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Subject: MEMO FROM ACTING AD, NRSS: GUIDANCE RELATIVE TO ONGOING OPERATION AND MAINTENANCE OF VITAL SIGNS MONITORING NETWORKS



Interior

United States Department of the

**NATIONAL PARK SERVICE
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Washington, D.C. 20240**

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February 28, 2008

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Memorandum

To: Regional Directors

From: (Acting) Associate Director, Natural Resource Stewardship and Science
/s/ **Mary Foley**

Subject: Guidance Relative to the Ongoing Operation and Maintenance of Vital Signs Monitoring Networks

The Inventory and Monitoring Program (I&M) provides funding, guidance, and technical support to more than 270 parks, organized into 32 networks, to complete a core set of natural resource inventories and to design and implement long-term monitoring of natural resources. The I&M program has been particularly well-received and successful because it has emphasized collaboration and coordination among parks, accountability, and partnerships with other agencies, states, and more than 150 universities.

On October 13, 2000, a document entitled the *National Park Service's Vision and Implementation Strategy for Park Vital Signs Monitoring* was provided to you that described the

vision for the 32 I&M networks as a key component in the Service's strategy to provide scientific data and information needed for management decision-making and education. Since that time, all 32 I&M networks have now been funded for long-term monitoring, and 23 of the 32 networks (197 parks) have completed the planning and design phase and have implemented operational monitoring. The network approach for achieving greater efficiency by sharing funding, personnel and expertise has worked well, particularly for small and medium-sized parks. The I&M networks are now a major contributor to the overall scientific infrastructure/expertise of the NPS, and the guidance, monitoring plans, protocols, and information management systems developed by the networks are recognized as "state of the art" and have been used by numerous State and federal agencies and other countries.

This memo and the attached document are intended to address the change in programmatic emphasis from monitoring planning and design to operational monitoring by providing updated guidance on the core duties, operations, and expectations for the I&M networks. The attached document summarizes key policy and guidance for the networks that was issued previously in various documents, and provides supplemental guidance on new activities and emerging issues (e.g., clarification of core duties; dissemination of monitoring results using websites and the Natural Resource Publication Series; monitoring networks 3-year start-up reviews).

The core responsibility for the vital signs program is to collect, manage, analyze and report long-term data for a modest set of vital signs (measurements of resource condition), and to effectively deliver data and information on resource condition to park managers, planners, and other key audiences. The funding level provided to the networks from the Servicewide I&M Program each year allows the networks to monitor only a few, high-priority vital signs, but most networks have been able to leverage these funds with park base or other funding, and network staff are involved in many successful collaborative efforts with other NPS programs and with other agencies and universities.

Thank you for your continued support of the Service's ecological monitoring efforts. Please share this memorandum and the attached document with Superintendents in your region, and encourage them to participate directly through their network's Board of Directors. If you have questions or need additional information about the activities described above, please contact Dr. Gary Williams, Chief of the NRPC Office of Inventory, Monitoring, and Evaluation, at 970/225-3539; or Dr. Steven Fancy, the National Monitoring Program Leader, at (970) 225-3571.

Attachment



Operations_of_I&M_Networks.doc

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Mary Foley, Ph.D.  
Associate Director (Acting)  
Natural Resource Stewardship and Science

# Updated Guidance Relative to the Ongoing Operation and Maintenance of Vital Signs Monitoring Networks

## Background

The Washington Office initially provided guidance for vital signs monitoring during FY 2001 in a document titled “*Park Vital Signs Monitoring: Vision and Implementation Plan*”. That document focused primarily on providing recommended guidance on the organization and planning efforts of the I&M networks. All 32 networks (270 parks) have now identified their vital signs of resource condition, and the first 23 networks (197 parks) have now implemented operational monitoring of their highest-priority vital signs after completing their long-term monitoring plan. The remaining networks will all have implemented operational monitoring by the end of FY 2009. The shift in programmatic emphasis from planning to operational monitoring will likely present several new challenges and concerns for the networks, ranging from those related to staff work assignments and priorities to managing datasets as part of an integrated, national network.

Given the maturity of network monitoring efforts throughout the Service, it now seems prudent to update the initial guidance provided in FY 2001. Therefore, this document is being provided to field units in order to: 1) briefly review previous guidance, and also to 2) offer additional, recommended guidance and/or strategies for how networks should deal with a number of activities and emerging issues likely to be associated with routine, operational monitoring in the future. The document also clarifies the respective roles that the Washington Office and the networks are expected to play in those efforts.

## Purpose of Monitoring

Knowing the condition of natural resources in national parks is fundamental to the National Park Service’s ability to manage park resources. National Park managers across the country are confronted with increasingly complex and challenging issues that require a broad-based understanding of the status and trends of park resources as a basis for making decisions, working with other agencies, and communicating with the public to protect park natural systems and native species. Vital signs monitoring is a key component in the Service’s strategy to provide the scientific data and information needed for management decision-making and education. Vital signs monitoring also contributes information needed to understand and to measure performance regarding the condition of watersheds, landscapes, marine resources, and biological communities.

Park vital signs represent selected physical, chemical, and biological elements and processes of park ecosystems that are indicators of the overall health or condition of the park, known or hypothesized effects of stressors, or elements that have important human values. Monitoring data help to define the normal limits of natural variation in park resources and provide a basis for understanding observed changes and possible management connections. Understanding the dynamic nature of park ecosystems and the consequences of human activities is essential for management decision-making aimed to maintain, enhance, or restore the ecological integrity of park ecosystems and to avoid, minimize, or mitigate ecological threats to these systems.

## **Overview of the Vital Signs Monitoring Program**

### **Service-wide Network Monitoring Structure and Goals**

The Service has organized more than 270 park units which contain significant natural resources into 32 administrative networks that share funding and a core professional staff in order to conduct long-term ecological monitoring. Each network links parks that share similar geographic and natural resource characteristics to improve efficiency and reduce costs. To guide the monitoring program, all 32 networks address the following five goals of vital signs monitoring as they plan, design, and implement integrated natural resource monitoring:

- Determine the status and trends in selected indicators of the condition of park ecosystems to allow managers to make better-informed decisions and to work more effectively with other agencies and individuals for the benefit of park resources.
- Provide early warning of abnormal conditions of selected resources to help develop effective mitigation measures and reduce costs of management.
- Provide data to better understand the dynamic nature and condition of park ecosystems and to provide reference points for comparisons with other, altered environments.
- Provide data to meet certain legal and Congressional mandates related to natural resource protection and visitor enjoyment.
- Provide a means of measuring progress towards performance goals.

In FY 2001, the Service adopted a baseline of 270 park units for GPRA reporting and derived funding allocation targets to the networks based upon that number of parks. However, some networks have since recognized and included other parks within their networks. The Service has not obtained, nor requested, any supplemental funding to support monitoring (or inventory) efforts in those additional parks. Therefore, it remains up to each network's discretion whether or not to include additional parks within their boundary as part of their monitoring program.

### **Operation of Individual Networks**

Network Organizational Codes - Funding to support core network staff and monitoring efforts is transferred to each network on an annual basis by the Service-wide I&M program and other national resource programs. An organization code has been established for each network in the 2100 series to facilitate funding transfers and to allow annual pay adjustment increases to be transferred to the networks. In addition, FTEs, equipment, and other resources are assigned to the network via its organization code. The network's organization code underscores the concept of shared personnel and fiscal resources among all of parks in the network, and is intended to ensure that funding and staffing for long-term programmatic needs of all of the parks in the network address only those items included in approved network monitoring plans and annual work plans.

Network Staffing – When the Vital Signs Monitoring Program was first implemented, organizers considered the minimum core staff for each network to include, but not necessarily be limited to, a full-time, permanent network coordinator and a permanent data manager. Those two positions were, and still are, considered to be absolutely essential for the long-term success and

effectiveness of the monitoring networks. However, all networks do not currently have a permanent coordinator and data manager on staff. Therefore, all networks, except for those with limited annual funding (i.e., less than \$400,000 per year), should proceed with the recruitment of those two permanent positions.

Since the I&M program was initiated, the Washington Office has provided at least 7 permanent FTE's to each network. Therefore, in addition to a permanent network coordinator and data manager, most networks should also be able to employ 5 or more applied scientists or technicians to collect, manage, analyze and report long-term data for high-priority vital signs identified in the network monitoring plan. Obviously, decisions concerning job series, grade, supervision, and duty station of network personnel should be made by network managers and reflect local network needs and priorities. It also seems likely that the composition of required network personnel and their duty station locations needed to provide support to all of the parks in the network may change over time. Regardless of future changes, networks should strive to retain sufficient permanent staff needed to facilitate monitoring efficiencies and integration, both among parks in the network and with other NPS programs and neighboring agencies.

Annual Administrative Reporting – As part of the overall managerial and budgeting process, monitoring networks are responsible for submitting an Annual Administrative Report and draft Work Plan (AARWP) to the Washington Office in early November each year. The network's AARWP is reviewed and formally approved by the Board of Directors and Regional I&M coordinator before being submitted to the Washington Office. The Administrative Report component of the document provides a summary of monitoring activities and accomplishments achieved during the previous fiscal year in addition to providing an accounting of network expenditures. The draft Work Plan component provides a description of anticipated monitoring activities and budgetary allocations for the next fiscal year. Final, approved work plans are to be submitted to the Washington Office by January 31, approximately 3 months after the draft is submitted.

The network AARWP reports must include the information needed by both the Inventory and Monitoring program and by the Water Resources Division water quality monitoring program for inclusion in their Annual Report to Congress. For that reason, the AARWP reports will also be reviewed by the Washington Office for completeness and acceptability. Format and software the networks should use for development of the AARWP is available on the monitoring Intranet at <http://www1.nrintra.nps.gov/im/monitor/aarwpguidance.cfm>.

### **Meeting Expectations for Program Accountability**

The NPS Inventory and Monitoring Program is a highly visible, national program which receives close scrutiny from both the DOI and the OMB. In fact, evaluation of performance of the overall natural resource stewardship directorate by OMB using their Program Assessment Rating Tool (PART) has focused largely on the monitoring program, due in large measure to the significant amount of funding provided through the Natural Resource Challenge, and also because monitoring provides a means of documenting trends in resource condition. OMB and DOI fully expect the Service to be able to report on the status and trend of natural resource conditions, as well as account for the expenditure of I&M funds, by all networks. The I&M Program is

accountable to the parks through each network's Board of Directors and technical committee, and is accountable to OMB, Congress, and the taxpayers through oversight by the Board of Directors, Regional I&M Coordinator, and Service-wide I&M Program Manager. It follows that, if the Service is to meet those expectations, close cooperation and coordination throughout the organization is essential, including that between WASO program managers, Regional I&M Coordinators, and network managers and administrators. The major role each of these organizational levels is expected to play in addressing service-wide monitoring accountability issues and concerns is briefly summarized as follows.

Role of the Washington Office – Essentially, the Washington Office is expected to provide the overall strategic guidance and direction needed to ensure accountability and effective performance among all of the monitoring networks. This role includes maintaining oversight and enforcement of reporting and network work plan requirements. The Washington Office also provides effective technical assistance and support to networks relative to centralized data management, specialized training, organization of national meetings and workshops, and periodic programmatic reviews (discussed below). Lastly, the Washington Office consolidates information from individual network reports and master databases into the annual Report to Congress.

Role of Regional Offices - Regional offices are also actively involved in guiding and overseeing the networks, particularly through the efforts of the Regional I&M Coordinator. Regional Offices assist with both technical and administrative support functions for the networks as necessary, including support for the region's Inventory and Monitoring Coordinator. Regional coordinators must play a key role in coordinating vital signs monitoring with other park operations and in establishing partnerships with external federal, state, and non-governmental organizations. For that reason, Regional I&M Coordinators are expected to serve on the Board of Directors for all networks in their regions and to promote effective communication among park superintendents, network staff, regional office personnel, and national I&M program staff. For the majority of networks, the Regional I&M Coordinator supervises the network coordinator, who in turn supervises network staff. Regional coordinators are also being asked to serve as "key officials" for Natural Resources Reports and Technical Reports (discussed below) submitted by networks in their region and to serve as panel members for periodic network operational reviews (also discussed below).

Role of Network Board of Directors - The network Board of Directors, usually comprised of park superintendents, regional science staff, and the Regional I&M Coordinator, is responsible for ensuring the overall effectiveness and success of the network's monitoring efforts and for ensuring that funds are spent for the intended purpose. The Network Coordinator serves as staff to the Chair of the Board for most networks. The Board makes decisions regarding the development and implementation of the network's monitoring strategy, including approval of annual budgets, work plans, and network staffing plans, and promotes overall accountability for the network monitoring program.

## Network Functions and Staff Responsibilities

Over the past several years, monitoring networks have become involved in numerous activities and functions such as organizing and cataloging data; performing data analysis, synthesis, and modeling; and providing data and expertise to park planners. Network personnel are also occasionally called upon to provide data and expertise for resource assessments and resource stewardship strategies, and to contribute to performance reporting. Such integration and collaboration with other NPS programs and agencies has always been considered to be an essential component of the I&M program strategy. However, some networks are now finding that meeting all of the expectations and requests for assistance from their parks, other programs, and other agencies exceeds what their staff can provide or sustain on a long-term basis. Regrettably, network managers are sometimes being placed in a situation of having to assign priorities to the functions they and their staff perform.

Therefore, to assist network managers in their decision-making, the following sections are provided to clarify the major functions networks are expected to perform and the activities their staff will likely need to undertake in order to accomplish those functions.

As defined in the Natural Resource Challenge, the primary mission of the monitoring networks is to collect, manage, analyze and report long-term data for a modest set of vital signs (measurements of resource condition), and to effectively deliver those data and related information on resource conditions to local park managers, planners, interpreters, and other key audiences. Fundamentally, network personnel are expected to devote the majority of their time and effort to completing tasks associated with that mission. Their FTE's were requested from OMB and have been assigned to the networks for that purpose. Chief among the network responsibilities which must be performed are the following:

- *Providing “one stop shopping” for resource condition and trend information* – For the high-priority vital signs identified in the network's monitoring plan and currently being monitored, this should be thought of as “the” core network function. Accordingly, network staff should maintain intranet and internet websites (see below) as the key means of communicating data and information collected and organized by the network to park managers, planners, and park staff for decision-making, education, and research.
- *Synthesizing key findings in succinct statements for managers and planners* – This likewise is considered to be a core network function, especially for network priority vital signs. Network staff should place priority on developing resource briefs and technical documents for each vital sign, and preparing synthesis reports that analyze data across vital signs as well as data from other sources and disciplines to help interpret results of vital signs monitoring. In addition, priority should be given to posting these reports on the network's websites to ensure their availability to all interested parties.
- *Collaboration with other programs and agencies* – As noted above, collaboration and coordination with other programs and agencies has always been considered to be a primary function of monitoring networks. However, lower priority is justified in those instances in which the collaboration and coordination efforts do not directly contribute to accomplishing the network's core mission.

- *Organizing and cataloging data collected by others* – The task of collecting, organizing, and cataloging data collected by others (i.e. non-network) should be considered to be a core function of the network, to the extent that the data are applicable to the high-priority vital signs being monitored by the network.

### **Network Functions Supporting other Natural Resource Activities**

While network personnel have a number of primary functions and activities they are expected to perform, there are other activities that, while crucial for accomplishing the overall NPS natural resource mission, are also considered to be outside the immediate responsibility of the networks. These are functions for which the primary responsibility rests with other NPS units at the Washington, regional, or park levels. Thus, as far as the networks are concerned, these functions can be thought of as “supportive” or secondary in nature and should be undertaken by network staff on a time-available basis. These functions and the role network personnel will likely play in their accomplishment include the following:

- *Assisting in occasional resource assessments* – Network staff are encouraged to participate in workshops and to contribute data to the Watershed Condition Assessments, NPCA State of the Parks, and other assessment efforts. However, other, non-network personnel should most appropriately assume the leadership role for these efforts. The technical documents and other information posted on the network website and contained in network will be an important source of information for these assessments.
- *Reporting to GPRA and Land Health Goals* – As discussed above, the primary responsibility of networks is to report on the condition and trends in park resources. Parks generally have the responsibility for reporting on management performance and the accomplishment of their management goals. Network staff should be encouraged to assist in these activities by providing expertise to parks, and by contributing to GPRA reporting, primarily via the data sets and technical documents available on the network’s website. The Watershed Condition Assessment program, a component of the Washington Office, has a major responsibility for providing key summary documents and GIS layers to assist park staff (with additional help from regional staff) report to GPRA goals.
- *Defining desired resource conditions based on current status and trend* – The expertise of network staff, the data they collect, and the results of various analyses and syntheses conducted by network staff will all make major contributions to determining desired resource conditions. However, defining desired resource conditions must also involve the general public and therefore reflect close coordination among park managers, planners, and subject matter experts. Therefore, responsibility for these efforts is most appropriately assigned to one or more of those groups.
- *Providing materials to interpreters, educators, the general public; outreach* – Public education and outreach are essential components of any successful monitoring program and network personnel are strongly encouraged to collaborate with and to assist Research Learning Centers and/or park interpretive staff in accomplishing their responsibilities for those functions, as time and other resources permits. Hopefully, additional funding and staffing can be provided to networks in the future so that they may take on additional responsibilities relative to this activity.



## **Network Data and Information Management**

Historically, the approach taken by the Service-wide Inventory and Monitoring Program relative to information management has been to develop centralized (Fort Collins and Denver) internet and desktop applications and to allow parks to manage their own data. Nearly all of the data currently contained in the major centralized databases (i.e., NatureBib, NPSpecies, and the NPS Data Store) have been entered by network or centralized staff. Network data managers have been given the responsibility of overseeing data entry and maintenance. Responsibility for deleting or editing records in centralized data bases has typically been delegated to the author or to the Point of Contact (POC) identified by the network. Unfortunately, this approach has led to a situation in which the service-wide databases oftentimes contain duplicate data records and many other records that are incomplete or otherwise of poor quality. To remedy this situation, Washington Office personnel will be asked to assume a more active role relative to the management of the information provided by the monitoring networks via websites. The respective roles Washington Office and network personnel will be expected to play in the future relative to data and information management are summarized below.

### **Centralized Databases**

Beginning in FY 2008, Washington Office personnel will be assigned tasks associated with editing centralized databases to remove obvious errors and to complete “common-sense” data cleanup steps, such as standardizing case (e.g., convert ALL CAPS to Title Case or Sentence case), as appropriate. There is a need to conduct data clean-up and to quarantine poor-quality records as soon as possible so that information contained in centralized databases can be made available to internal NPS users to assist them in their work, and so that NPS users can begin to see the tremendous utility of these databases. The tasks of making data available (“releasing data”) to the external scientific community and the general public, while very important, will be given lower priority until quality assurance procedures have been completed and sensitive and commercially-valuable data have been protected.

### **Network Websites**

Currently, networks are expected to have implemented a parallel series of Intranet (NPS only) and Internet (Public) websites to be used as a key means of communicating and disseminating inventory and monitoring results to park managers, planners, interpreters, and other internal and external audiences. Network data managers should insure that the Intranet sites adhere to the standard format of InsideNPS, and that internet websites follow the current I&M standard format, which is consistent with the NPS Content Management System. Both formats are current NPS standards, and network staff can obtain templates and other technical assistance from the Inventory and Monitoring Program Office in Fort Collins. Network staff should give priority to using these websites as a primary means of making Resource Briefs, data summaries, progress reports, technical reports, trend reports, interpretive materials, and other information available to internal NPS audiences.

## **Natural Resource Reports and Natural Resource Technical Reports**

Networks are strongly encouraged to publish their monitoring plans, protocols, trend reports, synthesis reports, inventory reports, annual data summary reports, and other products of the I&M efforts in the Natural Resource Report or Natural Resource Technical Report series, unless they are published in a peer-reviewed journal, or a numbered report series of a collaborating agency or university. Updated guidance, examples, and templates for the NPS national series are now available to assist the networks in these efforts on the Natural Resource Publications Management website at <http://www.nature.nps.gov/publications/NRPM>. Reports published in these numbered series meet a set of minimum standards and are peer-reviewed to ensure that the information provided is scientifically credible, technically accurate, appropriately written for the intended audience, and designed and published in a professional manner. To facilitate the timely publishing of routine scientific reports over the internet, the minimum style/formatting standards and templates use readily-available fonts and minimal formatting that do not require desktop-publishing skills. The final monitoring plan for all networks that do not yet have an approved plan should be published in the national Natural Resource Report series, as should most monitoring protocols. Publication of monitoring results in peer-reviewed professional journals, and presentation of findings at professional meetings, is also encouraged.

## **Monitoring Network 3-Year Start-up Reviews**

In order to maintain an effective NPS monitoring effort over the long-term, all network monitoring programs will undergo occasional programmatic reviews, with an initial “Start-up” review occurring within 3 years after the network’s monitoring plan is approved and operational monitoring begins. Subsequent program reviews will likely occur at intervals of five years or less. Start-up reviews will focus primarily on operational and administrative (not technical) aspects of the network’s monitoring program and will attempt to answer the basic question “Is the network monitoring program set up to succeed? The review will allow network and park staff to step back and evaluate their initial progress against the objectives and schedule set forth in the network’s monitoring plan, to develop a “road map” for completing and implementing the first set of protocols, and to make adjustments if needed. The review will help the network get off to a good start in developing a practical, sustainable monitoring program that provides parks with timely, relevant information.

Network monitoring program reviews will normally require approximately 3-4 days to complete, and may include meetings, telephone conference calls, or online questionnaires with superintendents, park resource chiefs, and key park and network staff and cooperators to get their input and perspectives on the program and any suggestions for improvements. The review panel will generally consist of 3-5 people who have experience with long-term monitoring across multiple networks. Each panel will include the Regional I&M Coordinator and will be led by the National Monitoring Program Leader. Networks will be asked for recommendations for the other review panel members.

Start-up reviews for the first 12 networks that implemented monitoring in October 2005 will be completed by October 1, 2008.