

Appendix A Laws, Policies, and Regulations Relevant to Grand Canyon National Park Management

	Law, Policy, or Regulation (by date)	Acronym	Record	Online Address
1864	Yosemite Act		13 Stat. 325	http://www.nps.gov/history/history/online_books/anps/anps_1a.htm http://www.gpoaccess.gov/uscode/
1870	Anti-Deficiency Act		31 USC 1341; ch. 251, 16 Stat. 251/ Public Law 97-258	http://www.gpoaccess.gov/uscode/ http://thomas.loc.gov
1872	Yellowstone National Park		30 USC 21-22, 17 Stat. 32	http://www.gpoaccess.gov/uscode/
1872	General Mining Act		30 USC 22 t seq. Ch. 152, 17 Stat. 91	http://www.gpoaccess.gov/uscode/
1890	General Grant National Park and a portion of Sequoia National Park Act		26 Stat. 650	http://www.gpoaccess.gov/uscode/
1893	Presidential Proclamation creating Grand Canyon National Forest and Game Reserve		Proclamation No. 45, 27 Stat. 1064	http://www.gpoaccess.gov/uscode/
1906	Yosemite Act		34 Stat. 831	http://www.gpoaccess.gov/uscode/
1906	Antiquities Act	Antiquities Act	16 USC 431-433; June 8, 1906, ch. 3060, 34 Stat. 225	http://www.gpoaccess.gov/uscode/
1908	Presidential Proclamation creating Grand Canyon National Monument		Proclamation No. 794 (35 Stat. 2175)	http://www.gpoaccess.gov/uscode/
1916	The National Park Service Organic Act	Organic Act	16 USC 1 et seq./Public Law 64-235	http://www.gpoaccess.gov/uscode/ http://thomas.loc.gov
1919	Grand Canyon National Park Establishment Act		40 Stat. 1175	http://www.gpoaccess.gov/uscode/
1920	Mineral Leasing Act		30 USC 181-287, Ch. 85, 41 Stat. 437	http://www.gpoaccess.gov/uscode/
1930	Acquired Lands Mineral Leasing Act		30 USC 301-306; Ch. 307 46 Stat. 373	http://www.gpoaccess.gov/uscode/
1934	Taylor Grazing Act		43 USC §§ 315-316o, June 28, 1934, as amended 1936, 1938, 1939, 1942, 1947, 1948, 1954 and 1976	http://www.gpoaccess.gov/uscode/

	Law, Policy, or Regulation (by date)	Acronym	Record	Online Address
1935	Historic Sites Act		16 USC 461-467; Ch. 593, 49 Stat. 666	http://www.nps.gov/history/local-law/FHPL_HistSites.pdf
1946	Administrative Procedure Act	APA	5 USC 551 et seq., ch. 324, 60 Stat. 237	http://www.gpoaccess.gov/uscode/
1947	Federal Insecticide, Fungicide and Rodenticide Act	FIFRA	7 USC 136-136y/Public Law 92-516	http://www.epa.gov/compliance/civil/fifra/index.html
1948	Clean Water Act	CWA	33 USC 1251 et seq.	http://www.gpoaccess.gov/uscode/
1955	Museum Act		16 USC 18f-18f-3, Ch. 259, 69 Stat. 242/Public Law 104-333	http://www.gpoaccess.gov/uscode/ http://thomas.loc.gov
1955	Clean Air Act of 1955 as amended 1963	CAA	42 USC 7401 et seq.	http://www.gpoaccess.gov/uscode/
1958	Fish and Wildlife Coordination Act 1958 and 1980		16 U.S.C. 661-667e	http://www.gpoaccess.gov/uscode/
1963	Clean Air Act as amended 1970, 1990	CAA	42 USC 7401-7671q/Public Law 88-206	http://www.epa.gov/air/caa/peg/
1964	The Wilderness Act	WA	16 USC 1131-1136/Public Law 88-57	http://www.gpoaccess.gov/uscode/ http://thomas.loc.gov
1965	Land and Water Conservation Fund Act	LWCF	16 USC 4601-4-4601-II/Public Law 88-578	http://www.gpoaccess.gov/uscode/
1965	Federal Water Project Recreation Act of 1965, as amended 1974 and 1976		USC 4601-12 et seq.	http://www.gpoaccess.gov/uscode/
1966	Freedom of Information Act	FOIA	5 USC 552/Public Law 89-554, 90-23	http://foia.state.gov/
1966	National Historic Preservation Act of 1966 and regulations implementing NHPA	NHPA	16 USC 470 et seq. 36 CFR Part 800 as amended	http://www.gpoaccess.gov/uscode/
1968	The National Trails System Act		P.L. 90-543, as amended through P.L. 109-418, December 21, 2006	http://thomas.loc.gov http://www.nps.gov/nts/legislation.html
1968	Wild and Scenic Rivers Act	WSRA	USC 1271 et seq.	http://www.gpoaccess.gov/uscode/
1968	Rights of Way on Tribal Trust Land Act		25 CFR Part 169	
1968	Architectural Barriers Act		42 USC 4151-4157/Public Law 90-480	http://www.gpoaccess.gov/uscode/ http://thomas.loc.gov

	Law, Policy, or Regulation (by date)	Acronym	Record	Online Address
1969	National Environmental Policy Act as amended 1975	NEPA	42 USC 4321 et seq./Public Law 91-90	http://www.gpoaccess.gov/uscode/ http://thomas.loc.gov
1970	General Authorities Act		16 USC 1a-1 et seq. Public Law 91-383; 94-458; 95-250	http://www.gpoaccess.gov/uscode/ http://thomas.loc.gov
1970	Occupational Safety and Health Act	OSHA	29 USC 651 et seq./Public Law 91-596	http://www.gpoaccess.gov/uscode/ http://thomas.loc.gov
1970	National Park Service General Authorities Act of 1970 and 1978		16 USC 1a-1	http://www.gpoaccess.gov/uscode/
1970	Planning, Acquisition, and Management of Federal Space Act		Executive Order 11512	http://www.archives.gov/federal-register/codification/executive-order/12072.html
1971	Protection and Enhancement of the Cultural Environment Act		Executive Order 11593	http://www.gsa.gov/Portal/gsa/ep/contentView.do?contentType=GSA_BASIC&contentId=12094
1972	Federal Advisory Committee Act	FACA	5 USC App. 1-16/Public Law 92-463	http://www.gsa.gov/faca
1972	Equal Employment Opportunity Act	EEO	42 USC 2000e-16(a)/Public Law 92-261	http://www.gpoaccess.gov/uscode/ http://thomas.loc.gov
1972	Airborne Hunting Act of 1971, as amended		16 USC § 742j-1	http://www.gpoaccess.gov/uscode/
1972	Water Pollution Control Act Amendments (Clean Water Act)		33 USC 1251-1387/Public Law 92-500, 95-217	http://www.gpoaccess.gov/uscode/ http://thomas.loc.gov
1972	Noise Control Act of 1972, as amended		42 USC 4901 et seq.	http://www.gpoaccess.gov/uscode/
1973	National Cemeteries Act		16 USC 2400-2410/Public Law 93-43	http://www.gpoaccess.gov/uscode/ http://thomas.loc.gov
1973	Endangered Species Act	ESA	16 USC 1531 et seq./Public Law 93-205	http://www.gpoaccess.gov/uscode/
1974	Special Recreation Permits and Special Recreation Permit Fees Act		36 CFR 71.10	http://www.nps.gov/fees_passes.htm
1974	Safe Drinking Water Act		42 USC s/s 300f et seq.	http://www.gpoaccess.gov/uscode/
1974	Forest and Rangeland Renewable Resources Planning Acts of 1974 and 1976		16 USC 1600	http://www.fs.fed.us/emc/nfma/includes/range74.pdf

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1975	The Hazardous Materials Transportation Act as amended	HMTA	49 USC 5010-5127/Public Law 93-633, 101-615, 103-311	http://www.gpoaccess.gov/uscode/ http://thomas.loc.gov
1975	Tribal Law and Order Code		Hualapai Tribal Council Resolution 72-72	
1975	Grand Canyon National Park Enlargement Act		16 USC 228/Public Law 93-620	http://www.gpoaccess.gov/uscode/
1976	Mining in the Parks Act		16 USC 1901-1912/Public Law 94-429	http://www.gpoaccess.gov/uscode/ http://thomas.loc.gov
1976	Federal Land Policy and Management Act	FLPMA	43 USC 1701 et seq.	http://www.gpoaccess.gov/uscode/
1978	Redwood Act Amendments in 1978		16 USC 1a-1	http://www.gpoaccess.gov/uscode/
1978	CEQ General Regulations Implementing National Environmental Policy Act		40 CFR Parts 1500-1508	ecfr.gpoaccess.gov/.../ecfrbrowse/Title40/40cfrv31_02.tpl
1978	American Indian Religious Freedom Act	AIRFA	42 USC 1996 et seq.	http://www.gpoaccess.gov/uscode/
1977	Floodplain Management Act		Executive Order 11988	http://www.archives.gov/federal-register/codification/executive-order/11988.html
1977	Protection of Wetlands Act		Executive Order 11990	http://www.epa.gov/OWOW/wetlands/regs/eo11990.html
1977	Exotic Organisms Act		Executive Order 11987	http://www.archives.gov/federal-register/codification/executive-order/11987.html
1978	Federal Compliance with Pollution Control Standards Act		Executive Order 12088	http://www.archives.gov/federal-register/codification/executive-order/12088.html
1979	Archaeological Resources Protection Act	ARPA	16 U.S.C. 470aa-mm/Public Law 96-95	http://www.gpoaccess.gov/uscode/ http://www.nps.gov/history/local-law/FHPL_ArchRsrcsProt.pdf http://thomas.loc.gov
1980	Comprehensive Environmental Response, Compensation and Liability Act	CERCLA	42 USC 13201-13556/Public Law 96-205	http://www.epa.gov/superfund/policy/cercla.htm http://www.gpoaccess.gov/uscode/ http://thomas.loc.gov
1981	Farmland Protection Policy Act	FPPA	Public Law 97-98	http://thomas.loc.gov

	Law, Policy, or Regulation (by date)	Acronym	Record	Online Address
1982	Federal Managers' Financial Integrity Act	FMFI	31 USC 3512(d)/Public Law 97-255, 97-452	http://www.gpoaccess.gov/uscode/ http://thomas.loc.gov
1986	Commemorative Works Act		40 USC 1001-1010/Public Law 99-652	http://www.cfa.gov/about/leg.html http://www.gpoaccess.gov/uscode/ http://thomas.loc.gov
1987	Aircraft Overflights in National Parks Act		Public Law 100-91	http://thomas.loc.gov
1988	National Park Omnibus Management Act		16 USC 5961(b)	http://www.gpoaccess.gov/uscode/
1988	Federal Cave Resources Protection Act	FCRPA	16 USC 4301-4310/Public Law 100-691	http://thomas.loc.gov http://www.gpoaccess.gov/uscode/
1990	Native American Graves Protection and Repatriation Act	NAGPRA	25 USC 3001-3013; Public Law 101-106	http://www.gpoaccess.gov/uscode/ http://thomas.loc.gov
1990	National Park System Resource Protection Act		16 USC 1911-4/Public Law 101-337, 104-333	http://www.gpoaccess.gov/uscode/ http://thomas.loc.gov
1990	Pollution Prevention Act		42 USC 13101 et seq.	http://www.gpoaccess.gov/uscode/
1990	Americans with Disabilities Act	ADA	42 USC 12101/Public Law 101-336	http://thomas.loc.gov
1991	Hualapai Constitution, Amended 1991		Public Law 93-560	http://thomas.loc.gov
1992	Energy Policy Act		42 USC 13201-13556/Public Law 102-486	http://www.gpoaccess.gov/uscode/ http://thomas.loc.gov
1993	Government Performance and Results Act	GPRA	31 USC 1115 et seq./Public Law 103-62	http://www.gpoaccess.gov/uscode/ http://thomas.loc.gov
1993	Regulatory Planning and Review Act		Executive Order 12866	http://www.archives.gov/federal-register/executive-orders/1993-clinton.html
1994	Government to Government Relations with Native American Tribal Governments Memorandum		Memorandum for the Heads of Executive Department and Agencies (signed President Clinton April 29, 1994)	http://www.cr.nps.gov/nagpra/AGENCIES/Clinton_Memorandum.htm
1994	Environmental Justice Act		Executive Order 12898	http://www.archives.gov/federal-register/executive-orders/pdf/12898.pdf

	Law, Policy, or Regulation (by date)	Acronym	Record	Online Address
1996	Alaska National Interest Lands Conservation Act	ANILCA	16 USC 3101-3233/Public Law 96-487	http://www.gpoaccess.gov/uscode/ http://thomas.loc.gov
1996	American Indian Religious Freedom Act	AIRFA	42 USC 1996-1996a/Public Law 95-341, 103-344	http://www.gpoaccess.gov/uscode/ http://thomas.loc.gov
1996	Indian Sacred Sites Act		Executive Order 13007	http://www.achp.gov/EO13007.html
1997	American Indian Tribal Rights, Federal-Tribal Trust Responsibilities, and Endangered Species Act		Secretarial Order 3206 (June 5,1997)	http://www.fws.gov/endangered/tribal/Esatribe.htm
1997	Hualapai Environmental Review Code		Hualapai Tribal Council Resolution 50-97	
1998	NPS Concessions Management Improvement Act		16 USC 5951-5966/Public Law 105-391 (title IV)	http://www.gpoaccess.gov/uscode/ http://thomas.loc.gov
1998	National Parks Omnibus Management Act		16 USC 5901-6011/Public Law 105-391	http://www.gpoaccess.gov/uscode/ http://thomas.loc.gov
1999	Invasive Species Act		Executive Order 13112	
2000	National Parks Air Tour Management Act		114 Stat. 61/Public Law 106-181 (title VIII)	http://www.gpoaccess.gov/uscode/ http://thomas.loc.gov
2000	Department of the Interior's (DOI) Implementing Procedures and proposed revisions (<i>Federal Register</i> , August 28, 2000)		516 Director's Manual 1-7	http://www.fws.gov/policy/505fw1.html
2000	Consultation and Coordination with Indian Tribal Governments Act		Executive Order 13175	http://www.epa.gov/fedreg/eo/eo13175.htm
2001	Federal Wildland Fire Management Policy			http://www.fs.fed.us/fire/management/policy
2001	Migratory Bird Treaty Act (Migratory Bird Guidance)		16 USC 703-711	http://www.gpoaccess.gov/uscode/
2004	Federal Lands Recreation Enhancement Act	FLREA	16 USC 6801-6814/Public Law 108-447	http://www.gpoaccess.gov/uscode/ http://thomas.loc.gov

	Law, Policy, or Regulation (by date)	Acronym	Record	Online Address
2006	National Park Service Management Policies		This volume is the basic NPS Servicewide policy document. Adherence to policy is mandatory unless specifically waived or modified by the Secretary, the Assistant Secretary, or the Director.	http://www.nps.gov/policy/MP2006.pdf
Directors Orders (National Park Service)				
	Park Planning	DO-2	The National Park Service has several sources of detailed written guidance to help managers make day-to-day decisions. The primary source of guidance is the 2006 edition of Management Policies—the foremost element of the Service’s directives system. Other elements include Director's Orders, Handbooks, and Reference Manuals.	http://www.nps.gov/applications/npspolicy/DOrders.cfm
	Law Enforcement Program	DO-9		
	Conservation Planning, Environmental Impact Analysis and Decision Making	DO-12		
	Environmental Management Systems	DO-13		
	Wildland Fire Management	DO-18		
	Cultural Resources Management	DO-28		
	Wilderness Preservation and Management	DO-41		
	Soundscape Preservation and Noise Management	DO-47		
	Concessions Management	DO-48		
	Special Park Uses	DO-53		
	Implementation of the NPS Organic Act	DO-55		
	Aviation Management	DO-60		
	Explosives Use and Blasting Safety	DO-65		
	Natural Resources Protection	DO-77		
	Wetland Protection	DO-77-1		

A.1 National Park Service Organic Act

Relevant Laws, Policies, and Regulations

The 1916 Organic Act directs the Department of the Interior and the NPS to manage units of the national park system “to conserve the scenery and the natural and historic objects and the wild life therein and to provide for the enjoyment of the same in such manner and by such means as will leave them unimpaired for the enjoyment of future generations” (16 USC 1). Congress reiterated this mandate in the Redwood National Park Expansion Act of 1978, which states that the NPS must conduct its actions in a manner that will ensure no “derogation of the values and purposes for which these various areas have been established, except as may have been or shall be directly and specifically directed by Congress” (16 USC 1a-1).

Within these mandates, the Organic Act and its amendments afford the NPS latitude to make resource decisions that balance visitor recreation and resource preservation. By these acts, Congress “empowered [the NPS] with the authority to determine what uses of park resources are proper and what proportion of the parks resources are available for each use” (*Bicycle Trails Council of Marin v. Babbitt*, 82 F.3d 1445, 1453 (9th Cir. 1996)). Courts have consistently interpreted the Organic Act and its amendments to elevate resource conservation above visitor recreation. For example

Michigan United Conservation Clubs v. Lujan, 949 F.2d 202, 206 (6th Cir. 1991) states, “Congress placed specific emphasis on conservation.”

The National Rifle Association of America v. Potter, 628 F. Supp. 903, 909 (D.D.C. 1986) states, “In the Organic Act Congress speaks of but a single purpose, namely, conservation.”

A.2 NPS Management Policies

Relevant Laws, Policies, and Regulations

In NPS Management Policies 2006 the National Park Service recognizes that resource conservation takes precedence over visitor recreation. Section 1.4.3 states “when there is a conflict between conserving resources and values and providing for enjoyment of them, conservation is to be predominant.” Because conservation is predominant, the National Park Service seeks to avoid or minimize adverse impacts on park resources and values. In addition, Section 1.4.3 also recognizes that the National Park Service has discretion to allow negative impacts when necessary. However, the National Park Service cannot allow an adverse impact that constitutes resource impairment.

The Organic Act prohibits actions that permanently impair park resources unless a law directly and specifically allows for such actions. As stated in NPS Management Policies, an action constitutes an impairment when its impacts “harm the integrity of park resources or values, including the opportunities that otherwise would be present for the enjoyment of those resources or values.” To determine impairment, the National Park Service must evaluate “the particular resources and values that would be affected; the severity, duration, and timing of the impact in question and other impacts.”

Park units vary based on their enabling legislation, missions, and natural and cultural resources. Therefore, recreational activities appropriate for each unit and for areas within each unit vary. An action appropriate in one unit could impair resources in another. Thus, in Chapter 4 the context, duration, timing, and intensity of impacts related to fire management at Grand Canyon are analyzed, as well as the potential for resource impairment.

Regarding fire management, NPS Management Policies 2006 states

4.5 Fire Management

Naturally ignited fire, including the smoke it produces, is part of many of the natural systems being sustained in parks. Such natural systems contain plant and animal communities characterized as fire-adapted or fire-dependent. They require periodic episodes of fire to retain their ecological integrity and, in the human-caused absence of fire, they can experience undesirable impacts that diminish their

integrity—such as unnatural successional trends, loss of habitat for fire-adapted plant and animal species, or vulnerability to unnaturally intense wildland fire.

Other park natural systems are characterized by a natural absence or very low frequency of fire. These systems are at risk of losing their ecological integrity when the natural fire regime is subjected to human interference. Fires that burn natural or landscaped vegetation in parks are called wildland fires. Wildland fires occur from both natural and human sources of ignition. Wildland fires may contribute to or hinder the achievement of park management objectives, and management response to each wildland fire is determined by whether or not the fire occurs within prescription as identified in the park's fire management plan. Wildland fire use is the application of an appropriate management response to naturally ignited wildland fires to accomplish specific resource management objectives in predefined areas outlined in fire management plans. Prescribed fires are the deliberate ignition of fires under prescribed circumstances to accomplish resource management objectives in predefined areas outlined in approved fire management plans.

Fire management consists of a program of activities designed to meet management objectives for protection of resource values, life, and property and, where appropriate, for using naturally ignited and human-ignited wildland fires as management tools. Park fire management programs designed specifically to meet park resource management objectives—including allowing fire to perform its natural role as much as practicable—will ensure that firefighter and public safety are not compromised.

Parks with vegetation capable of burning will prepare a fire management plan that is consistent with Federal law and departmental fire Management Policies, and that includes addressing the need for adequate funding and staffing to support the planned fire management program. The plan will be designed to guide a program that

- *responds to the park's natural and cultural resource objectives;*
- *provides for safety considerations for park visitors, employees, and developed facilities;*
- *addresses potential impacts on public and private neighbors and their property adjacent to the park; and*
- *protects public health and safety*

The fire management plan will also include guidance on determining in which situations natural regeneration of a burned ecosystem is appropriate and when management actions are needed to restore, stabilize, or rehabilitate an area following wildland fire.

Environmental and cultural resource compliance documentation developed in support of the plan will consider the effects of fire on air quality, water quality, and human health and safety. It will also discuss the influence of fire, fire management, and the potential consequences and effects of fire exclusion on the ability of the park to meet its natural and cultural resource management objectives.

Preparation of the plan and supporting documents will include collaboration with appropriate NPS natural and cultural resource offices, adjacent communities, interest groups, state and Federal agencies, and tribal governments, with cooperating agency status granted when requested by eligible adjacent communities, state and federal agencies, and tribal governments.

All wildland fires will be effectively managed through application of the appropriate strategic and tactical management options as guided by the park's fire management plan. These options will be selected after comprehensive consideration of the resource values to be protected, firefighter and public safety, costs, availability of firefighting resources, weather, and fuel conditions.

Naturally ignited and human-ignited fires managed to achieve resource management and fuel treatment objectives, and the smoke they produce, will both be managed to comply with applicable

local, state, and federal air quality regulations. Such fires will also include monitoring programs that record fire behavior, smoke behavior, fire decisions, and fire effects to provide information on whether specific objectives are met and to improve future fire management strategies. All parks will use a systematic decision-making process identified in their fire management plans or other documents to determine the most appropriate management strategies for all unplanned ignitions and for any naturally or management-ignited fires no longer meeting resource management objectives.

Parks lacking an approved fire management plan may not use resource benefits as a consideration influencing selection of a suppression strategy; they must consider resource impacts of suppression alternatives in decisions. Until a plan is approved, parks must immediately suppress all wildland fires, taking into consideration park resources and values to be protected, firefighter and public safety, costs, availability of firefighting resources, weather, and fuel conditions. Parks will use methods to suppress wildland fires that minimize impacts of the suppression action and the fire and are commensurate with effective control, firefighter and public safety, and resource values to be protected.

Burnable vegetation in many parks includes areas that are hazardous to specific park resources or human safety and property because of the presence of fuels that could carry wildland fire into special resource protection zones, developed areas, or outside park boundaries. The fire management plan will address strategies for preventing the accumulation of hazardous fuels in specific areas and for eliminating hazardous conditions that may have developed over time due to past fire suppression programs or ongoing development activities. These strategies will entail strategic planning, interdisciplinary coordination, and interorganizational collaboration as needed to provide appropriate treatment using adaptive management practices that range from site specific to landscape level. Although prescribed fire remains the preferred and most widely used NPS tool for managing the accumulation of hazardous fuels, strategies will incorporate other activities, such as manual, mechanical, biological and, rarely, chemical treatments (applying integrated pest management principles), that may be appropriate in specific instances, as guided by NPS and DOI policies and legal requirements. More details on wildland fire management, including interagency and DOI policies and requirements, are contained in Director's Order 18, Wildland Fire Management.

Fire management or suppression activities conducted within wilderness, including the categories of designated, recommended, potential, proposed, and eligible areas, will be consistent with the "minimum requirement" concept identified in chapter 6 and Director's Order #41: Wilderness Preservation and Management.

(See also Management Policies 2006: General Management Concepts 4.1; Partnerships 4.1.4; Restoration of Natural Systems 4.1.5; Air Resource Management 4.7; Fire Detection, Suppression, and Post-fire Rehabilitation and Protection 5.3.1.2; Fire Management 6.3.9; Visitor Safety 8.2.5.1; Structural Fire Protection and Suppression 9.1.8)

A.3 Director's Order 18, Wildland Fire Management Relevant Laws, Policies, and Regulations

In addition to NPS Management Policies 2006, which set the framework and provide policy direction for decision making in administering the national park system and NPS programs, Director's Orders may prescribe supplemental operating policies, specific instructions, requirements, or standards applicable to NPS functions, programs, and activities. Director's Orders may also delegate authority and assign responsibility. This environmental impact statement conforms with the guidelines presented in Director's Order 12, Conservation Planning, Environmental Impact Analysis, and Decision-making, and its implementing handbook.

Director's Order 18, and its Reference Manual (RM-18), guide the development of NPS policy relative to fire management and dictate fire management plan program requirements as listed in Table A-1.

Table A-1 National Park Service Fire Policy on Fire Management Plans

National Park Service Policy Directing Development Of Fire Management Plans Director’s Order 18: Wildland Fire Management Section 5: Program Requirements
<ul style="list-style-type: none"> • Every park with burnable vegetation must have a FMP approved by the superintendent.
<ul style="list-style-type: none"> • All approved fire management plans will • Reinforce the commitment that firefighter and public safety is the first priority • Describe wildland fire management objectives, which are derived from land, natural, and cultural resource management plans and address public health issues and values to be protected • Address all potential wildland fire occurrences and consider the full range of wildland fire management actions • Promote an interagency approach to managing fires on an ecosystem basis across agency boundaries in conformance with the natural ecological processes and conditions characteristic of the ecosystem • Include a description of rehabilitation techniques and standards that comply with resource management plan objectives and mitigate immediate safety threats • Be developed with internal and external interdisciplinary input and reviewed by appropriate subject-matter experts and all pertinent interested parties, and approved by the park superintendent • Comply with NEPA and any other applicable regulatory requirements • Include a wildland fire prevention analysis and plan • Include a fuels management analysis and plan • Include procedures for short- and long-term monitoring to document overall programmatic objectives are being met and undesired effects are not occurring
<ul style="list-style-type: none"> • Until a Fire Management Plan is approved, park areas must take an aggressive suppression action on all wildland fires, taking into account firefighter and public safety and resources to be protected within and outside the park
<ul style="list-style-type: none"> • Although resource impacts of suppression alternatives must always be considered in selecting a fire management strategy, resource benefits cannot be the primary consideration unless there is an approved Fire Management Plan

A.4 Federal Wildland Fire Management Policy Relevant Laws, Policies, and Regulations

The Interagency Federal Wildland Fire Policy Review Working Group revised the Federal Wildland Fire Management Policy in 2001. The Policy (summarized in Table A-2) provides an overall framework for agencies to develop a wildland fire program consistent with stated land and resource goals and objectives while ensuring firefighter and public safety. This GRCA FMP FEIS/AEF adheres to that policy. More information is available at <http://www.fs.fed.us/fire/management/policy.html>

Additionally, this plan will implement fire management policies and help achieve resource management and fire management goals as defined in Managing Impacts of Wildfires on Communities and the Environment, and Protecting People and Sustaining Resources in Fire Adapted Ecosystems—A Cohesive Strategy available online at http://www.fs.fed.us/publications/2000/cohesive_strategy_10132000.pdf; and A Collaborative Approach for Reducing Wildland Fire Risks to Communities and the Environment: Ten-Year Comprehensive Strategy Implementation Plan (Western Governors Association, updated yearly). This document can be found online at <http://www.westgov.org/wga/initiatives/fire/>.

A.5 Wilderness Act Relevant Laws, Policies, and Regulations

The National Park Service is required to manage Wilderness in accordance with the Wilderness Act of 1964. The Wilderness Act directs managers to “preserve Wilderness character,” and mandates that both wildness and naturalness be preserved. Congress defined Wilderness as “. . .an area where the earth and its community of life are untrammelled by man,” meaning unmanipulated, unmanaged, self-willed, autonomous, wild; that “retains its primeval character and influence.”

Congress further defined Wilderness to be an area “. . .managed so as to preserve its natural conditions and which (1) generally appears to have been affected primarily by the forces of nature,

with the imprint of man’s work substantially unnoticeable...” The Act further stipulates that Wilderness areas must have “outstanding opportunities for solitude or a primitive and unconfined type of recreation.”

The Act also states that there shall be no commercial enterprise or permanent roads in Wilderness, and “except as necessary to meet minimum requirements for the administration of the area for the purpose of the Act” (the purpose defined as preserving Wilderness character and “the public purposes of recreational, scenic, scientific, educational, conservation, and historical use”), there shall be no temporary road, no use of motor vehicles, motorized equipment or motorboats, no landing of aircraft, no other form of mechanical transport, and no structure or installation. . .” Congress also made a special provision that allows aircraft use “as may be necessary in the control of fire. . .”

The 1998 Update to the 1980 GRCA Wilderness Recommendation proposed two units totaling 1,139,077 acres for wilderness designation. These units include about 94 % of the park's total area. Of this total, 1,109,257 acres are recommended for immediate wilderness designation; and 29,820 are recommended for designation as potential wilderness, pending resolution of boundary and motorized riverboat issues. Represented within these units are examples of all the park's physiographic regions. Much of the fire management covered by this FMP FEIS/AEF will take place in GRCA’s recommended wilderness.

A.5.1 Wilderness Fire Management Relevant Laws, Policies, and Regulations

NPS Management Policies 2006 states

6.3.9 Fire Management

All fire management activities conducted in wilderness areas will conform to the basic purposes of wilderness. Actions taken to suppress wildfires must use the minimum-requirements concept unless the onsite decision maker determines in his/her professional judgment that conditions dictate otherwise. Preplanning is critical to ensure that emergency response incorporates minimum requirements to the greatest extent possible. Fire suppression activities should be managed in ways that protect natural and cultural resources and minimize the lasting impacts of the suppression actions. Information on developing a fire management program in wilderness is contained in Director’s Order 18.

Table A-2 2001 Federal Wildland Fire Management Policy

Policy	2001 Federal Wildland Fire Management Policy
Safety	Firefighter and public safety is the first priority. All Fire Management Plans and activities must reflect this commitment
Ecosystem Sustainability	Full range of fire management activities will be used to help achieve ecosystem sustainability including its interrelated ecological, economic, and social components
Response to Wildland Fire	Fire, as a critical natural process, will be integrated into land and resource management plans and activities on a landscape scale, and across agency boundaries. Response to wildland fire is based on ecological, social, and legal consequences of the fire. The circumstances under which a fire occurs, and the likely consequences on firefighter and public safety and welfare, natural and cultural resources, and values to be protected dictate the appropriate management response to the fire
Use of Wildland Fire	Wildland fire will be used to protect, maintain, and enhance resources and, as nearly as possible, be allowed to function in its natural ecological role. Use of fire will be based on approved Fire Management Plans and will follow specific prescriptions described in operational plans
Rehabilitation and Restoration	Rehabilitation and restoration efforts will be undertaken to protect and sustain ecosystems, public health, safety, and help communities protect infrastructure
Protection Priorities	Protection of human life is the overriding priority. Setting priorities among protecting human communities and community infrastructure, other property and improvements, and natural and cultural resources is based on values to be protected, human health and safety, and protection costs. Once people have committed to an

Policy	2001 Federal Wildland Fire Management Policy
	incident, these human resources become the highest value to be protected
Wildland-Urban Interface	Operational roles of Federal agencies as partners in WUI are wildland firefighting, hazardous fuels reduction, cooperative prevention and education, and technical assistance. Federal agencies may assist with exterior structural protection activities under formal Fire Protection Agreements that specify mutual responsibilities of the partners, including funding. (Some Federal agencies have full structural protection authority for facilities on their lands; they may also enter into formal agreements to assist state and local governments with full structural protection)
Planning	Every area with burnable vegetation must have an approved FMP. FMP are strategic plans that define a program to manage wildland and prescribed fires based on the area's approved land management plan. FMP must provide for firefighter and public safety; include fire management strategies, tactics, and alternatives; address values to be protected and public health issues; and be consistent with resource management objectives, activities of the area, and environmental laws and regulations
Science	Fire Management Plans and programs will be based on a foundation of sound science. Research will support ongoing efforts to increase our scientific knowledge of biological, physical, and sociological factors. Information needed to support fire management will be developed through an integrated interagency fire science program. Scientific results must be made available to managers in a timely manner and must be used in the development of land management plans, Fire Management Plans, and implementation plans
Preparedness	Agencies will ensure their capability to provide safe, cost-effective fire management programs in support of land and resource management plans through appropriate planning, staffing, training, equipment, and management oversight
Suppression	Fires are suppressed at minimum cost, considering firefighter and public safety, benefits, and values to be protected, consistent with resource objectives
Prevention	Agencies will work together and with their partners and other affected groups and individuals to prevent unauthorized ignition of wildland fires
Standardization	Agencies will use compatible planning processes, funding mechanisms, training and qualification requirements, operational procedures, values-to-be-protected methodologies, and public education programs for all fire management activities
Interagency Cooperation and Coordination	Fire management planning, preparedness, prevention, suppression, fire use, restoration and rehabilitation, monitoring, research, and education will be conducted on an interagency basis with involvement of cooperators and partners
Communication and Education	Agencies will enhance knowledge and understanding of wildland fire management policies and practices through internal and external communication and education programs. These programs will be continuously improved through the timely and effective exchange of information among all affected agencies and organizations
Agency Administrator and Employee Roles	Agency administrators will ensure that employees are trained, certified, and made available to participate in the wildland fire program locally, regionally, and nationally as the situation demands. Employees with operational, administrative, or other skills will support the wildland fire program as necessary. Agency administrators are responsible and accountable for making employees available
Evaluation	Agencies will develop and implement a systematic method of evaluation to determine effectiveness of projects begun under the 2001 Federal Fire Policy. The evaluation will assure accountability, facilitate resolution of areas of conflict, and identify resource shortages and agency priorities

Guidance on the need to suppress wildland fire or to use some wildland fires to achieve desired future conditions should appear in the park's planning documents (for example, in the wilderness management plan and fire management plan). Information in these documents will guide managers

in the selection of fire management tactics that protect natural and cultural resources from fire and from fire suppression actions.

The park's fire management plan will provide guidance for responses to natural and human-caused wildland fires based on fuel conditions, climatic conditions, resources at risk, potential for damage to property or loss of life, both within and adjacent to the wilderness, as well as the availability of fire suppression resources.

If a wildland fire use program is implemented, planning documents will also include the prescriptions and procedures under which the program will be conducted within wilderness. (See also Fire Management 4.5)

Director's Order 41, Wilderness Preservation and Management states

5. Fire Management in Wilderness

(d) The following special provisions are hereby made...In addition, such measures may be taken as may be necessary in the control of fire...subject to such conditions as the Secretary deems desirable.

The Wilderness Act: Section 4(d)

Fire management activities conducted in wilderness areas will conform to the basic purposes of wilderness. The park's Fire Management and wilderness management plans together will identify the natural and historic roles of fire in the wilderness and will provide a prescription for response, if any, to natural and human-caused wildfires. If a prescribed fire program is implemented, these plans will also include the prescriptions and procedures under which the program will be conducted within wilderness.

Actions taken to suppress wildfire will use the minimum requirement concept and will be conducted in such a way as to protect natural and cultural features and to minimize the lasting impacts of the suppression actions and the fires themselves.

NPS Management Policies: 6.3.9 Fire Management

Under ideal conditions, natural fire should be considered as a fundamental component of the wilderness environment. Director's Order # 18: Wildland Fire Management, directs that all fires burning within wilderness will be classified as a "wildland fire" or a "prescribed fire." Wildland fires are those that result from unplanned ignitions. Prescribed fires are those resulting from planned ignitions. All wildland fires within wilderness will be managed to include the application of minimum requirement suppression techniques, the consideration of firefighter and public safety, a cost/benefit analysis, sensitive natural and cultural resources, and will use the strategic and tactical options described in an approved fire management plan.

Fire management plans must address the effects of fire management decisions on wilderness resources and character, air quality, smoke management, water quality, and other pertinent natural and cultural resource management objectives.

Until a fire management plan is approved, all wildland fires in wilderness must be suppressed, with strong emphasis on the concept of minimum requirement in determining suppression methodologies.

Parks containing wilderness will integrate wilderness considerations in the systematic decision-making process, determining the most appropriate management strategies for all planned ignitions (prescribed fires), and for any unplanned fires that no longer meet resource management objectives. While parks lacking an approved fire management plan may not use resource benefits as a primary consideration influencing selection of a wildfire suppression strategy, the resource impacts of suppression alternatives on wilderness values must be considered when decisions are made.

Wilderness values must be adequately represented during all fire planning processes, and wilderness managers will assist in the selection and implementation of appropriate responses to wilderness fires. Resource advisors must be knowledgeable about wilderness values, objectives, and policies.

Any delegation of authority to Incident Management Teams will include appropriate emphasis on the protection of wilderness resources. The methods used to suppress all wildland fires should be those that minimize the impacts of the suppression action and the fire itself, commensurate with effective control and the preservation of wilderness values. Fire suppression teams should be trained in the concepts of wilderness management, the preservation of wilderness values, and wilderness fire management. This requirement should be identified in appropriate delegation orders.

A.5.2 Minimum Requirement

Relevant Laws, Policies, and Regulations

NPS Management Policies 2006 states

6.3.5 Minimum Requirement

All management decisions affecting wilderness must be consistent with the minimum requirement concept. This concept is a documented process used to determine if administrative actions, projects, or programs undertaken by the Service or its agents and affecting wilderness character, resources, or the visitor experience are necessary, and if so how to minimize impacts. The minimum requirement concept will be applied as a two-step process that determines

- *whether the proposed management action is appropriate or necessary for administration of the area as wilderness and does not cause a significant impact to wilderness resources and character, in accordance with the Wilderness Act;*
- *the techniques and types of equipment needed to ensure that impacts on wilderness resources and character are minimized.*

In accordance with this policy, superintendents will apply the minimum requirement concept in the context of wilderness stewardship planning, as well as to all other administrative practices, proposed special uses, scientific activities, and equipment use in wilderness. The only exception to the minimum requirement policy is for eligible areas that the Service has not proposed for wilderness designation. However, those lands will still be managed to preserve their eligibility.

When determining minimum requirements, the potential disruption of wilderness character and resources will be considered before, and given significantly more weight than, economic efficiency and convenience. If a compromise of wilderness resources or character is unavoidable, only those actions that preserve wilderness character and/or have localized, short-term adverse impacts will be acceptable.

Although park managers have flexibility in identifying the method used to determine minimum requirement, the method used must clearly weigh the benefits and impacts of the proposal, document the decision-making process, and be supported by an appropriate environmental compliance document. Parks must develop a process to determine minimum requirement until the plan is finally approved. Parks will complete a minimum requirement analysis on those administrative practices and equipment uses that have the potential to impact wilderness resources or values.

The minimum requirement concept cannot be used to rationalize permanent roads or inappropriate or unlawful uses in wilderness.

Administrative use of motorized equipment or mechanical transport will be authorized only

- *if determined by the superintendent to be the minimum requirement needed by management to achieve the purposes of the area, including the preservation of wilderness character and values, in accordance with the Wilderness Act; or*

- *in emergency situations (for example, search and rescue, homeland security, law enforcement) involving the health or safety of persons actually within the area.*

Such management activities will also be conducted in accordance with all applicable regulations, policies, and guidelines and, where practicable, will be scheduled to avoid creating adverse resource impacts or conflicts with visitor use.

While actions taken to address search and rescue, homeland security and law enforcement issues are subject to the minimum requirement concept, preplanning or programmatic planning should be undertaken whenever possible to facilitate a fast and effective response and reduce paperwork.

For more detailed guidance, see Director's Order #41 and the National Wilderness Steering Committee Guidance Paper #3: "What Constitutes the Minimum Requirements in Wilderness?" (See DO 12: Conservation Planning, Environmental Impact Analysis, and Decision-making).

A completed 2006 Grand Canyon Minimum Requirement Analysis Form (MRAF) is attached (Appendix A, Attachment A) as example. MRAFs are completed yearly for fire effects monitoring, prescribed fire, and wildland fire use activities.

A.5.3 National Wilderness Steering Committee Relevant Laws, Policies, and Regulations Guidance White Paper Number 3

In its Guidance White Paper Number 3, titled Minimum Requirements Decision Process, dated November 2006, the National Wilderness Steering Committee (NWSC) wrote

What are the minimum activities (method or tool) in fire management?

Section 4(d)(1) of the Wilderness Act allows fire suppression in designated wilderness, stating that "such measures may be taken as may be necessary in the control of fire, insects, and diseases, subject to such conditions as the Secretary deems desirable." While the use of motorized equipment, mechanical transport or any other Wilderness Act Section 4 (c) prohibition, is not necessarily barred in the management of fire, there should still be a carefully evaluation of need before it is employed. In this way, the management of fire is no different than any other administrative action taken in wilderness.

According to the May 2005 Wildland Fire Use Implementation Procedures Reference Guide, wildland fire use is now considered to be an emergency, as is wildfire. Wildland fire-use fires are natural ignitions allowed to burn and used to achieve resource management objectives. Much of what applies to other emergencies for example also applies to determining the appropriate course of action for managing wildland fires. Prescribed fires are considered to be planned events and are not emergencies.

Management actions on a wildland fire are derived from the Fire Management Plan and its environmental compliance documents. The Fire Management Plan, in turn, supports resource management planning documents, including the Wilderness Stewardship Plan, which in turn supports the unit's General Management Plan. Fire management decisions, and the costs of these decisions, are affected by the description of desired conditions found in these documents, and by the need to suppress or allow the fire to burn, to achieve these conditions. Minimum Requirements should be a component in any planning process. It is therefore very important that the various park management plans link together to guide fire management decisions.

It is critical that wilderness and fire managers work jointly during the development of not only Fire Management Plans but also during the development of tactical fire planning documents such as Wildland Fire Situation Analysis' for wildfires and the Wildland Fire Implementation Plans for wildland fire-use fires. The process for evaluating tactical activities, consistent with the Minimum

Requirements Concept, should be a component of the Fire Management Plan. The identification and analysis of specific tactics should be developed within Wildland Fire Situation Analysis' and Wildland Fire Implementation Plans.

The key to preserving a park's wilderness character and resources is through proper advanced fire management planning that incorporates the Minimum Requirements Concept. Preferred fire management techniques may include monitoring wildland fire-use fires, and conducting prescribed fire and mechanical treatments to protect park resource and wilderness values that are at risk from unnaturally intense wildland fire and associated suppression tactics.

Park fire management plans should pre-identify sensitive areas where retardant cannot be used unless human life is at stake (waterways, seeps, cultural resources, etc.). Additionally, planning should identify areas where camps or helispots should not be made. Wildland fire management requires preplanning to mitigate damage caused by management actions, and to reduce the need for extensive burned area rehabilitation.

In advanced planning, issues like the method of igniting a prescribed fire can be properly evaluated, and effects on wilderness character and resources, including cultural and natural resources, may be evaluated and, if needed, mitigated. For landscape scale prescribed fire planning, aerial ignition with its noise and presence of mechanical access must be evaluated alongside using hand crews with their camp and pack stock impacts, and especially in regard to safety issues associated with igniting prescribed fires in rugged terrain with hand crews versus aerial ignition. Prescribed fire can be used to replace wildland fires that could not be allowed to burn, so evaluating the overall effectiveness of such alternatives is critical.

For suppressing wildland fire, the least damaging methods and equipment should be applied, consistent with public and firefighter safety and the protection of any nearby development or other values at risk. For example, hand-built fire lines and backfires are preferred over the use of heavy equipment. In general, heavy equipment should not be allowed without written approval of the Superintendent; and this requirement should be outlined in the Fire Management Plan. However, for routine wildland fire suppression operations, if determined necessary, chainsaws or aircraft may be used in wilderness, though the use should be kept to a minimum.

When aircraft are used to suppress fire, water drops are preferable over chemical fire retardants. The application of such minimum requirement strategic and tactical options needs to be made in the fire management planning process that includes a Minimum Requirements Analysis.

Monitoring a wildland fire may require the use of aircraft. The daily monitoring required for fires being monitored instead of suppressed should be done with staff that hike in and camp near the fire or with remote still or video cameras instead of aircraft overflights whenever possible.

A prescribed burn, which is planned and not an emergency, should be treated very differently from a wildland fire suppression operation. It allows an opportunity for greater finesse. While it is clear that motorized equipment may be considered appropriate for prescribed burns, the park planning a prescribed burn has an opportunity to define the minimum activity necessary to conduct the operation with hand tools or some combination of hand and motorized. Chainsaws, aircraft, etc., may be stationed nearby and ready for use in case the fire gets out of prescription. These decisions need to be made in the fire management planning process that includes a Minimum Requirements Analysis; again, wilderness and fire managers must work together in development of this document.

The Interagency Standards for Fire and Fire Aviation Operations (revised annually) includes an appendix on Minimum Impact Suppression Tactics. It emphasizes selecting procedures, tools, and equipment that have the least impact on the bio-physical environment. It also provides guidelines for the

delivery of retardant or foam near waterways and in threatened and endangered species habitat that are designed to reduce impacts to the natural environment. These tactics should be applied during wildfire, wildland fire use or prescribed fire activities in wilderness.

GRCA fire managers conduct an annual Minimum Requirement Analysis (MRA) to address strategic and tactical options for prescribed fire, fire effects monitoring, and wildland fire use activities within wilderness. These annual assessments define the minimum activity necessary to conduct an operation with hand tools or some combination of hand and motorized equipment including aircraft.

In addition, maps identifying sensitive wilderness resources are annually updated and maintained. These maps are used by Resource Advisors during wildland fire incidents to identify where retardant cannot be used unless human life is at stake; locate fire-sensitive cultural resources or sensitive plant and animal populations, and identify where camps or helispots should not be made. Heavy equipment use requires written approval by the Superintendent and that authority is delegated on an incident-by-incident basis.

A.5.4 NPS Reference Manual 18 Wildland Fire Management **Relevant Laws, Policies, and Regulations**

RM-18 directs that wilderness area management needs to be in alignment with the role fire has played in wilderness areas historically. It also calls for fire management plans to detail proposed procedures for management in wilderness areas. RM-18 is issued by the Associate Director, Park Operations and Education, and is a technical expression of wildland fire management requirements and procedures that provides detailed definitions and expanded guidance of all information presented in DO-18.

A.5.5 NPS Reference Manual 77 Natural Resource Management **Relevant Laws, Policies, and Regulations**

RM-77 offers comprehensive guidance for managing, preserving, and protecting natural resources found in NPS units including wilderness. The NPS will manage wilderness areas for the use and enjoyment of the American people in such a manner as will leave them unimpaired for future use and enjoyment as wilderness. Management includes protection, preservation of wilderness character, and gathering and dissemination of information regarding use and enjoyment as wilderness.

A.5.6 Minimum Impact Suppression Tactics **Relevant Laws, Policies, and Regulations**

The Interagency Standards for Fire and Fire Aviation Operations (revised annually) or Red Book includes an appendix on Minimum Impact Suppression Tactics (MIST) included in this FMP FEIS/AEF as Appendix A, Attachment B. More information is also available at http://www.nifc.gov/red_book/.

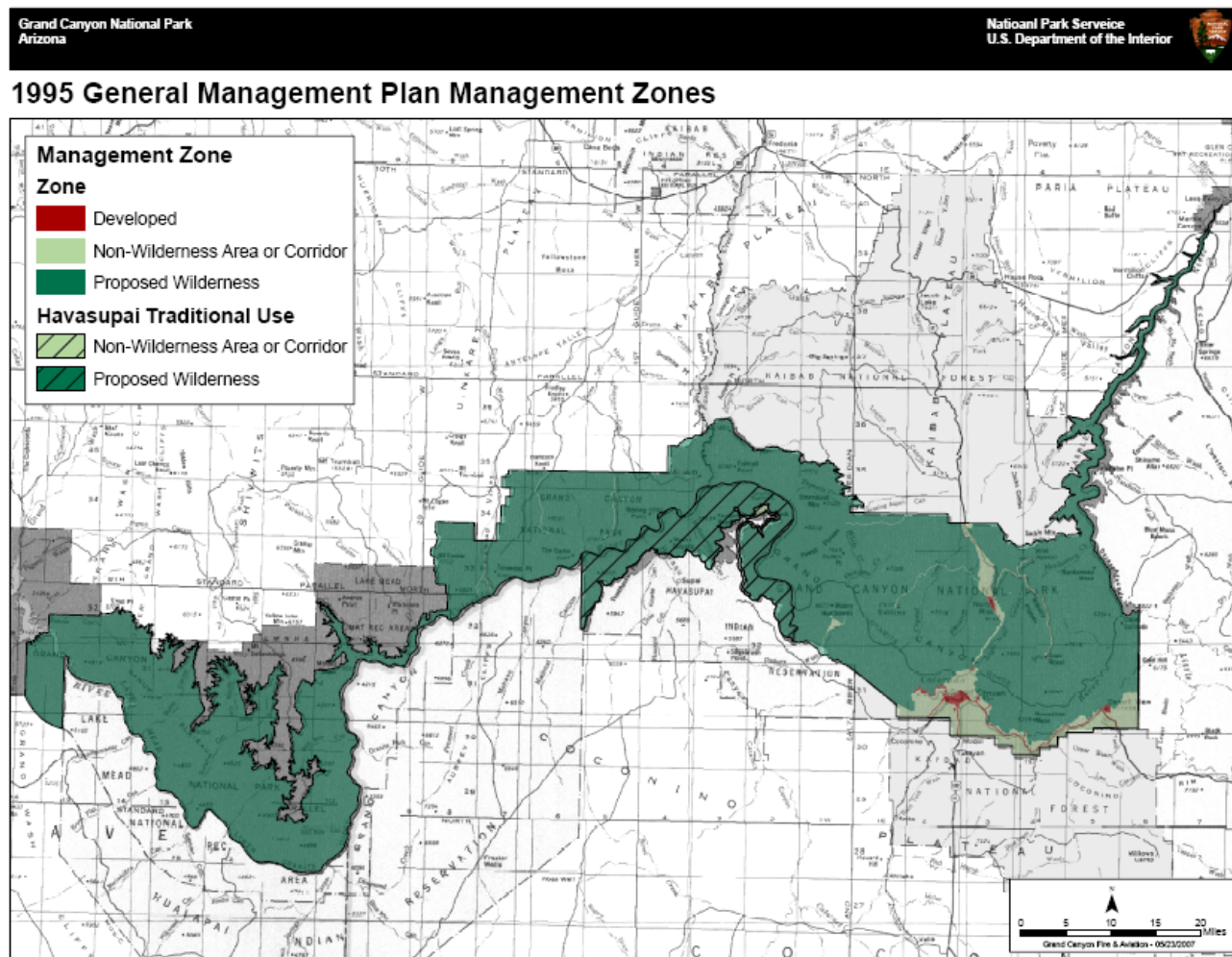
GRCA fire management incorporates interagency MIST standards and guidelines on all fires in wilderness, regardless of ignition type or management strategy.

A.5.7 Recommended Wilderness Information **Relevant Laws, Policies, and Regulations**

The Grand Canyon National Park Enlargement Act of 1975 required the National Park Service to prepare a wilderness recommendation. Following release of the 1998 Final Environmental Statement for a Wilderness Recommendation, GRCA submitted a proposal recommending 1.1 million acres for designation as wilderness, and approximately 29,820 acres as potential wilderness pending the resolution of boundary and motorboat issues.

In 1993 park staff reviewed and updated the 1980 Wilderness Recommendation, including refining acreage estimates through use of Geographical Information Systems (GIS). Revisions were consistent with the original recommendation.

Map A-1 Grand Canyon Wilderness



In accordance with NPS Management Policies 2006

“In addition to managing these areas for the preservation of the physical wilderness resources, planning for these areas must ensure that the wilderness character is likewise preserved. This policy will be applied to all planning documents affecting wilderness.

The National Park Service will take no action that would diminish the wilderness eligibility of an area possessing wilderness characteristics until the legislative process of wilderness designation has been completed. Until that time, management decisions will be made in expectation of eventual wilderness designation. This policy also applies to potential wilderness, requiring it to be managed as wilderness to the extent that existing nonconforming conditions allow. The National Park Service will apply the principles of civic engagement and cooperative conservation as it determines the most appropriate means of removing the temporary, nonconforming conditions that preclude wilderness designation from potential wilderness. All management decisions affecting wilderness will further apply the concept of ‘minimum requirement’ for the administration of the area regardless of wilderness category.” (Sec. 6.3.1)

NPS Management Policies 2006 states, “Wilderness considerations will be integrated into all planning documents to guide the preservation, management, and use of the park’s wilderness area and ensure that wilderness is unimpaired for future use and enjoyment as wilderness.”

A.6 Guiding Regulations and Policies

Soundscape

• Grand Canyon National Park Enlargement Act, 1975 (Public Law 93-620)

This law established the current park boundary. Section 8, titled Aircraft Regulation states *Whenever the Secretary (Interior) has reason to believe that any aircraft or helicopter activity or operation may be occurring or about to occur in Grand Canyon National Park, . . . which is likely to cause injury to the health, welfare, or safety of park visitors or to cause a significant adverse effect on the natural quiet and experience of the park, the Secretary shall submit. . . such complaints, information, or recommendations for rules and regulations or other actions as he believes appropriate to protect public health, welfare, and safety or the natural environment within the park. After reviewing the submission of the Secretary, the responsible agency shall consider the matter, and after consultation with the Secretary, shall take appropriate action to protect the park and visitors.*

• National Parks Overflights Act of 1987 (Public Law 100-91)

Section 3 of this Act identified noise associated with aircraft overflights at GRCA as causing “a significant adverse effect on the natural quiet^{*} and experience of the park,” and that current aircraft operations at the park “have raised serious concerns regarding public safety, including concerns regarding the safety of park users.” The Act required the Secretary of the Interior, working through the NPS, to submit recommendations to the Federal Aviation Administration (FAA) regarding “actions necessary for the protection of resources in the Grand Canyon from adverse impacts associated with aircraft overflights.” The recommendations were to “provide for substantial restoration of the natural quiet and experience of the park and protection of public health and safety from adverse effects associated with aircraft overflight,” and the FAA was to implement the recommendations unless they would adversely affect aviation safety. Subsection (3)(c) of the Act specifies that “helicopter flights shall not be prohibited, 1) which fly a direct route between a point on the north rim outside of Grand Canyon National Park and locations on the Hualapai Indian Reservation (as designated by the tribe); and 2) whose sole purpose is transporting individuals to or from boat trips on the Colorado River and any guide of such trip.”

• Executive Memorandum April 22, 1996, Regarding the Impact of Transportation in National Parks

Specifically, the President directed the Secretary of Transportation to issue regulations for GRCA that would place appropriate limits on sightseeing aircraft to reduce noise immediately, and to make further substantial progress towards restoration of natural quiet, as defined by the Secretary of Interior, while maintaining aviation safety in accordance with Public Law 100-91. With regard to GRCA it stated “should any final rule making determine that issuance of a further management plan is necessary to substantially restore natural quiet in the Grand Canyon NP, [the Secretary of Transportation, in consultation with Heads of relevant departments and agencies] will complete within five (5) years a plan that addresses how the Federal Aviation Administration and the NPS. . . will achieve the statutory goal not more than 12 years from the date of the directive [2008].”

• NPS Report to Congress, Report on Effects of Aircraft Overflights on the National Park System, July 1995

The report defines “substantial restoration of natural quiet,” as it relates to aircraft overflights in Public Law 100-91, as “a substantial restoration requires that 50% or more of the park achieve ‘natural quiet’ (no aircraft audible) for 75-100 percent of the day.” The report also lists the following goals and objectives developed to further assist in evaluating effectiveness of measures to meet requirements of Public Law 100-91

1. Substantially restore natural quiet as a resource

^{*}Current NPS policy refers to natural soundscapes, in part because a natural setting is not necessarily quiet and may contain numerous natural sounds. What was generally intended with the earlier usage (natural quiet) was not quiet, but rather absence of human-caused sounds. Outside formal legal use of the older term, natural quiet is replaced, following NPS policy, by the term natural soundscape(s).

2. Provide recreation opportunities and experiences for park visitors, consistent with park policies, where the opportunity for natural quiet is an important component
3. Mitigate any aircraft-related impacts on other natural and cultural resources
4. Address issues of health, safety and welfare of on-ground visitors and employees

Management objectives (and management zones they apply to) were

- a. Restore and maintain natural quiet by protecting wilderness character of remote areas (Backcountry Use Zone, River Corridor Use Zone)
 - b. Provide primitive recreation opportunities without aircraft intrusions in most backcountry areas, most locations on the river, and at destination points accessed by both (Backcountry Use Zone, River Corridor Use Zone, Corridor Trail System Use Zone)
 - c. Provide developed recreation opportunities with limited aircraft intrusions for visitors at rim developed areas and major front-country destination points accessible by road (Frontcountry [Paved Access] Use Zone)
 - d. Provide protection of sensitive wildlife habitat areas or cultural resources (Backcountry Use Zone, River Corridor Use Zone, Corridor Trail System Use Zone, Frontcountry [Paved Access] Use Zone)
 - e. Provide for welfare and safety of below-rim, backcountry, and rim visitors (Backcountry Use Zone, River Corridor Use Zone, Corridor Trail System Use Zone, Frontcountry [Paved Access] Use Zone)
 - f. Provide a quality aerial viewing experience while protecting park resources (including natural quiet) and minimizing conflicts with other park visitors (Air Tour Use Zone, Backcountry Use Zone, River Corridor Use Zone, Corridor Trail System Use Zone, Frontcountry [Paved Access] Use Zone)
- **NPS Management Policies 2006, Section 4.9** Requires the NPS to preserve, to the greatest extent possible, natural soundscapes of parks. Park natural soundscape resources encompass all natural sounds that occur in parks, including the physical capacity for transmitting those natural sounds and the interrelationships among park natural sounds of different frequencies and volumes. This policy directs Superintendents to identify what levels and types of unnatural sound constitute acceptable impacts on park natural soundscapes. The service will take action to prevent or minimize all noise that through frequency, magnitude, or duration adversely affects natural soundscape or other park resources or values, or that exceeds levels identified through monitoring as being acceptable to or appropriate for visitor uses at sites monitored.

Management zones described in the park's 1995 GMP are very important for providing context for natural soundscapes and include

- **Natural Zone:** lands and waters managed to conserve natural resources and ecological processes and to provide for their use and enjoyment in ways that do not adversely affect resources or ecological processes. This zone contains the park's recommended wilderness areas, undeveloped areas not recommended for wilderness designation on South and North Rims, and Havasupai traditional use lands. These remote areas tend to be quieter than developed areas such as Grand Canyon Village.
- **Cultural Zone:** includes lands managed for preservation, protection, and interpretation of cultural resources and their settings. Natural and Cultural Zones are most sensitive to noise intrusion because noise tends to be incompatible with their zoning and remoteness, including the unusual and noticeable natural quiet associated with solitude. Also, natural ambient sounds tend to be very low in these areas.
- **Developed Zone:** areas generally less sensitive to noise intrusions because a greater amount of human use, activity, and facility development is compatible with that zoning, generally resulting in subsequent higher ambient noise levels. Although most fire management treatments will be in the Natural Zone, most of the WUI is in the GMP's Developed Zone; most manual and mechanical treatments, and some prescribed fire treatments, will be in the WUI

A.7 Guiding Regulations and Policies

Socioeconomics

- **The Organic Act Redwood National Park Amendments (1978)** express a legal duty to protect park resources against threatening activities arising on adjacent lands. Changes in cultural makeup of communities around the park may result in changes in ways people use surrounding lands. Some of those changes may increase risk of unwanted wildland fire ignitions that threaten park ecosystems, visitors, or developments.
- **The Federal Grant and Cooperative Agreement Act (1978) and separate NPS authority (1996)** allows the NPS to enter into cooperative agreements with communities. This authority may be used if the NPS wishes to engage surrounding communities in fire prevention or fire education activities directed to residents or visitors, for example. One finding of the social assessment studies is that established community residents want to be engaged more as partners than as stakeholders with Federal land managing agencies. Cooperative agreements may be one way to accommodate that wish.
- **The Outdoor Recreation Act (1963)** declares a national policy to support recreation activities and identifies the NPS as the lead agency
- **The National Parks and Recreation Act (1978)** directs the NPS to develop general management plans with public input
- **Executive Order 13352 (August 26, 2004) Facilitation of Cooperative Conservation**, directs DOI agencies (and other agencies) to “implement laws relating to the environment and natural resources in a manner that promotes cooperative conservation.” Cooperative conservation “. . . means actions that relate to use, enhancement, enjoyment of natural resources, protection of the environment, or both, and that involve collaborative activity among Federal, state, local and tribal governments, private for-profit and nonprofit institutions, other non-governmental entities, and individuals.” This order supports collaboration with surrounding communities and other stakeholders in development of fire management policy and plans where fire management might have social and economic impacts on their interests (as well as for other reasons).
- **National Park Service Management Policies 2006** encourages studies that support the NPS mission by proving an understanding of park visitors, the non-visiting public, gateway communities and regions, and human interactions with park resources. Very little is known about how fire, smoke, fire effects on the landscape and fire management activities actually affect qualities of visitor experiences or visitor behaviors and, therefore, economic and social impacts of fire management policies and practices. This policy allows for needed research to be completed. This policy also identifies non-visiting public (described in research literature as passive users) as a population of interest to GRCA.
- **Grand Canyon National Park General Management Plan, 1995** objectives include
 - Preserve, protect, and interpret the park’s natural and scenic resource and values, and its ecological processes (Wildland fire is a major ecological process in GRCA ecosystems)
 - Preserve, protect, and improve air quality and related values such as visibility (Smoke from wildland fires sometimes affects visibility)
 - Preserve, manage, and interpret cultural resources (archeological, ethnographic, architectural, and historic resources, trails, and cultural landscapes) for benefit of present and future generations (Wildfire can threaten architectural, historic resources, and cultural landscapes, especially in developed areas and WUI)
 - Protect natural quiet and solitude, and mitigate or eliminate effects of activities causing excessive or unnecessary noise in, over, or adjacent to the park (Fire management activities sometimes create noise not usually found in wildland settings)
 - Provide a wide range of interpretive opportunities and information to best assist, inform, educate, and challenge visitors (Wildland fires provide excellent teachable moments through which ecological processes can be revealed and visitors provoked to deeper understandings of wildland fire, its ecological roles, and cultural meanings)
 - Educate and influence the public through positive action to preserve and protect the world they live in including, but not limited to, the park (Wildland fire is an essential part of most North American wildland ecosystems; at the same time fire creates smoke, releases carbon dioxide to the atmosphere,

and sometimes burns homes, damages health, and injures people, pets, and livestock. In the U.S., fire is a public policy issue in which citizens must engage to protect their world. Park fire education can advance informed public participation in fire, smoke management, and climate change debate)

- Provide canyon viewing opportunities, access to views and trails, and interpretation and information, recognizing these are the most important elements of a South Rim visitor experience. (Wildland fire smoke has important consequences for this objective when it obscures canyon views. Wildland fire also presents interpretive opportunities, and information and interpretation can affect visitor response to wildland fire smoke and visitor abilities to manage their experiences to take advantage of learning opportunities and minimize negative impacts associated with wildland fire)
- Understand, assess, and consider effects of park decisions outside and inside the park. (Park decisions have economic and social impacts outside the park. Sometimes those impacts extend well beyond park boundaries)

A.8 Guiding Regulations and Policies

Air Quality

- **National Park Service Management Policies 2006**, Section 4.5, notes that “Naturally ignited fire, including the smoke it produces, is part of the many natural systems being sustained in parks.” The section goes on to say that, “Naturally ignited and human-ignited fires. . .and the smoke they produce, will both be managed to comply with applicable local, state and federal air quality regulations.” Section 4.7.1 outlines the park service’s responsibility to “perpetuate the best possible air quality in parks,” and “[i]n cases of doubt. . .will err on the side of protecting air quality and its related values for future generations.” This section reiterates that “all air pollution sources within parks – including prescribed fire management and visitor use activities – will comply with all federal, state, and local air quality regulations and permitting requirements” and will “minimize air quality pollution emissions associated with park operations, including the use of prescribed fire and visitor use activities.”
- **Clean Air Act** designates Grand Canyon as one of 258 “mandatory class I Federal areas.” Under this designation, the park receives the most stringent protection against increases in “criteria pollutants” and a goal to return park visibility to natural conditions. Among programs to protect human health and welfare under the Clean Air Act, the EPA sets “National Ambient Air Quality Standards” (NAAQS) for criteria pollutants (carbon monoxide, ozone, particulates, sulfur dioxide, nitrogen oxides, and lead). These standards are based on ambient concentrations of certain pollutants in the air (in other words, what the public would be breathing). They are not based on air pollution emissions, since these emissions may (or may not) become diluted, dispersed, or chemically altered after they enter the atmosphere. The NAAQS pollutant concentrations are established over different time periods for different pollutants, including annual, daily, hourly, or multiple hour average concentrations. In GRCA, ozone levels do approach the NAAQS in early summer, but no violations have been measured. Particulate levels may exceed the NAAQS briefly during wildland fires. All other criteria pollutant concentrations are well below the NAAQS. New NAAQS for fine particles became effective December 18, 2006 (U.S. EPA 2006, p. 61144) and related revisions to the Air Quality Index are planned (U.S. EPA 2006, p. 61177). The new standard to protect human health is $35 \mu\text{g}/\text{m}^3$ as a 24 hour average, significantly lower than the old standard of 65 micrograms/cubic meter ($\mu\text{g}/\text{m}^3$). Violations of the standard carry sanctions, and if wildland fire smoke causes three violations of the NAAQS for particulate matter (PM_{10} or $\text{PM}_{2.5}$), the state or tribe must institute a Federally enforceable smoke management program (U.S. EPA 1998). State and tribal governments have been delegated authority to develop programs that adhere to these standards which apply to Federal programs and state, county and local governments within the state boundary. Arizona has developed an “Enhanced Smoke Management Plan” which was included in the State Implementation Plan for Regional Haze, submitted to the U.S. EPA on December 23, 2003 (reference: AZ Department of Environmental Quality, 2003 “Regional Haze State Implementation Plan for the State of Arizona,” page 75, available at <http://www.azdeq.gov/environ/air/haze/download/2sip.pdf>)
- **Regional Haze Rule** While numeric standards to protect human health are clearly set forth in Federal and state regulations, standards to protect visibility are less clearly defined. In 1977, Congress established a national goal “the prevention of any future, and the remedying of any existing,

impairment of visibility in mandatory class I Federal areas which impairment results from manmade air pollution” (Clean Air Act, Sec. 169A). The national Regional Haze Rule sets a target of 2064 to return visibility to natural conditions (40 CFR §51.308(d)(1)(i)(B)). There are no actual monitoring data to define natural conditions, so the EPA has set guidelines for its estimation (U.S. EPA 2003). These reconstructed natural conditions include estimates for natural wildland fires. To reach natural visibility conditions, the EPA has recommended (and Arizona has followed) a strategy to preserve the best visibility days while improving the worst. As can be seen from Table A-3, the Haze Index in 2004 on Grand Canyon’s best days was already close to the natural conditions target. However, its average days are hazier, and its worst days are substantially hazier than natural conditions.

Table A-3 Grand Canyon Haze Index 2004

Grand Canyon Haze Index, measured in deciviews			
	Best 20%, Average	Average	Worst 20%, Average
Natural Conditions Default Target (U.S. EPA 2003)	1.83	4.39	6.95
Actual Visibility Conditions in 2004 (VIEWS 2007)	1.98	6.44	11.17
<i>Visibility is measured in deciviews, a unit in which perceived changes in visibility are constant across a wide range of visibility conditions—a change of one deciview is visible to most observers under most conditions regardless of haze level</i>			

- **Arizona State Regulations** (AAC R18-2) for wildland fire management focus on the state’s responsibility to provide clean air to its citizens. Article 15, Forest and Range Management Burns, include requirements for permitting and reporting wildland fires, as well as emission and smoke management practices that wildland fire managers must consider in planning and managing fires. Arizona has an enhanced smoke management program that addresses both health and visibility standards, included annual emissions goals. Arizona has an enhanced smoke management program that addresses both health and visibility standards, included annual emissions goals.

A.9 Guiding Regulations and Policies

Special Status Plants

NPS direction for Federally listed and proposed species is to manage NPS habitats to sustain populations and meet recovery objectives so that special protection measures provided under the Endangered Species Act are no longer needed (DO 77-8). Each park is responsible for managing threatened or endangered species consistent with the applicable species recovery plan, if one exists, and to meet the national park share of threatened and endangered species recovery goals.

NPS Management Policies 2006 state that the agency would consider potential effects of actions on state and locally listed species. The NPS is required to perpetuate the natural distribution and abundance of these species and the ecosystems on which they depend.

In addition, the NPS strives to perpetuate the natural distribution and abundance of these species and the ecosystems on which they depend. To the extent possible, the NPS will allow natural processes, including the evolution of species, to control landscape and population level dynamics, assuming that all components of the natural systems remain intact. Preservation of fundamental physical and biological processes, as well as individual species, plant communities, and other components of naturally evolving ecosystems, is inherent in management direction. Management Policies state NPS will successfully maintain native plants by

- Restoring native plant populations when extirpated by past human-caused actions and minimizing human impacts on native plants and the processes that sustain them
- Develop data through monitoring
- Prevent introduction of exotic species

- The park will allow natural processes to maintain native plant species and influence natural fluctuations in populations of these species in accordance with NPS Management Policies. unless protection of a rare, threatened, or endangered species requires management
- Whenever NPS removes native plants it will seek to ensure prevention of interference with rare, threatened, and endangered plant or animal species or their critical habitats
- NPS will survey for, protect, and strive to recover all species listed under the Endangered Species Act and will meet its obligations under the NPS Organic Act by
 - Cooperating with U.S. Fish and Wildlife Service
 - Undertake active management programs to inventory, monitor, restore, and maintain listed species' habitat
 - Manage designated critical habitat

NPS will inventory, monitor, and manage state and locally listed species in a manner similar to its treatment of Federally listed species to the greatest extent possible

A.10 Guiding Regulations and Policies

Cultural Resources

Federal Statutes

- **The Antiquities Act of 1906 (34 Stat. 225)** provides for protection of historic, prehistoric, and scientific features on Federal lands (with penalties for unauthorized destruction or appropriation of antiquities), and for authorized scientific investigation of antiquities on Federal lands subject to permit and regulations
- **The Historic Sites Act of 1935 (49 USC 303)**, among other things, authorizes the NPS to “restore, reconstruct, rehabilitate, preserve, and maintain historic or prehistoric sites, buildings, objects, and properties of national historical or archaeological significance.”
- **The National Historic Preservation Act (NHPA) of 1966, as amended (16 USC 470 et seq.)** declares that historic preservation is a national policy and authorizes the Secretary of the Interior to expand and maintain a National Register of Historic Places that includes properties of national, state, and local historical significance. NHPA recommends that Federal agencies proposing action consult with the State Historic Preservation Officer regarding existence and significance of cultural and historical resource sites
- **The Archaeological and Historic Preservation Act of 1974 (16 USC 469 et seq.)** amended the 1960 Reservoir Salvage Act and provides for preservation of significant scientific, prehistoric, historic, and archaeological materials and data that might be lost or destroyed as a result of Federally sponsored projects
- **The American Indian Religious Freedom Act (AIRFA) of 1978 (42 USC 1996)** states it is the policy of the U.S. Government to protect and preserve for American Indians access to sites, use and possession of sacred objects, and freedom to worship through ceremonials and traditional rites

Executive Orders

- **Executive Order 11593** instructs all Federal agencies to support preservation of cultural properties, and directs them to identify and nominate to the National Register of Historic Places cultural properties under their jurisdiction and to “exercise caution. . .to assure that any federally owned property that might qualify for nomination is not inadvertently transferred, sold, demolished, or substantially altered.”
- **Executive Order 13007** requires Federal agencies “to the extent practicable, permitted by law, and not clearly inconsistent with essential agency functions, 1) accommodate access to and ceremonial use of Indian sacred sites by Indian religious practitioners and 2) avoid adversely affecting the physical integrity of such sacred sites.”

National Park Service Policies, Director's Orders

- **Director's Order 28A (DO 28A), Archeology**, recognizes that individual national parks contain significant archaeological sites which are important nonrenewable and non-replaceable park resources. The NPS seeks to conserve, protect, and manage these resources to prevent impairment of

archaeological resources. These goals are achieved through a program of identification, evaluation, documentation, registration, treatment, protection, preservation, monitoring, research, and interpretation. DO 28A recognizes five categories of responsibilities in managing archaeological resources 1) stewardship, 2) preservation planning and impact analysis, 3) law enforcement, review, and permit enforcement, 4) contracts, and 5) reporting.

- **Director's Order 58 (DO-58), Structural Fire Management, Section V.D., Cultural Resources**, states that the NPS structural fire program will protect cultural resources from damage or loss to the fullest extent possible

A.11 Other Relevant Laws and Policies

A.11.1 State of Arizona Department of Environmental Quality Regulations for Wildland Fire Management

GRCA will follow guidelines described in the ADEQ Final Forest and Range Management Burn Rule last amended in 2004 (Arizona Administrative Code: Title 18, Environmental Quality; Chapter 2, Department of Environmental Quality, Air Pollution Control, available as Appendix A, Attachment C or online at http://www.azsos.gov/public_services/Title_18/18-02.htm).

Appendix A, Attachment A

GRCA MINIMUM REQUIREMENT ANALYSIS

PROPOSED ACTION: Wildland Fire Use Operations PREPARED BY:

GRCA Project Number (if applicable):

DATE: 03/13/2006

PART A: Is this action necessary to manage the area as wilderness?

DESCRIPTION OF PROPOSED ACTION: Management of Wildland Fire Use fires

Wildland Fire Use fires are managed according to NPS Directors Order 18, Chapter 9 and Interagency Wildland Fire Use Implementation Guide.

1. Describe Special Provisions of Wilderness Legislation. Is there a special provision in wilderness legislation (The Wilderness Act or others) that allows consideration of actions involving Section 4(c) uses?

Cite law and section: Wilderness Act, sec. 4.c and 4.d.1

PROHIBITION OF CERTAIN USES

(c) Except as specifically provided for in this chapter, and subject to existing private rights, there shall be no commercial enterprise and no permanent road within any wilderness area designated by this Act and, except as necessary to meet minimum requirements for the administration of the area for the purpose of this Act (including measures required in emergencies involving the health and safety of persons within the area), there shall be no temporary road, no use of motor vehicles, motorized equipment or motorboats, no landing of aircraft, no other form of mechanical transport, and no structure or installation within any such area.

SPECIAL PROVISIONS

(d) The following special provisions are hereby made:

(1) Within wilderness areas designated by this chapter the use of aircraft or motorboats, where these uses have already become established, may be permitted to continue subject to such restrictions as the Secretary of Agriculture deems desirable. In addition, such measures may be taken as may be necessary in the control of fire, insects, and diseases, subject to such conditions as the Secretary deems desirable.

2. Describe Requirements of Other Legislation, Policy, and Guidance. Does taking action conform to and implement relevant standards and guidelines and direction contained in other legislation, policy, management plans, species recovery plans, tribal government agreements, and/or other interagency agreements?

Explain and cite law, policy, etc.:

Grand Canyon FMP-(NPS 1992: 56) Reformatted in 2005 to new standards.

The fire management plan establishes the goal to “effectively manage wildland fire and provide for the protection of life, property, and cultural resources, while ensuring the perpetuation of park ecosystems and natural resources.” It further establishes the objective of “. . . .restoration of natural fire regimes to park ecosystems. . .”

Grand Canyon GMP (NPS 1995: 6,7)

The GMP presents additional management objectives relevant to ecosystem conservation:

1. To the maximum extent possible, restore altered ecosystems to their natural conditions. In managing naturalized ecosystems, ensure preservation of native components through active management of nonnative components and processes.
2. Manage ecosystems to preserve critical processes and linkages that ensure preservation of rare, endemic, and specially protected (threatened/endangered) plant and animal species.
3. Preserve, protect, and interpret the genetic integrity and species composition within the park, consistent with natural ecosystem processes.
4. Preserve, protect, and interpret the park's natural and scenic resources and values, and its ecological processes.
5. Manage the park to preserve its integrity as a world heritage site with natural and cultural resources of national and international significance.

Grand Canyon RMP (NPS 1997: 108, 109)

The RMP provides additional objectives based on the GMP:

1. Protect human life and property.
2. Restore fuel loads and ecosystem structure to within the natural range of variability in vegetative communities.
3. Restore fire as a natural process through prescribed burning for reduction of fuels to levels that allow additional acreage to be designated as prescribed natural fire areas (this term has changed to Wildland Fire Use Areas).

3. Describe Options Outside of proposed wilderness. Can this action be accomplished outside GRCA wilderness? [Wilderness Coordinator concur? ____]

Yes No Explain: Yes and No

Approximately 100,000 forested acres are located on North Rim are approved for WFU. Most of these acres are proposed wilderness. The South Rim acres are not within proposed wilderness. Most of the acreage located in the inner canyon is approved for WFU and is proposed wilderness.

4. Describe how the action would contribute to preservation of wilderness character: How would the action contribute to preservation of wilderness character as described by the components below?

Untrammeled (Wilderness is ideally unhindered and free from modern human control or manipulation):

The forest health in Grand Canyon's proposed wilderness areas have been degraded due to the interruption of fire as a natural process since the intervention of modern fire suppression. Management of WFU fires will work to return fuels to pre-modern fire suppression conditions.

Undeveloped (Wilderness has minimal evidence of modern human occupation or modification):

Restoring fire as a natural process will assist in reducing the impact of human modification of forest and fuels condition from fire suppression.

Natural (Wilderness ecological systems are substantially free from the effects of human use, e.g. visitation and/or management activities)

The human and vehicle use in our proposed wilderness is a short-term impact which would work toward the long-term benefit of a very limited amount of human and vehicle use in management of fire as a natural process in the future.

Outstanding opportunities for solitude or a primitive and unconfined type of recreation (Wilderness provides opportunities for people to experience natural sights and sounds, solitude, risk, adventure and other attributes):

WFU may provide more access to forested areas that currently have very high fuel loadings. Current conditions hinder foot travel in remote areas forcing visitors to concentrate more closely together reducing individual solitude, fires burning in current conditions could result in large-scale stand replacement events reducing the scenic quality of the park. Fires that burn under management conditions are more likely to result in a condition where large overstory trees are made more resistant to fire moving upward through fuel ladders. Low intensity fires tend to ‘naturally limb large trees’ and reduce the number of understory trees (1 – 6 inch dbh trees). WFU under these conditions in helping to increase the site window which currently exists.

5. Describe the effects to the public purposes of wilderness: How would this action support the public purposes for wilderness (as stated in Section 4(b) of the Wilderness Act) of recreation, scenic, scientific, education, conservation and historical use?

Explain:

WFU would support the public purposes by; improving natural conditions thus allowing increased use in areas that are currently restricted due to heavy fuels loads and dense trees, reduction of fuels loading and trees per acre along travel corridors will increase the scenic quality. During WFU events we (Fire and Aviation Management) assign Fire Information Officers to assist in informing and educating our park staff and visitors of the different aspects of fire benefits.

PART A DECISION: *Is it necessary to take this action?*

Yes No

Explain:

Grand Canyon RMP (NPS 1997: 108, 109)

The RMP provides additional objectives based on the GMP:

1. Protect human life and property.
2. Restore fuel loads and ecosystem structure to within the natural range of variability in vegetative communities.
3. Restore fire as a natural process through prescribed burning for reduction of fuels to levels that allow additional acreage to be designated as prescribed natural fire areas (this term has changed to Wildland Fire Use Areas).

We feel that reintroducing fire into fire adapted ecosystems is a wilderness management goal. Safety, efficiency, cost effectiveness, and the higher probability of success are the driving force behind utilizing vehicles, chainsaws, and aerial operations to occur on wildland fire use fires in our proposed wilderness areas. Successes over the last 25 years have proved that this activity is accomplishing objectives stated in our strategic plans.

PART B: Determine the Minimum Tool - *HOW the action will be done*

Description of alternative methods to accomplish the proposed action: For each alternative, describe what methods and techniques will be used, when and where the action will take place, the general effects to the resources and wilderness character, and what mitigation measures are necessary.

ALTERNATIVE 1

Implementing wildland fire use fires utilizing only ground operations with no mechanical equipment (saws, vehicles, pumps, and mechanical environmental monitoring equipment)

- *When will the action take place?* Summer & Fall of 2006
- *What is the duration of the project?* 1 day to 3 months
- *Where will the action take place?* North Rim & South Rim of GCNP
- *How many people are needed to complete the action?* 8-50 people for each operation (See Below)

Describe effects to:

Biological and Physical Resources

Cultural Resources

Visitor Experience

Safety (personnel, visitors, contractors, work methods)

Economic and Time Constraints

- Large numbers of personnel would be necessary (8-50) to conduct monitoring, ignition and holding operations for each fire. Logistical support for a crew of this size would require 3-10 additional personnel to transport fuel, bladder bags with water, drinking water, logistical support equipment, ect.
- Costs would be high using these implementation methods because of the overtime for large numbers of personnel. Additional vehicles would be used, possibly incurring additional costs due to the rough character of the roadways. Estimated costs per acre would be \$380.00, which is double the average.
- The threat of damage to cultural resources located close to fire lines and staging areas from vandalism would be high. Decreased accessibility of survey crews would increase the chance for destruction of unknown cultural resources and would increase the response time for protecting fire sensitive sites.
- Disturbance to wildlife within the wildland fire use areas would increase due to the increased number of personnel needed and the duration those personnel would be working in the wilderness as well as the increased duration of smoke impacts to sensitive species and visitors. There would be a higher likelihood of impacts to Mexican Spotted Owl (MSO) critical habitat from high severity fire with the greater chance for escaped fire. Threatened and endangered species have specific measures which are addressed in the US Fish and Wildlife Service (USFWS) Biological Opinion (BO) for Wildland Fire Use (WFU).
- With more personnel working on the project over a longer period of time, the potential for injury increases. Monitoring interior sections of wildland fire use areas with ground personnel would require more escape routes and safety zones which would require additional work in the wilderness environment..
- Due to the increased amount of time it would take for WFU personnel to arrive on foot to the scene of the wildland fire (possibly hours), the amount of time available for the monitoring, ignition, and holding operations would be severely reduced, thus extending the number of operational periods it would take to complete even a small scale WFU operation. Requiring crews to hike to and from the project site in addition to hiking throughout the area with monitoring equipment for long durations would increase fatigue and the potential for injury and poor decision making.
- Successful containment of a fire within an MMA would be at risk due to the lack of rapid response times because all personnel would be on foot. Without utilizing engines, portable pumps and water stored in portable tanks the chance of an escape fire would increase.
- Successful monitoring and reporting of weather, smoke, fire behavior and burn severity conditions would not be accomplished as required by Arizona Department of Environmental Quality, USFWS

Biological Opinion, and Grand Canyon Fire Monitoring Plan without the use of mechanical environmental monitoring equipment (portable weather stations and DataRams).

Impacts to the wilderness character of the park could be diminished without the use of mechanical equipment to expedite the required actions.

ALTERNATIVE 2

Implementing Wildland Fire Use fires utilizing only ground operations, but allowing mechanical equipment (saws, vehicles, pumps, portable tanks and mechanical environmental monitoring equipment).

- *When will the action take place?* Summer & Fall of 2006
- *What is the duration of the project?* 1 day to 3 months
- *Where will the action take place?* North Rim & South Rim of GCNP
- *How many people are needed to complete the action?* 2-40 for each operation (See Below)

Describe effects to:

Biological and Physical Resources

Cultural Resources

Visitor Experience

Safety (personnel, visitors, contractors, work methods)

Economic and Time Constraints

- Moderate numbers of personnel would be necessary (2-40) to conduct ignition, holding and monitoring operations. Logistical support for a crew of this size would require 3-10 additional personnel. Vehicle traffic on fire roads would be heavy in support of personnel conducting ground operations.
- Vehicle use would be permitted only on existing roads. Saws would be used to mitigate safety hazards, assist with the suppression of unwanted fire(s), and help mitigate holding concerns.
- Pumps would be used to fill portable tanks and charge hoselays to protect sensitive resources. Portable weather stations and portable smoke monitoring equipment would be used to gather and report environmental conditions, the possible exceedance of NAQS would be recognized, and warnings could be announced more rapidly to park staff and visitors. Burn severity monitoring would be accomplished by satellite imagery and ground truthing by personnel on foot. Portable equipment would be used to monitor fire behavior and effects which would allow a better understanding of the full range of effects the has on the wilderness character of Grand Canyon NP.
- Costs would be high using these implementation methods because of overtime for large numbers of personnel, and logistical support costs for large numbers of personnel. Estimated costs per acre would be \$380.00 acre.
- The threat of damage to cultural resources located close to roads, and staging areas from vandalism and the increase in vehicle traffic would be lowered, with the use of vehicles for rapid response , portable pumps and portable tanks for water for protection of sensitive sites.
- Disturbance to wildlife within the project areas would decrease from the decreased number of personnel needed and the duration those resources would be working in the wilderness. Possible impacts to MSO critical habitat from high severity fire would be decreased with faster response times and more effective fire management options. Threatened and endangered species have specific measures which are addressed in the USFWS BO for WFU at Grand Canyon.
- With less resources working the project over a shorter period of time, the potential for injury would decrease. Monitoring interior sections of wildland fire use fires with ground personnel would be safer with availability of vehicles and a rapid escape.
- Containment of the fire within the MMA would be enhanced with the use of pumps and portable tanks and fire apparatus on scene around project area perimeters.

ALTERNATIVE 3

Implementing Wildland Fire Use fires utilizing only aerial operations

- *When will the action take place?* Summer & Fall of 2006
- *What is the duration of the project?* 1 day to 3 months
- *Where will the action take place?* North Rim & South Rim of GCNP
- *How many people are needed to complete the action?* 3 (See Below)

Describe effects to:

Biological and Physical Resources

Cultural Resources

Visitor Experience

Safety (personnel, visitors, contractors, work methods)

Economic and Time Constraints

Describe monitoring, mitigations and reporting requirements.

- Large numbers of personnel are not necessary to conduct aerial monitoring and provide logistics throughout the project area.
- No vehicles would be needed on fire roads during ignition phases of the project, as there would be no need to support personnel conducting ground ignition methods.
- Helicopter support of ground personnel with associated long line operations, logistical support, and construction of new helispots would not be necessary.
- Large numbers of personnel would not be present in the proposed wilderness conducting operations.
- Time necessary to monitor landscape scale areas would be decreased substantially, however detailed reports would not be available due to lack of on ground personnel.
- Stated planning objectives for restoration of fire to the ecosystem on a broad scale would be met much easier and quicker.
- With fewer people (3 to 4) working on the project over a shorter period of time, the potential for injury may decrease.
- Containment of fire within the project area would not be sufficient to hold any fire to within project area boundaries. The chance for an escape would be very high, and the occurrence of a large scale wildfire would be probable. Threats to boundaries and values at risk with this type of management are high. Increased over flights with water buckets would be required, thus impacting the wilderness more dramatically.
- Disturbance to wildlife within the WFU area would be considerably less due to the lack of ground resources. However, chance of death of wildlife and destruction of large areas of MSO critical habitat from high severity fire would increase with the increased chance for an escaped fire. The probability of collision between the condors and the helicopter would increase, compromising the safety of the helicopter crew and the progress of the condor recovery program. Threatened and endangered species have specific conservation measures which are addressed in the USFWS BO for Wildland Fire Use Fires at Grand Canyon NP. We would not be able to implement these measures with no ground operations as we would not be able to survey for or mitigate for sensitive species.
- Significant numbers of fire sensitive archaeological sites could be destroyed by the fire without ground operations to survey and protect these sites.
- Costs associated with this alternative would be less than the other alternatives, with most of the costs being incurred by flight time.

ALTERNATIVE 4

Implementing Wildland Fire Use fires utilizing aerial and ground operations, including vehicles, power saws, pumps, portable tanks, and mechanical environmental monitoring equipment.

- *When will the action take place?* Summer & Fall of 2006
- *What is the duration of the project?* 1 day to 3 months
- *Where will the action take place?* North Rim & South Rim of GCNP
- *How many people are needed to complete the action?* 2-35 people for each fire (See Below)

Describe effects to:

Biological and Physical Resources
Cultural Resources
Visitor Experience
Safety (personnel, visitors, contractors, work methods)
Economic and Time Constraints

Describe monitoring, mitigations and reporting requirements.

- Large numbers of personnel would not be necessary to conduct monitoring and provide logistical support throughout the project area, because they can return to fire camp at the end of each shift by vehicle.
- Helicopter support of ground personnel with associated long line operations would be necessary only in those cases where interior operations were necessary to meet wildland fire use objectives. In most cases ground personnel would bring their support with them in vehicles driven to or near the site.
- No new helispots would be constructed unless a life-threatening emergency occurred, old helispots would be improved if needed.
- Vehicle use would be permitted only on existing roads. Use of roads would only be allowed during critical times and would be reduced as soon as possible. Saws would be used to mitigate safety hazards, assist with the suppression of unwanted fire, help mitigate holding concerns and reduce impacts to sensitive sites.
- Stated planning objectives of restoration of fire into the ecosystem on a broad scale would be expedited. Costs per acre would be reduced substantially to around \$175 per acre.
- With less people (2-35) working each fire over a shorter period of time, the potential for injuries would decrease. Overall safety of the wildland fire use fire operations would be improved due to the reduced exposure to hazards, better implementation of LCES, and the reduction of the number of resources needed to accomplish wildland fire use objectives.
- With a combination of ground forces, portable pumps, and portable tanks, ignition, and containment of a fire within the project area would be sufficient in most cases. Threats to boundaries and values at risk with this type of management are moderate.
- Destruction of MSO critical habitat from high severity fire would be decreased with faster response times and more effective fire management options. Threatened and endangered species have specific measures which are addressed in the USFWS BO for WFU at Grand Canyon.
- Quality monitoring of environmental conditions (weather, smoke, fire behavior, fire effects and burn severity) would be greatly increased due to the use of highly accurate and sensitive mechanical environmental monitoring equipment. This data is reported to fire behavior analysts to assist in determination of spread rates and directions which is used for safety and planning purposes. The smoke conditions are reported to GRCA's Air Quality Specialist and Arizona Department of Environmental Quality representatives. In the event of hazardous health conditions wildland fire use managers would be able to acquire more accurate data sooner and would be able to distribute data more quickly. Fire effects and burn severity could be more accurately reported due to the use of the equipment.

PART B DECISION: *What is the Minimum Tool?*

State Alternative and Rationale. Describe monitoring and mitigations to minimize impacts on wilderness character.

Alternative four (4) is chosen as the best alternative to meet stated goals and objectives of planning documents for the park (GMP, RMP and FMP). Alternative four will minimize impacts to natural resources and visitors due to the short duration of impacts to the wilderness character needed to accomplish objectives and the best chance for successful operations by providing the tools necessary to manage natural fire starts in the safest, most effective, and most controlled manner. Alternative four will allow management to continue to allow fire back into the naturally functioning processes in GRCA.

Appendix A, Attachment B

MIST Guidelines

Safety

Safety is of utmost importance. Constantly review and apply Watch Out Situations and Fire Orders. Be particularly cautious with

- Unburned fuel between you and the fire
- Burning snags allowed to burn
- Burning or partially burned live and dead trees

Be constantly aware of surroundings; anticipate fire behavior and possible fire perimeter one or two days hence

Fire Line Phase

- Select procedures, tools, equipment that least impact the environment.
- Seriously consider using water as a fireline tactic. Fireline constructed with nozzle pressure, wetlining.

In light fuels, consider

- Coldtrail line
- Allowing fire to burn to natural barrier
- Burning out and use of gunny sack or swatter
- Constantly rechecking coldtrailed fireline
- If constructed fireline is necessary, use minimum width and depth to check fire spread

In medium/heavy fuels, consider

- Using natural barriers and coldtrailing
- Cooling with dirt and water, and coldtrailing
- If constructed fireline is necessary, use minimum width and depth to check fire spread
- Minimizing bucking to establish fireline. Preferably move or roll downed material out of the intended constructed fireline area. If moving or rolling out is not possible, or the downed bole is already on fire, build line around and let material be consumed

In aerial fuels—brush, trees, snags

Adjacent to fireline: limb only enough to prevent additional fire spread

- Inside fireline: remove or limb only those that if ignited would have potential to spread fire outside fireline
- Cut brush or small trees (if necessary) during fireline construction flush with the ground

In trees, burned trees, and snags

- Minimize cutting of trees, burned trees, and snags
- Live trees will not be cut, unless determined to cause fire spread across the fireline or endanger workers. If tree cutting occurs, cut stumps flush with ground
- Scrape around tree bases near fireline if hot and likely to cause fire spread
- Identify hazardous trees with an observer, flagging, and/or glow sticks.

When using indirect attack

- Do not fall snags on the intended unburned side of the constructed fireline, unless they are safety hazard to crews
- On the unintended burn-out side of the line, fall only those snags that would reach the fireline should they burn and fall over
- Consider alternative means to falling, i.e., fireline explosives, bucket drops
- Review items listed above (aerial fuels, brush, trees, and snags)

Mop-up Phase

- Consider using hot-spot detection devices along perimeter (aerial or hand-held).

Light fuels

- Coldtrail areas adjacent to unburned fuels

- Do minimal spading; restrict spading to hot areas near fireline
- Use extensive coldtrailing to detect hot areas

Medium and heavy fuels

- Coldtrail charred logs near fireline; do minimal scraping or tool scarring
- Minimize bucking of logs to check for hot spots or extinguish the fire
- Return logs to original position after checking or ground is cool
- Refrain from making boneyards; burned/partially burned fuels that were moved should be arranged in natural position as much as possible
- Consider allowing larger logs near the fireline to burnout instead of bucking into manageable lengths. Use lever, etc., to move large logs

Aerial fuels- brush, small trees, and limbs

- Remove or limb only those fuels that if ignited, have potential to spread outside fireline.

Burning trees and snags

- See Section B above

**Appendix A, Attachment C Arizona Department of Environmental Quality
Final Forest and Range Management Burn**

Rule last amended in 2004 (Arizona Administrative Code: Title 18, Environmental Quality; Chapter 2, Department of Environmental Quality, Air Pollution Control, available online at http://www.azsos.gov/public_services/Title_18/18-02.htm).

ARTICLE 15. FOREST AND RANGE MANAGEMENT BURNS

R18-2-1501. Definitions

In addition to the definitions contained in A.R.S. § 49-501 and R18-2-101, in this Article:

1. "Activity fuels" means those fuels created by human activities such as thinning or logging.
2. "ADEQ" means the Department of Environmental Quality.
3. "Annual emissions goal" means the annual establishment in cooperation with the F/SLMs, under R18-2-1503(G), of a planned quantifiable value of emissions reduction from prescribed fires and fuels management activities.
4. "Burn plan" means the ADEQ form that includes information on the conditions under which a burn will occur with details of the burn and smoke management prescriptions.
5. "Burn prescription" means, with regard to a burn project, the pre-determined area, fuel, and weather conditions required to attain planned resource management objectives.
6. "Burn project" means an active or planned prescribed burn, including a wildland fire use incident.
7. "Duff" means forest floor material consisting of decomposing needles and other natural materials.
8. "Emission reduction techniques (ERT)" means methods for controlling emissions from prescribed fires to minimize the amount of emission output per unit of area burned.
9. "Federal land manager (FLM)" means any department, agency, or agent of the federal government, including the following:
 - a. United States Forest Service,
 - b. United States Fish and Wildlife Service,
 - c. National Park Service,
 - d. Bureau of Land Management,
 - e. Bureau of Reclamation,
 - f. Department of Defense,
 - g. Bureau of Indian Affairs, and
 - h. Natural Resources Conservation Service.
10. "F/SLM" means a federal land manager or a state land manager.
11. "Local fire management officer" means a person designated by a F/SLM as responsible for fire management in a local district or area.
12. "Mop-up" means the act of extinguishing or removing burning material from a prescribed fire to reduce smoke impacts.
13. "National Wildfire Coordinating Group" means the national inter-agency group of federal and state land managers that shares similar wildfire suppression programs and has established standardized inter-agency training courses and qualifications for fire management positions.
14. "Non-burning alternatives to fire" means techniques that replace fire for at least five years as a means to treat activity fuels created to achieve a particular land management objective (e.g., reduction of fuel-loading, manipulation of fuels, enhancement of wildlife habitat, and ecosystem restoration). These alternatives are not used in conjunction with fire. Techniques used in conjunction with fire are referred to as emission reduction techniques (ERTs).
15. "Planned resource management objectives" means public interest goals in support of land management agency objectives including silviculture, wildlife habitat management, grazing enhancement, fire hazard reduction, wilderness management, cultural scene maintenance, weed abatement, watershed rehabilitation, vegetative manipulation, and disease and pest prevention.
16. "Prescribed burning" means the controlled application of fire to wildland fuels that are in either a natural or modified state, under certain burn and smoke management prescription conditions

that have been specified by the land manager in charge of or assisting the burn, to attain planned resource management objectives. Prescribed burning does not include a fire set or permitted by a public officer to provide instruction in fire fighting methods, or construction or residential burning under R18-2-602.

17. "Prescribed fire manager" means a person designated by a F/SLM as responsible for prescribed burning for that land manager.
18. "Smoke management prescription" means the predetermined meteorological conditions that affect smoke transport and dispersion under which a burn could occur without adversely affecting public health and welfare.
19. "Smoke management techniques (SMT)" means management and dispersion practices used during a prescribed burn or wildland fire use incident which affect the direction, duration, height, or density of smoke.
20. "Smoke management unit" means any of the geographic areas defined by ADEQ whose area is based on primary watershed boundaries and whose outline is determined by diurnal windflow patterns that allow smoke to follow predictable drainage patterns. A map of the state divided into the smoke management units is on file with ADEQ.
21. "State land manager (SLM)" means any department, agency, or political subdivision of the state government including the following:
 - a. State Land Department,
 - b. Department of Transportation,
 - c. Department of Game and Fish, and
 - d. Parks Department.
22. "Wildfire" means an unplanned wildland fire subject to appropriate control measures. Wildfires include those incidents where suppression may be limited for safety, economic, or resource concerns.
23. "Wildland fire use" means a wildland fire that is ignited by natural causes, such as lightning, and is managed using the same controls and for the same planned resource management objectives as prescribed burning.

Historical Note

Adopted effective October 8, 1996 (Supp. 96-4). Amended by final rulemaking at 10 A.A.R. 388, effective March 16, 2004 (Supp. 04-1).

R18-2-1502. Applicability

- A. A F/SLM that is conducting or assisting a prescribed burn shall follow the requirements of this Article.
- B. A private or municipal burner with whom ADEQ has entered into a memorandum of agreement shall follow the requirements of this Article.
- C. The provisions of this Article apply to all areas of the state except Indian Trust lands. All federally managed lands and all state lands, parks, and forests are under the jurisdiction of ADEQ in matters relating to air pollution from prescribed burning.
- D. Notwithstanding subsection (C), ADEQ and any Indian tribe may enter into a memorandum of agreement to implement this Article.
- E. ADEQ and any private or municipal prescribed burner may enter into a memorandum of agreement to implement this Article.

Historical Note

Adopted effective October 8, 1996 (Supp. 96-4). Amended by final rulemaking at 10 A.A.R. 388, effective March 16, 2004 (Supp. 04-1).

R18-2-1503. Annual Registration, Program Evaluation and Planning

- A. Each F/SLM shall register annually with ADEQ on a form prescribed by ADEQ, all planned burn projects, including areas planned for wildland fire use.
- B. Each planned year extends from January 1 of the registration year to December 31 of the same year. Each F/SLM shall use best efforts to register before December 31 and no later than January 31 of each year.
- C. A F/SLM shall include the following information on the registration form:
 1. The F/SLM's name, address, and business telephone number;
 2. The name, address, and business telephone number of an air quality representative who will provide technical support to ADEQ for decisions regarding prescribed burning. The same air quality representative may be selected by more than one F/SLM;
 3. All prescribed burn projects and potential wildland fire use areas planned for the next year;
 4. Maximum project and annual acres to be burned, maximum daily acres to be burned, fuel types within project area, and planned use of emission reduction techniques to support the annual emissions goal for each prescribed burn project;
 5. Planned use of any smoke management techniques for each prescribed burn project;
 6. Maximum project and annual acres projected to be burned, maximum daily acres projected to be burned, and a map of the anticipated project area, fuel types and loading within the planned area for an area the F/SLM anticipates for wildland fire use;
 7. A list of all burn projects that were completed during the previous year;
 8. Project area for treatment, treatment type, fuel types to be treated, and activity fuel loading to support the annual emissions goal for areas to be treated using non-burning alternatives to fire; and
 9. The area treated using non-burning alternatives to fire during the previous year including the number of acres, the specific types of alternatives utilized, and the location of these areas.
- D. After consultation with the F/SLM, ADEQ may request additional information for registration of prescribed burns and wildland fire use to support regional coordination of smoke management, annual emission goal setting using ERTs, and non-burning alternatives to fire.
- E. A F/SLM may amend a registration at any time with a written submission to ADEQ.
- F. ADEQ accepts a facsimile or other electronic method as a means of complying with the deadline for registration. If an electronic means is used, the F/SLM shall deliver the original paper registration form to ADEQ for its records. ADEQ shall acknowledge in writing the receipt of each registration.
- G. ADEQ shall hold a meeting after January 31 and before April 1 of each year between ADEQ and F/SLMs to evaluate the program and cooperatively establish the annual emission goal. The annual emission goal shall be developed to minimize prescribed fire emissions to the maximum extent feasible using emission reduction techniques and alternatives to burning subject to economic, technical, and safety feasibility criteria, and consistent with land management objectives.
- H. At least once every five years, ADEQ shall request long-term projections of future prescribed fire and wildland fire use activity from the F/SLMs to support planning for visibility impairment and assessment of other air quality concerns by ADEQ.

Historical Note

Adopted effective October 8, 1996 (Supp. 96-4). Amended by final rulemaking at 10 A.A.R. 388, effective March 16, 2004 (Supp. 04-1).

R18-2-1504. Prescribed Burn Plan

Each F/SLM planning a prescribed burn shall complete and submit to ADEQ the "Burn Plan" form supplied by ADEQ no later than 14 days before the date on which the F/SLM requests permission to burn. ADEQ shall consider the information supplied on the Burn Plan Form as binding conditions under which the burn shall be conducted. A Burn Plan shall be maintained by ADEQ until notification from the F/SLM of the completion of the burn project. Revisions to the Burn Plan for a burn project shall be submitted in writing no later than 14 days before the date on which the F/SLM requests permission to burn. To facilitate the Daily Burn authorization process under R18-2-1505, the F/SLM shall include on the Burn Plan form:

1. An emergency telephone number that is answered 24 hours a day, seven days a week;

2. Burn prescription;
3. Smoke management prescription;
4. The number of acres to be burned, the quantity and type of fuel, type of burn, and the ignition technique to be used;
5. The land management objective or purpose for the burn such as restoration or maintenance of ecological function and indicators of fire resiliency;
6. A map depicting the potential impact of the smoke unless waived either orally or in writing by ADEQ. The potential impact shall be determined by mapping both the daytime and nighttime smoke path and down-drainage flow for 15 miles from the burn site, with smoke-sensitive areas delineated. The map shall use the appropriate scale to show the impacts of the smoke adequately;
7. Modeling of smoke impacts unless waived either orally or in writing by ADEQ, for burns greater than 250 acres per day, or greater than 50 acres per day if the burn is within 15 miles of a Class I Area, an area that is non-attainment for particulates, a carbon monoxide non-attainment area, or other smoke-sensitive area. In consultation with the F/SLM, ADEQ shall provide guidelines on modeling;
8. The name of the official submitting the Burn Plan on behalf of the F/SLM; and
9. After consultation with the F/SLM, any other information to support the Burn Plan needed by ADEQ to assist in the Daily Burn authorization process for smoke management purposes or assessment of contribution to visibility impairment of Class I areas.

Historical Note

Adopted effective October 8, 1996 (Supp. 96-4). Amended by final rulemaking at 10 A.A.R. 388, effective March 16, 2004 (Supp. 04-1).

R18-2-1505. Prescribed Burn Requests and Authorization

- A. Each F/SLM planning a prescribed burn, shall complete and submit to ADEQ the "Daily Burn Request" form supplied by ADEQ. The Daily Burn Request form shall include:
 1. The contact information of the F/SLM conducting the burn;
 2. Each day of the burn;
 3. The area to be burned on the day for which the Burn Request is submitted, with reference to the Burn Plan, including size, legal location to the section, and latitude and longitude to the minute;
 4. Projected smoke impacts; and
 5. Any local conditions or circumstances known to the F/SLM that, if conveyed to ADEQ, could impact the Daily Burn authorization process.
- B. After consultation with the F/SLM, ADEQ may request additional information related to the burn, meteorological, smoke dispersion, or air quality conditions to supplement the Daily Burn Request form and to aid in the Daily Burn authorization process.
- C. The F/SLM shall submit the Daily Burn Request form to ADEQ as expeditiously as practicable, but no later than 2:00 p.m. of the business day preceding the burn. An original form, a facsimile, or an electronic information transfer are acceptable submittals.
- D. An F/SLM shall not ignite a prescribed burn without receiving the approval of ADEQ, as follows:
 1. ADEQ shall approve, approve with conditions, or disapprove a burn on the same business day as the Burn Request submittal.
 2. If ADEQ fails to address a Burn Request by 10:00 p.m. of the business day on which the request is submitted, the Burn Request is approved by default after the burner makes a good faith effort to contact ADEQ to confirm that the Burn Request was received.
 3. ADEQ may communicate its decision by verbal, written, or electronic means. ADEQ shall provide a written or electronic reply if requested by the F/SLM.
- E. If weather conditions cease to conform to those in the smoke management prescription of either the Burn Plan or an Approval with Conditions, the F/SLM shall take appropriate action to reduce further smoke impacts, ensure safe and appropriate fire control, and notify the public when necessary. After consultation with ADEQ, the smoke management prescription or burn plan may be modified.
- F. The F/SLM shall ensure that there is appropriate signage and notification to protect public safety on transportation corridors including roadways and airports during a prescribed fire.

Historical Note

Adopted effective October 8, 1996 (Supp. 96-4). Amended by final rulemaking at 10 A.A.R. 388, effective March 16, 2004 (Supp. 04-1).

R18-2-1506. Smoke Dispersion Evaluation

ADEQ shall approve, approve with conditions, or disapprove a Daily Burn Request submitted under R18-2-1505, by using the following factors for each smoke management unit:

1. Analysis of the emissions from burns in progress and residual emissions from previous burns on a day-to-day basis;
2. Analysis of emissions from active wildland fire use incidents, and active multiple-day burns, and consideration of potential long-term emissions estimates;
3. Analysis of the emissions from wildfires greater than 100 acres and consideration of their potential long-term growth;
4. Local burn conditions;
5. Burn prescription and smoke management prescription from the applicable Burn Plan;
6. Existing and predicted local air quality;
7. Local and synoptic meteorological conditions;
8. Type and location of areas to be burned;
9. Protection of the national visibility goal for Class I Areas under § 169A(a)(1) of the Act and 40 CFR 51.309;
10. Assessment of duration and intensity of smoke emissions to minimize cumulative impacts;
11. Minimization of smoke impacts in Class I Areas, areas that are non-attainment for particulate matter, carbon monoxide non-attainment areas, or other smoke-sensitive areas; and
12. Protection of the National Ambient Air Quality Standards.

Historical Note

Adopted effective October 8, 1996 (Supp. 96-4). Amended by final rulemaking at 10 A.A.R. 388, effective March 16, 2004 (Supp. 04-1).

R18-2-1507. Prescribed Burn Accomplishment; Wildfire Reporting

- A. Each F/SLM conducting a prescribed burn shall complete and submit to ADEQ the "Burn Accomplishment" form supplied by ADEQ. For each burn approval, the F/SLM shall submit a Burn Accomplishment form to ADEQ by 2:00 p.m. of the business day following the approved burn. The F/SLM shall include the following information on the Burn Accomplishment form:
1. Any known conditions or circumstances that could impact the Daily Burn decision process;
 2. The date, location, fuel type, fuel loading, and acreage accomplishments;
 3. The ERTs and SMTs described in R18-2-1509 and R18-2-1510, respectively, and may include any further ERTs and SMTs that become available, that the F/SLM used to reduce emissions or manage the smoke from the burn.
- B. The F/SLM shall submit the Burn Accomplishment form as an original form, a facsimile, or an electronic information transfer.
- C. ADEQ shall maintain a record of Burn Requests, Burn Approvals/Conditional Approvals/Denials and Burn Accomplishments for five years.
- D. The F/SLM in whose jurisdiction a wildfire occurs shall make available to ADEQ no later than the day after the activity all required information for wildfire incidents that burned more than 100 acres per day in timber or slash fuels or 300 acres per day in brush or grass fuels. For each day of a wildfire incident that exceeds the daily activity threshold, the F/SLM shall provide the location, an estimate of predominant fuel type and quantity consumed, and an estimate of the area blackened that day.

Historical Note

Adopted effective October 8, 1996 (Supp. 96-4). Amended by final rulemaking at 10 A.A.R. 388, effective March 16, 2004 (Supp. 04-1).

R18-2-1508. Wildland Fire Use: Plan, Authorization, Monitoring; Inter-agency Consultation; Status Reporting

- A. In order for ADEQ to participate in the wildland fire use decision-making process, the F/SLM shall notify ADEQ as soon as practicable of any wildland fire use incident projected to attain or attaining a size of 50 acres of timber fuel or 250 acres of brush or grass fuel.
- B. For each wildland fire use incident that has been declared as such by the F/SLM, the F/SLM shall complete and submit to ADEQ a Wildland Fire Use Burn Plan in a format approved by ADEQ in cooperation with the F/SLM. The F/SLM shall submit the Wildland Fire Use Burn Plan to ADEQ as soon as practicable but no later than 72 hours after the wildland fire use incident is declared or under consideration for such designation. The F/SLM shall include the following information in the Wildland Fire Use Burn Plan:
1. An emergency telephone number that is answered 24 hours a day, seven days a week;
 2. Anticipated burn prescription;
 3. Anticipated smoke management prescription;
 4. The estimated daily number of acres, quantity, and type of fuel to be burned;
 5. The anticipated maximum allowable perimeter or size with map;
 6. Information on the condition of the area to be burned, such as whether it is in maintenance or restoration, its ecological function, and other indicators of fire resiliency;
 7. The anticipated duration of the wildland fire use incident;
 8. The anticipated long-range weather trends for the site;
 9. A map depicting the potential impact of the smoke. The potential impact shall be determined by mapping both the daytime and nighttime smoke path and down-drainage flow for 15 miles from the wildland fire use incident, with smoke-sensitive areas delineated. Mapping is mandatory unless waived either orally or in writing by ADEQ. The map shall use the appropriate scale to show the impacts of the smoke adequately; and
 10. Modeling or monitoring of smoke impacts, if requested by ADEQ after consultation with the F/SLM.
- C. ADEQ shall approve or disapprove a Wildland Fire Use Burn Plan within three hours of receipt. ADEQ shall consult directly with the requesting F/SLM before disapproving a Wildland Fire Use Burn Plan. If ADEQ fails to address the Wildland Fire Use Burn Plan within the time allotted, the Plan is approved by default under the condition that the F/SLM makes a good faith effort to contact ADEQ to confirm that the Plan was received. Approval by ADEQ of a Wildland Fire Use Burn Plan is binding upon ADEQ for the duration of the wildland fire use incident, unless smoke from the incident creates a threat to public health or welfare. If a threat to public health or welfare is created, ADEQ shall consult with the F/SLM regarding the situation and develop a joint action plan for reducing further smoke impacts.
- D. The F/SLM shall submit a Daily Status Report for each wildland fire use incident to ADEQ for each day of the burn that the fire burns more than 100 acres in timber or slash fuels or 300 acres in brush or grass fuels. The F/SLM shall include a synopsis of smoke behavior, future daily anticipated growth, and location of the activity of the wildland fire use incident in the Daily Status Report.
- E. The F/SLM shall consult with ADEQ prior to initiating human-made ignition on the wildland fire use incident when greater than 250 acres is anticipated to be burned by the ignition. Emergency human-made ignition on the incident for protection of public or fire-fighter safety does not require consultation with ADEQ regardless of the size of the area to be burned.
- F. The F/SLM shall ensure that there is appropriate signage and notification to protect public safety on transportation corridors including roadways and airports during a wildland fire use incident.

Historical Note

Adopted effective October 8, 1996 (Supp. 96-4). Amended by final rulemaking at 10 A.A.R. 388, effective March 16, 2004 (Supp. 04-1).

R18-2-1509. Emission Reduction Techniques

- A. Each F/SLM conducting a prescribed burn shall implement as many Emission Reduction Techniques as are feasible subject to economic, technical, and safety feasibility criteria, and land management objectives.

B. Emission Reduction Techniques include:

1. Reducing biomass to be burned by use of techniques such as yarding or consolidation of unmerchandisable material, multi-product timber sales, or public firewood access, when economically feasible;
2. Reducing biomass to be burned by fuel exclusion practices such as preventing the fire from consuming dead snags or dead and downed woody material through lining, application of fire-retardant foam, or water;
3. Using mass ignition techniques such as aerial ignition by helicopter to produce high intensity fires of high fuel density areas such as logging slash decks;
4. Burning only fuels essential to meet resource management objectives;
5. Minimizing consumption and smoldering by burning under conditions of high fuel moisture of duff and litter;
6. Minimizing fuel consumption and smoldering by burning under conditions of high fuel moisture of large woody fuels;
7. Minimizing soil content when slash piles are constructed by using brush blades on material-moving equipment and by constructing piles under dry soil conditions or by using hand piling methods;
8. Burning fuels in piles;
9. Using a backing fire in grass fuels;
10. Burning fuels with an air curtain destructor, as defined in R18-2-101, operated according to manufacturer specifications and meeting applicable state or local opacity requirements;
11. Extinguishing or mopping-up of smoldering fuels;
12. Chunking of piles and other consolidations of burning material to enhance flaming and fuel consumption, and to minimize smoke production;
13. Burning before litter fall;
14. Burning before green-up of fuels;
15. Burning before recently cut large fuels cure in areas with activity; and
16. Burning just before precipitation to reduce fuel smoldering and consumption.

Historical Note

Adopted effective October 8, 1996 (Supp. 96-4). Amended by final rulemaking at 10 A.A.R. 388, effective March 16, 2004 (Supp. 04-1).

R18-2-1510. Smoke Management Techniques

A. Each F/SLM conducting a prescribed burn shall implement as many Smoke Management Techniques as are feasible subject to economic, technical, and safety feasibility criteria, and land management objectives.

B. Smoke management techniques include:

1. Burning from March 15 through September 15, when meteorological conditions allow for good smoke dispersion;
2. Igniting burns under good-to-excellent ventilation conditions;
3. Suspending operations under poor smoke dispersion conditions;
4. Considering smoke impacts on local community activities and land users;
5. Burning piles when other burns are not feasible, such as when snow or rain is present;
6. Using mass ignition techniques such as aerial ignition by helicopter to produce high intensity fires with short duration impacts;
7. Using all opportunities that meet the burn prescription and all burn locations to spread smoke impacts over a broader time period and geographic area;
8. Burning during optimum mid-day dispersion hours, with all ignitions in a burn unit completed by 3:00 p.m. to prevent trapping smoke in inversions or diurnal windflow patterns;
9. Providing information on the adverse impacts of using green or wet wood as fuel when public firewood access is allowed;
10. Implementing maintenance burning in a periodic rotation to shorten prescribed fire duration and to reduce excessive fuel accumulations that could result in excessive smoke production in a wildfire; and
11. Using wildland fire-use strategies to shift smoke into more favorable smoke dispersion seasons.

Historical Note

Adopted effective October 8, 1996 (Supp. 96-4). Former Section R18-2-1510 renumbered to R18-2-1511; new R18-2-1510 made by final rulemaking at 10 A.A.R. 388, effective March 16, 2004 (Supp. 04-1).

R18-2-1511. Monitoring

- A. ADEQ may require a F/SLM to monitor air quality before or during a prescribed burn or a wildland fire use incident if necessary to assess smoke impacts. Air quality monitoring may be conducted using both federal and non-federal reference method as well as other techniques.
- B. ADEQ may require a F/SLM to monitor weather before or during a prescribed burn or a wildland fire use incident, if necessary to predict or assess smoke impacts. After consultation with the F/SLM, ADEQ may also require the F/SLM to establish burn site or area-representative remote automated weather stations or their equivalent, having telemetry that allows retrieval on a real-time basis by ADEQ. An F/SLM shall give ADEQ notice and an opportunity to comment before making any change to a long-term established remote automated weather station.
- C. A F/SLM shall employ the following types of monitoring, unless waived by ADEQ, for burns greater than 250 acres per day, or greater than 50 acres per day if the burn is within 15 miles of a Class I Area, an area that is non-attainment for particulate matter, carbon monoxide, or ozone, or other smoke-sensitive area:
 1. Smoke plume measurements, using a format supplied by ADEQ; and
 2. The release of pilot balloons (PIBALs) at the burn site to verify needed wind speed, direction, and stability. Instead of pilot balloons, a test burn at the burn site may be used for specific prescribed burns on a case-by-case basis as approved by ADEQ, to verify needed wind speed, direction, and stability.
- D. An F/SLM shall make monitoring information required under subsection (C) available to ADEQ on the business day following the burn ignition.
- E. The F/SLM shall keep on file for one year following the burn date any monitoring information required under this Section.

Historical Note

Adopted effective October 8, 1996 (Supp. 96-4). Former Section R18-2-1511 renumbered to R18-2-1512; new R18-2-1511 renumbered from R18-2-1510 and amended by final rulemaking at 10 A.A.R. 388, effective March 16, 2004 (Supp. 04-1).

R18-2-1512. Burner Qualifications

- A. All burn projects shall be conducted by personnel trained in prescribed fire and smoke management techniques as required by the F/SLM in charge of the burn and established by National Wildfire Coordinating Group training qualifications.
- B. A Prescribed Fire Boss or other local Fire Management Officer of the F/SLM having jurisdiction over prescribed burns shall have smoke management training obtained through one of the following:
 1. Successful completion of a National Wildfire Coordinating Group or F/SLM-equivalent course addressing smoke management; or
 2. Attendance at an ADEQ-approved smoke management workshop.

Historical Note

Adopted effective October 8, 1996 (Supp. 96-4). Former Section R18-2-1512 renumbered to R18-2-1513; new R18-2-1512 renumbered from R18-2-1511 and amended by final rulemaking at 10 A.A.R. 388, effective March 16, 2004 (Supp. 04-1).

R18-2-1513. Public Notification and Awareness Program; Regional Coordination

- A. The Director shall conduct a public education and awareness program in cooperation with F/SLMs and other interested parties to inform the general public of the smoke management program described by this Article. The program shall include smoke impacts from prescribed fires and the role of prescribed fire in natural ecosystems.

- B. ADEQ shall make annual registration, prescribed burn approval, and wildfire and wildland fire use activity information readily available to the public and to facilitate regional coordination efforts and public notification.

Historical Note

Adopted effective October 8, 1996 (Supp. 96-4). Former Section R18-2-1513 renumbered to R18-2-1514; new R18-2-1513 renumbered from R18-2-1512 and amended by final rulemaking at 10 A.A.R. 388, effective March 16, 2004 (Supp. 04-1).

R18-2-1514. Surveillance and Enforcement

- A. An F/SLM conducting a prescribed burn shall permit ADEQ to enter and inspect burn sites unannounced to verify the accuracy of the Daily Burn Request, Burn Plan, or Accomplishment data as well as matching burn approval with actual conditions, smoke dispersion, and air quality impacts. On-ground site inspection procedures and aerial surveillance shall be coordinated by ADEQ and the F/SLM for safety purposes.
- B. ADEQ may use remote automated weather station data if necessary to verify current and previous meteorological conditions at or near the burn site.
- C. ADEQ may audit burn accomplishment data, smoke dispersion measurements, or weather measurements from previously conducted burns, if necessary to verify conformity with, or deviation from, procedures and authorizations approved by ADEQ.
- D. Deviation from procedures and authorizations approved by ADEQ constitute a violation of this Article. Violations may require containment or mop-up of any active burns and may also require, in the Director's discretion, a five-day moratorium on ignitions by the responsible F/SLM. Violations of this Article are also subject to a civil penalty of not more than \$10,000 per day per violation under A.R.S. § 49-463.

Historical Note

Adopted effective October 8, 1996 (Supp. 96-4). Former Section R18-2-1514 repealed; new R18-2-1514 renumbered from R18-2-1513 and amended by final rulemaking at 10 A.A.R. 388, effective March 16, 2004 (Supp. 04-1).

R18-2-1515. Forms; Electronic Copies; Information Transfers

- A. ADEQ shall make available on paper and in electronically readable format any form required to be developed by ADEQ and completed by a F/SLM.
- B. After consultation with an F/SLM, ADEQ may require the F/SLM to provide data in a manner that facilitates electronic transfers of information.

Historical Note

Adopted effective October 8, 1996 (Supp. 96-4). Amended by final rulemaking at 10 A.A.R. 388, effective March 16, 2004 (Supp. 04-1).