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Land Management Plan Monitoring, Evaluation, & Five Year Trend Report

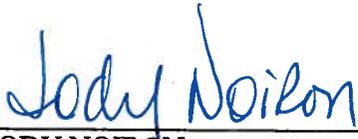
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I am pleased to present the San Bernardino National Forest's annual Monitoring and Evaluation Report for your review. The purpose of the Monitoring and Evaluation Report is to determine the effectiveness of the Land Management Plan and whether changes are necessary to the Plan, or in program or project implementation. In addition to the annual Monitoring and Evaluation Report, the 5-year trend report will detail the Forest's progress toward achieving desired conditions as established by each Forest Goal set out in the Land Management Plan.

The 2006 Record of Decision for the San Bernardino National Forest Land Management Plan identified the monitoring requirements as the cornerstone of our program emphasis for the future. We are now in the fifth year of monitoring conducted under the revised plan, and the Forest has learned a great deal from monitoring. The lessons we learn from monitoring help improve our programs and projects. We continue to find ways to increase efficiency and effectiveness of our monitoring and evaluation efforts. This fifth year monitoring report will answer questions designed to evaluate progress toward the Forest's desired conditions. It is my commitment to keep you informed of the monitoring results through this report. If you would like to participate in future monitoring, please contact the Forest.

Your continued interest in the San Bernardino National Forest Land Management Plan is just one way for you to stay current with activities on your public lands. Additional information can be found on our website at <http://www.fs.fed.us/r5/sanbernardino>.

Sincerely,



JODY NOIRON
Forest Supervisor
San Bernardino National Forest



Date

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Introduction

Monitoring is the method for adapting to change and to more easily amend and eventually revise land management plans in order to achieve desired conditions while ensuring healthy National Forests exist for future generations. Monitoring requirements are found in all three parts of the 2006 San Bernardino National Forest Land Management Plan (LMP). Appendix C in Part 3 of the LMP summarizes the monitoring requirements identified in each part of the LMP.

Part 1 monitoring identifies outcome evaluation questions that will help evaluate movement towards the desired conditions over the long-term. The outcome evaluation questions are measured through indicators of each goal in which the San Bernardino National Forest (Forest) implements projects that move it toward desired conditions. The baseline conditions that will be used to answer these questions and evaluate progress over time were established within the LMP, or have been developed over time are laid out in this report.

The LMP Five Year Trend Report is the comprehensive evaluation of the Forest's movement toward desired conditions, and is being prepared in the fifth year following implementation of the LMP. The primary purpose of this trend report is to determine the effectiveness of the LMP and whether changes in the LMP or goals, indicators, or outcome evaluation questions are necessary.

Part 2 monitoring focuses on program implementation including inventory through accomplishments tracked in Forest Service corporate databases. The annual accomplishment indicators determine if the program areas are implementing the objectives and strategies established in Part 2 of the LMP.

Part 3 monitoring is conducted at the project or activity level in order to evaluate the effectiveness and application of design criteria established in the LMP. The new projects implemented in 2010 and ongoing activities and sites were randomly selected for monitoring based on functional area. Selected projects and ongoing activity or sites were then visited by an interdisciplinary monitoring team to review the application and effectiveness of the design criteria. If problems in implementation were detected or if design criteria were determined to be ineffective, the team recommended corrective actions. LMP monitoring was combined with Best Management Practice (BMP) monitoring when circumstances allowed. The San Bernardino National Forest Leadership Team (FLT) participated in monitoring on the San Jacinto Ranger District for one day. The FLT participates in LMP Part 3 monitoring and evaluation each year by attending a fieldtrip to the projects, activities, or sites on a Ranger District, which is rotated each year.

The Fiscal Year (FY) 2010 LMP Monitoring and Evaluation Report documents the evaluation of selected projects and programs where activities occurred during October 1, 2009 through September 30, 2010. The primary purpose of this evaluation is to determine the effectiveness of the LMP and whether changes in the LMP or in project or program implementation are necessary.

Part 1 Monitoring

Monitoring and evaluation provide knowledge and information to keep the LMP viable. Appropriate selection of indicators, and monitoring and evaluation of key results helps the Forest Service determine if the desired conditions identified in the LMP are being met. Monitoring and evaluation also help the Forest Service determine if changes should be made to goals and objectives, or monitoring methods.

The aggregated outcome of project-level work reflects progress towards achieving the desired conditions of the LMP and the contribution to Forest Service priorities. This emphasizes the importance of using the National Strategic Plan desired conditions, goals and objectives that apply to the planning area in the LMP and to use common criteria and indicators as appropriate. This approach will enable monitoring and evaluation efficiencies and provide critical information on the contribution of the Forest to the Forest Service's mission, goals, and objectives.

Monitoring and evaluation processes begin by identifying key questions Forest Service managers need to answer about land management plan implementation. Managers must also understand baseline conditions (that is, the resource conditions that were present when the record of decision was signed) versus desired conditions, and the evaluation strategies that will help determine if movement towards desired conditions is occurring. Current conditions of key environmental indicators are identified in the final environmental impact statement (USDA Forest Service 2005) along with projected trends. Actual trends in key environmental indicators are used to measure changes over time as the basis for determining when a need for change is indicated.

Table 1: Part 1 Monitoring Summary

Goal	Activity, Practice Or Effect To Be Measured	Monitoring Question	Indicators	Data Reliability	Measuring Frequency (Years)	Report Period (Years)
1.1	Vegetation Treatments in WUI Defense Zone	Has the Forest made progress in reducing the number of acres that are adjacent to development within WUI defense zones that are classified as high risk?	Acres of High Hazard and High Risk in WUI Defense Zone	High	1	5
1.2.1	Restoration of Forest Health in Fire Regime I	Is the National Forest making progress toward increasing the percentage of vegetation types that naturally occur in Fire Regime 1 in Condition Class 1?	Departure from desired fire regime, acres by Fire Regime I	Mod	5	5
1.2.2	Restoration of Forest Health in Fire Regime IV	Is the Forest making progress toward maintaining or increasing the percentage of vegetation types that naturally occur in Fire Regime IV in Condition Class 1?	Departure from desired fire regime, acres by Fire Regime IV	Mod	5	5
1.2.3	Restoration of Forest Health in Fire Regime V	Has the Forest been successful at maintaining long fire-free intervals in habitats where fire is naturally uncommon?	Departure from desired fire regime, acres by Fire Regime V	Mod	5	5
1.2.4	Restoration of Forest Health for Resilience	Has the Forest been successful at reducing mortality risk?	Mortality Risk Assessment	High	5	5
2.1	Invasive Species	Are the Forest's reported occurrences of invasive plants/animals showing a stable or decreasing trend?	Acres of treatments in reported occurrences	Mod	1	5

Goal	Activity, Practice Or Effect To Be Measured	Monitoring Question	Indicators	Data Reliability	Measuring Frequency (Years)	Report Period (Years)
3.1	Visitor Use of the Forest	Are trends in indicators and visitor satisfaction surveys indicating that the Forest has provided quality, sustainable recreation opportunities that result in increased visitor satisfaction?	Visitor Satisfaction (NVUM)	Mod	5	5
3.2	Wilderness Use	Are trends in indicators and visitor satisfaction surveys depicting the Forest has provided solitude and challenge in an environment where human influences do not impede the free play of natural forces?	Wilderness Condition, Wilderness Satisfaction (NVUM)	Mod	5	5
4.1	Mineral and Energy Development	Has the Forest been successful at protecting ecosystem health while providing mineral and energy resources for development?	Number of Mineral and Energy Projects Proposed and Approved, Minerals and Energy Success at protecting Ecosystem Health, Utility Corridor Effectiveness	Mod	1	5
4.2	Mineral and Energy Development	Has the Forest been successful at protecting ecosystem health while providing renewable resources for development?	Number of Renewable Resource Projects Proposed and Approved, Renewable Resources Success at protecting Ecosystem Health	Mod	1	5
5.1	Watershed Function	Is the Forest making progress toward sustaining Class 1 watershed conditions while reducing the number of Condition Class 2 and 3 watersheds?	Number of Watersheds in each Condition Class	High	1	5
5.2	Riparian Condition	Is the Forest increasing the proper functioning condition of riparian areas?	Change in Indicator Score for Aquatic Habitat, Aquatic Biota and Riparian Vegetation	Mod	5	5
6.1	Rangeland Condition	Is Forest rangeland management maintaining or improving progress towards sustainable rangelands and ecosystem health?	Percent of key areas in active allotments meeting or moving towards desired conditions	Mod	1	5
6.2	Biological Resource Condition	Are trends in resource conditions indicating that habitat conditions for fish, wildlife, and rare plants are in a stable or upward trend?	MIS Habitat Condition	Mod	5	5
7.1	Built Landscape Extent/ Land Adjustment	Is the Forest balancing the need for new infrastructure with restoration opportunities or land ownership adjustment to meet the desired conditions?	Land Ownership Complexity, Authorized and Administrative Infrastructure, Inventoried Unclassified Roads and Trails	High	5	5

Goal 1.1: Vegetation Treatments in WUI Defense Zone

Improve the ability of southern California communities to limit loss of life and property and recover from the high intensity wildland fires that are a natural part of this state's ecosystem.

Large fires are an inevitable and increasingly common part of southern California ecosystems. Suburban communities have been developed in more remote areas and urban areas have pushed up into the foothills in many places. This has led to an increase in the amount of Wildland/Urban Interface (WUI) areas that are at risk and in need of protection from wildland fire. A large portion of these interface areas are covered in chaparral vegetation. High intensity, stand-replacing fires are a natural part of the fire regime within these vegetation types, putting homes built here at risk even from the natural fire regime. Fire history studies are showing an increasing trend in fire occurrence.

The desired condition is to have vegetation treated to enhance community protection and reduce the risk of loss of human life, structures, improvements, and natural resources from wildland fire and subsequent floods. Firefighters should have improved opportunities for tactical operations and safety near structures, improvements, and high resource values. By providing for defensible space, public and firefighter safety is enhanced. Local jurisdictional authorities, citizen groups and the Forest Service acting together to mitigate hazardous fuel conditions in areas surrounding urban interface, urban intermix, and/or outlying improvements should be improved.

Outcome Evaluation Question

Has the Forest made progress in reducing the number of acres that are adjacent to development within WUI defense zones that are classified as high risk?

Acres of high hazard and high risk in the WUI Defense Zone

The WUI defense zone is defined in Part 3 of the LMP in standard S7, including the referenced Appendix K. The defense zone is the portion of the WUI that is directly adjacent to structures. It has a variable width which is determined at the project level up to maximum widths defined for general vegetation types in standard S7.

High hazard fuels are those that have the potential to burn with high intensity. Fire intensity affects suppression effectiveness in protecting structures in interface areas. A key strategy in the LMP is to reduce fire hazard adjacent to communities and structures to improve suppression effectiveness and provide defensible space in interface areas. Risk is related to human values or “risk of loss.” The presence of structures is the indicator of risk in this analysis.

There is no current site-specific inventory of fuel hazard within the defense zone. In addition, high hazard conditions can be dynamic, returning in as few as five years after a fire in some vegetation types. For this reason the hazard indicator is assumed to be high in all areas until a project-level assessment determines otherwise. Therefore, the monitoring task is to track the level of management effort directed at reducing fire hazard in the WUI defense zone, including keeping the inventory of the actual defense zone up-to-date.

Table 2: Fifth Year Trend of Acres of High Hazard and High Risk in WUI Defense Zone

Indicator	Baseline Acres	Acres Treated	Acres removed due to new information on absence of substantial structures	Acres added due to new information on presence of substantial structures	Acres added from growth due to maintenance backlog	Five Year Trend in High Hazard and High Risk Acres
WUI Defense Zone	94,333	15,491	0	0	0	16%

There are currently 94,333 acres of WUI Defense zone on the Forest. The acres that comprise the WUI Defense zone include areas that have high value infrastructure located on them, such as power transmission lines and California State Highways that are authorized on NFS lands. These types of infrastructure on the Forest are either essential to firefighter, public safety, and the effectiveness of fire suppression or are such high values that the vegetation is treated as WUI Defense Zone. Over the five year monitoring period 15,491 acres were treated and/or maintained in WUI Defense zone on the Forest, which is approximately 16% of the total WUI Defense zone on the Forest.

The Forest has been effective at treating vegetation in WUI Defense zone to enhance community protection and reduce the risk of loss of human life, structures, improvements, and natural resources from wildland fire and subsequent floods. The Forest worked with federal, state, and local agencies to identify priority lands to treat over the landscape. With funding support from the Forest, much of cooperating agencies' efforts were focused on private lands adjacent to the NFS boundary. The Forest worked to complement the efforts by cooperating agencies by concentrating treatment efforts on evacuation routes and strategic fuelbreaks. Over the monitoring period, the rate of treatment of WUI Defense zone in the Forest has not reached a level to meet desired conditions, and over time acres will be added back to the category of high hazard and high risk due to maintenance backlog. Project planning efforts over the monitoring period have focused on treatment within WUI Defense zone, and those projects will be implemented as funding allows over the next monitoring period.

Goal 1.2: Restoration of Forest Health

Table 3-3 of Appendix C of Part 3 in the LMP identifies Goals 1.2.1, 1.2.2, 1.2.3 as Vegetation Condition. This definition of the Goal is not supported by Part 1 of the LMP, and Table 3-3 of Appendix C of Part 3, LMP should be amended to reflect the following definitions of Goal 1.2.1: Restoration of Forest Health in Fire Regime I; Goal 1.2.2: Restoration of Forest Health in Fire Regime IV; and Goal 1.2.3: Restoration of Forest Health in Fire Regime V.

The LMP should be amended to include Goal 1.2.4: Restoration of Forest Health for Resilience and an associated outcome evaluation question in order to reflect the complexity of natural resource management on the Forest. This Goal and question will evaluate the Forest's movement toward desired conditions in regards to forest health as it relates to insect and disease outbreaks. The Forest's ability to manage for vegetation resilience and respond to insect and disease outbreaks is a large factor in moving toward desired conditions.

Restore forest health where alteration of natural fire regimes has put human and natural resource values at risk.

The current condition of the vegetation on the Forest has been influenced by a century of fire management, mostly in the form of fire suppression, as well as by other land-use practices, including logging, grazing, and mining. The interaction of climate, geology and topography has created an array of vegetation types on the Forest that ranges from dry desert scrub to high elevation alpine forests. Ensuring the health of America's forests requires the analysis, understanding, and management of complex and interrelated natural resources. Increasing human-use pressures, a continual threat from native and exotic insects and diseases, and more complex management policies make natural resource management demanding.

The long-term desired condition for the remaining unburned National Forest System (NFS) lands will be to:

1. Create forests more resistant to the effects of drought, insect and disease outbreaks and stand-killing crown fires;
2. Encourage tree recruitment that contain a species mix more like pre-settlement composition, (i.e., with a higher representation of shade-intolerant species like ponderosa pine that have declined during the period of fire suppression);
3. Recreate stand densities more like those of the presuppression era; and
4. Encourage a stand structure that emphasizes large-diameter trees.

The structure, function, and species composition of nearly all southern California plant communities are under the direct control of recurrent fire. The long-term goal of vegetation management is to perpetuate plant communities by maintaining or re-introducing appropriate fire regimes while also protecting human communities from destructive wildland fires. To accomplish this goal, the Forest Service has developed desired conditions within the framework of five major fire regimes that have been described for the United States (Schmidt et al. 2002). In this classification, fire regimes are defined primarily by the frequency (average interval between fires) and fire severity (which is related to intensity). Generally, other elements of fire regimes such as season of burning, landscape pattern, and size are not so heavily weighted in this classification. The regimes are as follows:

- Fire Regime I (0 to 35 years, low severity)
- Fire Regime II (0 to 35 years, stand replacement)
- Fire Regime III (35 to over 100 years, mixed severity fires)
- Fire Regime IV (35 to over 100 years, stand replacement)
- Fire Regime V (Over 200 years, stand replacement)

A national Condition Rating System has been developed that links fire regime to existing vegetation by evaluating the degree to which a vegetation type has departed from its ideal regime. The greater the departure, the greater the risk fire poses to the functioning of the ecosystem. The three Condition Classes are as follows:

- Condition Class 1 - Fire regimes are within a historical range (i.e., 1910 to present), and the risk of losing key ecosystem structure and function is low. Vegetation attributes (e.g., species composition and structure) remain intact and operate within the historic range.
- Condition Class 2 - Fire regimes have been moderately altered from their historic range. Fire frequencies have departed from historical frequencies by one or more return intervals (either

increased or decreased) and the risk of losing key ecosystem components is moderate. Vegetation attributes have been moderately altered from their historic averages resulting in moderate changes to one or more of the following attributes: fire size, intensity and severity, and landscape pattern.

- Condition Class 3 - Fire regimes have been significantly altered from their historical range. Fires have departed from historic frequencies by multiple return intervals. Vegetation attributes have been significantly altered from their historic range. The risk of losing key ecosystem components is high resulting in significant changes to one or more of the following fire regime attributes: fire size, intensity, severity, and landscape pattern.

Goal 1.2.1: Restoration of Forest Health in Fire Regime 1

Reduce the potential for widespread losses of montane conifer forests caused by severe, extensive, stand replacing fires.

Historically, montane conifer forests were dominated by multi-layered, old-growth stands with large-diameter trees and frequent canopy openings. Frequent, patchy, low-to moderate-intensity surface fires maintained this open structure, and species composition was well represented by light-loving conifers like ponderosa, Jeffrey and sugar pine. Fire return intervals averaged 30 to 50 years (Everett 2003). Frequent fires maintained open understories, reduced the density of shade-tolerant white fir and incense cedar, and favored recruitment of Jeffrey, ponderosa and sugar pines (Minnich 1988).

In the late 1800s, the structure and species composition of montane conifer forests changed dramatically as a result of logging and, later in the early 1900s, by fire suppression. The last 95 years of fire suppression have been unusually effective in montane conifer forests. The remarkable success of fire suppression has created an unnatural increase in the density of understory trees, especially shade-tolerant white fir and incense cedar. Increases in stand densities have fundamentally changed ecosystem processes in many of these forests. Understory competition has caused tree mortality, outbreaks of disease, and a reduction in recruitment of large overstory trees. More importantly, fires behave differently in these altered forest conditions. In the past, understory fuels burned primarily as surface fires with occasional passive crown fires and infrequent active crown fires; however, in recent decades the risk of stand-replacing crown fire events has increased dramatically because of forest-floor fuel accumulations, fuel ladders of small trees, and standing dead or dying trees. As a result, fires have become more intense and burn larger, more continuous areas.

The desired condition is that the interval between fires will be shortened in montane conifer forests to emulate historic intervals so that excessive accumulations of stand-threatening ladder and ground fuels do not develop. However, complete elimination of stand-replacing fires is not possible because during wildland fire weather, topography, and fuels create localized patches of high intensity, passive crown fires. Moreover, small areas of crown fires are desirable because they provide openings for the regeneration of shade-intolerant species. Rather, the goal will be to reduce the occurrence of extensive crown fires like those that burned in 2003. With this management emphasis, the majority of forest stands would eventually be returned from Condition Class 3 to Condition Class 1.

The desired condition will be to: (1) create forests more resistant to the effects of drought, insect and disease outbreaks and stand-killing crown fires; (2) encourage tree recruitment that contain a species mix more like pre-settlement composition, (i.e., with a higher representation of shade-intolerant species like ponderosa pine that have declined during the period of fire suppression); (3) recreate stand densities more

like those of the presuppression era; and (4) encourage a stand structure that emphasizes large-diameter trees.

Although the overall goal of fuels reduction also applies to the forested areas with growing sites that are more productive, which have high canopy cover with densely-shaded understories, they will be managed to maintain high canopy cover, as well as greater within-stand vertical (e.g., tree regeneration layers, snags) and horizontal (e.g., downed woody material) heterogeneity than in other montane conifer forests. Many wildlife species, including the California spotted owl, specifically require this type of high-cover conditions.

Outcome Evaluation Question

Is the National Forest making progress toward increasing the percentage of vegetation types that naturally occur in Fire Regime 1 in Condition Class 1?

Departure from desired fire regime, acres by Fire Regime 1

Acres in Condition Classes 2 and 3 are due to the infrequency of fires. Acres of fuel treatments and fire are therefore appropriate indicators for making progress towards this goal. Vegetation treatments envisioned by the LMP are to be designed to bring forested stands into Condition Class 1. Therefore it is assumed that if these projects are implemented as planned, acres treated, as measured by the annual indicators for this goal, will indicate progress toward the desired condition of moving these stands to Condition Class 1. Fire can be classified as prescribed and wildfire. Prescribed fire is used as a management tool to help reduce the vegetation and reintroduce fire as a natural process. Annually, those Montane Conifer areas that have had wildfire or prescribed fire will be added to Condition Class 1. The desired condition for fire is low intensity, high frequency that removes ladder fuels and reduces the risk of crown fires.

Table 3: Fifth Year Trend of Acres by Fire Regime 1

Vegetation Type	Baseline Acres	Acres Treated	Acres of Wildfire	Acres with no disturbance in last 35 years	Five Year Trend in Condition Class 1 Acres
Montane Conifer, Regime 1	189,892	17,595	89	172,208	+17,684

The vegetation types that are in Fire Regime 1 were compared with the wildfires, prescribed burning, and mechanical treatments that have occurred over the last 35 years. The areas that overlapped were considered within Condition Class 1. The baseline acres are not considered in Condition Class 1 unless they have been treated or had wildfire occur on them over the last 35 years.

The baseline amount of vegetation types that are in Fire Regime 1 on the Forest is 189,892 acres. Over the five year monitoring period, 17,595 acres were treated and/or maintained either through mechanical means or prescribed burning and 89 acres had low intensity wildfire burn on the Forest, which is approximately 9% of vegetation in Fire Regime 1 on the Forest, for an average of 3,536 acres per year. On average, a minimum of 5,425 acres need to be treated or have fire occur on them annually to ensure that the vegetation types in Fire Regime 1 are in Condition Class 1 over the 35 year disturbance interval. Although progress has been made, at the current rate, management has not reached a sustainable level of treatment to meet desired conditions.

Goal 1.2.2: Restoration of Forest Health in Fire Regime 4

Reduce the number of acres at risk from excessively frequent fires while improving defensible space around communities.

A variety of vegetation types and habitats are identified as being under the influence of Fire Regime 4.

The desired condition for chaparral is to establish a diversity of shrub age classes in key areas near communities to improve the effectiveness of fire suppression operations. Adequate defensible space around communities could greatly reduce the risk of structure loss, as well as improve safety for residents. Thus, at the urban interface there will be a management emphasis on direct community protection. In addition to protecting urban areas, strategically placed blocks of young chaparral around certain forest types (e.g., montane conifer and bigcone Douglas-fir) could be used to reduce the risk of crown fires. The desired condition for coastal sage scrub is to increase the average interval between fires thereby reducing the area at risk of type conversion. Fire is the dominant regenerative force in chaparral. Historic and prehistoric fire-return intervals in chaparral likely ranged from 40 to 60 years (Minnich 1988). The result of an increase in human-caused ignitions has been a decrease in the average fire return interval to 30 to 40 years or less in some regions (Keeley and others 1999a). Repeated burning first eliminates non-sprouting, obligate-seeding shrubs that require enough time between fires to mature, reproduce and restock the seedbank. On the other hand, resprouting shrubs do not depend as heavily on seedling recruitment and can survive short-interval fires, at least for a while, but they cannot endure frequent fires indefinitely and eventually disappear. Grasslands or the mixture of shrubs and grasses that replace both chaparral and coastal sage scrub become self-perpetuating, since shrubs are unable to re-colonize in the face of frequent, seedling-killing fires and heavy competition from nonnative grasses. This shrub-to-grass conversion has been most visible and widespread in the foothills of the San Gabriel and San Bernardino Mountains and along heavily-used highway corridors where ignition rates are unusually high.

For closed-cone conifers found in these habitats, the desired condition is to maintain 35- to 100-year intervals between stand-replacing fires depending on the life history characteristics of each species. Coulter pine is the most widespread serotinous conifer on the Forest. This pine exhibits wide cone-habit variation, ranging from near complete serotiny where it grows in highly flammable chaparral and canyon live oak forests to mostly open cones in forests and woodlands subject to infrequent, low- to moderate-intensity surface fires (Borchert 1985).

Coulter pine exhibits numerous fire-adapted traits: seedlings establish profusely after periodic crown fires; it has a relatively short life span (50 to 100 years); seedlings thrive in full sunlight; and it bears serotinous cones which liberate seeds when subjected to intense heat. As a result, Coulter pine is more compatible with the chaparral fire regime than bigcone Douglas-fir. The biggest threats to Coulter pine (and to knobcone pine and the closed-cone cypresses) are multiple fires in short succession (for example, less than 25 years apart) or, more rarely, complete fire exclusion. Multiple, short-interval fires kill trees before an adequate closed-cone seed crop has developed (Sawyer and others 1988, Thorne 1988). Like Coulter pine, knobcone pine also produces serotinous cones and is even more dependent on fire for seed dispersal and seedling recruitment (Vogl and others 1988).

Outcome Evaluation Question

Is the Forest making progress toward maintaining or increasing the percentage of vegetation types that naturally occur in Fire Regime 4 in Condition Class 1?

Departure from desired fire regime, acres by Fire Regime 4

Acres in Condition Classes 2 and 3 are due to excessively frequent fires. Acres of fuel treatment, therefore, are not good indicators of making progress toward this goal. Improved suppression and prevention effectiveness over time may lead to improving conditions where long-term trends will indicate progress toward the desired condition. Those areas that have a fire return interval that is greater than 35 years are in Condition Class 1.

Table 4: Fifth Year Trend of Acres by Fire Regime 4

Vegetation Type	Baseline Acres	Acres of treatment with return interval greater than 35 years	Return Interval Less than 35 years		Five Year Trend in Condition Class 1 Acres
			Acres of treatment	Acres of Wildfire	
Chaparral/ Costal Sage Scrub/ Closed-cone conifer/ Lower montane; Regime 4	479,169	3,774	7,508	249,867	+221,794

The vegetation types that are in Fire Regime 4 were compared with the wildfires, prescribed burning, and mechanical treatments that occurred in those areas. The areas that overlapped were then evaluated; and if the disturbance return interval was less than 35 years, those areas were subtracted from the baseline acres. The baseline acres are not considered in Condition Class 1 unless the disturbance interval is greater than 35 years.

The baseline amount of vegetation types that are in Fire Regime 4 on the Forest is 479,169 acres; 221,794 acres are in Condition Class 1, or approximately 46%. Over the five year monitoring period, 3,774 acres were treated either through mechanical means or prescribed burning at a return interval greater than 35 years. Over that same period, 7,508 acres were treated either through mechanical means or prescribed burning at a return interval less than 35 years.

Goal 1.2.3: Restoration of Forest Health in Fire Regime 5

Maintain long fire-free intervals in habitats which are slow to recover.

A variety of vegetation types fall into Fire Regime 5. The desired conditions for alpine and subalpine habitats are to (1) maintain long fire-free intervals to encourage natural, sporadic tree recruitment and (2) limit the effects of human use, especially trampling of fragile alpine plant communities. The Forest Service should maintain long fire-free intervals in desert types and prevent frequent fires from eliminating them or significantly reducing their distributions.

Pinyon-juniper woodlands are stable and self-replacing. Unlike other pines, pinyon is highly shade tolerant. Pinyon-juniper woodlands do not carry fire readily. When fires do occur, they are typically intense, stand-replacing events. Pinyon-juniper woodlands recover very slowly from crown fires. Fires historically have been infrequent in interior desert habitats. In recent years, however, several large fires have burned in pinyon woodlands and forests in the San Bernardino Mountains and Peninsular Ranges. Some woodlands have been reduced in size because of an increase in human-caused wildfires (Beauchamp 1986, Stephenson and Calcarone 1999). The current fire regime in pinyon-juniper woodlands is largely controlled by proximity to urbanized areas and by the level of human use of this vegetation type.

Bigcone Douglas-fir and canyon live oak typically grow together in mesic sites such as shaded canyons, draws, old landslides, or on steep north- and east-facing aspects. Fire is the dominant disturbing force shaping lower montane forests. Because these forests frequently occur as small patches within chaparral-dominated landscapes, lower montane forest fire regimes are heavily influenced by surrounding chaparral. For example, fires rarely start in bigcone Douglas-fir forests but instead spread into them from the surrounding chaparral (Minnich 1988). Because it has thick bark and the ability to canopy-sprout, bigcone Douglas-fir is relatively fire-resistant (Gause 1966). Nevertheless, periodic wildfires have restricted this species to protected areas on steep, ravelly slopes with little understory vegetation or on rock outcrops and landslides. For the most part, the high-intensity wildfires that rage in chaparral only kill trees on the periphery of bigcone Douglas-fir populations or, if they burn into the stands, kill understory trees (Minnich 1977); however, occasionally fires destroy entire populations. Regeneration in these stands, if it occurs at all, is typically slow and highly unpredictable (Minnich 1980). The primary management concern in lower montane habitats is the loss of bigcone Douglas-fir populations in stand-replacing wildfires.

Outcome Evaluation Question

Has the Forest been successful at maintaining long fire-free intervals in habitats where fire is naturally uncommon?

Departure from desired fire regime, acres by Fire Regime 5

Acres in Condition Classes 2 and 3 are due to excessively frequent fires. Acres of fuel treatment, therefore, are not good indicators of making progress toward this goal. Improved suppression and prevention effectiveness over time may lead to improving conditions where long-term trends will indicate progress toward the desired condition. Those areas that do not have a fire return interval that is too frequent, greater than 200 years, are in Condition Class 1. Fires that occur too frequently lead to vegetation type changes in Fire Regime 5. The extent of vegetation in Fire Regime 5 is measured geographically to determine the trend in populations on the Forest.

Table 5: Fifth Year Trend of Acres by Fire Regime 5

Vegetation Type	Baseline Acres	Return Interval Less than 200 years		Five Year Trend in Condition Class 1 Acres
		Acres of treatment	Acres of Wildfire	
Alpine and Subalpine/ Desert woodlands, forests and scrub/ Bigcone Douglas-fir; Regime 5	18,090	0	11,990	6,100

The vegetation types that are in Fire Regime 5 were compared with the wildfires, prescribed burning, and mechanical treatments that occurred in those areas. The areas that overlapped were then evaluated; and if the disturbance return interval was less than 200 years, those areas were subtracted from the baseline acres. The baseline acres are not considered in Condition Class 1 unless the disturbance interval is greater than 200 years.

The baseline amount of vegetation types that are in Fire Regime 5 on the Forest is 18,090 acres. Over the five year monitoring period, 0 acres were treated either through mechanical means or prescribed burning and 11,990 acres had a return interval less than 200 years, primarily due to wildfire. The areas that did not have a return interval less than 200 years are considered to be in Condition Class 1, which is approximately 34% of vegetation types in Fire Regime 5 on the Forest.

Goal 1.2.4: Restoration of Forest Health for Resilience

The recent, historically unprecedented drought has dramatically increased tree and chaparral mortality on the four southern California national forests. Drought-weakened trees became increasingly vulnerable to attack by insects. The drought began in 1999. By 2001, tree mortality was apparent in the San Bernardino Mountains, in the eastern portion of the San Gabriel Mountains, and in the San Jacinto Mountains.

Although equally severe droughts likely occurred prior to European settlement, this drought is thought to be unprecedented in its effects. The Forest is artificially dense and in many places is highly impacted by air pollution, leading to greater mortality than would likely have occurred under presettlement stand conditions.

The desired condition is to protect natural resource values at risk due to insect or disease loss at levels outside of the historic range of variability or where needed to improve habitat.

Outcome Evaluation Question

Has the forest been successful at reducing mortality risk?

Mortality Risk Assessment

When assessing risk as it relates to forest health, risk is often composed of two parts: the probability of a forest being attacked (susceptibility) and the probability of resulting tree mortality (vulnerability). The National Insect and Disease Risk Map project (NIDRM) comprises 188 models which attempt to predict how individual tree species will react to various mortality agents. The models, in turn, are the interactions of predicted agent behavior with known forest and climatic parameters (criteria). The most widely used forest parameters for insect models in NIDRM were stand basal area (BA), stand density index (SDI), and tree diameter or its surrogate, quadratic mean diameter (QMD). Plot data were interpolated to create uniform 'surfaces' that capture natural variations in forest parameters. Disease models include tree host, alternate host, and sporulation host layers, BA, SDI, and tree diameter as its surrogate, QMD, average yearly relative humidity, seasonal precipitation, stress index, and for introduced diseases, current disease distributions.

See Figure B-1: 2006 National Insect and Disease Risk Map in Appendix B.

Host tree species layers were built from USDA Forest Inventory Analysis data at a scale of 30 m and resampled at 240 m for the 2012 Insect and Disease Risk Map. Measurements of basal area (> 1 inch), SDI (>1 inch), QMD, and percent host were used to build host layers and the layers were later validated by regional vegetation mappers. Climatic data layers include 30-year averages of monthly and yearly maximum, minimum, and mean temperature, monthly and yearly precipitation and relative humidity, frequency of droughts lasting 3 years, and departures from normal moisture balance for sliding 4-year periods based on precipitation, soil characteristics, and transpiration.

Insect and disease models were built for specific host species and subsequently combined to show overall risk of mortality to all agents (e.g. probability that there will be basal area loss >25% over the next 15 years). Individual models included susceptibility and vulnerability models. These models utilized total SDI, percent host curves, threshold for bark beetle-caused tree mortality, QMD curves; and less frequently, drainage index, slope position index, annual precipitation, and three year drought frequency. Parameters chosen for each model were ranked and weighted, functions defined for ranges of parameter values, and risk attributed of all the parameter added to determine the model's risk of loss for each pixel

within the Forest. Insect and disease models showing risk for the Forest included: mountain pine beetle on lodgepole pine and sugar pine, western pine beetle on Coulter pine and ponderosa pine; Jeffrey pine beetle on Jeffrey pine; Ips beetle species on pinyons; fir engraver on white fir; Douglas-fir tussock moth on white fir; and goldspotted oak borer on California black oak, coast live oak diseases modeled that do not currently impact the Forest included sudden oak death and white pine blister rust. Risk from other diseases, including root diseases, is included within the models for bark beetles. For example, the fir engraver model uses parameters that also predict Heterobasidion root disease and fir leafy mistletoe. Since these diseases predispose trees to fir engraver attack and separate models would double-count risk to the fir host, separate models were not developed.

Forest health trends will be identified by comparing the NIDRM maps and cross referencing with previous and current mortality within the reporting period. The general trend that is derived from comparing the NIDRM maps can indicate where management has been effective and where management should be focused in the future. The five year trend will then inform the Forest if it is moving toward desired conditions. If the five year trend shows an increase in the risk of mortality, evaluation will need to determine if a trigger has been reached, thereby requiring an amendment or revision of the LMP.

Goal 2.1: Invasive Species

The Forest has not been able to complete an inventory of invasive plants and animals over the monitoring period and therefore is not able to report if management is moving toward desired conditions. The LMP should be amended by changing the outcome evaluation question for Goal 2.1: Invasive Species. The new question uses the aggregated effectiveness of treatments over the five year monitoring period to determine the Forest's effectiveness at moving toward desired conditions.

Reverse the trend of increasing loss of natural resource values due to invasive species.

Invasive nonnative species are animal and plant species with a high capacity for reproduction and spread at the expense of native species. They are introduced into an area in which they did not evolve and in which they have few or no natural enemies to limit their reproduction and spread. These species can cause environmental harm by significantly changing ecosystem composition, structure, and function. They can prey upon, consume, harm, or displace native species. Many invasive nonnative species are well established on the Forest and are difficult to control or eradicate. Some species (such as bullfrogs, starlings, arundo, cheatgrass and black mustard) are so prevalent they may always persist. A continuing threat is the potential for introduction of new invasive species and the spread of those that are currently present.

The desired condition is that the structure, function, and composition of plant communities and wildlife habitats are not impaired by the presence of invasive nonnative plants and animals.

Outcome Evaluation Question

Are the Forest's reported occurrences of invasive plants/animals showing a stable or decreasing trend?

Acres of treatments in reported occurrences

The indicator for determining if the Forest is moving toward the desired conditions is the number of acres of reported occurrences that have been treated. Recently, efforts to prevent, control and eradicate these species have increased, and more emphasis has been given to the management of invasive nonnative

animals and plants at the county, state and federal levels. Education efforts are beginning to expand in cooperation with state and county partnerships.

The five year trend will be measured by: establishing a baseline for the acres of reported occurrences of invasive plant and animal species; subtracting the areas that have been effectively treated; and adding areas where new presence of invasive species has been reported. The five year trend will then inform the Forest if they are moving toward desired conditions. If the five year trend shows a decrease in the number of acres of invasive species treated, evaluation will need to determine if a trigger has been reached, thereby requiring an amendment or revision of the LMP.

Table 6: Baseline Acres of Treatments in Reported Occurrences of Invasive Species

Indicator	Baseline Reported Occurrences	Acres of treatment	Acres added due to new information on presence	Fifth year trend
Acres of invasive plants/ animals	1,176	1,069		

Over the monitoring period, 1,176 acres were entered into the database of record for invasive plant and animal occurrences on the Forest, with an average of 235 acres per year. The Forest treated 1069 acres of invasive plants and animals over the monitoring period, with an average of 214 acres per year. The capability for treating invasive plants and animals on the Forest increased. The reported occurrences do not provide an inventory of invasive plant and animal species on the Forest, and therefore do not indicate if management has been effective at preventing the introduction of new species or the colonization of new areas. The indicator does show the management actions over the monitoring period, and the trend can demonstrate whether or not the Forest is moving toward desired conditions by increasing the capacity over time in order to reach an inventory of invasive plants and animals.

Goal 3.1: Managed Recreation in a Natural Setting

Provide for Public Use and Natural Resource Protection.

Management of recreation on the Forest has traditionally been focused on the areas receiving the most intensive use and thus are more vulnerable to resource impacts. As surrounding populations have soared, the Forest has become a primary source of natural open-space based recreation activities. Limited access due to steep topography and dense chaparral has led to a pattern of generally low levels of use across most of the landscape. Recreation is highly concentrated in areas that are relatively flat and have roaded access (e.g., valley bottoms and forested mountain valleys and plateaus). In addition, water is an attraction that draws large crowds in many areas. This concentrated and unregulated use has become a concern, especially where sensitive natural resources may be disturbed.

Desired conditions for managing recreation include accommodating the increased demand for recreation within the capacity of the land to support it. An emphasis on natural resource protection improves resource conditions through increased regulation of recreation use. Improved recreation infrastructure is designed to direct use away from sensitive areas or, where this is not possible, minimize adverse effects. Expansions in recreation infrastructure are balanced by restoration and removal of unneeded facilities that do not meet user needs or are in conflict with resource protection needs. Increases in roaded acres over time should be low, as defined by the road density analysis.

Outcome Evaluation Question

Are trends in indicators and visitor satisfaction surveys indicating that the National Forest has provided quality, sustainable recreation opportunities that result in increased visitor satisfaction?

Visitor Satisfaction from National Visitor Use Monitoring (NVUM)

A long-term indicator is the visitor satisfaction from the NVUM survey. Outdoor recreation is a social interaction of people with nature (with or without other people present) that contributes to their satisfaction and physical/mental well-being. As such it was difficult to derive specific physical indicators for this activity. Forest management of recreation is to provide opportunities for people to have quality experiences and it was thought that the best measure of that is their satisfaction.

An important element of outdoor recreation program delivery is evaluating customer satisfaction with the recreation setting, facilities, and services provided. Satisfaction information helps managers decide where to invest in resources and to allocate resources more efficiently toward improving customer satisfaction. Satisfaction is a core piece of data for national- and forest-level performance measures. To describe customer satisfaction, several different measures are used. Recreation visitors were asked to provide an overall rating of their visit to the national forest, on a 5-point Likert scale. About one-third of visitors interviewed on the forest rated their satisfaction with fourteen elements related to recreation facilities and services, and the importance of those elements to their recreation experience. For the 2003 NVUM, the Likert scale for performance ranged from poor to very good. For the 2009 NVUM, the Likert scale for performance ranged from very dissatisfied to very satisfied.

The satisfaction elements most readily controlled by managers were aggregated into four categories: developed facilities, access, services, and visitor safety. The aggregate measure is called “Percent Satisfied Index (PSI)”, which is the proportion of all ratings for the elements in the category where the satisfaction ratings had a numerical rating of 4 or 5. Conceptually, the PSI indicator shows the percent of all recreation customers who are satisfied with agency performance. The agency’s national target for this measure is 85%.

Table 7: Percent Satisfaction Index scores for aggregate categories (2003)

Items Rated	Satisfied Survey Respondents (%)	
	Developed Sites *	Undeveloped Areas (GFAs)
Developed Facilities (includes restroom cleanliness and facility condition)	85.1	80.5
Access (includes parking availability, parking lot condition, road condition and trail condition)	87.2	92.9
Services (includes availability of information, signage, employee helpfulness)	76.6	74.4
Perception of Safety	93.8	94.7

This is a composite rating. It is the proportion of satisfaction ratings scored by visitors as satisfied or very satisfied. It is computed as the percentage of all ratings for the elements within the grouping that are at or above the target level, and indicates the percent of all visits where the person was satisfied with agency performance.

* This category includes both Day Use and Overnight Use Developed Sites.

The 2003 NVUM indicated satisfaction with agency performance in regards to Developed Sites at 85.1% for Developed Facilities, 87.2% for Access, 76.6% for Services, and 93.8% for Perception of Safety. For

Undeveloped Areas/ General Forest Areas, satisfaction is at 80.5% for Developed Facilities, 92.9% for Access, 74.4% for Services, and 94.7% for Perception of Safety.

Table 8: Percent Satisfaction Index scores for aggregate categories (2009)

Items Rated	Satisfied Survey Respondents (%)	
	Developed Sites *	Undeveloped Areas (GFAs)
Developed Facilities (includes restroom cleanliness and facility condition)	90.1	70.3
Access (includes parking availability, parking lot condition, road condition and trail condition)	76.5	81.2
Services (includes availability of information, signage, employee helpfulness)	77.3	64.9
Perception of Safety	87.7	87.8

This is a composite rating. It is the proportion of satisfaction ratings scored by visitors as satisfied or very satisfied. It is computed as the percentage of all ratings for the elements within the grouping that are at or above the target level, and indicates the percent of all visits where the person was satisfied with agency performance.

* This category includes both Day Use and Overnight Use Developed Sites.

The 2009 NVUM indicated satisfaction with agency performance in regards to Developed Sites at 90.1% for Developed Facilities, 76.5% for Access, 77.3% for Services, and 87.7% for Perception of Safety. For Undeveloped Areas/ General Forest Areas, satisfaction is at 70.3% for Developed Facilities, 81.2% for Access, 64.9% for Services, and 87.8% for Perception of Safety.

The five year trend for Developed Sites is an increase by 5% in visitor satisfaction for Developed Facilities, a reduction in satisfaction for Access by 10% and Perception of Safety by 6%, and approximately stable for Services. For Undeveloped Areas/ General Forest Areas, the five year trend is a reduction for all four categories: 10% for Developed Facilities, 11% for Access, 10% for Services, and 7% for Perception of Safety. Most categories in the 2009 NVUM are below the 85% national target.

The trends for Developed Facilities and Undeveloped Areas/ General Forest Areas indicate that the Forest has in general not been entirely effective at providing for public use. Through this indicator the Forest is not able to determine the effectiveness of protection for natural resource, or how well the direction within the LMP is being implemented.

In order to assess the ability of the Forest to protect natural resources while providing for public use, the Aquatic Habitat, Aquatic Biota, and Riparian Vegetation indicators from Goal 5.2 and the Habitat Fragmentation, Aquatic Habitat, and Riparian Habitat indicators from Goal 6.2 will be evaluated to determine movement toward desired conditions by protecting resources. The baseline for Goal 5.2 is that 35% of Riparian Conditions are in the Good/ Functioning condition. A positive trend will indicate if the Forest is moving toward desired conditions for Goal 5.2. The Habitat Fragmentation, Healthy Diverse Habitats, Aquatic Habitat, and Riparian Habitat indicators for Goal 6.2 will determine if recreation management is effective at protecting resources. Habitat fragmentation on the Forest has been reduced over the monitoring period through consolidation of NFS lands and decommissioning of roads and trails, and as indicated by the improvement of Mountain lion habitat. The amount of healthy diverse habitats on the Forest is stable to slightly increasing, as indicated by Mule deer habitat. Aquatic habitat on the Forest is stable, as indicated by Arroyo toad habitat and the watershed condition indicators. Riparian habitat

could be declining on the Forest, as indicated by Song sparrow habitat and the watershed condition indicators.

Goal 3.2: Wilderness

Retain a Natural Evolving Character within Wilderness.

There are 8 existing wilderness areas on the Forest, with the addition of the South Fork San Jacinto and Cahuilla Mountain Wildernesses in 2009, totaling more than 156,178 acres and comprising 23.6% of the Forest. Three wildernesses on the Forest are Class 1 areas defined by the 1977 Clean Air Act. The availability of land outside wilderness capable of providing high-quality, primitive, wildland recreation experiences has decreased over time. Human caused sights and sounds are an impact on wilderness experiences, typically disrupting the primitive solitude that visitors seek. Finally, people's perception of wilderness values is shifting. Traditionally, wilderness was viewed primarily as an area to satisfy primitive recreation needs. Currently, many people see wilderness as the highest level of protection for biodiversity, ecosystems, plants, wildlife, air resources, and watershed values.

Desired conditions for wilderness include: Ecological processes occur untrammelled. Human influences do not impede the free play of natural forces in the ecosystem. Management activities prescribed for enhancement and recovery of threatened and endangered species and for the re-introduction of extirpated species are supported. Vegetation management maintains or mimics natural processes for the purpose of achieving wilderness fire management objectives. Reduce to an acceptable level, the risks and consequences of wildland fire within wilderness or escaping from wilderness. Outstanding opportunities for solitude and inspiration are characteristic and stable, or increasing. Primitive and unconfined recreation opportunities that offer physical and mental challenges are stable or increasing. Remediate and prevent human-caused impairments to air quality values including visibility, ozone injury, and acid and nitrogen deposition. Suppression of wildland fires and ignition of prescribed fires in wilderness will consider impacts to human health and air quality. People are connected to the values of wilderness resulting in support and stewardship for these values. Wilderness is used as a benchmark for ecological studies.

Outcome Evaluation Question

Do trends in indicators and visitor satisfaction surveys indicate the Forest has provided solitude and challenge in an environment where human influences do not impede the free play of natural forces?

Wilderness Condition

Wilderness condition will be used to indicate the effectiveness of the Forest at moving toward desired conditions. Wilderness Condition will be evaluated from a combination of the wilderness section of the NVUM for visitor satisfaction, national reporting systems for management actions in wilderness, Watershed Condition Assessment, and accomplishment data related to the National 10-year Wilderness Stewardship Challenge.

An important element of outdoor recreation program delivery is evaluating customer satisfaction with the recreation setting, facilities, and services provided. Satisfaction information helps managers decide where to invest in resources and to allocate resources more efficiently toward improving customer satisfaction. Satisfaction is a core piece of data for national- and forest-level performance measures. To describe customer satisfaction, several different measures are used. Recreation visitors were asked to provide an

overall rating of their visit to the Forest, on a 5-point Likert scale. About one-third of visitors interviewed on the forest rated their satisfaction with fourteen elements related to recreation facilities and services, and the importance of those elements to their recreation experience. For the 2003 NVUM, the Likert scale for performance ranged from poor to very good. For the 2009 NVUM, the Likert scale for performance ranged from very dissatisfied to very satisfied.

The satisfaction elements most readily controlled by managers were aggregated into four categories: developed facilities, access, services, and visitor safety. The aggregate measure is called “Percent Satisfied Index (PSI)”, which is the proportion of all ratings for the elements in the category where the satisfaction ratings had a numerical rating of 4 or 5. Conceptually, the PSI indicator shows the percent of all recreation customers who are satisfied with agency performance. The agency’s national target for this measure is 85%.

Table 9: Percent Satisfaction Index scores for aggregate categories (2003)

Items Rated	Satisfied Survey Respondents (%)	
	Wilderness	
Developed Facilities (includes restroom cleanliness and facility condition)	79.2	
Access (includes parking availability, parking lot condition, road condition and trail condition)	87.8	
Services (includes availability of information, signage, employee helpfulness)	81.9	
Perception of Safety	98	

This is a composite rating. It is the proportion of satisfaction ratings scored by visitors as satisfied or very satisfied. It is computed as the percentage of all ratings for the elements within the grouping that are at or above the target level, and indicates the percent of all visits where the person was satisfied with agency performance.

The 2003 NVUM indicated satisfaction with agency performance in regards to Wilderness at 79.2% for Developed Facilities, 87.8% for Access, 81.9% for Services, and 98% for Perception of Safety.

Table 10: Percent Satisfaction Index scores for aggregate categories (2009)

Items Rated	Satisfied Survey Respondents (%)	
	Wilderness	
Developed Facilities (includes restroom cleanliness and facility condition)	59.9	
Access (includes parking availability, parking lot condition, road condition and trail condition)	91.7	
Services (includes availability of information, signage, employee helpfulness)	76.7	
Perception of Safety	98.9	

This is a composite rating. It is the proportion of satisfaction ratings scored by visitors as satisfied or very satisfied. It is computed as the percentage of all ratings for the elements within the grouping that are at or above the target level, and indicates the percent of all visits where the person was satisfied with agency performance.

The 2009 NVUM indicated satisfaction with agency performance in regards to Wilderness at 59.9% for Developed Facilities, 91.7% for Access, 76.7% for Services, and 98.9% for Perception of Safety.

The five year trend for Wilderness is a reduction in visitor satisfaction for Developed Facilities by 20% and Services by 5%, an increase in satisfaction for Access by 4%, and approximately stable for Perception of Safety. The trend is a reduction in satisfaction for Developed Facilities; although, all facilities are outside of wilderness and these results are not a good indicator of the Forest’s movement toward desired conditions for wilderness management. Overall, the trend is stable for visitor satisfaction in Wilderness.

In order to move toward desired conditions, the Forest is working to improve wilderness condition through the 10-Year Wilderness Stewardship Challenge (10YWSC). The 10YWSC was approved by Chief Dale Bosworth and the National Leadership Team in the fall of 2003 with the stated goal of having all 406 wildernesses in existence at that time managed to a “minimum stewardship level” by 2014, which coincides with the 50th anniversary of the Wilderness Act. The “minimum stewardship level” is reached when a wilderness scores 60-points or higher of a total possible 100-points on ten elements, such as fire planning, recreation site inventory and baseline workforce. In the first year of the 10YWSC, only 44 wildernesses, or 10.8% of the total, were managed to this level. After five years, national accomplishment has improved from 44 wildernesses “managed to a minimum stewardship level” to 122 wildernesses managed to this level (30.0% of all wildernesses).

Table 11: 10-Year Wilderness Stewardship Challenge (2009)

Progress Classes	Wilderness
Wildernesses “At Or Above” Standard	San Gorgonio Wilderness
Wildernesses “Near” Standard	Cucamonga Wilderness
Wildernesses “Approaching” Standard	San Jacinto Wilderness Santa Rosa Wilderness
Wildernesses Not Reporting	Bighorn Mountain Wilderness

Every Region noted that having dedicated and experienced wilderness personnel was critical to the success in the Challenge that has been attained thus far. Seasoned wilderness employees have the skills, know the land, are aware of the issues, understand the purpose of wilderness and most importantly, are passionate about the work; people work best on what they care about most.

Progress has been made within Regions through the use of various strategies, including the setting of specific and definable timelines for completion of goals, focusing efforts on specific Elements of the Challenge, focusing resources on lagging wilderness areas, dedicating staff to wilderness stewardship (through the use of detailers, trainers, strike teams, and resource specialists), and increasing cooperation between wilderness programs on different administrative units. One key to improved stewardship is successful integration—collaboration between wilderness personnel and specialists from other resource program areas, as well as interdisciplinary funding.

Additionally, the Forest is moving toward desired conditions by ensuring that annual use in wilderness is consistent with law, regulation and policy. Any approval of the use of motorized equipment or mechanical transport for administrative purposes (e.g. rock drill, generator, helicopter, chainsaw for such projects as trail and bridge repair, etc.) must be based on law, regulation, and policy regarding responsible wilderness stewardship. Any approved action requiring use of motorized equipment or mechanical transport in wilderness shall have been determined to be the minimum necessary for administration of the area to meet the purposes of the Wilderness Act. Line Officers are responsible for reviewing the proposal, understanding the need, protecting the resource, providing for safety, and being accountable for these decisions. Categories that may constitute emergencies include fire suppression, prescribed burns, health and safety, law enforcement involving serious crime or fugitive pursuit, removal of deceased persons, and aircraft accident investigations.

Given the relative stability in visitor satisfaction, the additional actions that the Forest and Region are working on to improve wilderness condition, and the compliance with law, regulation and policy, the

Forest is moving toward desired conditions by providing solitude and challenge in an environment where human influences do not impede the free play of natural forces.

Goal 4.1: Energy Transmission and Production, and Mineral Development

To be consistent with the other Goals, Goal 4.1a: Mineral and Energy Development should be amended to Goal 4.1: Energy Transmission and Production, and Mineral Development. The addition of Energy Transmission better reflects the use on the Forest, and the evaluation will indicate if the Forest is moving toward desired conditions.

Administer Minerals and Energy Resource Development while protecting ecosystem health.

A wide variety of minerals and energy resources are found on Forest, including precious minerals, geothermal, high quality metallurgical, chemical and cement grade carbonate rocks, and mineral materials. The Forest has an essential role in contributing to an adequate and stable supply of mineral and energy resources while continuing to sustain the land's productivity for other uses and its capability to support biodiversity goals.

The desired condition is that approved minerals and energy developments are managed to facilitate production of mineral and energy resources while minimizing adverse impacts to surface and groundwater resources and protecting or enhancing ecosystem health and scenic values.

Outcome Evaluation Question

Has the National Forest been successful at protecting ecosystem health while providing mineral and energy resources for development?

Number of Mineral and Energy Projects Proposed and Approved

The number of mineral and energy projects proposed and approved will be used to demonstrate the baseline of impacts to resources. The screening of projects, the difference between the proposed and approved projects, is the first indicator of the protection of ecosystem health. Screening is used to ensure that projects comply with the LMP and other applicable laws, regulations, and policies.

At the time of the decision on the LMP, four mining Plans of Operation were approved on the Forest. Over the last five years three more Plans of Operation have been proposed and approximately 180 Notices of Intent have been reviewed. The existing and proposed Plans of Operation on the Forest are:

- Proposal for the Mitsubishi South Quarry, currently being analyzed
- Proposal for the Omya expansion of Butterfield 3 Quarry, currently being analyzed
- Proposal for the Blackhawk Quarry, operator withdrew Plan of Operation because the proposal does not occur on NFS lands.
- Approval of the Omya Sentinel Quarry Plan of Operation in 2003
- Approval of the Omya Inc. Quarries Plan of Operation in 1987 following operation without an approved Plan of Operation
- Approval of the Specialties Minerals Inc. Quarries Plan of Operation in 1987 following operation without an approved Plan of Operation
- Approval of the Mitsubishi 17A and 17B Quarry Plan of Operation in 1983

As part of the Mitsubishi Cement Corporation 17A and 17B Quarry Plan of Operation 38 acres of habitat were set aside in a conservation easement held by Mitsubishi for plant species in the Carbonate Habitat Management Strategy.

The Forest, currently, has very few energy development facilities, but has large corridors of energy transmission. As such, indicators will be developed over the next five years to determine if the Forest is facilitating opportunities while protecting resources. As data becomes available, the Forest will develop a baseline number of energy transmission and production projects proposed and approved, the baseline acres of habitat conserved for energy transmission and production projects, and a baseline number of utility corridors plus the miles of transmission lines outside of utility corridors in order to determine if the Forest is moving toward desired conditions.

Minerals and Energy Success at protecting Ecosystem Health

The number of acres of habitat conserved as part of mitigation for mineral and energy projects will be used to indicate the effectiveness of the Forest at protecting ecosystem health. This indicator demonstrates the trend in habitat protection from approved mineral and energy development projects.

Outcome Evaluation Question

Are designated utility corridors being fully utilized prior to designation of new corridors serving similar market needs?

Utility Corridors

The indicator for the outcome evaluation question identified for Goal 4.2: Energy Infrastructure in Table 3-3 of Appendix C of Part 3 in the LMP is utility corridors. This indicator is part of both Goal 4.1: Energy Transmission and Production and Mineral Development and Goal 7.1: Natural Areas in an Urban Context.

The five year trend will be determined by taking the baseline number of utility corridors plus the miles of transmission lines outside of utility corridors and comparing the five year level of utility corridors plus the miles of transmission lines outside of utility corridors. The five year trend will then inform the Forest if they are moving toward desired conditions. If the five year trend shows a increase in the number of utility corridors plus the miles of utilities outside of utility corridors, evaluation will need to determine if a trigger has been reached, thereby requiring an amendment or revision of the LMP.

Goal 4.2: Renewable Resource Energy Development and Transmission

Table 3-3 of Appendix C of Part 3 in the LMP identifies Goal 4.2 as Energy Infrastructure Support. This definition of the Goal is not supported by Part 1 of the LMP, and will not be evaluated in detail in this report because it is included in the evaluation of other Goals in this report. The LMP should be amended to remove the definition of Goal 4.2 as Energy Infrastructure Support, and Goal 4.1b: Renewable Resource Energy Development and Transmission should be changed to Goal 4.2.

Administer Renewable Energy Resource developments while protecting ecosystem health.

Wind energy can be developed to generate mechanical power or electricity. Solar energy can be developed to provide heat, light, hot water, electricity and cooling for many uses. Hydroelectric power can be developed to provide both mechanical power and electricity for a multitude of uses. The Forest has

an essential role in contributing to an adequate and stable supply of renewable energy resource developments while continuing to sustain the land's productivity for other uses and its capability to support biodiversity.

The desired condition for solar, wind, and hydroelectric energy resources is that the Forest will support the use of these renewable resources to help meet the growing energy needs in southern California while protecting other resources. The desired condition for biomass is that as the Forest generates timber and chipped woody material as a by-product of ecosystem management, healthy forest restoration, fuels management, and community protection projects, that biomass will be available for energy co-generation when other higher value options are not available.

Outcome Evaluation Question

Has the National Forest been successful at protecting ecosystem health while providing renewable resources for development?

Number of Renewable Resource Projects Proposed and Approved

The number of renewable resource projects proposed and approved will be used to demonstrate the baseline of impacts to resources. The screening of projects, the difference between the proposed and approved projects, is the first indicator of the protection of ecosystem health. Screening is used to ensure that projects comply with the LMP and other applicable laws, regulations, and policies.

At the time of the decision on the LMP, four renewable resource energy facilities were located on the Forest. All four are hydroelectric generation facilities located in Mill Creek, Santa Ana River, Lytle Creek, and San Geronio Creek and operated by Southern California Edison. The facility located in San Geronio Creek is currently being surrendered. No new renewable resource projects have been proposed over the five year monitoring period, although wind generation facility proposals are anticipated in the near future.

An indicator will be developed over the next five years to determine if the Forest is facilitating opportunities while protecting resources. As data becomes available, the Forest will develop the baseline acres of habitat conserved as part of mitigation for renewable resource projects in order to determine if the Forest is moving toward desired conditions. As renewable resource projects are proposed and approved appropriate mitigations will be implemented as appropriate.

Goal 5.1: Watershed Function

Improve watershed conditions through cooperative management.

The Forest generally provides the headwaters and primary source areas for most of the major river systems in southern California. Streams and rivers offer habitat to numerous aquatic and riparian-dependent species-at-risk found over the Forest; in addition to providing water for municipal, commercial and agricultural uses off of the Forest. Watershed conditions, or watershed health, on the Forest vary depending upon the amount of disturbance that has occurred within each watershed, and the effect of the disturbance on the natural integrity of the watershed as a whole.

The desired condition is that watersheds on NFS lands are healthy, dynamic and resilient, and are capable of responding to natural and human caused disturbances while maintaining the integrity of their biological

and physical processes. Geologic resources are managed to protect, preserve and interpret unique resources and values, and to improve management of activities that affect watershed condition and ecosystem health. Geologic hazards are identified, analyzed and managed to reduce risks and impacts where there is a threat to human life, natural resources, or financial investment.

Outcome Evaluation Question

Is the Forest making progress toward sustaining Class 1 watershed conditions while reducing the number of Condition Class 2 and 3 watersheds?

Number of Watersheds in each Watershed Condition Class

It is generally accepted that watersheds heavily altered by disturbance would contain more impaired water bodies than watersheds with moderate or minimal disturbance. The number of Hydrologic Unit Codes (HUC) in each condition class having impaired waters will be used as an indicator for moving toward desired conditions.

Table 12: Fifth Year Trend of Number of Watersheds in each Watershed Condition Class

Indicator	Desired Condition	Baseline Number of Watersheds (HUC 5)	Number of Watersheds in the fifth year (HUC 6)	Fifth year trend
Watersheds in Condition Class I - Good	Maintained condition ratings	10	14	Declined from 50% to 20.6%
Watersheds in Condition Class II - Moderate	Maintained or improved condition ratings	4	40	Increased from 20% to 58.8%
Watersheds in Condition Class III - Poor	Improved condition ratings	6	14	Declined from 30% to 20.6%

HUC 5 priority watersheds were determined using an integrated team approach in 2001 using a system of indicators to rank various health conditions. These indicators included soil erosion, mass wasting, floodplain connectivity, water quality, water quantity, stream vegetation, channel stability, and aquatic integrity. Each indicator was given a rating of 1 (low threat), 2 (moderate threat), or 3 (high threat). Of the 20 HUC 5s that the Forest overlaps, 6 were rated with a high threat level, equivalent to Condition Class 3, 4 were rated with a moderate threat level, equivalent to Condition Class 2, and 10 were rated with a low threat level, equivalent to Condition Class 1.

In 2010, Watershed Condition was again assessed using an integrated team approach and a national set of indicators. The scale of the analysis changed to HUC 6 (watersheds between 10,000 and 40,000 acres), leading to more measured watersheds. Instead of 8 indicators as in 2001, there were 12. Aquatic physical characteristics include water quality, water quantity, and aquatic habitat and account for 30% of the score. Aquatic biological characteristics include aquatic biota and riparian vegetation and account for 30% of the score. Terrestrial physical characteristics include roads and trails, and soils and account for 30% of the score. Terrestrial biological characteristics include fire regime, forest cover, non-forest cover, terrestrial invasive species, and forest health and account for 10% of the score. Each indicator was given a rating of 1 (functioning), 2 (functioning at risk), or 3 (impaired). Of the 68 HUC 6s that the Forest overlaps by at least 5% of the land, 14 were Condition Class 3 (impaired), 40 were Condition Class 2 (Functioning at risk), and 14 were Condition Class 1 (Functioning).

With the change in methodology, trends must not be looked at as indicative of future possibilities nor movement toward desired conditions. However, the percentage of watersheds in Condition Class 3 (Impaired) declined from 30% to 20.6%, the percentage in Condition Class 2 (Functioning At-Risk) increased from 20% to 58.8%, and the percentage in Condition Class 1 (Functioning) declined from 50% to 20.6%.

Goal 5.2: Riparian Condition

The LMP should be amended by changing the outcome evaluation question for Goal 5.2 - Riparian Condition. Clean Water Act 303d listings are based on water quality constituent data and an assessment of beneficial uses, which are not a good surrogate or indicator of riparian conditions. It has been determined by the Forest that tracking the number of 303d listings will not provide information on the riparian condition of the watersheds.

Improve riparian conditions.

Riparian and aquatic ecosystems play a vital role in watershed functioning and in the survival of most of the species-at-risk. These ecosystems contain aquatic and terrestrial features and lands adjacent to perennial, intermittent, and ephemeral streams, as well as in and around meadows, lakes, reservoirs, ponds, wetlands, vernal pools, seeps, springs and other bodies of water.

Riparian Conservation Areas (RCAs) are areas along streams and around water/riparian features that are identified to protect riparian and aquatic ecosystems and the dependent natural resources associated with them during site-specific project planning and implementation. Standard S47 including Appendix E of Part 3 of the LMP explains the concept and the process for delineating RCAs.

The desired condition is that watercourses are functioning properly and support healthy populations of native and desired nonnative riparian dependent species. Riparian vegetation consists mainly of native species, with minimal or no presence of invasive nonnative plants. Nuisance nonnative aquatic animals are absent or rare in streams and lakes. Riparian and aquatic ecosystems (including vegetation, channel stability, water quality, and habitat for aquatic and riparian dependent species) are resilient and able to recover after natural events, such as floods and wildland fires.

Outcome Evaluation Question

Is the forest increasing the proper functioning condition of riparian areas?

Change in Indicator Score for Aquatic Habitat, Aquatic Biota and Riparian Vegetation

The indicator is the Aquatic Habitat, Aquatic Biota and Riparian Vegetation indicators from the Watershed Condition Assessment. The change in score from the Watershed Condition Assessment indicators will demonstrate the effectiveness of the Forest at protecting riparian areas, and therefore the watercourses that they surround.

Clean Water Act Section 303(d) requires that States create a list of water bodies that are not meeting beneficial uses. These lists are used to create Total Maximum Daily Loads (TMDLs) for constituents needed to bring the water body back into compliance with its beneficial uses. The burden of proof required by the Regional Water Quality Control Boards to put a water body on the 303(d) list is far less than the information needed to remove a water body from the list. The implication is that once a water

body is listed, there is little the Forest Service can do to remove the water body from the list. TMDL implementation is generally a multi-decade long process requiring tens to hundreds of thousands of dollars of studies, restoration, and monitoring. Since 2005, the number of water bodies on or contributed to by Forest Service lands that have had 303(d) listings have increased from 11 on the 2006 list (Big Bear Lake - Cu, Hg, Metals, Aquatic plants, Nutrients, PCBs, Sediment; Canyon Lake - pathogens; Lake Elsinore - PCBs, toxicity; Lake Fulmor - pathogens; Grout Creek - metals, nutrients; Knickerbocker Creek - metals; Lytle Creek - pathogens; Middle Santa Ana - pathogens; Mountain Home Creek - pathogens; Mountain Home Creek East Fork - pathogens; Rathbone Creek - nutrients) to 16 on the 2010 list (all previous plus Mill Creek Reach 2 - pathogens, Santa Ana Reach 6 - metals, Cucamonga Creek - pH, Holcomb Creek - total dissolved solids, Crab Creek - total dissolved solids).

Clean Water Act 303d listings are based on water quality constituent data and an assessment of beneficial uses, such as municipal supply (MUN), contact recreation (REC1), non-contact recreation (REC2), cold water fishery (COLD), etc. These beneficial uses, though indirectly influenced by riparian conditions, are not a good surrogate or indicator of riparian conditions. It has been determined by the Forest that tracking the number of 303d listings will not provide information on the riparian condition of the watersheds. The Watershed Condition Framework (2010) calls out water quality (per 303(d) listings) as a separate indicator than aquatic habitat and riparian vegetation. Therefore, Goal 5.2 - Riparian Condition should be amended and will be tracked by using a subset of the Watershed Condition Framework indicators, Aquatic Habitat, Aquatic Biota, and Riparian Vegetation Indicators. In order to establish a baseline the 2010 readings for Watershed Condition Class have Riparian Conditions as 35% Good (Functioning), 55% Fair (Functioning At-Risk), and 10% Poor (Impaired).

The five year trend will be measured by: taking the baseline percentage for each Watershed Condition Class indicator (Aquatic Habitat, Aquatic Biota, and Riparian Vegetation Indicators) established in this report, and comparing the five year Watershed Condition Assessments values for each of the indicators. The five year trend will then inform the Forest if they are moving toward desired conditions. If the five year trend shows an increase in the percentage of each indicator in Impaired Riparian Condition and/or a decrease in the percentage of each indicator in Functioning Riparian Condition, evaluation will need to determine if a trigger has been reached, thereby requiring an amendment or revision of the LMP.

Table 13: Baseline Condition of Aquatic and Riparian Indicators

Indicator	Desired Condition	Baseline Percentage of Watersheds	Percentage of Watersheds in the fifth year	Fifth year trend
Good (Functioning)	Maintained condition ratings	35%		
Fair (Functioning At-Risk)	Maintained or improved condition ratings	55%		
Poor (Impaired)	Improved condition ratings	10%		

Goal 6.1: Rangeland Condition

Move toward improved rangeland conditions as indicated by key range sites.

Livestock grazing pre-dates the establishment of the National Forest System. Spanish missionaries brought herds of cattle, sheep and horses from Mexico in the early 1800s and began propagating them to supply the missions. The herds proliferated rapidly. By the early 1860s, range managers have estimated

that there were approximately 3.5 million animal units on all California ranges, heavily concentrated in the coastal counties. Maps show that these ranges must have been overstocked at this time.

Traditional concepts of range condition and trend are not applicable to California annual grasslands. Variations in precipitation and temperature cause far more variation in species composition and production than does grazing. Rangeland management of livestock grazing areas for sustainability is achieved by allowing moderate utilization levels that maintain forage, cover, and habitat requirements for wildlife; and maintain soil productivity, water quality, and ecosystem health. Moderate use is defined as leaving adequate amounts of residual dry matter or plant stubble height in order to provide favorable microenvironments for early seedling growth, protect root development in perennial plants, maintain soil protection, and provide adequate soil organic matter. Standard S56 including Appendix E in Part 3 of the LMP defines specific forage utilization standards that must be met in different vegetation types in order to achieve moderate use.

The desired condition is that livestock grazing opportunities are maintained and are managed for sustainable, healthy rangelands that contribute to improving watershed conditions towards a fully functional and productive condition.

Outcome Evaluation Question

Is forest rangeland management maintaining or improving progress towards sustainable rangelands and ecosystem health?

Percent of Key Areas in active allotments meeting or moving towards Desired Conditions

In livestock grazing areas, 'key areas' are designated to monitor rangeland conditions. Key areas are defined as a portion of the range, which, because of its location, grazing or browsing value, and/or use serves as an indicative sample of range conditions, trend, or degree of use seasonally. A key area guides the general management of the entire area of which it is part.

Table 14: Active Allotment Key Areas Trend

Indicator	Percentage of Key Areas in active allotments meeting or moving towards Desired Conditions
2002 Baseline	14% (Designated Grazing Areas)
2010 Level	77% (Key Areas)
Fifth year trend	Overall positive trend

In 2002, the Forest had 26 grazing areas over approximately 184,925 acres, which included 15 allotments, 5 livestock areas, and 6 administrative pastures. Of these 26 grazing areas, 16 were active and 10 were vacant. The Forest had 25,773 acres or approximately 14% of designated grazing areas that were either meeting or moving toward desired conditions. In 2010, the Forest had 4 active allotments over approximately 63,292 acres, which included 20 key areas. The Forest had on average over the monitoring period 15 or approximately 75% of key areas that were either meeting or moving toward desired conditions. Although the increase in percentage of area moving toward desired conditions cannot be directly compared to the baseline data, there are general trend that indicate that the Forest is moving toward desired conditions for active allotments.

Goal 6.2: Biological Resource Condition

Provide ecological conditions to sustain viable populations of native and desired nonnative species.

The mountains and foothills of southern California are home to approximately nine native species of fish, 18 amphibians, 61 reptiles, 299 birds, 104 mammals, 2,900 vascular plants, and an unknown number of species of invertebrate animals and non-vascular plants. Approximately 3,000 of these species occur on the four southern California National Forests.

Many of the 3,000 species have a large proportion of their distribution on NFS lands. Some are endemic to the Forest (essentially found nowhere else in the world), and some have special status as federally listed threatened, endangered, proposed, candidate, or Forest Service sensitive species. Other species have wide geographic ranges and are found elsewhere in California, Mexico, the West or the Southwest, but are rare in southern California. There are also plants and animals that were formerly common in southern California, but are now rare because of urban development. Some of the best remaining habitat for these species occurs on the margins of NFS lands.

The desired condition is that habitats for federally listed species are conserved, and listed species are recovered or are moving toward recovery. Habitats for sensitive species and other species of concern are managed to prevent downward trends in populations or habitat capability, and to prevent federal listing. Flow regimes in streams that provide habitat for threatened, endangered, proposed, candidate, and/or sensitive aquatic and riparian-dependent species are sufficient to allow the species to persist and complete all phases of their life cycles. Habitat conditions sustain healthy populations of native and desired nonnative fish and game species. Wildlife habitat functions are maintained or improved, including primary feeding areas, winter ranges, breeding areas, birthing areas, rearing areas, migration corridors, and landscape linkages. Fish habitat functions are maintained or improved, including spawning areas, rearing areas, and upstream and downstream migration, where possible.

Outcome Evaluation Question

Are trends in resource conditions indicating that habitat conditions for fish, wildlife, and rare plants are in a stable or upward trend?

Management Indicator Species Habitat Condition

Management Indicator Species (MIS) are selected because their population or habitat trends are believed to indicate the effects of management activities (36 CFR 219.19(a)(1) [1982]; 36 CFR 219.14 [2005]), and are a focus for monitoring (36 CFR 219.19(a)(6) [1982]). Species considered for designation as MIS were assessed using the following criteria to determine their appropriateness:

- Changes in the species' population or habitat should reflect the effects of National Forest management activities; and
- Population or habitat trends for the species must be capable of being effectively and efficiently monitored and evaluated.

Twelve management indicator species (MIS) on the four southern California National Forests were selected to monitor certain habitat types and issues, as described in Part 1, page 44-45. Nine of these species are present on the Forest and will be monitored for progress toward achieving desired conditions for biological resources. The LMP required forest-scale monitoring of habitat condition and trend for the

MIS that were selected for representative habitat types and issues. Habitat condition is defined as the current amount of habitat (or habitat factor) on the Forest.

The individual MIS accounts were updated to describe the current environmental conditions. The method used to monitor each species differs depending on the purpose for monitoring of that species.

Table 15: MIS Monitoring Methods

MIS	Indicator	Objectives	Monitoring Method	Measure	Issue
Mountain lion	Habitat Fragmentation	Functional landscape linkages; species well-distributed	Studies in cooperation with CDFG, USGS	Trend in distribution, movement and/or habitat conditions	Landscape linkages; habitat fragmentation
Mule deer	Healthy Diverse Habitats	Stable or increasing well-distributed populations	Herd composition in cooperation CDFG; habitat condition	Trend in abundance and/or habitat condition	Vegetation diversity and age class mosaics; roads and recreation effects
Arroyo toad	Aquatic Habitat	Properly functioning streams; stable or increasing populations	Population abundance and/or habitat condition in selected locations	Trends in abundance, distribution, and/or habitat conditions	Ground disturbance including trampling and compaction; spread of invasive non-native species; mortality from collision; altered stream flow regimes
Song sparrow	Riparian Habitat	Stable or increasing populations; healthy riparian habitat	Riparian bird species point counts and/or habitat condition	Trend in abundance and/or habitat condition	
Coulter pine	Coulter Pine Habitat	Maintain Coulter pine habitat	FIA data; aerial photo-monitoring	Trend in age/size class distribution	Drought/beetle-related mortality and lack of fire
Bigcone Douglas-fir	Bigcone Douglas-fir Habitat	Maintain bigcone Douglas-fir stands	FIA data; aerial photo-monitoring	Trend in extent of vegetation type	Altered fire regimes (fire severity and/or fire return interval)
California spotted owl	Montane Conifer Forest	Maintain/increase numbers and distribution	FS Region 5, CDFG protocol	Occupied territories and/or habitat condition	
Black oak		Maintain or increase numbers	FIA data	Trend in abundance, size class distribution	
White fir		Pre-settlement age/size class distribution	FIA data	Trend in size class distribution	

The Forest manages for sustainable habitat for all wildlife species that are native to the area. Special emphasis is given to those species listed under the Endangered Species Act through consultation with the USDI, Fish and Wildlife Service (USFWS).

Habitat Fragmentation

The mountain lion was selected as a MIS to evaluate and guide planning related to the effects of the Forest's management activities on landscape level habitat fragmentation and habitat linkages. The mountain lion is the largest carnivore on the four southern California National Forests, and it requires large core habitat areas, abundant prey, and habitat connectivity between subpopulations. The Forest Service believes that interagency, inter-forest monitoring of mountain lion populations, habitat, and landscape linkages can be used to estimate the effects of national forest management on mountain lion abundance and distribution, and that trends can be an indicator of the condition of biological communities at the landscape level. Maintaining linkages between national forests and to other protected wildlands is critical to the future of mountain lions and other species, and continued mountain lion movement will measure the effectiveness of the Forest in cooperating with other agencies in providing for landscape linkages.

The Forest's capability for monitoring the Mountain lion population is dependent upon the number of depredation permits issued and number of successful depredation kills. Based on California state records of depredation, attacks on people, and predation on prey populations, the mountain lion population appears to have peaked in 1996 and has been somewhat stable since. The depredation permit data do not provide any specific insight into the current mountain lion population status or trends for the Forest's San Gabriel, San Jacinto, or San Bernardino Mountains.

It is likely that the reduction of deer herds over time has resulted in fewer mountain lions in the Forest. Deer herds have declined from historic times due to development in the summer range into large communities (Big Bear, Arrowhead, Running Springs, Idyllwild, etc.), high levels of recreation in fawning habitat (meadows and riparian areas), drying of streams, meadows and riparian areas from diversion and pumping for human use, type conversion of some lower chaparral areas to annual grassland from too frequent wildfire and the increase of invasive species, human development in the winter ranges, and high road densities in some prime deer habitat where unauthorized vehicle use has been high.

Another area of concern for mountain lions on the Forest has been the continued decline in permeability of the critical landscape linkages that support movement of mountain lions. The connections and landscape linkages are important to mountain lion survival and natural ecosystem function on the Forest. The reports for the various linkages can be found in the linkage reports at <http://www.scwildlands.org/index.aspx>.

Recent and ongoing fuels management emphasis on the Forest should be a benefit to the mountain lion through the creation of more edge and early successional habitat for deer. Fire, which is an important ecological process in southern California forests and shrub stands, had been excluded in many areas through fire suppression for many years. Some areas that ecologically burn on a 20-40 year cycle have not burned for close to 100 years. The recent large burns on the Forest should benefit deer and mountain lion for some years to come.

Unauthorized vehicle use has been a concern on the Forest for many years. Where this use is most prevalent, deer herds are seriously affected. The Forest has made progress in closing some roads in sensitive riparian areas and controlling unauthorized vehicle use off of roads in some prime deer habitat. The biggest problem areas are sites with flatter more open terrain such as Garner Valley and the desert side of San Bernardino Mountains.

In order to completely understand habitat fragmentation trends on the Forest, the ownership complexity, authorized and administrative infrastructure, and inventoried unauthorized roads and trails indicators from Goal 7.1 need to be evaluated to determine movement toward desired conditions. The internal ownership complexity, and thereby fragmentation has been reduced over the 5 year monitoring period, and with the implementation of the Travel Management System evaluation, the Forest is moving toward desired conditions.

Habitat fragmentation on the Forest has been reduced over the monitoring period through consolidation of NFS lands and decommissioning of roads and trails, and as indicated by the improvement of Mountain lion habitat.

Healthy Diverse Habitats

Mule deer was selected as a MIS to answer the question, “Are shrub, woodland, and forest habitats being managed adequately to provide the quality and quantity of habitat for species dependent on or strongly associated with large blocks of healthy, diverse wildland with low to moderate human disturbance?” Mule deer abundance will be used to monitor the effects of Forest Service management on landscape patterns in chaparral age class diversity related to fire and on motorized road and trail density. Mule deer is also an indicator of Forest’s effectiveness in working with state agencies and other interested groups. Monitoring will be conducted by the California Department of Fish and Game through on-going interagency efforts with the intent of monitoring herd size and distribution as well as habitat condition. Where possible, demographic data will be gathered as well to better estimate population trends. A long-term increase in the size of a herd will be used as an indicator of the effectiveness of LMP objectives and standards in moving wildlife habitat toward desired conditions.

Although trends in mule deer populations are difficult to detect, the Forest Service believes they can be determined through cooperation with the California Department of Fish and Game. Observed changes in mule deer abundance may not be due entirely to the effects of management by the Forest. This lack of a precise cause-and-effect relationship is due to the complex interrelationship between deer herd size, hunting pressure, human developments, disturbance and roads, and vegetation management practices on private wildlands. However, the Forest Service recognizes that mule deer population trends on the National Forests are in large part dependent on Forest Service management of recreation, roads and vegetation. Because providing suitable deer habitat is an important management objective for the National Forests of southern California, it is important for the Forest Service to engage in interagency monitoring efforts of deer population abundance and habitat condition. In addition, mule deer and its habitat can be used to evaluate the effects of different strategies in LMP alternatives for recreation, vegetation and road management.

The Forest supports three distinct deer herds, all within Deer Assessment Unit 7. Population estimates were made for the San Jacinto/Santa Rosa Mountains, the San Bernardino Mountain, and the Los Angeles Mountain deer herds in 2004 by the California Department of Fish and Game (CDFG). The San Jacinto/Santa Rosa Mountains herd is the only herd that moves between Hunt Zone D-19 (on the Forest) and D-16 of the Cleveland National Forest. The San Bernardino herd is within in Hunt Zone D-14 and the Los Angeles herd is within Hunt Zone D-11. Overall, the deer populations in these hunt zones appear to be stable to slightly increasing.

The deer herd in the eastern San Gabriel Mountains appears to be increasing slightly as evidenced by increased sightings on bighorn sheep flights and increased road kills. Much of habitat for this portion of the herd has burned since 2003. There should be increased productivity and a population increase during the next 10 years or so. Development is not impacting the herd on the Forest to any great extent because the range is so rough and deer habitat is primarily public land.

The deer population in the San Bernardino Mountains appears to have been declining in recent years. The severe drought in the early 2000s has undoubtedly affected this herd. Many streams and springs that had always been thought to be perennial dried up during this period. Forage quantity and quality was severely affected. Recent fires in the last decade have improved forage conditions, so that if normal rainfall occurs, deer productivity should increase for some time. A substantial amount of fuels reduction work has taken place in the mountain range and this should benefit deer. The benefits are not as great as would be expected if the work was taking place further away from communities.

Deer in the San Jacinto Mountains were classified into five main concentrated summer ranges. These key areas were Mountain Center, Thomas Mountain, Desert Divide, Tahquitz and Round Valley, and Santa Rosa Mountain. Except for the Tahquitz Valley herd, the deer on the San Jacinto Mountain belong to resident herds. Hazardous fuels reduction projects on and around Thomas Mountain and Garner Valley may provide additional forage as new grasses grow, and a reduction in livestock grazing numbers in these areas also benefit deer as there is less resource competition for forage. Increased subdivision in Garner Valley has impacted this deer herd as well as the severe drought of the early 2000s.

Unauthorized vehicle use has had an effect on deer populations in the San Bernardino Mountains. The effects have been greatest on the desert side of the mountain range where there are large areas of more gently terrain and habitat open enough to drive off road. Areas with high road densities (authorized and unauthorized) in the 1980s had only 10% of the deer densities that unroaded similar habitat had (S. Loe pers. comm.). The Forest has made a concerted effort to reduced unauthorized vehicle use, and increased the level of management of the OHV program. Cooperative efforts with the OHV community have improved conditions for deer and other wildlife species.

The amount of healthy diverse habitats on the Forest is stable to slightly increasing, as indicated by Mule deer habitat.

Aquatic Habitat

The arroyo toad was selected as an indicator to answer the question, "Is arroyo toad habitat being managed to achieve protection and recovery objectives for the species?" In selecting the arroyo toad, the Forest considered the following:

- The arroyo toad is an indicator of aquatic habitat quality (U.S. Fish and Wildlife Service 2001)
- Considerable effort is being directed toward the management of the arroyo toad in the form of land use designations and use of site-specific mitigations. There is a need to predict how effective these measures will be, followed by monitoring to determine actual species response and effectiveness of management actions.
- Short-term fluctuations in arroyo toad populations may not indicate the effects of management actions, being strongly influenced by weather patterns. However, the Forest believes that long-term trends in arroyo toad population abundance, distribution, and habitat condition will reflect the

effectiveness of management activities in protecting and improving habitat conditions for arroyo toads, as well as other riparian dependent species, that are susceptible to high levels of human disturbance and habitat degradation.

The Forest has identified approximately 1,500 acres of Arroyo toad occupied habitat on the Forest. USFWS Designated Critical Habitat (February 2011) has 4,636 acres on the Forest. There are three Critical Habitat Units that overlap the Forest: San Jacinto River Basin Unit (Unit 9), Upper Mojave River Basin (Unit 22), and the Upper Santa Ana River/Cajon Wash Unit (Unit 20).

Table 16: Arroyo Toad Critical Habitat Acreages

Ranger District	Acreage on Forest
San Jacinto Ranger District – Unit 9	1158
Front Country Ranger District – Units 20 and 22	1725
Mountaintop Ranger District – Unit 22	1753

The known populations of arroyo toads on the Forest are generally small, possibly because of the limited extent of low gradient habitat on the Forest. Although routine monitoring has been a priority for the Forest, population estimates and trends are not available for toad populations on the Forest. Surveys have focused on inventory and determining continued toad occupancy (presence) as well as monitoring and correcting impacts to habitat rather than tracking trends through time. Monitoring efforts have been able to confirm that all sites previously documented as occupied continue to remain occupied.

In order to completely understand aquatic habitat trends on the Forest, the aquatic habitat and aquatic biota indicators from Goal 5.2 need to be evaluated as they are assessed to determine movement toward desired conditions. Currently, 35% of Riparian Conditions are in the Good/ Functioning condition.

Aquatic habitat on the Forest is stable, as indicated by Arroyo toad habitat and the watershed condition indicators. The watershed indicators provide a baseline level of conditions but only provide a reference point for aquatic habitat at this time. The trend is primarily determined by the trend in Arroyo toad habitat.

Riparian Habitat

The song sparrow was selected to answer the question, “Is riparian habitat being managed to provide the quality and quantity of habitat for species dependent on or strongly associated with riparian areas?” The song sparrow was selected because its abundance is expected to be responsive to management actions as well as indicating trends in the status of the biological community. For example, song sparrow abundance is negatively correlated with the use of riparian understories for grazing and recreation (Marshall 1948a, 1948b) and positively correlated with the abundance of herbaceous vegetation (Ballard and Geupel 1998). Monitoring song sparrow abundance and/or habitat condition will provide insight into the effects of grazing and recreation use on riparian bird communities. Long-term changes in the size of the song sparrow population or habitat conditions will be used as an indicator of the effectiveness of LMP objectives and standards in moving riparian habitats toward desired conditions. The song sparrow is widely distributed throughout the southern California National Forests and is relatively easily monitored using point count methods that have been used for many years on the National Forests. A ten-year data set on a monitoring scheme, developed in cooperation with the Pacific Southwest Forest and Range Experiment Station, already exists for the National Forests that can be used as a baseline for future comparison.

Conservation of aquatic and riparian habitat is a high priority for the Forest. The issue here is 1) ground disturbance including trampling and compaction, 2) spread of invasive non-native species, 3) mortality from collision, and 4) altered stream flow regimes. While removing/reducing grazing from many riparian areas on NFS lands has reduced impacts to the habitat, there are still many pressures on riparian zones, especially low-elevation riparian areas close to urban areas. Dispersed recreation use concentrated in these areas continues to increase and result in habitat degradation/destruction and disturbance to riparian-dependent species. Studies have found that grazing and recreation both result in reduced song sparrow abundance. Domestic and commercial water extractions/diversions likewise continue to degrade riparian habitat, resulting in shrinking of riparian zones and lower quality habitat. The effects of water extractions/diversions on riparian habitat are probably most severe during drought cycles. When compared to past conditions (10-20 years) the trend for this habitat type is considered to be stable or improving on NFS lands. This inference is based on the fact that management actions to protect habitat have included elimination/reduction of grazing near/in occupied habitat, decommissioning and seasonal closures of recreation facilities and roads in/near occupied habitat, installation of habitat protection barriers, elimination of parking opportunities near occupied habitat, etc.

Riparian Bird Counts (RBC) were conducted at 206 sites over the National Forest in southern California annually between 1988 and 1996 and again in 2003. No RBCs have been conducted since 2003. During the RBC surveys, negative trends in song sparrow abundance were detected on the Forest. The decline in the number of song sparrows breeding in the Forest suggests that there has been a declining trend in the riparian habitat conditions for which song sparrow is an MIS. The decline in the number of song sparrows breeding on the Forest would seem to suggest that there has been a declining trend in the riparian habitat conditions. However, it is believed that riparian conditions on the National Forests have generally improved since the 1990s due to changes in management practices.

In order to completely understand riparian habitat trends on the Forest, the riparian vegetation indicator from Goal 5.2 needs to be evaluated to determine movement toward desired conditions. Currently, 35% of Riparian Conditions are in the Good/ Functioning condition.

Riparian habitat could be declining on the Forest, as indicated by Song sparrow habitat and the watershed condition indicators. The watershed indicators provide a baseline level of conditions but only provide a reference point for riparian habitat at this time. The trend is primarily determined by the trend in Song sparrow habitat.

Bigcone Douglas-fir Habitat

Bigcone Douglas-fir was selected as a MIS because of concern about the effects of increased fire frequency and severity on this habitat type. Altered fire regimes are affecting the abundance and distribution of this tree and the vegetation series of which it is the dominant constituent element. The bigcone Douglas-fir habitat type is one that will be a major focus of vegetation management projects, and the bigcone Douglas-fir trees themselves are an obvious and appropriate indicator of the successful restoration and maintenance of this community.

In order to completely understand Bigcone Douglas-fir habitat trends on the Forest, the Departure from desired fire regime, acres by Fire Regime 5 indicator from Goal 1.2.3 needs to be evaluated to determine movement toward desired conditions. There are 6,100 acres in Condition Class 1 for Fire Regime 5, which is 34% of the total acres on the Forest that are within Fire Regime 5. Although Bigcone Douglas-fir

habitat is only a portion of Fire Regime 5, the overall trend indicates that the Forest is not moving toward desired conditions for Bigcone Douglas-fir habitat. Forest Inventory and Analysis (FIA) plots are measured once every 10 years and have not been measured twice since the implementation of the LMP.

Coulter Pine Habitat

Coulter pine was selected as a MIS because of the concern that drought and bark beetle-caused mortality without subsequent burning to open the cones could be jeopardizing seedling establishment and stand persistence. Monitoring will help answer the question “Is vegetation and fire management providing the ecological conditions necessary to maintain Coulter pine?”

In order to completely understand Coulter pine habitat trends on the Forest, the Departure from desired fire regime, acres by Fire Regime 4 indicator from Goal 1.2.2 needs to be evaluated to determine movement toward desired conditions. There are 221,794 acres in Condition Class 1 for Fire Regime 4, which is 46% of the total acres on the Forest that are within Fire Regime 4. Although Coulter pine habitat is only a portion of Fire Regime 4, the overall trend indicates that the Forest is moving toward desired conditions for Coulter pine habitat. Lack of available FIA data has prevented the proper analysis of Coulter pine as an indicator of drought and beetle-related mortality and fire frequency.

Montane Conifer Forest

The California spotted owl, California black oak, and white fir were selected as MIS for the montane conifer forest habitat type. These species were selected because their populations and their population structure are indicators of the condition of montane conifer forests. Taken together, population trends of these species will indicate progress toward achieving the desired condition for montane conifer forest habitat that contain large patches of mature trees with reduced stem densities, interspersed with canopy gaps providing opportunities for regeneration of light-requiring species, including black oak, Jeffrey and ponderosa pine.

The California spotted owl and its habitat will be monitored to answer the question, “Are mature, large diameter, high canopy cover stands with densely-shaded understories being maintained in sufficient distribution, quantity and quality to provide habitat for California spotted owl and other interior forest species?” Many wildlife species, including the California spotted owl, specifically require these ecological conditions. A territorial species with large acreage requirements (at least 300 acres of mature forest per pair), the California spotted owl is an indicator of mature conifer forest with a dense, multilayered canopy (Stephenson and Calcarone 1999). Monitoring the California spotted owl and its habitat will indicate the effectiveness of management activities in achieving maintenance and restoration of this type of montane conifer habitat.

Black oak will be monitored to answer the question, “Is fire or other disturbance occurring too infrequently in mid-elevation conifer stands to allow black oak and other shade-intolerant species to persist over time?” Black oak is a gap-phase species that requires occasional openings in the forest canopy in order to regenerate. Its acorns are also an important food source for many forest animal species (California Department of Fish and Game 2002). Abundance of black oak, especially saplings, will indicate progress toward reducing forest stand densities and creating regeneration opportunities for light-requiring tree species.

White fir was selected as a MIS to answer the question, “Are management activities changing montane conifer forest tree species composition to achieve density and age/size class distributions more similar to pre-suppression conditions?” The abundance of shade-tolerant white fir has increased with the success of fire suppression in montane conifer forests once dominated by black oak, Jeffrey pine and ponderosa pine (Stephenson and Calcarone 1999); thus it acts as an indicator of forest stand densification. Reduced abundance of small-diameter white fir and well-distributed large-diameter white fir in conifer stands will indicate a return to more historic stand conditions and meet the desired condition for this habitat.

Montane conifer forests contain large patches of mature trees interspersed with canopy gaps providing opportunities for regeneration of light-requiring species, including ponderosa pine, sugar pine, and Jeffrey pine. The primary issue in this habitat is altered fire regimes (fire severity and/or fire return interval). If the habitat is restored with the proper fire regimes, then the indicator species will be moving toward desired conditions.

On the Forest, thousands of large and small-diameter trees died due to drought, especially those at lower elevations where white fir had expanded owing to successful fire suppression. In addition to the drought, wildfires such as the Butler 2, Cedar, Day, and Slide have burned large areas in higher elevation forests where white fir is abundant. These fires have almost certainly thinned many understory firs, and in the case of the Butler 2 Fire killed even the largest trees. In addition to wildfire and drought, white fir has been targeted in hazardous fuels reduction projects. Stand improvement work in the montane conifer forest vegetation type has been conducted in recent years involving overstory and understory thinning using both prescribed fire and mechanical treatments. Where thinning has been implemented small-diameter, ladder fuels have been reduced in an effort to create more fire resilient forests. There is lack of basic monitoring data with which to evaluate trends in black oak and white fir. The monitoring of these species depends once again on FIA data which is currently unavailable. Through natural mortality, wildfire, and implementation of hazardous fuels reduction projects, White fir habitat is decreasing and the opportunity for Black oak habitat is increasing. The Forest is moving toward desired conditions for the portions of montane conifer forest habitat

USFWS estimated that there were 138 California spotted owl territories on the Forest (USFWS 2006) based on CDFG and Forest Service records. However, the Forest has documented 181 territories. Of those, 152 territories have nest trees or territory centers that have been mapped on the Forest. The others are mapped as Home Range Core (HRC), Protected Activity Center (PAC), or Nest Stand (NS) on the Forest or are adjacent to NFS lands. Since 2003, the SBNF has conducted a monitoring effort in response to the vegetation mortality and fuels reduction program as required by the Forest Plan, CASPO Strategy, and various NEPA decisions. Between 1989 and 1998, occupancy rates by pairs were between 50 – 65%. Since 2003, they have ranged between 29 - 44%. The number of active territories in the San Bernardino Mountains has declined steadily since 1990. Large-scale wildfires, severe droughts, large-scale vegetation mortality, intensive fuels treatment around communities and developed areas, urban development, invasive plant species, and other factors have combined to significantly change the amount and quality of California spotted owl habitat. Reduction in habitat would seem to suggest that the mature, large diameter, high canopy closure portions of montane conifer forest habitat are in decline.

Goal 7.1: Natural Areas in an Urban Context

Retain natural areas as a core for a regional network while focusing the built environment into the minimum land area needed to support growing public needs.

Urbanization within and surrounding NFS lands threatens to alter the natural character of many areas. Suburban communities have been developed in more remote areas and urban areas have pushed up into the foothills in many places. This has led to an explosion in the amount of Wildland/Urban Interface areas that are at risk and in need of protection from wildland fire. The combination of increased development and the need to protect these developed areas from fire and other natural events (such as flooding) will put increasing pressure on National Forest managers to alter landscape character to accommodate these uses.

The desired condition is that the natural and cultural features of landscapes that provide their sense of place are intact. Landscapes possess a vegetation pattern and species mix that is natural in appearance and function. Built elements and landscape alterations complement landscape characteristics. Areas zoned as Back Country retain an undeveloped character with a low level of loss of acres in this condition.

Outcome Evaluation Question

Is the Forest balancing the need for new infrastructure with restoration opportunities or land ownership adjustment to meet the desired conditions?

Land Ownership Complexity

The complexity of internal and external boundaries is determined through calculating the miles of boundary per area of the NFS lands. A higher value indicates highly intermixed ownerships.

Table 17: NFS Boundary Complexity

National Forest	Miles of exterior NFS Boundary	Miles/sq. mile	Miles of Private In-holding Boundary	Miles/sq. mile
2005 Baseline	394	0.47	935	1.12
2010 Level	580	0.55	720	0.69
Fifth year trend	+186	+0.08	-215	-0.44

There has been no significant change in the area of the Forest over the monitoring period. The Forest's exterior boundary has increased by 186 miles over the five year monitoring period from 394 miles to 580 miles. Much of this difference is due to better mapping of land ownership compared to the legislated boundary. The complexity is demonstrated by dividing the exterior boundary by the area of the NFS lands. The complexity of the Forest's exterior boundary has increased by 0.08 miles/ square mile, from 0.47 to 0.55 miles/ square mile. The Forest's interior boundary has decreased by 215 miles over the five year monitoring period from 935 miles to 720 miles. Much of this difference is due to better mapping of land ownership, and partly due to land adjustments. The complexity is demonstrated by dividing the interior boundary by the area of the NFS lands. The complexity of the Forest's interior boundary has decreased by 0.44 miles/ square mile, from 1.12 to 0.69 miles/ square mile. Given that much of the increase in the complexity of the exterior boundary is due to better mapping, the trend demonstrates that the Forest is moving toward desired conditions.

The Forest's Land Ownership and Adjustment Program continues to aid other programs to meet LMP goals. The number of conservation organizations partnering with the Forest to acquire valuable habitat

now includes three Conservancies, three Land Trusts and one Conservation Fund. Approval of several transportation projects generated significant mitigation funds. When combined with land donation opportunities, the Forest acquired 320 acres in the Santa Ana River headwaters and is at various stages of increasing acreages in meadow habitat, southern rubber boa habitat, spotted owl habitat and a critical wildlife linkage. Small, but important, land donations will facilitate access and better management of previously acquired and restored landscapes.

The land adjustment program can reduce ownership complexity through consolidation of ownerships. The annual indicator is the acres of land acquired, which will reduce the complexity of ownership and reduce the boundary miles per area. Over the five year monitoring period the following land adjustments have occurred on the Forest, totaling 2,943.36 acres:

• Garner Ranch II Purchase	39.14	1/28/05
• Upper Ranch Exchange	378.94	7/29/05
• Norton I Conveyance	-4.68	12/13/05
• Grass Valley Creek Purchase	152.9	02/10/06
• Sugarbush Purchase	321.76	11/29/06
• Mill Creek Conveyance	-24.86	12/13/06
• Yucaipa Ridge Purchase	1154.45	12/29/06
• Heartbar Purchase	273.38	06/29/07
• DEFAS, Norton II, Legislated	10.05	06/27/08
• Palm Canyon Purchase	642.28	12/17/08

In order to determine if the Forest is moving toward desired conditions, additional indicators will be developed to assess the amount of developed area on the Forest. As data becomes available, the Forest will develop a baseline number of authorized and administrative infrastructure and the baseline miles of unauthorized roads and trails in order to determine if the Forest is moving toward desired conditions.

Authorized and Administrative Infrastructure

Accommodating urban infrastructure to support growing populations is one of the management challenges that the Forest faces. There are increasing demands from private, semi-private and public industry, corporations, organizations, associations and private individuals for requests for various uses on NFS lands including infrastructure for community support. In addition, the combination of increased development and the need to protect these developed areas from fire and other natural events puts increasing pressure on managers to alter landscape character to accommodate these uses. One strategy to reduce future effects is to be proactive in local planning efforts. In 2006, the Forest was an active participant in meetings for the San Bernardino County update of their General Plan, Development Code and nine of their Community Plans. The Forest also provided response letters to other proposed actions that could affect forest management. The amount of authorized and administrative infrastructure on NFS lands increases the complexity of management.

The five year trend will be measured by: taking the baseline number of authorized and administrative infrastructure and comparing the existing authorized and administrative infrastructure on the Forest. The five year trend will then inform the Forest if they are moving toward desired conditions. If the five year

trend shows an increase in the number of authorized and administrative infrastructure, evaluation will need to determine if a trigger has been reached, thereby requiring an amendment or revision of the LMP.

Inventoried Unauthorized Roads and Trails

The number of inventoried unauthorized roads and trails will be used as an additional indicator of the effectiveness of the Forest's movement towards desired conditions. The concentration of recreation activities has increased the pressure on areas surrounding authorized infrastructure that has led to an increase in unauthorized roads and trails. The inventory of the unauthorized roads and trails will demonstrate the effectiveness of the Forest at protecting resources.

The five year trend will be measured by: establishing a baseline for the miles of unauthorized roads and trails; subtracting the miles that have been decommissioned; and adding the miles of unauthorized roads and trails that have been reported. The five year trend will then inform the Forest if they are moving toward desired conditions. If the five year trend shows an increase in the reported number of miles of unauthorized roads and trails, evaluation will need to determine if a trigger has been reached, thereby requiring an amendment or revision of the LMP.

Part 2 Monitoring

Monitoring identified in Part 2 of the LMP is focused on program implementation including inventory activities. The Forest currently uses performance indicators for tracking program accomplishments. The current system tracks performance measures linked to the National Strategic Plan and reports accomplishments through a national reporting system. Although the system will evolve over time as technology changes, Table 20 represents the type of measures that are reported on an annual basis.

Table 18: Part 2 Monitoring Summary

Indicators	Baseline Level	Current Level	Five Year Average	Estimated Forest Annual Need
Acres of Terrestrial Habitat Enhanced	206	8,433	3,331	2,800
Miles of Aquatic Habitat Enhanced	4	23	43	25
Acres of Noxious Weeds Treated	38	393	317	130
Acres of Forest Vegetation Established or Improved	188	5,889	2,646	2,000
Acres of Watershed Improved	125	2,450	1,406	1,450
Acres of Land Ownership Adjusted	1,381	0	1,002	2,500
Number of Heritage Resources Managed to Standard	65	11	17	77
Products Provided to Standard (Interpretation and Education)	185		237	400
Recreation Special Use Authorizations Administered to Standard	875	346	299	1,010
PAOT Days Managed to Standard (Developed Sites)	269,362	468,400	444,175	356,976
Recreation Days Managed to Standard (General Forest Areas)	5,699		7,201	14,500
Land Use Authorizations Administered to Standard	439	149	120	800
Number of Mineral Operations Administered to Standard	15	9	9	15
Acres of Allotments Administered to Standard	17,000	13,584	14,291	32,500
Acres of Hazardous Fuel Reduction	3,953	2,345	10,189	25,100
Miles of Passenger Car Roads Maintained to Objective Maintenance Level	95	230	182	316
Miles of High Clearance & Back Country Roads Maintained to Objective Maintenance Level	279	145	177	789
Miles of Road Decommissioned	6	20	18	30
Miles of Trail Operated and Maintained to Standard	20	284	149	471

The five year summary for the Acres of Terrestrial Habitat Enhanced, Miles of Aquatic Habitat Enhanced, Acres of Noxious Weeds Treated, Acres of Vegetation Improved, Acres of Watershed Improved, and PAOT Days Managed to Standard (Developed Sites) indicators is that the Forest's annual capability increased from the baseline in 2005 and on average exceeds the estimated Forest Annual Need identified in the LMP.

The Products Provided to Standard (Interpretation and Education) and Recreation Days Managed to Standard (General Forest Areas) indicators are no longer tracked. The LMP should be amended to remove Products Provided to Standard (Interpretation and Education) and Recreation Days Managed to Standard (General Forest Areas) as indicators for program implementation.

The five year summary for the Acres of Land Ownership Adjusted, Number of Heritage Resources Managed to Standard, Recreation Special Use Authorizations Administered to Standard, and Land Use Authorizations Administered to Standard indicators is that the Forest's annual capability decreased from the baseline in 2005 and has not met the estimated Forest Annual Need identified in the LMP over the five year monitoring period. The five year summary for the Acres of Hazardous Fuel Reduction indicator is that the Forest's annual capability decreased from the baseline in 2005 and has not met the estimated Forest Annual Need identified in the LMP over the five year monitoring period. The capability of the Forest did increase from the baseline over the monitoring period but has since decreased.

The five year summary for the Number of Mineral Operations Administered to Standard indicator is that the Forest's annual need decreased from the estimated Forest Annual Need identified in the LMP due to the reduction in the number of authorized mineral operations on the Forest. The annual Forest Capability and Need in the LMP should be amended to 9 Mineral Operations Administered to Standard.

The five year summary for the Acres of Allotments Administered to Standard indicator is that the Forest's annual need decreased from the estimated Forest Annual Need identified in the LMP due to the reduction in the number of authorized grazing allotments on the Forest. The annual Forest Capability and Need in the LMP should be amended to 21,220 Acres of Allotments Administered to Standard.

The five year summary for the Miles of Passenger Car Roads Maintained to Objective Maintenance Level, Miles of High Clearance & Back Country Roads Maintained to Objective Maintenance Level, and Miles of Trail Operated and Maintained to Standard indicators is that the Forest's annual capability increased from the baseline in 2005 but has not met the estimated Forest Annual Need identified in the LMP over the five year monitoring period.

The five year summary for the Miles of Road Decommissioned indicator is that the Forest's annual capability increased from the baseline in 2005 and exceeded the estimated Forest Capability and Need identified in the LMP in 2009, but on average has not met the estimated Forest Annual Need identified in the LMP over the five year monitoring period.

Carbonate Endemic Plant Habitat Management

Outcome Evaluation Question

Is habitat being conserved through implementation of the Carbonate Habitat Management Strategy?

Reference Values

The following actions from the Carbonate Habitat Management Strategy (CHMS) Part IV (Administration) were taken during fiscal year 2010.

13(a)(iii): The Habitat Reserve was managed for conservation of carbonate plants and consistent public uses, as provided under section 9(f) of the CHMS. This management included use, maintenance and patrol of NFS roads, maintenance of fencing and signage, and administration of special use authorizations.

13(b)(i) and (ii): The habitat and credit registry were maintained and updated in the Mountaintop GIS during fiscal year 2010. These data were used to answer multiple queries from Mitsubishi, Specialty Minerals Inc., OMYA and the Cushenbury Mine Trust with regard to their ongoing activities under the CHMS, as well as new proposals.

Conclusions

Habitat is being conserved through implementation of the Carbonate Habitat Management Strategy. Management activities associated with carbonate habitat during fiscal year 2010 made limited gains toward the desired conditions of protecting the habitat reserve, avoiding destruction of critical habitat, recovering listed species, and restoring carbonate habitat. The main factors limiting substantial gains in these areas was available funding and awaiting the Multi-Party Agreement drafting by the Industry partners.

Recommendations

- Continue ongoing work towards the LMP recommended establishment of the Blackhawk Research Natural Area.
- Work on taking title to Mitsubishi Cement Co. 17P and 18P via donation.
- Work on requesting mineral withdrawal to establish initial habitat reserve and implement mitigation measures for Omya and Mitsubishi.

Pebble Plain Plant Habitat Management

Outcome Evaluation Questions

Is habitat being conserved through implementation of conservation strategies?

Are resource conditions indicating a stable or upward trend toward meeting desired conditions?

Reference Values

The following actions from the Pebble Plain Habitat Management Guide were taken during fiscal year 2010.

D-1 (5.): Coordination continued with Southern California Edison and Bear Valley Electric Service to avoid and minimize impacts associated with operation and maintenance of their electrical transmission lines through pebble plain habitat.

D-1 (6.): Patrols continued to monitor sensitive areas, record impacts, and maintain fences, signs and gates. Barbed wire continued to be replaced with smooth wire. Additional smooth wire fencing and signage was constructed in strategic locations.

D-1 (9.): The Forest Minerals Officer, in coordination with the District Botanist, continued to manage mining-related activities in and around pebble plain habitat. The strategy is to work with claimholders to prepare Notices of Intent that avoid impacts to pebble plain habitat by design.

D-1 (12.): The effort to identify, close and restore unclassified roads in pebble plain habitat was folded into the OHV Route Designation Project. A final decision on this action was rendered in February 2009 and implementation is in progress.

Conclusions

Habitat is being conserved through implementation of conservation strategies, and resource conditions indicate a stable or upward trend toward meeting desired conditions?

Management activities associated with pebble plains during fiscal year 2010 made limited gains toward the desired conditions of conserving habitat, minimizing incompatible uses, restoring habitat, and recovery of listed species. The main factor limiting substantial gains in these areas was available funding.

Recommendations

- Continue ongoing work towards the LMP recommended establishment of the Arrastre and Wildhorse Research Natural Areas.
- Look for additional opportunities to improve pebble plain habitat through the integration of functional programs.
- Repair and expand resource fencing and signage in high use areas.

Off-Highway Vehicle (OHV) Program Monitoring

There are five methods of OHV program monitoring. Each program is described separately with conclusions and recommendations for all compiled at the end of this section.

1) OHV Trail Soil Monitoring

Monitoring

During fiscal year 2010, all of the designated OHV trails on the Forest were monitored for soil retention and soil loss. During this time, it was determined that all of these trails were retaining soils at sustainable amounts. The maintenance efforts from the fall of 2009 throughout 2010 included clearing out over side drains, clearing and building up rolling dips, armoring culverts with rock. These actions all contributed to the trails soil stabilization.

During the spring of 2010, all of the designated OHV Trails on the Forest were maintained using a small bulldozer, front-end loader and/or using hand tools. The trail treads were graded, rocks and debris removed. All of the trail drain structures were cleared and rolling dips reshaped.

2) Wildlife Habitat Protection Program/ Habitat Monitoring Plan (WHPP/HMP) and OHV Restoration Site Monitoring

Monitoring

Wildlife Habitat Protection Program/Habitat Monitoring Plan (WHPP/HMP) and Restoration Site Monitoring are funded in partnership with the State of California Off Highway Motor Vehicle Recreation Division (OHMVRD). WHPP/HMP monitoring is conducted by Forest field staff four times a year using maps and checklists to protect and restore threatened, endangered and sensitive wildlife and plant habitat from unauthorized off road and trail use. Restoration sites are monitored to ensure they are not affected by unauthorized use and to schedule maintenance needs.

Under the 2010 HMP, 22 locations of wildlife habitat and 36 locations of plant habitat were to be monitored 4 times (but weather only permitted 3). In 2010, 17 of the 58 sites had unauthorized off highway vehicle use occur. The number of sites being affected declined slightly from last year, most likely due to diligent patrol involving OHV, recreation, resource personnel and OHV volunteers, combined with unfavorable weather. Mountaintop (combined) patrols coordinate regularly to address OHV concerns. OHV volunteers have diligently resumed their "adoptive monitoring" program to increase monitoring and maintenance in areas with recurring effects in addition to the quarterly monitoring/maintenance performed by forest personnel. Interdisciplinary teams have been and will continue to be scheduled to address repetitive concerns in sensitive areas. Management plans are being implemented at the T-6 crossing and the Cactus Flats Staging Area, and are in the planning stages for Warm Springs. These are three known areas of concern on the Mountaintop District.

In 2010, thirty three restoration sites in addition to 17 miles of newly restored trails at Baldy Mesa were monitored (several restoration sites have been removed from monitoring due to complete recovery). During field monitoring, newly created disturbances were disguised immediately by covering trails with (slash) forest litter, rocks and vegetation to prevent future damage. For locations needing intensive treatment such as well established trails, erosion control work or long stretches of fence maintenance, a work party was scheduled. In conjunction with the monitoring, OHV conservation funds were used to propagate plants to immediately disguise unauthorized trails and to maintain a supply of containerized plants for this use.

The 2009/2010 State of California Off Highway Motor Vehicle Recreation Division grant proposal on the Forest was updated to include the prospectus for trends and expectations for OHV trails as described in the LMP. In addition, the proposal included goals to assist the Forest in achieving the desired conditions for OHV use. A shift has occurred in this cycle of grants to focus funding on monitoring/maintaining previous restoration sites rather than starting new ones.

3) Adopt-a-Trail Program Road and Trail Monitoring

Monitoring

The Forest motorized Adopt-a-Trail (AAT) Program maintains over 250 miles of forest roads and trails. The AAT Program currently has over 46 active clubs and an estimated 4,000 volunteers that conduct monitoring on all three Ranger Districts. In addition, some volunteers are trained to operate bulldozers, front loaders, backhoes, chainsaws, ATVs and motorcycles.

The Adopt-a-Trail clubs monitor thousands of acres of NFS lands. Every adopted road and trail has an annual written maintenance plan that identifies specific maintenance needs. Maintenance includes

brushing, culvert clearance, off road restoration, maintenance of signs, and facilities and equipment needs. The maintenance plans include monitoring points which include fence lines, barricades for sensitive habitats, restoration sites, hiking trail interfaces (unauthorized use), private property trespass and stream crossing monitoring. OHV Employees and OHV Volunteers repair any breach of barricades, fence lines, etc. These breach points become future monitoring points for OHV patrols and OHV projects. If an area has been illegally breached by motor vehicles multiple times, analysis determines what methodology will be employed to deter any future breach(es). Typically, signs are posted, Law Enforcement increased and any barricades are bolstered until the unauthorized motorized use stops occurring.

4) SBNFA-OHV Volunteer Program Monitoring Monitoring

The San Bernardino National Forest Association (SBNFA)-OHV Volunteer Program has approximately 150 members that conduct monitoring on all three Ranger Districts. The volunteers are skilled 4 x 4, ATV and motorcycle operators and they provide written reports surmising their daily activities monitoring in the Forest.

After 80 hours of specific training, the OHV Volunteers are given the authority to patrol as OHV hosts, making public contacts while monitoring the Forest use patterns. The OHV Volunteers report forest fires, illegal campfires, traffic collisions and other incidents while providing service to our public. While in the field, the OHV Volunteers are trained to monitor sensitive areas such as meadows, wilderness areas, urban interface (excessive sound), streams, and rare plant and wildlife habitats for unauthorized motorized use.

The OHV Volunteers are a vital Forest resource. Including all the services described above they are trained to identify and complete field projects and often assist in WHPP and Archeological monitoring and completing required monitoring forms.

5) Forest Travel Management Monitoring Monitoring

Monitoring occurs in conjunction with implementation of the Forest Travel Management decision. All Forest Roads and Trails that were affected by decommissioning or restoration efforts are monitored on a daily basis. If a site has been breached by motorized vehicles, the OHV Employee or OHV Volunteer will repair the breach immediately. If the breach requires equipment, supplies or a work party, this is reported to the Forest Liaison and a project is initiated to repair the breach site.

Conclusions for WHPP, Restoration Site, Adopt-A-Trail, SBNFA OHV Monitoring, and Travel Management Monitoring Programs

Off-Highway vehicle use on designated routes is consistent with Forest Goal 5.2 to provide for public use and resource protection. Active management for OHV is also consistent with this goal and Strategy Law 1 to utilize cooperative agreements with local law enforcement agencies, and supplement field personnel and provide additional law enforcement support primarily on high use weekends or holidays when visitor use is highest. OHV management is a program emphasis in several of the Places across the Forest. The LMP prospectus for trends and expectations over the next 3-5 years for Trails states that the program will emphasize improving the NFS OHV trails and roads by designating OHV road and trail routes and effectively managing inappropriate use. The desired condition for OHV use is for the use to safely occur on designated routes only.

Along routes within any Wildlife Habitat Protection Program/Habitat Monitoring Program areas, Adopt-A-Trail and SBNFA OHV Volunteer use monitoring programs, mitigation of unauthorized OHV use to protect natural resources and wildlife habitats has been successful in most locations. In those areas where the Forest has a managed presence, unauthorized use decreased. The contribution of volunteers is key to the success of Wildlife Habitat Protection Program, OHV, and Adopt-A-Trail monitoring efforts.

The monitoring programs have the ability to move the Forest toward the LMP desired condition for OHV management.

Recommendations for WHPP/HMP, Site Restoration, Adopt-A-Trail, and SBNFA OHV Monitoring Programs

- Continue monitoring soil loss and retention on all of the designated OHV Trails and complete annual OHV trail maintenance using mechanized equipment and hand tools.
- In order to comply with Standard 35, for identified desired conditions for managed motorized recreation, watershed management and sustainable biological resource conditions. Our Staff will continue to coordinate the WHPP/HMP, Site Restoration Program, Adopt-a-Trail Program, SBNFA OHV Volunteer monitoring program and the internal OHV taskforce described in WHPP section above.
- To ensure all WHPP/HMP and restoration sites are monitored four times a year as required, continue to implement the monitoring dates established in 2009.
- Continue the Travel Management monitoring as scheduled.
- Look for opportunities to fund and train additional patrol staff.
- Continue to support volunteer programs.

Heritage Program Monitoring

Monitoring

Two types of heritage program monitoring are conducted. Section 106 of the National Historic Preservation Act (NHPA) requires that the Forest locate and protect properties that are potentially eligible for, and sites that are on the National Register of Historic Places, during project planning and implementation. Project monitoring is conducted to ensure sites are avoided, to monitor when activities are being conducted within a site boundary or to ensure project activities will not affect subsurface sites. The Archaeological Clearance Memo that is signed by the District and Forest Archaeologist and included in the project file identifies if management measures are necessary for protection of historic properties and if Section 106 monitoring is required during project implementation.

Each time Section 106 monitoring is completed, the District Archaeologist completes a standardized form. The forms are not added to the project file; they are filed on the District by year. Annually, District Archaeologists provide information from the forms to the Forest Archaeologist for completion of the Regional Programmatic Agreement Report. This report identifies all projects completed under the Programmatic Agreement, activities that occurred and projects that were monitored.

Section 110 of the NHPA requires monitoring and evaluation of the condition of existing historic properties that are not affected by planned management activities. It is a proactive program for the purpose of identifying and evaluating historic resources for their potential inclusion into the National Register. Monitoring is completed to report historic property condition or to report if sites have been

vandalized. The Forest is required to conduct assessments and condition surveys on 20% of the Forest's Priority Heritage Assets each year.

Results

In fiscal year 2010, under Section 106, the Forest implemented methods to avoid, as well as monitor during and after implementation to avoid impacts to heritage resources during all fuel reduction projects and associated activities. A total of 31 projects required monitors to protect 182 sites during fiscal year 2010. In fiscal year 2010, the Forest requirement for Section 110 monitoring and reporting included 62 properties, through the implementation of a volunteer site stewardship program and through condition surveys.

Conclusions

During fiscal year 2010, Section 106 monitoring was completed as required for 31 projects, and 62 Priority Heritage Asset sites were monitored under Section 110.

Recommendations

- Ensure the Archaeological Clearance Memo and Tribal Consultation documentation is included in the project file prior to implementation and that it is implemented as described.

Water Quality Monitoring

Best Management Practices Evaluation Program (BMPEP)

Forest Service obligations to the State Water Board Management Area Agreement include 1) correcting water quality problems on the Forest, 2) perpetually implementing the Best Management Practice (BMPs) and 3) monitoring and evaluating effectiveness of BMPs.

Results

The Forest contributed to the restoration of deteriorated watershed lands by completing road and trail maintenance and fuel reduction projects. Implementation of the BMPs was accomplished by conducting BMP training and including BMPs in every project analysis that had hydrologic input. BMP monitoring was accomplished by identifying needs in the analysis process; implementation monitoring was completed by contracting officer representatives or other Forest Service personnel on the project site as the work was being completed.

Effectiveness monitoring is completed through annual BMP monitoring of randomly selected, recently completed projects that have been through at least one winter precipitation season, concurrent monitoring in which sites are selected based on management interest in specific ongoing projects, and monitoring required by Regional Water Quality Control Board (RWQCB) permits. Effectiveness monitoring is designed to evaluate how well the Forest and Region implement BMPs and how effectively the BMPs control water pollution from NFS lands. The summary and results of calendar year 2010 monitoring are located in the San Bernardino National Forest Best Management Practices Region 5 Evaluation Program Water Quality Monitoring Report 2010. Methods for dealing with the identified problems have been established and are currently being implemented.

Currently the Forest is party to three Clean Water Act Total Maximum Daily Load (TMDL) implementation plans: Big Bear Lake and tributaries nutrient TMDL, Lake Elsinore/Canyon Lake nutrient

TMDL, and the Middle Santa Ana pathogen TMDL. In fiscal year 2010, the Lake Elsinore/Canyon Lake TMDL implementation plan required water quality monitoring throughout the applicable watersheds. Requirements will persist in each of these areas for the foreseeable future. In addition to the three TMDLs with implementation plans, the Forest is an identified stakeholder for an additional 15 impaired water bodies. Monitoring requirements for these water bodies need to be negotiated with the appropriate RWQCB.

Conclusions

In the past five years, implementation of BMPs averaged 86% success on the Forest (FY06=78%, FY07=87%, FY08=91%, FY09=86%, FY10=88%). Effectiveness protocols have averaged 83% success on the Forest (FY06=78%, FY07=97%, FY08=80%, FY09=80%, FY10=78%).

High effectiveness ratings in fiscal year 2007 were attributed predominantly to lack of precipitation. Awareness of the importance of BMP implementation and effectiveness continues with increased training and interaction with District personnel, increased coordination with LMP monitoring, and continued regulatory interactions with the Santa Ana and Lahontan RWQCBs.

The 80% effectiveness rating for fiscal year 2008 was attributed predominantly to a legacy road problem where Deer Creek crosses Forest Service Road 1N09. The Forest Service acquired Legacy Roads dollars for fiscal year 2010 and completed the required analysis for funding the appropriate structure in this location.

The 80% effectiveness rating for fiscal year 2009 is not attributable to the fuels reduction program, the reforestation program, or the minerals program (100% implementation and effectiveness). The roads monitoring showed 75% implementation and 55% effectiveness. The recreation monitoring showed 71% implementation and 57% effectiveness.

The 78% effectiveness rating for fiscal year 2010 is not attributable to the fuels reduction program, the reforestation program, or the minerals program (100% implementation and effectiveness). The engineering monitoring showed 82% implementation and 59% effectiveness. The recreation monitoring showed 83% implementation and 83% effectiveness. The grazing allotment failure is being addressed in the current Allotment analysis in progress.

Continued interaction with all Districts throughout the planning process for fuels treatments have improved communication and understanding of the importance of limiting sediment and erosion from fuels treatment sites. The addition of the Lahontan Timber Waivers has put BMP monitoring to the forefront of concerns on the Mountaintop Ranger District.

Forest leadership has been made aware that through the new Management Area Agreement between the Pacific Southwest Region of the Forest Service and the State Water Resources Control Board, being worked on during 2010 and 2011, that monitoring of many more projects in TMDL watersheds may be required in the future.

Roads combined with much public recreation continue to be the areas with the most potential problems. Much of the Forest remains open during the winter and the Forest experiences a lot of public recreation including OHV use. Unauthorized trails are constantly identified and projects are moved forward to fix

these problems. The Forest's Travel Management program and the Forest Service's Legacy Roads funding will both continue to be used to solve ongoing roads issues.

Recommendations

- Continue training and interaction with District staff throughout planning process for fuels treatments, road and engineering projects, and recreation/OHV management.
- Continue combining BMP and LMP monitoring field trips, as applicable to both protocols.
- Continue to promote concurrent monitoring with RWQCBs.

Air Quality Monitoring

Under the Regional air quality monitoring program, a sampling station at the Converse Fire Station monitors the air quality near the San Gorgonio Wilderness Class 1 air shed. This station is part of the IMPROVE national monitoring network. More information may be found at the IMPROVE web site at the following URL's:

Raw data: <http://vista.cira.colostate.edu/improve/Data/data.htm>

Reports: http://vista.cira.colostate.edu/improve/Publications/improve_reports.htm

Part 3 Monitoring

Implementation and effectiveness monitoring for Part 3 of the LMP are conducted at the project level in order to evaluate the effectiveness and application of design criteria established in the LMP. Part 3 of the LMP requires annual implementation monitoring of new projects and ongoing activities and sites. As detailed in the LMP, the Program Emphasis and Objectives describe the activities and programs on the Forests. Activities were organized into six functional areas, which include all areas of business for which the Forest is responsible. The functional areas collectively include 35 programs. National Forest management uses the results to clearly communicate program capability both internally and externally.

The Program Emphasis and Objectives' six functional areas are:

- **Management & Administration:** National Forest leadership, management and administrative support activities, communications, external affairs, community outreach, planning, human resources, information technology, and financial management.
- **Resource Management:** Activities related to managing, preserving, and protecting the national forest's cultural and natural resources.
- **Public Use & Enjoyment:** Activities which provide visitors with safe, enjoyable and educational experiences while on the national forest and accommodate changing trends in visitor use and community participation and outreach.
- **Facility Operations & Maintenance:** Activities required to manage and operate the National Forest's infrastructure (i.e., roads, facilities, trails, and structures).
- **Commodity & Commercial Uses:** Grazing management, forest special product development, and activities related to managing non-recreation special-uses such as National Forest access, telecommunications sites, and utility corridors.

- **Fire & Aviation Management:** Wildland fire prevention through education, hazardous fuels reduction, and proactive preparation. This program also includes on-forest wildland fire suppression, and national or international wildland fire and emergency incident response.

An interdisciplinary review team visited the selected projects and ongoing activities and strives to review the effectiveness of applying LMP design criteria. If problems in implementation were detected, or if the design criteria were determined to be ineffective, then the team recommended corrective actions. Corrective actions may include amendments to the LMP if necessary to improve the effectiveness of the design criteria.

Appendix C of Part 3 in the LMP identifies at least 10 percent of projects and on-going activities will be reviewed annually. The LMP should be amended to randomly select, for the monitoring period, at least five new projects. Ideally, a project will be selected from each functional area, excluding Management & Administration because new projects do not fall in this functional area. If there are a large number of new projects implemented, as timing and funding permit, additional projects will be randomly selected from each applicable sub-category in the functional areas. All ongoing activities and sites will be stratified into the appropriate functional areas. At a minimum, three ongoing activities and/or sites will be randomly selected for the monitoring period. Ideally, an ongoing activity and/or site will be selected from Public Use & Enjoyment, Facility Operations & Maintenance, and Commodity & Commercial Uses functional areas. As timing and funding permit, ongoing activities and/or sites will be randomly selected from each applicable sub-category in the three functional areas.

New Projects

All new projects implemented during the monitoring period, including projects that are implemented over multiple years, were stratified into the appropriate functional areas. Ten percent of projects were selected from each functional area, excluding Management & Administration because new projects do not fall in this functional area.

Lytle Development Land Donation Monitoring

The field review of the Lytle Development Land Donation occurred on May 24, 2011 on the Front Country Ranger District for new project monitoring under the Resource Management functional area. The Lytle Development donated 2.51 acres of land to the Forest. The opportunity for the donation next to the Sycamore fire station was identified during the analysis for an easement to San Bernardino County for a quarter of an acre to the northeast where Glen Helen road was expanded to the west. The Lytle Development is planned for 25,000 homes across Interstate 15 from Sycamore fire station.

The land donation was analyzed under a categorical exclusion. The analysis focused on encumbrances with the parcels of land, specifically the utilities that follow Glen Helen road. There were not any design criteria for this project because no ground disturbing activities occurred. Invasive species occur on the lands that were acquired in the exchange, but no actions were included in the analysis to manage these invasive species. Any activities that may occur in the future on NFS lands will be analyzed under a site specific analysis. The land donation removed a trespass by the Forest Service Sycamore fire station entrance. Due to the proximity to a major highway and the expanded Glen Helen road, there are resource concerns from increased levels of disturbance, including trash dumping and fire ignitions.

Conclusions

The Lytle Development Land Exchange project is consistent with Forest Goal 7.1 to take opportunities to reduce ownership complexity through consolidation of NFS lands. This project directly implements LMP Strategy Lands 1 – Land Ownership Adjustment by consolidating NFS land base to improve management effectiveness. An opportunity was identified to fix the trespass that the Forest was in when a proponent came to the Forest for an easement across NFS lands.

Recommendations

- Opportunities should be explored to survey for resources as part of the title transfer analysis of land acquired for the NFS.

Angelus Oaks Pile Burn**Monitoring**

The field review of Angelus Oaks Pile Burn project implementation occurred on June 28, 2011 on the Front Country Ranger District as part of the new project monitoring under the Resource Management functional area. The 980 acre project has been implemented since 2004 when the analysis, under a categorical exclusion, was completed. This project was completed under Category 10 – Hazardous Fuels Reduction activities using prescribed fire and mechanical methods, which the Forest Service has since been enjoined from implementing. This project was allowed to continue implementation because the majority of the project was completed prior to the ruling. Additionally, this project was analyzed before the LMP was completed.

The analysis included design criteria for the protection of wildlife, botany, archaeology, and hydrology resources. The project was effective at implementing these design criteria, including: a 100 foot buffer from Mountain Home Creek; excluding burn piles from sensitive botany species and rubber boa habitat; surveying for botany species following implementation; protecting the Santa Ana River trail through closures and guides; and installing temporary fencing along trails near public areas. The project occurs within California spotted owl protected activity centers (PACs) and Southern rubber boa habitat. There was a contract issue during implementation which mechanically treated an area that was not identified for implementation. This issue happened due to contract oversight being spread over too great of an area with too many projects.

Due to the amount of time that this project has been implemented, many of the piles have deteriorated and some have become wildlife habitat. The Angelus Oaks Prescribed Understory Burn project is proposed to maintain the fuel reduction activities that have occurred under this project.

Conclusions

The Angelus Oaks Pile Burn project implementation is consistent with Forest Goal 1.1 to improve the ability of communities to limit loss of life and property. This project implements LMP Strategy Fire 2 – Direct Community Protection by reducing the fire threat to communities using mechanical treatments and prescribed fire. The project did not meet design criteria identified in the LMP for California spotted owl and Southern rubber boa. Implementation of the project occurred over a long period of time and changed conditions were not incorporated into the implementation of the project.

Recommendations

- A consistency review with the LMP should occur and be documented in the project record for projects that have decisions made prior to the revision of the LMP.

Burro Management**Monitoring**

The review of Burro Management project implementation occurred on July 21, 2011 on the Mountaintop Ranger District as part of the new project monitoring under the Resource Management functional area. This project implemented the 1997 decision, analyzed under an Environmental Assessment, which created a new Territory Management Plan as directed by the Wild Horse and Burros Protection Act (1971). The 1997 decision, that established two Herd Management Areas (HMAs), was instigated by the proliferation of burros in developed areas in the Big Bear valley and conflicts and hazards that the burros caused. Following the 1997 decision, a controversial round up of burros occurred.

In the fall of 2009, 50 burros were passively rounded up and relocated to the BLM's Ridgecrest horse and burro facility where they were prepared for adoption. These burros were relocated because they were outside of HMA 1, which was designated as an area within the Territory that was suitable for burros and would not cause conflicts with humans. A LMP consistency review was completed prior to implementing the 2009 round up. The level of controversy and public interest in the 2009 round up was reduced compared to the 1997 round up. Following the 2009 round up, there has been a population of 20 burros observed outside of HMA 1, near communities.

Conclusions

The Burro Management project implementation is consistent with Forest Goal 6.1 to maintain livestock grazing opportunities and Forest Goal 6.2 to maintain wildlife habitat functions. This project directly implements LMP Strategy LG 3 – Wildhorse and Burro Territories by managing the population and distribution as specified in the territory management plan.

Recommendations

- Continue monitoring the burro population on the Mountaintop Ranger District and implementing the territory management plan.

Streambed Restoration**Monitoring**

The review of Forest-wide Streambed Restoration project implementation occurred on August 10, 2011 as part of the new project monitoring under the Resource Management functional area. The Forest-wide Streambed Restoration project restores stream habitats in high recreational use areas to improve the quality and availability of outdoor recreation experiences and provide public education. The Forest coordinated volunteer work and provided supplies for restoration of 8 miles of stream across the Forest in fiscal year 2010. 32 volunteers from the Fisheries Resource Volunteer Corps worked over 1,000 hours. Restoration work included: trash removal, graffiti removal, recreational dam removal, stream condition surveys, public education, and reporting.

Conclusions

The Streambed Restoration project implementation is consistent with Forest Goal 3.1 to provide for public use and natural resource protection, Forest Goal 5.1 to improve watershed conditions through

cooperative management, Forest Goal 5.2 to improve riparian conditions, and Forest Goal 6.2 to maintain wildlife habitat functions. This project implements LMP Strategies WAT 1 – Watershed Function, REC 4 – Conservation Education, LM 2 – Landscape Restoration, and Law 1 – Enforcement and Investigations by maintaining watershed integrity, providing environmental education opportunities, restoring landscapes to reduce visual effects, and utilizing cooperative agreements to provide additional law enforcement support.

Recommendations

- Partnerships with volunteer groups should be fostered and maintained to help with management of the Forest.

North Fork of the San Jacinto Healthy Forest

Monitoring

The field review of North Fork of the San Jacinto Healthy Forest project implementation occurred on May 11, 2011 on the San Jacinto Ranger District as part of the new project monitoring under the Resource Management functional area. The FLT participated on this field review. The 220 acre Fuller Mill unit was implemented during the 2010 fiscal year with fuel reduction and pile burning. Activities included thinning with a masticator, hand thinning in sensitive and steep areas, limbing, pruning, hazard tree removal, hand piling, and burning. Some piles were not burned and left on site for wildlife habitat creation. The project was implemented as part of evacuation route for Highway 243. The project was analyzed under the North Fork of the San Jacinto Healthy Forest Project Environmental Assessment. Project design criteria, including establishment of RCAs and limited operating periods, were effective at protecting sensitive resources, such as California spotted owl habitat, Mountain yellow legged frog occupied critical habitat, and archaeological sites. The fuel reduction activities were accomplished through a single contract and District fire personnel accomplished pile burning. Contract administration was very effective; even limiting contract non-compliance to a small area when a masticator entered into an established RCA. Integration between fire management and vegetation management was very effective at protecting sensitive areas, meeting burning prescriptions, and reducing fire hazard during implementation of this project.

Conclusions

The North Fork of the San Jacinto Healthy Forest project implementation is consistent with Forest Goal 1.1 to enhance community protection and firefighter safety through vegetation treatment, Forest Goal 1.2.1 to reduce the potential for widespread loss of montane conifer forests, Forest Goal 5.1 to have healthy watersheds, and Forest Goal 6.2 to maintain wildlife habitat functions. This project implements LMP Strategies FH 3 – Restoration of Forest Health, WP 1 – Offer Wood Products, and Fire 5 – Fuelbreaks and Indirect Community Protection by implementing vegetation management activities to reduce tree densities and fuel loading along roadsides and watershed boundaries to limit fire size and limit threat to communities, while providing opportunities to use the debris from the forest thinning activities.

Recommendations

- Implementation of hazardous fuels reduction and forest health projects should continue to integrate fire and vegetation management program areas to ensure that all management objectives are being met.

- Contract oversight at the District level should continue in order to ensure that implementation is conducted as desired.

Bay Tree Spring Safety Hazard Abatement

Monitoring

The field review of Bay Tree Spring Safety Hazard Abatement project implementation occurred on May 11, 2011 on the San Jacinto Ranger District as part of the new project monitoring under the Resource Management functional area. The FLT participated on this field review. Bay Tree Spring was documented as a location that water was available as far back as the 1930s, and is similar to other sites in southern California that were developed by road agencies to provide water to the motoring public. Mandatory tests of drinking water identified Coliform and Escherichia coli bacteria in the well. An evaluation by a geotechnical engineer determined that the spring was influenced by surface water which allowed for the bacteria. Three options were considered to mitigate the hazard posed by the contaminated water: decommissioning the site, re-drilling the well, and treating the water. There were safety issues associated with this site due to inadequate parking for the amount of use. Additionally, there were policy issues with providing potable water at an undeveloped recreation site. It was determined by the Responsible Official that decommissioning was the only viable option after multiple attempts to discourage or block use were unsuccessful. The project was documented in a Categorical Exclusion (CE) checklist under 36 CFR 220.6(d)5 – Repair and maintenance of recreation sites and facilities. Scoping for this project included notices to the public, which generated a huge public interest, including the creation of a website. The improvements associated with Bay Tree Spring were removed to protect public health and safety and the spring was restored to natural free-flowing conditions. The improvements that were removed as part of this project included a sign identifying Bay Tree Spring, a water tap stand, and a horizontal pipe. The horizontal well was sealed with high pressure grout. Permits from Riverside County and Caltrans were obtained prior to decommissioning.

Conclusions

The Bay Tree Spring Safety Hazard Abatement project implementation is consistent with Forest Goal 3.1 to provide for public use and natural resource protection. This project implements LMP Strategies WAT 2 – Water Management and REC 2 – Sustainable Use and Environmental Design by managing groundwater and surface water to maintain or improve water quality by restoring areas where visitor use is affecting public safety.

Recommendations

- A communication plan should be developed for controversial projects prior to analysis in order to involve and educate the public in the most efficient way.

ARRA CIM-0521-03 Trail Maintenance

Monitoring

The review of Region-wide ARRA Trail Maintenance project implementation occurred on July 26, 2011 as part of the new project monitoring under the Facilities Operations & Maintenance functional area. This American Recovery and Reinvestment Act (ARRA) project completed Forest-wide routine repair and maintenance of non-motorized and motorized trails and trailhead facilities. In fiscal year 2010 a target of 35.9 miles of trail maintenance and 5 miles of trail improvement was set, and 250.9 miles of maintenance and 51.3 miles of improvement were accomplished. This project was identified as one of the first 10% of

‘shovel-ready’ projects that received ARRA funding to create jobs. Work was accomplished through partnerships with the Los Angeles Conservation Corps (LACC), the California Conservation Corps (CCC), and the Urban Conservation Corps of the San Bernardino National Forest Association (SBNFA). This project was analyzed under a Categorical Exclusion and an R5 ARRA Checklist CE that was developed for ARRA projects was used to document the analysis. A ‘Trail-Specific Checklist of Design Criteria’ was developed as part of the Biological Assessment/Evaluation, and was completed in advance by District staff for coordination with resource specialists.

Conclusions

The ARRA CIM-0521-03 Trail Maintenance project implementation is consistent with Forest Goal 3.1 to provide for public use and natural resource protection. The ‘Road and Trail System’ section of this Goal states that “The system is well-maintained commensurate with levels of use and available funding.” This project implements LMP Strategy Trans 1 – Transportation Management by maintaining the trail network to levels commensurate with sustainable resource conditions and the type and level of use.

Recommendations

- Continue to use checklists to document compliance with the LMP for routine projects.

ARRA CIM-05-03R Road Storm Proofing/Maintenance

Monitoring

The review of Forest-wide ARRA Road Storm Proofing/Maintenance project implementation occurred on July 21, 2011 as part of the new project monitoring under the Facilities Operations & Maintenance functional area. This ARRA project focused on the removal of Spanish broom along California State Highway 18 for evacuation route safety as authorized by the 2009 decision that was analyzed in a Categorical Exclusion. A high level of public safety and environmental analysis was completed for the decision which resulted in applying a low risk herbicide and using the cut and daub method of application. The analysis of this project discovered a high level of public interest and controversy for treatment of Spanish broom on the Forest. Spanish broom was treated over approximately 23 acres with herbicide or physical removal over 5.2 miles, for 20 feet on each side of California State Highway 18. To decrease risk along the highway, the 67,000 pounds of Spanish broom was chipped and then hauled to a landfill.

Implementation of this project was effective at implementing the design criteria analyzed, including: providing a no herbicide use buffer adjacent to private lands, working with private landowners and Special Use Permit holders, establishing a 100 foot buffer around all water, avoidance of Southwestern willow flycatcher habitat, presence of biology monitors during implementation, adding dye to the herbicide to identify treatment locations, limiting herbicide to 2 gallons on site at any time in case of accidents or spills, and abiding by California laws such as use of certified applicators, labeling of pesticide containers, use of a 4 hour restriction on re-entry into treated areas and use of personal protective equipment. Many precautions to ensure the safety of personnel implementing this project along the steep highway slopes were implemented resulting in no injuries or spills.

Removal of broom was constrained in some locations due to the requirements for the non-detection of herbicide in water bodies and no effect to Threatened and Endangered species, however, the goal of creating a safer evacuation route along California State Highway 18 was achieved. Follow up monitoring has indicated that the treatments were effective but retreatment is needed.

Conclusions

The ARRA CIM-05-03R Road Storm Proofing/Maintenance project implementation is consistent with Forest Goal 2.1 to reverse the trend of increasing loss of natural resource values due to invasive species. This project directly implements LMP Strategies IS 1 - Invasive Species Prevention and Control, Trans 1 - Transportation Management, and Fire 2 - Direct Community Protection by containing and controlling established infestations of invasive species along evacuation routes for public safety. The control of Spanish broom along California State Highway 18 also directly implements actions described in Part 3 of the LMP, Appendix M –Forest of Southern California Weed management Strategy.

Recommendations

- A management plan needs to be developed in coordination with CalTrans and CalFire for Spanish broom along evacuation routes on the Forest.
- Expanding the monitoring and mitigation of seed source is needed in addition to treatments.
- Additional treatments are needed along California State Highways 138, 330, and 38.

Riverside County Ranger Peak Communication Tower**Monitoring**

The field review of Riverside County Ranger Peak Communication Tower project implementation occurred on May 11, 2011 on the San Jacinto Ranger District as part of the new project monitoring under the Commodity & Commercial Uses functional area. The FLT participated on this field review. Riverside County is updating their emergency services network across the County and identified that there was a need for a 2-way radio site on Ranger Peak. The 120 foot tower will provide services to cover Highway 243 and expanding private developments in and around NFS lands. The option to place the tower on private land near Ranger Peak was explored, but the site did not meet the requirements necessary to provide emergency service, including security, backup power, fire hardened site, and seismic standards. The decision to authorize a 30 year permit was signed by the Forest Supervisor due to the need to amend the LMP to establish a communication site and lower the scenic integrity objective for the site. The Riverside County Ranger Peak Communication Tower project was analyzed under an Environmental Assessment and establishes a government only communications site on the San Jacinto Ranger District. Visual impacts to scenic byway - Highway 243, the sky line view, and the Ranger Peak Lookout location were issues that required design criteria, including galvanization of the tower, drab colors of buildings, and vegetation screening between sites. Other design criteria included implementing the project outside migratory bird season, botany surveys prior to construction, invasive species surveys post implementation, and vegetation clearance around the site for fire protection. Botany surveys did not occur prior to implementation and vegetation clearance around the site needs to be improved to meet state of California requirements. This project had issues during analysis due to turnover of personnel at the District and Forest levels as well as in Riverside County. Due to the delays in analysis there was a lot of pressure from the proponent to finish the project in a shortened time period.

Conclusions

The Riverside County Ranger Peak Communication Tower project implementation is consistent with Forest Goal 7.1 to retain natural areas as a core for a regional network while focusing the built environment into the minimum lands area needed to support growing public needs. This project implements LMP Strategies Lands 2 – Non-Recreation Special Use Authorizations and Fire 4 –

Firefighter and Public Safety by improving emergency communications by authorizing a new tower that conforms to LMP design criteria. The LMP was amended to add Ranger Peak as a Communication Site.

Recommendations

- The process that special use applications are received and processed should be streamlined to limit the effects of personnel turnover and communication breakdowns with proponents.

Sheep Fire Suppression Repair

Monitoring

The field review of Sheep Fire Suppression Repair project implementation occurred on May 24, 2011, on the Front Country Ranger District as part of the new project monitoring under the Fire & Aviation Management functional area. The Sheep Fire was a 7,128 acre fire that resulted in the establishment of 32.2 miles of hand line, 11.45 miles of dozer line, 6.9 miles of improved road, and safety zones. The construction of control lines and safety zones allows for the introduction of invasive species, fragmentation of wildlife habitat, adverse effects to viewsheds, and created an opportunity for unauthorized OHV use. Repair of the control lines and safety zones included slashing (covering and concealing disturbed areas with cut vegetation), re-distribution of topsoil, contouring back to natural slopes, installation of barriers to block unauthorized OHV access to control lines, chunking, installation of waterbars to reduce erosion, and effectiveness monitoring. When justified, opportunities were taken to close and restore unauthorized OHV trails that were affected during suppression activities. Incident Resource Advisors prepared a written suppression repair plan for the incident. The plan was approved by the Incident Commander and the appropriate line officers on the affected Forests. One site that was visited was a wide dozer line that was established in the area known as Helicopter Hill, which marks the administrative boundary between the San Bernardino and Angeles National Forests. The dozer line was established as a location from which firefighters could safely engage in fire suppression efforts to protect the community of Wrightwood. The general area has cultural significance for the San Manuel Band of Serrano Mission Indians. During the visit it was discovered that barriers installed to preclude unauthorized OHV use had been breached. Although it has not been confirmed, it is likely that the barriers were taken down to access a fuel reduction project on the Angeles National Forest.

Conclusions

The Sheep Fire Suppression Repair project implementation is consistent with Forest Goal 1.1 to improve the ability of southern California communities to limit loss of life and property and recover from the high intensity wildland fires that are natural part of this state's ecosystem. This project implements LMP Strategies IS 1 – Invasive Species Prevention and Control, FH 1 – Vegetation Restoration, WAT 1 – Watershed Function, Fire 3 – Fire Suppression Emphasis by restoring fire suppression impacts to control invasive species introduction, erosion, and unauthorized OHV.

Recommendations

- Continue to take advantage of opportunities to restore unauthorized OHV routes.

Ongoing Activities and Sites

Ongoing activities and sites were selected from Public Use & Enjoyment, Facility Operations & Maintenance, and Commodity & Commercial Uses functional areas at a prescribed rate of two campgrounds, two recreation special uses, one trailhead, one minor recreation site, one OHV trail or area,

at least one non-recreation special use, one road maintenance, and two grazing allotments. The one non-recreation special use was monitored under the new project selection through the Riverside County Ranger Peak Communication Tower project. The one road maintenance and two grazing allotments were monitored through the 2010 San Bernardino National Forest Best Management Practices Region 5 Evaluation Program Water Quality Monitoring Report.

Summit OHV Trailhead

Monitoring

The field review of the Summit OHV Trailhead occurred on May 24, 2011 on the Front Country Ranger District as part of the ongoing site monitoring under the Public Use & Enjoyment functional area. The use at the Summit OHV Trailhead has greatly expanded since the temporary closure of the Baldy Mesa OHV Staging Area during the construction of the Burlington Northern third rail, and the use has pushed beyond the original boundary. Use can exceed 100 people during weekends. The trailhead is connected to one designated OHV trail, Forest Service Road 3N22, and the OHV system in the area is limited.

During the closure of Baldy Mesa OHV Staging Area a port-a-potty was installed at the trailhead, but there are no restroom facilities at the site. A fence that once delineated the trailhead boundary has been removed. The trailhead crosses a known archeological site and any expansion can potentially increase those impacts. The expanded site provides more opportunity for erosion, impacts to air quality, and introduction of invasive species. There are some signs of erosion at the entrance to the trailhead, but the hilltop location reduces erosion impacts. With the typical winds that blow through Cajon Canyon the large open dirt area could produce large quantities of fugitive dirt into the air. Around the expanded boundary there is a large population of invasive species. Within a mile and a half there is the largest Arroyo toad population on the Forest and its' designated critical habitat.

There is a proposed project to define the Summit OHV Trailhead and mitigate impacts associated with the use. The project is funded through California State OHV Grants.

Conclusions

The Summit OHV Trailhead is not consistent with Forest Goal 3.1 to provide for public use and natural resource protection. The 'OHV' section of this Goal states that "High-use areas are managed within the capacities in order to maintain the quality of experiences." This site should comply with LMP Strategies REC 2 – Sustainable Use and Environmental Design and Trans 1 – Transportation Management by analyzing the OHV site to manage visitor use within the limits of identified capacities in order to improve opportunities and facilities.

Recommendations

- The desired use, based on available opportunities in the area, needs to be defined for the Summit OHV Trailhead and the boundary needs to be defined with the installation of barriers commensurate with that use.
- Mitigations for the protection of wildlife, botany, hydrology, and archeology resources need to be a part of any decision regarding the Summit OHV Trailhead.
- The impacted areas outside of the boundary need to be restored, including invasive species management and archeological site protection.
- Opportunities should be explored to integrate the OHV use at this site with the larger OHV system in the area.

Skyline Group Campground

Monitoring

The field review of the Skyline Group Campground occurred on June 20, 2011 on the Mountaintop Ranger District as part of the ongoing site monitoring under the Public Use & Enjoyment functional area. The Skyline Group Campground has one site that can hold up to 25 people and is managed under a concession permit as part of the Heart Bar Recreation complex. The campground is located at the back of the Heart Bar Campground and has facilities that include parking for up to 9 vehicles, a vault toilet, and water. The campground is located on a bench that helps to limit the footprint. In 2000 the vault toilet and barriers were replaced. The campground is located near the Heart Bar meadow complex and designated Southwestern willow flycatcher habitat. The concessionaire is responsible for identifying hazard trees, then gets permission from the District to remove the trees, and then obtains a commercial wood permit and sells the wood to campers.

Conclusions

The Skyline Group Campground is consistent with Forest Goal 3.1 to provide for public use and natural resource protection. This site is consistent with LMP Strategy REC 2 – Sustainable Use and Environmental Design by managing visitor use within the limits of identified capabilities.

Recommendations

- A sign designating the Skyline Group Campground needs to be installed at the entrance to the campground.

Alpine Pedal Path Interpretive Site

Monitoring

The field review of the Alpine Pedal Path Interpretive Site occurred on June 20, 2011 on the Mountaintop Ranger District as part of the ongoing site monitoring under the Public Use & Enjoyment functional area. The Alpine Pedal Path was constructed in 1990 and 1991 as part of the North Shore Recreation complex and is approximately 3.2 miles long with a half mile spur that leads to the Big Bear Discovery Center. The pedal path is a highly used trail along the north shore of Big Bear Lake. The land acquisition, analysis, and decision for the North Shore Recreation complex were completed in 1977. The two interpretive sites along the pedal path were developed as part of environmental education in conjunction with the rest of the North Shore Recreation complex. Due to funding limitations, the Discovery Center has taken precedence for environmental education in the North Shore Recreational complex. As part of the 1977 decision there were protection measures for Bald Eagles, including limiting use on trail, and further restrictions on use from December 1 to March 31 each year. The campground concessionaire for the North Shore Recreation complex maintains the Pedal Path. However, under the new permitting regulations that begin in 2012, the concessionaire will no longer be responsible for trail maintenance, as it is not a revenue generating facility.

Conclusions

The Alpine Pedal Path Interpretive Site is consistent with Forest Goal 3.1 to provide for public use and natural resource protection. This site is consistent with LMP Strategy REC 2 – Sustainable Use and Environmental Design by managing visitor use within the limits of identified capabilities. Design criteria identified in the project analysis for Bald Eagle protection are not being implemented.

Recommendations

- The Alpine Pedal Path needs to be reanalyzed for compliance with the LMP and current resource conditions.

Serrano Campground**Monitoring**

The field review of the Serrano Campground occurred on June 20, 2011 on the Mountaintop Ranger District as part of the ongoing site monitoring under the Public Use & Enjoyment functional area. The first phase of Serrano Campground was completed in 1991 and was developed as part of the North Shore Recreation complex. The development of the campground was needed to remove user created conflicts and resource issues around Big Bear Lake. The campground is approximately 44 acres with 132 units that are managed under a concessionaire permit, including 34 sites that have full hookups and are open during the winter. After opening the campground has had on average reservation rates of 100% on weekends and 95% on weekdays annually from Memorial Day to Labor Day. The land acquisition, analysis, and decision for the North Shore Recreation complex were completed in 1977. Resource concerns for the campground include: wildlife, botany, hydrology, archeology, and aesthetic resources. As part of the 1977 decision there was a limited operating period from December 1 to April 1 for Bald Eagles. Consultation was reinitiated to open the upper two loops of the campground during the winter. The closures for Bald Eagles have been effective at habitat and species protection. Since construction, Pebble plains species have been surveyed in the campground and barriers have been installed to exclude use. Because of the high intensity of use there has been a loss of many large trees and other vegetation in the campground. The campground is connected to the county water and sewer system, and the concessionaire is responsible for trash removal and site maintenance. The area has since been identified as a potential historic district and there are numerous archeological sites in the campground. Boulders have been used to limit access in the campground. There is little screening in the campground because of the proximity to California Highway 38 and the size of the campground.

Conclusions

The Serrano Campground is consistent with Forest Goal 3.1 to provide for public use and natural resource protection. This site is consistent with LMP Strategy REC 2 – Sustainable Use and Environmental Design by managing visitor use within the limits of identified capabilities.

Recommendations

- With the renewal of the concession permit for the North Shore Recreation complex, Serrano Campground needs to be reanalyzed for compliance with the LMP and current resource conditions.

Cougar Crest Trailhead**Monitoring**

The field review of the Cougar Crest Trailhead occurred on June 20, 2011 on the Mountaintop Ranger District as part of the ongoing site monitoring under the Public Use & Enjoyment functional area. The Cougar Crest trailhead consists of a paved parking area for 10-12 cars and a vault toilet. The trailhead is part of the North Shore Recreation complex, and connects to the Pedal Path through a bridge to the Discovery Center and a culvert under California Highway 38 to Serrano Campground. The land acquisition, analysis, and decision for the North Shore Recreation complex were completed in 1977. The campground concessionaire for the North Shore Recreation complex maintains the Cougar Crest

trailhead. However, under the new permitting regulations that begin in 2012, the concessionaire will no longer be responsible for maintenance of this site, as it is not a revenue generating facility.

Cougar Crest trail connects to Pacific Crest Trail. There is a Mountain Bike use conflict between the Cougar Crest trail and the Pacific Crest Trail; Cougar Crest trail allows Mountain Bike use and connects into the Pacific Crest Trail that does not allow Mountain Bike use. There are issues with user created trail spurs at the trailhead. Cougar Crest trail is an old roadbed and has some erosion issues because of the large tread area.

Conclusions

The Cougar Crest Trailhead is consistent with Forest Goal 3.1 to provide for public use and natural resource protection. This site is consistent with LMP Strategy REC 2 – Sustainable Use and Environmental Design by managing visitor use within the limits of identified capabilities.

Recommendations

- The Cougar Crest trail width needs to be defined and restricted to mitigate hydrology issues.

Hook Creek Recreation Residence Tract

Monitoring

The field review of the Hook Creek Recreation Residence Tract occurred on July 21, 2011 on the Mountaintop Ranger District as part of the ongoing site monitoring under the Public Use & Enjoyment functional area. The Hook Creek Recreation Residence Tract originally had 6 cabins; one was torn down and four burned in the Old fire in 2003. The cabins were not authorized to be rebuilt because of the proximity to Hook Creek as directed in the LMP. The one cabin that remains was built in 1932. The location of the cabin makes it prone to vandalism. The cabin is authorized by a 20 year special use permit, issued in 2009. Annual inspections ensure compliance with the terms and conditions of the special use permit and LMP, including: impacts to health and safety, aesthetic, archeological, wildlife, botany, and hydrology resources. Fire safety and compliant use enforcement are the largest factors during permit inspections. As with most Recreation Residence Tracts on the Forest, the tract is considered as eligible for the National Register until an evaluation is completed.

Conclusions

The Hook Creek Recreation Residence Tract is consistent with Forest Goal 3.1 to provide for public use and natural resource protection. This ongoing activity is consistent with LMP Strategy REC 5 – Recreation Special Use Authorizations by managing recreation residences in compliance with law, regulation, and policy.

Recommendations

- A comprehensive plan for managing Recreation Residence Tracts on the Forest is needed in order to continue to implement the LMP and ensure that the permits are administered to standard.

Polique Canyon Recreation Residence Tract

Monitoring

The field review of the Polique Canyon Recreation Residence Tract occurred on July 21, 2011 on the Mountaintop Ranger District as part of the ongoing site monitoring under the Public Use & Enjoyment functional area. The Polique Canyon Recreation Residence Tract has 24 cabins that are in two separate

locations along the north side of Big Bear Lake. The tract was established in the 1920s. Each cabin is authorized by a 20 year special use permit. Annual inspections ensure compliance with the terms and conditions of the special use permit and LMP, including: impacts to health and safety, aesthetic, archeological, wildlife, botany, and hydrology resources. Fire safety and compliant use enforcement are the largest factors during permit inspections. As with most Recreation Residence Tracts on the Forest, the tract is considered as eligible for the National Register until an evaluation is completed. In 2009 permits were renewed across the Forest for Recreation Residence Tracts, including the 24 cabins in the Polique Canyon Recreation Residence Tract.

Conclusions

The Polique Canyon Recreation Residence Tract is consistent with Forest Goal 3.1 to provide for public use and natural resource protection. This ongoing activity is consistent with LMP Strategy REC 5 – Recreation Special Use Authorizations by managing recreation residences in compliance with law, regulation, and policy.

Recommendations

- A comprehensive plan for managing Recreation Residence Tracts on the Forest is needed in order to continue to implement the LMP and ensure that the permits are administered to standard.
 - Bills need to be issued for fiscal year 2011.

Overall Recommendations

LMP Amendments

- The LMP should be amended to include an additional outcome evaluation question for Goal 1.2: Restoration of Forest Health in order to reflect the complexity of natural resource management on the Forest. This question will evaluate the Forest's movement toward desired conditions in regards to forest health as it relates to insect and disease outbreaks. The Forest's ability to manage for vegetation resilience and respond to insect and disease outbreaks is a large factor in moving toward desired conditions.
- Table 3-3 of Appendix C of Part 3 in the LMP identifies Goals 1.2.1, 1.2.2, 1.2.3 as Vegetation Condition. This definition of the Goal is not supported by Part 1 of the LMP, and Table 3-3 of Appendix C of Part 3, LMP should be amended to reflect the definition of Goal 1.2.1: Restoration of Forest Health in Fire Regime I; Goal 1.2.2: Restoration of Forest Health in Fire Regime IV; and Goal 1.2.3: Restoration of Forest Health in Fire Regime V.
- The Forest has not been able to complete an inventory of invasive plants and animals over the monitoring period and therefore is not able to report if management is moving toward desired conditions. The LMP should be amended by changing the outcome evaluation question for Goal 2.1: Invasive Species. The new question uses the aggregated effectiveness of treatments over the five year monitoring period to determine the Forest's effectiveness at moving toward desired conditions.
- To be consistent with the other Goals, Goal 4.1a: Mineral and Energy Development should be amended to Goal 4.1: Energy Transmission and Production, and Mineral Development. The addition of Energy Transmission better reflects the use on the Forest, and the evaluation will indicate if the Forest is moving toward desired conditions.
- Table 3-3 of Appendix C of Part 3 in the LMP identifies Goal 4.2 as Energy Infrastructure Support. This definition of the Goal is not supported by Part 1 of the LMP, and will not be evaluated in detail

in this report because it is included in the evaluation of other Goals in this report. The LMP should be amended to remove the definition of Goal 4.2 as Energy Infrastructure Support, and Goal 4.1b: Renewable Resource Energy Development and Transmission should be changed to Goal 4.2.

- The LMP should be amended by changing the outcome evaluation question for Goal 5.2 - Riparian Condition. Clean Water Act 303d listings are based on water quality constituent data and an assessment of beneficial uses, which are not a good surrogate or indicator of riparian conditions. It has been determined by the Forest that tracking the number of 303d listings will not provide information on the riparian condition of the watersheds.
- Appendix C of Part 3 in the LMP identifies at least 10 percent of projects and on-going activities will be reviewed annually. The LMP should be amended to randomly select, for the monitoring period, at least five new projects. Ideally, a project will be selected from each functional area, excluding Management & Administration because new projects do not fall in this functional area. If there are a large number of new projects implemented, as timing and funding permit, additional projects will be randomly selected from each applicable sub-category in the functional areas. All ongoing activities and sites will be stratified into the appropriate functional areas. At a minimum, three ongoing activities and/or sites will be randomly selected for the monitoring period. Ideally, an ongoing activity and/or site will be selected from Public Use & Enjoyment, Facility Operations & Maintenance, and Commodity & Commercial Uses functional areas. As timing and funding permit, ongoing activities and/or sites will be randomly selected from each applicable sub-category in the three functional areas.

LMP Monitoring Protocol

- Draft a monitoring protocol for the LMP to provide data support of the annual Monitoring and Evaluation report and the five year Trend report.
- Work to schedule one day of new project and ongoing activity and site monitoring to include the FLT.
- Establish the baseline information for Forest Goals 2.1, 4.1, 4.2, 6.1, and 7.1 in order to determine if the Forest is moving toward desired conditions.

Forest and Project Planning

The following recommendations do not originate from any one individual project or activity review but rather, grew out of considering how to improve Forest-wide programs, projects and activities:

- Complete LMP consistency reviews for projects that have decisions prior to the 2006 Record of Decision on the LMP.
- Continue to provide for contract oversight at the District level.
- Establish a process to ensure that proposed projects are designed to move the Forest toward desired conditions, either through LMP checklists or review by the Environmental Coordinator.

LMP Amendments

The LMP is a dynamic document that can be amended in response to:

- Errors and or discrepancies found during implementation;
- New information;
- Changes in physical conditions;
- New laws, regulations, or policies that affect National Forest management.

The amendments to date are listed in the table below. Supporting documents are kept on file in the LMP Tracking Notebook. We frequently learn about the need for amendments through monitoring.

Table 19: LMP Amendments

Amendment	Implementation Date	Type of Change
1.	October 24, 2005	Errata
2.	April 21, 2006	Reissuance of Record of Decision (ROD) due to technical error in the FEIS regarding omission of public comments on wildlife issues and the agency's responses in the printed and published materials. Began a new 90 day appeal period April 21, 2006 which ended July 20, 2006. The Plan went in effect October 31, 2005 and will remain in effect. The decision to select Alternative 4A did not change.
3.	April 2006	Errata- San Bernardino National Forest LMP – 1 page of errata specific to the Forest.
4.	September 2006	Errata- for Published Documents- southern California Forest Plans Revision. This is the final errata published for all 4 southern California forest plans. It is 31 pages and includes all prior errata. Available on website http://www.fs.fed.us/r5/scfpr/projects/lmp/errata
5.	September 8, 2006	Administrative Correction (36CFR 219.7). Correction to LMP Part 2, p.16. Table 487. Designated Utility Corridors-San Bernardino National Forest. Added Devers-Valley No. 1, a 1.8 mile 500Kv (1) utility corridor to table. This corridor occurs on the San Jacinto Ranger District and was inadvertently left out of the table during the plan revision. The entire Devers –Valley No. 1 correction is available on the Forest website.
6.	January 14, 2008	LMP Amendment. USDA FS Designation of Section 368 Energy Corridors on NFS Land in 10 Western States. Decision by Secretary of Agriculture to Amend Land Management Plans.
7.	January 11, 2010	LMP Plan Amendment. Designation of the Ranger Peak Communication Site.
8.	January 11, 2010	LMP Plan Amendment. Designation of the Lake Hemet Communication Site.

LMP Updates

LMP Amendments (discussed above) change decisions made by the LMP. Consequently, they require environmental analysis under the National Environmental Policy Act (NEPA). From time to time other changes to the LMP are needed which are not intended to affect earlier decisions or Plan objectives. Examples of such changes include corrections; clarification of intent; changes to monitoring questions; and refinements of management area boundaries to match management direction with site-specific resource characteristics at the margin of the maps. We call these types of changes “updates.” Since they do not change any Plan decision, they do not require NEPA analysis.

Updates to the San Bernardino Land Management Plan are described in the table below. The supporting document is on file in the LMP Tracking Notebook. There are no updates recommended as a result of this monitoring effort.

Table 20: LMP Updates

Update	Implementation Date	Type of Change
1.	May 31, 2006	Removal of Mill Creek Recreation Tract from the list of Recreation Residence Tracts in Part 2, p.17., Other Designations-Table 481.Recreation Residence Tracts. The Decision Memo was signed May 31, 2006; the Tract was conveyed on December 13, 2007.
2.	December 8, 2009	Removal of Middle Fork Recreation Tract from the list of Recreation Residence Tracts in Part 2, p. 17., Other Designations-Table 481. Recreation Residence Tracts. The Decision Notice was signed December 8, 2009.
3.	September 3, 2010	Incorporation of HR146 - Omnibus Public Land Management Act of 2009, which added to the existing Santa Rosa Wilderness and designated two new wildernesses, Cahuilla Mountain and South Fork San Jacinto, within the San Bernardino National Forest. The Act expanded the Santa Rosa and San Jacinto Mountains National Monument with the addition of the Santa Rosa Peak and Tahquitz Peak areas. The Act also designated portions of the North Fork San Jacinto River and Palm Canyon Creek as 'Wild', portions of the North Fork San Jacinto River and Fuller Mill Creek as 'Scenic', and portions of the North Fork San Jacinto River, Fuller Mill Creek, and Bautista Creek as 'Recreational' Rivers.

Table 21: LMP Monitoring and Trend Report Action Plan

Task and Responsible Official	Effective Date
The Forest Supervisor approves all of the recommendations in section V.	October 2011
The Forest 2009 LMP Monitoring and Evaluation Report will be discussed at an upcoming Forest Leadership Team (FLT) meeting.	October 2011
To ensure the recommendations of the on the ground and activity monitoring in section III are reviewed, the Forest Supervisor will inform project and program leaders who participated in the monitoring of the availability of the 2010 LMP Monitoring and Evaluation & Trend Report on the Forest website.	October 2011
To promote LMP consistency in future projects, the Forest Supervisor will ensure that the 2010 LMP Monitoring and Evaluation & Trend Report is available on the Forest website for all employees.	October 2011

Public Participation

In October 2011, the 2010 San Bernardino National Forest Land Management Plan Monitoring, Evaluation, & Trend Report will be made available to the public on the Forest website, or a printed version upon request.

List of Preparers

Thomas Hall, Forest Environmental Coordinator was the primary investigator for this San Bernardino National Forest Land Management Plan Monitoring, Evaluation, & Trend Report. The interdisciplinary team consisted of the following Forest line and staff:

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Appendix A

Table A 1: Selected Projects and Activities for LMP Monitoring and Evaluation on the San Bernardino National Forest

Unit	Place	Name	Project (10%)	Program	Ongoing Activity Site (10%)	Monitor LMP Consistency	Monitor Effectiveness	Documentation reviews, field reviews and/or comments
FCRD	Lytle Creek	Lytle Development Land Donation	X			X	X	Field Review 5/24/2011
FCRD	Mojave Front Country, Lytle Creek	3N31			X-BMP	X	X	Field Review 5/24/2011
FCRD	Mojave Front Country	Sheep Fire Suppression Repair	X			X	X	Field Review 5/24/2011
FCRD	Cajon	Summit OHV Trailhead			X	X	X	Field Review 5/24/2011
FCRD	San Bernardino Front Country, San Gorgonio	Angelus Oaks Pile Burn	X			X	X	Field Review 6/28/2011
SJRD	Idyllwild	Bay Tree Spring Safety Hazard Abatement	X			X	X	Field Review 5/11/2011
SJRD	Idyllwild	North Fork of the San Jacinto Healthy Forest	X			X	X	Field Review 5/11/2011
SJRD	Idyllwild	Riverside County Ranger Peak Communication Tower	X			X	X	Field Review 5/11/2011
MTRD	San Gorgonio	Skyline Group Campground			X	X	X	Field Review 6/20/2011
MTRD	Big Bear	Alpine Pedal Path Interpretive Site			X	X	X	Field Review 6/20/2011
MTRD	Big Bear	Serrano Campground			X	X	X	Field Review 6/20/2011
MTRD	Big Bear	Cougar Crest Trailhead			X	X	X	Field Review 6/20/2011
MTRD	Big Bear, Big Bear Back Country, Desert Rim, San Gorgonio	Burro Management	X			X	X	Field Review 7/21/2011

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Unit	Place	Name	Project (10%)	Program	Ongoing Activity Site (10%)	Monitor LMP Consistency	Monitor Effectiveness	Documentation reviews, field reviews and/or comments
MTRD	Arrowhead	Hook Creek Recreation Residence Tract			X	X	X	Field Review 7/21/2011
MTRD	Big Bear	Polique Canyon Recreation Residence Tract			X	X	X	Field Review 7/21/2011
Forest	Forest-wide	ARRA CIM-0521-03 Trail Maintenance	X			X	X	Field Review 7/26/2011
Forest	Arrowhead, San Bernardino Front Country	ARRA CIM-05-03R Road Storm Proofing/Maintenance	X			X	X	Field Review 7/21/2011
Forest	Forest-wide	Streambed Restoration	X			X	X	Field Review 7/26/2011
Forest	Forest-wide	OHV Grant Monitoring Requirements		X Recreation		X	X	Reviews of WHPP, restoration site monitoring, and results. Discussion of methods and results of Soils Monitoring Program Adopt-A-Trail and SBNFA Volunteer Monitoring Programs
Forest	Forest-wide	Heritage Program Monitoring		X Heritage		X	X	Discussion with Heritage Program Manger
Forest	Forest-wide	Grazing Allotments		X Range		X	X	Monitored under BMPEP monitoring.
Forest	Forest-wide	FY10 Annual Species Monitoring per Biological Opinion		X			X	Review of T&E Species monitoring report to Fish and Wildlife Service.
Forest	Forest-wide	Roads Monitoring		X				Field reviews of each site
Forest	Forest-wide	BMPEP Review per State Agreement		X	X	X	X	BMPEP sampling and documentation as required by Regional Agreement w/State Water Resources Control Board.

FCRD = Front Country Ranger District, SJRD = San Jacinto Ranger District, MTRD = Mountaintop Ranger District, BMP = Also part of Calendar Year 2011 Best Management Practice Monitoring

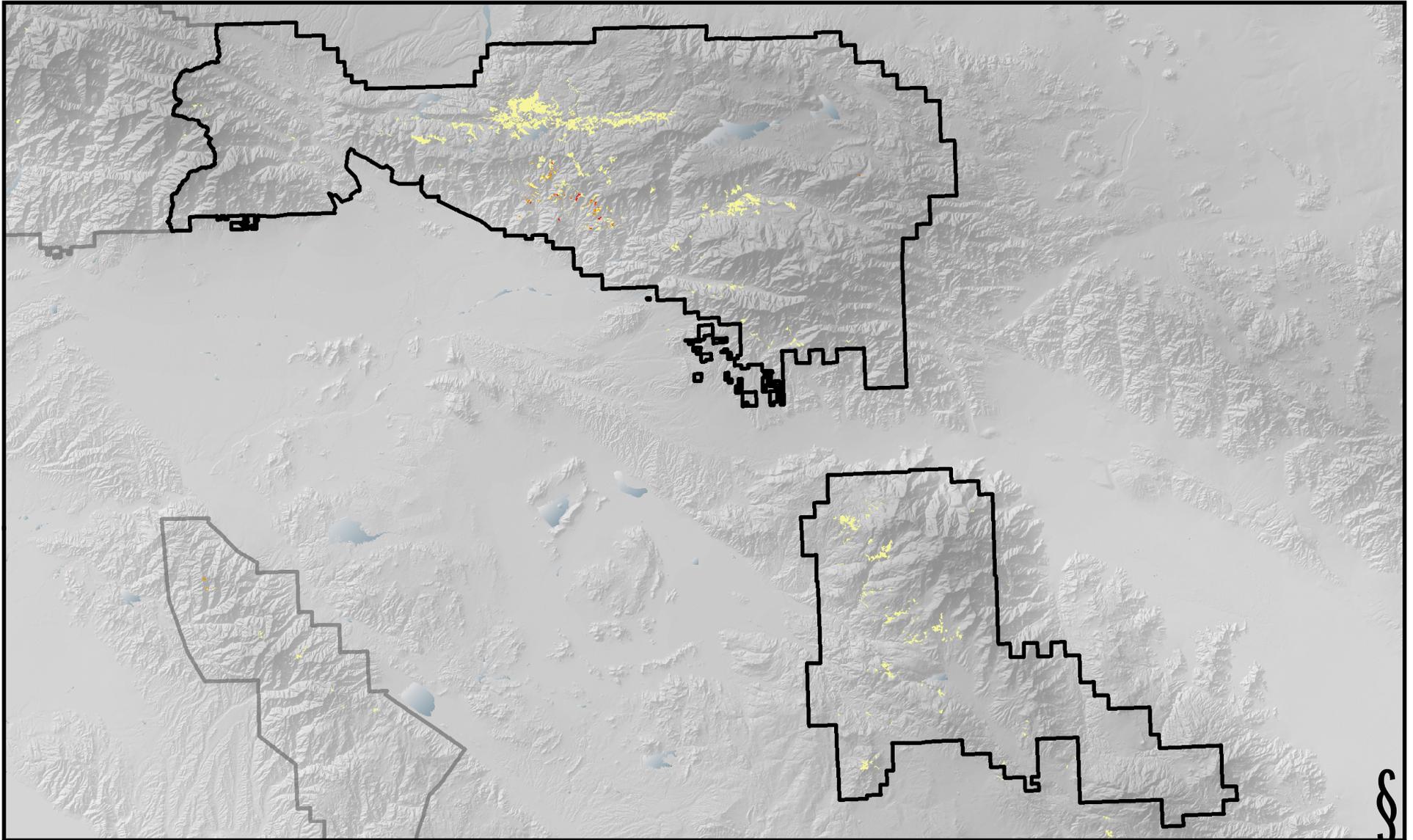
Appendix B

Figure B-1: 2006 National Insect and Disease Risk Map

Workbook for 2006 California insects and disease risk map:

http://www.fs.fed.us/foresthealth/technology/pdfs/CA_Workbook_2007.pdf

Schmidt, K.M., J.P. Menakis, C.C. Hardy, W.J. Hann, and D.L. Bunnell. 2002. Development of coarse-scale spatial data for wildland fire and fuel management. General technical report RMRS-GTR-87. U.S. Department of Agriculture Forest Service, Rocky Mountain Research Station, Fort Collins, Colorado.



Insect and Disease Risk, San Bernardino National Forest

Risk is defined as a 25 percent or more volume loss over the next 15 years including background mortality.

0 5 10 Miles

0 5 10 Kilometers

1:650,000

Percent Basal Area Loss

0 - 25

25 - 50

50 - 75

75 - 100

Forest Boundary

Map Created on 12/13/2007