Author: Jane Tranel
Date: 12/10/96 3:56 PM
Priority: Normal
TO:
Subject: Resources Careers Update
---------- Message Contents ----------

CLASSIFICATION/POSITION REVIEWS COMPLETE

Task force members and classification specialists conducted over 125 reviews of natural and cultural resource management positions at 13 parks and centers in the last year. John Mussare, special assistant to the Deputy Director and former chief classifier for the service, summarizes the findings:

> "The minimum full performance level for professional resource management positions in the NPS was clearly a GS-11. Some professional positions, however, have been filled with people who lack the expertise or education to perform professional work or are hired below the skill and grade level needed for the job. At the same time, many well-qualified technicians are performing professional work not reflected in their grades or position descriptions. This creates classification and position management concerns. In other words, we are not managing our workforce the way we should. Frequently we have generalists attempting to perform professional level work. With the shortages of staff, we need to be careful that we give the resources the academic attention they need. For downsizing/budget reasons, professional work is being diluted as staff are being asked to do other types of work. In other words, their time is spent on things other than professional resource management. In some series (e.g. curators and historians), we are not ensuring that sufficient time is devoted to research. There is strong belief that resource management should report to the Superintendent or Assistant Superintendent. Many people believe that the resources are not being adequately represented when it comes to budget or priority setting."

BENCHMARK POSITION DESCRIPTIONS

Twenty-four benchmark position descriptions in 20 series have been completed by teams of classifiers and subject matter experts. These will go out for field review very soon.

REVIEW PACKAGE IS COMING

A review package, which includes a cover memo from the Deputy Director, the above-referenced PDs, the Natural and Cultural Resources Management Professional Development Program document (the conceptual framework), position management guidance, and a worksheet for each park to assess the impact of the resources careers initiative on its workforce, will also go to the field as soon as possible. There may be a rapid turnaround for this information in an attempt to get park-by-park information into the expected FY98 base increase.

The review package will be posted on this bulletin board.

BUDGET ISSUES

We simply don't know at this time whether or not the cost of implementation will be available. We're working with the Associate Directors for Natural and Cultural Resources, the budget staff in WASO, and anyone else we can think of to stress the importance of this initiative to the NPS resources and the resource management workforce.

TIMING OF IMPLEMENTATION

This will depend in part on the budget information but mostly on the direction from the National Leadership Council at their next meeting (January).

FOR MORE INFORMATION

Task force chair Kathy Davis of SOAR will post the minutes of the last task force meeting on this bulletin board. The preamble of the Professional Development Plan follows for background. Keep posted to this BB for continuing dialog.

---------- Rescources Careers Preamble ----------

The National Park Service is the steward for many of America's most important cultural, natural, and recreational resources. The agency was created in 1916 with its mission

> to conserve the scenery and the natural and historic objects and the wildlife therein . . . by such means as will leave them unimpaired for the enjoyment of future generations.

Today, we call this broad challenge resource stewardship and we recognize that parks are complex, vulnerable, and often dynamic systems that require more than fences around their borders to maintain them in perpetuity. The essence of a park is its resources, hence all agency activities must be measured by their effects on those resources.

To sustain a park and its resources, a park manager must know what the resources are; where they are located; which are significant; how they interrelate with other resources, both inside and outside the park boundaries; what research is needed to identify and understand those resources and how the natural and cultural systems function; what long-term monitoring is needed to detect both natural and unnatural changes in their condition; what threatens their integrity ; what actions are needed to protect them from harm or restore them when damaged; and what kinds of public use are appropriate to allow for their enjoyment and yet keep them unimpaired for future generations.

Resource stewardship requires the knowledge and skills of highly trained specialists in natural and cultural resource disciplines (resource managers), in addition to a variety of other occupations which together constitute the park team, both in and outside the NPS. Resource managers require the education and training commensurate with the complexity of issues, disciplines, and competing interests that challenge the integrity of park resources today.

Yet most parks lack sufficient, well-trained resource management staff to do more than identify critical issues and attempt to address those that are most manageable or controversial. Most small parks lack any resource specialists at all. Few parks have resource management programs which are able to support the management needs of the park or have the available expertise to either use scientific findings to conserve resources or translate them into useable information for managers or other staff. Simply stated, we have only limited knowledge of our resources, so we have little way to identify when they are being degraded.

It is impossible to fulfill the stewardship mission without NPS commitment to acquire and support the people who have the specialized resource expertise. The agency must staff its units appropriately, to ensure that the expertise is available to every manager. Motivated and capable resource managers, like other staff, must see and realize opportunities for professional development and career growth. There need to be attainable career options for them which include both technical and managerial tracks and potentially lead to the most senior agency positions.

Congress has expanded the role of the NPS beyond the borders of parks, thus creating additional demands for resource expertise in external programs. National Park Service resource managers administer national landmark and register programs and provide technical assistance and grants to other agencies and the private sector in their conservation efforts. While the specific issues addressed may be different, these external programs require similar specialized resource expertise to protect significant resources as do the internal park programs, and the career issues are the same.

The Resources Careers Initiative builds upon groundwork of many groups and individuals who have accomplished much in recent years to prepare the Service for the next step. The staffing needs have been quantified, the strategic plans have been written, and the professional competencies have been developed. Resources Careers is developing benchmark position descriptions (based on GS-11 as the minimum full performance level for most resource managers), defining the entry routes and career paths, and writing the implementation plans to professionalize the natural and cultural resource management workforce of the National Park Service. This initiative is linked to other programs improving training and professional development opportunities for resource managers and others in the NPS.□

NATURAL AND CULTURAL RESOURCES PROFESSIONAL DEVELOPMENT PROGRAM

NATIONAL PARK SERVICE

Department of the Interior

Final
November 21, 1996

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EXECUTIVE SUMMARY

Many of our nation's greatest natural and cultural areas are protected within the boundaries of the national park system. The challenges we are facing in managing these resources are immense. Shrinking budgets, downsizing and restructuring initiatives, increased visitation and encroachment, poor environmental conditions, crime, and age itself, are teaming up to create a situation of catastrophic proportion. Left unchecked, our resources will suffer irreparable damage. Public policy is being challenged at a time when our ability to respond is diminishing.

The National Park Service's mission to protect and preserve our resources for future generations requires professional foresight. We must not only know what the resources are and where they are located, but must be able to interrelate the necessary monitoring, research, use patterns, and preservation strategies in order to mitigate threats or impacts to resources in light of today's challenges.

If we are to be successful in our endeavor to protect and preserve our resources, we must define and implement a human resources development program for resources management careers that will meet the stewardship needs of the NPS. The goals and actions presented in this report are designed to achieve this objective. Following are some of the key issues addressed in this report:

- Uniform description of roles and functions of key positions and organizational entities.
- Identification of levels of professionalism (competencies) required to meet the challenges of resources stewardship and partnership now and in the future.
- Establishment of a career entry system that will improve our ability to bring the most-qualified candidates to resources positions.
- Identification of recruitment strategies designed to improve under representation.
- Establishment of full-performance levels for professional and technical resources positions.
- Identification of key position management issues and how they bear on the achievement of excellence in resources stewardship and partnership.
- Identification of a professional development strategy that will provide the needed training, continuing education, and developmental experiences to maximize resources staff capabilities.

Together these issues, or initiatives, constitute the Natural and Cultural Resources Professional Development Program. Because the stakes are so high, successful implementation is imperative. To succeed we must: (1) have managers understand the reason for this professionalization initiative, (2) support the classification, staffing, and position management strategies, and (3) provide appropriate funding. By doing so, the NPS will ensure professional level management of our natural and cultural resources.

PREAMBLE

The National Park Service is the steward for many of America's most important cultural, natural, and recreational resources. The agency was created in 1916 with its mission

> *to conserve the scenery and the natural and historic objects and the wildlife therein . . . by such means as will leave them unimpaired for the enjoyment of future generations.*

Today, we call this broad challenge *resources stewardship*, and we recognize that parks are complex, vulnerable, and often dynamic systems that require more than fences around their borders to maintain them in perpetuity. The essence of a park is its resources, hence all agency activities must be measured by their effects on those resources.

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Yet most parks lack sufficient, well-trained resources management staff to do more than identify critical issues and attempt to address those that are most manageable or controversial. Most small parks lack any resource specialists at all. Few parks have resources management *programs* which are able to support the management needs of the park or have the available expertise to either use scientific findings to conserve resources or translate them into useable information for managers or other staff. Simply stated, we have only limited knowledge of our resources, so we have little way to identify when they are being degraded.

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INTRODUCTION

In 1991 the Associate Director of Natural Resources, Washington Office, convened a committee to examine natural resources management and research. The result was the Natural Resources Strategic Plan completed in 1992. Based on the findings stated in the plan, a draft Professional Development Program was written (Appendix A), then put aside during the National Park Service's (NPS) restructuring activities. The document was retrieved by Resources Careers, a committee established by the Careers Council, Vail Agenda, for the purpose of defining and implementing a human resources development program for natural and cultural resources management employees that will meet the stewardship and partnership needs of NPS.

The original document was prepared as the natural resources component of the NPS Natural Resources Management Professional Development Program. Recognizing the excellent work and value of the original document, the Resources Careers committee decided in November 1995, with the concurrence of the Acting Associate Director of Cultural Resources, to revise the document to make it a comprehensive Natural and Cultural Resources Professional Development Program.

The first draft of the original plan was prepared by the committee assigned to the task of implementing the National Park Service's Natural Resources Strategic Plan. It received widespread review in early 1994 and further review by the Resources Careers committee and others. Many actions identified in the original document were further refined by the Resources Careers committee to carry forth the professionalization initiative and the purpose of the Natural Resources Strategic Plan. That draft received widespread review early in 1994 and was further reviewed by the Resources Careers Committee. This version reflects recent NPS organizational changes and more fully incorporates Vail Agenda and National Park Service Strategic Plan Vision 1994 goals. The Resources Careers committee retained the critical elements of the original program while adding essential cultural components.

RESOURCES STEWARDSHIP AND PARTNERSHIP VISION

The National Park Service's Natural and Cultural Resources Professional Development Program will play a key role in meeting the agency's mission of protecting the diversity of natural and cultural resources, landscapes, and processes found within the national park system of the United States. This will be accomplished by developing a cadre of highly educated, skilled, and motivated resources managers and subject matter specialists that are capable of meeting the many challenges of resources stewardship and partnership. The employees' effectiveness will be enhanced by the development of a sound position management strategy, proactive intake training and continuing education programs, and a commitment to provide the opportunity for each employee to achieve excellence.

NEED FOR PROFESSIONAL DEVELOPMENT

Many of our nation's last great remaining natural and cultural areas are protected within the boundaries of the national parks. The value of these areas increases many fold with the accelerated loss of natural and cultural landscapes, biological diversity, and cultural resources outside parks. Collectively, the units of the national park system provide a reflection of our national "self-identity." As stated in the 1970 Administration of the National Park Service Act (16 USC 1a-1-1c), "These areas, though distinct in character, are united through their inter-related purposes and resources into one National park system as cumulative expressions of a single national heritage... Individually and collectively, these areas derive increased national dignity and recognition of their superb environmental quality through their inclusion jointly in one National park system preserved and managed for the benefit and inspiration of all the people of the United States." This message was reaffirmed with similar language in the 1978 Redwoods Act (16 USC 1a-1).

The resources stewardship mission of the National Park Service has become progressively more critical in shaping the future of our society. To achieve our mission, today and in the future, the primary focus must be on attaining ***a high level of competency (ability and quality)*** within the organization. Organizational excellence can only be attained when each and every employee is able to achieve excellence. The National Park Service's key to success is no different from that of any other organization. We must focus our efforts on developing an organization that expects and allows each employee to excel.

HISTORICAL PERSPECTIVE

Since the inception of the National Park Service, park rangers were the keepers of the peace and the protectors of national park resources. A few park biologists came to the larger parks starting in the late 1920s. Park archeologists and historians first appeared about then. Uniformed park naturalists, known for their knowledge of the fauna, flora, history and prehistory, conducted campfire programs and guided walks. From the 1920s to the mid-1960s, this organization served the parks fairly well. Since the late 1960s, however, escalating visitation has brought increased crime, impact to resources, and expansion of facilities. A critical need developed for professional emergency services such as criminal investigation, emergency medical services, firefighting, search and rescue, and even more specialized skills like hostage negotiation, crisis intervention, and drug interdiction.

The ranger operation in the parks grew and evolved to meet these challenges. Rangers became progressively more specialized in protection and emergency services operations. During the same period, needs for environmental education and interpretation intensified. The new park interpreter position was redefined from the ranger naturalist position description, which had an emphasis on natural or cultural history knowledge, to a position focused more on communication and education skills. During this period of rapid growth, the national park system focused most of its human resources on meeting the rapidly expanding need to serve the public.

During the 1970s, the struggling profession of park biologist nearly vanished. Responsibilities

of the few existing biologists focused on research. Rangers were recruited for their knowledge and skills in law enforcement and emergency services, and interpreters were hired for their communication skills. Required law enforcement, medical, and numerous other courses were offered to rangers to enhance their emergency operations skills, while natural resources management training remained virtually nonexistent. To a large extent, the National Park Service failed to recruit additional staff educated in natural or cultural resources. Eventually the National Park Service was left with very little comprehensive resources management capability. (See Appendix B for terminology.)

In response to the *State of the Parks Report* of 1980, the Natural Resources Management Trainee Program was inaugurated in 1982 as an initial effort to remedy the problem. Between 1982 and 1993, 130 professional level resources specialists were added and participated in an intensive 18-month training and development program. However, the program did not keep up with the increasing demand for NPS resources management training. Because of limited courses and class size, many new natural resources employees were unable to receive the training. Today less than 30 percent of the professional level natural resources managers in the National Park Service have received entry level basic training.

From a cultural resources perspective, a similar history is illustrated by the park archeologists. There have been archeologists in the parks since the first half of the twentieth century. Until the mid-to-late 1970s, however, they tended to be located at parks established primarily for their archeological resources and were concentrated in parks in the southeastern, midwestern, and southwestern portions of the country. Starting in the mid-1950s, archeological centers were established in those areas, and in the late 1960s and early 1970s the centers became affiliated with universities. In the late 1970s, in response to increased demands brought about by environmental and historic preservation legislation, NPS started to assign archeologists to large parks that had been established primarily for resources other than archeological. The changes that brought about the 1970s staffing response also changed the focus of the park archeologists' duties from strictly archeology to historic preservation and all aspects of cultural resources management. Today, it is clear the full range of cultural resources expertise needs to be an integral part of research and resources management in the parks.

The National Park Service's Natural Resources Strategic Plan was initiated in 1992 in an effort to address the widespread and growing concern about the inability of the National Park Service to meet the increasingly complex stewardship demands of the agency. Specific objectives of this plan were formed to meet the recommendations of the National Research Council's *Science in the National Parks* 1992 report. Initiated well before the Vail Agenda, the Natural Resources Strategic Plan addressed all the critical natural resources stewardship issues identified in the Vail Report. Its implementation included the efforts of eight action teams involving 63 resources professionals and park managers. The Natural and Cultural Resources Professional Development Program incorporates the work of the three Natural Resources Strategic Plan teams charged with improving the professional capabilities of the natural resources management staff of the National Park Service.

The National Park Service Strategic Plan Vision, completed in July 1994, described the seven most important things that we can do. They are listed below with the Natural and Cultural Resources Professional Development Program recommendations to achieve the goals.

- **Establish a scientific, scholarly basis for resources management decisions.** The program increases the level of academic education of new employees, provides a comprehensive intake training program, ensures continuing education and employee development, and provides mechanisms for existing employees to obtain advanced degrees, all of which contribute to better scientific decision making.
- **Strengthen park protection.** Effective resources protection depends on an in-depth knowledge of the status and trends of park resources. Improving the capabilities and scientific credibility of resources managers is directly linked to the effectiveness of protection programs.
- **Achieve sustainability in all park operations and development.** A key element of achieving sustainability is understanding the natural dynamics of the environment and cultural context containing the development or park operation. This program will lead to the enhanced knowledge of baseline environmental conditions in the parks and on nearby lands.
- **Help people forge emotional, intellectual, and recreational ties with their natural and cultural heritage.** Forging these ties is dependent on improving public knowledge and understanding of park resources and the human activities that promote or threaten park integrity. Fulfilling this program will greatly improve the quality of information available to staff engaged in public education.
- **Lead in a national initiative to strengthen the recognition and perpetuation of heritage resources and their public benefits.** Working with newly expanded partnerships among parks and neighbors, highly educated and knowledgeable resources staff will play a key role in improving public enthusiasm for maintaining a healthy environment and cultural heritage both inside and outside of national park units.
- **Become a more responsive, efficient, and accountable organization.** The position management strategy in this program will greatly improve the efficiency of existing and future natural and cultural resources staff. Employees will be more capable and confident in their ability to achieve the difficult tasks that lie ahead.
- **Pursue maximum public benefit through contracts, cooperative agreements, contributions, and other alternative approaches to support park operations.** More competent, confident, and energetic employees will be more effective in reaching out to the National Park Service's friends, associates, and sister agencies in a cooperative effort to improve the management and protection of park resources.

The NPS director's 1994 initiative, Stewardship Today for Parks Tomorrow, recognized the serious problem of staff shortages in natural resources stewardship professions as documented by the Natural Resources Management Assessment Program (NR-MAP, 1992). The goal of that initiative is to double the number of staff involved in natural resources management by the year 2000.

The Cultural Resources Management Assessment Program (CR-MAP) was field tested, then completed by more than 200 parks by June 1996. CR-MAP documents a similar level of serious staff shortages in cultural resources professions as NR-MAP did for natural resources. There have been professionalization budget initiatives for cultural resources already, and they can be expected to continue with CR-MAP documentation of the extent of the need.

This Natural and Cultural Resources Professional Development Program builds on previous actions. Unlike previous efforts, however, this program will substantially improve through systematic changes, how the National Park Service will recruit, train, organize, and manage its work force.

ACHIEVING THE VISION

To facilitate fundamental improvements in the National Park Service development and management of human resources, the Professional Development Program identified and addressed eight program objectives to achieve the resources stewardship vision.

Objective 1. Identify and describe the roles and functions of key positions and organizational entities that contribute to the accomplishment of the resources stewardship mission.

Objective 2. Recommend key organizational elements that will most likely contribute to excellence in resources stewardship.

Objective 3. Recommend critical elements of sound position management and identify how they bear on the achievement of excellence in resources stewardship.

Objective 4. Identify and describe the level of professional competency required to meet the challenges of resources stewardship now and in the near future.

Objective 5. Establish a new employee career entry strategy that will improve the agency's ability to bring the most qualified candidates to resources positions.

Objective 6. Establish the full-performance level for professional and technical resources positions, career ladders, and career upward mobility.

Objective 7. Define a professional development strategy that will provide the needed training, continuing education, and developmental experiences to maximize staff capabilities.

Objective 8. Evaluate servicewide staffing needs and develop a long-term strategy to increase staffing levels.

SUMMARY OF CRITICAL ACTIONS

The following actions make up the most urgent elements of a strategy to improve the resources management program of the National Park Service. Together these steps will significantly improve efficiency and achieve excellence in the National Park Service's stewardship of its natural and cultural resources. The recommended actions and programs presented in this plan address these elements.

- Define the ***role and function*** of resources managers.
- Define and recommend key elements of a field ***organizational structure*** that best serves the stewardship of park resources, ensures program accountability, enhances communications and partnerships, and provides for long-term continuity of natural and cultural resources programs.
- Advance an initiative that provides the ***base funding and staffing*** necessary to carry out natural and cultural resources programs with the degree of professionalism necessary for effective stewardship of park resources.
- Conduct a resources management ***position management review***. Determine the full performance grade level for professional and technical positions, and prepare benchmark position descriptions for key natural and cultural resources positions.
- Implement throughout the service a well-defined ***employee recruitment program*** for professional and technical natural and cultural resources positions.
- Implement a servicewide program of ***training and professional development*** focused on enhancing and maintaining the professional qualifications necessary for all resources management staff.

SPECIFIC ACTION TIMETABLE

Action	Responsibility	D
Define role and function	Natural Resources Strategic Planning Team	7/
Organizational changes	Restructuring Working Group and Directorate	11
Evaluate staffing levels	NR-MAP Process CR-MAP Process	12 10
Develop guidance for natural resources course curriculum	Natural Resources Strategic Planning Team	7/
Implement intake and fundamentals training for natural resources course	Employee Development Division, Washington Office Associate Director for Natural Resources	5/
Increase staffing levels with continuation professionalization initiative based on R-MAP	Washington Office Associate Directors for Natural and Cultural Resources	FY FY
Conduct position management review to define full-performance level and prepare benchmark position descriptions	Resources Careers Committee, NPS Classifiers	FY
Begin implementation of Resources Careers	National Leadership Council, Washington Office Associate Directors for Natural and Cultural Resources	3/
Finish implementation of Resources Careers	National Leadership Council, Washington Office Associate Directors for Natural and Cultural Resources	3/
Resources Careers Committee duties complete	Resources Careers Committee	12

Dates indicate the desired time for program action or implementation.

OTHER ACTIONS

To develop a comprehensive professional development program, there are more actions to be taken in addition to those mentioned in the table above. They are identified in this document and general guidance is given in subsequent sections. Specific details must be developed for these actions.

- Develop strategy for recruitment
- Implement recruitment strategy
- Develop cultural resources fundamentals course curriculum

- Implement cultural resources fundamentals course
- Develop strategy for advanced degree program
- Implement advanced degree program
- Develop strategy for education grant program
- Implement education grant program
- Develop strategy for continuing education program
- Implement continuing education program

ROLES AND FUNCTIONS

All functional disciplines within various levels of the National Park Service organization contribute to achieving the resources stewardship and partnership mission. This document offers guidance for the role and function of resources managers and specialists in parks. Professionals in the Washington, field area, and system support offices offer policy, guidance, and support.

Natural resources managers include a wide variety of disciplines in the natural and physical sciences, including, but not limited to, general biologists, ecologists, entomologists, botanists, wildlife biologists, fishery biologists, geologists, hydrologists, and soil scientists. Cultural resources managers include a wide variety of disciplines, including, but not limited to, archeology, cultural anthropology, curation, history, historic architecture, and historic landscape architecture. Resources managers work at all levels of the National Park Service, from entry-level developmental positions through supervisory and management positions.

Resources Managers__Park
Natural and cultural resources managers in parks are responsible for managing resources programs and supporting the superintendent in meeting park goals relating to the National Park Service resources stewardship mission. In some park units, natural and cultural resources programs may be integrated under the supervision of a single program manager or division chief.

Chief of Resources Management (Natural, cultural or integrated natural and cultural)

Leadership
Establishes and effectively leads a credible natural and/or cultural resources management program at the park level. Initiates policies and programs that will enhance resources stewardship and partnership. Sets a tone of teamwork among park divisions, as well as with other agencies and the public, to enhance the effectiveness of the park's resources management program. The lead resources manager serves as a principal resources management advisor to the park superintendent.

Program Management
Assists the superintendent in defining goals and setting park priorities. Defines needs and seeks staff and funding to carry out the programs and projects detailed in the resources

management plan. Prepares cooperative agreements, requests for proposals, and other documents necessary to carry out an effective resources management program. Prepares and submits annual reports on resources management and research activities. Tracks budgets. Supervises resources management staff, including organization of workload and position management.

Resources Management Planning
Prepares and updates a comprehensive resources management plan for the park as well as action plans to address particularly complex resources issues. In doing so, synthesizes research carried out in the park. The resources management plan defines detailed objectives for the park's resources, delineates long-term strategies for accomplishing those objectives, and presents a plan of action to implement them. Develops specific action plans to address particularly complex resources issues. Synthesizes results of relevant scientific studies, including those carried out elsewhere, for developing possible options and formulating management programs to address specific resources issues. Uses an interdisciplinary and interdivisional approach in developing resources management and action plans, and defining needs for monitoring, research, mitigation, interpretation, and enforcement to achieve the park's resources stewardship and partnership objectives.

Mitigation
Develops and implements action plans to mitigate threats to or negative effects on resources and to restore damaged resources. Works with others in developing and implementing programs to prevent negative resources impacts. Applies current scientific concepts and state-of-the-art techniques, as well as knowledge of laws, policies, guidelines, National Park Service programs, and other considerations, in formulating effective mitigation strategies.

Monitoring
Analyzes existing inventory and monitoring data, determines the state of knowledge of various resources, and identifies significant gaps in information. Using scientifically valid protocols, designs and implements inventory and monitoring programs needed to document status and trends in the condition of park resources. Analyzes monitoring results, provides for effective data management, and otherwise carries out all of the park inventory and monitoring program management responsibilities. Consults with research scientists as necessary.

Research Oversight and Management
Identifies deficiencies in information about park resources and develops strategies to obtain that information. Defines information and research needs; develops requests for proposals; works with area scientists and other professionals to evaluate research proposals, including coordination of peer review as appropriate; and works with area scientists and other professionals to coordinate peer review of interim and final reports. Works closely with the area scientists and other professionals to ensure that research projects are carried out in response to identified needs and are effective in meeting those needs. Facilitates the USGS Biological Resources Division and National Park Service research programs and provides on-site liaison with USGS Biological Resource Division scientists who are stationed in parks,

cooperative research units, and research centers. Critically evaluates research implications for management, evaluating the validity of the results, recognizing the extent to which they can be generalized, and distinguishing fact from opinion or value-based judgment. Responsible for ensuring that all research conducted within the park adheres to high standards. Provides an effective interface between research staff and park managers and ensures that research results are readily available for management decision making, planning, and incorporation into interpretation programs.

At larger or more complex parks, this research program management function will be assigned to a specific position and could be either a natural or cultural professional. This position requires a strong academic background, an established reputation, professional credibility, and an interest in the application of resources principles in park management. The manager in this position maintains a network with professionals from universities, other agencies, and professional societies. To maintain expertise requires involvement in actually carrying out some level of research activity and publication of results.

Resources Assessment
Actively participates in park planning and facility design, evaluates the potential effects of proposed projects on resources, and works with design/planning team to develop approaches that minimize impacts. Ensures that compliance is carried out, and oversees the quality of compliance. Serves on interdisciplinary planning teams at various organizational levels, writing general management plans, development concept plans, environmental impact statements, and other planning documents. Reviews the plans and compliance documents of other agencies in terms of the proposals' effects on park resources and ecosystem processes.

Interaction with Others
Represents the superintendent in matters pertaining to resources stewardship and partnership. Under direction of the superintendent, works with adjacent land management agencies and others in defining shared objectives and developing strategies to achieve those objectives. Maintains contact with professionals at universities and with research and resources management personnel of other agencies involved in activities relevant to park resources issues. Serves on interagency resources management planning teams addressing issues relevant to a park. Also works with other park teams (interpretation, visitor protection, maintenance, concessions, and administration) in matters pertaining to resources stewardship, issues, and projects.

Source of Expertise
Provides professional resources expertise for input into park management, synthesizes the results of various research studies, and incorporates state-of-the-art concepts into resources management programs. Identifies threats to park resources based on knowledge of cultural resources and processes and ecological principles, as well as results of monitoring. This manager is a key source of resources information and facilitates dissemination and information exchange.

Data Management
Maintains database/s on results of research, natural and cultural resources inventories, baseline studies, and monitoring in accordance with National Park Service standards. Oversees natural and cultural resources themes and applications of the park's Geographic Information System (GIS). Maintains cultural and natural history collections in accordance with National Park Service collections management standards. Maintains the resources library, including reports and publications, resulting from research carried out in the park.

Other Divisions/Teams
Effective stewardship of park resources requires the involvement of all divisions/teams, bringing their diverse talents and expertise to bear in working toward shared objectives. There are many opportunities for personnel in all teams to participate. Working in concert with the park's resources management staff, their efforts can result in a highly effective program.

It is important that all field employees develop a "qualitative" sense of natural and cultural resources. Sensitivity to the resources and to perceived threats and prompt reporting to the resources management staff are essential tools in the parkwide stewardship program. Often the field ranger, interpreter or maintenance worker will notice a change, such as lower stream water flow, presence of sick animals or vandalism to a historic structure or archeological site, that might otherwise go unnoticed. These observations become the early warning system, triggering further investigation.

ORGANIZATION

National Park Service natural and cultural resources organization at the Washington Office, National Center, field areas, and system support offices were directly affected by NPS organizational and staffing changes as identified in the 1994 agency restructuring plan and associated cluster organizational plans. The organization of functions in parks remained largely a local management decision. Since the NPS is currently engaged in a rapidly changing period of agency evolution, it will be necessary to allow and encourage some experimentation in organization to find the best type of new organization at various levels. There are, however, some basic principles that will enhance the professional capability and effectiveness of resources professionals.

It is recognized that there is a wide diversity of units within the national park system, so some degree of organizational flexibility is necessary. However, the same organizational principles discussed in this section apply to all national park system units. Similar units can have comparable organizational structures, and there are very good reasons for natural and cultural resources functions to have continuity and stability. Many natural and cultural resources programs, such as ecological monitoring, habitat restoration, archeological site monitoring, and collections storage, are long-term programs. The National Park Service must learn how to protect the integrity of these programs from the disruption that frequently occurs as a result of unnecessary organizational changes.

The NPS should strive to incorporate the following critical principles into its new organizational model.

- Structure should group activities that require similar worker skills and knowledge. These functional units have a necessary critical mass so that individual members can interact. The synergism produced in such a work group achieves results far greater than if the individuals were working alone. The force of these groups can then be focused on achieving excellence in their given field of work.
- Structure should avoid unnecessary layers, foster good communication both between divisions/teams and up and down the structure, and be as consistent as possible among units.
- Units should be distinctive, and the roles and functions clearly defined and understood.
- Organization should be structured and function so that employees are empowered to make decisions at the lowest levels possible.
- Structure should reflect the prominence of the resources stewardship mission of the National Park Service. It should be obvious to outside viewers that the NPS is truly a resources based agency.
- Central core of the agency's resources stewardship capability includes professional resources managers and educators engaged in natural, cultural, and social sciences, historic preservation, history, archeology, architecture, and related fields. The central core needs to play active roles at all levels within the organization in order to provide effective leadership, program direction, and accountability.
- The most senior resources managers or scientists, regardless of the agency organizational level, should report directly to the park superintendent or field area manager and be an integral part of the park, system support office or field area senior management team. This assures that the highest level of resources knowledge and understanding is always at the table when management options are discussed and key decisions are made regarding park stewardship.

POSITION MANAGEMENT

At present, most National Park Service natural resources positions are classified as GS-401 General Biologists. Because this series does not require knowledge in any specific field, recruitment for positions classified in this series usually results in a register of eligibles with a wide variety of knowledge, skills, and abilities (KSAs). Although the ranking and rating process used by the selecting official should consider the applicant's response to the specific job KSAs, the register will likely include applicants with general rather than specific knowledge of key subject matter areas. This practice tends to result in a natural resources staff with a broad education and experience in a wide variety of subjects. This strategy is often driven by a management perception that this allows for more program flexibility, something that has been viewed as desirable. Whether this trend truly increases flexibility is arguable. What we have learned is that such a policy based on flexibility and general knowledge falls short of the degree of depth and excellence required of our resources management programs. As a consequence, National Park Service resources managers often find themselves at a

disadvantage when interacting with their peers in other agencies, or in defending a National Park Service position in the public arena in areas of specialty needed.

This lack of agency depth in the resources management program has often resulted in superintendents relying heavily on research staff to resolve management issues. This worked to the detriment of research, as recognized by the National Research Council. Now that the biological resources research staff of the National Park Service has been transferred to the USGS Biological
Resource Division, the need to deepen the level of expertise in the National Park Service resources management and science program is even more urgent.

This does not refute the idea that resources managers often need to work in several resources fields. What it does point out is that it will be more effective to identify the primary professional disciplines needed to address the key issues in each park, and classify and recruit for a high level of knowledge in these disciplines. College graduates with an advanced degree focusing on one discipline also have significant knowledge of other natural resources subjects that will be adequate to address a wide variety of resources issues, particularly with assistance of experts located elsewhere in NPS, other agencies, and academia.

There is no counterpart in cultural resources to the GS-401 General Biologist. Although organizationally cultural resources positions have had many titles, e.g., cultural resources specialist, cultural resources manager, park archeologist, regional historian, curator, and so on, they all have had one thing in common. They are all classified in one of the professional series, that is, GS-170 Historian, GS-190 Anthropologist, GS-193 Archeologist, GS-807 Landscape Architect, GS-808 Architect, GS-1015 Museum Curator, and so forth. Even though this practice has allowed for a relatively high level of professionalism among cultural resources personnel in the National Park Service, usually only one, or at most two, of the professions are represented in any given park area. The exception to this is at the Washington and system support office levels where five or six professions are represented. The result is good professional quality at these levels, but a lack of depth to the program at the park level.

The first step in the process of changing to a position management policy focused on achieving quality and depth through staff diversification is to evaluate the natural and cultural resources management staffing needs of the parks, system support offices, and centers. Assessment of the workload associated with key issues has been done through NR-MAP and CR-MAP, which were previously described. The elements of these programs identified in NR-MAP and CR-MAP are shown in Table 1 and Table 2, respectively. The R-MAP analyses used information on park profiles, resources, and related factors to assess the FTE workload, which could be carried out by permanent employees, seasonal employees, contract or other means.

The KSAs for staff required to successfully address these issues must next be identified. The scope and difficulty of the issues for each park will determine the level of specialization necessary to achieve a quality resources management program. The full range of Office of Personnel Management (OPM) series should be used to properly classify positions, with a

focus on the most critical KSAs of each position.

The NPS should effectively use the concept of inter-disciplinary positions. These are particularly helpful for supervisory positions responsible for programs containing multiple professions and for resources manager positions that are responsible for the entire natural and cultural program in a smaller NPS unit. Rather than classifying a position in a single general series and calling it a natural or cultural resources specialist, managers and personnelists should consider creating an interdisciplinary series position. This classification concept brings a higher level of professionalism to the position and better targets the most critical two or three sets of questions on knowledge, skills, and ability needed for the position. An example for such a position would be a historical park with a mix of resources issues, but whose most serious on-going issue is managing vegetation to maintain the historic landscape. In this case, the top-priority sets of KSAs for the position might be a GS-430 Botanist and a GS-807 Historical Landscape Architect. The position description can be classified as inter-disciplinary GS-430/GS-807 with an organizational title of an integrated park resources manager.

In the complex resources management organizations frequently needed in large parks and in central offices, this classification policy will result in a division/team made up of program area specialists classified as terrestrial and aquatic ecologists, botanists, wildlife and fishery biologists, geologists, hydrologists, paleontologists, archeologists, cultural anthropologists, historians, historical architects, curators, and other positions that function as program managers for these primary issue areas and multi-series or interdisciplinary supervisory and leadership positions. One of the benefits of this policy will be an enhanced ability to recruit and retain the brightest and best of the applicant pool by offering professional positions with competitive grades that have a well-defined career ladder. When classified properly, the primary entry-level grade for professional resources management positions should be GS-5/7/9 with a GS-11 or minimum full performance level.

TABLE 1
Major elements of park natural resources management programs, as identified in the Natural Resources Management Assessment Program (NR-MAP).

Vegetation Management	Collections and Data Management
Wildlife Management	Resources Protection
Prescribed Fire Management	Interpretation of Natural Resources Issue
Water Resources Management (Quality and Quantity)	Science Consultation and Oversight
Environmental Planning and Compliance	Research

TABLE 2
Major elements of park cultural resources management programs, as identified in the Cultural Resources Management Assessment Program (CR-MAP).

Archeological Inventory, Research, and Treatment	Cultural Resources Library Collections
Historic Structure Inventory, Research, and Treatment	Cultural Studies and Reports
Cultural Landscape Inventory, Research, and Treatment	Historic Preservation Compliance
Ethnographic Resources Inventory and Interpretation of Cultural Resources	External Technical Assistance
Museum Collection Documentation, Preservation and Use	Coordination with Natural Science
	Special Monitoring and Preservation Needs
	GIS and Data Management

Note: The organizational title "natural resources specialist" is a relic from the days when all operational field employees were rangers and some rangers specialized in law enforcement, interpretation, or resources management. What has been developing during the past decade is a new career in the National Park Service, which is not a ranger or an interpreter but a resources manager. The service must maintain and strengthen this direction of position management.

PROFESSIONALISM

The dictionary defines *professional* as one with experience and competence who engages in a pursuit, study, science or sport as a profession rather than as a pastime. It involves the possession and use of a certain level of qualifications to carry out that pursuit, and effort to maintain those qualifications.

The *minimum full performance level for resources management personnel was defined as GS-11* based on reviews of 125 positions in 13 parks and one museum center. Position reviews were done between September 1995 and August 1996 by the Resources Careers committee and NPS classifiers. They examined the type of natural and cultural resources work being done in NPS and the grade value of it.

A resources management professional functioning at the full performance level is defined as a subject matter expert who has the knowledge and expertise to operate independently without day-to-day oversight. Professional resources management positions are graded from the minimum full performance GS-11 level to GM-15. Positions below GS-11, other than technician positions, must be clearly defined as developmental. Resources management responsibilities at the GS-5 to GS-9 level also may be incorporated as part of multi-disciplinary

positions.

Management of resources management personnel should be based on the concept of *applied specialists* and *integrators*. Applied specialists include positions such as wildlife biologist, hydrologist, aquatic ecologist, botanist, archeologist, historian, curator, and historical architect. Integrators function to integrate the efforts of a number of specialists into a program based on a comprehensive approach. Integrators focus on the linkages among disciplines. It is also the function of integrators to recognize gaps, when specialists not on the park or office staff need to be consulted. With the current low staffing levels at the park level, most resources management personnel have had to serve both as specialist and integrator. With increased staffing levels in resources management, the concept of specialists and integrators should become much more of a reality.

Responsibilities of Resources Managers
The progression of responsibilities, knowledge requirements, and measures of professional performance are shown in Appendix C.

The integrator function of resources management at the minimum full performance GS-11 level requires a combination of technical knowledge and knowledge of the purposes and programs of the National Park Service. A program manager at this level applies knowledge of current professional concepts, synthesizing them into a comprehensive resources management plan and more detailed resources action plans. The GS-11 program manager designs and supervises field work, adapting appropriate methods to specific park situations. Results of research carried out at the park or reported in the professional literature are critically analyzed for their application to park issues. An M.S. or M.A. degree in a natural or cultural resource field provides the necessary theoretical foundation, problem-solving capability, and knowledge of methods, concepts, and processes. Training and on-the-job experience are necessary to provide knowledge of National Park Service purposes, policies, and programs.

Resources managers at higher grades work with issues of greater complexity, for which policy guidance or professional foundation may be lacking or unclear. The resources management division or branch chief integrates work of specialists into a cohesive program, ensuring that they maintain and apply up-to-date knowledge of current concepts and state-of-the-art techniques. Complex long-term strategic approaches are formulated and implemented, and progressively more innovation is needed with increasing grade. At higher grades, the employee's work becomes critical to the success of resources management programs throughout the service. Awareness of the philosophical basis of resources management becomes increasingly important. Management and leadership ability are critical. Employees at the highest grades are viewed by others as leaders and as sources of information, solutions to complex problems, and innovative approaches to improve programs.

In contrast to the integrator positions described above, technical expertise is of utmost importance in specialist positions. Employees in these positions serve as critical sources of expertise for natural and cultural resources programs. Specialists carry out

management-oriented studies in their areas of expertise and apply their expertise in developing action plans, recommendations for park management, and input into park plans, designs, and environmental assessments. Reports on findings are presented at professional conferences and may be published in journals. With increasing grade, specialist positions involve issues of greater complexity and scope, and work is characterized by increasing innovation. An advanced degree is imperative, with a Ph.D. or equivalent education and experience, by the GS-13 level.

CAREER ENTRY

The success of any agency or organization depends on its ability to continually improve the professional capability of its work force through the recruitment of highly knowledgeable and skilled employees. Current National Park Service recruitment practices for natural and cultural resources positions frequently result in very small lists of applicants who are poorly matched with the most critical skill needs of the position. The National Park Service must recruit people with the highest level of knowledge possible. The agency can then build on this formal education through specialized training and developmental experiences. A high degree of professional knowledge in specific subject matter areas is needed in the National Park Service today to meet the most critical natural and cultural resources demands of the parks and the service.

An adequate pool of highly qualified candidates exists who are very interested in working for the National Park Service. Throughout the service, however, there is a general lack of understanding of how to effectively use the OPM hiring authorities to recruit for vacancies. Resources management chiefs and their supervisors need recruitment and position management knowledge to select and effectively use the recruitment method that best meets their needs. Well-defined recruitment methods that include hiring authorities, advertisement, candidate targeting strategies, and vacancy announcement distribution should be developed.

Vacancies for all positions at GS-9 and below, and for some scientist positions at GS-11 and GS-12, can be announced through "all source" announcements to attract the most qualified candidates available. For vacancy announcements to reach the largest applicant pool, we must develop a method of notifying, in a timely manner, prospective candidates primarily located in other National Park Service areas, at universities, and in other agencies.

The goal of the recruitment program should be consistent recruitment of the most qualified candidates available for all vacancies. Care must be taken to consider the career opportunities of existing natural and cultural resources employees and to enhance their opportunities for professional development. All individuals, and especially those in development level resources management positions, should have employee development plans designed to prepare the employee for his or her next career step. Field areas should establish an active network concerning opportunities to advance through development levels and into full performance level positions.

Networking the automated vacancy announcement system (AVADS) with the existing Internet electronic communication system used by all universities and professional societies is critical. The interface with the Internet can be managed on a regional basis, targeting universities in the region that have strong natural and/or cultural resources programs that meet current regional recruitment needs and that have culturally diverse student populations. When a vacancy announcement for "all sources" recruitment is prepared, the system support office personnel office will be able to automatically send the announcement to all of the target universities and professional societies in their region. It is possible to use the Internet system to send vacancy announcements directly to other offices' Internet vacancy announcement system. The National Park Service should evaluate the Internet vacancy announcement system for the recruitment of rangers, interpreters, and administrative personnel. By using this automated system, the National Park Service will be much more effective in recruiting highly qualified staff for entry-level and new natural resources positions.

Special effort must be made to diversify the cultural and ethnic backgrounds of the workforce. The methods given above should be used to increase the proportion of women in the work force. However, these methods probably will not be effective in attracting qualified minority candidates, who are less aware of career opportunities in natural and cultural resources and in the National Park Service. Through affirmative action outreach programs, minority groups will be made aware of these opportunities. The NPS also should develop a presence on selected campuses that have large minority populations, as the service is doing at Haskell Indian Nations University. Outstanding students who are interested can be identified and enrolled as cooperative education students without competition. Candidates gain the academic background needed to be a professional in the service while learning about park operations through on-the-job experience. A portion of all natural and cultural resources positions should be targeted for cooperative education agreements. Clear objectives should be defined and incorporated into each field areas' recruitment plan.

While some standard practices and protocols should be adopted at the Washington Office level, the specific elements of the servicewide recruitment program would best be managed at the field area level to ensure maximum responsiveness to the parks. The development and initiation of this program, in concert with personnel and equal opportunity divisions/teams, is a key factor in the professional development strategy.

CAREER LADDERS AND PATHS

The entry level career ladder is GS-5/7/9/11. Entry may occur at any level within this ladder for which the applicant is qualified. All entry level personnel recruited into a professional level resources management position will enter this career ladder and will be eligible for non-competitive promotion to the full performance GS-11 level. If the incumbent's current position is not classified as a full performance position, i.e., a developmental position, he/she will be eligible for non-competitive promotion to another position of the same or related series that is full performance. With increasing experience and training, employees can move up in grade or can make the transition from specialist to program management positions. Natural

and cultural resources program management provides management experience and capability appropriate for a transition to park management positions.

PROFESSIONAL DEVELOPMENT

Training

Effective management of natural and cultural resources in the national park system today requires a comprehensive training program that provides critically needed training not only for new entry-level resources professionals, but for mid-level, supervisory, and upper-level resources management personnel, as well. The training portion of this professional development strategy includes the development of a basic training program for all professional natural and cultural resources positions and an advanced training program for supervisory and management positions. Although the focus of this strategy is for employees in the natural and cultural resources professional series positions, training must also be provided for park managers, park rangers, interpreters, and other employees whose primary duties are other than resources management.

Natural Resources Management Intake Training Course

An intensive six-week basic natural resources management training curriculum has been developed to replace the existing Natural Resources Management Trainee Program. The target group for this training is National Park Service scientists and other field personnel whose primary duties include professional-level natural resources management. *It is recommended that the Natural Resources Management Intake Training Course be required training for all new professional natural resources management staff, regardless of classification series.*

The goal of the Natural Resources Management Intake Training Course is to enhance the scholastic education of new employees with additional knowledge specific to the management of natural resources programs in the National Park Service. Although the curriculum will not include subject matter generally offered in university-level natural resources fields of study, the quality of training will be consistent with this level of study. Tests will be prepared and administered for all curriculum modules. A minimum passing score will be required of all course graduates.

Cultural Resources Management Intake Training Course

Either a separate intensive basic cultural resources management training curriculum needs to be developed or the existing basic natural resources management training curriculum needs to be modified and expanded to include cultural resources. In many ways, the latter would be preferable because then cultural resources professionals would be more knowledgeable about natural resources issues and concerns and vice versa. This would lead to more effective integration of natural and cultural resources management, especially at the park level. Appendix D contains a list of training topics and session objectives that could be included in such an integrated curriculum.

Advanced Natural and Cultural Resources Training Courses
Approximately fifteen to twenty 40-hour training courses could be developed (Appendix E). They would be offered according to an annual assessment of training needs identified through the employee development plan process, and will be funded by the centralized training account. *It should be agency policy that each natural and cultural resources employee be required to attend a minimum of one 40-hour advanced-level training course each year.*

The goal of these training courses is to provide specific advanced-level training in selected subject matter areas identified as needed servicewide. As employees move from one park to another, they will often need additional advanced-level training to meet the specific needs of their new position. In other cases, while in their current position, employees encounter new threats to park resources' integrity requiring the development of additional knowledge or skills in previously unfamiliar subjects. In these cases, additional formal training may be needed. These courses will also serve as refresher training, featuring the latest information and technology.

Some professional societies have professional certification programs, and the states license certain professions. *Scientists and other subject matter experts should maintain certification or license, as appropriate.*

Management and Leadership Development
Few resources managers have received training above introductory levels in management and leadership. An affirmative program is needed to develop a cadre of upper-level managers who will become leaders in National Park Service resources management. The course should parallel the two-week course in Management for Natural Resources Managers offered by Pennsylvania State University.

Associated with this, it is recommended that each system support office make an affirmative effort to place its resources management team leaders in "acting" assignments when superintendencies, assistant superintendencies, and other management positions are vacant. Resources managers interested in management development should include such "acting" assignments in their employee development plans.

Resources Stewardship and Partnership for Managers Workshop
Superintendents and other managers have ultimate responsibility for maintaining the integrity of park resources. An understanding of current concepts, approaches, and philosophy of resources management is critical. Examples of topics on which up-to-date information is needed include approaches to landscape management across jurisdictions, conservation of rare ecosystems, fundamental concepts of sustainability, preservation of historic structures, historic landscapes and archeological sites, Native American concerns and ethnographic sites, and conservation and storage of collections. *It is recommended that a 24-hour curriculum be developed each year, addressing state-of-the-art concepts in resources stewardship and partnership, and presented at a series of workshops offered to superintendents, high-level natural and cultural resources program managers, and appropriate members of the directorate*

and each field area directorate.

Continuing Education

It is generally recognized that the half-life of a college education is seven to ten years. In other words, half of what is learned in college is obsolete within that time. *It is recommended that a servicewide continuing education program be developed that includes an advanced degree program and an education and grant program.*

Advanced Degree Program

The National Park Service should develop an affirmative program to expedite the completion of advanced degree programs by employees who are in positions where a degree would contribute to professional-level performance. Such a program will help bring the professional caliber of National Park Service resources managers up to the needed level as quickly as possible. The goal is to encourage and provide mechanisms for employees to return to school to obtain advanced degrees. To be successful, such a program should use servicewide funding to minimize impact to the employee and the park. The program should have a servicewide scope since extensive coordination is essential. *A guideline for this program should be prepared and implemented as an integral part of the natural and cultural resources professional development program.*

Education Grant Program

The goal of this program is to have the most cost-effective mechanism to provide specifically targeted educational opportunities for all employees. This financial support will cover tuition, books, and transportation costs for university courses taken as advanced training. This program would also be used to pay costs of training offered by other agencies. The grant program should provide a minimum of thirty graduate-level courses per year for natural and cultural resources employees. This program can be particularly beneficial for providing training in subjects that are critical to only a limited number of employees. The program would be administered by the Washington Office, perhaps in conjunction with the Albright Fund. Prioritized grant applications would be received twice a year from the field area training coordinator. Grants will not be in cash but in the form of account expenditure authorizations. Employees will use existing procurement methods (such as purchase orders and travel authorizations) to pay for tuition, books, and travel.

Participation in Professional Societies

Active participation in professional societies by National Park Service employees, regardless of their specialty area, provides a wide variety of benefits to the service. In the past the National Park Service has had a tendency to look only inward for new ideas and solutions to resources issues and management problems. The geographic isolation of many park employees has been compounded by an inherent social isolation attributed to many employees' nearly religious dedication to the National Park Service mission. While this "green blood" mentality often resulted in a cohesive work force rich in camaraderie, it has proven to be an Achilles' heel in our ability to adapt to rapidly evolving technology, scientific information, environmental and political conditions, and management concepts. Natural and cultural resources employees, in

particular, need to mix with other professionals in their fields. Benefits of participation in professional scientific conferences and workshops include:

- Exposure to new information and ideas, which may take considerable time to be published in journals.
- Exposure of resources managers to leading professionals and resources management personnel of other agencies, universities, and organizations involved in activities relevant to park resources issues.
- Contacts with people who are actively working in the field, with many key people in one place at the same time.
- Opportunity for informal consultation and feedback concerning park issues.
- Representation of the National Park Service and building credibility in the professional community and with other agencies.
- Building others' understanding of the National Park Service, and increasing their awareness of opportunities to work in parks and contribute to stewardship of park resources.

Natural and cultural resources employees should be strongly encouraged to actively participate in professional societies, including participation at meetings, publishing in journals, and holding office. In a letter dated March 27, 1995, the Director, National Park Service, along with six other top level managers in the Departments of the Interior and Agriculture, strongly endorsed membership, involvement, and participation in professional societies. Whenever possible, attendance at meetings of professional societies should be viewed as a type of training, the costs of which should be born by the agency. This involvement in the greater professional world should include participation in international, as well as domestic, activities. The classification of professional employees in the full range of OPM series will give the agency representation in most of the applied science and cultural resources organizations, as well as land management-oriented organizations, such as the Natural Areas Society, thereby greatly enhancing the image of the National Park Service as a truly professional conservation agency. Applied science and cultural resources organizations include national, state, and local societies. Examples of national organizations include the Wildlife Society, Ecological Society of America, American Fisheries Society, Society for Conservation Biology, the Organization of American Historians, Society for American Archaeology, American Anthropological Association, and the Association for Preservation Technology International.

11/22/96

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APPENDIX A

Acknowledgments

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APPENDIX B

Terminology

What's in a word? Actually quite a bit. How we use a word is often a reflection of relevant perceptions. Terms used to define natural resources functions within National Park Service operations are included in the *Natural Resources Management Guideline, NPS-77* (1991). Terms used to define cultural resources functions within National Park Service operations are included in the *Cultural Resources Management Guideline, NPS-28* (1996). These terms are listed below verbatim or slightly paraphrased to shorten them.

Natural Resources Stewardship
The effective management of natural resources to ensure their integrity in perpetuity. This term is similar to resources management, but assumes that the management is carried out with the goal of maintaining a healthy, self-perpetuating, and ecologically complete park environment, with all of its ecosystem processes and components, for the long-term enjoyment and inspiration of the public.

Cultural Resources Stewardship
The systematic, responsible actions directly affecting cultural resources. The standards are: pending planning decisions, cultural resources are preserved and protected in their existing forms; every treatment project is supported by an approved plan or report appropriate to the proposed action; the appropriate level of Section 106 compliance is accomplished before executing a treatment project; and sufficient lands and interests in lands are acquired to ensure protection of cultural resources associated with a park's purpose.

Natural Resources Management
The function by which the National Park Service strives to understand natural processes and human-induced effects; mitigates the existing and potential effects; monitors for ongoing or future trends; protects existing natural species, populations, communities, systems, and processes; and interprets these organisms, systems, and processes to the park visitor and the nation. Resources management is the umbrella function that includes the stated sub-functions of resource protection, mitigation, monitoring, and interpretation/education, and includes management actions such as exercising legislative or legal authority to prevent a potentially harmful land use practice from occurring near the park boundary.

Cultural Resources Management
The dual nature of cultural resources, an inseparable union of social and physical qualities, leads directly to the three central issues of cultural resources management: first, to discover the significance or meaning of each resource; second, to slow the rate at which their essential material qualities are lost; and third, to support the use and enjoyment of cultural resources while minimizing negative effects on them. These imperatives are at the heart of the cultural resources program. Cultural resources management involves research, planning, and stewardship. The physical attributes of cultural resources are, with few exceptions,

nonrenewable. The primary concern of cultural resources management, therefore, is to minimize the loss or degradation of culturally significant material.

Research

Investigation aimed at the discovery and interpretation of facts, the revision of accepted theories in light of new facts, or the development of practical applications of such new theories. Research is essential to informed decision making for park planning and operations, including maintenance and visitor services. The standards for research are that it is

- mission-related and supports resources management and interpretation
- often interdisciplinary and
- adequate to support planning.

In addition, legal compliance must precede final decisions about the treatment of resources and about park development or operation activities that may affect the resources.

Resources Protection

The prevention of overuse, vandalism or destruction of natural and cultural resources by human causes, and the enforcement of laws and regulations affecting resources management. Protection includes ranger patrols required to protect park resources, special permitting, and enforcement of regulations and/or laws pertaining to archeological and historic resources, fish and wildlife species, endangered species, agriculture, grazing, mineral management, air and water quality, and so on. Resources protection actions depend on the integration of social science and human management knowledge and skills with basic resource knowledge. Parks are a part of larger cultural themes and natural systems; therefore, protection efforts often include action related to external threats to resource integrity. A basic premise states that it is better to preserve than repair, better to repair than restore, and better to restore than reconstruct.

Interpretation and Public Education

Interpretation and public education communicate to park visitors the nature and significance of park resources and processes in order to increase the visitors' enjoyment and appreciation of the park. In addition, education programs target park neighbors and others outside the park to gain support for park protection, cooperative land use, and regional cultural preservation programs.

APPENDIX C

Outline of Responsibilities

The progression of resources management responsibilities, knowledge requirements, and general measures of performance are shown below. This outline is not intended to cover all resources management positions, but rather to provide enough guidance that the location of any position within this framework will be clear. It is intended to aid supervisors in defining responsibilities appropriate to each grade level, and thereby aid in workload and position management. Clear definition of the level of responsibility is essential to ensuring that the responsible employee is provided with the professional development and support necessary to carry out a high quality program.

Management of resources management personnel should be based on the concept of *specialists* and *integrators*. *Specialists* include positions such as wildlife biologist, hydrologist, aquatic ecologist, botanist, archeologist, curator, and historical architect. *Integrators* function to integrate the efforts of a number of specialists into a program based on a comprehensive approach. Integrators focus on the linkages among disciplines. It is also the function of integrators to recognize gaps, when specialists, who are not on the park or office staff need to be consulted.

Educational and training levels given below are in addition to those required by the OPM X-118; they are desired levels that will help ensure a professional level of performance and are intended to provide guidance in developing KSAs and in recruiting and selection. It is recognized that, to some extent, experience can substitute for education; however, the foundation of knowledge and skills provided by experience is not equivalent to that provided by education.

The educational and training levels shown below also will be used in determining needs for professional development in natural and cultural resources.

Minimum full performance level for resources management is defined as GS-11. Positions below that level, other than technical positions, should be clearly defined as developmental. Discussion of responsibilities at the GS-5 to GS-9 levels is also intended to provide guidance in classifying the resources management responsibilities that may be carried out as part of a multi-disciplinary position, such as combinations of resources management with protection, and for interpretation duties.

GS-5 Resources Management (Technician or Developmental)
This may be a temporary or permanent full-time technical position or the entry level for a multi-graded developmental professional position. These resources management responsibilities also may be part of a multi-disciplinary position.

Typical work for a person in this position involves following a plan that someone else

developed. The person is responsible for learning and performing the work. Protocols do not involve decision making. If additional information is needed, the employee consults with the supervisor and other park staff. The supervisor provides close technical supervision.

Education should be at least a B.S. or B.A. degree in a natural or cultural resource field. If it is a developmental position, the employee should have the educational background needed for the target level of work. Training necessary for this work may last from less than a day to a few weeks.

Performance evaluation is based on completion of the task to specified standards, with information recorded accurately, completely, and in a usable manner.

GS-7 Resources Management
This may be a technical position or the entry level for a multi-graded developmental professional position. These resources management responsibilities also may be part of a multi-disciplinary position.

As at the GS-5 level, a person in this position follows a plan that someone else developed. However, the protocols allow some decision making and judgment. Intensive involvement in the work is necessary to develop the judgment needed. If additional information is needed, the employee consults with the supervisor and other park staff. Technical supervision is provided through regular spot-checking by the supervisor.

Education should be at least a B.S. or B.A. degree in a natural or cultural resource field. If this is a developmental position, the employee should have the educational background needed for the target level of work. Several weeks of training are also required. Knowledge of methods to ensure an acceptable level of program quality is critical.

Performance evaluation is based on completion of the task, with evidence of good judgment, consistency and precision among employees, and low error rate in measurements and record-keeping.

GS-9 Resources Management (Integrator)
This may be a developmental or "operating level" resources management position, or it may be the entry level or developmental level of a multi-graded position whose target is journeyman level or above.
A person in this position

- develops resources management plans with input from others,
- uses manuals and procedures developed elsewhere, with very limited modification,
- independently carries out natural or cultural resources field work, and
- develops databases, analyzes and interprets data, and writes reports on the results.

This person relies on expertise of professionals in the system support office and consults with higher-level National Park Service resources managers in the system support and field

director's offices or other parks and occasionally with outside experts. Technical supervision is provided through occasional spot checking by a GS-11 or higher-level resources manager.

Education should be at least a B.S. or B.A. degree in a natural or cultural resource field and an M.S. or M.A. is preferable. If this is a developmental position, the employee should have the educational background needed for the target level of work. Training should include the natural resources management intake training course (which should be expanded to become a fully integrated natural and cultural resources management course), which includes National Park Service mandates, laws and regulations, policies, and programs (See Professional Development section of text.).

Performance evaluation is based on incorporation of basic ecological, cultural and scientific principles, and consistency of plans and actions with National Park Service policies.

GS-9 Specialist
This is an entry-level specialist, such as a wildlife biologist, botanist, range specialist, cultural anthropologist or historical landscape architect who works in a small- to medium-size park.

A person in this position
- develops field action plans within a relatively narrow specialty,
- uses manuals and procedures developed elsewhere, with limited modification,
- independently carries out natural or cultural resources field work,
- develops databases with data analysis and interpretation, and
- prepares reports on the results.

This person relies on program direction and standards from the supervisor and higher-graded subject matter experts in the system support office, as well as outside the agency. Technical information is obtained from journals and other reference material.

Education should be at the M.S. or M.A. degree level in the specialty area of the position. Training should include the resources management intake training course, which includes National Park Service mandates, laws and regulations, policies, and programs.

Performance evaluation is based on incorporation of basic ecological, cultural, and scientific principles and consistency of plans and actions with National Park Service policies and guidelines.

GS-11 Division Chief (Integrator)
This is the basic, minimum, full-performance resources manager. This position may be the chief of resources management at a small park and may supervise several permanent and seasonal positions.

A person in this position
- develops and updates the park resources management plan as well as other plans, and

initiates new programs,
- synthesizes professional information from a number of sources in developing plans and programs,
- critically analyzes research results for management implications,
- adapts appropriate methods to park situations,
- designs and supervises field work, and
- represents the park in developing joint programs with other agencies.

Manuals and procedures appropriate to given situations do not always exist. If additional technical information is needed, the employee consults professional literature and professionals with expertise in relevant areas. The employee also consults with specialists and higher-level resources managers in the system support office.

Education should be an M.S. or M.A. degree in a natural or cultural resource field. In addition to the resources management intake training course required at the GS-9 level, training and on-the-job experience are needed to provide more in-depth knowledge of National Park Service procedures, programs, and policies.

Performance evaluation is based on the employee's maintaining and applying knowledge of current scientific concepts, on problem solving capability, on use of state-of-the-art techniques in resources management, and through peer review of the program by higher-level resources managers and possibly scientists.

GS-11 Specialist
This is a specialist, such as a wildlife biologist, aquatic ecologist, geologist, hydrologist, archeologist, historian or historical architect, who works for a higher-level resources management branch chief or team leader, usually at a medium-to-large park or in a system support office.

A person in this position
- prepares and implements action plans and applied management studies which draw on the employee's area of expertise,
- working with supervisor and system support office staff, defines research needs, develops and/or reviews proposals, oversees research, and critically analyzes the management implications of research results, and
- evaluates and synthesizes results from studies to developing action plans, recommendations for park management, or input into park plans, designs or environmental assessments.

If additional technical information is needed, the specialist consults professional literature and other specialists with expertise in relevant areas.

Education should be an M.S. or M.A. degree in area of expertise.

Performance evaluation is based on maintaining and applying knowledge of current scientific concepts.

GS-12 Division Chief
This position is typically a chief of resources management, supervising several permanent and seasonal employees at a park of medium complexity.

In addition to responsibilities of the GS-11 level, the employee
- integrates the work of specialists into a cohesive program,
- provides leadership to the program and its personnel,
- identifies needs for new programs and obtains staff and funding to implement them,
- works with the superintendent to establish new park policies, and
- provides input into new field area policies and programs.

If additional technical information is needed, the division chief consults subordinate specialists; scientific literature; scientists; and counterparts in other parks, system support offices, the National Center for Cultural Resources Stewardship and Partnership Programs or the Natural Resources Program Center (the national program centers).

Education should be an M.S. or M.A. degree in a natural or cultural resource field. In addition to the training and education required at the GS-11 division chief level, additional training is needed in managerial skills.

Performance evaluation is based on leadership of an effective program in which employees maintain and apply current knowledge of professional concepts and state-of-the-art techniques in resources management.

GS-12 Branch Chief/Team Leader
This position is chief of a branch/team focused on natural or cultural resources or a specialty, such as wildlife biology, minerals management, physical science, archeology, history, or curation, or a branch/team focused on a function, such as monitoring or compliance, in a division/team with a GS-13 division chief/team leader in a medium-to-large park or a system support office.

The employee is a specialist with expertise specific to the branch, as well as an integrator of the specialists' work into a cohesive effort. If additional technical information is needed, the employee consults subordinate specialists, scientific literature, scientists, and counterparts in other parks, system support offices and the national program centers.

Education should be an M.S. or M.A. degree in an area of expertise. In addition to the resources management intake training course required at the GS-9 level, training and on-the-job experience is needed to provide more in-depth knowledge of National Park Service policies, procedures, and programs. Training in managerial skills also is needed.

Performance evaluation is based on leadership of an effective program in which specialists maintain and apply current knowledge of scientific concepts and state-of-the-art techniques in natural resources management.

GS-12 Specialist
This is a specialist, such as a wildlife biologist, aquatic ecologist, geologist, hydrologist, cultural anthropologist, historical architect, or historical landscape architect, who works for a higher-level resources management team leader or division chief in a complex park, system support office, program center, or the national program centers.

A person in this position prepares and implements action plans and applied management studies which draw on the employee's area of expertise; defines research needs, develops and/or reviews proposals, oversees research, critically evaluates research results, and analyzes their implications for management; and evaluates and synthesizes results from a number of studies in developing action plans, recommendations for park management, or input into park plans, designs, or environmental assessments. Reports and briefings on resources management issues and findings are prepared for park managers, presented at professional resources management conferences, and may be published in management-oriented technical journals. If additional technical information is needed, the employee consults professional literature and other specialists with expertise in relevant areas.

Education should be at least an M.S. or M.A. degree in area of expertise.

Performance evaluation is based on maintaining and applying knowledge of current scientific concepts and state-of-the-art techniques in resources management and on quality of in-house publications.

GS/GM-13 Division Chief
This position is typically a chief of moderately complex and/or broad programs, such as the resources management division in a park of medium-to-high complexity or the natural or cultural resources management division in a small cluster.

The employee
- develops and implements strategies to address complex issues,
- establishes new park or cluster programs and direction,
- in consultation with the superintendent or field director, establishes new policies for the unit (i.e., park or region), and
- provides input into policies and programs at the next higher level.

In a cluster, serves as an advocate for the resources staff, working to secure the staff, funding, and information they need to effectively carry out their programs. In defining program direction, the employee incorporates current concepts in science, philosophy, and ethics of resources management.

Education should be at least an M.S. or M.A. degree in a natural or cultural resource field. In addition to training required at the GS-12 division chief level, greater management skill is needed. Additional training and on-the-job experience to provide in-depth knowledge of National Park Service objectives, policies, and programs are critical.

Performance evaluation is based on management ability and on leadership of an effective program in which employees maintain and apply current knowledge of professional concepts and advanced techniques in resources management. The chief is a source of information concerning new approaches or avenues to improve resources programs.

GS-13 Specialist

This position is similar to the GS-12 specialist, but provides technical and resources management expertise in a complex park or park program, or provides support to several complex parks, usually at the system support office or national program center level. Even higher levels of needed expertise can warrant higher grades. The position may involve program management responsibilities for a specific subject area or discipline.

A person in this position

- prepares and implements action plans and applied management studies that draw on the employee's area of expertise,
- works with complex problems, for which there may be little or no precedent;,
- defines research needs, develops and/or reviews proposals, oversees research, critically evaluates research results, and analyzes their implications for management, and
- evaluates and synthesizes results from a number of studies, which may often be contradictory, in developing action plans, recommendations for park management, or input into park plans, designs or environmental assessments.

The specialist's work is characterized by innovation. Reports and briefings on resources management issues and findings are prepared for park managers, presented at professional management conferences, and may be published in management-oriented technical journals. If additional technical information is needed, the employee consults professional literature and professionals with expertise in relevant areas.

Education should be an M.S. or M.A. at minimum or Ph.D. in area of expertise.

Performance evaluation is based on well-founded and effective innovation, including the innovative application of state-of-the-art scientific concepts or the effective resolution of conflicting data in complex resources management issues, and on quality of presentations at professional conferences and in-house or journal publications.

GM-14/15 Division Chief/Team Leader

This position is typically the chief/leader of a highly complex and/or broad program, such as the resources management division in a large or complex park, or a natural or cultural

resources team in a medium-to-large system support office, or in the national program centers.

The employee

- develops and implements strategies to address complex issues, involving a variety of interests and often conflicting factors,
- establishes new park, cluster, and servicewide programs and direction, which are applied or used as models by others,
- establishes new policies and programs with broad scope and complexity,
- takes the lead in developing standards and in obtaining funding or taking other steps to facilitate their implementation, and
- serves as an advocate for parks, working to secure the staff, funding, and information they need to effectively carry out their programs.

In defining program direction, the chief/leader incorporates current and innovative concepts in science and explores issues in the philosophy and ethics of resources management.

Education should be at least an M.S. or M.A. degree in a natural or cultural resource field. In addition to training required at the GS-13 program chief level, greater management skill is needed, as well as more in-depth knowledge of National Park Service and other agencies' objectives, policies, and programs.

Performance evaluation is based on management ability and on leadership, vision, and effectiveness in overseeing a program in which employees are leaders in innovation and application of complex scientific concepts and innovative techniques in resources management. The chief/leader leads and is a source of information concerning solutions to complex problems, as well as new approaches to improve resources programs.

APPENDIX D

Natural and Cultural Resources Management Intake Training Courses Topics and Session Objectives

Natural and Cultural Resources Policies and Guidelines

- Introduce participants to National Park Service policies relative to natural and cultural resources management, including the history of policy formation and the relationship of policy to statutes, laws, and regulations.
- Discuss the development and use of the National Park Service guidelines.
- Illustrate how policy supports and is incorporated into the guiding principles and management philosophies of the National Park Service.
- Illustrate various aspects of policy implementation in real life park situations with examples of controversial policy issues.

Role and Function of the National Park Service Organization

- Introduce the organizational structure of the Department of the Interior and the National Park Service directorate and the role and function of the Washington, D.C., national program centers, field area and system support offices, Denver Service Center, Harpers Ferry Center, both employee development centers, and the USGS Biological Resources Division.
- Illustrate where various program areas are located in the hierarchy and emphasize the communication that must take place across program lines at all levels of the service.
- Discuss the process used to obtain services or information from the various centers and offices.
- Discuss the evolving relationship of the resources management division's role and function to other park operations and the need for good communications and cooperation.

Introduction to Natural and Cultural Resources Laws and Regulations

- Provide participants with a background of resources laws.
- Explain the relationship of federal laws to regulations used to enforce laws and various agencies responsibilities.
- Explain or indicate responsible steps for applying laws when resources are damaged or threatened.
- Explain how laws were used to formulate NPS Management Policies, Natural Resources Management Guideline, and the Cultural Resources Management Guideline.

The Management and Supervision of Field Operations

- Provide a thorough review of the information contained in the Natural Resources Management guideline and the Cultural Resources Management Guideline as it relates to protection and management of resources.
- Provide examples of the "tools" at the disposal of resources managers to monitor and manage natural and cultural resources.

- Discuss the process of evaluating the condition of park resources, how to set operational priorities, and how to carry out basic field operations.

Resources Management Planning

- Explain the levels and respective roles of planning in management of park resources.
- Emphasize the importance of resources management plans in the management of natural and cultural resources.
- Illustrate how ecological principles of conservation biology and the principles of historic preservation are included in resources management plans and specific resource action plans.
- Explain the importance of resources management program planning versus project planning.

Interagency Coordination and Public Relations

- Study the mission and policies of the other land managing agencies of the Departments of the Interior and Agriculture and the federal and state regulatory agencies.
- Discuss the need for interagency and private sector involvement in National Park Service land management planning and decision making processes.
- Discuss the relationship of the park's geographic location to the concept of ecosystem management.
- Indicate the threats to park resources, based on authorized activities occurring outside park boundaries, and impacts of park management activities on adjoining landowners.
- Demonstrate the importance of maintaining good public relations and effective communications with adjoining landowners despite the park's management objectives.

Environmental Law and Compliance

- Explain the keystone laws as they relate to protection of natural and cultural resources, including National Environmental Policy Act (NEPA), National Historic Preservation Act (NHPA), Federal Water Pollution Control Act, Clean Air Act, E.O. 11990 Protection of Wetlands, Floodplain Management, Endangered Species Act, Federal Insecticide, Fungicide, and Rodenticide Act, Archeological Resources Protection Act (ARPA), Native American Graves Protection and Repatriation Act (NAGPRA), and so forth.
- Explain the relationship of NEPA, NHPA, and NAGPRA as they relate to the park planning process and the management of natural and cultural resources.
- Explain the process involved in applying NEPA and NHPA steps in protecting resources outside park boundaries.
- Provide examples of environmental and cultural compliance for day-to-day park operations as well as large development.
- Indicate where compliance is necessary in addition to NEPA and NHPA.

Natural and Cultural Resources Program Administration

- Demonstrate the importance of effective program development skills and the long-term benefits to the wise stewardship and partnership of natural and cultural resources.

- Explain the steps involved with developing and managing a program budget and the budget cycle and process, and where resources management plans are involved in the budget process.
- Explain the various fiscal management tools available to accomplish work such as cooperative agreements, purchase orders, contracts, interagency agreements, and the people to contact for help on the selection process. Also, indicate where these tools are appropriate or inappropriate.

Forming an Integrated Resources Management Program

- Illustrate the range of cultural and natural resources within parks.
- Explain or illustrate the interrelationship between cultural and natural resources preservation and management.
- Review the relationship between NEPA and NHPA, particularly the requirements of Sections 106 and 110. Discuss the need and requirements of protecting cultural resources when engaged in natural resources management programs, the need and requirements of protecting natural resources when engaged in cultural resources management programs, and how the planning and compliance process can be integrated.
- Discuss the organizational structure of National Park Service cultural and natural resources management functions and the National Park Service relationship to the State Historic Preservation Officers.

Human Use: Impact Assessment and Limits of Acceptable Change

- Define the role of social science in resources management.
- Relate the effects on park management from visitor expectations and an increase in special use demands.
- Describe how principles of social science are an integral function of planning documents for the proper stewardship of park resources.
- Explain the relationship of social science to other divisions or programs at the park.
- Illustrate the importance of monitoring visitor activities and their impact on resources. Demonstrate how to use monitoring results to formulate management and mitigation activities.

APPENDIX E

Advanced Training Courses in Natural and Cultural Resources Management for the National Park Service Professional Development Program

The following courses are recommended for inclusion in the natural and cultural resources management training component of the professional development strategy.

- Air Quality Management
- Managing Water Resources
- Applications of GIS in Natural and Cultural Resources Programs
- Managing Mining and Mineral Resources
- Cave Management
- Integrated (Natural and Cultural) Resources Management
- Restoration Ecology Seminar
- Managing for Natural Processes; Policy Analysis
- Monitoring Natural and Cultural Resources
- Developing and Maintaining Natural and Cultural Resources Inventories
- Advanced NEPA Compliance; The EIS Process
- Advanced NHPA Compliance; Sections 106 and 110
- Understanding and Complying with NAGPRA
- Arid Lands Management Seminar
- Marine and Coastal Resources Management
- Anthropological and Archeological Considerations in Natural Resources Planning and Management
- Biological and Physical Science Considerations in Cultural Resources Planning and Management
- Managing Wilderness Resources
- Managing Natural and Cultural Resources in a Regional Context (Ecosystem Management)
- Managing Complex Databases in the National Park Service
- Managing and Protecting Paleontological Resources
- Managing and Protecting Archeological Resources
- Managing and Protecting Ethnographic Resources
- Managing and Protecting Historic and Prehistoric Structures
- Managing and Protecting Cultural Landscapes
- Managing and Protecting Collections