurable and detectible effect on habitat quality of the mixed broadleaf deciduous riparian forest PNVT.

Alternative B—Direct and Indirect Effects

The effects of motorized public use of roadways and continued maintenance consists of the conversion of native habitat to non-vegetated road ways and is a linear direct loss of mixed broadleaf deciduous riparian forest PNVT total miles of roadways within warbling vireo habitat.

Diversity of mixed broadleaf deciduous riparian forest habitats includes variety of riparian tree species with varying structural stages and height diversity with a tall overstory component that are an important elements to diversity of mixed broadleaf deciduous riparian forest PNVT indicator habitat for the warbling vireo. Alternative B would designate 167 miles of roads as open to motorized public use, a reduction of 36 percent reduction from Alternative A and would designate a road density of 6.35 miles of roads per mile of cottonwood mixed broadleaf deciduous riparian forest PNVT a reduction in road density of 35 percent from Alternative A. Road densities in excess of 2.4 miles per square mile habitat would be an indicator of watershed with higher probability that hydrologic regime is altered and could be in poor condition (Potyondy and Geier, 2010). Alternative B would not authorize motorized cross-country travel, or MBGR. Alternative B would continue to authorize dispersed camping on less than 1 percent of PNVT acres and fuelwood gathering on 33 percent of the mixed broadleaf deciduous riparian forest PNVT. Alternative B is not anticipated to affect the tall overstory habitat component of the mixed broadleaf riparian forest PNVT. The primary effects to warbling vireo habitat quality could include disturbance from noise from motor vehicle use of roads and trails, motorized cross-country travel, dispersed camping, fuel wood gathering and MBGR. Effects to warbling vireo habitat quality from motorized vehicle use would increase with increased miles of designated roadways and authorized use adjacent to designed roads for motorized public use. Alternative B would designate 167 miles of roads and trails open to public use and would increase warbling vireo habitat quality over Alternative A. Alternative B have could have effects to warbling vireo habitat but is not anticipated to have a measurable and detectible effect on habitat quality of the mixed broadleaf deciduous riparian forest PNVT.

Alternative C—Direct and Indirect Effects

The effects of motorized public use of roadways and continued maintenance consists of the conversion of native habitat to non-vegetated road ways and is a linear direct loss of mixed broadleaf deciduous riparian forest PNVT total miles of roadways within warbling vireo habitat. Diversity of mixed broadleaf deciduous riparian forest habitats includes variety of riparian tree species with varying structural stages and height diversity with a tall overstory component that are important elements to diversity of mixed broadleaf deciduous riparian forest PNVT indicator habitat for the warbling vireo. Alternative C would designate 214 miles of roads as open to motorized public use, a reduction of 19 percent reduction from Alternative A and a 28 percent increase in roads and trails open to public use from Alternative B. Alternative C would designate a road density of 8.06 miles of roads per mile of mixed broadleaf deciduous riparian forest habitats PNVT a reduction in road density of 18 percent from Alternative A and would increase road density by 27 percent from Alternative B. Road densities in excess of 2.4 miles per square mile habitat would be an indicator of watershed with higher probability that hydrologic regime is altered and could be in poor condition (Potyondy and Geier, 2010). Alternative C would not authorize motorized cross-country travel. Alternative C would authorize MBGR on 175 percent of PNVT acres, dispersed camping on 25 percent of the PNVT and fuelwood gathering on 40 percent of the PNVT. Alternative C is not anticipated to affect the tall overstory habitat component of the mixed broadleaf riparian forest PNVT. The primary effects to warbling vireo habitat quality could include disturbance from noise from motor vehicle use of roads and trails, motorized cross-country travel, dispersed camping, fuel wood gathering and MBGR. Effects to warbling vireo habitat quality from motorized vehicle use would increase with increased miles of designated roadways and authorized use adjacent to designed roads for motorized public use. Alternative C would designate 214 miles of roads and trails open to public use and would

increase warbling vireo habitat quality over Alternative A primarily from not authorizing motorized cross-country travel and would decrease warbling vireo habitat quality from Alternative B. Alternative C could have effects to warbling vireo habitat quality but is not anticipated to have a measurable and detectible effect on habitat quality of the mixed broadleaf deciduous riparian forest PNVT.

Alternative D—Direct and Indirect Effects

The effects of motorized public use of roadways and continued maintenance consists of the conversion of native habitat to non-vegetated road ways and is a linear direct loss of mixed broadleaf deciduous riparian forest PNVT total miles of roadways within warbling vireo habitat. Diversity of mixed broadleaf deciduous riparian forest habitats includes a variety of riparian tree species with varying structural stages and height diversity with a tall overstory component that are an important element to diversity of mixed broadleaf deciduous riparian forest PNVT indicator habitat for the warbling vireo. Alternative D would designate 257 miles of roads as open to motorized public use, a reduction of 2 percent from Alternative A, a 54 percent increase in roads and trails open to public use from Alternative B and an increase of 19 percent increase from Alternative C. Alternative D would designate a road density of 9.61 miles of roads per mile of mixed broadleaf deciduous riparian forest PNVT a reduction in road density of 2 percent from Alternative A and would increase road density by 51 percent from Alternative B and a 19 percent increase in road density from Alternative C. Road densities in excess of 2.4 miles per square mile habitat would be an indicator of watershed with higher probability that hydrologic regime is altered and could be in poor condition (Potyondy and Geier, 2010). Alternative D would not authorize motorized cross-country travel. Alternative D would authorize MBGR on 244 percent of PNVT acres greater than any alternative, and dispersed camping 49 percent of PNVT acres, greater than any alternative. Alternative D would authorize dispersed camping on 81 percent of PNVT acres, a 57 percent reduction from Alternative A but would increase dispersed camping over Alternative B and Alternative C. Alternative D would authorize fuelwood gathering on 146 percent of PNVT acres similar to Alternative A. Alternative D is not anticipated to affect the tall overstory habitat component of the mixed broadleaf riparian forest PNVT. The primary effects to warbling vireo habitat quality could include disturbance from noise from motor vehicle use of roads and trails, motorized cross-country travel, dispersed camping, fuel wood gathering and MBGR. Effects to warbling vireo habitat quality from motorized vehicle use would increase with increased miles of designated roadways and authorized use adjacent to designed roads for motorized public use. Alternative D would designate 257 miles of roads and trails open to public use and would be similar to effects as Alternative A and would decrease warbling vireo habitat quality from Alternative B and Alternative C. Alternative D could have effects to warbling vireo habitat quality but is not anticipated to have a measurable and detectible effect on habitat quality of the mixed broadleaf deciduous riparian forest PNVT.

Western Wood Pewee

The western wood pewee is an indicator species for medium overstory within the mixed broadleaf deciduous riparian forest PNVT.

Alternative A—Direct and Indirect Effects

The effects of motorized public use of roadways and continued maintenance consists of the conversion of native habitat to non-vegetated road ways and is a linear direct loss of mixed

broadleaf deciduous riparian forest PNVT total miles of roadways within western wood pewee habitat. Diversity of mixed broadleaf deciduous riparian forest habitats includes a variety of riparian tree species with varying structural stages and height diversity with a mixed overstory component that is an important element to general mixed broadleaf deciduous riparian forest PNVT indicator habitat for the western wood pewee Alternative A would designate 338 miles of roads and trails open to motorized public use, 78 percent of current public use roads and trails in the mixed broadleaf deciduous riparian PNVT and would designate a road density of 9.84 miles of roads per mile of mixed broadleaf deciduous riparian PNVT. Road densities in excess of 2.4 miles per square mile habitat would be an indicator of watershed with higher probability that hydrologic regime is altered and could be in poor condition (Potyondy and Geier, 2010). Alternative A would continue to authorize motorized cross-country travel, MBGR and dispersed camping on 191 percent of the mixed broadleaf deciduous riparian forest PNVT and fuelwood harvest on 146 percent of PNVT acres. Alternative A is not anticipated to affect the medium overstory habitat component of the mixed broadleaf riparian forest PNVT. The primary effects to western wood pewee habitat quality could include disturbance from noise from motor vehicle use of roads and trails, motorized cross-country travel, dispersed camping, fuel wood gathering and MBGR. Effects to western wood pewee habitat quality from motorized vehicle use would increase with increased miles of designated roadways and authorized use adjacent to designed roads for motorized public use. Alternative A would designate 263 miles of roads and trails open to public use which could have indirect effect to western wood pewee habitat but is not anticipated to have a measurable and detectible effect on habitat quality of the mixed broadleaf deciduous riparian forest PNVT.

Alternative B—Direct and Indirect Effects

The effects of motorized public use of roadways and continued maintenance consists of the conversion of native habitat to non-vegetated road ways and is a linear direct loss of mixed broadleaf deciduous riparian forest PNVT total miles of roadways within western wood pewee habitat. Diversity of mixed broadleaf deciduous riparian forest habitats includes variety of riparian tree species with varying structural stages and height diversity with a medium overstory component that are an important elements to diversity of mixed broadleaf deciduous riparian forest PNVT indicator habitat for the western wood pewee. Alternative B would designate 167 miles of roads as open to motorized public use, a reduction of 36 percent reduction from Alternative A and would designate a road density of 6.35 miles of roads per mile of mixed broadleaf deciduous riparian forest PNVT a reduction in road density of 35 percent from Alternative A. Road densities in excess of 2.4 miles per square mile habitat would be an indicator of watershed with higher probability that hydrologic regime is altered and could be in poor condition (Potyondy and Geier, 2010). Alternative B would not authorize motorized cross-country travel, or MBGR. Alternative B would continue to authorize dispersed camping on less than 1 percent of PNVT acres and fuelwood gathering on 33 percent of the mixed broadleaf deciduous riparian forest PNVT. Alternative B is not anticipated to affect the medium overstory habitat component of the mixed broadleaf riparian forest PNVT. The primary effects to western wood pewee habitat quality could include disturbance from noise from motor vehicle use of roads and trails, motorized cross-country travel, dispersed camping, fuel wood gathering and MBGR. Effects to western wood pewee habitat quality from motorized vehicle use would increase with increased miles of designated roadways and authorized use adjacent to designed roads for motorized public use. Alternative B would designate 167 miles of roads and trails open to public use and would increase western wood pewee habitat quality over Alternative A. Alternative B

have could have effects to western wood pewee habitat but is not anticipated to have a measurable and detectible effect on habitat quality of the mixed broadleaf deciduous riparian forest PNVT.

Alternative C—Direct and Indirect Effects

The effects of motorized public use of roadways and continued maintenance consists of the conversion of native habitat to non-vegetated road ways and is a linear direct loss of mixed broadleaf deciduous riparian forest PNVT total miles of roadways within western wood pewee habitat. Diversity of mixed broadleaf deciduous riparian forest habitats includes variety of riparian tree species with varying structural stages and height diversity with a medium overstory component that are important elements to diversity of mixed broadleaf deciduous riparian forest PNVT indicator habitat for the western wood pewee. Alternative C would designate 214 miles of roads as open to motorized public use, a reduction of 19 percent reduction from Alternative A and a 28 percent increase in roads and trails open to public use from Alternative B. Alternative C would designate a road density of 8.06 miles of roads per mile of mixed broadleaf deciduous riparian forest habitats PNVT a reduction in road density of 18 percent from Alternative A and would increase road density by 27 percent from Alternative B. Road densities in excess of 2.4 miles per square mile habitat would be an indicator of watershed with higher probability that hydrologic regime is altered and could be in poor condition (Potyondy and Geier, 2010). Alternative C would not authorize motorized cross-country travel. Alternative C would authorize MBGR on 175 percent of PNVT acres, dispersed camping on 25 percent of the PNVT and fuelwood gathering on 40 percent of the PNVT. Alternative C is not anticipated to affect the medium overstory habitat component of the mixed broadleaf riparian forest PNVT. The primary effects to western wood pewee habitat quality could include disturbance from noise from motor vehicle use of roads and trails, motorized cross-country travel, dispersed camping, fuel wood gathering and MBGR. Effects to western wood pewee habitat quality from motorized vehicle use would increase with increased miles of designated roadways and authorized use adjacent to designed roads for motorized public use. Alternative C would designate 214 miles of roads and trails open to public use and would increase western wood pewee habitat quality over Alternative A primarily from not authorizing motorized cross-country travel and would decrease western wood pewee habitat quality from Alternative B. Alternative C could have effects to western wood pewee habitat quality but is not anticipated to have a measurable and detectible effect on habitat quality of the mixed broadleaf deciduous riparian forest PNVT.

Alternative D—Direct and Indirect Effects

The effects of motorized public use of roadways and continued maintenance consists of the conversion of native habitat to non-vegetated road ways and is a linear direct loss of mixed broadleaf deciduous riparian forest PNVT total miles of roadways within western wood pewee habitat. Diversity of mixed broadleaf deciduous riparian forest habitats includes a variety of riparian tree species with varying structural stages and height diversity with a medium overstory component that are an important element to diversity of mixed broadleaf deciduous riparian forest PNVT indicator habitat for the western wood pewee. Alternative D would designate 257 miles of roads as open to motorized public use, a reduction of 2 percent from Alternative A, a 54 percent increase in roads and trails open to public use from Alternative B and an increase of 19 percent increase from Alternative C. Alternative D would designate a road density of 9.61 miles of roads per mile of mixed broadleaf deciduous riparian forest PNVT a reduction in road density of 2 percent from Alternative A and would increase road density by 51 percent from Alternative B and

a 19 percent increase in road density from Alternative C. Road densities in excess of 2.4 miles per square mile habitat would be an indicator of watershed with higher probability that hydrologic regime is altered and could be in poor condition (Potyondy and Geier, 2010). Alternative D would not authorize motorized cross-country travel. Alternative D would authorize MBGR on 244 percent of PNVT acres greater than any alternative, and dispersed camping 49 percent of PNVT acres, greater than any alternative. Alternative D would authorize dispersed camping on 81 percent of PNVT acres a 57 percent reduction from Alternative A but would increase dispersed camping over Alternative B and Alternative C. Alternative D would authorize fuelwood gathering on 146 percent of PNVT acres similar to Alternative A. Alternative D is not anticipated to affect the tall overstory habitat component of the mixed broadleaf riparian forest PNVT. The primary effects to western wood pewee habitat quality could include disturbance from noise from motor vehicle use of roads and trails, motorized cross-country travel, dispersed camping, fuel wood gathering and MBGR. Effects to western wood pewee habitat quality from motorized vehicle use would increase with increased miles of designated roadways and authorized use adjacent to designed roads for motorized public use. Alternative D would designate 257 miles of roads and trails open to public use and would be similar to effects as Alternative A and would decrease western wood pewee habitat quality from Alternative B and Alternative C. Alternative D could have effects to western wood pewee habitat quality but is not anticipated to have a measurable and detectible effect on habitat quality of the mixed broadleaf deciduous riparian forest PNVT.

Common Black Hawk

The common black hawk is an indicator species for riparian streamside within the mixed broadleaf deciduous riparian forest PNVT.

Alternative A—Direct and Indirect Effects

The effects of motorized public use of roadways and continued maintenance consists of the conversion of native habitat to non-vegetated road ways and is a linear direct loss of mixed broadleaf deciduous riparian forest PNVT total miles of roadways within common black hawk habitat. Diversity of mixed broadleaf deciduous riparian forest habitats includes a variety of riparian tree species with varying structural stages and height diversity with a mixed overstory streamside habitat component that are important element to general mixed broadleaf deciduous riparian forest PNVT indicator habitat for the common black hawk Alternative A would designate 338 miles of roads and trails open to motorized public use, 78 percent of current public use roads and trails in the mixed broadleaf deciduous riparian PNVT and would designate a road density of 9.84 miles of roads per mile of mixed broadleaf deciduous riparian PNVT. Road densities in excess of 2.4 miles per square mile habitat would be an indicator of watershed with higher probability that hydrologic regime is altered and could be in poor condition (Potyondy and Geier, 2010). Alternative A would continue to authorize motorized cross-country travel, MBGR and dispersed camping on 191 percent of the mixed broadleaf deciduous riparian forest PNVT and fuelwood harvest on 146 percent of PNVT acres. Alternative A would have direct effects to stream side habitat component from dispersed camping, motorized cross country travel and fuelwood gathering. The primary effects to common black hawk habitat quality could include disturbance from noise from motor vehicle use of roads and trails, motorized cross-country travel, dispersed camping, fuel wood gathering and MBGR. Effects to common black hawk habitat quality from motorized vehicle use would increase with increased miles of designated roadways and authorized use adjacent to designed roads for motorized public use. Alternative A would designate 263 miles of roads and trails open to public use which could have direct indirect effect

to common black hawk habitat but is not anticipated to have a measurable and detectible effect on habitat quality of the mixed broadleaf deciduous riparian forest PNVT.

Alternative B—Direct and Indirect Effects

The effects of motorized public use of roadways and continued maintenance consists of the conversion of native habitat to non-vegetated road ways and is a linear direct loss of mixed broadleaf deciduous riparian forest PNVT total miles of roadways within common black hawk habitat. Diversity of mixed broadleaf deciduous riparian forest habitats includes variety of riparian tree species with varying structural stages and height diversity with a stream side habitat component that are important elements to diversity of mixed broadleaf deciduous riparian forest PNVT indicator habitat for the common black hawk. Alternative B would designate 167 miles of roads as open to motorized public use, a reduction of 36 percent reduction from Alternative A and would designate a road density of 6.35 miles of roads per mile of mixed broadleaf deciduous riparian forest PNVT a reduction in road density of 35 percent from Alternative A. Road densities in excess of 2.4 miles per square mile habitat would be an indicator of watershed with higher probability that hydrologic regime is altered and could be in poor condition (Potyondy and Geier, 2010). Alternative B would not authorize motorized cross-country travel, or MBGR. Alternative B would continue to authorize dispersed camping on less than 1 percent of PNVT acres and fuelwood gathering on 33 percent of the mixed broadleaf deciduous riparian forest PNVT. Alternative B would have effects to the stream side habitat component from dispersed camping, motorized cross country travel and fuelwood gathering. The primary effects to common black hawk habitat quality could include disturbance from noise from motor vehicle use of roads and trails, motorized cross-country travel, dispersed camping, fuel wood gathering and MBGR. Effects to common black hawk habitat quality from motorized vehicle use would increase with increased miles of designated roadways and authorized use adjacent to designed roads for motorized public use. Alternative B would designate 167 miles of roads and trails open to public use and would increase common black hawk habitat quality over Alternative A. Alternative B have could have direct and indirect effects to common black hawk habitat but is not anticipated to have a measurable and detectible effect on habitat quality of the mixed broadleaf deciduous riparian forest PNVT.

Alternative C—Direct and Indirect Effects

The effects of motorized public use of roadways and continued maintenance consists of the conversion of native habitat to non-vegetated road ways and is a linear direct loss of mixed broadleaf deciduous riparian forest PNVT total miles of roadways within common black hawk habitat. Diversity of mixed broadleaf deciduous riparian forest habitats includes variety of riparian tree species with varying structural stages and height diversity with a stream side component that are important elements to diversity of mixed broadleaf deciduous riparian forest PNVT indicator habitat for the common black hawk. Alternative C would designate 214 miles of roads as open to motorized public use, a reduction of 19 percent reduction from Alternative A and a 28 percent increase in roads and trails open to public use from Alternative B. Alternative C would designate a road density of 8.06 miles of roads per mile of mixed broadleaf deciduous riparian forest habitats PNVT a reduction in road density of 18 percent from Alternative A and would increase road density by 27 percent from Alternative B. Road densities in excess of 2.4 miles per square mile habitat would be an indicator of watershed with higher probability that hydrologic regime is altered and could be in poor condition (Potyondy and Geier, 2010). Alternative C would not authorize motorized cross-country travel. Alternative C would have

effects to the stream side habitat component from dispersed camping, motorized cross country travel and fuelwood gathering. The primary effects to common black hawk habitat quality could include disturbance from noise from motor vehicle use of roads and trails, motorized cross-country travel, dispersed camping, fuel wood gathering and MBGR. Effects to common black hawk habitat quality from motorized vehicle use would increase with increased miles of designated roadways and authorized use adjacent to designed roads for motorized public use. Alternative C would designate 214 miles of roads and trails open to public use and would increase common black hawk habitat quality over Alternative A primarily from not authorizing motorized cross-country travel and would decrease common black hawk habitat quality from Alternative B. Alternative C could have direct and indirect effects to common black hawk habitat quality but is not anticipated to have a measurable and detectible effect on habitat quality of the mixed broadleaf deciduous riparian forest PNVT.

Alternative D—Direct and Indirect Effects

The effects of motorized public use of roadways and continued maintenance consists of the conversion of native habitat to non-vegetated road ways and is a linear direct loss of mixed broadleaf deciduous riparian forest PNVT total miles of roadways within common black hawk habitat. Diversity of mixed broadleaf deciduous riparian forest habitats includes a variety of riparian tree species with varying structural stages and height diversity with a streamside habitat component that are important elements to diversity of mixed broadleaf deciduous riparian forest PNVT indicator habitat for the common black hawk. Alternative D would designate 257 miles of roads as open to motorized public use, a reduction of 2 percent from Alternative A, a 54 percent increase in roads and trails open to public use from Alternative B and an increase of 19 percent increase from Alternative C. Alternative D would designate a road density of 9.61 miles of roads per mile of mixed broadleaf deciduous riparian forest PNVT a reduction in road density of 2 percent from Alternative A and would increase road density by 51 percent from Alternative B and a 19 percent increase in road density from Alternative C. Road densities in excess of 2.4 miles per square mile habitat would be an indicator of watershed with higher probability that hydrologic regime is altered and could be in poor condition (Potyondy and Geier, 2010). Alternative D would not authorize motorized cross-country travel. Alternative D would authorize MBGR on 244 percent of PNVT acres greater than any alternative, and dispersed camping 49 percent of PNVT acres, greater than any alternative. Alternative D would authorize dispersed camping on 81 percent of PNVT acres a 57 percent reduction from Alternative A but would increase dispersed camping over Alternative B and Alternative C. Alternative D would authorize fuelwood gathering on 146 percent of PNVT acres similar to Alternative A. Alternative D would have effects to the stream side habitat component from dispersed camping, motorized cross country travel and fuelwood gathering. The primary effects to common black hawk habitat quality could include disturbance from noise from motor vehicle use of roads and trails, motorized cross-country travel, dispersed camping, fuel wood gathering and MBGR. Effects to common black hawk habitat quality from motorized vehicle use would increase with increased miles of designated roadways and authorized use adjacent to designed roads for motorized public use. Alternative D would designate 257 miles of roads and trails open to public use and would be similar to effects as Alternative A and would decrease common black hawk habitat quality from Alternative B and Alternative C. Alternative D could have effects to common black habitat quality but is not anticipated to have a measurable and detectible effect on habitat quality of the mixed broadleaf deciduous riparian forest PNVT.

Cumulative Effects to Mixed Broadleaf Deciduous Riparian Forest

Alternative A

Alternative A would potentially result in a long-term cumulative decrease in the mixed broadleaf deciduous riparian forest PNVT structural stages, tree heights and a well-developed understory. This alternative would cumulatively contribute to a decrease in key habitat components such as a well-developed overstory composed of tall and medium height tress, snags, well developed understory, and general mixed broadleaf deciduous riparian forest habitat conditions that are expected to be at risk from increased future demand for use of forest resources. Alternative A would continue wood and forest product harvesting, dispersed camping, motorized cross-country travel and unlimited motorized big game retrieval within the cottonwood willow riparian forest PNVT. Motorized use of roads and trails may result in cumulative effects to the PNVT when other Tonto National Forest activities such as land exchanges, reauthorization of livestock grazing allotments, mining and exploratory drilling, watershed/vegetation regeneration and habitat improvement, roadway material source pits, recreation management, personal use activities, and new road construction. Use of roads and motorized trails, cross-country travel and dispersed camping could cause noise disturbance within all structural stages of the PNVT and could result in cumulative effects to habitat quality to MIS species. The cumulative effects of Tonto National Forest activities are expected to maintain designated roads at an approximate overall density of 9.84 miles of road per square mile of the cottonwood willow riparian forest PNVT. Road densities in excess of 2.4 miles per square mile habitat would be an indicator of watershed with higher probability that hydrologic regime is altered and could be in poor condition (Potyondy and Geier, 2010). Alternative A is not anticipated to have a measurable and detectible effect on habitat quality of the mixed broadleaf deciduous riparian forest PNVT.

Alternative B

There would be no direct effects to mixed broadleaf deciduous riparian forest structural stage diversity, tree height, well developed understory, and habitat quality to mixed broadleaf deciduous riparian forest PNVT MIS. While this alternative may result in some improvement to habitat quality, it would be unlikely that these changes would impact reproductive success to the degree that forestwide population change would occur. Overall, this alternative is not expected to change forestwide habitat or population trends for the mixed broadleaf deciduous riparian forest PNVT MIS. The effects of this alternative may combine with other activities to result in a beneficial cumulative effect mixed broadleaf deciduous riparian forest PNVT habitat quality over a much of the PNVT through elimination of motorized cross country travel, MBGR and reduced dispersed camping and fuelwood gathering. The cumulative effects of Alternative B in relation to Tonto National Forest activities are expected to maintain designated roads at an approximate overall density of 6.35 miles of road per square mile of mixed broadleaf deciduous riparian forest PNVT. Road densities in excess of 2.4 miles per square mile habitat would be an indicator of watershed with higher probability that hydrologic regime is altered and could be in poor condition (Potyondy and Geier, 2010).Alternative B would have a beneficial effect to mixed broadleaf deciduous riparian forest compared to Alternative A, however it is not anticipated to have a measurable and detectible effect on habitat quality of the mixed broadleaf deciduous riparian forest PNVT.

Alternative C

This alternative is expected to result in an overall beneficial effect by decreasing impacts to the mixed broadleaf deciduous riparian forest PNVT and decreasing disturbance to the species that use it for habitat compared to Alternative A but increase potential habitat quality effects when compared to Alternative B. This alternative may result in effects to the quality of this habitat by potentially affecting the abundance of key habitat elements such a well-developed understory and general the cottonwood willow riparian forest conditions. This alternative's reduction of roads to 8.06 miles of road per square miles of the mixed broadleaf deciduous riparian forest PNVT would decrease potential effects to the mixed broadleaf deciduous riparian forest PVNT from Alternative A and increase effects to the PNVT from Alternative B. Road densities in excess of 2.4 miles per square mile habitat would be an indicator of watershed with higher probability that hydrologic regime is altered and could be in poor condition (Potyondy and Geier, 2010). Alternative C would not change the amount or distribution of indicator habitat over the mixed broadleaf deciduous riparian forest PNVT. Habitat quality could improve, given the reduction in the amount of open roads and motorized trails, and maintaining cross-country travel, dispersed camping, and fuel wood gathering comparable to Alternative A but increased over Alternative B. Factors that moderate any improvements in habitat quality include increasing MBGR to 4 percent of the mixed broadleaf deciduous riparian forest PNVT. When combined with other Tonto National Forest activities the cumulative effects of Alternative C may combine with other activities to result in a beneficial cumulative effect to mixed broadleaf deciduous riparian forest PNVT dependent MIS species over a much broader area. Alternative C would increase MBGR from Alternative A and decrease MBGR from Alternative B, and would be similar to Alternative A in authorized dispersed camping, and cross-country travel and would reduce fuelwood gathering and increase cross-country travel, MBGR and dispersed camping from Alternative B. The cumulative effects of Alternative C are not anticipated to have a measurable and detectible effect on habitat quality or the species that use mixed broadleaf deciduous riparian forest PNVT for habitat.

Alternative D

Alternative D would not change the amount or vegetation structural stage, tree heights and a well-developed understory in the mixed broadleaf deciduous riparian forest PNVT. Cross-country travel would be authorized in Alternative D. Alternative D would authorize MBGR and dispersed camping on greater habitat acres than any alternative and would maintain fuelwood gathering similar to Alternative A and on more habitat than Alternative B and Alternative C. Motorized vehicle use of roads and trails would be increased to 9.61 miles of road per mile of mixed broadleaf deciduous riparian forest PNVT similar to Alternative A, an 11 percent decrease from Alternative A, a 38 percent increase from Alternative B and a 39 percent increase from Alternative C. Fuelwood gathering would be similar to Alternative A and MBGR would be increased above all alternatives providing little improvement in habitat quality from current baseline conditions. Factors that moderate any improvement in habitat quality include maintaining an overall road density of 9.61 miles of open roads per square mile of PNVT, fuelwood gathering and MBGR corridors over a large amount of the PNVT. While this alternative may result in negative impacts to habitat quality, it would be unlikely that these changes would impact reproductive success to the degree that mixed broadleaf deciduous riparian forest MIS species population change would occur. Overall, this alternative is not expected to change forestwide habitat or population trends but would provide fewer benefits and have greater impacts from disturbance compared to Alternative A, Alternative B, and Alternative C. The cumulative

effects of Alternative D are not anticipated to have a measurable and detectible effect on habitat quality or the species that use the mixed broadleaf deciduous riparian forest PNVT for habitat.

Indicators of Water – Macro-invertebrates

Direct, Indirect and Cumulative Effects to Water-Macro-invertebrates

Macro-invertebrates are an indicator species of "water" habitat with the Tonto National Forest. The forest has classified 28,989 acres of "water" as a vegetation type and PNVT to be analyzed as to potentials effects to macro-invertebrates habitat and trends and a determination of effects to population and habitat trend from the selection of any action alternative. Currently no motorized roads and trails open to public use are identified as occurring in the "water" PNVT. Similarly no roads and trails open to public use have been identified as occurring in the "water" PNVT in any alternative. However as motorized roads and trails open to public use is increased, negative effects to watersheds and ultimately aquatic resources may be increased (Potyondy and Geier, 2010). No effects to the "water" PNVT or macro-invertebrates are anticipated from any alternative since no motorized roads or trails are anticipated to occur in the "water" PNVT. Effects may be anticipated and would increase with increasing road density across all PNVTs. As road density increases by alternative, negative effects to "water" PNVT and macro-invertebrates would increase. Alternative B would have fewer roads and motorized trails designated for public use and would have the least negative effects to the "water" PNVT and macro-invertebrate populations. Alternative C would have less negative effects than Alternative A and Alternative D but would increase effects to "water" PNVT and macro-invertebrate populations. Alternative D would be similar to Alternative A in effects to the "water" PNVT and macro-invertebrate populations but would increase negative effects over Alternative B and Alternative C. Cumulative effects to the "water" PNVT from other Tonto National Forest activities such as land exchanges, reauthorization of livestock grazing allotments, mining and exploratory drilling, watershed/vegetation regeneration and habitat improvement, roadway material source pits, recreation management, personal use activities, and new road construction could result in cumulative negative effects to "water" PNVT habitat quality to macro-invertebrates.

Migratory Birds

Executive Order 13186 (January 10, 2001) requires federal agencies to consider management impacts to migratory birds to further the purposes of the Migratory Bird Treaty Act, Bald and Golden Eagle Protection Act, and other laws. Federal agencies need to identify whether unintentional take will occur, and if so, whether such take would have a measurable negative effect on migratory bird populations. Take is defined to mean "… to pursue, hunt, shoot, wound, kill, trap, capture, or collect, or attempt to pursue, hunt, shoot, wound, kill, trap, capture, or collect" (50 CFR 10.12). Removal or destruction of vegetation is not considered a taking. Executive Order 13186 imposes procedural requirements on project level analyses for migratory birds. The Tonto National Forest is required to:

- Evaluate the effects of agency actions and plans on migratory birds, with emphasis on species of concern; and
- Identify where unintentional take, reasonably attributable to agency action, is having, or is likely to have, a measurable negative effect on migratory bird populations.

The Tonto National Forest will fulfill these requirements by 1) analyzing and disclosing the project's effects on Tonto National Forest migratory bird species of concern, 2) identifying any Important Bird Areas (IBA) or overwintering areas that exist within or in proximity to the project area and analyzing and disclosing effects as appropriate, 3) identifying opportunities to restore or enhance migratory bird habitat or mitigate negative project effects and include these activities in the project plan, 4) retaining adequate levels of snags and dead & downed wood.

Affected Environment

Table 65 shows the migratory bird species of concern that may occur in the project area because their habitats also are within the activity area.

Table 65: Tonto National Forest Migratory Bird Species of Concern

Species	Nest Substrate[b]	Nest type[b]	Usual nest height range[b] (feet)	Nesting Period[c]
Mixed Conifer with Aspen: Douglas fir, white fir, ponderosa pine, often some aspen and Gambel's oak				
Flycatcher, Cordilleran[a]	deciduous tree, cliff, ground	cavity	0 to 30	May to Aug
Flycatcher, olive-sided[a]	conifer	cup	5 to 75	May to Aug
Goshawk, northern[a]	conifer, deciduous tree	platform	20 to 60	May to Aug
Kinglet, golden-crowned	conifer	pendant	4 to 60	May to Aug
Owl, flammulated[a]	snag	cavity	no information	May to Jul
Owl, Mexican spotted[a]	conifer, cliff	cavity, platform, scrape	80	May to Sep
Pigeon, band-tailed[a]	conifer, deciduous tree	platform	6 to 30	May to Sep
Sapsucker, red-naped[a]	deciduous tree	cavity	10 to 20	May to Jul
Warbler, red-faced[a]	ground	cup	0	May to Jul
Mixed Broadleaf Deciduous Riparian Forest: cottonwoods, maple, box elder, alder, willow, some Gambel's oak, ponderosa pine, Douglas fir, while fir, and aspen				
Beardless-tyrannulet, northern[a]	deciduous tree	sphere	4 to 50	Apr to Aug
Black-hawk, common[a]	deciduous tree	platform	20 to 30	Mar to Aug
Flycatcher, Cordilleran[a]	deciduous tree, cliff, ground	cavity	0 to 30	May to Aug
Sapsucker, red-naped[a]	deciduous tree	cavity	10 to 20	May to Jul
Warbler, MacGillivray's	shrub, ground	cup	2 to 3	May to Jul
Warbler, red-faced[a]	ground	cup	0	May to Jul
Warbler, yellow[a]	shrub, tree	cup	1 to 14	Apr to Aug
Ponderosa Pine Mild: primarily pure pine forests				
Flycatcher, olive-sided[a]	conifer	cup	5 to 75	May to Aug
Goshawk, northern[a]	conifer, deciduous tree	platform	20 to 60	May to Aug

Species	Nest Substrate[b]	Nest type[b]	Usual nest height range[b] (feet)	Nesting Period[c]
Owl, flammulated[a]	snag	cavity	no information	May to Jul
Owl, Mexican spotted[a]	conifer, cliff	cavity, platform, scrape	80	May to Sep
Pigeon, band-tailed[a]	conifer, deciduous tree	platform	6 to 30	May to Sep
Warbler, Grace's[a]	conifer	cup	20 to 60	May to Aug
Warbler, olive[a]	conifer	cup	30 to 65	Apr to Jul
Woodpecker, Lewis's[a]	deciduous tree, snag	cavity	5 to 100	May to Aug
Pinyon-juniper grasslands				
Eagle, bald	tree	platform	30 to 60	Dec to Jul
Goshawk, northern[a]	conifer, deciduous tree	platform	20 to 60	May to Aug
Owl, Mexican spotted[a]	conifer, cliff	cavity, platform, scrape	80	May to Sep
Flycatcher, southwestern willow	shrub, deciduous tree	cup	2 to 10	Jun to Aug
Cuckoo, western yellow-billed	deciduous tree, shrub	platform	4 to 8	Jun to Sep
Pinyon-juniper Chaparral: Juniper woodlands				
Eagle, golden[a]	cliff, tree	platform	10 to 100+	Mar to Jul
Falcon, peregrine[a]	cliff, tree	scrape	50 to 200+	Mar to Jul
Flycatcher, gray	shrub	cup	2 to 9	May to Aug
Jay, pinyon	conifer	cup	3 to 26	Apr to Aug
Titmouse, juniper	deciduous tree, snag	cavity	3 to 10	Apr to Jul
Vireo, gray	shrub	cup	2 to 6	Apr to Aug
Warbler, black-throated gray[a]	conifer, deciduous tree	cup	5 to 50	Apr to Aug
Madrean Encinal Woodland: Madrean evergreen oaks, juniper, pinyon pine				
Eagle, golden[a]	cliff, tree	platform	10 to 100+	Mar to Jul
Warbler, black-throated gray[a]	conifer, deciduous tree	cup	5 to 50	Apr to Aug
Interior Chaparral: Shrub live oak, manzanita, mountain-mahogany, cliffrose				
Sparrow, black-chinned	shrub	cup	1.5 to 3	Apr to Aug
Semiarid grassland: Often with scattered sotol, agaves, burroweed, snakeweed, yucca, mesquite				
Ealge, golden[a]	cliff, tree	platform	10 to 100+	Mar to Jul
Hawk, Swainson’s	cliff	platform	20 to 30	Apr to Aug
Desert communities: palo verde, ironwood, mesquite, catclaw, acacia, saguaro, cholla, barrel cactus, prickly pear, creosote bush, jojoba, crucifixion thorn				
Eagle, golden[a]	cliff, tree	platform	10 to 100+	Mar to Jul
Falcon, peregrine[a]	cliff, tree	scrape	50 to 200+	Mar to Jul
Falcon, prairie	cliff	scrape, crevice	30 to 40	Mar to Jun
Flicker, gilded	snag	cavity	6 to 15	Mar to Jul

Species	Nest Substrate[b]	Nest type[b]	Usual nest height range[b] (feet)	Nesting Period[c]
Hummingbird, Costa's[a]	shrub	cup	3 to 5	Feb to Jul
Martin, purple	snag	cavity	5+	May to Aug
Owl, elf	cactus	cavity	15 to 35	Apr to Jul
Phainopepla[a]	deciduous tree, shrub	cup	4 to 50	Feb to Aug
Thrasher, Bendire's	shrub	cup	2 to 4	Mar to Aug
Towhee, canyon	bush, tree	cup	4 to 12	Mar to Oct
Woodpecker, Gila	cactus, deciduous tree	cavity	15 to 30	Mar to Aug
Vireo, Bell's[a]	shrub	cup	1 to 5	Mar to Sep
Warbler, Lucy's	snag	cavity	3 to 11	Apr to Jul
Cottonwood Willow Riparian: Primarily cottonwood, willow, mesquite, tamarisk (salt cedar), some ash, walnut, and hackberry				
Beardless-tyrannulet, northern[a]	deciduous tree	sphere	4 to 50	Apr to Aug
Black-hawk, common[a]	deciduous tree	platform	20 to 30	Mar to Aug
Cuckoo, western yellow-billed	deciduous tree, shrub	platform	4 to 8	Jun to Sep
Eagle, bald	tree	platform	30 to 60	Dec to Jul
Flycatcher, southwestern willow	shrub, deciduous tree	cup	2 to 10	Jun to Aug
Vireo, Bell's[a]	shrub	cup	1 to 5	Mar to Sep
Warbler, yellow[a]	shrub, tree	cup	1 to 14	Apr to Aug
Water: bulrush, sedges, pondweeds, cattail, duckweed, saltgrass				
Rail, Yuma clapper	ground	platform	0	Mar to Aug

[a] Species occur in other habitat categories also
[b] Source: Ehrlich et al., 1988
[c] Source: Corman and Wise-Gervais 1995

In addition, there are three important bird areas (IBA) located within Tonto National Forest: Cave Creek IBA, Salt and Verde Riparian Ecosystem IBA, and Boyce Thompson Arboretum and Arnett-Queen Creeks IBA. There is also a designated overwintering area at Roosevelt Lake.

Environmental Effects

Methodology

To determine the species of concern within Tonto National Forest, migratory bird species were compiled from two sources: Arizona Partners in Flight (Latta *et al*., 1999) and U.S. Fish and Wildlife Services (2008b). Those bird species were selected from three Biological Conservation Regions: 33 (Sonoran and Mojave Desert), 34 (Sierra Madre Occidental), and 16 (Southern Rockies and Colorado Plateau). Species of concern were finally determined from those species that occurred on the forest based on the Tonto National Forest bird checklist (U.S. Forest Service, 2009c).

To evaluate the effects of the agency action on particular migratory bird species, the species habitat was used as a basis for the analysis. Migratory bird species of concern were analyzed if their habitat is within the action area. Corman and Wise-Gervais's (2005) habitat classifications were used and a determination was made for a species associated habitat by its most common occurrence in 1-4 habitat types. Because certain species were found in more than one type of habitat, many bird species were classified in multiple habitat types.

Alternative A – No Action

Unintentional take (bird, eggs, nest) is highly unlikely to occur at a level that would have a measurable effect on migratory bird populations or habitat quality. Alternative A is considered as the baseline for comparison to all action alternatives. Across all PNVTs Alternative A would have an average road density of 1.16 miles of road open to public motorized vehicle travel per square mile of MBTA habitat. The relatively low density of open public roads to MIS habitats suggest that although some level of impact occurs to migratory birds and habitats wherever motorized vehicle travel is allowed, Alternative A would have no measurable negative effect on migratory bird species of concern populations or habitat quality above current baseline conditions.

No effects would occur to IBAs because Alternative A is considered as the current baseline condition that all action alternatives are compared. Under Alternative A roads and trails open to public use would remain unchanged from current baseline conditions. Road densities with the IBAs vary from 0.47 miles of road per square mile of IBA habitat in the Boyce-Thompson Arboretum/Arnett IBA, to 2.62 miles in the Cave Creek Ecosystem IBA and 4.29 in the Salt and Verde River Riparian System IBA. Motorized big game retrieval, dispersed camping and motorized cross country travel is not permitted in any IBA. Fuelwood gathering would be permitted in the Boyce-Thompson Arboretum/Arnett Creek IBA. Alternative A would have no measurable negative effect on IBAs above current baseline conditions.

No effects would occur to snags and dead and downed wood because Alternative A is considered as the baseline for comparison to all action alternatives. Under Alternative A personal wood gathering and roads and trails open to public use would remain unchanged from current baseline conditions. Alternative A would have no measurable negative effect on snags and dead and down wood above current baseline conditions.

Alternative B

Unintentional take (bird, eggs, nest) is highly unlikely to occur at a level that would have a measurable effect on migratory bird populations or habitat quality. Although some level of impact occurs to migratory birds wherever motorized vehicle travel is allowed, across all PNVTs Alternative B reduces areas of potential affects by reducing road density in all PNVTs to 0.63 miles of open public road to per square mile of MBTA habitats. Similar to Alternative A, Alternative B would not allow for motorized big game retrieval, or motorized cross-county travel. Alternative B would reduce acres of areas available to dispersed camping and fuelwood gathering from current baseline conditions. Consequently, this alternative would have a beneficial effect on migratory bird species of concern populations and habitat quality compared to the current baseline conditions.

Alternative B would have a beneficial effect to IBAs because it reduces miles of roads and trails open to public use in all IBAs. Alternative B would reduce road densities within the IBAs to 0.39 miles of road per square mile of IBA habitat in the Boyce-Thompson Arboretum/Arnett IBA, to 0.38 miles in the Cave Creek Ecosystem IBA and 1.75 miles in the Salt and Verde River Riparian System IBA. Alternative B would not permit motorized big game retrieval, and motorized cross country travel in any IBA. Alternative B would permit dispersed camping within a 0.18 designated camping site within the Salt and Verde River Riparian System IBA. Alternative B would have a beneficial effect on migratory bird species of concern populations and habitat quality compared to the current baseline conditions.

Alternative B would have a positive effect to snags and dead & downed wood because in all PNVTs it would reduce personal use fuelwood gathering an average of 88 percent across all PNVTs. Alternative B would reduce the likelihood of potential impacts to cavity and snag nesting birds, as permitted access to these areas would be reduced. Alternative B would have a beneficial effect on snags and down logs forestwide in all PNVTs compared to the current baseline conditions.

Alternative C

Unintentional take (bird, eggs, nest) is highly unlikely to occur that would have a measurable effects on migratory bird populations or habitat quality. Although some level of impact occurs to migratory birds wherever motorized vehicle travel is allowed, across all PNVTs Alternative C reduces areas of potential affects by reducing road density in all PNVTs to 0.86 miles of open public road per square mile of MBTA habitats reducing dispersed camping by 87 percent and fuel wood gathering by 90 percent. However, Alternative C would increase motorized big game retrieval by 83 percent. Consequently, this alternative would have a beneficial effect on migratory bird species of concern populations and habitat quality compared to the current baseline conditions.

Some effects would occur to IBAs if Alternative C is implemented. Alternative C does reduce miles of roads and trails open to public use in all IBAs. Alternative C would reduce road densities within the IBAs to 0.39 miles of road per square mile of IBA habitat in the Boyce-Thompson Arboretum/Arnett IBA, to 0.38 miles in the Cave Creek Ecosystem IBA and 1.96 miles in the Salt and Verde River Riparian System IBA. Alternative C would not permit motorized cross country travel in any IBA consistent with current baseline conditions. Alternative C would permit dispersed camping, motorized big game retrieval, in the Boyce-Thompson Arboretum/Arnett Creek IBA, and limit fuelwood gathering to 140 acres of the 2,583 acre Boyce-Thompson Arboretum/Arnett Creek IBA available for fuel wood gathering under Alternative A. Alternative C would result in an 89 percent reduction in these elements from current baseline conditions in the Boyce-Thompson Arboretum/Arnett Creek IBA. Alternative C would permit motorized big game retrieval and dispersed camping in the Cave Creek and Salt and Verde River System IBAs. Areas open to motorized big game retrieval and dispersed camping is currently not permitted. Alternative C would permit motorized big game retrieval and dispersed camping on 328 acres (24 percent) of Cave Creek IBA acres and 281 acres (21 percent) of the Salt and Verde River Riparian System IBA acres. Alternative C would not permit fuelwood gathering in the Cave Creek and Salt and Verde River Riparian System IBAs. Areas open to dispersed camping, motorized big game retrieval, and fuelwood gathering is less than 10 percent of the Boyce-Thompson Arboretum/Arnett Creek IBA, 24 percent of the Cave Creek Ecosystem IBA and 21 percent of the

Salt and Verde River Riparian System IBA. Some unintentional take could occur in each IBA, and may have a measurable negative effect on migratory bird populations and habitat quality within the Cave Creek Ecosystem and Salt and Verde River Riparian System IBAs.

Alternative C would have a positive effect to snags and dead & downed wood because it would not permit personal use fuelwood gathering in the Cave Creek Ecosystem and Salt and Verde River Riparian System IBAs and would decrease areas permitted for fuelwood gathering by 95 percent from current baseline conditions in the Boyce-Thompson Arboretum/Arnett Creek IBA. Alternative C would reduce the likelihood of potential impacts to cavity and snag nesting birds, as permitted motorized vehicle access to these areas would be reduced. Alternative C would have a beneficial effect on snags and down logs forestwide in all PNVTs compared to the current baseline conditions.

Alternative D

Unintentional take (bird, eggs, nest) may occur at a level that would have a measurable effect on migratory bird populations or habitat. Some level of impact occurs to migratory birds wherever motorized vehicle travel is allowed. Across all PNVTs Alternative D would not increase potential affects from roads and trails designated for motorized vehicle use due to in all PNVTs permitting 1.11 miles of open public road per square mile of MBTA habitats, similar to current forestwide baseline conditions. Within all PNVTs Alternative D would permit 2,068,208 acres (194 percent increase) to motorized big game retrieval, a near threefold increase over current baseline conditions and would reduce habitat quality for migratory birds. Alternative D would decease dispersed camping by 52 percent from current baseline conditions and would be the same as alternative A in permitted personal fuelwood gathering areas. Consequently, this alternative would have a negative effect on migratory bird species of concern populations and habitat quality compared to the current baseline conditions.

Some effects would occur to migratory birds and habitat quality in IBAs if Alternative D is implemented. The density of roads and trails permitted for public use are similar to Alternative A in the Boyce-Thompson Arboretum/Arnett IBA and Cave Creek Ecosystem IBAs, and reduced from 103 miles of open roads under current baseline conditions to 71.68 (reduction of 30 percent) in the Salt and Verde River Riparian IBA. Alternative D would not permit motorized cross country travel in any IBA consistent with current baseline conditions.

Alternative D would permit 16,114 acres of motorized big game retrieval and dispersed camping in all IBAs, which is not permitted under current baseline conditions. Alternative D would be similar to Alternative A permitting 1,345,998 acres available for personal fuel wood gathering only in the Boyce-Thompson Arboretum/Arnett IBA. Alternative D would not permit personal fuel wood gathering in the Cave Creek Ecosystem or the Salt and Verde River Riparian System IBAs. Alternative D would increase areas available for motorized big game retrieval and dispersed camping. Some unintentional take could occur in each IBA, and may have a measurable negative effect on migratory bird populations within all IBAs.

Alternative D would not affect snags and dead and down wood because it would be the same as Alternative A for permitted personal fuelwood gathering at the current baseline area and acres. Alternative D would not have a measurable effect to snags and down logs forestwide in all PNVTs compared to the current baseline conditions.

Noxious/Invasive Weeds

Roads and motorized trails are known to be effective vectors for transporting invasive plant seeds. Recreational vehicles, such as two- or four-wheel drive vehicles, ATVs, or motorcycles can bring weed seeds and plant parts onto the Forest from other sources. They can also spread existing infestations into new sites. For example, ATVs are commonly driven in the right-of-way along State Route 188. Much of this right-of-way has had a Malta starthistle infestation for over twenty years. When ATVs move from the right-of-way onto the Forest road network or are driven cross-country, they can spread Malta starthistle throughout the Tonto Basin area.

Affected Environment

There are 52 invasive weeds that are known to occur on the Tonto National Forest[115]. Another 16 are nearby and could be growing on the Tonto National Forest currently or in the future.

Although there are fewer acres of weeds on the Tonto National Forest as compared to many other western forests, weed populations are growing rapidly here. History has repeatedly demonstrated that most invasive weed populations do not remain small for long. Growth rates can be exponential with an apparent lag time between initial infestation and subsequent extensive infestations that are beyond control (Radosevich, 2013).

As of May 2013, approximately 26,831 acres of weed infestations were documented and mapped on the Tonto National Forest. Most of this acreage is one large site of weeping lovegrass that was seeded on the entire Dude Fire area in 1990 (21,436 acres). This seeding project was done in an emergency situation after fire had denuded the area of vegetative cover, and impending monsoons could have caused massive soil loss. At that time there was not a source of native seed in sufficient quantity to cover the burned area, and the decision was made to use nonnative species for seeding. The remainder is 47 different species of weeds in 1,324 different infestations. The great majority of these infestations are less than 5 acres in size.

Most of the weeds inventoried on the Forest are near highways or main roads, for three reasons: 1) much of the survey effort has been conducted for road projects. There are more remote infestations, but they are harder to find and may not be near projects that require survey; 2) weeds tend to initially establish in disturbed areas such as road shoulders and bar ditches; and 3) Vehicles are a major source of transport of weed propagules (plant parts that are able to vegetatively reproduce and seeds).

Environmental Effects

Methodology

The Forest's database for invasive plant inventory (Natural Resource Information System or NRIS) was used to overlay the Forest's weed layer onto various route and trail configurations identified in the proposed action and alternatives. The NRIS database is continually updated with new information derived from highway and system road surveys, surveys for other projects such as mineral exploration, range monitoring, and incidental identification and mapping by

[115] For a full list of these species, see the Noxious/Invasive Weeds Report in the project record.

knowledgeable Forest employees and others who are adept at plant identification. For purposes of this analysis, the inventory as of May 2013 was used.

Effects Common to all Alternatives

Weeds are a threat to biodiversity and productivity of lands administered by the Tonto National Forest. In heavily infested areas, weeds directly compete with native plants and can cause their displacement. Some weeds are toxic to wildlife and livestock. Weeds affect ecosystems at landscape levels by altering the structure, organization, or function of ecological systems (U.S. Forest Service, Tonto National Forest 2012a, Olson 1999). Potential impacts include alteration of disturbance regimes (such as wildfire), changes in wildlife food base and cover, soil erosion, changes in soil moisture patterns, and altered recreational or aesthetic values. Indirect effects caused by replacement of native plants include impacts to microbial flora and fauna and insect pollinators, all of which contribute to normal ecosystem function (Olson, 1999).

Road corridors can be prolific sources of weed seeds that may be carried to other locations, or that may colonize adjacent vulnerable habitats (Tyser and Worley, 1992). Motor vehicle use is known to enhance weed introduction and establishment in a number of ways, including transportation of weed propagules (seeds, root and shoot fragments), and alteration of soil conditions and other habitat factors (Trombulak and Frissell, 2000). Motor vehicles can carry weed seed and plant parts from place to place on their tires, and/or on the vehicle body. A study in Kakadu National Park in Australia found that weed seed was transported into the park on tourist vehicles and was more likely to be transported by four-wheel drive vehicles that had been driven cross-country (Lonsdale and Lane, 1994). A study from Montana State University showed that a four-wheel-drive truck picked up, on average, 176 seeds per 50-mile trip on dry unpaved road in June. ATVs were found to pick up 15 times more seeds off-trail than on a trail. ATVs were capable of picking up as many as 200,000 seeds over 48 miles of travel (about 4,200 seeds per mile), out of which roughly 750 were from noxious weeds (Rew and Pollnac, 2010). It is not unusual to find new weed infestations on the Forest. They are often along travel corridors (motorized and nonmotorized). Even if a new infestation were found along a road or trail, the conclusion as to what particular vector caused its introduction is not always clear. This determination is not necessary if an infestation of a species that is a prolific seeder is found on a route. In that situation it may be deemed prudent to close or limit travel on that route until that particular weed is brought under control, in order to prevent spread caused by vehicles. Plant parts moved about during road maintenance can spread weed infestations nearly as effectively as seed, as many invasive plants are able to propagate themselves with root or stem fragments (Ferguson *et al.*, 2003).

Vehicles and construction and maintenance operations transport invasive plant seeds into uninfested areas, and provide prime sites for seed germination and seedling establishment. Road maintenance activities may enhance germination of weed seeds by increasing exposure of weed seeds to sunlight (Jensen, 1995). Presence of invasive exotic plant species has been highly correlated with sunlit soil and frequent, severe disturbances, such as those resulting from road traffic and road maintenance activities (Pauchard and Alaback, 2006).

Disturbed areas create edges within plant communities. Edges are recognized as potential starting points for invasion of weeds into less disturbed areas (Gucinski *et al.*, 2001).

The number of nonnative species has been shown to significantly increase with increasing route density (Dark, 2004). Native plant cover and species diversity increase with increasing distance from routes, while presence of exotic species typically declines with increased distance from routes (Gelbard and Harrison 2003; Tyser and Worley 1992; Pauchard and Alaback 2006).

Effects from invasive species would continue to occur under all alternatives, including the proposed action. In general, alternatives with fewer routes open for motor vehicle use, especially those that exclude routes that are currently weed-infested, provide a reduced risk for transport of seeds by motorized vehicles, a reduction in habitats susceptible to weed invasion, and a reduced opportunity for spread of weeds to uninfested areas of the Forest.

Alternative A – Summary of Direct and Indirect Effects

Under this alternative, a total of at least 24,802 acres of noxious weeds would be open to vehicular access. Most of this acreage is on the Payson Ranger District, in the area of the Dude Fire of 1990. An unknown number of weed-infested acres are near unauthorized roads and trails that are currently used.

While the Tonto National Forest Plan does not specifically address invasive plant management, implementation of Alternative A affects invasive plant populations such that the Forest does not meet Forest Plan goals of management of resources to prevent or reduce serious long-lasting hazards, maintenance, and enhancement of visual resource values, wildlife species diversity, wildlife habitat improvement, and rangeland restoration.

Alternative B – Summary of Direct and Indirect Effects

Under this alternative, a total of 4,336 acres of noxious weeds would be open to vehicular access.

Alternative C – Summary of Direct and Indirect Effects

Under this alternative, a total of 20,739 acres of noxious weeds would be open to vehicular access. Most of this acreage is on the Payson Ranger District, in the area of the Dude Fire of 1990.

Alternative D – Summary of Direct and Indirect Effects

Under this alternative, a total of 25,803 acres of noxious weeds would be open to vehicular access. Most of this acreage is on the Payson Ranger District, in the area of the Dude Fire of 1990.

Cumulative Effects for All Alternatives

The boundary for this cumulative effects analysis is the Tonto National Forest and includes private lands. This discussion includes management actions related to noxious or invasive weeds since 2003. Prior to 2003, occurrences and distribution of noxious or invasive weeds on the Forest were largely unknown. Beginning in 2003, the Tonto National Forest began surveying and documenting noxious or invasive weed occurrences. Weed maps are documented in the Forest's Natural Resource Information System database and on a noxious weed layer in the Forest's GIS system.

In 2003, the Southwestern Region of the Forest Service completed the Environmental Assessment for Management of Noxious Weeds and Hazardous Vegetation on Public Roads on National Forest System Lands in Arizona. The decision which followed in 2004 allows treatment of noxious or invasive weeds along state and federal highway rights-of-way through all National Forests in Arizona, including the Tonto National Forest. Arizona Department of Transportation (ADOT) and their contractors and subcontractors have conducted several herbicide control projects along State Routes 77, 87, 88, 188, 260, and U.S. Highway 60 on the Tonto National Forest in the last five years.

For the last several years, the Tonto National Forest and ADOT have included weed control and prevention measures in highway construction projects. ADOT contractors now write a Noxious Species Control Plan, and use both herbicide and manual methods to control weeds along rights-of-way inside project limits. There are typically at least two major highway construction projects occurring on the Tonto National Forest at any time. For the next 5 years, construction projects are scheduled for State Routes 87, 88, 177, 260, and U.S. Highway 60.

The Tonto National Forest completed an Environmental Assessment for Integrated Treatment of Noxious or Invasive Plants, and a decision was signed in August 2012. This decision allows the Tonto National Forest to use the full range of tools to manage invasive weed infestations, including manual, mechanical, prescribed fire, biological control, and herbicides.

Of numerous activities occurring on the Forest, both casual and permitted, most have some potential to introduce and spread invasive plants. Such activities include livestock grazing, special use permits involving use of livestock, hiking, fishing, hunting, wildlife watching, mining, horseback riding, and all types of recreational driving. Road management agencies such as county public works departments and departments of transportation, and Arizona Department of Transportation would continue to maintain and upgrade roads and highways through the Tonto NF. Highway construction projects would doubtless continue; the Forest works with all of these agencies to prevent introduction and spread of noxious weeds during these activities. The Forest itself conducts activities that have potential to spread weeds: road maintenance, firefighting, and use of prescribed fire, post-fire rehabilitation including revegetation of burned and bladed sites, and creation of new recreation sites. Where permits are involved, the Forest includes permit clauses appropriate to the activity to prevent spread of weeds. The Forest includes Best Management Practices in its own activities for the same purpose. The wildland urban interface would continue to be a source of invasive weed infestation for the Tonto. The Forest program of public education and awareness of invasive weeds somewhat mitigates this, but this source of weed spread is largely outside of our control.

At current funding levels, it is expected that the Forest would be able to eradicate weeds classified as Category A (those with limited distribution in Arizona, or as yet unrecorded in the state, which pose a serious threat, such as camelthorn, musk thistle, or Canada thistle). Weed species classified as Category B would most probably be contained or eliminated in some areas, but would continue to spread in many areas. Class B weeds are of limited distribution in Arizona, common in some places in the state. Management goal is to contain their spread, decrease population size, then eliminate. Class C weeds have spread beyond our capability to eradicate them. The management goal is to contain spread to present size and then decrease the population, if possible. Class C weeds would continue to spread.

Hydrological Resources

Protection of water quantity and quality is an element of the Forest Service mission (Forest Service Strategic Plan for 2007 to 2012, 2007). Management activities on National Forest lands should be planned and implemented to protect hydrologic functions of forest watersheds, including volume, timing, and quality of stream flow. Use of roads, trails, and other areas on national forests by motor vehicles has potential to affect these hydrologic functions by intercepting runoff, compacting soils, damaging vegetation and stream channels, and detaching sediment. Management decisions to eliminate cross-county motorized travel, add new routes and areas to national forest system (NFS) roads and trails, and make changes to existing NFS roads and trails should consider effects on watershed functions.

Affected Environment

Watershed

The Tonto National Forest lies wholly or partly within seven 4th HUC Watersheds. Within these watersheds there are thirty-six 5th HUC watersheds and 197 6th HUC watersheds that lie wholly or partly within the boundaries of the Tonto National Forest. Greater than 50 percent of the watershed area of 150 6th HUC watersheds lies within the Forest boundaries.

Water Quality

Improvements to the nation's waters over the past three decades are largely due to the control of traditional point sources of water pollution; however, a large number of water bodies remain impaired and the goal of eliminating pollutant discharge and attaining fishable and swimmable waters is still unrealized. Nonpoint sources of pollution such as agriculture, construction, forestry, and mining are responsible for much of the nation's remaining water quality impairment (U.S. Bureau of Land Management, 2011). Three of these activities: agriculture (livestock grazing), forestry, and mining currently occur on NFS lands administered by the Tonto National Forest. In addition to these activities other sources of nonpoint source pollution on the Tonto National Forest include roads, prescribed fire and wildfire, and recreational uses[116].

Water quality in the state is assessed by the Arizona Department of Environmental Quality (ADEQ). Water quality has been assessed in major perennial stream reaches and lakes on the Forest. Categories used by ADEQ for describing the status of water quality in the states' rivers, streams and lakes are identified in Table 66.

Table 66: Water Quality Categories

Category	Definition
1	Attaining all designated uses
2	Attaining some designated uses, and no use is threatened or impaired
3	Insufficient or no data and information to determine if any designated use is attained

[116] This paragraph comes from an EPA report to Congress that states: In 2000, 40 percent of the rivers and streams, 45 percent of the lakes, and 50 percent of the estuaries were impaired. See National Water Quality Inventory Report to Congress (305(b) report), 2000, available at http://www.epa.gov/305b/2000report/. The paragraph is an introductory discussion of the progress of the *Clean Water Act* on a nationwide basis with a brief discussion of the types of disturbance occurring on the Tonto NF that can contribute to nonpoint sources of pollution.

Category	Definition
4	Impaired or threatened for one or more designated uses but a Total Maximum Daily Load (TMDL) analysis is not necessary because:
4A	A TMDL has already been completed
4B	Other pollution control requirements are reasonably expected to result in attainment of the water quality standard
4C	The impairment is caused by pollution but not a pollutant, or
4N	The impairment is solely by natural conditions (an Arizona list only)
5	Impaired or threatened for one or more designated uses by a pollutant, and a TMDL needs to be developed or revised

Streams and water bodies within the Tonto National Forest that are listed on the State of Arizona's impaired waters (303d) list for 2010 are displayed in Figure 48. Roosevelt Lake is identified as an impaired water body due to mercury found in fish tissue. Fish consumption advisory has been issued for Roosevelt Lake.

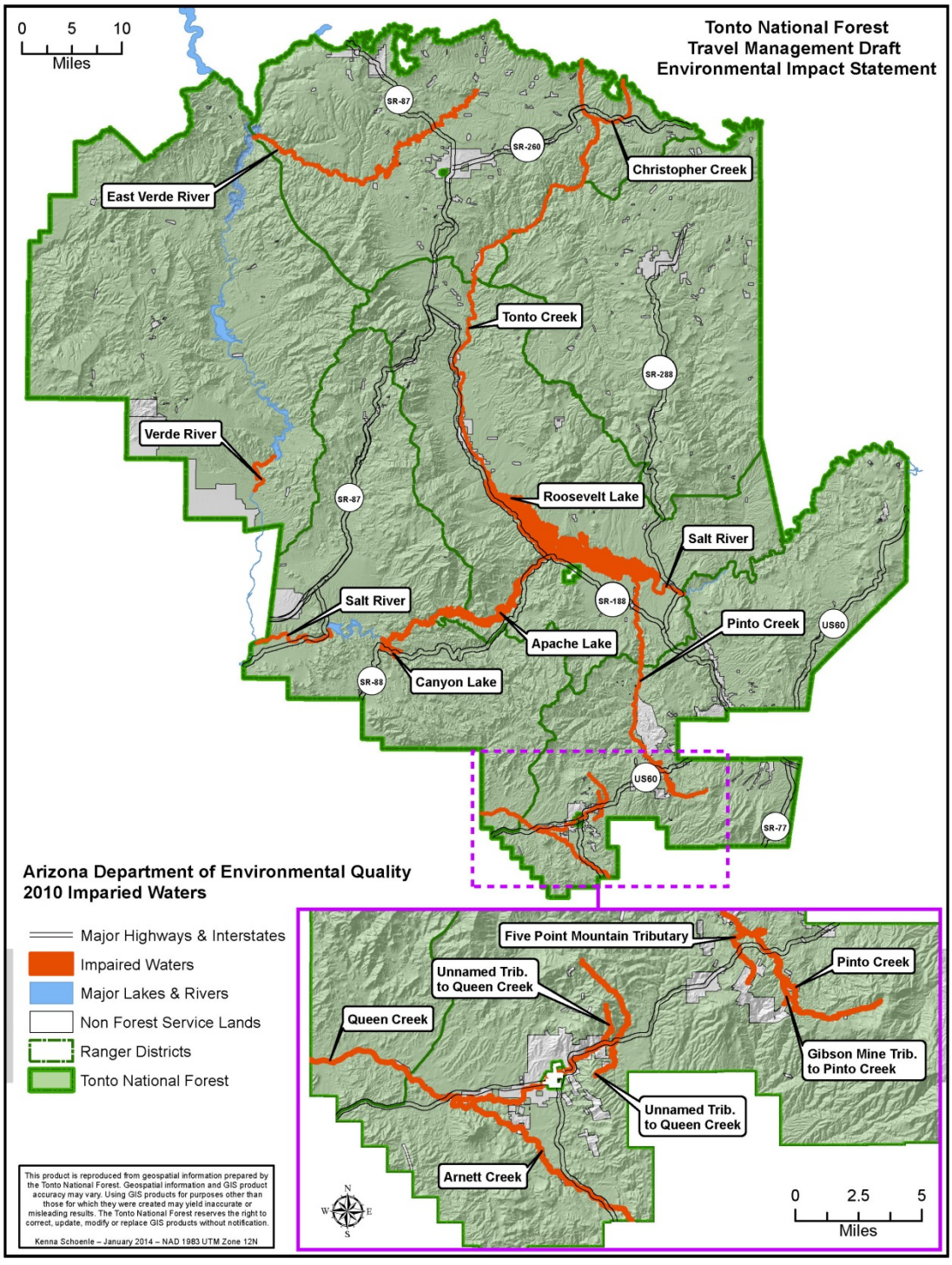

Figure 48: Map of Impaired Streams and Water Bodies within Tonto National Forest

The impaired water bodies map displays formally designated impaired water bodies within the Tonto National Forest. Macroinvertebrate data collected by ADEQ identifies a number of additional streams that have aquatic habitat issues that are not formally designated as impaired. ADEQ also proposes to issue new fish consumption advisories for streams on the Tonto National Forest that are also not formally designated as impaired in the current (2010) listing of 303d water bodies.

The primary pollutant generated by roads is sediment/turbidity. The Salt River from the confluence with Pinal Creek to Roosevelt Lake is the only water body within the Tonto National Forest that is identified as impaired for suspended sediment. It is also identified as impaired for nitrogen, phosphorous and E.Coli. bacteria. ADEQ proposes to initiate a Total Maximum Daily Load (TMDL) analysis for this water body in 2015. A completed TMDL means that ADEQ has devised a plan to bring the impaired water body into compliance with the states' water quality standards and that it is taking steps to implement the plan. Other impaired water bodies within the Forest are primarily impaired by pollutants such as copper, selenium, low dissolved oxygen, phosphorous, nitrogen, E. Coli, mercury in fish tissue, arsenic, and boron. Primary sources of these pollutants include; natural sources, septic systems and poor human waste disposal practices, historic mining, and unknown sources. Roads are not a primary source of these pollutants.

Riparian Areas and Streams

Riparian areas occupy approximately one percent of the Area managed by the Southwestern Region of the Forest Service (roughly 22.5 million acres in 11 National Forests and Grasslands in Arizona, New Mexico, and western Oklahoma and Texas) (Lafayette et al. 1996). They have importance disproportionate to their limited extent, especially in the arid Southwest. This importance is a function of their diverse and productive vegetative composition and structure, their linkage between upland and aquatic ecosystems, and their linkage between upper and lower watershed areas. Some of their most important functions include: 1) providing fish and wildlife habitat, 2) improving water quality by filtering and retaining sediment and nutrients transported by runoff from terrestrial uplands, 3) stabilizing stream banks and floodplain surfaces, 4) increasing the volume and duration of base flows by replenishing local alluvial aquifers, and 5) reducing flood flow velocities and filtering sediments and nutrients transported by flood flows during over bank flow events. Brinson et al. (1981) estimates that the percentage of riparian areas that have been altered in the United States range from 70 to 90 percent.

Riparian areas on the Tonto National Forest were mapped during a project completed for the Southwestern Region of the Forest Service in 2011(U.S. Forest Service, 2013) known as the Regional Riparian Mapping Project (RMAP). This project mapped riparian areas at a 1:12,000 scale and used valley bottom models, photo interpretation, Terrestrial Ecological Unit Inventory, and other ancillary references to develop the mapping. The project resulted in 24 different riparian mapping units, thirteen of which are found on the Tonto National Forest. This project provides the most current and accurate inventory of riparian areas on the forest. Approximately 75,000 acres of riparian vegetation were mapped, representing approximately 2.5 percent of the land base of the Forest. Table 67 displays riparian vegetation types and acreage found within the Tonto National Forest.

Table 67: Riparian Vegetation on Tonto National Forest

RMAP Unit Code and Vegetation Type	Acres
110 - Arizona Alder - Willow	222
130 - Desert Willow	8,937
150 - Fremont Cottonwood - Conifer	12,699
170 - Fremont Cottonwood / Oak	483
180 - Fremont Cottonwood / Shrub	28,963
190 - Herbaceous Riparian	310
230 - Narrowleaf Cottonwood / Shrub	1,823
270 - Sycamore - Fremont Cottonwood	15,704
300 - Arizona Walnut	11
340 - Sparsely Vegetated	40
350 - Ponderosa Pine / Willow	6,022
400 - Historic Riparian - Agriculture	6
410 - Historic Riparian - Residential/Urban	6,560
Total*	**75,213**

** Excludes historic riparian which is on private land or submerged*

The Tonto National Forest stream arc Geographic Information System layer identifies approximately 13,250 miles of streams within the boundaries of the Tonto National Forest. Approximately 640 miles (5 percent) are perennial and an estimated 1,530 miles (12 percent) are intermittent (based on miles of streams supporting riparian vegetation after subtracting miles of perennial streams).

The Tonto National Forest has conducted a number of channel stability assessments across the forest to better understand the condition of its streams and to implement measures to improve the condition of degraded stream reaches. Approximately one percent of the miles of perennial and intermittent streams on the forest have been assessed. Based on assessments completed to date, 19 percent of assessed streams are stable, 49 percent are impaired, and 32 percent are unstable[117].

Environmental Effects

Assumptions and Methodology

Water resources and their existing conditions are analyzed on a sixth Hydrologic Unit Code (HUC6) basis in terms of road density and proximity of roads to stream channels and other water bodies (watersheds are divided and subdivided into successively smaller units. HUC6 watersheds are the sixth subdivision of a major watershed such as the Lower Colorado River Basin and are

[117] For more information, a summary of stream channel assessments within HUC5 watersheds can be found in the Watershed Report, Appendix A, Table 3, in the project record.

known as subwatersheds). HUC6 watersheds typically range in size from 10,000 to 40,000 acres. Other units of measure to analyze effects of roads on water resources are analyzed by ranger district. These include: numbers of stream crossings, proximity to impaired water bodies, and miles of roads within riparian areas.

GIS information was used for the majority of the analysis. GIS data considered in the analysis includes:

- National Forest system and nonsystem roads
- Perennial, and intermittent and ephemeral stream systems
- Impaired water bodies
- Riparian areas
- Lakes

Water quality/sediment load: The potential for roads to affect water quality and aquatic habitats is assessed by identifying the number of miles of roads hydrologically connected to streams and water bodies. Hydrologic connectivity occurs where there is a continuous flow path from roads to streams and water bodies. Examples include ditches that convey road derived or intercepted runoff to stream channels, cross drain features such as waterbars or dips, that discharge sufficient water to create a gully, sediment plume, or both that extends to a stream channel, and fillslopes that encroach on stream channels. Proximity of roads to streams and water bodies and the number of road stream crossings can be used to indicate connectivity (Gucinski *et al.*, 2000; U.S. Forest Service, 1999). Roads within 300 feet of a stream channel are considered to be hydrologically connected to the adjacent stream or water body. The 300 foot distance is based on guidance provided in the Forest Service Watershed Condition Classification Technical Guide (U.S. Forest Service, 2010) that is used to assess the condition of HUC6 watersheds on National Forests

Density: Road density is known to play a dominant role in human-induced augmentation of sediment supply by erosion and mass wasting in the Pacific Northwest and it is reasonable to assume that similar relationships exist elsewhere (U.S. Forest Service, 2011a). Road density will be displayed by ranger district and assessed using the criteria in the Technical Guide (U.S. Forest Service, 2011b) by HUC6 watershed. The number of HUC6 watersheds falling within the condition class ratings identified in the Technical Guide will be identified for each alternative.

General Road Effects

Roads directly affect natural sediment and hydrologic regimes by altering stream flow, sediment loading, sediment transport and deposition, channel morphology, channel stability, substrate composition, stream temperatures, water quality, and riparian conditions in a watershed (Gucinski *et al*., 2000). These effects would apply to all the alternatives.

The hydrologic effect of roads depends on several factors, including location of roads on sideslopes, characteristics of the soil profile, subsurface water flow and groundwater interception, design of drainage structures (ditches, culverts) that affect the routing of flow through watersheds, and the proportion of the watershed occupied by roads (Gucinski *et al*., 2000).

Roads have three primary effects on hydrologic processes. They intercept rainfall directly on the road surface and road cut and fill slopes, and intercept subsurface water moving down the

hillslope; they concentrate flow either on the surface or in an adjacent ditch or channel; and they divert or reroute water from natural flow paths (Gucinski *et al*., 2000; U.S. Forest Service, 1999).

By intercepting road runoff as well as natural surface runoff and subsurface flow, and concentrating and diverting it into ditches, gullies, and channels, road systems effectively increase the density of streams in the landscape, thereby altering timing of peak flows and hydrograph shape (Gucinski *et al*., 2000). Small increases in peak flows may also result from roads in watersheds. Based on studies of small watersheds, effect of roads on peak flows is detectable but relatively modest for most storms (Gucinski *et al*., 2000).

Roads contribute more sediment to streams than any other land management activity (Gucinski *et al*., 2000). Large increases in the amount of sediment delivered to the stream channel can greatly impair or even eliminate fish and aquatic invertebrate habitat and alter the structure and width of stream banks and adjacent riparian zone (Macdonald *et al.*, 1991). The amount of sediment can affect channel shape, sinuosity, and relative balance between pools and riffles. Indirect effects of increased sediment loads may include increased stream temperatures and decreased intergravel dissolved oxygen (DO) (Macdonald *et al.*, 1991).

Fine sediments tend to fill interstices between coarser particles, which reduce habitat space for small fish, invertebrates, and other organisms. Intrusion of fine particles into bed material also reduces the permeability of bed material, which often results in a decline in concentration of intergravel DO. Some invertebrate species are very sensitive to even small declines in DO (Macdonald *et al.*, 1991).

Excess sediments can cause widening of the stream channel, filling in of the channel thalweg (the deepest portion of the channel), increasing bed elevation (channel aggradation), and declining cross sectional area. Net deposition of sediment usually results in more extreme stream temperatures, a decrease in the amount and quality of fish cover. Other changes may include changes in the quality of spawning habitat, a possible reduction in habitat space for algae and macroinvertebrates, increased bank erosion, and an increased likelihood of flooding (Macdonald *et al.*, 1991).

Roads can alter the physical dynamics of stream channels. Stream channels migrate across their historic floodplains, eroding the bed and banks in one location, while aggrading the bed and building new banks in other locations. They also transport the water, sediment, and debris of their attendant watershed. Large pieces of woody debris and fine organic matter transported by streams provide physical structure and diverse aquatic habitat. When roads encroach directly on stream channels, these processes can be modified. Wood and sediment can be trapped behind stream crossings, reducing downstream sediment transport and increasing risk of crossing failure. Unnatural channel widths, slope, and stream-bed form are found upstream and downstream of stream crossings. Road alignment and road fills can isolate floodplains, constrict the channel, constrain channel migration, and simplify riparian and aquatic habitat (U.S. Forest Service, 1999).

Water Quality

The effects of roads and motorized trails on water quality can include sedimentation (deposited solids), turbidity (suspended solids), and pollutants within affected watersheds. Turbidity reduces in-stream photosynthesis and results in reduced food supply and aquatic habitat. Roads increase

nutrient delivery to streams by removing vegetation, rerouting water flow paths, and increasing sediment delivery. Nutrients discharged into aquatic systems can cause algal blooms, which reduce water clarity and deplete oxygen (Arizona Department of Transportation, 1995). Pollutants associated with leaks and spills of petroleum products may be adsorbed to sediments, absorbed by plant material, or dissolved in runoff; once mobilized, these contaminants may enter aquatic systems (Ouren *et al*., 2007). Roads can lead to water temperature changes by removal of streamside vegetation where roads encroach on channels, and alter streamflow regimes through processes described earlier. Water quality can also be adversely affected when fugitive dust and contaminants enter aquatic systems. Airborne dust and contaminants adsorbed to dust particles raised by OHV traffic may eventually settle directly onto wetlands.

Effects of Cross-country Travel

The primary effects of OHV activity on soils and overall watershed function include altered soil structure (soil compaction in particular), destruction of soil crusts (biotic and abiotic) and erosion pavements (gravel surfaces) that would otherwise stabilize soils, and soil erosion. As soil compaction increases, the soil's ability to support vegetation diminishes, because resulting increases in soil strength and changes in soil structure (loss of porosity) inhibit growth of root systems and reduce infiltration of water. As vegetative cover, water infiltration, and soil stabilizing crusts are diminished or disrupted, precipitation runoff rates increase, and soil erosion accelerates, leading to formation of rills, gullies, and other surface changes (Ouren *et al*., 2007).

Effects of OHV activities on water quality can include sedimentation (deposited solids), turbidity (suspended solids), and pollutants within affected watersheds. Sedimentation increases because compacted soils, disrupted soil crusts, and reduced vegetation cover can lead to increased amounts and velocities of runoff; in turn, this accelerates the rates at which sediments and other debris are eroded from OHV use areas and flushed to down slope aquatic systems. Pollutants associated with deposition of OHV emissions and spills of petroleum products may be adsorbed to sediments, absorbed by plant material, or dissolved in runoff; once mobilized, these contaminants may enter aquatic systems (Ouren *et al*., 2007).

Where slope is a factor, extensive networks of OHV routes can proliferate across landscapes and serve as conduits that intercept and alter direction of natural surface flow pathways. These conduits may be eroded to form gullies that channel dislodged sediments and contaminants into stream systems. Where OHV activity occurs, networks of OHV routes proliferate. The generally impervious nature of soils compacted by OHV traffic enhances gully formation in these conduits, thus promoting additional flows of sediments and suspended solids into stream systems, effectively extending the drainage network of a given watershed, and potentially changing the timing of peak runoff flows (Ouren *et al*., 2007).

Riparian Effects

Roads and motorized trails in riparian areas have many of the same effects as those in upland sites; however they compound these effects by disrupting many of the natural beneficial functions provided by riparian areas. Healthy riparian areas stabilize stream channels, provide storage for sediment, serve as nutrient sinks for surrounding watersheds, improve the quality of water, control water temperature through shading, reduce flood peaks, and serve as recharge areas for alluvial and deeper aquifers (DeBano and Schmidt, 1989). Roads directly remove the riparian vegetation and replace it with an impermeable surface (Lafayette *et al*., 1996). Roads in riparian

areas compact soils, which reduces infiltration, are often in close proximity to stream channels thereby contributing disproportionate amounts of sediments and other pollutants to stream channels. Riparian areas are popular recreation sites because of the cool and shady environment they provide in an otherwise hot and arid area. Recreational use of riparian areas disturbs many of the same functions of these areas that are also disturbed by roads. Roads in riparian areas facilitate recreational access to these areas which compounds the effects of the roads themselves.

Alternative A – Direct and Indirect Effects

Table 68 displays density of motorized routes by ranger district. On a forest wide basis route density would be classified as fair in the WCC Technical Guide (U.S. Forest Service, 2011b). Road density would be characterized as fair on all ranger districts. The Cave Creek Ranger District has the lowest road density but has many miles of uninventoried unauthorized routes that if inventoried would likely result in a higher road density rating.

Table 68: Road Density by Ranger District

Ranger District	Road Miles	Area (sq mi)	Road Density (mi/sq mi)
Cave Creek	975.7	955.0	1.02
Globe	1,029.7	736.1	1.40
Mesa	775.0	694.5	1.12
Payson	1,022.1	723.1	1.41
Pleasant Valley	1,183.6	682.6	1.73
Tonto Basin	1,058.1	841.0	1.26
Total	**6,044.2**	**4,632.3**	**1.30**

All activities associated with motor vehicle use have the potential to effect hydrological resources. Table 69 provides a summary of water resource effects associated with this alternative.

Table 69: Forest Wide Changes from Existing Conditions—Alternative B

Water Resource Feature	Effects from Alternative B	Change in Effects from Existing Conditions
Road Density (mi/sq. mi)	0.78	-0.52
Route Proximity to Water (%)	10.2	-7.4
Watershed Condition Attribute Ratings – Road Density		
Good	113	46
Fair	62	-30
Poor	3	-16
Watershed Condition Attribute Ratings – Proximity to Water		
Good	101	4,044
Fair	67	-15 to 14
Poor	10	-25 to 30
Miles of motorized routes within buffer distance (300 ft) of water resource feature		

Water Resource Feature	Effects from Alternative B	Change in Effects from Existing Conditions
Perennial Streams	64.9	4044
Lakes	17.9	-15 to 14
Intermittent & Ephemeral Streams	1,286.1	-25 to 30
Impaired Water Bodies	51	-49.4 to 55.3
Riparian Areas	242.1	-11.4
Number of Stream Crossings		
Perennial Streams	305	-274
Intermittent & Ephemeral Streams	3,973	-2863
Other Water Resource Impacts		
Open to Motorized Cross Country Travel (acres)	0	-700,004
Number and Area (acres) of Permit Zones	5	+4 (+116,797)
Area open to Motorized Big Game Retrieval (acres)	0	-700,004
Area open to Motorized Dispersed Camping (acres)	65	-699,939
Area open to Motorized Fuelwood Gathering (acres)	132,568	-1,213,432

Motorized routes within the 300-foot buffer distance have a greater potential to be hydrologically connected to streams than those beyond the 300-foot buffer distance. Motorized routes hydrologically connected to stream channels and water bodies can provide greater quantities of sediments and other pollutants directly to these features. Hydrologic connectivity is dependent on a number of factors including slope, soil erodibility, vegetative ground cover, and climatic conditions. A 300-foot buffer provides a reasonable distance for identifying the majority of motorized routes that would have direct pathways for delivering road derived pollutants to water bodies.

A total of 672 miles of unauthorized motorized routes have been inventoried on the Forest. In some instances the impacts of unauthorized routes are greater than those of maintained routes due to lack of roadway design and failure to include Best Management Practices (BMPs). One of the benefits of implementing the Travel Management Rule should be to reduce the proliferation of unauthorized routes.

Impacts to water resources are occurring in these areas from disturbance to vegetation, exposure and compaction of soils, rutting and gullying of routes, disruption of natural drainage patterns, and disturbance to riparian areas and stream channels. These effects result in increased runoff, erosion, and sedimentation, as well as direct disturbance to sensitive riparian and aquatic ecosystems. Increasing impacts are anticipated into the future due to growing population in the Phoenix Metropolitan Area and increasing OHV sales. Heavy cross-country travel in close proximity to stream channels and within stream channels would affect channels and water quality more than the same level of use at a greater distance from these areas. Similar affects would occur

where cross-country travel occurs in riparian areas. Areas with only incidental OHV use have minimal watershed effects. Impacts to natural drainage patterns, riparian areas, and stream channels and increases in erosion are occurring in these areas and are described under general roads effects.

Webb (1983) found that after a single pass, annual plants on an OHV route remained intact, but most were destroyed after ten passes. It is expected that perennial plants would be more robust, and therefore perennial plants are likely to also sustain one to two passes. Minimal impacts on vegetative ground cover and soil compaction are expected from motorized retrieval of big game. Based on the low number of trips required for big game retrieval, short distance needed for retrieval, and low number of OHV crossings of a site, motorized big game retrieval has minimal effects on water resource conditions.

Dispersed motorized camping would have its greatest impacts at popular dispersed camping sites where short unauthorized routes provide access to the camping site. Impacts would be similar to those described for roads. Riparian areas are often popular dispersed campsites due to shade and access to water. Motorized dispersed camping in these sites impacts riparian areas both through the disturbance created by the route accessing the site and disturbance that occurs onsite from camping. Camping results in disturbance to vegetation, compaction of soils, and accelerated runoff and erosion. Proximity of riparian areas to stream channels means a greater likelihood that impacts within the riparian area would be expressed in the channel as well. Improper disposal of human waste can also affect water quality. Although motorized dispersed camping can have moderate impacts to watershed conditions at popular dispersed campsites; the limited extent of dispersed camping on a forestwide basis results in only minor impacts overall.

Alternative B – Direct and Indirect Effects

Table 70 displays road density by ranger district. Changes from existing conditions are also displayed.

Table 70: Route Density by Ranger District—Alternative B

Ranger District	Route Miles	Change From Existing	Route Density (mi/Sq mi)	Change From Existing
Cave Creek	449.8	-526.0	0.47	-0.55
Globe	736.3	-293.3	1.00	-0.40
Mesa	386.6	-388.5	0.56	-0.56
Payson	701.9	-320.2	0.97	-0.44
Pleasant Valley	618.5	-565.1	0.91	-0.83
Tonto Basin	711.9	-346.2	0.85	-0.41
Total	**3,605.0**	**-2439.2**	**0.78**	**-0.53**

Table 71 provides a summary of water resource effects associated with this alternative.

Table 71: Forest Wide Changes from Existing Conditions—Alternative B

Water Resource Feature	Effects from Alternative B	Change in Effects from Existing Conditions
Road Density (mi/sq. mi)	0.78	-0.52
Route Proximity to Water (%)	10.2	-7.4
Watershed Condition Attribute Ratings – Road Density		
Good	113	46
Fair	62	-30
Poor	3	-16
Watershed Condition Attribute Ratings – Proximity to Water		
Good	101	4,044
Fair	67	-15 to 14
Poor	10	-25 to 30
Miles of motorized routes within buffer distance (300 ft) of water resource feature		
Perennial Streams	64.9	4044
Lakes	17.9	-15 to 14
Intermittent & Ephemeral Streams	1,286.1	-25 to 30
Impaired Water Bodies	51	-49.4 to 55.3
Riparian Areas	242.1	-11.4
Number of Stream Crossings		
Perennial Streams	305	-274
Intermittent & Ephemeral Streams	3,973	-2863
Other Water Resource Impacts		
Open to Motorized Cross Country Travel (acres)	0	-700,004
Number and Area (acres) of Permit Zones	5	+4 (+116,797)
Area open to Motorized Big Game Retrieval (acres)	0	-700,004
Area open to Motorized Dispersed Camping (acres)	65	-699,939
Area open to Motorized Fuelwood Gathering (acres)	132,568	-1,213,432

The effect of this alternative on a forest wide basis is a substantial decrease in miles of roads within riparian areas, in the number of crossings of perennial streams, and in the number of crossings of intermittent and ephemeral channels. On an overall basis these changes represent almost a forty-three percent decrease in road mileage within riparian areas, a forty-seven percent decrease in road crossings of perennial streams, and a forty-two percent decrease in number of crossings of intermittent and ephemeral channels. Road density in riparian areas declines from 3.6 miles per square mile under existing conditions to 2.1 miles per square mile under Alternative B.

In terms of the WCC attribute rating for road density the difference in density would improve the rating from poor to fair.

Road density decreases to less than one mile per square mile on all districts except Globe. On a forest wide basis road density also decreases to less than one mile per square mile. A density of less than one mile would result in a road density attribute rating of good when the WCC Technical guide criteria are applied. Route density in the Globe District remains in the fair category although density nearly achieves a good rating.

Proximity of routes to water is reduced by nearly forty-two percent from existing conditions in this alternative. On a forest wide basis the proximity to water attribute rating would remain in the fair category. To achieve a good rating for this attribute the percent of streams in close proximity to motorized routes would have to drop below 10 percent. Attribute ratings of good would be achieved in the Cave Creek, Mesa, and Tonto Basin Districts. These ratings would not apply until decommissioning of routes identified for this activity has been completed. In some instances site specific environmental analysis will be required before decommissioning can occur.

Motorized cross-country travel would not be permitted in this alternative, including for retrieval of big game. Eliminating motorized cross-country travel in areas where heavy OHV use occurs on the 700,000 acres currently open to cross country travel on the Payson and Pleasant Valley ranger districts would allow disturbed areas to recover over time. Eliminating motorized cross country travel would result in reduced impacts to watershed conditions from those under existing conditions. Additionally, motorized dispersed camping would be limited to designated dispersed sites that are accessible by a designated road or motorized trail. The small overall area (65 acres) affected by this activity results in negligible impact on watersheds and the net effect would be a negligible reduction in impacts compared to the No Action Alternative. Finally, fuelwood gathering for personal use would be permitted within 300 feet of a designated road or motorized trail within a woodcutting permit area. The net effect would likely be little difference in watershed impacts between the alternatives.

Alternative C – Direct and Indirect Effects

Table 72 displays road density by ranger district. Changes from existing conditions are also displayed.

Table 72: Route Density by Ranger District—Alternative C

Ranger District	RouteMiles	Change From Existing	Route Density (mi/sq mi)	Change From Existing
Cave Creek	669.0	-306.8	0.70	-0.32
Globe	817.3	-212.4	1.11	-0.29
Mesa	561.0	-214.0	0.81	-0.31
Payson	863.2	-158.8	1.19	-0.22
Pleasant Valley	874.5	-309.1	1.28	-0.45
Tonto Basin	895.2	-162.9	1.06	-0.19
Total	**4,680.2**	**-1,364.0**	**1.01**	**-0.29**

Table 73 provides a summary of water resource effects associated with this alternative.

Table 73: Forestwide Changes from Existing Conditions—Alternative C

Water Resource Feature	Effects from Alternative C	Change in Effects From Existing Conditions
Road Density (mi/sq. mi)	1.01	-0.29
Route Proximity to Water (%)	13.4	-4.2
Watershed Condition Attribute Ratings – Road Density		
Good	86	19
Fair	88	-4
Poor	4	-15
Watershed Condition Attribute Ratings – Proximity to Water		
Good	75	18
Fair	82	1
Poor	21	-19
Miles of motorized routes within buffer distance (300 ft) of water resource feature		
Perennial Streams	88.8	-31.4
Lakes	21.9	-7.4
Intermittent & Ephemeral Streams	1684	-522
Impaired Water Bodies	61.4	-13.8
Riparian Areas	313.9	-109.2
Number of Stream Crossings		
Perennial Streams	411	-168
Intermittent & Ephemeral Streams	5,203	-1,633
Other Water Resource Impacts		
Number and area (acres) Open to Motorized Cross Country Travel	4 + 4 tot lots (6,790)	+4+4 tot lots (- 693,225)
Number and Area (acres) of Permit Zones	4 (116,797)	+3 (+82,077)
Area open to Motorized Big Game Retrieval (acres)	1,293,200	+593,196
Area open to Motorized Dispersed Camping (acres)	91,400	-608604
Area open to Motorized Fuelwood Gathering (acres)	162,000	-1,184,000

This alternative reduces miles of roads within riparian areas, and number of stream crossings by roads. On an overall basis these changes represent a twenty-six percent decrease in road mileage within riparian areas, a twenty-nine percent decrease in road crossings of perennial streams, and a twenty-four percent decrease in the number of crossings of intermittent and ephemeral channels. The decrease in miles of roads in riparian areas reduces road density in these areas to 2.7 miles

per square mile. If the criteria for the road density attribute from the WCC Technical Guide are applied to road density in riparian areas this density would remain in the poor category.

The Bartlett and Roosevelt Lake OHV areas would permit motorized cross country travel between the variable water surface and the high water mark of these lakes. These areas are primarily unvegetated or vegetated with annual species that pioneer these areas when water levels drop. Although motor vehicle use could cause rutting of the surface, concentrating some runoff and increasing erosion minimally, the overall effect is likely negligible. Golf Course, another proposed OHV Area, is a relatively small flat upland area of 17 acres just south of Superior. Watershed impacts at this site would be small and would consist primarily of increased runoff and erosion from compaction and rutting of soils and reduced vegetative ground cover.

The Sycamore OHV Area includes an ephemeral wash that is tributary to Lower Sycamore Creek. Forest Road 403 lies within the wash bottom until it joins Sycamore Creek. Approximately 4.5 miles of the channel of Sycamore Creek, extending upstream from the boundary with Fort McDowell Indian Reservation, are included in the area. This OHV area includes uplands adjacent to the ephemeral wash that is tributary to Sycamore Creek and uplands adjacent to Sycamore Creek. The ephemeral wash is characterized by a multiple channel bed (braided channel) consisting of unconsolidated sand and gravel, and xeroriparian vegetation consisting primarily of mesquite that occupies terrace and floodplain features. Travel in wash bottoms has a small potential to introduce contaminants to ground and surface waters from spills and leaks of fuels and oils. Travel in wash bottoms can also damage riparian vegetation, particularly younger age classes. Sycamore Creek is characterized as an intermittent system that flows following significant winter precipitation. Much of the stream flow that reaches the alluvial basin, which begins near the upper end of the OHV area, infiltrates into the bed of the creek (Thomsen and Schumann, 1968). The channel through the alluvial basin is dry most of the year. OHV impacts in the area include a small potential to introduce contaminants to ground and surface waters from spill of fuels and oils. OHV impacts can also disturb armor layers of channel bottom material that form during periods of high flow making the channel more susceptible to erosion. OHV travel in uplands can remove vegetative ground cover, and cause compaction and rutting of soils. Increased runoff from bared and compacted soils can increase erosion and sediment delivery to stream channels and wash bottoms.

Eliminating motorized cross-country travel in areas where heavy OHV use occurs on the 700,000 acres currently open to cross country travel on the Payson and Pleasant Valley ranger districts would allow disturbed areas to recover over time. This alternative permits motorized retrieval of elk and bear for up to one mile from both sides of designated roads and motorized trails. There would be a negligible change in impacts compared to the No Action Alternative. This alternative would also permit motorized access for 100 feet from either side of designated roads and motorized trails. Approximately 91,400 acres would be available for motorized dispersed camping. Although motorized dispersed camping can have moderate impacts to watershed conditions at popular dispersed campsites; the limited extent of dispersed camping on a forest wide basis results in only minor impacts overall. Additionally, this alternative would permit motorized fuelwood gathering within 300 feet of either side of a designated road or motorized trail within woodcutting permit areas. The net effect would likely be little difference in watershed impacts between the alternatives.

Alternative D – Direct and Indirect Effects

Table 74 displays road density by ranger district. Changes from existing conditions are also displayed.

Table 74: Route Density by Ranger District—Alternative D

Ranger District	Route Miles	Change From Existing	Route Density (mi/sq mi)	Change From Existing
Cave Creek	856.4	-119.3	0.90	-0.12
Globe	1,024.9	-4.7	1.39	-0.01
Mesa	698.8	-76.3	1.01	-0.11
Payson	1,002.8	-19.3	1.39	-0.03
Pleasant Valley	1,140.5	-43.1	1.67	-0.06
Tonto Basin	1,035.2	-22.9	1.23	-0.03
Total	**5,758.7**	**-285.5**	**1.24**	**-0.06**

Table 75 displays a summary of water resources effects associated with this alternative.

Table 75: Forestwide Changes from Existing Conditions—Alternative D

Water Resource Feature	Effects from Alternative D	Change in Effects from Existing Conditions
Road Density (mi/sq. mi)	1.24	-0.06
Route Proximity to Water (%)	16.7	-0.9
Watershed Condition Attribute Ratings – Road Density		
Good	70	3
Fair	91	-1
Poor	17	-2
Watershed Condition Attribute Ratings – Proximity to Water		
Good	70	2
Fair	91	-1
Poor	17	-1
Miles of motorized routes within buffer distance (300 ft) of water resource feature		
Perennial Streams	109.7	-10.5
Lakes	29	-0.3
Intermittent & Ephemeral Streams	2,100.8	-105.7
Impaired Water Bodies	73.6	-1.6
Riparian Areas	395.1	-28
Number of Stream Crossings		
Perennial Streams	529	-50

Water Resource Feature	Effects from Alternative D	Change in Effects from Existing Conditions
Intermittent & Ephemeral Streams	6,457	-379
Other Water Resource Impacts		
Number and Area (acres) Open to Motorized Cross Country Travel	4 areas +4 tot lots(6,790)	+4+ 4 tot lots (-693,225)
Number and Area (acres) of Permit Zones	1 (34,720)	0
Area open to Motorized Big Game Retrieval (acres)	2,248,300	+1,548,296
Area open to Motorized Dispersed Camping (acres)	336,000	-364,004
Area open to Motorized Fuelwood Gathering (acres)	1,346,000	0

Little change in road density occurs in this alternative from existing conditions. Forest wide, road density decreases from 1.25 to 1.24 miles per square mile. Applying the road density attribute rating criteria from the WCC Technical Guide (U.S. Forest Service, 2011b) results in a rating of "fair," which would be unchanged from existing conditions. Small decreases in route density would occur in all districts. The road density attribute rating would improve to "good" in the Cave Creek district (density is less than 1 mile per square mile) but would remain unchanged from existing conditions in the other districts.

Proximity of routes to water would be reduced by five percent from existing conditions in this alternative. On a forest wide basis the proximity to water attribute rating from the WCC Technical Guide (U.S. Forest Service, 2011) would remain in the fair category and be unchanged from existing conditions. Attribute ratings of fair would remain unchanged for all districts. Additionally, this alternative results in small decreases in motorized routes from existing conditions within buffer distances of perennial streams (9 percent), intermittent and ephemeral

As with all the action alternative, cross-country travel would be eliminated under this alternative. The same designated OHV areas in Alternative C are proposed for this alternative; the impacts would be the same as Alternative C. Motorized retrieval of elk, mule deer, white tail deer, and bear would be limited to areas within one mile of either side of designated motorized routes under this alternative. Negligible impacts to watershed conditions would be expected due to the small number of motorized retrievals and the large area available for these retrievals. This alternative would also allow motorized dispersed camping up to 300 feet on both sides of designated roads and motorized trails. Approximately 336,000 acres would be available for this activity. This area is slightly less than half the area open to dispersed camping under existing conditions but greater than the areas open under Alternatives B and C. Although motorized dispersed camping can have moderate effects to watershed conditions at popular dispersed campsites; the limited extent of dispersed camping on a forest wide basis results in only minor effects overall.Finally, impacts associated with fuelwood gathering for this alternative would be the same as Alternative A.

Cumulative Effects for All Alternatives

Vegetation and fuels management are planned to have a net, long-term improvement to soil and water conditions although there may be short-term negative impacts during implementation.

Mitigation measures and Best Management Practices are designed to mitigate any short-term impacts that may occur from project implementation. Livestock grazing activities (past and ongoing) have impacted riparian and water resource conditions but reauthorizations of grazing permits are designed to minimize impacts to these resources.

Route realignment, reconstruction, or decommissioning may occur with future projects and access through or required by other land jurisdictions may impact the Forest. The extent of these changes cannot be predicted or quantified. Future changes to routes would be planned and mitigated to reduce impacts.

Urban development and interface growth would continue on private lands. These would not directly affect National Forest land, but runoff from urban development can cause an increase in erosion and affect water quality on downstream NFS lands.

Future mineral exploration and development, land exchanges, and utility construction are either planned or likely to occur. Disturbance can be relatively minor in some cases such as small utility constructions, but in mineral exploration and development disturbance can be extensive.

Visitor access to The Rolls, St. Clair, and Sycamore sites may be restricted in the future. Restrictions may prevent continued proliferation of unauthorized routes and prevent additional impacts to soil and watershed conditions.

In response to air quality concerns, city/town, county, and state restrictions are in place for use of recreational vehicles on unpaved roads and vacant lots in regions of Maricopa and Pinal counties that are failing to attain Federal Air Quality Health Standards set by the Environmental Protection Agency. Measures implemented on NFS lands to reduce air quality impacts such as road paving, hardening of OHV parking areas, enforcing speed limits on unsurfaced roads, and placing limits on user numbers may also reduce watershed impacts.

A number of major road construction projects are planned by other government entities well into the future. Road construction can have short term impacts on water quality, but impacts are minimized through implementation of BMPs. Over the long term, additional paved surfaces can increase runoff, erosion, and introduction of contaminants into waterways. Construction of the Tonto Creek Bridge may result in reduced watershed impacts, if one or more of the current low water crossings are closed and the site is allowed to revegetate.

Soil Resources

Soil resources and their existing conditions will be analyzed Forest-wide by ranger district. Soil erosivity as measured by the Universal Soil Loss Equation (USLE) “K” factor, soil strength, and road density will be units of measure to analyze effects associated with roads. Soil erosion from roads and motorized trails will be estimated as average annual tons of sediment delivered to stream channels on a forest wide basis using the Water Erosion Prediction Project (WEPP) computer model (U.S. Forest Service, 2000). Soil Condition is not considered in the impact analysis because the subject matter expert who was most familiar with the derivation of the soil condition classes is no longer with the Tonto National Forest. Additional work to model soil erosion has been conducted to improve the analysis of the effects on soils from motorized routes.

Affected Environment

The ecological niche of the Tonto National Forest ranges from Sonoran Desert (hot, dry) at the lowest elevations to mixed conifer forests (cool, moist) at the highest elevations. Sonoran Desert communities, pinyon-juniper woodlands, chaparral, semidesert grasslands, and ponderosa pine forests occupy the largest extent in the Forest while mixed conifer forests, wetland/cienega, and riparian forests are the least extensive on the Forest (U.S. Forest Service, 2007). These life zones form numerous ecological types.

Due to the wide range of elevations, slope, and geological types, existing soils and vegetation are quite variable. The majority of the soils classified fall into Aridisols, Alfisols, and Inceptisols followed by a fairly large amount of Mollisols where past and present herbaceous vegetative cover developed organic surfaces. Poorly developed Entisols occur along drainages. These riparian areas have some of the highest levels of impacts associated with OHV travel.

Most of the soils on the Forest formed in sedimentary rocks including sandstone, limestone, and conglomerate and are generally medium and fine textured throughout their profiles. Soil depths for these soils are generally shallow and moderately deep in most upland positions, but are deeper in low-lying areas. In areas of the Forest not covered by sedimentary rocks a large number of soils are derived from granite. These soils tend to be medium to coarse textured and highly erosive. Recently developed soils (Entisols) are found in fluvial stream systems and are generally coarse textured and rocky throughout their profile.

Precise acres of soils directly impacted from motorized vehicle use are not known and occur throughout the Forest but have been observed to be especially widespread in Sonoran Desert and riparian areas.

The forces generated by wheeled or tracked vehicles repeatedly traveling over the soil can chew up, destroy, and remove the protective layer of vegetation, duff, and biological crusts, exposing and detaching bare soil susceptible to accelerated erosion.

Erosion Risk

Surface-erosion problems are generally worse in highly erodible terrain (soils with High Erosion Risks); particularly landscapes underlain by granite or highly fractured rocks. Roads located on these soils are also primary sediment sources. Soils with moderate erosion are also at risk for accelerated erosion and sediment delivery but to a lesser magnitude than soils with severe erosion hazard (Table 76[118]). Approximately 70 percent of the Forest is underlain by soils with moderate to high erosion risk.

Table 76: Erosion Risks on Tonto National Forest (Existing Roads)

Ranger District	Not Rated	High	Mod	Low	Total Miles
Cave Creek	84 mi (9%)	71 mi (8%)	560 mi (60%)	226 mi (24%)	939

[118] Miles of roads not rated for erosion risk are roads on private lands(that were not rated in the TES or TEUI), roads where TEUI interpretation of the Soil Mapping Unit is in progress, and roads on rock outcrop, badlands/rock outcrop, lakes, rivers, etc., riverwash, or mines.

Ranger District	Not Rated	High	Mod	Low	Total Miles
Globe	81 mi (8%)	153 mi (15%)	501 mi (49%)	289 mi (28%)	1,025
Mesa	72 mi (10%)	104 mi (14%)	438 mi (60%)	114 mi (16%)	728
Payson	62 mi (7%)	566 mi (60%)	185 mi (20%)	133 mi (14%)	947
Pleasant Valley	73 mi (7%)	331 mi (30%)	468 mi (42%)	235 mi (21%)	1,107
Tonto Basin	63 mi (6%)	254 mi (25%)	467 mi (45%)	248 mi (24%)	1,032
Total	**434 mi (8%)**	**1,480 mi (26%)**	**2,619 mi (45%)**	**1,245 mi (22%)**	**5,777**

When OHVs travel on steep slopes, they often do so by traveling straight up or down a slope or nearly so to optimize the stability of the vehicle and reduce its chances for rollover. When tires spin and displace soil, tracks are created that may rapidly expand due to the mechanical loosening of the soil and its displacement. These sites are more prone to erosion and sediment delivery from rainfall runoff than adjacent undisturbed sites. Figure 49 displays areas with moderate to high erosion risk on the Forest.

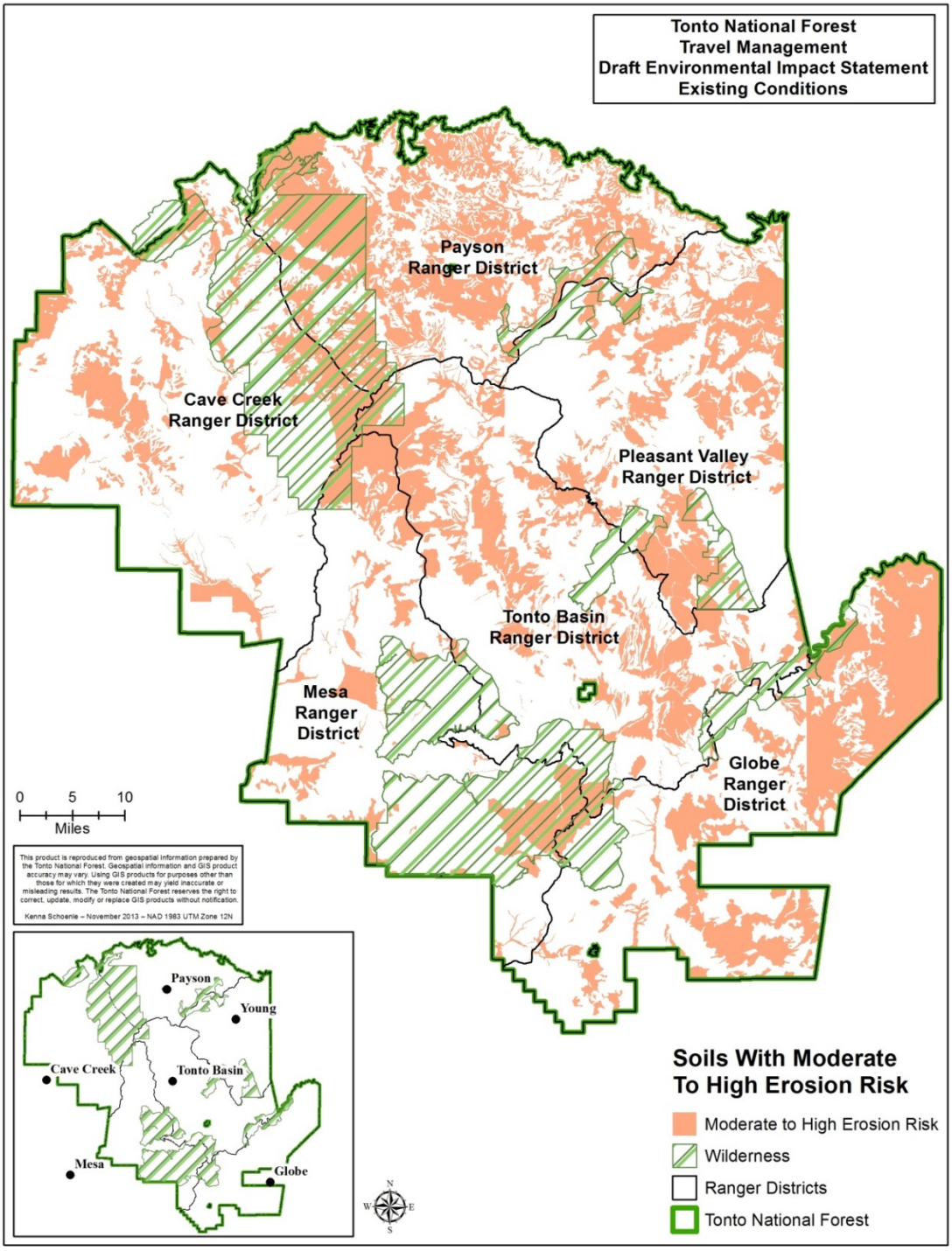

Figure 49: Map of Areas with Moderate to Soil Erosion Risk

Soil Strength

Table 77[119] illustrates soil strength on the Forest. Soil strength is an estimation of the bearing strength of soils. Soils with low bearing strength are especially subject to compaction and rutting, especially when soils are wet. Soils with moderate strength are subject to compaction but to a lesser degree than those with low strength.

Table 77: Soil Strength on Tonto National Forest (Existing Roads)

Ranger District	Not Rated	Low	Mod	High	Total Miles
Cave Creek	84 mi (9%)	95 mi (10%)	152 mi (16%)	608 mi (65%)	939
Globe	81 mi (8%)	253 mi (25%)	83 mi (8%)	607 mi (59%)	1,025
Mesa	72 mi (10%)	225 mi (31%)	16 mi (2%)	415 mi (57%)	728
Payson	62 mi (7%)	373 mi (39%)	52 mi (5%)	460 mi (49%)	947
Pleasant Valley	73 mi (7%)	689 mi (62%)	259 mi (23%)	86 mi (8%)	1,107
Tonto Basin	63 mi (6%)	308 mi (30%)	135 mi (13%)	526 mi (51%)	1,032
Total	**434 mi (8%)**	**1,943 mi (34%)**	**697 mi (12%)**	**2,703 mi (47%)**	**5,777**

Approximately forty-six percent of the Forest is covered by soils that have low to moderate bearing strength when wet. Ruts are easily created on these soils and on roads that traverse these soils. Ruts created on the driving surface can concentrate water flow that can create gullies on both the road and adjoining land.

Road Density

Sediment production is positively correlated with road length (Ried and Dunne, 1984). Therefore road density can be used as a measure to assess the impacts of roads on erosion. The Tonto National Forest currently has a road density of 1.16 miles per square mile (1.31 miles per square mile when inventoried unauthorized motorized routes are included) of all roads on all lands within the Forest proclamation boundary (includes roads on private lands, state and county highways, and local roads).

The Forest Service Watershed Condition classification Technical Guide (U.S. Forest Service, 2011b) recommends a density of 1 mile per square mile but stresses that "… increasing road density has been correlated with increasing sediment yield in many studies nationwide. However, the true set of environmental conditions that produce sedimentation are complex, unmeasured, or unknown. Numerous other factors including soils, geology, slope, and road condition also influence sediment yield. The result is that road density is not a perfect predictor of the impacts to

[119] Miles of roads not rated for erosion risk are roads on private lands (that were not rated in the TES or TEUI), roads where TEUI interpretation of the Soil Mapping Unit is in progress, and roads on rock outcrop, badlands/rock outcrop, lakes, rivers, etc., riverwash, or mines.

sediment yield. While there are no absolute thresholds for acceptable road densities, generally fewer miles of roads/mi^2 will have a lighter impact."

Sediment Yield

Sediment Yield was modeled at a broad scale on a forest wide basis. Estimates of the range in sediment delivered to stream channels across buffer distances between roads and stream channels and at road crossings are displayed in Table 78.

Table 78: Sediment Delivery to Streams from Road Buffers and Stream Crossings

Road Type	Range in Average Annual Sediment Transported Across Road Buffers (tons/yr)	Range in Average Annual Sediment Transported to Streams at Stream Crossings (tons/yr)
ML2 and unknown ML	23,080 - 24,300	8,260 - 9,450
ML3	5710 - 6,400	970 - 1,290
Unauthorized	990 - 1110	260 - 430
Total	**28,790 - 31,810**	**9,480 - 11,180**

Total sediment delivered to stream channels ranges from 38,270-42,990 tons per year in this alternative.

Unauthorized Routes

An unknown number of Unauthorized Routes occur throughout the Forest. The known length is 672 miles with the majority of these routes occurring either in the Sycamore Creek area of the Mesa Ranger District or the Desert Vista part of the Cave Creek Ranger District. Since Unauthorized Routes are not engineered and many tend to occur on steep slopes and drainages, these routes tend to cause more soil erosion than engineered roads. Assuming an average width of 12 feet, the 672 miles of inventoried unauthorized routes would result in removal of 977 acres of land from the productive land base. This represents 0.03 percent of lands within the Tonto National Forest.

Environmental Effects

Assumptions and Methodology

Terrestrial Ecosystem Survey (TES) and Terrestrial Ecological Unit Inventory (TEUI)

The TES and TEUI are used to map, classify, and evaluate soils on the Forest. They contain predictions and limitations for soils and vegetation for selected land uses. These inventories are mapped at a scale of 1:24,000 and designed for use in a variety of applications including landscape, watershed, and Forest level planning. It is important to acknowledge that many differences in soils can occur, even within short distances. Where site-specific information is required at a finer scale, on-site investigations should be made to validate or refine soil information. Approximately 1.1 million acres of the Forest have a completed and published Terrestrial Ecosystems Survey (U.S. Forest Service, 1985a). Mapping for the draft Terrestrial Ecological Unit Inventory has been completed for most of the remainder of the forest.

Approximately 95 percent of the Forest has been mapped with either the TES or TEUI. The remaining acres to be mapped are primarily unroaded areas that would not be affected by the alternatives analyzed in the travel management assessment process. These acres mapped for the TEUI have been entered into a GIS database but a final correlation and final report have not been completed. The mapping of these acres is still considered tentative and subject to change.

Erosion Risk

Erosion risk interpretations are derived from published TES "K" factors and from calculated "K" factors in the draft TEUI (The soil erodibility factor (K-factor) is a quantitative description of the inherent erodibility of a particular soil; it is a measure of the susceptibility of soil particles to detachment and transport by rainfall and runoff (U.S. Soil Conservation Service, 1993). The "K" factor used in the Universal Soil Loss Equation (USLE) model was used to determine the erosion risk. K factors with a value of 0.10 or less were given a "low" rating, K factors greater than 0.10 but less than 0.20 were rated "moderate," while K factors of 0.20 or greater were given a "high" rating.

Soil Strength

Soil Strength interpretations are derived from published TES and draft TEUI interpretations. Soil strength was derived from the soil family. Soil strength estimates are based on natural, undisturbed soil profiles. Ratings are for wet soil. Low strength ratings consist of families with fine or clayey-skeletal montmorillonitic or smectitic particle sizes/mineralogy classes. Moderate strength ratings consist of families with fine or clayey-skeletal mixed particle sizes/mineralogy classes. And high strength rating consists of all other soils.

Effects Common to All Alternatives

Under all alternatives use of roads would continue. Roads contribute more sediment to streams than any other land management activity (Gibbons and Salo 1973; Meehan 1991). Roads and, to a lesser extent, motorized trails have three primary effects that can affect erosion: They intercept rainfall directly on the road surface and road cutbanks and intercept subsurface water moving down the hillslope; they concentrate flow, either on the surface or in an adjacent ditch or channel; and they divert or reroute water from flowpaths that it would otherwise take if the road were not present. Concentrated flow can result in an increase in rill and gully erosion. Most of the hydrologic and geomorphic consequences of roads result from one or more of these processes. For example, by intercepting surface and subsurface flow, and concentrating and diverting it into ditches, gullies, and channels, road systems effectively increase the density of streams in the landscape, thereby changing the amount of time required for water to enter a stream channel, altering the timing of peak flows and hydrograph shape (King and Tennyson, 1984; Wemple *et al.*, 1996). Roads directly affect natural sediment and hydrologic regimes by altering streamflow, sediment loading, sediment transport and deposition, channel morphology, channel stability, substrate composition, stream temperatures, water quality, and riparian conditions in a watershed (Gucinski *et al.*, 2000).

Alternative A – Direct and Indirect Effects

Roads and Trails Designated for Motor Vehicle Use

Currently there are no motorized trails. In this alternative, there would 2,307 miles of road maintained for high-clearance vehicles, 645 miles of road maintained for passenger vehicles, 2006 miles of roads open and currently used by the public (maintenance level unknown).

The No Action Alternative presents the environmental effects associated with continued motorized use of unauthorized routes. There are currently 672 inventoried miles. Many additional miles of uninventoried unauthorized routes also exist on the Forest. It is likely that public use of unauthorized routes would continue and that the number and miles of these routes may increase in number. Unauthorized routes present a special problem for soil conditions for several reasons. The roads are not properly engineered, do not have proper drainage and erosion control built into them, often occur on steep, erosive soil, and many are located in sensitive areas such as riparian areas. A large number of routes in the Desert Vista and Lower Sycamore Creek areas have known erosion scars. The existence and proliferation of unauthorized routes will have negative effects on soil condition.

Motorized Cross-country Travel

Under the No Action Alternative, unrestricted, cross-country travel could continue to adversely affect soil condition and soil productivity on the 704,000 acres of the Payson and Pleasant Valley ranger districts where cross-country travel is not prohibited by existing closure.

Repeated tracking by OHV use directly affects the soil by removing the protective vegetation layer to bare soil and loosening soil aggregates through tire churning, rutting and soil displacement thus exposing the soil to accelerated erosion resulting in loss of soil productivity. The impacts are most pronounced during periods when the soil is wet. OHV use indirectly causes accelerated erosion and sediment transport to connected streams following storm events. Repeated OHV travel on soils with moderate or high erosion risk is most likely to cause accelerated erosion, runoff, and sediment delivery into connected stream courses, posing a risk to long-term soil productivity. On soils with slight erosion risk, the direct effect of OHV activity is lower but could cause a loss of soil productivity when vegetative ground cover is removed, soil is compacted, or rutting occurs.

About 52 percent of the portions of the Payson and Pleasant Valley ranger districts that are open to cross-country travel contain soils with moderate and high erosion risks and almost 70 percent of the open areas contain soils with low and moderate strength. These soils are vulnerable to motorized vehicle travel. Motorized vehicle use could result in accelerated soil erosion on areas where repeated OHV use occurs and soils have moderate and high erosion risk.

Soil conditions on the areas open to cross-country travel contain about 25 percent to 30 percent of soils considered to be unsatisfactory or impaired from past disturbances. Continued repeated cross-country motorized travel on these soils would cause accelerated erosion and contribute to reduced long-term soil productivity and vegetative cover.

There are several areas where unauthorized concentrated OHV use is occurring. Approximately 2,500 acres have been disturbed, primarily in the Desert Vista area of the Cave Creek Ranger District and the Lower Sycamore area of the Mesa Ranger District. Resource damage has

occurred in these areas including loss of vegetation, rutting of slopes, and gully erosion. If enforcement is not adequate then these areas would likely expand, causing further soil damage.

Permit Zones

The existing Bulldog Canyon Permit Zone would continue to require a gate combination code and a free permit from the Forest. It is likely that there is little difference between soil conditions within and outside of this permit zones with the exception that users of the permit zones tend to be more aware of restrictions and are more likely to stay on designated routes which is an overall benefit to soil conditions.

Motor Vehicle Use for Big Game Retrieval

Under the No Action Alternative, continued, unrestricted game retrieval would occur only in the areas of the Payson and Pleasant Valley ranger districts, unless otherwise posted. Approximately 704,000 acres could be affected. It is likely that some motorized big game retrieval occurs in ranger districts outside of posted open areas. Payson and Pleasant Valley ranger districts lie within Game Management Units (GMUs) 22 and 23. These game management units also include portions of the Cave Creek, Mesa, and Tonto Basin ranger districts. Motorized big game retrieval estimates for these game management units would overestimate the total number of motorized big game retrievals. The majority of the Cave Creek District in Game Management Unit 22 lies within the Mazatzal Wilderness and wilderness areas have been excluded from the estimates for motorized big game retrieval. Five year average estimates of motorized big game retrieval in GMUs 22 and 23 are 391 retrievals per year. Most motorized game retrieval also involves a single trip with a vehicle (typically an ATV). Webb (1983) found that after a single pass, annual plants on an OHV route remained intact, but most were destroyed after ten passes. We expect perennial plants to be more robust, and therefore perennial plants are likely to also sustain one to two passes. Minimal impacts on vegetative ground cover and soil compaction are expected from motorized retrieval of big game. Based on the low number of trips required for big game retrieval, short distance needed for retrieval, and low number of OHV crossings of a site, motorized big game retrieval has minimal effects on soil conditions. Big game retrieval on upland soils under conditions of dry soils would not be expected to appreciably affect vegetation, soil condition, and productivity. Localized impacts would be most pronounced where motorized traffic occurred on wet soils which could cause soil compaction and loss of vegetation.

Motor Vehicle Use for Dispersed Camping

For this alternative, continued, unrestricted motorized, dispersed camping would occur on the Payson and Pleasant Valley ranger districts where driving off road is permitted by the Forest Plan and in the very limited areas of the southern four districts where off road driving is posted open. In these areas, motorized travel would continue to cause localized impacts to soils, but would be restricted to areas very minor in extent.

Although very limited in extent, motorized dispersed camping could have adverse effects to soil resources where roads provide access to sensitive soils and riparian areas. On wet soils where repeated cross-country travel continues or even where single passes occur, soil damage has been observed and would continue under this alternative. Dispersed camping has the direct effect of disturbing the vegetative ground cover, exposing bare soil, causing soil compaction and rutting on wet soils and causing accelerated sheet and rill erosion. Although motorized dispersed camping

can have moderate impacts to soil conditions at popular dispersed campsites, the limited extent of dispersed camping on a forestwide basis results in only minor impacts overall.

Motor Vehicle Use for Fuelwood Gathering

Personal use fuelwood gathering and gathering of other forest products would continue on approximately 1.35 million acres under this alternative. Approximately 6,000 user days spent gathering fuelwood over this area in 2012 disperse a small number of users over a large area. Permit conditions that require fuelwood gatherers to use the same ingress and egress and to scatter slash over their tracks to reduce soil impacts. Permit conditions that do not authorize fuelwood gathering from January through March when soils are wet also prevent impacts to soils. Overall this activity has minimal effects on soil conditions.

All Action Alternatives – Direct and Indirect Effects

Roads and Trails Designated for Motor Vehicle Use

Under the action alternatives motorcycle trails and ATV trails would be added to the system either by conversion of an unauthorized route or by changing the status of a system road. Alternative B proposes 2,021 miles of motorized trails, Alternative C proposes 2,628 miles, and Alternative D proposes 1,816 miles. Motorized trails (both ATV and motorcycle) are likely to have slightly less of an impact on soil conditions than roads because of a smaller footprint. However, the differences are not measurable at the scale of this analysis; therefore, for the purpose of this assessment, roads, and motorized trails would be assumed to have similar impacts.

The Forest has inventoried about 672 miles of unauthorized routes. Under all Alternatives some of these routes would be converted to system roads or motorized trails. Remaining inventoried unauthorized routes would be decommissioned. Routes not added to the system would not be physically changed on the ground until future site-specific environmental analysis is completed. The effects of adding unauthorized roads to the system cannot be fully evaluated without also looking at the total resulting road density. Unauthorized routes would not be added to the system as roads without following proper mitigation measures and following Best Management Practices (BMPs).

Soil Parameters

Of the action alternatives (alternatives B, C, and D), alternative B has the fewest miles and number of roads occurring on sensitive soils (moderate and high erosion risk and low soil strength). Alternative D has the most miles occurring on sensitive soils. Alternative A has more miles of system roads containing sensitive soils than alternative D when inventoried unauthorized routes are included. Alternative A also has many miles of additional but uninventoried unauthorized routes that impact sensitive soils. Overall alternative B has the lowest impact on sensitive soils. It is likely that alternative A has the greatest impact. Alternative D is similar to alternative A except that improved enforcement should reduce use on uninventoried unauthorized routes. Alternative C is intermediate between alternatives B and D.

Sediment Delivered to Stream Channels

Alternative A produces the greatest amount of sediment. Alternatives B and C produce approximately 50 percent less sediment than Alternative A; while Alternative D produces

approximately 24 percent less. Although the number of road miles and stream crossings remains relatively constant under all Alternatives, sediment delivery differs because decommissioned and administrative only roads receive no or very limited administrative traffic resulting in less soil disturbance and less sediment delivery into connected streams. Under no-traffic conditions, roadbed and road ditches tend to revegetate resulting in greater protective surface cover that reduces water flow, erosion and sediment delivery into connected streams. Over time, recovery of vegetation, soils, and channel crossings on roads designated as decommissioned would reduce sediment delivery below the estimates above. Greatest reductions would occur in Alternative B which would decommission the greatest number of roads (2,367 miles), followed by Alternative C (1,290 miles). The smallest reduction in sediment delivery in the long term would be from Alternative D which would decommission 201 miles of roads.

Areas Designated for Motor Vehicle Use

Under alternatives C and D, motorized cross-country travel would be reduced to four designated motorized cross-country areas and four small tot lots allowing unrestricted cross-country travel on 6,783 acres, or less than 0.25 percent of the Forest. Two designated areas are below the high water marks of Bartlett and Roosevelt Lakes. The other two areas have been heavily impacted in the past from uncontrolled OHV use. The tot lots total less than 12 acres and are also in areas that have received heavy OHV use. The direct effect would be continued erosion and loss of vegetation in these areas. The proposed OHV areas at Bartlett and Roosevelt Lakes are within the “bathtub ring” of these reservoirs. Vegetation at these sites is limited to annual species that pioneer this habitat when water levels are below the conservation pool. Approximately one fourth of the proposed Sycamore OHV area has steep slopes on erosive soil. The other areas are considerably flatter with a lower risk of erosion. An indirect effect may be less off-road OHV use in other parts of the Forest as OHV users may spend more time in designated areas. The net result of these two alternatives would likely be heavy impacts to the OHV areas covering less than 0.25 percent of the Forest and lower impacts to the rest of the Forest.

Under alternative B, motorized cross-country travel would be completely eliminated and would not contribute to degradation of erodible, unsatisfactory, or impaired soils. Soil productivity and functions would improve on impacted soils in both the short-term and the long-term. Under alternative B the designated motorized cross-country areas, heavily impacted in the past, would be allowed to recover. The net result of this alternative would be to greatly reduce impacts to the four designated areas.

Overall, Alternatives C and D would likely minimize impacts to soils from motorized cross-country traffic forest-wide while allowing heavy impacts to the Designated Areas. Alternative B would reduce impacts both to the Designated Areas, and on a forest wide basis.

Permit Zones

Under alternative B four Permit Zones in addition to the existing Bulldog Canyon Permit Zone would be established. Total area included within Permit Zones would be 150,924 acres. Alternative C would establish three Permit Zones in addition to the existing Bulldog Canyon Permit Zone. Total area included within Permit Zones would be 116,797 acres. Under alternative D only the existing Bulldog Canyon Permit Zone would continue to be managed as a Permit Zone. Total area in this Permit Zone is 34,720 acres. These zones restrict motorized public access to 317 miles of roads and motorized trails in alternative B, 326 miles of roads and

motorized trails in alternative C, and 47 miles of roads and motorized trails in alternative D. Motorized users would need to acquire a permit from the Forest to access these zones. The impacts to soils within these areas would be similar to the impacts to soils outside of these Permit Zones where cross-country travel would be restricted.

Motor Vehicle Use for Big Game Retrieval

Motorized, big game retrieval would not be permitted off designated roads and motorized trails in Alternative B; could occur within one mile of either side of designated roads and motorized trails under Alternatives C and D. Under Alternative C motorized cross country retrieval of elk and bear would be allowed within one mile of either side of designated roads and motorized trails and would permit retrieval on approximately 1,293,000 acres. Under Alternative D motorized cross country retrieval of mule and white tail deer as well as bear and elk would be authorized within one mile of either side of designated roads and motorized trails as well and would permit motorized retrieval on approximately 2,067,000 acres. The effects of game retrieval would be similar under Alternatives C and D except that a larger area would be affected in Alternative D than Alternative C. Both alternatives have a larger area open to retrieval than Alternative A (704,000 acres). Based on the low number of trips required for big game retrieval, short distance needed for retrieval, and low number of OHV crossings of a site, motorized big game retrieval would have minimal effects on soil conditions. Big game retrieval on upland soils under dry conditions would not be expected to appreciably affect vegetation, soil condition, and productivity. Localized impacts would be most pronounced where motorized traffic occurred on wet soils which could cause soil compaction and loss of vegetation. The overall impacts would be small and localized in all alternatives except for Alternative B where measurable effects would not occur.

Motor Vehicle Use for Dispersed Camping

Under these alternatives, dispersed camping would be permitted only at designated dispersed sites under alternative B, within 100 feet of designated roads and motorized trails under alternative C, and within 300 feet of designated roads and motorized trails under alternative D. Alternative B would impact approximately 75 acres, alternative C would impact approximately 91,400 acres and alternative C would impact approximately 336,000 acres. All of the action alternatives would limit motorized dispersed camping to fewer acres than the 704,000 acres open to this activity under alternative A. Impacts to soils would be localized and very minor in extent but could occur if access to dispersed camping sites and parking occurs repeatedly in the same area or if soils are wet. The net effect of the action alternatives would be a negligible reduction in impacts when compared to the No Action Alternative.

Motor Vehicle Use for Fuelwood Gathering

Under these alternatives motorized vehicle access for gathering personal use firewood and other forest products is limited to within 300 feet of designated roads and motorized trails in alternatives B and C. Alternative D is similar to alternative A and does not limit motorized vehicle access for persons holding a personal use firewood cutting permit as long as they are within a woodcutting permit area. Approximately 1,346,000 acres would be available for this activity in alternative D. Areas open to fuelwood cutting would be greater in alternative C (161,785 acres) than in alternative B (132,568 acres) because of the greater length of roads and motorized trails open under alternative C. Conditions attached to the fuelwood gathering permit such as using the

same route for entering and leaving a fuelwood gathering site, covering the route with slash or other debris, and not going off road when soils are wet and rutting may occur, limit the impact of this activity on soil conditions. In addition fuelwood gathering is not authorized from January through March when soils are most likely to be wet. Impacts to soils would be localized and very minor in extent but could occur if access to fuelwood gathering sites occurs repeatedly in the same area or if soils are wet. Approximately 1,500 permits resulting in about 6,000 user days for gathering fuelwood disperse a small number of permit holders over a large area. Impacts on soils from this activity are likely to be negligible. Alternatives B and C result in impacts to smaller areas than alternatives A and D but would also tend to concentrate use in these smaller areas.

Cumulative Effects for All Alternatives

The cumulative effects analysis area relevant to soil resources includes the entire Tonto National Forest including private and other public lands that lie within the Forest boundary. Cumulative effects are projected for a 10-year timeframe. Past activities are considered part of the existing condition.

Broad scale activities such as vegetation management, fuels management, and livestock grazing activities have occurred in the past, are occurring, and are reasonably foreseeable actions on the Forest. Vegetation and fuels management are planned to have a net, long-term improvement to soil conditions although there may be short-term negative impacts during implementation. Mitigation measures and Best Management Practices are designed to mitigate any short-term impacts that may occur from project implementation. Livestock grazing activities (past and ongoing) have impacted soil conditions but reauthorizations of grazing permits are designed to minimize these impacts.

Route realignment, reconstruction, or decommissioning may occur with future projects and access through or required by other land jurisdictions may impact the Forest. The extent of these changes cannot be predicted nor quantified. Future changes to routes would be planned and mitigated to reduce impacts.

Urban development and interface growth would continue on private lands. These would not directly affect Forest land but runoff from urban development can cause an increase in erosion on down-gradient Forest lands.

Future mineral exploration, land exchanges, and utility construction are either planned or likely to occur. Disturbance can be relatively minor in some cases such as small utility constructions but in mineral exploration disturbance can be extensive.

Major road projects under construction or planned include State Routes, Forest Roads, and Federal Highways. These projects may add additional miles of roads to the Forest and remove soil from production. Although new roads are designed to minimize and mitigate impacts, newly constructed roads have been known to produce significant erosion and to impact soil condition off site. It is not possible to quantify the effects of new road projects but impacts could be substantial.

Various recreation projects are in the planning stage or are likely to occur. Implementing these projects may cause localized, short-term soil disturbance but are likely to reduced long-term impacts to soils from uncontrolled recreation.

Air Quality

This section documents potential air quality impacts associated with the range of alternatives presented in chapter two of the draft environmental impact statement (DEIS). It identifies areas within the Tonto National Forest that are not meeting current National Ambient Air Quality Standards (NAAQS) and evaluates emissions from Off-Highway Vehicles (OHV) to determine if the proposed action would increase emissions and decrease air quality in the Forest, nonattainment and maintenance areas or class I wilderness areas.

Affected Environment

This section identifies the study areas used in the analysis and presents the baseline emissions levels associated with OHV use for each study area. In particular, it presents the baseline emissions estimates for OHV use within: (1) the Tonto National Forest; (2) each nonattainment and maintenance area; and (3) Class 1 wilderness areas.

In total, there are ten study areas:

- Tonto National Forest: This study area is delineated by the Tonto national Forest administrative boundary.
- Nonattainment and maintenance planning areas: There are five planning areas within the Tonto National Forest, including: three PM_{10} nonattainment areas, one PM_{10} maintenance area and one ozone nonattainment area.
- Class I wilderness areas: There are four Class I areas within the Tonto National Forest.

Nonattainment and Maintenance Areas within the Tonto National Forest

There are five air quality control regions within the Forest, including three PM_{10} nonattainment areas, one PM_{10} maintenance area and one ozone nonattainment area: Phoenix planning area for 24-hour PM_{10} Serious nonattainment; Hayden planning area for 24-hour PM_{10} moderate nonattainment; Miami planning area PM_{10} moderate nonattainment; Payson planning area for 24-hour PM_{10} Attainment, limited maintenance; and Phoenix planning area for 8-hour ozone Moderate nonattainment.

PM_{10} planning areas: are designated by EPA for areas that violate the PM_{10} NAAQS. Sources of PM_{10} include: fugitive dust from unpaved roads, vehicle exhaust, construction activities, mining and agricultural activities, industrial sources, fuel combustion from fireplaces and woodstoves as well as prescribed and wildfires.

Ozone areas: are designated by EPA for areas that violate the ozone NAAQS. Ozone formation is driven in part by its precursor emissions of nitrogen oxides (NO_x) and volatile organic compounds (VOC). Main sources of NO_x and VOC emissions include: electrical generation, industrial and mobile sources. However, peak afternoon O_3 is also a function of NO_x and VOC mixing ratios. For example, areas that are NO_x-sensitive (typically rural areas) are associated with high reactivity-weighted VOC/NOx ratios. Adding more VOC to NO_x-sensitive areas may have little or no effect on ozone production. On the other hand, adding NO_x to the mixture can increase ozone production.

Class I Wilderness Areas

There are four Class I areas within the Forest[120], including the: Pine Mountain Wilderness; Mazatzal Wilderness; Sierra Ancha Wilderness; and Superstition Wilderness.

Particulates that remain suspended in the atmosphere are efficient at light scattering and contribute to regional haze and reduced visibility (U.S. EPA, 2010). Air quality indicators for Class 1 areas include[121]: Particulate concentration – which affects human health and visibility; and Ozone concentration – which affects human health and vegetation;

During July of 1999, the EPA adopted the Regional Haze Rule that set a 60-year timeline for states to improve visibility within mandatory Federal Class I areas. This timeline used visibility monitoring data collected from 2000 to 2004 to set the baseline years, with a goal of Natural Condition by 2064. All Class I areas located within the analysis area are currently within parameters to meet their 2064 Natural Conditions target.

ADEQ is developing a SIP to remedy existing and prevent future visibility impairment at mandatory Class I Federal areas (CIAs). The SIP is required under the contextual requirements defined under 40 CFR Part 51 Section 300 through 309 of the Regional Haze Rule and will provide reasonable progress and long-term strategies for Arizona's twelve Class I areas.

Emissions from Off-Highway Vehicles

Emissions inventories for nonattainment and maintenance areas are required to be updated every three years[122]. The most recent emissions inventories for the Phoenix 24-hour PM_{10} and 8-hour ozone nonattainment areas provide County-wide emissions estimates for OHV sources. However, the published inventories do not provide the level of detail necessary to determine Forest specific emission estimates for OHV use.

For the Forest areas, baseline and future OHV emissions inventories were developed using engineering methods described in AP-42[123] and EPA's NONROAD2008 model documentation. The emissions listed in Table 79 were calculated using AP-42 and conservative estimates for silt and moisture content.

[120] See figure 1 in chapter 1 of the DEIS for an illustration showing Class I area locations.
[121] More information can be found on the FLAG 2010 website
[122] "Consolidated Emissions Reporting". 67 Federal Register 111 (June 10, 2002), pp. 39602-39616
[123] EPA AP-42 Compilation of Air Pollutant Emission Factors. 13.2.2 Unpaved Roads equation (1b)

Table 79: Miles of Unpaved Roads and Projected 2013 Baseline Uncontrolled Emissions[124] for Alternative A

Study Areas	Total miles*	% of total miles	Average Daily OHV	Baseline PM_{10} (ton/year)	Baseline NO_x (ton/year)	Baseline VOC (ton/year)
Tonto National Forest	5,631	100	89	1,801	0	0
Phoenix 24-hour PM10 nonattainment	605	10.75	10	194	0	0
Miami 24-hour PM10 maintenance	257	4.57	4	82	0	0
Hayden 24-hour PM10 nonattainment	196	3.48	3	63	0	0
Payson 24-hour PM10 nonattainment	321	5.71	5	103	0	0
Phoenix 8-hour ozone nonattainment	1,381	24.53	22	0	35	1,527
Mazatzal Wilderness	203	3.60	3	65	5	224
Superstition Wilderness	137	2.43	2	44	3	151
Sierra Ancha Wilderness	108	1.91	2	34	3	119
Pine Mountain Wilderness	47	0.83	1	15	1	51

**Mileage includes 672.33 miles of unauthorized routes.*

The emissions associated with off-road motorcycles (dirt bikes) and all-terrain vehicles (ATVs) vehicles on unpaved roadways include:

- *Fugitive particulate emissions:* from vehicle travel over unpaved surfaces. Fugitive road dust is a result of motor vehicle use when road surfaces are dry; the force of wheels moving across the native surfaces causes pulverization of surface material. Dust is lofted by the rolling wheels as well as by the turbulence caused by the vehicle.
- *Vehicle exhaust emissions:* from off-highway vehicles include nitrogen oxides (NOx), hydrocarbons (HC) and particulate matter ($PM_{2.5/10}$). Epa's NONROAD 2008 emissions model provides estimates for HC emissions, which can be used as a surrogate for VOC emissions by way of a conversion factor[125].

[124] Emissions estimates use conservative assumptions for soil moisture and silt. Further, the emissions reported represent uncontrolled emissions and may differ from emissions estimated reported in the SIP emissions inventories.
[125] Conversion Factors for Hydrocarbon Emission Components online at EPA 2010

Environmental Effects

This section evaluates the potential impacts to air resources for each alternative. Total net emissions from off-highway vehicle use are estimated to determine if OHV emissions will decrease the air quality within the Forest. In general, for emissions that are shown to increase, air quality is expected to decrease. The opposite is similar. For emissions that are shown to decrease, air quality is expected to increase or no adverse impact to air quality is expected.

Assumptions and Methodology

The analysis was completed using the process outlined in EPA's General Conformity Guidance and on the basis that the General Conformity Analysis provides direction for determining emissions impacts under NEPA.

The method for estimating emissions from off-road recreational vehicles includes the following steps:

1. Identify any nonattainment or maintenance areas within the Forest.
2. Develop baseline and future emissions inventories for each nonattainment and maintenance area identified in step 1 and calculate the total direct and indirect emissions for each alternative.
3. If the total direct and indirect emissions from step 2 are below the emissions levels specified under 40 CFR 93.153(b)(1) and (2), then the proposed action is not expected to cause significant air quality impacts. Table 80 illustrates threshold emission levels.

Table 80: General Conformity Emissions Thresholds by SIP Planning Area

Region/Pollutant	Designation	Threshold* (tons per year)
Phoenix Planning Area/ PM_{10}	Serious Nonattainment	70
Hayden Planning Area/ PM_{10}	Moderate Nonattainment	100
Miami Planning Area/ PM_{10}	Limited Maintenance Plan and request for redesignation to attainment (ADEQ 2008).	100
Payson Planning Area/ PM_{10}	Limited maintenance area	100
Maricopa County/ Ozone	Nonattainment	100^

*Threshold value source: 40 CFR 81, Threshold – 40 CFR § 93.153(b)(1) and (2).
^ (NO_x or VOC)

Nonattainment and Maintenance Areas Included in Analysis

In the first step, GIS analysis was used to determine that five air quality planning areas are located within the Forest's administrative boundary[126]. Further, GIS analysis was used to

[126] A detailed explaination of the calcualtions used in the analysis can be found in the Air Quality Specialist Report in the project record.

determine the distribution of roadways used by OHVs within the Forest and each air quality planning area.

In the second step the 2008 baseline and 2013 future OHV emissions were estimated for each planning area and each alternative. For each nonattainment or maintenance area, we require OHV emissions estimates for the *no action* alternative and OHV estimates for each alternative (A, B, and C). The emissions estimates are projected from the 2008 baseline inventory year to the 2013 future baseline inventory year. The no action emissions estimates are representative of OHV activities during the 2013 future baseline year before the proposed action will occur, while the OHV emissions for each alternative are representative of the 2013 future year inventories, after the proposed action will occur.

In the third and final step, the total net emissions for each alternative and each nonattainment or maintenance area are then compared to emissions threshold levels to determine if the proposed action would cause or contribute to a NAAQS violation. The criterion for determining significance of the proposed action on air quality is as follows:

- If the proposed action emission is below the emissions threshold, then significant air quality impacts are not expected.
- If the proposed action emission is above the emissions threshold, then significant air quality impacts are expected.

The results indicate a reduction in emissions for each of the alternatives under consideration. Further, the General Conformity Applicability Analysis indicates a reduction in criteria pollutant emissions within each nonattainment and maintenance areas. Therefore significant adverse air quality impacts are not expected.

Cumulative Effects of All Proposed Alternatives

Present and reasonably foreseeable actions within the project area include: recreational OHV use; smoke from wildland and prescribed fires; wood burning; dust and pollution from urban development; dust from agricultural fields, disturbed areas and vacant lots lifted by elevated winds and seasonal thunderstorm outflows; and emissions from motorized vehicle use.

Fugitive dust emissions from unpaved roads; windblown dust; industrial development are the primary contributors to poor air quality within the PM_{10} nonattainment areas. Outside of the PM_{10} nonattainment areas and in the higher elevations of the Forest, particulate emissions from smoke due to wood burning and prescribed and wildland fires are the primary culprits. Ozone precursor emissions from mobile sources, including OHVs, tend to be more problematic for the 8-hour Phoenix ozone nonattainment area.

Increases in population and recreation will impact air quality by increasing particulate and ozone precursor emissions within the Forest. It is expected that present activities and their air emissions will persist in the reasonably foreseeable future. However, air emissions from regulated activities are managed under State and County air quality rules, regulations and attainment plans, which require emissions reductions within nonattainment areas in order to meet federal air quality standards. Therefore, cumulative air emissions from regulated activities within the nonattainment areas are expected to decrease over time.

Under the No Action Alternative (Alternative A), cumulative emissions in the nonattainment areas are expected to decrease in accordance with regulatory programs under the Clean Air Act. However, projected growth in population for the Phoenix Metro Area and increasing demand for recreational resources may tend to increase OHV use in more remote Forest areas, which may increase air pollutant emissions and degrade air quality within other areas of the Forest.

Particulate emissions within all PM_{10} nonattainment areas, Class I areas and forest wide, would be substantially less under all alternatives compared to Alternative A. Cumulative ozone precursor emissions are also substantially less under all alternatives compared to Alternative A for the 8-hour ozone nonattainment area, Class I areas and forest wide. Therefore, cumulative air quality impacts are also likely to be less.

General Conformity Determination

The results indicate a reduction in emissions for each of the alternatives under consideration. Further, the general conformity applicability analysis indicates a reduction in criteria pollutant emissions within each nonattainment and maintenance area. Therefore a general conformity determination is not required for the actions associated with the project.

Climate Change

Affected Environment

The Southwestern Regional Office planning program has summarized some ecological and socioeconomic effects of climate change (U.S. Forest Service, 2010). This document suggests the state of knowledge needed to address climate change at the forest scale is still evolving. Most global climate models are not yet suitable to apply to land management at the forest scale. This limits regional analysis of potential effects especially for a specific project. Climate modelers generally agree that the Southwestern United States is experiencing a drying tend that will continue into the latter part of 21st century. Climate model scenarios suggest the warming trend observed in the last 100 years may continue into the next century with the greatest warming occurring during the winter. Some climate models predict 2-3 degree temperature changes in the next 20 years. Some potential ecological implications of climate change trends include (U.S. Forest Service, 2010):

- More extreme disturbance events, including wildfires and intense rain and flashfoods and wind events (Swetnam *et al.*, 1999).
- Greater vulnerability to invasive species, including insects, plants, fungi, and vertebrates (Joyce *et al.*, 2007).
- Long-term shifts in vegetation patterns (Westerling *et al.*, 2006; Millar *et al.*, 2007).
- Cold-tolerant vegetation moving upslope, or disappearing in some areas. Migration of some tree species to the more northern portions of their existing range (Clark, 1998).
- Potential decreases in overall forest productivity due to reduced precipitation (U.S. Forest Service, 2005).
- Shifts in the timing of snowmelt (already observed) in the American West, which, along with increases in summer temperatures, have serious implications for the survival of fish

species, and may challenge efforts to reintroduce species into their historic range (Joyce *et al.*, 2007; Millar *et al.*, 2007).

- Effects on biodiversity, pressure on wildlife populations, distribution, viability, and migration patterns, because of increasing temperatures, water shortages, and changing ecological conditions.

Environmental Effects

Effect of the Proposal on Climate Change

Agency direction defines the emission of greenhouse gases and effects to carbon cycling as the direct climate change effects of a project. The interaction of emissions with atmospheric concentrations of greenhouse gasses such that they impact the climate is defined as the potential indirect climate change effect (U.S. Forest Service, 2009a).

Under this definition, there is no direct effect associated with any of the proposed actions considered in any of the alternatives. These alternatives do not authorize the emission of greenhouse gasses; the action alternatives do not limit the emission of greenhouse gasses; the action alternatives are unlikely to change carbon cycling or the emission of greenhouse gasses as compared to the no action alternative.

Regarding indirect effects, Agency direction states, "Because greenhouse gases mix readily into the global pool of greenhouse gases, it is not currently possible to ascertain the indirect effects of emissions from single or multiple sources (projects). Also, because the large majority of Forest Service projects are extremely small in the global atmospheric CO_2 context, it is not presently possible to conduct quantitative analysis of actual climate change effects based on individual projects" (USDA Forest Service 2009a).

Based on this guidance, Alternatives B, C, and D do not have measurable indirect effects as compared with the No Action Alternative (Alternative A).

Effect of Climate Change on the Proposal

Alternative A

This alternative has more miles of motorized routes than any of the alternatives. It also permits the greatest area of off road vehicle use for firewood gathering, motorized big game retrieval, dispersed camping and general off road vehicle use of any of the alternatives. Increased intensity of storm events expected from climate change would increase erosion and sedimentation from exposed road surfaces. The large number of stream crossings in this alternative reduces the resilience of channels and riparian areas to resist the erosive effects of floods. The larger mileage of roads in this alternative also provide a greater number of pathways for nonnative species to be introduced to native ecosystems which are more susceptible to non- native species due to stress from warmer temperatures and reduced water availability.

Alternative B

This alternative would designate for decommissioning the greatest mileage of motorized routes of all alternatives. This alternative also results in the minimum area of off road disturbance of any of the alternatives for motorized dispersed camping, firewood gathering, and motorized big game

retrieval. Reduced mileage of motorized routes area open to cross country travel reduces erosion potential from high intensity storms. The reduced number of stream crossings improves stability of channels and aquatic habitat and provides greater resilience to channel and riparian areas from flooding. Reduced mileage of roads reduces pathways for introducing non-native species to climate change stressed ecosystems. Cumulatively these effects result in greater landscape level resilience to climate change. Eventual revegetation of decommissioned routes may provide negligible sequestration of carbon. Reduced mileage of roads may also reduce greenhouse gas emissions if fewer vehicle miles are driven on motorized routes on the Forest.

Alternative C

Impacts would be similar to Alternative B but at a smaller scale due to designating fewer miles of roads for decommissioning and greater areas open to off road travel for motorized dispersed camping, firewood gathering, and motorized big game retrieval.

Alternative D

Impacts would be greater than Alternatives B and C but less than Alternative A due to designating even fewer miles of roads for decommissioning than in Alternatives B and C, and permitting off road motorized travel in larger areas for motorized big game retrieval, firewood gathering, dispersed camping, and general off road motorized travel in designated OHV areas. Impacts would be less than Alternative A.

Short-term Uses and Long-term Productivity

NEPA requires consideration of "the relationship between short-term uses of man's environment and the maintenance and enhancement of long-term productivity" (40 CFR 1502.16). As declared by Congress, this includes using all practicable means and measures, including financial and technical assistance, in a manner calculated to foster and promote the general welfare, to create and maintain conditions under which man and nature can exist in productive harmony, and fulfill the social, economic, and other requirements of present and future generations of Americans (NEPA Section 101).

The change in driving on National Forest System roads and trails created by any of the action alternatives does not jeopardize the long-term productivity of the Tonto National Forest. As described throughout chapter 3, implementing any of the action alternatives would generally improve resources when compared to the current condition.

However, in the case of motor vehicle use for personal use fuelwood gathering, there are anticipated effects in the short-term use and long-term productivity. The Tonto National Forest generates 400,000 to 500,000 cubic feet of available dead and down fuelwood annually. Available fuelwood is the result of both natural occurring events and management activities. Many local small business and residents rely on this fuelwood to heat their homes and business, offsetting the cost associated with other heat sources. For many residents, this may be their only heat source and wood gathering becomes a family event and recreational activity. The Forest benefits by the removal of scattered fuel accumulations that under natural fire regimes would be removed through frequent fire. Personal use fuelwood gathering allows the general public to be directly involved with the management of their National Forest while removing products that contribute directly to their social and economic wellbeing.

Natural events or disturbances that result in the creation of fuelwood include but are not limited to wildfire, insect outbreaks, droughts, and heavy snowfalls. These occur to varying degrees across the forest in an extremely random pattern. Areas affected can range from small scattered patches to large landscape scales. Resulting fuel loads are also extremely variable, ranging from high concentrations of mortality and breakage to very light and scattered accumulations. Access to these areas is currently provided by both system and non-system roads and often extends for great distances away from roads and trails.

Management activities that generate available fuelwood include prescribed fire, range improvement cuttings, timber stand improvement cuttings and restoration activities. After these treatments are completed, slash and associated breakage becomes available for fuelwood gathering. Treatment areas range in size from 50 to 1000 acres or more in size. Treatments are usually followed several years later by prescribed fire to reduce the increased fuel load to more manageable levels. Personal use fuelwood gathering allows the public to assist land managers by removing valuable products from these areas before burning. This reduces the intensity of the resulting fire making it easier to manage. Access to these areas is also provided by both system and non-system roads and often extends for great distances away from roads and trails.

Fuelwood gathering during the spring and summer is often concentrated near system roads where concentrations of fuelwood can be seen from the vehicle. Available fuelwood in these areas can quickly become depleted requiring fuelwood gatherers to scout the surrounding terrain to find wood. As areas where disturbances have occurred are located, fuelwood gatherers begin to move off roads and trails to take advantage of these concentrations. Under alternatives A and D this practice would continue, allowing personal use fuelwood gatherers to spread out across the permitted areas to obtain their wood. Alternatives B and C would restrict fuelwood gathers to within 300 feet on both sides of designated roads and trails where availability of fuelwood may become scarce over time. This can lead to concentrated use in some areas, effectively removing all available fuelwood. In areas further away from the roads and trails, concentrations of dead and down fuel would start to accumulate over time, increasing the risk of uncharacteristically intense fire behavior. As the season progresses and the weather turns cool, individuals may have trouble locating areas to legally gather fuelwood and fill their permits.

Historically, along the sides of roads gets cleared of dead and down fuelwood each year by late August, five months into the nine month season. The majority of permits are sold in the latter portion of the season generally from late August through November, as temperatures drop and people being to focus on heating their homes. There have even been cases where some people wait until the last minute and purchase permits in December.

One possible option for enabling the 600 foot corridor to meet the needs that are accomplished yearly by the current fuelwood gathering program would be to move wood outside of the corridor into that corridor. To do this efficiently would require equipment to make repeated trips back and forth across the treatment area and would have a much larger impact on soils and residual vegetation then random trips into the area by individual wood cutters. These wood cutters tend to pick their individual trails directly to their spots and tend to only make one trip to each area they cut.

It would take several years for fuels to begin to build up across the landscape, say five to seven years (normal burn cycle) under “normal” conditions. When treatments occur or there is die off due to drought or insects the time for fuel accumulation can shorten considerably. Insects can

create fuel hazards in a single year as evident by the bark beetle out break near Pine in the early 2000s.

While it is acknowledged that very few wood cutters will physically haul wood over 100 feet to their truck and even fewer use wheelbarrows to gather wood, they do frequently use old skid trails or gaps in the forest to work their vehicles into the forest a considerable distance where they can load wood directly into their trucks or trailers without having to carry the wood by hand. ATVs with trailers have greatly increased the distances they are able to reach. The larger the tree, the further the wood cutter is often willing to drive off the road. Some wood cutters travel 500 to 1000 feet off the road to gather a large juniper that has burned down. While most of the wood cutters that receive one of the 1,500 permits issued yearly would stay within 300 feet of designated routes, the more experienced cutters rarely cut near the road, and regularly venture beyond 300 feet. A conservative estimate of these wood cutters would be 30 percent of regular permit holders or approximately 300 individuals.

Unavoidable Adverse Effects

Implementation of any of the alternatives would result in some unavoidable adverse environmental effects. Although formation of the alternatives included avoidance of some effects, other adverse effects could occur that cannot be completely mitigated. The environmental effects for each resource area in this chapter discuss these effects in greater detail.

Irreversible and Irretrievable Commitments of Resources

An irreversible commitment of a resource is one that cannot be regained, such as the extinction of a species. An irretrievable commitment is one where the value of the resource is lost for a period of time, such as the loss of soil productivity from the existence of a road.

The no action could result in the irreversible loss of cultural resource sites, as cross-country travel is currently permitted on the Payson and Pleasant Valley Ranger Districts. By definition, cultural resource sites and traditional cultural properties are not renewable and damage to them cannot be reversed. By following the programmatic agreement discussed in the Heritage Resources section of this chapter, the action alternatives would have no irreversible commitments of resources.

All the alternatives would result in the irretrievable commitment of some of the forest's soil productivity. This commitment, however, would be negligible when considered at the scale of the forest. All action alternatives designate unauthorized routes, which commits the soil to use as a route rather than for growing plants. Additionally, the action alternatives would continue to allow camping, which also tends to commit soil to that use. Alternatives C and D, which are expected to result in more bare ground from motorized dispersed camping, could irretrievably reduce visual quality in some places. The environmental effects for each resource area in this chapter discuss these effects in greater detail.

Chapter 4. Consultation and Coordination

Preparers and Contributors

The following is a list of contributors to this draft environmental impact statement. Numerous other people have also contributed in many ways to this document. Their help is greatly appreciated.

Bray G. Addison Jr., Patrol Captain, Central Arizona Zone, Law Enforcement Officer

Education: BS and MS degrees in Wildlife Management

Experience: Bray Addison, served 4 years on active duty in the U.S. Army as a Field Artillery officer. After getting his Arizona POST certification as a police officer, he served 8 years as a Wildlife Manager for the Arizona Game and Fish Department. He has been a U.S. Forest Service Law Enforcement Officer on the Tonto National Forest for 11 years, with the last 4 years as the Patrol Captain.

Kenna Belsky, Forest GIS Specialist, Tonto National Forest

Education: M.A.S.in Geographic Information Systems and B.S.P. in Urban Planning from Arizona State University

Experience: Kenna has worked for the Forest Service for the past three years. Her career started in the recreation department doing special use permits on the Mesa Ranger District. She has been a Forest GIS Specialist for over two years working on various forestwide projects and helping to grow the GIS program on the Forest.

Patti R. Fenner, Noxious Weed Program Manager, Tonto National Forest

Education: BS Botany from Arizona State University; MS in Natural Resource Management from Arizona State University

Experience: Patti was a Range Conservationist with the Forest Service for 23 years, managing livestock allotments and range vegetation. She has been in her current position we the forest Noxious Weed Program manager for 10 years.

Tim Holt, Wildlife Manager Supervisor, Arizona Game and Fish Department

Education: B.S. Biology (Fish and Wildlife Management), Northern Arizona University

Experience: Tim Holt has worked for the Arizona Game and Fish Department for 13 years in the southwestern, northern, and central portions of Arizona. He has served as a Wildlife Manager, Wildlife Specialist, and currently as a Wildlife Manager Supervisor in Region 6 of the Arizona Game and Fish Department.

Patti Johnston, Recreation Specialists Detail to Tonto National Forest

Education: B.S. Agricultural Business Management, California Polytechnic State University; Range Management classes, New Mexico State University.

Experience: Patti has worked with Forest Service for 31 years in Regions 1, 3 and 6.

Kimber Jones, Forest Landscape Architect, Tonto National Forest

Education: Bachelor of Landscape Architecture, Iowa State University

Experience: Kimber, a registered Landscape Architect, has worked for the Tonto National Forest for 24 years designing recreation sites, overseeing the design and construction of highways crossing through the forest, and is responsible for scenery management.

Grant Loomis[127], Forest Hydrologist, Tonto National Forest

Education: B.A. Economics, UC Davis; MS (all but thesis) Hydrology and Water Resources, University of Arizona.

Experience: Grant has been the hydrologist for the Tonto National Forest for the past 26 years. Prior to that, he was the hydrologist on the Bureau of Land Management's Glenwood Springs Resource Area in Colorado for 6 years. He was also an economist/hydrologist on the Bureau of Land Management's Winnemucca District in Nevada for 2 years.

Leonard Montenegro (Contractor), Air Quality Scientist, numAIRic Inc.

Education: B.S. Chemistry, Arizona State University.

Experience: Leonard has worked for fifteen years in the areas of air quality assessment and modeling. He has five years as a professional consultant providing clients with air quality research and analysis necessary to comply with governmental regulations. He was head of evaluation for Arizona's Air Quality Division and has carried out a variety of air quality assessments in Arizona.

Justin Mouton, Forestry Technician, Tonto National Forest

Education: B.S. Urban Forestry, Southern University, and A&M College

Experience: Justin has worked for the Forest Service for nearly 3 years, working on the Deschutes National Forest and the Tonto National Forest. A product of the STEP/SCEP program, he worked on various internships as a seasonal firefighter and technician before accepting a position after graduating from college.

Ryan Nicholas, Natural Resource Specialist (Pathways Intern), Tonto National Forest

Education: M.S. Urban Forestry, Southern University and A&M College; B.S. Plant and Soil Science, Southern University and A&M College

Experience: Ryan has worked for the Forest Service for seven years, working on the Willamette National Forest and the Tonto National Forest. In the past he has worked as a soil science SCEP on both the Willamette National Forest and the Tonto National Forest. Currently he is a Natural Resource Specialist for the Tonto National Forest. He is also in his last year of college pursuing a PhD in Urban Forestry.

[127] Grant Loomis also revised the Soils Report and authored the Climate Change section in Chapter 3.

Kay Nicholson (Contractor), Senior Biologist, Logan Simpson Design Inc.

Education: M.S. Environmental Resources, Arizona State University; B.S. Animal Science, Oregon State University.

Experience: Kay has worked as a wildlife biologist for fourteen years. She has twelve years experience as a consultant preparing Endangered Species Act and National Environmental Policy Act compliance documents for project proponents on projects throughout the western United States. She was the Intermountain Biology Team Leader for Entrix Environmental Consultants, and was a Senior Biologist at Aztec Engineering. Currently, she is a Senior Biologist for Logan Simpson Design Inc.

Richard Remington (Contractor), Senior Biologist, Logan Simpson Design Inc.

Education: Certified Public Manager, Arizona State University; B.S. Wildlife Biology, Arizona State University

Experience: Formerly the Arizona Game and Fish Department regional supervisor for northeastern Arizona, Richard is a wildlife biologist with more than 35 years of experience. Since joining Logan Simpson Design Inc. in 2004 as a senior biologist, Richard has managed many biological resources analyses and assessment projects.

Lonny Rollins, Roads Manager, Tonto National Forest

Education: BS Civil Engineering, University of Arizona

Experience: Lonny has worked for the Tonto for over four years as a civil engineer. He has worked on many different development projects throughout the Forest. He is currently the Roads Manager for the Tonto National Forest.

Anne Thomas, Social Scientist and Team Leader, Tonto National Forest

Education: M.S. Human Dimensions of Ecosystem Science and Management, Utah State University; B.S. Environmental Science, Concordia University at Austin.

Experience: Anne has worked for the Forest Service for six years, working on the Wasatch-Cache National Forest, the Intermountain Regional Office, the Humboldt-Toiyabe National Forest, the Sequoia National Forest, and the Tonto National Forest. She has been an interdisciplinary team leader for the Giant Sequoia National Monument Plan and a district NEPA coordinator. Currently she is the NEPA Coordinator for the Tonto National Forest.

Jon Scott Wood, Forest Archaeologist, Tonto National Forest

Education: BS and MS degrees in Archaeology from Arizona State University

Experience: 38 years working as an archaeologist on the Tonto National Forest.

Nathan Yorgason, acting Wildlife Program Lead, Tonto National Forest Service

Education: GIS Certification, Utah State University; B.S. Wildlife and Range Management, Brigham Young University.

Experience: Nate has worked for the Forest Service for 15 years, working on the Dixie National Forest, Lewis and Clark National Forest and the Pike and San Isabel National Forest as a Wildlife Biologist. Nate has served on several Interdisciplinary teams for a variety of projects and has acted as Interdisciplinary Team Leader for large Vegetation Management projects. Currently Nate is the acting Wildlife Program Manager on the Tonto National Forest.

Distribution of the Draft Environmental Impact Statement

This draft environmental impact statement has been distributed to individuals who specifically requested a copy of the document. In addition, copies have been sent to the following Federal agencies, federally recognized tribes, State and local governments, and organizations representing a wide range of views regarding travel management:

ABA Arizona Bowhunters
Adair Desert Tours
Agua Fria Intergroup
Agua Fria National Monument
Airpark Auto
Arizona Repeater Association
Alan Benoit Photography
All Wet Scuba, LLC
Alltel
AMA
American Bass Association
American Fisheries Society
American Motorcycle Association
American Rivers
Americon Realty
AnasArizonai Foundation, Inc.
Animal and Plant Health Inspection Service
Animal Defense League of Arizona
Antenna Sites, Inc.
Antlers
Apache Bass Club
Apache County ATV Roughriders
Apache County Development and Communication Services
Apache Junction Chamber of Commerce
Apache Junction Rock and Gem Club, Inc.
Apple Hill Enterprises
Archaeological Consulting Services, LTD
Arizona Anglers Family Fishing
Arizona Archaeology Society - Phoenix Chapter
Arizona Association of Conservation Districts
Arizona Association of Counties
Arizona ATV Riders, Inc.
Arizona Auto Association
Arizona Awareness Desert Jeep Tours, Inc.
Arizona Bass Club
Arizona Beemers
Arizona Board of Regents - KAET ASU
Arizona Bound Jeep Tours
Arizona Bowhunters
Arizona Cattle Growers Association
Arizona Cattle Grower's Association
Arizona City Gem and Mineral Society
Arizona Commission of Agriculture and Horticulture
Arizona Department of Agriculture
Arizona Department of Agriculture, Animal Services
Arizona Department of Emergency & Military Affairs
Arizona Department of Environmental Quality
Arizona Department of Environmental Quality – Water Quality Division
Arizona Department of Environmental Quality - Emergency Response
Arizona Department of Mines and Mineral Resources
Arizona Department of Public Safety
Arizona Department of Transportation
Arizona Department of Transportation, Maintenance Office
Arizona Department of Water Resources
Arizona Division of Emergency Management
Arizona Elk Society
Arizona Game and Fish Department
Arizona Game and Fish Department - Law Enforcement Branch
Arizona Game and Fish Department - Radio Dispatch
Arizona Game and Fish Department - Regional VI Headquarters
Arizona Game and Fish Department - WMHB
Arizona Game and Fish Department- Adopt-A-Ranch Program Manager
Arizona Game and Fish Department - Region 6 HQ
Arizona Geological Survey
Arizona GrArizonaing Clearinghouse
Arizona Great Outdoors
Arizona Guide Association
Arizona House of Representatives
Arizona Iceman
Arizona Iron Supply, Inc.
Arizona Livestock Board
Arizona Native Plant Society
Arizona Navy
Arizona Office of Tourism

Arizona OHV Association
Arizona OHVC
Arizona OHVC, Arizona Rock Rats
Arizona Outdoor Journal
Arizona Outdoors Club at ASU
Arizona Partnership for Forest Health
Arizona Public Service
Arizona Public Service - Childs Power Plant
Arizona Public Service - Forestry and Special Programs
Arizona Ranch Management
Arizona Repeater Association
Arizona Rivers Coalition
Arizona Senate
Arizona Small Mine Operators Association
Arizona Sportsmasters
Arizona State Association of 4-Wheel Drive Clubs
Arizona State Land Department
Arizona State Land Office
Arizona State Lands - State
Arizona State Mine Inspector
Arizona State Parks
Arizona State Parks - Division of Planning
Arizona State Parks Board
Arizona State Senate
Arizona State Treasurer
Arizona Trail Riders, Inc.
Arizona Trout Unlimited
Arizona Unique Buggy Adventures, Inc.
Arizona State University
Arizona State University - College of Law
Arizona State University - Global Institute of Sustainability
Arizona State University - Morrison School of Agribusiness
Arizona State University - Department of Zoology
Arizona State University - Disability Resource Center
Arizona State University - Global Institute of Sustainability
Arizona State University Hayden Library - Government Documents
Arizona State University - Libraries
Arizona State University - Plant Biology
Arizona State University -Zoology Department
Arizona State University - School of Earth and Space Exploration
Arizona Virtual Jeep Club
Arizona Water Company
Arizona Wholesale Fuelwood
Arizona Wilderness Coalition
Arizona Wildlife Federation
Arizona Wool Producers
Armstrong Living Trust
Arrowhead Canyon Homeowners Association
ASA4WDC Conservation
ASARCO, Inc.
ASARCO, LLC
Audubon Expedition Institute
Audubon Society
Audubon Society-Tucson
Bank One
Bar Eleven Land and Cattle Company
Bar X Ranch Conservatory, Inc.
Barro's Pizza
Bartlett Lake Marina
Barton, Venable, Gullette and Randall
Bat Conservation
Bat Conservation International
Beaver Valley Improvement Association
Biff Miller and Regina Durbin
Big River Films
Bill Johnson's Big Apple Restaurant
Black Brush Ltd. Partnership
Black Canyon City Chamber of Commerce
Black Mountain Coffee Shop
Black Mountain Lions Club
Black Mountain Mining Corp
BLM - Arizona Strip Field Office
BLM, Arizona State Office
Blue Ribbon Coalition
Bob Lee and Sons Tree Services
Bordges Timber, Inc.
Boyce Thompson Arboretum
Braggin Rock Club
Bray Creek Ranch
Brown and Bain
Bubbles Up Drive and Travel
Bullock Logging
Bureau of Indian Affairs
Bureau of Indian Affairs - Navajo
Bureau of Indian Affairs - San Carlos
Bureau of Land Management
Bureau of Reclamation
C.A.S.T. (Central Arizona Spouse Teams)
Cable One
Cactus Shadows High School
Camelback Adventures
Camp Creek Association
Camp Creek Homeowners Association
Camp Creek Residence Association
Camp Verde Chamber of Commerce
Canyon Bass Association
Canyon Bass Club
Canyon de Chelly National Monument
Cave Creek Building Supply
Cave Creek Outfitters
Cave Creek Saddle Club
Cave Creek Unified School District
Cave Creek/Carefree Chamber of Commerce
Center for Biological Diversity
Central Arizona Association of Governments
Central Arizona Project
Central Arizona Trail Hounds
Chamber of Commerce
Chandler Bass Assn
Chaparral Guides and Outfitters
Chino Winds NRCD
Christopher Creek Homeowners Assn
CHRJ Partners

Chuckwalla Wilderness Adventures
Cierra Medical Walk-In
Citizens for a Better Young
City of Apache Junction
City of Flagstaff
City of Globe
City of Hildale
City of Kanab
City of Mesa
City of Mesa, District 5
City of Page
City of Payson
City of Prescott
City of Scottsdale
City of Sedona
City of St. George
City of Williams
Civil Air Patrol
Clarkdale Chamber of Commerce
Coconino County - District 1
Coconino County - District 2
Coconino County - District 3
Coconino County - District 4
Coconino County - District 5
Coconino County - Planning and Zoning
Coconino County Cooperative Extension Office
Coconino County Public Works Department
Coconino Natural Resource Conservation District
Cold Springs Ranch
Community Television Project, Inc.
Continental Mining Inc.
Cooper's Hay Hook Ranch
Copper Hills ATV Riders Association
Copperstate Bass Club
Cottonwood Chamber of Commerce
Creation Research Society
Croman Corporation
CTW Cattle Company
Dames and Moore
Defenders of Wildlife
Del Norte Bass Club
Del Shay Ranch, Inc.
Department of Water Resources
Desert Bighorn Sheep Society
Desert Botanical Garden
Desert Dog Hummer Adventures
Desert Mountain Properties
Desert Southwest Region
Desert Storm Hummer Tours, Inc.
Desert Foothills Medical Center
Destination West, Inc.
D'Eugenio Investment Enterprises, Inc.
Diamond A Ranch Corporation
Diamond Point Homeowners Association
Dirty SW Offroad Badboys Society
Dons of Arizona
Dorothy Cline Wells Trust
Dos S Ranch
Durham Communications
East Maricopa NRCD
East Valley Tribune
East Verde Mine Patents
East Verde Park HOA
East-West Productions
EECO and ECO
El Mar Diving (Tierra Mar)
Eloy Enterprise
Environmental Information Center
Environmental Planning Group
Environmental Services Department - Division of Water and Waste Management
Environmental Strategies, Inc.
EPA - Region 9
Equipment Maintenance Service
ERA - Young Realty
Extreme Arizona
Farm Services Agency
Federal Aviation Administration
Federal Bureau of Investigation
Fenn Land and Cattle Company, LLC
First Western Resources Inc.
Fisher Wireless Services, Inc.
Five County Association of Governments
Flagstaff Activist Network
Flagstaff Area National Monuments
Flagstaff Gem and Mineral Society
Flowing Springs
Foothills Equipment Rental RSC
Foothills Photo
Forest Guardians
Forest Permittee
Fort Apache Timber Company
Foundation for Biodiversity
Fredonia Fire Department
Freedom Wireless Gila, Inc.
Freelance Productions
Freeman McQue Public Relations
Friends of Agua Fria National Monument
Friends of Arizona Rivers
Friends of Pinto Creek
Friends of Sycamore
Friends of the Goldfields
FSEEE
Ft. McDowell Tribal Council
Ft. McDowell Yavapai Nation
General Metals Manufacturing and Supply
Gila County
Gila County Board of Supervisors, District 1 Supervisor
Gila County Board of Supervisors, District 3 Supervisor
Gila County Cattle Growers
Gila County Community Development
Gila County Cooperative Extension
Gila County Emergency Management
Gila County Extension Service
Gila County Planning & Zoning Commission
Gila County Public Works
Gila County Sheriff's Office
Gila County Trails

Gila National Forest
Gila River Cellular General Partnership
Gila River Cellular General Partnership
Gila River Indian Community
Girl Scouts Arizona Cactus-Pine Council
Glendale Chamber of Commerce
Globe-Miami Regional Chamber of Commerce and Economic Development Corporation
Goldfield Ghost Riders
Governor’s Forest Health Councils
Governor's Office
Grand Canyon Chamber of Commerce
Grand Canyon Council
Grand Canyon Council, Inc. Camp Geranimo
Grand Canyon National Park
Grand Canyon Wildlands
Grand Canyon-Parashant National Monument
Grand County Justice Court
Greater Arizona Bicycle Association
Green Valley Lapidary Club
Greenback Valley Ranch
GTWA
H&E Ranch
Happy Jack Information Center
Hardscrabble GrArizonaing Allotment
HEAT Dirt Riders
Hebbard and Webb Inc.
Heritage Camp Timber
High Desert Investment Company
Holliday Timber Products
House of Representatives
Houston Creek Ranch, LLC
Houston Mesa General Store
Huachuca Mineral and Gem Club
Hyatt Regency Scottsdale
Hyland Bay Company
Intermountain Resources
Integrity Land and Cattle, LLC
International Association F&W Agencies
International Llama Association
Irving Power Plant
Isabelle Hunt Memorial Public Library
J Bar B Cattle Company
Jack Arizona Bass
Jerome Chamber of Commerce
JF Ranch
Johnson Cattle Company
Johnson Ranch Partnership
Johnston Farms, Ltd. Partnership
Joseph Auza Sheep Company
K&K Lumber Co, LLC
Kampgrounds of America
Kane County Planning/Zoning
Keep Sedona Beautiful, Inc.
Kelly Clark Automotive
Kendell Family Revocable Trust
KMOG-Radio
Lake Havasu Gem and Mineral Society, Inc.
Lakeview Lapidary Club
LArizonay H Cross Ranch
Lawman Bass Club
Legislative Council
Liars Korner
Living Proof, Inc.
Logan Simpson Design, Inc.
Magma Copper Company
Malcolm Pirnie, Inc.
Maricopa Audubon Society
Maricopa County
Maricopa County Board of Supervisors
Maricopa County Cooperation Extension Service
Maricopa County Department of Transportation
Maricopa County Supervisor's Office Lake Patrol Division
Maricopa Lapidary Society, Inc.
Martin Ranch, Inc.
Mayer Area Chamber of Commerce
Mayo Clinic
McDowell Sonoran Land Trust
Mesa 4-Wheels
Mesa Chamber of Commerce
Mesa East Rock Club
Mesa Four Wheelers
Mesa Tribune Newspaper
Mesa Varmint Callers
Mid Week Bass Anglers
Mineral Resources
Mingus Gem and Mineral Club
M-L Arizonay-S Cattle Co.
Mogollon Sportsman's Assoc.
Mohave County - District 1
Mohave County - District 2
Mohave County - District 3
Mohave County Planning/Zoning
Mojave Electric Coop
Montgomery and Interpreter, PLC
Motorola Rockhound Club
Mountain Bike Association of Arizona
Mueller Revocable Trustees
Muleshoe X Cattle Company
National Park Service
National Wildlife Federation
Native Ecosystems
Nature Conservancy - Northern Arizona Program
Navajo Nation
Navajo Army Depot
Navajo National Monument
Nelson Timber
Nevada Department of Wildlife
New Mexico State University - Agriculture and Economic Department
New River/Desert Hills Community Association
New World Communications of Phoenix, Inc.
Northcott, Inc.
Northern Arizona Audubon Society
Northern Arizona Council of Governments
Northern Arizona University - Department of Geology
Northern Arizona University - Forest ERA
Office of Senator Jon Kyl

Offroad Passport
Old Pueblo Bass Anglers
Old Pueblo Lapidary Club, Inc.
OMYA
Orotex, Inc.
Outback Safari Company Inc.
Outdoors Now
OW Ranch
Oxbow Estates RV
P Diamond, LLC
P.V. Trail Riders
Pacific Legal Foundation
Page Land and Cattle Company
Pago Bass Club
Palo Verde Sierra Club
Patty Ryan Living Trust
Paul Bunyan's Firewood, Inc.
Pauline Peters Living Trust
Pay Dirt MagArizonaine
Payson Chamber of Commerce
Payson Parks, Recreation, and Tourism Department
Payson Police Department
Payson Public Library
Payson Rimstone Rock Club
Payson Roundup
Payson Verde River Ranch, LLC
People for the West
Perimeter Bicycling Association of America
Permagrin Canoe and Kayaking School
Petrified Forest National Park
Phelps Dodge Corp
Phelps Dodge Miami Inc.
Phillips Outdoor Program Center
Phoenix Bassmasters
Phoenix Junior Bassmasters
Phoenix Ski Club
Phoenix Zoo
Pinal County Board of Supervisors
Pinal Mountain Cabin Owners
Pine/Strawberry Fire Department
Pine/Strawberry Water Improvement District
Pleasant Valley Community Council
PNRS
Police Department - Homeland Security/CT102
Ponderosa Fire Deptartment
Precision Marine
Precision Pine and Timber, Inc.
Prescott Bass Club
Prescott Chamber of Commerce
Prescott College
Prescott National Forest Friends
Prescott Valley Economic Development Foundation
Probation Department, County of Gila
Public Lands Information Center
Pueblo of Zuni Heritage and Historic Preservation Office
Qwest Communications
R.A.M. Inc.
Rafter Cross Cattle Company
Rambo Realty and Investment
Rancher ASP Board OHV Advisor
Recon Environmental Inc.
Red Creek Ranch, LLC
Red Mountain Mining, Inc.
Reevis Mountain School
Renegy LLC
Resolution Copper Company
Riding Arizona
Rim Tours Inc.
Rimwood, Inc.
Rio Verde Horsemen's Association
Roadrunner 4 Wheel Drive Club
Roadrunners Prospecting Club
Rock Art Signs
Rock House Grocery
Rockstars Motorcycle Offroad
Rocky Mountain Elk Foundation
Roosevelt Marina, LLC
Roosevelt Residents Organization
Rooster Tails West Bass Club
Rooster Tales West Bass Club
RPAP
Saguaro 4x4s
Saguaro Amateur Remote Base Association, Inc.
Saguaro Bassmasters
Saguaro Dive and Travel
Saguaro Lake Marina
Saguaro Lake Ranch, Inc. (Cimarron A & R. C. Sublease River Running)
Saguaro National Monument
Salt River Pima- Maricopa Indian Community
Salt River Project
Salt River Project - Environmental Services Department
Salt River Project - Water Rights Division
San Carlos Apache Timber Products Company
San Carlos Apache Tribe
San Carlos Apache Tribe -Forest Resources Program
Sanborn Land and Cattle Company
Santa Rita Ranches, Inc.
Save the Peaks Coalition
SBA ONRSA
Scottsdale Artist School, Inc.
Scottsdale Department of Planning and Economic Development
Scottsdale Osborn Trauma Center
Scottsdale Shea Hospital
Scuba Science, Inc.
SEC, Inc.
Sedona Chamber of Commerce
See Canyon Homes
Sheep Springs Sheep Company
Sierra Club
Sierra Club - Grand Canyon Chapter
Sierra Club - Southwest Office
Silvery Colorado River Rock Club
Slat River Canoe and Kayak
Sleep Inn
Soil and Moister Conservation Program
Southern Gila County Economic Development Corp.

Southwest Forest Products
Southwest Forest Science Complex
Southwest Natural History Association
Southwest Network
Southwestern Biological Institute
Spectrum Aerospace
SpringHill Suites by Marriott
Spur Cross Ranch Conservation Area
State Historic Preservation Officer
Station Manager, TV4
Stewart – Martin
Stone Container Corp.
Sun City Rockhound Club
Sunny Mesa Realty
Sunsites Gem and Mineral Club
Superhook Towing
Superior Development Company
Superstition O.K. Corral Stables, Inc.
Superstition Area Land Trust
Superstition Mountain Adventures, Inc. dba Apache Trail Tours
SW Adventure, Inc.
SW Transmission
Telespectra
Telluride White Water
The Arizona Trail Association
The Griffin Cattle Ranch
The Hopi Tribe
The Hopi Tribe - Hopi Cultural Preservation
The Hopi Tribe Preservation Office
The Nature Conservancy, Regional Conservation Manager
The Sparks Law Firm P.C.
The Wilderness Society -Arizona Chapter
The Wilderness Society
The Zia Connection
Thunder Mountain Adventures
Timbersource.com
Tonto Apache Tribal Police Department
Tonto Apache Tribe
Tonto Basin Kiwanis Club
Tonto Creek Estates
Tonto Hills Homeowners Association
Tonto National Monument
Tonto Natural Bridge State Park
Tonto NRCD
Tonto Recreation Alliance
Tonto Rim Sports Club
Town of Big Water
Town of Carefree
Town of Cave Creek
Town of Chino Valley
Town of Clarkdale
Town of Colorado City
Town of Fredonia
Town of Miami
Town of Payson
Town of Prescott Valley
Town of Superior
Trails 'n Tails LLC
Tri Star Logging
Trial Horse Adventures
Triangle P Ranch
Tri-Valley Bass Club
Tucson District Office
Tucson Gem and Mineral Society
Tusayan Fire Department
Tuzigoot National Monument
U.S. Army Corps of Engineers
U.S. Customs and Border Protection
U.S. Environmental Protection Agency
U.S. EPA Region 9
U.S. Fish and Wildlife Service
U.S. Geological Survey
U.S. Geological Survey, Southwest Biological Science Center
U.S. Senate
Union Pacific Railroad
United Association Plumbers and Pipefitters
University of Arizona
University of Arizona - Ecology and Evolutionary Biology
University of Arizona - Gila County Cooperation Extension
University of Arizona, Department of Geosciences
University of Arizona at NAU
University of Arizona -Cooperation Extension
University of Arizona School of Renewable Natural Resources
Univision
UpsJeep
USDA NRCS
USDA, Fish and Wildlife Service
USDA-APHIS-PPQ, Plant health director
USDI, Bureau of Reclamation
Utah Division of Wildlife Resources
Verde Glen Property Association
Verde Natural Resource Conservation District
Verde NRCD
Verde Ranger District
Verde Valley Forum for Public Affairs
Virtual Jeep Club
W.J. Cattle Co.
Walgreens
Wally Smith Logging, Inc.
Walt's Kawasaki-Yamaha
WAPA
WAPA - Desert SW Region
Waste Management
Way Out West Off Road Expeditions
West Side Bassmasters
Western Area Power
Western Land Exchange Project
Western States Public Lands Coalition
Western Technologies, Inc.
Western Watersheds Project
White Mountain Apache Tribe
White Mountain Apache Tribe Legal Department
White Mountain Apache Tribe, Tribal Attorney
White Mountain Conservation League

Wickenburg Gem and Mineral Society, Inc.
Wild Earth Guardians
Wild West Jeep Tours
WildEarth Guardians
Wilderness Aware
Wilderness Watch
Wildland Fire Advisory Council
Williams Fire Department
Willow Hill Ranch
Windwalker Expeditions, Inc.
Winkelman NRCD
Winters Company
Withycombe Family, LLC
Yavapai County - District 1
Yavapai County - District 2
Yavapai County - District 3
Yavapai County Board of Supervisors
Yavapai - Apache Nation
Yavapai - Prescott Tribe
Yuma Gem and Mineral Club
Zuni Pueblo

Glossary of Terms

***36 CFR 212*:** 2005 Travel Management Rule which replaced CFR 295.

***36 CFR 261*:** Establishes prohibitions necessary to manage and control use on National Forest development trails.

***36 CFR 293*:** Prohibits motorized use in wilderness and primitive areas.

***36 CFR 800*:** Implementing regulations for *Section 106 of the NHPA*

Adaptive management: A system of management practices based on clearly identified intended outcomes and monitoring to determine if management actions are meeting those outcomes; and, if not, to facilitate management changes that will best ensure that those outcomes are met or re-evaluated. Adaptive management stems from the recognition that knowledge about natural resource systems is sometimes uncertain (*36 CFR 220.3*).

Administrative unit: A National Forest, a National Grassland, a purchase unit, a land utilization project, Columbia River Gorge National Scenic Area, Land Between the Lakes, Lake Tahoe Basin Management Unit, Midewin National Tallgrass Prairie, or other comparable unit of the National Forest System.

Administrative use only (Admin Use): motorized access is restricted, often with a locked gate, to Forest Service personnel or those that hold an authorized use permit to access the road or trail. These routes would not show up on the motor vehicle use map. Motorized user not authorized to be on these routes would be cited for being in violation.

Alluvial: Pertaining to processes or materials associated with transportation or deposition by running water.

Annual maintenance: Work performed to maintain serviceability or repair failures during the year in which they occur. Includes preventive and/or cyclic maintenance performed in the year in which it is scheduled to occur. Unscheduled or catastrophic failures of components or assets may need to be repaired as a part of annual maintenance.

Aquatic: Growing or living in or frequenting water; taking place in or on water.

Aquatic ecosystem: A stream channel, lake or estuary bed, the water itself, and the biotic (living) communities that occur therein.

Archaeological survey: A systematic, intensive inspection of the landscape in order to identify, inventory, and evaluate archaeological sites, which are defined as locations of purposeful prehistoric or historic human activity.

Area: A discrete, specifically delineated space that is smaller, and in most cases much smaller, than a Ranger District.

Arterial road: Classified road that provides service to large land areas; arterial roads are usually developed and operated for long-term land and resource management purposes and constant service.

Aspect: The direction a slope faces. For example, a hillside facing east has an eastern aspect.

Buffer: A zone of a specified distance around a linear or area feature.

Code of Federal Regulations: A codification of the general and permanent rules published in the *Federal Register* by the executive departments and agencies of the Federal Government.

Collaboration: Managers, scientists, and citizens working together to plan, implement, and monitor national forest management. The intention is to engage people who have information, knowledge, expertise, and an interest in the health of national forest ecosystems and nearby communities.

Collector roads: Classified roads serving smaller land areas than arterial roads; collector roads collect traffic from local roads and usually connect to forest arterial roads or state and county highways. They are operated for either constant or intermittent service depending on land use and resource management objectives.

Council on Environmental Quality (CEQ: The Council on Environmental Quality established by *Title II of NEPA (40 CFR 1508.6).*

Critical habitat: Areas designated for the survival and recovery of federally listed threatened or endangered species.

Cumulative effects (or impacts): The effect on the environment, which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or nonfederal) or person undertakes such other actions. Cumulative effects can result from individually minor ,but collectively significant, actions taking place over a period of time (*40 CFR 1508.7*).

Decommissioned (roads or trails): Demolition, dismantling, removal, obliteration, and /or disposal of a deteriorated or otherwise unneeded asset or component, including necessary cleanup work. This action eliminates the deferred maintenance needs for the fixed asset. Portions of an asset or component may remain, if they do not cause problems or require maintenance.

Deferred maintenance: Maintenance activities that can be delayed without critical loss of facility serviceability until the work can be economically or efficiently performed.

Degradation: Reduction in quality. The process whereby the water quality and chemical, physical, or biological integrity of a water body is decreased. Habitat quality can be changed by certain management activities. If the quality is reduced, then habitat degradation has occurred.

Designated road, trail, or area: A National Forest System road, a National Forest System trail, or an area on National Forest System lands that is designated for motor vehicle use pursuant to § 212.51 on a motor vehicle use map.

Draft environmental impact statement (DEIS): A detailed written statement as required by section *102(2) (C) of the NEPA (40 CFR 1508.11)* that is released to governmental agencies and the general public for review and comment.

Designated road, trail, route, or area: A National Forest System road, trail or area that is designated for motor vehicle on a motor vehicle use map (*36 CFR 212*).

Desired conditions: Land or resource conditions that are expected to result based on goals and objectives.

Ecology/ecological: The interrelationships of living things to one another and to their environment, or the study of these interrelationships.

Ecosystem: An arrangement of living and nonliving things and the forces that move them. Living things include plants and animals. Nonliving parts of ecosystems may be rocks and minerals. Weather and wildfire are two of the forces that act within ecosystems.

Endangered species: Those plant or animal species that are in danger of extinction throughout all or a significant portion of their range. Endangered species are identified by the Secretary of the Interior in accordance with the *Endangered Species Act of 1973*.

Endemic: When referring to a species, means living in defined geographic area: such as a species of organism that is confined to a particular geographic region like an island or river

Environmental impact statement (EIS): A detailed written statement as required by section *102(2) (C) of NEPA (CFR 1508.11).*

Ephemeral stream: Streams that flow only as the direct result of rainfall or snowmelt. They have no permanent flow.

Executive orders: United States Presidents issue executive orders to help officers and agencies of the executive branch manage the operations within the federal government itself. Executive orders have the full force of law[1] when they take authority from a power granted directly to the Executive by the Constitution, or are made in pursuance of certain Acts of Congress which explicitly delegate to the President some degree of discretionary power (delegated legislation). Like statutes or regulations promulgated by government agencies, executive orders are subject to judicial review, and may be struck down if deemed by the courts to be unsupported by statute or the Constitution

Executive Orders (EO) 11644 and 11989: These orders provide direction for Federal agencies to establish policies and provide for procedures to control and direct the use of OHVs on public lands so as to: 1) protect the resources of those lands; 2) promote the safety of all users of those lands; and 3) minimize conflicts among the various users on those lands. Section 3(1) establishes that “Areas and trails shall be located to minimize damage to soil, watershed, vegetation, or other resources of the public lands.” Section 9(a) allows the agency head to close trails to use if the use is causing effects to the soil, vegetation, and other resources until the adverse effects have been eliminated and measures are implemented to prevent future recurrence.

***Executive Order 11990 of May 24, 1977*:** This order requires each agency to take action to minimize destruction, loss, or degradation of wetlands and to preserve and enhance the natural and beneficial values of wetlands.

Executive Order 13007: Each executive branch agency with statutory or administrative responsibility for the management of Federal lands shall, to the extent practicable, permitted by law, and not clearly inconsistent with essential agency functions, (1) accommodate access to and ceremonial use of Indian sacred sites by Indian religious practitioners and (2) avoid

adversely affecting the physical integrity of such sacred sites. Where appropriate, agencies shall maintain the confidentiality of sacred sites.

Executive Order 13112, issued by the President in 1999: a species is considered invasive if it: 1) is nonnative to the ecosystem under consideration and 2) its introduction causes or is likely to cause economic or environmental harm or harm to human health. The Tonto National Forest has not been intensively surveyed for noxious weeds. Populations of some noxious weeds have been known for nearly 30 years and have spread considerably since they were first identified. Others are still being found in small infestations.

Executive Order 13443: The purpose of this order is to direct Federal agencies that have programs and activities that have a measurable effect on public land management, outdoor recreation, and wildlife management, including the Department of the Interior and the Department of Agriculture, to facilitate the expansion and enhancement of hunting opportunities and the management of game species and their habitat.

Fauna: Animal life

Flora: Plant life

Forest road or trail: A road or trail wholly or partly within or adjacent to and serving the National Forest System that the Forest Service determines is necessary for the protection, administration, and utilization of the National Forest System and the use and development of its resources (*36 CFR 212*).

Forest transportation atlas: A display of the system of roads, trails, and airfields of an administrative unit.

Forest transportation facility: A forest road or trail or an airfield that is displayed in a forest transportation atlas, including bridges, culverts, parking lots, marine access facilities, safety devices, and other improvements appurtenant to the forest transportation system.

Forest transportation system: The system of National Forest System roads, National Forest System trails, and airfields on National Forest System lands (*36 CFR 212*).

Four County Area: Refers to the four counties that overlap with the Tonto National Forest: Gila, Maricopa, Pinal, and Yavapai.

Fuels: Plants and woody vegetation, living and dead, which are capable of burning.

Fuelwood: Wood cut into short lengths for burning in a fireplace, woodstove or fire pit.

Geographic information system (GIS): A computer system capable of storing, manipulating, analyzing, and displaying geographic information.

Habitat: The area where a plant or animal lives and grows under natural conditions.

Herbaceous: A plant having little or no woody tissue.

Heritage: Refers to historic preservation, prehistoric, and historic cultural resources and cultural traditions.

Highway: Highway is a way or a place of whatever nature publicly maintained and open to the use of the public for purposes of vehicular travel. The term "highway" does not include fire trails, logging roads, service roads regardless of surface composition, or other roughly graded trails and roads upon which vehicular travel by the public is permitted.

Image: A graphic representation of a person or thing, typically produced by an electronic device. Common examples include remotely sensed data and photographs.

Interdisciplinary team (IDT): A group of professional resource specialists who analyze the effects of alternatives on natural and other resources. Through interaction, participants bring different points of view and a broader range of expertise.

Intermittent stream: A stream that flows only at certain times of the year, when it receives water from streams or from some surface, such as melting snow.

Inventoried roadless area (IRA): areas identified in a set of inventoried roadless area maps, contain in Forest Service Roadless Area Conservation, Final Environmental Impact Statement, Volume 2, dated November 2000, which are held at the National Headquarters office of the Forest Service, or any subsequent update or revision of those maps.

Irretrievable: A term that applies to the loss of production, harvest, or use of natural resources. For example, some or all of the timber production from an area is lost irretrievably, while an area is serving as a winter sports site. The production lost is irretrievable, but the action is not irreversible. If the use changes, it is possible to resume timber production.

Irreversible: A term that describes the loss of future options. The term applies primarily to the effects of use of nonrenewable resources, such as minerals or cultural resources, or to those factors, such as soil productivity, which are renewable only over long periods of time.

Landscape: A large land area composed of interacting ecosystems which are repeated due to factors such as geology, soils, climate, and human impacts.

Maintenance: The upkeep of the entire forest transportation facility including surface and shoulders, parking and side areas, structures, and such traffic-control devices, as are necessary for its safe and efficient utilization (*36 CFR 212*).

Maintenance levels: The Forest Service currently classifies maintenance of National Forest System roads by five maintenance levels. According to the Tonto National Forest Plan, they are defined as follows:

- Level 1: Roads are not open to traffic; they are maintained to protect the road investment and its surrounding resources. These roads may be opened for a specific activity and returned to Level 1 upon completion of the project.
- Level 2: Roads are maintained open for limited passage of traffic. Roads in this maintenance level are primitive type facilities intended for high clearance vehicles. Passenger car traffic is not a consideration.
- Level 3: Roads are maintained open and safe for travel by a prudent driver in a passenger car. However, user comfort and convenience is not considered a priority.

- Level 4: Roads are maintained to provide a moderate degree of user comfort and convenience at moderate travel speeds.
- Level 5: Roads are maintained to provide a high degree of user comfort and convenience. These roads are normally two lanes with aggregate or paved surface.

Management action: Any activity undertaken as part of the administration of the National Forest.

Meadow: Areas of moist low lying and usually level grasslands. Generally, the water table is just below the surface of the soil and the most abundant vegetation is usually favored by wet, but not constantly, flooded soil.

Mesic: Moderately moist climates or environments. In vegetation it generally refers to vegetation found in moist environments. In soils it refers specifically to soils with mean annual temperatures of 8 to 15 degrees centigrade.

Mitigation: Avoiding the impact altogether by not taking a certain action or parts of an action through:

- Minimizing impacts by limiting the degree or magnitude of the action and its implementation.
- Rectifying the impact by repairing, rehabilitating, or restoring the affected environment.
- Reducing or eliminating the impact over time by preservation and maintenance operations during the life of the action.
- Compensating for the impact by replacing or providing substitute resources or environments.

Motor vehicle: Any vehicle which is self-propelled, other than: (1) a vehicle operated on rails; and (2) any wheelchair or mobility device, including one that is battery-operated, that is designed solely for use by a mobility-impaired person for locomotion, and that is suitable for use in an indoor pedestrian area (*36 CFR 212*).

Motor vehicle use map (MVUM): The management of all the various renewable surface resources of the national forests, so that they are utilized in the combination that will best meet the needs of the American people; making the most judicious use of the land for some or all of these resources or related services over areas large enough to provide sufficient latitude for periodic adjustments in use to conform to changing needs and conditions; that some land will be used for less than all of the resources; and harmonious and coordinated management of the various resources, each with the other, without impairment of the productivity of the land, with consideration being given to the relative values of the various resources, and not necessarily the combination of uses that will give the greatest dollar return or the greatest unit output (*Multiple-Use Sustained-Yield Act; Public Law 86–517*).

Motorized big game retrieval corridor: defined by the Travel Management Rule as "the designation of the limited use of motor vehicles within a specified distance of designated routes, and if appropriate, within specified time periods solely for purposes of "…retrieval of a downed big game animal by an individual who has legally taken that animal" (36 CFR 212.51 (b)).

Motorized dispersed camping corridor: defined by the Travel Management Rule as "the designation of the limited use of motorized vehicles within a specified distance of certain designated routes, and if appropriate within specified time periods, solely for the purpose of dispersed camping." (*36 CFR212.51 (b)*).

Motorized trail: Can range from single tack, that would accommodate a dirt bike, to the width of a standard dirt road, that could be driven by any vehicle with high enough clearance or appropriate suspension.

***National Environmental Policy Act* (NEPA):** Codifies the national policy of encouraging harmony between humans and the environment by promoting efforts to prevent or eliminate damage to the environment, thereby enriching our understanding of ecological systems and natural resources. It declares the federal government to be responsible for: (a) coordinating programs and plans regarding environmental protection; (b) using an interdisciplinary approach to decision-making; (c) developing methods to ensure that non-quantifiable amenity values are included economic analyses; and (d) including in every recommendation, report on proposals for legislation, or other major federal actions significantly affecting the quality of the environment a detailed environmental impact statement (EIS).

National Forest System (NFS): As defined in the *Forest Rangeland Renewable Resources Planning Act*, the National Forest System includes all national forest lands reserved or withdrawn from the public domain of the United States, all national forest lands acquired through purchase, exchange, donation, or other means; the national grasslands and land utilization projects administered under title III of the *Bankhead-Jones Farm Tennant Act (50 Stat. 525, 7 U.S.C. 1010-1012)*; and other lands, waters, or interests therein which are administered by the Forest Service or are designated for administration through the Forest Service as a part of the system (*36 CFR 212*).

National Forest System road: Defined by the Travel Management Rule 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*). In addition, a road is defined as "a motor vehicle route over 50 inches wide, unless identified and managed as a trail" (*36 CFR 212.1*).

National Forest System trail: A forest trail other than a trail which has been authorized by a legally documented right-of-way held by a state, county or other local public authority (*36 CFR 212*).

National Register of Historic Places (NRHP): List of historic resources (districts, sites, buildings, structures, objects, etc.) deemed worthy of preservation. This register is maintained by the Department of Interior. A number of criteria must be met for a resource to be deemed eligible to the NRHP.

Natural resource: A feature of the natural environment that is of value in serving human needs.

Noxious weeds: Aggressive, nonnative plant species that have been introduced. They can be difficult to manage, poisonous, toxic, parasitic, or carrier of insects or disease. Examples of noxious weeds are scotch broom, yellow star thistle, and cheatgrass.

Off-highway vehicle (OHV): Any motor vehicle designed for or capable of cross country travel on or immediately over land, water, sand, snow, ice, marsh, swampland, or other natural terrain (*36 CFR 212*).

OHV recreation: Recreation activities that are conducted, using off-highway vehicles. Activities include riding ATVs, hunting, riding motorcycles, driving for pleasure, and rock crawling (*36 CFR 212*).

Open to public use: Except during scheduled periods, extreme weather conditions, or emergencies, open to the general public for use with a standard passenger auto, without restrictive gates or prohibitive signs or regulations, other than for general traffic control or restrictions based on size, weight, or class of registration (*23 CFR 660.103*).

Objective maintenance level: 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 (*FSH 7709.58.12.3.1*).

Obliteration: A form of decommissioning that recontours and restores natural slopes.

Operational maintenance level: 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 (*FSH 7709.58.12.3.1*).

Other Power-Driven Mobility Device: Any mobility device powered by batteries, fuel, or other engines—whether or not designed primarily for use by individuals with mobility disabilities--that is used by individuals with mobility disabilities for the purpose of locomotion, including golf carts, electronic personal assistance mobility devises (EPAMDs), such as the Segway®PT, or any mobility device designed to operate in areas without defined pedestrian routes, but that is not a wheelchair within the meaning of this section. This definition does not apply to Federal Wilderness Areas; wheelchairs in such areas are defined in section 508(c)(2) of the ADA, 42 U.S.C. 12207(c)(2).

Over snow vehicle (OSV): A motor vehicle that is designed for use over snow and that runs on a track or tracks and/or a ski or skis, while in use over snow (*36 CFR 212*).

Patch: An area of vegetation, similar in structure and composition.

Perennial stream: A stream that typically has running water on a year-round basis.

Permit zone: Motorized vehicle users are required to obtain a permit to access the designated permit zone area which has locked gates and barriers restricting non-permitted motorized access. Cross-country travel is not allowed within the permit zone and vehicles are restricted to designated routes.

Pothunting: A form of vandalism against historic and prehistoric resources, where items are taken from a site.

Proposed action: A proposal made by the Forest Service to authorize, recommend, or implement an action to meet a specific purpose and need.

Protected activity centers (PACs): Designated areas that are afforded protection to specific species by restricting certain management activities. For example, Mexican spotted owl PACs protect owl habitat and breeding areas by restricting timber harvest.

Public involvement: The use of appropriate procedures to: inform the public, obtain early and continuing public participation, and consider the views of interested parties in planning and decision-making.

Public land: Land for which title and control rests with a government – Federal, state, regional, county, or municipal.

Public road: Roads under the jurisdiction of and maintained by a public authority that are open to public travel (*23 U.S.C 101(a)*).

Reasonably foreseeable actions: Those Federal or non-Federal activities not yet undertaken, for which there are existing decisions, funding, or identified proposals. Identified proposals for Forest Service actions are described in *220.4(a) (1) (36 CFR 220.3)*.

Recreation Opportunity Spectrum (ROS): A land classification system which categorizes National Forest land into six classes, each class being defined by its setting and by the probable recreation experiences and activities it affords. The six classes in the spectrum are: primitive, semi-primitive non-motorized, semi-primitive motorized, roaded natural, rural, and urban as defined below from the Forest Plan:

Primitive (P): Area is characterized by essentially unmodified natural environment of fairly large size. Interaction between users is very low and evidence of other users is minimal. The area is managed to be essentially free from evidence of human-induce restrictions and control. Motorized use within the area is not permitted.

Semi-primitive non-motorized (SPNM): Area is characterized by a predominantly natural or natural-appearing environment of moderate-to large size. Interaction between users is low, but there is often evidence of other users. The area is managed in such a way that minimum on-site controls and restriction may be present, but are subtle. Motorized used is not permitted.

Semi-primitive motorized (SPM): Area is characterized by a predominantly natural or natural-appearing environment of moderate-to large size. Concentration of users is low, but there is often evidence of other users. The area is managed in such a way that minimum on-site controls and restriction may be present, but are subtle. Motorized used is permitted.

Roaded natural (RN): Area is characterized by predominantly natural- appearing environments with moderate evidences of sight and sounds of man. Such evidences usually harmonize with the natural environment. Interaction between users may be low to moderate, but with evidence of other users prevalent. Resource modification and utilization practices are evident, but harmonize with the natural environment. Conventional motorized use is provided for in construction standards and design of facilities.

Rural (R): Area is characterized by substantially modified natural environment. Resource modification and utilization practices are to enhance specific recreation activities and to maintain vegetative cover and soil. Sight and sounds of humans are readily evident, and the interaction between users is often moderate to high. A considerable number of facilities are designed for use by a large number of people. Facilities are often provided for special activities. Moderate densities are provided for away from developed sites. Facilities for intensified motorized use and parking are available.

Urban (U): Area is characterized by a substantially urbanized environment, although the background may have natural-appearing elements. Renewable resources modification and utilization practices are to enhance specific recreational activities. Vegetative cover is often exotic and manicured. Sights and sounds of humans, on-site, are predominant. Large numbers of users can be expected, both on-site and in nearby areas. Facilities for highly intensified motor use and parking are available, with forms of mass transit often available to carry people throughout the site.

Responsible official: The Agency employee who has the authority to make and implement a decision on a proposed action (*36 CFR 220.3*).

Riparian area: The area along a watercourse or around a lake or pond.

Riparian ecosystem: The ecosystem around or next to water areas that support unique vegetation and animal communities as a result of the influence of water.

Road: A motor vehicle route over 50 inches wide, unless identified and managed as a trail (*36 CFR 212*).

Road construction or reconstruction: Supervising, inspecting, actual building, and incurrence of all costs incidental to the construction or reconstruction of a road.

Road management objective (RMO): Documentation of the intended purpose of an NFS road based on management area direction and access management objectives; enumerating design, operation, and maintenance criteria and documenting traffic management strategies for each vehicle class and season of use, if applicable, on an NFS road. It also documents forest orders and permits associated with the road.

Route: A road or trail.

Scope: The range of actions, alternatives, and impacts to be considered in an environmental impact statement (*40 CFR 1508.25*).

Scoping: An early and open process for determining the scope of issues to be addressed and for identifying the significant issues related to a proposed action (*40 CFR 1501.7*).

Sensitive species: Plant or animal species which are susceptible to habitat changes or impacts from activities. The official designation is made by the U.S. Forest Service at the regional level and is not part of the designation of threatened or endangered species made by the U.S. Fish and Wildlife Service.

Single track trails: Trail tread width is generally from 18 inches to 60 inches. Designated use can be for hiker, pedestrian, pack and saddle, bicycle, or motorcycle.

Snag: A standing dead tree. Snags are important as habitat for a variety of wildlife species and their prey.

Species: A class of individuals having common attributes and designated by a common name; a category of biological classification ranking immediately below the genus or subgenus; comprising related organisms or populations potentially capable of interbreeding.

Standards and guidelines (S&Gs): The primary instructions for land managers. Standards address mandatory actions, while guidelines are recommended actions necessary to a land management decision.

Suitability: The appropriateness of certain resource management to an area of land. Suitability can be determined by environmental and economic analysis of management practices.

Sustainability: The ability of an ecosystem to maintain ecological processes and functions, biological diversity, and productivity over time.

Sustainable: The yield of a natural resource that can be produced continually at a given intensity of management is said to be sustainable. Recreation activities are sustainable if the human activity does not reduce ecologic sustainability.

Taxa: The name applied to any one group or entity in the scientific classification system.

Temporary road of trail: A road or trail necessary for emergency operations or authorized by contract, permit, lease, or other written authorization that is not a forest road or trail and that is not included in a forest transportation atlas.

Threatened species: Those plant or animal species likely to become endangered throughout all or a specific portion of their range within the foreseeable future as designated by the U.S. Fish and Wildlife Service under the *Endangered Species Act of 1973*.

Traditional cultural property (TCP): Areas which have cultural significance or are sacred to a Native American Tribe or group. May include areas used for gathering traditional foodstuffs, archaeological sites, or sacred sites or areas.

Trail: A route 50 inches or less in width or a route over 50 inches wide that is identified and managed as a trail (*36 CFR 212*).

Travel management atlas: An atlas that consists of a forest transportation atlas and a motor vehicle use map or maps.

Unauthorized road, route, or trail: A road or trail that is not a forest road or trail or a temporary road or trail and that is not included in a forest transportation atlas.

Understory: The trees and woody shrubs growing beneath branches and foliage formed collectively by the upper portions of adjacent trees.

Utility terrain vehicle (UTV): A type of off-highway vehicle that travels on four or more low-pressure tires, has a steering wheel or tiller, provides side-by-side seating, and is of various widths (*FSH 2309.18, FSM 2353.05*).

Visual quality: The forest visual resources; terrain, geological features, or vegetation.

Visual resource management: The art and science of planning and administering the use of National Forest land in such ways that visual effects maintain or upgrade man's psychological welfare. The planning and design of visual aspects of multiple-use land management (Tonto National Forest Plan, p. 234-6).

Watershed: The entire region drained by a waterway, lake, or reservoir. More specifically, a watershed is an area of land above a given point on a stream that contributes water to the streamflows at that point.

Wetlands: Areas that are inundated by surface or ground water with a frequency sufficient to support (and that under normal circumstances do or would support) a prevalence of vegetation or aquatic life that requires saturated or seasonally saturated soil conditions for growth and reproduction.

Wild and Scenic Rivers: The National Wild and Scenic River System was created by Congress in 1968 (Public Law 90-542; 16 U.S.C. 1271 et seq.) to preserve certain rivers with outstanding natural, cultural and recreational values in a free-flowing condition for the enjoyment of present and future generations. Wild river areas are those rivers or sections of rivers that are free of impoundments and generally inaccessible except by trail, with watersheds or shoreline essentially primitive and waters unpolluted. These represent vestiges of primitive America. Scenic river areas are those rivers or sections of rivers that are free of impoundments, with shorelines or watershed still largely primitive and shorelines largely undeveloped, but accessible in places by road.

Wilderness: Per the 1964 Wilderness Act, a wilderness is undeveloped Federal land retaining its primeval character and influence without permanent improvements or human habitation. No motorized activities are permitted within Wilderness. Public Law 98-406 added additional Wilderness Areas within the Tonto National Forest to the Wilderness Preservation System in Arizona.

Wildland: An area in which development is essentially nonexistent, except for roads, railroads, powerlines, and similar transportation facilities.

Xeric: A soil moisture regime common to Mediterranean climates that have moist cool winters and warm dry summers. A limited amount of water is present, but does not occur at optimum periods for plant growth.

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Index

36 CFR 261, 1, 8, 237, 507
Arizona Game and Fish Department, i, 6, 13, 16, 19, 21, 35, 41, 43, 50, 53, 73, 75, 78, 82, 83, 185, 187, 188, 189, 215, 216, 218, 221, 222, 223, 224, 225, 226, 227, 229, 230, 231, 232, 233, 236, 241, 243, 497, 519, 522, 524
Bartlett Lake, 37, 63, 113, 159, 160, 199, 201, 211, 213, 221, 228, 238, 239, 242
Bulldog Canyon Permit Zone, 14, 48, 157, 161, 227, 245, 480, 482
Cave Creek, iii, 1, 3, 16, 17, 23, 27, 29, 37, 39, 61, 74, 83, 85, 86, 91, 100, 101, 107, 114, 120, 121, 127, 146, 157, 159, 160, 194, 205, 207, 223, 226, 229, 230, 231, 235, 238, 240, 242, 243, 463, 465, 467, 470, 471, 473, 476, 477, 479, 480
cross-country travel, iii, iv, 1, 7, 8, 10, 14, 15, 16, 17, 21, 23, 27, 57, 64, 66, 67, 71, 72, 75, 78, 80, 83, 84, 85, 86, 100, 101, 107, 108, 113, 114, 120, 121, 122, 127, 129, 135, 144, 146, 148, 149, 151, 152, 154, 161, 162, 184, 185, 190, 193, 195, 196, 197, 198, 199, 200, 201, 202, 203, 204, 206, 207, 208, 209, 210, 211, 212, 213, 214, 223, 225, 226, 228, 230, 233, 234, 238, 240, 242, 243, 244, 245, 464, 467, 469, 479, 480, 482, 483, 494
EO 11644 and *EO 11989*. *See* *Executive Order (EO) 11644* and *EO 1198*, 2
Forest Plan, i, iii, 1, 6, 8, 9, 16, 23, 28, 35, 47, 57, 58, 59, 60, 61, 62, 64, 71, 74, 86, 89, 95, 96, 105, 111, 118, 150, 152, 153, 154, 156, 453, 480, 511, 515, 518, 525, 526, 529, 530
Forest Service Chief Dale Bosworth, 6
Globe, iii, 1, 3, 16, 23, 25, 37, 83, 85, 86, 91, 100, 101, 107, 113, 114, 120, 121, 127, 146, 157, 159, 160, 177, 185, 191, 194, 205, 207, 223, 226, 230, 235, 242, 463, 465, 467, 470, 474, 476
Mesa, iii, 1, 3, 16, 23, 25, 27, 29, 37, 39, 48, 75, 83, 85, 86, 91, 99, 100, 101, 104, 107, 110, 113, 114, 117, 120, 121, 127, 145, 146, 148, 157, 159, 160, 161, 191, 194, 205, 207, 223, 226, 227, 230, 235, 236, 238, 240, 242, 463, 465, 467, 470, 474, 476, 477, 479, 480, 497
National Environmental Policy Act, ii, 1, 15, 57, 71, 206, 513
NEPA, ii, 1, 2, 3, 9, 11, 15, 60, 71, 72, 73, 74, 209, 488, 492, 499, 508, 509, 513, 525
Payson, 1, 2, 3, 9, 16, 21, 23, 25, 61, 62, 63, 64, 67, 83, 85, 86, 91, 100, 101, 107, 108, 114, 120, 121, 122, 127, 129, 135, 140, 144, 146, 157, 185, 186, 194, 196, 205, 207, 208, 238, 240, 453, 463, 465, 467, 469, 470, 474, 476, 479, 480, 487, 488, 494
Pleasant Valley, 1, 2, 3, 9, 16, 21, 23, 25, 63, 64, 67, 83, 85, 86, 100, 101, 107, 108, 114, 120, 121, 122, 127, 129, 135, 140, 144, 146, 157, 185, 186, 194, 196, 205, 207, 208, 238, 240, 463, 465, 467, 469, 470, 474, 476, 479, 480, 494
Roosevelt Lake, 37, 61, 63, 113, 154, 159, 160, 199, 201, 211, 213, 221, 228, 238, 239, 242, 456, 458, 469
Sycamore, 29, 37, 39, 63, 100, 107, 113, 151, 159, 160, 199, 201, 211, 213, 227, 240, 241, 242, 459, 469, 472, 477, 479, 482, 524
Tonto Basin, iii, 1, 3, 16, 23, 25, 37, 83, 86, 101, 107, 114, 120, 121, 127, 146, 157, 159, 160, 185, 194, 207, 223, 226, 230, 235, 242, 451, 463, 465, 467, 470, 474, 476, 480

Appendix A: Proposed Changes to the Forest Plan

In order to comply with the Travel Management Rule, Tonto National Forest Plan would need to be amended to state "Motor vehicle use off the designated system of roads is prohibited, except as identified on the Motor Vehicle Use Map[128]." Specific changes to the Plan are listed in Table 81.

Table 81: Specific Changes to the Tonto National Forest Plan Related to ORV and Cross Country Use

Section	Page	Text to be Removed
Public Issues and Management Concerns	13	The section under Fifth Period that refers to areas and miles of road available for ORV use, as well as how the ORV policy will be implemented.
Management Prescriptions Applicable to All Forest Areas	38	Annually review and review off-road vehicle (ORV) maps. Inform the public to ensure maximum volunteer compliance of motor vehicle restrictions.
Management Prescriptions Applicable to All Management Areas	48	Maintain all trails with numbers from 500 to 999 to maintenance level 1 (except those which are to be closed or are under permit) after all other trails have been maintained to their called-for maintenance level.
Management Prescriptions Applicable to All Analysis Areas in Management Area 1D	60	Area is closed to off-road vehicle use, unless posted as open.
Management Prescriptions Applicable to Analysis Areas 3100, 3200, 3201, and 3600 in Management Area 1E	62	ORV use prohibited, unless posted as open.
Management Prescriptions Applicable to All Analysis Areas in Management Area 1F	Replacement Page 67	ORV use prohibited, unless posted as open.
Management Prescriptions Applicable to All Management Areas in 2D	Replacement Page 82	ORV use prohibited, unless posted as open.
Management Prescriptions Applicable to All Analysis Areas in Management Area 2F	86	ORV use prohibited, unless posted as open.
Management Prescriptions Applicable to All Analysis Areas in Management Area 3F	105	ORV use prohibited, unless posted as open.
Management Prescriptions Applicable to All Analysis Areas in Management Area 4D	Replacement Page 129	ORV use allowed (except as noted above), unless posted as closed.
Management Prescriptions Applicable to All Analysis Areas in Management Area 4F	Replacement Page 140	ORV use prohibited unless posted as open.
Management Prescriptions Applicable to All Analysis Areas in Management Area 5D	Replacement Page 153	ORV use allowed, unless posted as closed.

[128] This change would be necessary regardless of which action alternative is selected.

Section	Page	Text to be Removed
Management Prescriptions Applicable to Analysis Areas 5506, 5512, 5530, 5536, 5542 in Management Area 5D	Replacement Page 159	Do not exceed more than seven (7) miles of arterial and collector roads in each 5,000 acre management unit. Additional local or feeder roads necessary for timber harvest will be closed, waterbarred, and blocked with logging slash, when no longer required for post-sale activities
Management Prescriptions Applicable to All Management Areas in 5G	Replacement Page 165	ORV use prohibited, unless posted as closed.
Management Prescriptions Applicable to Analysis Areas 3100, 3200, 3201, and 3600 in Management Area 6F	Replacement Page 180	ORV use prohibited, unless posted as open.
Management Prescriptions Applicable to All Analysis Areas in Management Area 6J	Replacement Page 194	ORV use prohibited, unless posted as open.

Table 82 shows the specific changes to the Tonto National Forest Plan relating to the Recreation Opportunity Spectrum (ROS)—P is short for primitive, SPNM for semi primitive nonmotorized, SPM for semi primitive motorized, RN for roaded natural, R for rural, and U short for Urban[129].

Table 82: Specific Changes to the Tonto National Forest Plan Related to Recreation Opportunity Spectrum

Mngt. Area	Forest Plan ROS Page	Current ROS Text	Proposed Amendment Language		
			Alternative B	Alternative C	Alternative D
1A; 1B; 1C; 1D	N/A*	-----	-----	-----	-----
1E	62	P: 2% SP[NM]: 4% SPM: 70% RN: 24%	P: 0.92% SPNM:55.63% SPM: 12.26% RN: 31.19%	SPNM: 37.36% SPM: 30.09% RN: 32.56%	SPNM: 27.19% SPM: 40.64% RN: 32.18%
1F	67	P: 4% SP[NM]: 40% SPM: 38% RN: 18%	P: 3.54% SPNM: 55.73% SPM: 31.62% RN: 9.10%	P: 0.63% SPNM: 44.44% SPM: 42.66% RN: 12.27%	P: 0.06% SPNM: 37.32% SPM: 49.25% RN: 13.38%
1G	37†	N/A	SPNM: 26.69% RN: 73.31%	SPNM: 0.06% SPM: 26.63% RN: 73.31%	SPNM: 0.06% SPM: 41.91% RN: 58.03%
2A; 2B	N/A	-----	-----	-----	-----
2C	79	P: 2% SP[NM]: 98%	SPNM: 100%	SPNM: 94.75% SPM: 5.25%	SPNM: 57.90% SPM: 42.10%

[129] For more information about the ROS classification system, see the Recreation Resources section of Chapter 3 of this document.

Mngt. Area	Forest Plan ROS Page	Current ROS Text	Proposed Amendment Language		
			Alternative B	Alternative C	Alternative D
2D	82	SP[NM]: 2% SPM: 58% RN: 40%	SPNM: 56.22% SPM: 6.29% RN: 37.48%	SPNM: 32.73% SPM: 25.52% RN: 71.75%	SPNM: 21.39% SPM: 36.64% RN: 41.97%
2E	84	SPM: 100%	SPNM: 83.71% SPM: 9.47% RN: 6.82%	SPNM: 83.71% SPM: 9.47% RN: 6.82%	SPNM: 71.67% SPM: 21.53% RN: 6.80%
2F	86	SP[NM]: 35% SPM: 39% RN: 24% R:1% U:1%	P: 0.02% SPNM: 40.65% SPM: 34.93% RN: 19.59% R: 1.59% U: 3.21%	SPNM: 34.78% SPM: 41.15% RN: 19.27% R: 1.59% U: 3.21%	SPNM: 19.58% SPM: 57.73% RN: 17.89% R: 1.59% U: 3.21%
3A; 3B; 3C; 3D	N/A	-----	-----	-----	-----
3E	103	SP[NM]: 100%	SPM: 91.26% RN: 8.74%	SPM: 91.26% RN: 8.74%	SPM: 91.26% RN: 8.74%
3F	105	SP[NM]: 24% SPM: 21% RN: 55%	P: 0.03% SPNM: 32.64% SPM: 5.27% RN: 60.92% R: 1.13%	SPNM: 30.84% SPM: 6.34% RN: 61.69% R: 1.13%	SPNM: 25.73% SPM: 7.85% RN: 65.28% R: 1.13%
3H	110	SP[NM]: 100%	SPNM: 39.20% RN: 60.80%	SPNM: 39.20% RN: 60.80%	SPNM: 33.94% RN: 66.06%
3I	113	P: 1% SP[NM]: 42% SPM: 36% RN: 21%	P: 0.84% SPNM: 53.91% SPM: 25.51% RN: 19.74%	P: 0.41% SPNM: 35.99% SPM: 41.70% RN: 21.90%	P: 0.32% SPNM: 27.67% SPM: 46.50% RN: 25.50%
3J; 4A; 4B; 4C	N/A	-----	-----	-----	-----
4D	129	SP[NM]: 1% SPM: 55% RN: 38% R: 2% U: 4%	P: 2.69% SPNM: 31.89% SPM: 37.12% RN: 18.05% R: 4.22% U: 6.02%	P: 2.69% SPNM: 21.63% SPM: 32.43% RN: 33.19% R: 4.22% U: 5.83%	SPNM: 18.45% SPM: 32.41% RN: 39.09% R: 4.22% U: 5.83%
4E	137	SP[NM]: 100%	SPNM: 100%	SPNM: 100%	SPNM: 100%
4F	140	SP[NM]: 24% SPM: 46% RN: 26% R: 2% U: 2%	P: 2.64% SPNM: 23.70% SPM: 50.09% RN: 14.57% R: 4.25% U: 4.75%	P: 1.27% SPNM: 12.20% SPM: 60.82% RN: 17.89% R: 3.05% U: 4.77%	P: 0.07% SPNM: 5.91% SPM: 64.21% RN: 20.79% R: 3.05% U: 4.77%
5A; 5B; 5C	N/A	-----	-----	-----	-----

Mngt. Area	Forest Plan ROS Page	Current ROS Text	Proposed Amendment Language		
			Alternative B	Alternative C	Alternative D
5D	153	SP[NM]: 23% SPM: 40% RN: 36% U: 1%	P: 0.38% SPNM: 37.44% SPM: 39.56% RN: 22.03% R: 0.59%	SPNM: 7.62% SPM: 62.40% RN: 29.39% R: 0.59%	SPNM: 1.74% SPM: 71.45% RN: 26.22% R: 0.59%
5E	161	SP[NM]: 27% SPM: 32% RN: 41%	SPNM: 32.41% SPM: 5.27% RN: 62.31%	SPNM: 19.89% SPM: 27.43% RN: 52.68%	SPNM: 10.17% SPM: 57.42% RN: 32.41%
5F	163	SPM: 100%	SPNM: 81.79% RN: 18.21%	SPNM: 81.79% RN: 18.21%	SPNM: 72.72% SPM: 9.07% RN: 18.21%
5G	165	SP[NM]: 41% SPM: 46% RN: 12% U: 1%	P: 1.64% SPNM: 39.74% SPM: 43.14% RN: 12.87% R: 2.60%	P: 0.03% SPNM: 21.41% SPM: 62.59% RN: 13.38% R: 2.60%	P: 0.03% SPNM: 16.47% SPM: 75.72% RN: 5.19% R: 2.60%
6A; 6B	N/A	-----	-----	-----	-----
6C	175	SP[NM]: 63% SPM: 37%	P: 1.01% SPNM: 64.03% SPM: 25.41% RN: 9.55%	SPNM: 59.76% SPM: 26.18% RN: 14.07%	SPNM: 49.67% SPM: 39.57% RN: 10.77%
6D	177	SP[NM]: 80% SPM: 20%	P: 71.31% SPNM: 28.69%	P: 71.31% SPNM: 28.69%	P: 71.31% SPNM: 28.69%
6E	178	SP[NM]: 80% SPM: 20%	SPNM: 49.79% SPM: 26.59% R: 23.62%	SPNM: 76.38% R: 23.62%	SPNM: 46.47% SPM: 25.18% R: 28.34%
6F	180	SP[NM]: 1% SPM: 14% RN: 84% R: 1%	P: 1.46% SPNM: 8.82% SPM: 0.38% RN: 88.20% R: 1.14%	P: 0.80% SPNM: 9.48% SPM: 0.38% RN: 88.20% R: 1.14%	P: 0.76% SPNM: 8.60% SPM: 0.45% RN: 89.04% R: 1.14%
6G; 6H; 6I	N/A	-----	-----	-----	-----
6J	194	SP[NM]: 37% SPM: 33% RN: 27% R: 3%	SPNM: 34.50% SPM: 44.14% RN: 18.08% R: 3.28%	SPNM: 25.90% SPM: 46.40% RN: 24.42% R: 3.28%	SPNM: 20.42% SPM: 51.39% RN: 24.90% R: 3.29%
6K	N/A	-----	-----	-----	-----

[†]Acreage for this area included Management Areas 1E and 1F.