

Natural Resource Management Plan



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Maricopa County

Parks and Recreation

September 13, 2017

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INTRODUCTION

Maricopa County Parks and Recreation Department (Department) manages approximately 120,000 acres of Sonoran Desert open space in south central Arizona; the largest area of any county park system in the country. The natural resources of this arid environment include a diversity of native plants and animals, soil and geological features, water and air, scenic viewsheds and natural soundscapes. Extensive human impacts from the settlement era of the 1800s through current intensive urbanization threaten the integrity of the region's natural resources.

Purpose

The purpose of this plan is to recommend the appropriate processes needed to better understand, maintain, restore, and protect the natural resources within the Department's stewardship. This plan describes the overarching resource management goals of the Department and presents general management philosophies and strategies.

1.0 GENERAL MANAGEMENT CONCEPTS

The following concepts will guide the Department's natural resource management actions:

1. The Department will adhere to all applicable natural resource related laws.
2. The Department will utilize the best available scientific data to establish desired future conditions for the various natural resource features and systems in its parks; to develop the limits of acceptable change; and to adapt management actions that mitigate the influence of change.
3. The Department will define, assemble, and synthesize comprehensive baseline inventory data describing the natural resources under its stewardship, and identify the processes that influence those resources.
4. The Department will manage natural resources to preserve species, biological communities and geological features and the fundamental physical and biological processes they require.
5. The Department's natural resource management strategy will not focus on preserving individual species (except threatened or endangered species) or individual natural processes, but rather on maintaining all the components and processes of park ecosystems, including the natural abundance, diversity, and genetic and ecological integrity of the plant and animal species native to those ecosystems.
6. The Department will manage parks in the context of their larger ecosystems, working with adjacent and regional landowners to advance shared conservation goals and avoid adverse impacts to resources.
7. The Department will monitor natural resources to detect changes and to evaluate possible impacts of change on park resources and values.
8. The Department will not intervene in natural biological or physical processes except to protect human welfare and property or to restore natural ecosystem functioning; however, intervention from minimum to more aggressive may be required to achieve management objectives.
9. Biological or physical processes altered by past human activities may require special management action to restore them to natural conditions or to maintain a proximity to a natural state when a truly natural system is no longer attainable.
10. The Department will implement these actions based on the level of available resources and funding dedicated towards this endeavor.

1.1 PLANNING FOR NATURAL RESOURCE MANAGEMENT

A comprehensive natural resource management plan template will be developed by Department planning staff to ensure consistent planning among parks. Each park will participate with Department planning staff to prepare its own natural resource management plan to include prescriptive management actions and monitoring recommendations in accordance with the template.

A “Natural Resources Committee” (NRC) consisting of various Department staff including planning and operations staff (and at times various outside authorities) will be formed. The NRC shall address park natural resource issues, review park documents pertaining to natural resources, research pertinent scientific data, and generally be available to advise all levels of staff regarding natural resource management on park lands. The NRC shall present its findings to the Director (or his or her designee) for final consideration into the natural resource management plan.

This strategy will provide the opportunity to define the activities needed to achieve the desired future conditions for the natural resources in the parks. It will integrate the best available science and prescribe activities such as inventories, research, monitoring, restoration, mitigation, protection, and education, and management of resources. Where existing information is inadequate, plans for collecting needed information (including monitoring) will be required before activities are permitted. Long-term research or monitoring may also be necessary to understand the effects of management actions on natural resources.

1.1.1 PREVIOUS PLANNING EFFORTS

The Department’s 2009 Strategic System Master Plan noted the lack of a comprehensive natural resource plan. As the inaugural edition, this plan was developed internally by Department staff in order to set the foundation for future updates and was modeled after the National Park Service’s Management Policies 2006 and utilized additional Department staff expertise. The document also underwent peer review from outside agencies.

The Strategic System Master Plan recommends development be limited to no more than ten percent of the total park acreage (some exceptions provided). Additionally, each park is zoned into five management areas (developed, trail, semi-primitive, perimeter buffer) to outline the management intent of that area. Combined, these tools will assist with natural resource management.

1.1.2 PLAN AMENDMENTS OR UPDATES

This document should be referenced annually by the NRC to ensure Department compliance. This document should be updated at least every five years. More frequent updates should be initiated as the needs of the Department evolve or as any natural resource related laws change or as new scientific data becomes available or as conditions warrant. Any potential changes should be reported to the Director and Department planning staff for consideration.

1.2 NATURAL RESOURCE INFORMATION

Both hard-copy and electronic data on park resources will be housed permanently in a file system maintained at Department headquarters. Since scientific information is frequently used to develop additional lines of inquiry, all natural resource information will not be cycled per legal record retention protocol, but will be kept separate and in a permanent natural resource information system overseen by the Department.

Most information about park natural resources will be made broadly available to park employees, the scientific community, and the public. The Department may withhold information about the nature and specific location of sensitive park natural resources such as caves, mineral areas, archaeological sites, and endangered, threatened, rare, or commercially valuable resources unless releasing the information would not risk resource harm or would be consistent with other applicable laws.

1.3 EVALUATING IMPACTS ON NATURAL RESOURCES

The Department will ensure that the environmental costs and benefits of proposed operations, development, and resource management are fully and openly evaluated before taking actions that may impact the natural resources of parks. This evaluation should include consulting the public or other stakeholders when appropriate.

1.4 PARTNERSHIPS

The Department recognizes that cooperation with other land and resource managers can accomplish ecosystem stability and other resource management objectives when the best efforts of a single manager might fail. Therefore, the Department will develop agreements with federal, tribal, state, and local governments, and non-governmental organizations and universities as well as private landowners, when appropriate, to coordinate plant, animal, water, and other natural resource management activities in ways that maintain and protect park resources and values.

1.5 RESTORATION OF NATURAL SYSTEMS

The Department will reestablish natural functions and processes in parks by allowing landscapes disturbed by natural phenomena, such as landslides, floods, and fires, to recover naturally unless manipulation is necessary to protect other park resources, developments, or employee and public safety.

The Department will seek to correct human-induced impacts on natural systems including the introduction of exotic species; the contamination of air, water, and soil; changes to hydrologic patterns and sediment transport; the acceleration of erosion and sedimentation; and the disruption of natural processes by restoring disturbed areas. Efforts may include, but are not limited to:

- removal of exotic species;
- removal of contaminants and non-historic structures or facilities;
- restoration of abandoned mineral lands, abandoned or unauthorized roads, areas overgrazed by domestic animals, or disrupted natural waterways and/or shoreline processes;
- restoration of areas disturbed by Department administrative, management, or development activities (such as hazard tree removal, construction, or sand and gravel extraction) or by public use;
- restoration of natural soundscapes;
- protection or reestablishment of natural biotic corridors;
- restoration of native plants and animals; and
- restoration of natural scenic viewsheds.

When park developments/facilities are damaged or destroyed and replacement is necessary, the development/facility should be replaced or relocated to promote the restoration of natural resources and processes.

2.0 STUDIES AND COLLECTIONS

The Department will encourage appropriately reviewed natural resource studies whenever such studies are consistent with applicable laws and policies. These studies support the Department's mission by providing the Department, the scientific community, and the public with an understanding of park resources, processes, values, and uses that will be cumulative and constantly refined. This approach will enhance the Department's desire for a scientific and scholarly basis for park planning, development, operations, management, and interpretive activities.

As used here, the term "studies" means short- or long-term scientific or scholarly investigations or educational activities that may involve natural resource surveys, inventories, monitoring, and research, including data and specimen collection. Studies include projects conducted by researchers and scholars in universities, foundations and other institutions; tribal colleges and organizations; other federal, tribal, and state agencies; and Department staff. The data and information acquired through studies conducted in parks will be made publicly available according to Department policies and regulations.

The Department will promote cooperative relationships with educational and scientific institutions and qualified individuals when that relationship can assist the Department in obtaining information and when the opportunity for research and study in the parks offers the cooperators a significant benefit to their programs. Department facilities and assistance may be made available to qualified cooperators who are conducting Department-authorized studies.

2.1 NATURAL RESOURCE INVENTORY, MONITORING, AND RESEARCH STUDIES

The Department may support studies to:

- ensure a systematic, current, and fully adequate park natural resource information base;
- provide a sound basis for policy, guidelines, and management actions;
- develop effective strategies, methods, and technologies to restore disturbed resources, and predict, avoid, or minimize adverse impacts on natural resources and on visitors and related activities;
- ensure that plans and actions reflect contemporary knowledge about the natural and cultural context of special natural areas, cultural landscapes, and natural resources having traditional cultural meaning and value to associated human groups;
- determine the causes of natural resource management problems and identify alternative strategies for potentially resolving them;
- understand the ceremonial and traditional resource management practices of Native Americans and traditional uses by groups with demonstrated ties to particular natural resources of parks;
- further understand park ecosystems and related human social systems, including visitors and gateway communities, and document their components, condition, and significance; and
- ensure that the interpretation of the parks' natural resources and issues reflects current standards of scholarship relating to the history, science, and condition of the resources.

Park inventory, monitoring, and research needs and specific research objectives will be identified in the appropriate management plans for each park, or in Department-wide program plans. Non-department studies conducted in parks are not required to address specifically identified Department management issues or information needs.

All studies in parks will employ nondestructive methods to the maximum extent feasible with respect to resource protection, research methodology, and the scientific and management value of the

information and collections to be obtained. Although studies involving physical impacts to park resources or the removal of objects or specimens may be permitted, studies and collecting activities that will lead to the impairment of park resources and values are prohibited.

2.2 DEPARTMENT AUTHORIZATION FOR NATURAL RESOURCE STUDIES

A natural resource investigation proposal (see Appendix A) will precede all natural resource studies. This document will be reviewed by the NRC and may be reviewed by various partnering authorities. All research and data and specimen collection conducted by Department employees will be appropriately documented and carried out in accordance with all laws, regulations, policies, and professional standards pertaining to survey, inventory, monitoring, and research. Additional agreements, insurance, etc. may be required by the Department. All studies, papers, or other publications of any kind shall acknowledge Maricopa County Parks and Recreation Department.

2.2.1 NON-DEPARTMENT LED STUDIES

The objectives for collecting specimens will be detailed in the study proposal form that will, at a minimum, delineate the location, activity, methodology, and timeline of the proposed study. The proposal form will be evaluated by the NRC and recommended to the Director (or his/her designee) for approval. All required local, state and federal permits must be present prior to any collection activity. The researcher must provide copies of appropriate field notes, cataloging, and other data; information about the data collected; progress reports; interim and final reports; and publications derived from the permitted activities.

2.2.2 DEPARTMENT LED STUDIES

Department staff will comply with the same proposal submission process (Appendix A) and expectations as outlined in section 2.2.1 as non-department entities. Department staff may be expected to make their findings available to the public, such as by publication in professional journals or through presentation in interpretive programs.

2.3 NATURAL RESOURCE COLLECTIONS

Material collected as part of a natural resource study will be deposited in the collections of reputable public institutions, and made available to other scientists and the general public that express legitimate academic reasons for access.

Field data, objects, non-living specimens, and features obtained for preservation during inventory, monitoring, research, and study projects, together with associated records and reports, will be managed over the long term in accordance with recognized best practices for natural resource material collections. Living specimens that are not authorized for consumptive analysis but are authorized for retention by the researcher will be held in accordance with applicable state and federal laws and regulations.

In most cases, only small quantities of specimens may be collected. Special coordinating and reporting requirements may be required to insure that collecting of specimens does not impact the park visitor experiences. The repeated collection of materials to ensure a continuing supply source for research or propagation is prohibited unless the proposed activity clearly requires repeated collection, as might be the case with a monitoring or park restoration program.

3.0 SPECIAL DESIGNATIONS

The Department recognizes that special designations may apply to parts or all of some parks to highlight the additional management considerations that those designated areas warrant. Examples of these designations include conservation areas, areas of critical environmental concern, preserves, Maricopa Trail, cultural areas, state/national registries, critical habitat and safe harbor areas, hunting areas, non-attainment areas, herd management areas, and raptor nesting areas.

Some designations within and adjacent to a park reflect the management intent of non-Department entities like federal or state governments and delineate special management concerns that pertain to specific species or biotic communities as mandated by state or federal law. Such designations will require coordination of management actions by the Department and the designating authority. These designations may also be incorporated into the park (e.g. Wild Burro Herd Management Areas; Bald Eagle Closure Areas) natural resource management plan.

Designations for which the Department is the sole proponent are listed below.

3.1 CONSERVATION AREAS

Conservation areas are managed to protect the physical area, natural features, cultural heritage sites, or floral or faunal communities from further loss or degradation, and to restore the resources of these areas with prescribed measures. Recreational uses are secondary when appropriate.

3.2 PRESERVE AREAS

Preservation areas are managed to maintain the integrity of the area's flora, fauna, geology or other resource values. Recreational uses are secondary when appropriate.

3.3. RECREATION AREAS

Recreation areas are managed for authorized recreational activities as the its primary purpose with the understanding that resource conservation is paramount to the long-term enjoyment of the area.

4.0 BIOLOGICAL RESOURCE MANAGEMENT

The Department's resource management strategy will involve actions that afford the full diversity of plant and animal life possible within a Sonoran Desert environment. This will entail maintaining as parts of the natural ecosystems of parks all plants and animals native to park ecosystems. The term "plants and animals" refers to all five of the commonly recognized kingdoms of living things and includes such groups as flowering plants, ferns, mosses, lichens, algae, fungi, bacteria, mammals, birds, reptiles, amphibians, fishes, insects, worms, crustaceans, and microscopic plants or animals.

In addition to maintaining biological resources, the Department will engage in restoring species and ecosystems, recovering endangered and special category species, removing exotic and noxious species, and controlling species when over-abundance or other factors threaten other park resources.

4.1 GENERAL PRINCIPLES FOR MANAGING BIOLOGICAL RESOURCES

The Department will support diversity of native plants and animals by:

- preserving and restoring the natural abundances, diversities, dynamics, distributions, habitats, corridors, and behaviors of native plant and animal populations and the communities and ecosystems in which they occur;

- minimizing human impacts on native plants, animals, populations, communities, and ecosystems, and the processes that sustain them;
- when feasible, restoring native plant and animal populations in parks when they have been extirpated by past human-caused actions;
- cooperating with land owners and natural resource managers to encourage the conservation of the populations and habitats of park plants and animals, to participate in local and regional scientific and planning efforts, to identify ranges of populations of native plants and animals, and to develop cooperative strategies for maintaining or restoring these populations both within and outside parks when appropriate;
- whenever possible, relying on natural processes to maintain native plant and animal species and influence natural fluctuations in populations of these species, intervening to manage individuals or populations of native species only when such intervention will not cause unacceptable impacts to the populations of the species or to other components and processes of the ecosystems that support them;
- planning and implementing plant and animal population management actions with transparency, following established planning procedures and including provisions for public review and comment;
- reducing the population of a park plant or animal only after close coordination with state and federal authorities, and using scientifically valid resource information obtained through consultation with technical experts to evaluate the need for population management.

4.2 RESTORATION OF NATIVE PLANT AND ANIMAL SPECIES

The Department will strive to restore extirpated native plant and animal species to parks whenever all of the following criteria are met:

- There is a desire on the part of the authoritative regulatory plant or wildlife agencies to restore the species or habitat, and the Department's parks are part of the desired restoration area.
- Adequate habitat to support the species either exists or can reasonably be restored in the park and if necessary also on adjacent public lands and waters, and once a natural population level is achieved the organism can be self-perpetuating.
- The species does not, based on an effective management plan, pose a serious threat to people in parks, to park resources, or to persons or property outside park boundaries.

4.3 MANAGEMENT OF THREATENED OR ENDANGERED PLANTS AND ANIMALS

In the interest of affording parks that contain the full diversity of plants and animals of the Sonoran Desert, the Department will fully meet its obligations under federal, state, or local laws and regulations to both proactively conserve listed species and to prevent detrimental effects on these species. To meet these obligations, the Department will:

- cooperate with both federal and state land management agencies and/or wildlife management agencies to ensure that Department actions comply with both the written requirements and the spirit of the Endangered Species Act. This cooperation should include the full range of activities associated with the Endangered Species Act, including consultation, conferencing, informal discussions, and securing all necessary permits;
- cooperate with other agencies to ensure that the delineation of critical habitat, essential habitat, and/or recovery areas on park-managed lands provides needed conservation benefits to the total recovery efforts being conducted by all the participating agencies;
- participate in the recovery planning process, including the provision of members on recovery teams and recovery implementation teams where appropriate;

- conduct actions and allocate funding, as available, to address endangered, threatened, proposed, and candidate species.

4.4 MANAGEMENT OF NATURAL LANDSCAPES

Natural landscapes disturbed by natural phenomena, such as landslides, floods, and fires will be allowed to recover naturally unless manipulation is necessary to (1) mitigate for excessive disturbance caused by past human effects, (2) preserve cultural and historic resources as appropriate based on park planning documents, or (3) protect park developments or the safety of people. Landscape and vegetation conditions altered by human activity may be manipulated where the park management plan provides for restoring the lands to a natural condition. Management activities to restore human-altered landscapes may include, but are not restricted to:

- removing constructed features, restoring natural topographic gradients, and revegetating with native park species on acquired inholdings and disturbed sites;
- restoring natural processes and conditions to areas disturbed by human activities such as fire suppression;
- rehabilitating areas disturbed by visitor use using seeds, cuttings, or transplants representing species and gene pools native to the ecological portion of the park in which the disturbance occurred.

4.5 MANAGEMENT OF EXOTIC SPECIES

The Department will pursue efforts that eliminate or reduce displacement of native flora and fauna by exotic species. High priority will be given to managing exotic species that have, or potentially could have, a substantial impact on park resources, and that can reasonably be expected to be successfully controlled. Lower priority will be given to exotic species that have almost no impact on park resources or that probably cannot be successfully controlled.

The decision to initiate management should be based on confirmation that the species indeed is exotic. For species determined to be exotic and where management appears to be feasible and effective, the Department will consult with agency, tribal, academic and other partners as appropriate to (1) evaluate the species' current or potential impact on park resources; (2) develop and implement exotic species management plans according to established planning procedures; and (3) invite public review and comment, where appropriate. Programs to manage exotic species will be designed to avoid causing significant damage to native species, natural ecological communities, natural ecological processes, cultural resources, and human health and safety. Considerations and techniques regarding removal of exotic species are similar to those used for native species.

4.6 PEST MANAGEMENT

Pests are living organisms that interfere with the purposes or management objectives of a specific site within a park or that jeopardize human health or safety. Decisions concerning whether or not to manage a pest or pest population will be influenced by whether the pest is an exotic or a native species.

The Department may control native pests to:

- conserve threatened, rare, or endangered species, or communities;
- preserve, maintain, or restore the historical integrity of cultural resources;
- conserve and protect plants, animals, and facilities in developed areas;
- prevent outbreaks of a pest from invading uninfested areas outside the park;
- manage a human health hazard when advised to do so by the U.S. Public Health Service (which includes the Centers for Disease Control); or

- to otherwise protect against a significant threat to human safety.

Exotic pests will be managed according to Section 4.5 herein.

Chemical control of pests may be used only in certain circumstances. All users of pest control chemicals in parks may be required to submit pesticide use requests, which will be reviewed on a case-by-case basis, taking into account environmental effects, cost and staffing, and other relevant considerations. The decision to incorporate a chemical, biological, or bioengineered pesticide into a management strategy will be based on a determination by Department review that it is necessary and other available options are either not acceptable or not feasible. The Department may consult with other relevant partners as needed. Pesticide applications will comply with procedures established by the Environmental Protection Agency and relevant Maricopa County policy.

Insect repellents, and insecticides applied to persons or to livestock must conform to Maricopa County policies and approval procedures, except that pesticides used under the following conditions do not require approval:

- personal insect repellents and insecticides that employees or park visitors personally obtain and use to meet personal needs;
- insect repellents and insecticides applied to personally owned pets and pack and saddle stock.

Pesticides must not be stockpiled. No pesticides may be purchased unless they are authorized and expected to be used within one year from the date of purchase. Pesticide storage, transport, and disposal will comply with procedures established by the Environmental Protection Agency and relevant Maricopa County policy.

5.0 FIRE MANAGEMENT

The Sonoran Desert ecosystem evolved without fire as an agent of plant succession. Recent introductions of various exotic winter annual plants have afforded desert landscapes with a fuel source during the dry months of late spring and early summer. Fire can alter for generations the Palo Verde-Saguaro plant community, essentially eliminating the Saguaro cactus from vast areas, a plant which is especially susceptible to fire. Likewise, riparian ecosystems that sustain growth of exotic winter annual vegetation are vulnerable to spring fires.

The objectives of the Department's fire management strategy are:

- cooperate and coordinate fire management activities with outside experts;
- eliminate where feasible fire fuels in areas with critical park resources or near human habitation; and
- aggressively engage fires to extinguish as quickly as possible those that endanger the public or valuable park resources.

Parks will prepare an emergency management plan that is consistent with state and federal law and departmental fire management strategy, and that includes addressing the need for adequate funding and staffing to support the planned fire management program. The emergency management 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.

Suppression of active fires will be performed by experts from outside of the Department and may include the use of special fire suppression equipment, prescribed burns, and mechanical fuel reduction. These options will be reviewed and selected by experts after comprehensive consideration of the resource values to be protected, firefighter and public safety, costs, availability of firefighting resources, weather, and fuel.

All fire recovery will be effectively managed through the application of appropriate strategic and tactical management options as guided by the park’s emergency management plan. These options may include guidance on determining 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. Preparation of the plan and supporting documents will include collaboration with appropriate adjacent communities, interest groups, state and federal agencies, and tribal governments.

6.0 WATER RESOURCES

6.1 PROTECTION OF SURFACE WATERS AND GROUNDWATERS

The Department will perpetuate surface waters and groundwaters as integral components of park aquatic, riparian, and terrestrial ecosystems.

6.2 WATER RIGHTS

Water for the preservation and management of the county park system will be obtained and used in accordance with legal authorities. The Department will consider all available authorities on a case-by-case basis and will pursue those that are the most appropriate to protect water-related resources in parks. While preserving its legal remedies, the Department will work with Maricopa County, State of Arizona and federal water resource management and regulatory bodies to protect park resources and participate in negotiations to seek the resolution of conflicts among multiple water claimants. Water essential for MCPRD needs may be purchased if it is not otherwise available. Department consumptive use of water will be efficient and conservation oriented, especially in water-scarce areas.

All rights to the use of water diverted from or used on County lands within the county park system by the Department or its concessioners, lessors, or permittees will be perfected in the name of Maricopa County. The Department will seek to perfect all existing and future rights and acquire new rights as feasible.

Park surface waters or groundwater will be withdrawn for consumptive use only when such withdrawal is necessary for the use and management of the park. All park water withdrawn for domestic or administrative uses will be returned to the park watershed system once it has been treated to a degree that ensures that there will be no impairment of park resources.

The Department may enter into contracts for the sale or lease of water to persons, states, or their political subdivisions that provide public accommodations or services for park visitors outside and near the park that have no reasonable alternative sources of water. The Department will authorize such contracts only if:

- the use does not jeopardize or unduly interfere with the natural or cultural resources of the park, and
- the government's costs are fully recovered at fair market value, and
- the contract is for a short term or intermittent use.

6.3 WATER QUALITY

The pollution of surface waters and groundwaters by both point and nonpoint sources can impair the natural functioning of aquatic and terrestrial ecosystems and diminish the utility of park waters for visitor use and enjoyment. The Department will cooperate with other County and local agencies to determine the quality of park surface and groundwater resources and avoid, whenever possible, the pollution of park waters by human activities occurring within and outside the parks. The Department will:

- work with appropriate governmental bodies to meet the standards of the Clean Water Act and other state or County agencies;
- take all necessary actions to maintain or restore the quality of surface waters and groundwaters within the parks consistent with the Clean Water Act and all other applicable federal, state, and local laws and regulations;
- determine and mitigate point source contaminants; and
- enter into agreements with other agencies and governing bodies, as appropriate, to secure their cooperation in maintaining or restoring the quality of park water resources.

6.4 FLOODPLAINS

In managing floodplains on park lands, the Department will (1) acknowledge that flooding is important for maintaining riverine ecosystem values, (2) manage for the preservation of floodplain values; (3) minimize conditions associated with flooding that are potentially hazardous to existing human habitation; and (4) comply with provisions of the Clean Water Act and the Rivers and Harbors Appropriation Act of 1899. The Department will work with the Flood Control District of Maricopa County (Flood Control) to mitigate, restore, and manage floodplains. Specifically, the Department will strive to:

- protect, preserve, and restore the natural resources and functions of floodplains;
- avoid the long- and short-term environmental effects associated with the human occupancy and modification of floodplains;
- plan both floodplain, riparian, watershed, and watercourse systems; and
- oppose floodplain developments and actions that could adversely affect the natural resources and functions of floodplains or increase flood risks to humans.

When it is not practicable to locate or relocate development or inappropriate human activities to a site outside and not affecting the floodplain, the Department will:

- use nonstructural measures as much as practicable to reduce hazards to human life and property while minimizing the impact of nonstructural measures to the natural resources of floodplains; and
- ensure that structures and facilities are designed to be consistent with the intent of the standards and criteria of the National Flood Insurance Program.

6.5 RIPARIAN AREAS

The Department will manage wetlands in compliance with all applicable laws. The Department will (1) provide leadership and take action to prevent the destruction, loss, or degradation of wetlands; (2) preserve and enhance the natural and beneficial values of wetlands; (3) avoid new construction in wetlands unless there are no practicable alternatives and the proposed action includes all practicable

measures to minimize harm to wetlands; and (4) the proposed action includes educational elements to park visitors.

The Department will implement a “no net loss of wetlands” policy. In addition, the Department will strive to achieve a longer-term goal of net gain of wetlands across the County park system through restoration of previously degraded or destroyed wetlands.

When natural wetland characteristics or functions have been degraded or lost due to previous or ongoing human actions, the Department will, to the extent practicable, restore them to predisturbance conditions.

The Department will conduct or obtain park-wide wetland inventories to ensure proper planning with respect to the management and protection of wetland resources. Additional, more detailed wetland inventories will be conducted in areas that are proposed for development or are otherwise susceptible to degradation or loss due to human activities.

For proposed developments and new activities, plans, and programs that threaten wetlands, the Department will coordinate all activities with the appropriate County, state, and federal agencies relative to Clean Water Act compliance, and comply fully with any mitigation measure deemed necessary to compensate for the loss of riparian habitat.

6.6 WATERSHED AND WATERCOURSE PROCESSES

The Department will manage park watersheds as complete hydrologic systems and minimize human-caused disturbance to the natural upland processes that deliver water, sediment, and debris to watercourses. These processes include runoff, erosion, and disturbance to vegetation and soil caused by fire, insects, meteorological events, and mass movements. The Department will work with Maricopa County Flood Control, state and federal agencies to restore limited functionality and values to rivers, streams, and major washes in and near parks. This management will include active coordination with owners of adjacent lands that contribute to the hydrologic process of park wetlands.

The Department will manage watercourses to protect stream processes that create habitat features such as floodplains, riparian systems, debris accumulations, terraces, gravel bars, riffes, and pools. Watercourse processes include flooding, stream migration, and associated erosion and deposition.

The Department will protect watershed and watercourse features primarily by avoiding impacts on watershed and riparian vegetation and by allowing natural fluvial processes to proceed unimpeded. When conflicts between infrastructure (such as bridges and pipeline crossings) and watercourse processes are unavoidable, park managers will first consider relocating or redesigning facilities rather than manipulating watercourse. Where watercourse manipulation is unavoidable, managers will use techniques that are visually nonobtrusive and that protect natural processes to the greatest extent practicable.

7.0 AIR RESOURCE MANAGEMENT

The Department will seek to perpetuate the best possible air quality in parks to (1) preserve natural resources and systems; (2) preserve cultural resources; and (3) sustain visitor enjoyment, human health, and scenic vistas. Vegetation, visibility, water quality, wildlife, historic and prehistoric structures and objects, cultural landscapes, and most other elements of a park environment are sensitive to air

pollution and are referred to as “air quality-related values.” The Department will actively promote and pursue measures to protect these values from the adverse impacts of air pollution. In cases of doubt as to the impacts of existing or potential air pollution on park resources, the Department will work with qualified experts to protect air quality and related values for future generations.

The Department will work with Maricopa County Air Quality Department and state and federal agencies. External programs needed to remedy existing and prevent future impacts on park resources and values from human-caused air pollution will be tracked by MCPRD.

8.0 GEOLOGIC RESOURCE MANAGEMENT

The Department will preserve and protect geologic resources as integral components of park natural systems. As used here, the term “geologic resources” includes both geologic features and geologic processes. The Department will (1) assess the impacts of natural processes and human activities on geologic resources; (2) maintain and restore the integrity of existing geologic resources; (3) integrate geologic resource management into Department operations and planning; and (4) interpret geologic resources for park visitors.

8.1 PROTECTION OF GEOLOGIC PROCESSES

The Department will, except as identified below, allow natural geologic processes to proceed unimpeded. Geologic processes are the natural physical and chemical forces that act within natural systems and on human developments across a broad spectrum of space and time. Such processes include, but are not limited to, exfoliation, erosion and sedimentation, shoreline processes, and seismic activity. Geologic processes may be addressed during planning and other management activities in an effort to reduce hazards that can threaten the safety of park visitors and staff and the long-term viability of the park infrastructure.

Intervention in natural geologic processes will be permitted only when:

- necessary in emergencies that threaten human life and property;
- there is no other feasible way to protect natural resources, park facilities, or historic properties;
- intervention is necessary to restore impacted conditions and processes, such as restoring habitat for threatened or endangered species.

8.1.1 SHORELINES

Unless otherwise regulated by a superior resource management agency, natural shoreline processes (such as erosion, deposition, overwash, inlet formation, and shoreline migration) may be allowed to continue without interference.

Where human activities or structures have altered the nature or rate of natural shoreline processes, the Department will, in consultation with appropriate state and federal agencies, investigate alternatives for mitigating the effects of such activities or structures and for restoring natural conditions.

Any shoreline manipulation measures proposed to protect cultural resources may be approved only after an analysis of the degree to which such measures would impact natural resources and processes, so that an informed decision can be made through an assessment of alternatives.

Where erosion control is required by law, or where present developments must be protected in the short run to achieve park management objectives, including high-density visitor use, the Department

will use the most effective method feasible to achieve the natural resource management objectives while minimizing impacts outside the target area.

New developments will not be placed in areas subject to wave erosion or active shoreline processes unless (1) the development is required by law; or (2) the development is essential to meet the park's purposes, as defined by its establishing act or proclamation, and

- no practicable alternative locations are available;
- the development will be reasonably assured of surviving during its planned life span without the need for shoreline control measures; and
- steps will be taken to minimize safety hazards and harm to property and natural resources.

8.2 MANAGEMENT OF GEOLOGIC FEATURES

The Department will protect geologic features from the unacceptable impacts of human activity while allowing natural processes to continue. The term "geologic features" describes the products and physical components of geologic processes. Examples of geologic features in parks include rocks, soils, and minerals; canyons, arches, dramatic or unusual rock outcrops and formations; and paleontological and paleoecological resources such as fossilized plants or animals or their traces.

8.2.1 PALEONTOLOGICAL RESOURCES AND THEIR CONTEXTS

All Department construction projects in areas with potential paleontological resources will be preceded by a preconstruction surface assessment prior to disturbance. For any occurrences noted, or when the site may yield paleontological resources, the site will be avoided or, if necessary, the resources will be collected and properly curated before construction begins in accordance to any applicable law. Areas with potential paleontological resources must also be monitored during construction projects.

Paleontological resources, including both organic and mineralized remains in body or trace form, will be protected, preserved, and managed for public education, interpretation, and/or scientific research. The Department will study and manage paleontological resources in their paleoecological context (that is, in terms of the geologic data associated with a particular fossil that provides information about the ancient environment).

The Department may use consultants to inventory paleontological resources and systematically monitor for newly exposed fossils, especially in areas of rapid erosion. Scientifically significant resources will be protected by collection or by on-site protection and stabilization. The Department will encourage and help the academic community to conduct paleontological field research in accordance with the terms of a scientific research and collecting permit. Fossil localities and associated geologic data will be adequately documented when specimens are collected. Paleontological resources found in an archeological context are also subject to the policies for archeological resources. Paleontological specimens that are to be retained permanently are subject to the policies for museum objects.

The Department will take appropriate action to prevent damage to and unauthorized collection of fossils. To protect paleontological resources from harm, theft, or destruction, the Department will ensure, where necessary, that information about the nature and specific location of these resources remains confidential.

8.2.2 SOIL RESOURCE MANAGEMENT

The Department will actively seek to understand and preserve the soil resources of parks, and to prevent, to the extent possible, the unnatural erosion, physical removal, or contamination of the soil or

its contamination of other resources. The Department will work with applicable County agencies, state, and federal agencies (such as United States Department of Agriculture Natural Resources Conservation Service (USDA NRCS) or the University of Arizona Cooperative Extension). When needed, the Department will obtain adequate soil surveys for the management of park resources. Products will include soil maps, determinations of the physical and chemical characteristics of soils, and the interpretations needed to guide resource management and development decisions.

Management action will be taken to prevent or at least minimize adverse, potentially irreversible impacts on soils. Soil conservation and soil amendment practices may be implemented to reduce impacts. Importation of off-site soil or soil amendments may be used to restore damaged sites. Off-site soil normally will be salvaged soil, not soil removed from pristine sites, unless the use of pristine site soil can be achieved without causing any overall ecosystem impairment. Before using any off-site materials, parks must develop a prescription and select the materials that will be needed to restore the physical, chemical, and biological characteristics of original native soils without introducing any exotic species.

When soil excavation is an unavoidable part of an approved facility development project, the Department will minimize soil excavation, erosion, and off-site soil migration during and after the development activity.

When use of a soil fertilizer or other soil amendment is an unavoidable part of restoring a natural landscape or maintaining an altered plant community, the use will be guided by a written prescription. The prescription will be designed to ensure that such use of soil fertilizer or soil amendment does not unacceptably alter the physical, chemical, or biological characteristics of the soil, biological community, or surface or groundwaters.

9.0 SOUNDSCAPE MANAGEMENT

Park natural soundscape resources encompass all the 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. Natural sounds occur within and beyond the range of sounds that humans can perceive, and they can be transmitted through air, water, or solid materials. The Department will preserve, to the greatest extent possible, the natural soundscapes of parks.

Some natural sounds in the natural soundscape are also part of the biological or other physical resource components of the park. Examples of such natural sounds include:

- sounds produced by birds, frogs, or katydids to define territories or aid in attracting mates;
- sounds produced by bats to locate prey or navigate;
- sounds received by mice or deer to detect and avoid predators or other danger; and
- sounds produced by physical processes, such as wind in the trees, claps of thunder, or falling water.

The Department will maintain the natural soundscape to the extent possible or will strive to restore to the natural condition wherever possible those park soundscapes that have become degraded by unnatural sounds, and will protect natural soundscapes from unacceptable impacts.

Using appropriate management planning, the Department will identify what levels and types of unnatural sound constitute acceptable impacts on park natural soundscapes. The frequencies,

magnitudes, and durations of acceptable levels of unnatural sound will vary throughout a park, being generally greater in developed areas. In and/or adjacent to parks, the Department will monitor human activities that generate noise that adversely affects park soundscapes, including noise caused by mechanical or electronic devices. The Department will take action to prevent or minimize all noise that through frequency, magnitude, or duration adversely affects the natural soundscape or other park resources or values, or that exceeds levels that have been identified through monitoring as being acceptable to or appropriate for visitor uses at the sites being monitored.

10.0 LIGHTSCAPE MANAGEMENT

Maintaining natural lighting in parks eliminates the potential influence that artificial light might have on park organisms and visitor enjoyment of park resources. The Department will strive to preserve, to the greatest extent possible, the natural lighting of parks, to minimize light that emanates from park facilities, and will seek the cooperation of park visitors, neighbors, and local government agencies to prevent or minimize the intrusion of artificial light into the natural nighttime lighting of parks.

The Department will:

- adhere to “International Dark Sky” standards to the extent feasible;
- use minimal-impact lighting techniques; and
- restrict the use of artificial lighting in parks to those areas where security, basic human safety, and specific cultural resource requirements must be met.

11.0 VIEWSHED MANAGEMENT

The Department recognizes the importance of panoramic vistas relative to experiencing other natural park resources. Although there are no regulations requiring special protection of these integral vistas, the Department will strive to identify, prioritize, and protect these park-related and adjacent resources through the cooperation of park visitors, neighbors, and local government agencies to prevent or minimize visual intrusion.

APPENDIX A - NATURAL RESOURCE STUDY PROPOSAL APPLICATION

Thank you for your interest in conducting a natural resource study/survey at a Maricopa County Park. Please describe your proposal using this form; the information provided must be typewritten. Attach additional information as needed. Submit this form and all supporting materials electronically.

Project Sponsor: (e.g. university and department or other institution)	
Project Name or Title:	
Project Lead: (name)	
Qualifications of Lead:	
Project Assistant: (name)	
Qualifications of Assistant:	
Project Assistant: (name)	
Qualifications of Assistant:	
Funding Source:	
Permits:	
Scope of Work:	
Purpose and Need	
Relevancy to Department Natural Resource Management program	
Location (include map)	
Timeline	
Expected Work	
Staffing (include task descriptions for each type of staff)	
Disposition of Collected Materials	
Additional Information (attach additional sheets if needed)	
Do not write below this line. For MCPRD review only.	
Natural Resource Committee:	

Special Provisions/Requirements	Must provide copies of appropriate field notes, cataloging, and other data; information about the data collected; progress reports; interim and final reports; and publications derived from the permitted activities.
Recommendation	Approve: <input type="checkbox"/> Deny: <input type="checkbox"/>
Date	
MCPRD Director (or designee):	
Special Provisions/Requirements	
Recommendation	Approve: <input type="checkbox"/> Deny: <input type="checkbox"/>
Signature	
Date	

DRAFT