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**NATIONAL PARK SERVICE
BENCHMARK POSITION DESCRIPTION**

**Physical Scientist
GS-1301-12**

Introduction

The incumbent serves as a senior principal advisor in the physical sciences for one or more parks. The physical scientist is responsible for program development and implementation related to geology, soils, hydrology, hydrogeology, air quality, acoustics, paleontology, caves and karst formations, and related fields and activities.

Major Duties (80-100%)

Directs an intricate program of physical sciences and other natural resource activities that involve sensitive and complex issues that may impact a wide variety of park issues.

Represents the superintendent when working with others on physical science matters.

Develops and maintains liaisons and effective working relations with related groups and individuals, agencies, and the public in order to encourage and facilitate cooperative regional management strategies. Attends management and professional conferences and other events for the purpose of exchanging information, presenting technical and policy information, and advancing advocacy for park stewardship.

Develops and prepares major portions of the resources management plan and specific action plans pertaining to the management and protection of the physical portion of natural resources.

Represents park on NPS regional task groups or similar organizations. Makes presentations at parks, public gatherings, and professional meetings.

Assists natural resources management staff in parks, centers and support offices by providing direct professional and programmatic advice and support.

Carries out program management duties by developing work plans and schedules, scopes of work, cost estimates, and proposals and/or grants to justify funding requests and accomplish goals. May administer and track project funds and prepare accomplishment reports, as needed. Maintains awareness of applicable funding sources within NPS and outside.

Develops and implements long range plans for the inventory, evaluation, documentation, preservation, research, and interpretation of physical sciences and

other natural resources within the appropriate mission, objectives, and resources contexts.

Develops guidelines to deal with the more complex or unusual problems, or with novel, undeveloped or controversial aspects of physical sciences and other natural resources and their management.

Coordinates physical science strategies and programs with those on adjacent lands for the purposes of achieving broad ecosystem protection strategies and preventing human impacts.

Negotiates cooperative and interagency agreements and other cooperative instruments needed to effectively carry out resource stewardship goals.

Identifies research needs, prepares research proposals, and provides oversight for research projects. Serves as a Contracting Officer's Technical Representative for projects conducted through contracts, interagency agreements, and cooperative agreements.

In cooperation with researchers, designs, develops, tests and implements scientific programs and monitoring protocols for the long-term monitoring of physical resources. This includes conducting inventories to determine statistically valid plot distributions and design. Writes new monitoring documents that define monitoring techniques and develops methods for future refinements of protocols. Based on results of inventories, in-depth studies, and monitoring, the incumbent develops and conducts scientifically credible protection, mitigation, and restoration projects needed to prevent resource damage, to restore and/or maintain features, and to minimize human impacts.

Develops and carries out statistically valid data collection protocols for the monitoring of physical resources and the results of protection, mitigation, and restoration projects. Performs data collection using the latest technology. Performs data entry and carries out quality control checks on data collection and entry performed by others. Conducts analysis of complex data, determining and documenting the significance of findings.

Prepares management and scientific reports regarding the results of protection, mitigation, restoration, inventory, monitoring, and research activities. Summarizes new and conventional information for use by scientists, managers, park staff, cooperators, and partners.

Incorporates appropriate Geographic Information System (GIS) technology into job to provide comprehensive and scientifically sound answers to inquiries from managers and others. Utilizes automatic methods of data collection, analysis or illustration. Inputs data into digital form and uses computer applications for data analysis, manipulation, and presentation.

Prepares environmental assessments (EAs) related to park projects in compliance with the National Environmental Policy Act. Evaluates EAs and environmental impact statements prepared by other federal agencies for projects that may effect park resources.

Works closely with park education staff to incorporate new information into park and partner education programs.

Prepares and maintains geologic specimens in park collection, especially for specimens relating to paleontology, cave and karst formations, and geology. Maintains records on the collection.

Acquires and maintains equipment and supplies necessary to conduct field activities.

May supervise seasonal, temporary, permanent, VIP, and other personnel, but less than 25% of the time.

Factor 1. Knowledge Required by the Position Level 1-7; 1250 points

Knowledge of NPS planning and management requirements and guidelines so that plans result in programs that provide adequate long-term protection for resources.

Professional knowledge of the physical aspects of park ecosystems which include geologic resources, soils, air and water resources, paleontology, hydrology, acoustics, weather, caves and karst formations, and related resources. This knowledge is necessary in order to interpret findings from the analysis of long-term datasets and define the significance of changes that are occurring.

Knowledge of laws and regulations, such as those pertaining to mining, oil and gas development, and site restoration, and NPS regulations, policies, and guidelines regarding the management and monitoring of natural resources, in order to assure that program goals and objectives meet legal requirements and reflect national priorities and policies.

Knowledge of scientific data acquisition and analysis standards, methods, and recording techniques so that the incumbent can efficiently manage the collection and summation of data, and accomplish data analysis in a way that is highly credible and meets scientifically acceptable standards.

Skill to plan and carry out complex management and scientific programs so that the resource stewardship needs of the park are met in a cost effective, efficient, timely, and professional manner.

In-depth knowledge of program management and administration of budget, contracts, and personnel.

Knowledge of principles and techniques associated with measuring physical resources in order to determine which techniques should be used to acquire the desired information and achieve needed accuracy; and to develop new techniques and methods when careful analysis indicates that existing techniques are not satisfactory.

Skill to modify or adapt standard techniques, processes, and procedures and to access, select, and apply precedents and devise strategies to achieve program goals.

Knowledge of NPS guidelines, procedures, and techniques required for the preservation, mounting, labeling, storage, and cataloguing of specimens in order to insure that specimens are adequately preserved and properly accessioned into the park's museum.

Knowledge of computer hardware, software, and application so that information, primarily field data, can be processed, summarized, and reports generated.

Skill in oral and written communication in order to insure that plans are well written and easily understood; scientific reports and journal articles are of high scientific credibility; pertinent information is shared effectively with others; and oral presentations are well designed, informative, and clearly convey the intended message.

Factor 2. Supervisory Controls Level 2-4; 450 points

The supervisor sets the overall goals and resources available. Guidance is provided only to determine priorities, approve work plans, and assist in working through unprecedented situations that have a bearing on the overall program.

The incumbent independently plans, designs, implements, and manages the program with a minimum of direct supervision. Independent judgement is required on a regular basis in developing, testing, and refining procedures and methods, and in the application of these methods in the field. The incumbent resolves most problems that arise and coordinates the work both within the work unit and with other park divisions. The incumbent keeps the supervisor informed of progress, potentially controversial problems, and concerns, issues or other matters having far-reaching implications.

The supervisor evaluates the completed work based on general adequacy in meeting program or project objectives, expected results, and compatibility with other work. Work produced is considered technically correct and is normally accepted without significant change.

Factor 3. Guidelines Level 3-4; 450 points

Guidelines include laws, regulations, policies, practices, scientific protocols, plans, procedures, and any additional directions given and defined by the supervisor. Policy and precedents are applicable but are stated in general terms; guidelines are scarce or of limited use. Guidelines are often inadequate to deal with the more complex or unusual problems, or with novel, undeveloped, or controversial aspects of physical

sciences resources management encountered at the field level. These kinds of situations occur when precedents or guides point toward conflicting decisions; recent court decisions or legislation may appear to require a technical decision at variance with existing guides; or there may be relatively few precedents or guides which are pertinent to specific methods; or proven methods are incomplete. The employee uses judgement in interpreting and adapting guidelines for specific cases or problems, then analyzes results to recommend changes.

Factor 4. Complexity Level 4-5; 325 points

The work includes varied duties requiring many different and unrelated processes and methods that are applied to a broad range of activities or substantial depth of analysis. Decisions regarding what needs to be done include major areas of uncertainty in approach, methodology, or interpretation and evaluation processes that result from such elements as continuing changes in program, technological developments or conflicting requirements. The work requires originating new techniques, establishing criteria or developing new information.

Physical resources issues are often publicly controversial and require substantial initiative and skill in building consensus and obtaining public and cooperating agency support. The incumbent must be able to exercise professional skills in physical sciences research, evaluation, and writing applied to (1) a broad range of physical sciences subjects or (2) substantial depth of analysis.

Assignments involve sensitive and complex issues that require solving problems concerned with novel, undeveloped or controversial aspects. The problems are difficult due to the abstract nature of the concepts, or the existence of serious conflicts among scientific requirements, program direction, and administrative requirements. These conditions create major areas of uncertainty in the decision-making process. Information collected must be reorganized, interpreted, and presented to reflect supportable hypotheses and themes. The incumbent must be able to examine separate subject areas to draw upon research and sources of several fields of the physical sciences.

The incumbent must be especially versatile and innovative in order to recognize new approaches,

devise new or improved techniques or strategies for obtaining effective results, or to anticipate future trends and requirements. In addition, the person must be able to (1) exercise good professional judgement in ensuring the appropriate consideration of physical sciences resources in the overall picture of park operations, development, interpretation, and resources management; (2) identify resources, evaluate their significance, develop management options that take into account all levels and areas of concern, and (3) prepare plans to preserve, conserve, mitigate impacts, and manage the resources.

Factor 5. Scope and Effect Level 5-4; 225 points

The purpose of the work is to develop and implement plans and strategies to protect resources and resolve problems with solutions that achieve management objectives. The successful accomplishment of the duties of this position provides the professional foundation of the physical science program. The work involves establishing criteria, formulating projects, assessing program effectiveness or investigating or analyzing a variety of unusual conditions, problems or questions. The product or service affects a wide range of agency activities, major activities or issues, or the operation of other agencies or entities. Management strategies developed and conducted by the incumbent are essential to maintaining the resources. Information gained through research, inventory, and monitoring provide the scholarly and professionally credible basis for management decisions, thereby directly affecting the current and future integrity of the resources.

The work influences the effectiveness or acceptability of agency goals and programs by program managers or specialists in outside agencies. Programs carried out by the incumbent directly affect the preservation or enhancement of the ecological integrity of park ecosystems and surrounding landscapes.

Factor 6. Personal Contacts Level 6-3; 60 points

Contacts are made with physical scientists, resources managers, and subject matter experts of other agencies and tribes, researchers and other members of the scientific community, science and management staff of other parks, conservation organizations, the media, the general public, and other members of the park staff. Contacts typically are not established on a routine basis, and the role and authority are identified and developed during the course of the contact.

Factor 7. Purpose of Contacts Level 7-2; 50 points

The purposes of the contacts are to provide professional advice to managers and other staff; to exchange information; to provide instruction and services; to coordinate and advise on mutual work efforts and research; to insure compliance with laws and regulations; to train; to procure supplies and materials; and to secure cooperation for programs from other agencies, individuals or interest groups.

Factor 8. Physical Demands Level 8-2; 20 points

The position may require strenuous physical activity including periods of standing, walking, climbing, and lifting and carrying heavy objects. Some activities will occur in physically dangerous areas or settings. Documentary research and report writing work is sedentary, which entails the ability to concentrate and write for long periods of time.

Factor 9. Work Environment Level 9-2; 20 points

Work is performed both indoors and outdoors in all types of weather. Assignments may be performed in potentially hazardous areas including steep slopes, rocky terrain, volcanoes, caves, firelines, arctic environments, swamps, deserts, and forests. Flying in fixed-wing aircraft and helicopters is possible.

Total Points 2850



Resources Careers