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## **CHAPTER 3: IMPLEMENTATION**

### **IMPLEMENTATION SCHEDULE**

Land use plan decisions are generally implemented or become effective upon approval of the plan and signing of the Record of Decision. These decisions include the effective date of land health standards and desired future or resource condition decisions, land use allocation decisions, and all special designations.

Management actions in this Approved Plan that require additional site-specific project planning, as funding becomes available, will require further environmental analysis, completion of 106 compliance for cultural resources, and Section 7 consultation. Implementation-level decisions, with the exception of routes designated open for off-highway vehicle use, are also contingent upon further environmental analysis, Section 106 compliance, and Section 7 consultation. Decisions to implement site-specific projects will be subject to administrative review at the time such decisions are made.

The Bureau of Land Management (BLM) and National Park Service (NPS) will continue to involve and collaborate with the public during implementation of this Approved Plan. Opportunities to become involved in plan implementation will include development of partnerships and community-based citizen working groups. The BLM and NPS invite citizens and user groups interested in the management of Grand Canyon-Parashant National Monument (the Monument) to become actively involved in the implementation of plan decisions. The BLM, NPS, and citizens can collaboratively develop site-specific goals and objectives that mutually benefit public land resources, local communities, and the people who live, work, or recreate on public lands.

### **MONITORING**

Monitoring of actions related to implementing land use plans is an important part of adaptive management. Tracking the progress of actions and measuring changes resulting from these activities is important in either determining success or the need for a different management approach.

Many activities and events are monitored on the Monument. For example, grazing utilization and vegetation trends are measured to support decisions on allotment Standards and Guideline evaluations. A more detailed monitoring strategy is included in Table 3.1.

<b>TABLE 3.1: PRELIMINARY MONITORING STRATEGIES</b>					
<b>Location(s)</b>	<b>Issue/Objective</b>	<b>Indicator (what)</b>	<b>Protocol (how/ methods)</b>	<b>Frequency (when)</b>	<b>*Trigger/Action</b>
<b>Soil, Water, and Air</b>					
Monument-wide	Study the effects of continuing erosion that endanger floodplain soils and threaten meadow soils. Map out these areas.	<ul style="list-style-type: none"> <li>Gully, rill, and sheet erosion</li> <li>Vegetative cover, compaction</li> </ul>	<ul style="list-style-type: none"> <li>Monitor erosion</li> <li>Monitor Vegetative cover</li> <li>Monitor impacts and gully progressions</li> <li>Collect and analyze sedimentation and erosion data</li> </ul>	<ul style="list-style-type: none"> <li>On-going</li> </ul>	<ul style="list-style-type: none"> <li>N/A</li> </ul>
Mt. Logan Meadows	Assess the effects of the restoration of them and their watersheds	<ul style="list-style-type: none"> <li>Soil water flux and genetic characteristics</li> <li>Vegetative cover</li> </ul>	<ul style="list-style-type: none"> <li>Visual inspection</li> </ul>	<ul style="list-style-type: none"> <li>Early spring after snow melt</li> </ul>	<ul style="list-style-type: none"> <li>N/A</li> </ul>
Upper Langs Run watershed and other selected sites	Assess the effects of restoration projects	<ul style="list-style-type: none"> <li>Surface stability</li> <li>Vegetative cover change</li> <li>Sediment gains</li> <li>Structural controls</li> </ul>	<ul style="list-style-type: none"> <li>Visual inspection</li> </ul>	<ul style="list-style-type: none"> <li>Annually to occasional</li> </ul>	<ul style="list-style-type: none"> <li>N/A</li> </ul>
Salinity control project areas and other saline soils	Assess maintenance and function for existing projects and the needs for new ones	<ul style="list-style-type: none"> <li>Structural damage</li> <li>Surface or gully erosion</li> <li>Salt content</li> </ul>	<ul style="list-style-type: none"> <li>Structural damage</li> <li>Severe erosion</li> <li>High to moderate salt yield</li> </ul>	<ul style="list-style-type: none"> <li>Annually to occasional</li> </ul>	<ul style="list-style-type: none"> <li>N/A</li> </ul>
Administrative Sites	Potable water quality testing	<ul style="list-style-type: none"> <li>Chemical</li> <li>Bacteriological</li> </ul>	<ul style="list-style-type: none"> <li>Water testing for coliform</li> </ul>	<ul style="list-style-type: none"> <li>Several times a year</li> </ul>	<ul style="list-style-type: none"> <li>Coliform contamination or exceeding chemical limits</li> <li>Find source of contamination and clean up</li> <li>Provide notice to public of non-potable water</li> </ul>
Wildfire burns and other select disturbed areas	Assess the effects of disturbance and reclamation	<ul style="list-style-type: none"> <li>Erosion or stabilization</li> <li>Vegetative cover</li> </ul>	<ul style="list-style-type: none"> <li>Visual inspection</li> </ul>	<ul style="list-style-type: none"> <li>As needed</li> </ul>	<ul style="list-style-type: none"> <li>Large wildfire</li> <li>Erosion and flooding</li> </ul>

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<b>Hazardous Materials</b>					
Old cleaned-up site at Pakoon Springs	Keep clean of trash or chemicals that might weather out of reclaimed soils	Visible trash Chemical stains, odors, or sheens	<ul style="list-style-type: none"> <li>Visual inspection for trash or chemicals or odors</li> </ul>	<ul style="list-style-type: none"> <li>Once per year after monsoon season</li> </ul>	<ul style="list-style-type: none"> <li>Clean up, if necessary</li> </ul>
<b>Forest &amp; Woodlands</b>					
Monument-wide	Management of Public & Commercial Fuelwood Areas	Number of acres monitored	<ul style="list-style-type: none"> <li>Monitor stipulations</li> <li>Monitor permits</li> <li>Monitor effectiveness</li> <li>Law Enforcement of Stipulation adherence</li> </ul>	<ul style="list-style-type: none"> <li>Ongoing</li> <li>Annually for selected sites and areas</li> <li>As needed</li> </ul>	<ul style="list-style-type: none"> <li>Terminate designated areas, designate new areas or boundaries, modify stipulations, limit permitted amounts, terminate permits</li> </ul>
Monument-wide	Management of Public & Commercial Fuelwood Areas (associated with fuels reduction & restoration projects)	Number of acres monitored	<ul style="list-style-type: none"> <li>Monitor stipulations</li> <li>Monitor permits</li> <li>Monitor effectiveness</li> <li>Law Enforcement of Stipulation adherence</li> </ul>	<ul style="list-style-type: none"> <li>Ongoing</li> <li>Annually for selected sites and areas</li> <li>As needed, occasional</li> </ul>	<ul style="list-style-type: none"> <li>Terminate designated areas, designate new areas or boundaries, modify stipulations, limit permitted amounts, terminate permits</li> </ul>
Monument-wide	Management of Stewardship Projects	Number of acres monitored	<ul style="list-style-type: none"> <li>Monitor stipulations</li> <li>Monitor contract adherence</li> <li>Monitor project effectiveness</li> </ul>	<ul style="list-style-type: none"> <li>Ongoing</li> <li>Annually for selected sites and areas</li> </ul>	<ul style="list-style-type: none"> <li>Terminate designated areas, designate new areas or boundaries, modify stipulations and/or project implementation, limit permitted amounts, terminate contract</li> </ul>
Monument-wide	Management of Forest and Woodlands Restoration Projects (including other projects that attempt to or will change the character of overstory vegetation)	Number of acres monitored	<ul style="list-style-type: none"> <li>Monitor stipulations</li> <li>Monitor contract/project adherence</li> <li>Monitor project effectiveness</li> </ul>	<ul style="list-style-type: none"> <li>Ongoing</li> <li>Annually for selected sites and areas</li> </ul>	<ul style="list-style-type: none"> <li>Terminate designated areas, designate new areas or boundaries, modify stipulations and or project implementation, limit permitted amounts, terminate contracts</li> </ul>

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Monument-wide	Management of Forest and Woodland Health	Number of acres monitored	<ul style="list-style-type: none"> <li>Monitor overall forest and woodland health issues (insect, disease, and stand density issues)</li> </ul>	<ul style="list-style-type: none"> <li>Ongoing</li> <li>Annually for selected sites and areas</li> <li>As needed</li> </ul>	<ul style="list-style-type: none"> <li>Determine appropriate management of problem issues</li> </ul>
<b>Cultural Resources</b>					
Designated road system	Off-road impacts Route proliferation Vandalism Surface collection	Visual site inspections for: Site integrity Surface integrity	<ul style="list-style-type: none"> <li>Monitor and report (Law Enforcement, Site Stewards, Staff, local rancher)</li> <li>Educate Public</li> <li>Class III surveys</li> </ul>	<ul style="list-style-type: none"> <li>Ongoing</li> <li>Annually for selected sites and areas</li> <li>As needed</li> </ul>	<ul style="list-style-type: none"> <li>Impacts/excavate, reroute, inventory</li> <li>Route closures</li> </ul>
Standing structures and prehistoric intact features	Natural deterioration Vandalism	Visual site inspections for: Site integrity Structural integrity	<ul style="list-style-type: none"> <li>Monitor (Staff and Site Stewards)</li> </ul>	<ul style="list-style-type: none"> <li>Annually for selected sites and areas</li> <li>Ongoing</li> </ul>	<ul style="list-style-type: none"> <li>Destruction of standing features/stabilization, restoration, allow deterioration</li> <li>Record sites, assign to category</li> </ul>
Monument-wide	Livestock grazing impacts to rock art, standing structures and features, rock shelters, caves, concentrations of cattle (trampling)	Visual site inspections for: Site integrity Surface integrity	<ul style="list-style-type: none"> <li>Section 106 for new facilities</li> <li>Monitor – Site Stewards and staff</li> </ul>	<ul style="list-style-type: none"> <li>As needed</li> <li>Ongoing</li> <li>Annually for selected sites and areas</li> </ul>	<ul style="list-style-type: none"> <li>Impacts/mitigation, record, inventory area</li> </ul>
<b>Caves and Karst Resources</b>					
Monument-wide	Monitor Visitor Use Impacts; Monitor for Natural Resource Degradation	<ul style="list-style-type: none"> <li>Graffiti</li> <li>Trash</li> <li>Trails</li> <li>Damage to Speleotherms</li> <li>Hazardous Materials</li> </ul>	<ul style="list-style-type: none"> <li>Monitor unacceptable impacts</li> <li>Visual inspection</li> <li>Set permanent photo documentation points</li> <li>Photo document impacted areas</li> </ul>	<ul style="list-style-type: none"> <li>As needed</li> <li>Ongoing</li> <li>Annually for selected sites and areas</li> </ul>	<ul style="list-style-type: none"> <li>Restrict access</li> <li>Clean, as necessary</li> </ul>

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		<ul style="list-style-type: none"> <li>• Digging in cave</li> <li>• Vandalism in cave</li> </ul>	<ul style="list-style-type: none"> <li>• Create Visual Impact Evaluation System (VIES) for these caves and future caves as deemed necessary: Bobcat, Grand Wash, Basket, and Resort</li> </ul>		
<b>Recreation</b>					
SRMAs	Produce targeted recreation opportunities specific to each RMZ	Realization of targeted benefits for each RMZ.	<ul style="list-style-type: none"> <li>• Visitor surveys</li> <li>• Focus groups</li> </ul>	<ul style="list-style-type: none"> <li>• Every 5 years</li> </ul>	<ul style="list-style-type: none"> <li>• N/A</li> </ul>
SRMAs	Produce targeted recreation opportunities specific to each RMZ	Physical setting conditions, such as remoteness, naturalness, facilities	<ul style="list-style-type: none"> <li>• Monitor “development creep” with regard to authorizing expansion of designated road systems and recreation facilities into settings targeted as more primitive; monitor lack of development in RMZs where development was targeted</li> <li>• Monitor landscape change via VRM</li> </ul>	<ul style="list-style-type: none"> <li>• For every project proposed in SRMAs</li> </ul>	<ul style="list-style-type: none"> <li>• Targeted recreation benefits not realized</li> <li>• Adjust project to limit development appropriate to the SRMA/RMZ</li> </ul>
SRMAs	Produce targeted recreation opportunities specific to each RMZ	Social setting conditions, such as group size, encounters with other users, and evidence of use	<ul style="list-style-type: none"> <li>• Existing NAU protocols for evidence of use (rapid site inventory, human impact site monitoring)</li> <li>• Actual counts for group size and encounters</li> </ul>	<ul style="list-style-type: none"> <li>• Every 3-5 years for rapid site inventory</li> <li>• Every year to 2 years for human impact site monitoring, encounters and group size</li> </ul>	<ul style="list-style-type: none"> <li>• Targeted recreation benefits not realized</li> <li>• Sustained exceedance of social setting/assess need for visitor use management</li> </ul>
SRMAs	Produce targeted recreation opportunities specific to each RMZ	Administrative setting conditions, such as visitor services, management controls, mechanized use	<ul style="list-style-type: none"> <li>• Monitor level of effort to provide visitor information and assistance appropriate to targeted settings</li> </ul>	<ul style="list-style-type: none"> <li>• Project-by-project</li> </ul>	<ul style="list-style-type: none"> <li>• Targeted recreation benefits not realized</li> </ul>

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			<ul style="list-style-type: none"> <li>Monitor level of regulation, signing, and permitting applied as appropriate to targeted settings</li> </ul>		
SRMAs, ERMA	National RMiS requirements	Number of visits, visitor days, etc.	<ul style="list-style-type: none"> <li>Traffic counters, visitor registers, Information Center counter, SRP post-use reports, direct counts</li> </ul>	<ul style="list-style-type: none"> <li>Monthly for traffic and Information Center counters</li> <li>Bi-monthly for visitor registers</li> <li>Annually for SRPs</li> </ul>	<ul style="list-style-type: none"> <li>Meet RMiS reporting requirements</li> </ul>
Monument-wide	Authorizing recreation uses	Number of permits	<ul style="list-style-type: none"> <li>Counting commercial SRPs</li> <li>Counting individual SRPs</li> </ul>	<ul style="list-style-type: none"> <li>Monthly for RUPs</li> <li>Post-use for commercial and competitive SRPs</li> <li>Monthly for individual SRPS</li> </ul>	<ul style="list-style-type: none"> <li>N/A</li> </ul>
Monument-wide	Authorizing recreation uses	Number of permit violations	<ul style="list-style-type: none"> <li>Monitor authorized activities for permit stipulations compliance</li> </ul>	<ul style="list-style-type: none"> <li>As needed</li> </ul>	<ul style="list-style-type: none"> <li>Violations/suspend or revoke permit</li> </ul>
ERMA	Resource protection, user conflict, visitor safety		<ul style="list-style-type: none"> <li></li> </ul>	<ul style="list-style-type: none"> <li></li> </ul>	<ul style="list-style-type: none"> <li>N/A</li> </ul>
<b>Wilderness</b>					
Statutory wildernesses	Preservation of wilderness character	Number of acres monitored	<ul style="list-style-type: none"> <li>Patrol (foot or aerial) and staff report findings and recommendations</li> <li>NEPA process</li> <li>Existing NAU protocols for naturalness (rapid site inventory, human impact site monitoring)</li> </ul>	<ul style="list-style-type: none"> <li>Monthly patrol</li> <li>Project-by-project</li> <li>Every 3-5 years for rapid site inventory</li> <li>Every year to 2 years for human impact site monitoring and solitude</li> </ul>	<ul style="list-style-type: none"> <li>N/A</li> </ul>

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			<ul style="list-style-type: none"> <li>Actual counts for solitude</li> </ul>		
Statutory wildernesses	Preservation of wilderness character	Number of wilderness boundary vehicle violations	<ul style="list-style-type: none"> <li>Actual counts</li> </ul>	<ul style="list-style-type: none"> <li>Ongoing</li> </ul>	<ul style="list-style-type: none"> <li>Rehab damaged areas; educate the public, cite violators</li> </ul>
<b>Travel Management</b>					
Designated road/trail system	Management of designated system	Number of roads/trails meeting targeted maintenance intensities	<ul style="list-style-type: none"> <li>Road/trail condition assessments</li> </ul>	<ul style="list-style-type: none"> <li>Annually on rotating basis</li> </ul>	<ul style="list-style-type: none"> <li>Unsafe conditions/prioritize repair of unsafe locations</li> </ul>
Designated road/trail system	Management of designated system	Placement and retention of all signing	<ul style="list-style-type: none"> <li>Road/trail condition assessments</li> </ul>	<ul style="list-style-type: none"> <li>Annually on rotating basis</li> </ul>	<ul style="list-style-type: none"> <li>Safety concerns/prioritize replacement where signage is crucial to safe vehicle operations/ wayfinding</li> </ul>
Designated road/trail system	Management of designated system	Average daily traffic	<ul style="list-style-type: none"> <li>Traffic counters on key roads/trails</li> </ul>	<ul style="list-style-type: none"> <li>Monthly</li> </ul>	<ul style="list-style-type: none"> <li>Increasing use/target heavily used areas for maintenance and safety inspecting</li> </ul>
Designated road/trail system	Management of designated system	Number of illegal, off-system vehicle incursions	<ul style="list-style-type: none"> <li>Visual inspections</li> <li>NAU protocols</li> </ul>	<ul style="list-style-type: none"> <li>Ongoing</li> <li>Annually for selected rotating areas</li> </ul>	<ul style="list-style-type: none"> <li>Physical damage/rehab damaged area; educate public; cite violators</li> </ul>
<b>Wilderness Characteristics</b>					
Monument-wide	Maintenance of wilderness characteristics	Naturalness, outstanding opportunities for primitive recreation and solitude	<ul style="list-style-type: none"> <li>NEPA process</li> <li>Existing NAU protocols for naturalness (rapid site inventory, human impact site monitoring)</li> <li>Actual counts for solitude</li> </ul>	<ul style="list-style-type: none"> <li>Project-by-project</li> <li>Every 3-5 years for rapid site inventory</li> <li>Every 1- 2 years for human impact site monitoring and solitude</li> </ul>	<ul style="list-style-type: none"> <li>Potential impact to wilderness characteristics/ modify project design and activities to retain wilderness characteristics and VRM class</li> </ul>
<b>Visual Resources</b>					
Monument-wide	Management of targeted visual classes	Degree of contrast (landscape change) created	<ul style="list-style-type: none"> <li>VRM contrast rating</li> </ul>	<ul style="list-style-type: none"> <li>Project-by-project</li> </ul>	<ul style="list-style-type: none"> <li>Potential impact to VRM classes/adjust project design and activities to retain targeted visual resource class</li> </ul>

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<b>Soundscapes</b>					
Baseline inventory & selected site long-term monitoring on NPS lands	Maintenance of natural ambient sound characteristics: audibility, intensity, duration, frequency	Change in natural ambient sound: audibility, duration	<ul style="list-style-type: none"> <li>• Measure human-caused intrusions: loudness/intensity</li> <li>• % Time above Ambient</li> <li>• % Time Audible</li> <li>• # of intrusions &amp; duration</li> </ul>	<ul style="list-style-type: none"> <li>• Every 3-5 years following initial baseline inventory</li> <li>• Project basis as needed</li> </ul>	<ul style="list-style-type: none"> <li>• Modify activities under Monument authority</li> <li>• Seek relief from agencies with regulatory authority</li> </ul>
<b>T/E Species: Desert Tortoise</b>					
Pakoon Springs road from Arizona border to Pakoon Springs	Monitor effects of use of roads on desert tortoise.	Document number of live and dead tortoise along Pakoon Springs road. Document route proliferation.	<ul style="list-style-type: none"> <li>• Early morning, low speed windshield survey by passenger</li> <li>• Total approx. 20 miles (10 mi each direction)</li> </ul>	<ul style="list-style-type: none"> <li>• Repeat weekly March thru April, monthly May thru Oct.</li> <li>• Repeat monitoring every 5 years</li> </ul>	<ul style="list-style-type: none"> <li>• Closures of other restrictions</li> </ul>
Mojave Desert, desert tortoise habitat	Monitor number/density of desert tortoise.	Document numbers of live and dead tortoise and estimate tortoise population densities of desert tortoise.	<ul style="list-style-type: none"> <li>• USFWS conducts line distance sampling (BLM contributes \$2-\$5k annually)</li> <li>• Random transects throughout NE Mojave Recovery Unit</li> </ul>	<ul style="list-style-type: none"> <li>• Repeat annually</li> </ul>	<ul style="list-style-type: none"> <li>• Contributes to range-wide recovery efforts and recovery planning, could lead to RMP amendment</li> </ul>
<b>T/E Species: Mexican Spotted Owl</b>					
Canyon habitats	Assess potential MSO nesting sites based on suitable habitats identified by 2001 Willey model.	Document MSO nesting site suitability and presence or absence of MSO.	<ul style="list-style-type: none"> <li>• Protocol established by MSO recovery team</li> <li>• 5-10 sites per year</li> </ul>	<ul style="list-style-type: none"> <li>• Repeat annually</li> </ul>	<ul style="list-style-type: none"> <li>• Contributes to range-wide recovery efforts and planning, could lead to RMP amendment</li> </ul>
<b>T/E Species: Southwestern Willow (SW) Flycatcher</b>					
Riparian habitats	Assess all suitable and potential SW flycatcher nesting sites.	Document SW flycatcher nesting site suitability and presence or absence of SW flycatcher.	<ul style="list-style-type: none"> <li>• Protocol established by SW flycatcher recovery team</li> <li>• 11 sites</li> </ul>	<ul style="list-style-type: none"> <li>• Repeat every other year</li> </ul>	<ul style="list-style-type: none"> <li>• Contributes to range-wide recovery efforts and recovery planning, could lead to RMP amendment</li> </ul>

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<b>T/E Species: Peregrine Falcon</b>					
Canyon eyrie sites	Assess specific nesting sites as assigned by AGFD and USFWS.	Document presence or absence of peregrine falcon.	<ul style="list-style-type: none"> <li>• Protocol established by peregrine monitoring team</li> <li>• Up to 4 sites</li> </ul>	<ul style="list-style-type: none"> <li>• Repeat every year</li> </ul>	<ul style="list-style-type: none"> <li>• Contributes to range-wide recovery efforts and recovery planning, could lead to RMP amendment</li> </ul>
<b>T/E Species: Listed and Special Status Plants</b>					
Monument-wide	To assess effects of management actions on populations of plants	Demography, counts, mortality, man-induced impacts	<ul style="list-style-type: none"> <li>• Macroplots with tagged plants</li> <li>• Macroplots and transects using counts.</li> </ul>	<ul style="list-style-type: none"> <li>• Annually for listed plants, 1-3 years for special status plants</li> </ul>	<ul style="list-style-type: none"> <li>• Down trends (demographic or counts) caused by man induced impacts</li> </ul>
<b>Vegetation</b>					
Monument-wide	Management of authorized uses	<ul style="list-style-type: none"> <li>• Vegetative trend of key species</li> <li>• Precipitation</li> </ul>	<ul style="list-style-type: none"> <li>• Permanent photo plots, and Frequency transects, dry weight rank</li> <li>• Rain Can &amp; Remote Automated Weather Station</li> </ul>	<ul style="list-style-type: none"> <li>• Every 4-8 years</li> <li>• Quarterly</li> </ul>	<ul style="list-style-type: none"> <li>• Up or down trend of key or undesirable species</li> <li>• Meeting or not meeting desired plant community objectives</li> </ul>
<b>Livestock grazing (BLM lands)</b>					
Desert tortoise habitat	Management of livestock grazing	Vegetation utilization level	<ul style="list-style-type: none"> <li>• Grazed class method</li> </ul>	<ul style="list-style-type: none"> <li>• Annually in use pastures</li> </ul>	<ul style="list-style-type: none"> <li>• Use levels in excess of 45%</li> </ul>
Monument-wide	Management of livestock grazing	Vegetation utilization level	<ul style="list-style-type: none"> <li>• Grazed class method</li> </ul>	<ul style="list-style-type: none"> <li>• Annually in use pastures</li> </ul>	<ul style="list-style-type: none"> <li>• Use levels in excess of 45%</li> </ul>
<b>Livestock grazing: (NPS lands)</b>					
Baseline inventory & selected site long-term monitoring on NPS lands under grazing permit	Prevent impairment (DO-12); Maintain ecologic integrity of soils and vegetation	Plant utilization; soil integrity; deviation from plant community ecological potential	<ul style="list-style-type: none"> <li>• TBD through study;</li> <li>• In concert with BLM Arizona Standards and Guidelines for Livestock Grazing Management</li> </ul>	<ul style="list-style-type: none"> <li>• TBD through research study</li> </ul>	<ul style="list-style-type: none"> <li>• TBD through research study</li> </ul>

<b>Fire and Fuels Management</b>					
Monument-wide	Assess the effects of fire	Prescribed fire Fire use	<ul style="list-style-type: none"> <li>• Long term photo plots</li> <li>• Vegetation plots</li> <li>• Burn severity</li> <li>• Others as needed</li> </ul>	<ul style="list-style-type: none"> <li>• Pre, during and post monitoring</li> </ul>	<ul style="list-style-type: none"> <li>• Planning of ignition</li> <li>• Ignition</li> </ul>
Monument-wide	Assess the effects of fire	Wildfire	<ul style="list-style-type: none"> <li>• Long term photo plots</li> <li>• Vegetation plots</li> <li>• Burn severity</li> <li>• Others as needed</li> </ul>	<ul style="list-style-type: none"> <li>• Mostly post monitoring</li> </ul>	<ul style="list-style-type: none"> <li>• Ignition</li> </ul>
*Trigger/Action – What would trigger (a threshold) an action/What the BLM or NPS would do if monitoring shows an undesirable direction or action.					

## **ADAPTIVE MANAGEMENT**

Adaptive management is a decision process that promotes flexible decision making that can be adjusted in the face of uncertainties as outcomes from management actions and other events become better understood. Careful monitoring of these outcomes both advances scientific understanding and helps adjust policies or operations as part of an iterative learning process. Adaptive management also recognizes the importance of natural variability in contributing to ecological resilience and productivity. It is not a “trial and error” process; rather, it emphasizes learning while doing. Adaptive management does not represent an end in itself: it represents a means to more effective decisions and enhanced benefits. Its true measure is in how well it helps meet environmental, social, and economic goals, increases scientific knowledge, and reduces tensions among stakeholders (U.S. Department of the Interior [DOI] 2007).

Adaptive management involves ongoing, real-time learning and knowledge creation, both in a substantive sense and in terms of the adaptive process itself. Though it is commonly thought that an adaptive approach can produce results quickly at low cost, the opposite is more likely to be true. An initial investment of time and effort will increase the likelihood of better decision-making and resource stewardship in the future, but patience, flexibility, and support are needed over the life of an adaptive management project. For these reasons, it is important to carefully consider the potential use of an adaptive approach, and to engage in careful planning and evaluation when adaptive management is used (DOI 2007).

Adaptive management involves synthesizing existing knowledge, exploring alternative actions, and making explicit forecasts about their results. Management actions and monitoring programs are carefully designed to generate reliable feedback and clarify the reasons underlying results. Actions and objectives are then adjusted based on this feedback and improved understanding to continue to try to achieve the desired future conditions. In addition, decisions, actions, and results are carefully documented and communicated to others, so that knowledge gained through experience is passed on rather than lost when individuals move or leave the organization.

The Monument staff and management will involve interested stakeholders in implementing the decisions in this Approved Plan and commit to an adaptive management process that will work toward achieving the identified management objectives. Results from ongoing monitoring and assessment will be used to adjust and improve these management decisions.