NADP QA Plan 2003-01

QUALITY MANAGEMENT PLAN

NATIONAL ATMOSPHERIC DEPOSITION PROGRAM

A Cooperative Research Support Program of the
State Agricultural Experiment Stations (NRSP-3)
Federal and State Agencies
and Private Research Organizations

In 2003, scientists, students, educators, and others interested in the National Atmospheric Deposition Program (NADP) logged nearly 220,000 sessions and viewed more than 100,000 maps on the NADP Internet site. This site now annually receives more than 1.5 million hits. These data are used to address important questions about the impact of the wet deposition of nutrients on eutrophication in coastal estuarine environments; the relationship between wet deposition, the health of unmanaged forests, and the depletion of base cations from forest soils; the impact of pollutant emissions changes on precipitation chemistry; and the rate at which precipitation delivers mercury to remote lakes and streams.

The NADP was organized in 1977 under the leadership of State Agricultural Experiment Stations (SAES) to address the problem of atmospheric deposition and its effects on agricultural crops, forests, rangelands, surface waters, and other natural and cultural resources. In 1978, sites in the NADP precipitation chemistry network first began collecting one-week, wet-only deposition samples analyzed by the Central Analytical Laboratory (CAL) at the Illinois State Water Survey. The network was established to provide data on amounts, temporal trends, and geographic distributions of the atmospheric deposition of acids, nutrients, and base cations. The NADP was initially organized as SAES North Central Regional Project NC-141, which all four SAES regions endorsed as Interregional Project IR-7 in 1982. A decade later, SAES reclassified IR-7 as National Research Support Project NRSP-3, which it remains.

In October 1981, the federally supported National Acid Precipitation Assessment Program (NAPAP) was established to increase understanding of the causes and effects of acidic precipitation. This program sought to establish a long-term precipitation chemistry network of sampling sites distant from point source influences. Because of its experience in organizing and operating a national-scale network, NADP agreed to coordinate operation of NAPAP's **National Trends Network (NTN)**. To benefit from shared siting criteria, identical operating procedures, and a shared analytical laboratory, NADP and NTN merged with the designation NADP/NTN. Many sampling sites are supported by the U.S. Geological Survey (USGS), NAPAP's lead federal agency for deposition monitoring. Under Title IX of the federal Clean Air Act Amendments of 1990, NAPAP continues. Today there are more than 250 sites in the network, and the network designation has been shortened to NTN.

In the 1990s, NADP expanded to include two additional networks. **The Atmospheric Integrated Research Monitoring Network (AIRMoN)**, which currently has nine sites, joined NADP in October 1992. The AIRMoN sites collect samples daily when precipitation occurs. Samples are refrigerated until analysis at the CAL for the same constituents measured in NTN samples. AIRMoN seeks to identify pollutant source/ receptor relationships and the effect of emissions changes on precipitation chemistry, combining measurements with atmospheric models. AIRMoN also evaluates new sample collection and preservation methods.

Another NADP network, the **Mercury Deposition Network (MDN)**, currently has nearly 80 sites and joined NADP in 1996. The MDN sites collect wet-only deposition samples that are sent to a laboratory specializing in mercury measurements. Frontier Geosciences, Inc. analyzes all samples for total mercury and some samples for methyl mercury. The MDN collects data on the wet deposition of mercury to surface waters, forested watersheds, and other receptors. Forty-three states and eight Canadian provinces have advisories against consuming fish from lakes with high mercury concentrations in fish tissues. MDN data enable researchers to investigate the importance of the atmospheric deposition of mercury as a cause of this problem.

The NADP receives support from the U.S. Geological Survey; Environmental Protection Agency; National Park Service; National Oceanic and Atmospheric Administration; U.S. Department of Agriculture-Forest Service; U.S. Fish & Wildlife Service; Bureau of Land Management; Tennessee Valley Authority; and U.S. Department of Agriculture - Cooperative State Research, Education, and Extension Service under agreement 2002-39138-11964. Additional support is provided by other federal, state, local, and tribal agencies, State Agricultural Experiment Stations, universities, and nongovernmental organizations. Any opinions, findings, conclusions, or recommendations expressed in this publication are those of the authors and do not necessarily reflect the views of the U.S. Department of Agriculture or any other sponsor.

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NATIONAL ATMOSPHERIC DEPOSITION PROGRAM

QUALITY MANAGEMENT PLAN

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Quality Management Plan Approval Form

NADP Program Chair

Approved:

Richard Grant, 9 December 2003 (original approval on file)
Richard Grant
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Document History

21 October 2003	Quality Management Plan approved by the NADP Technical Committee.
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1. Introduction

1.1. Background and Motivation

As rain or snow forms and precipitates, it scavenges particles and gases from the air, including pollutants emitted from natural sources (volcanoes, sea spray, etc.) and anthropogenic sources (vehicles, industrial emissions, etc.). These pollutants are deposited to the Earth's surface both in precipitation and as dry deposition. Differences in precipitation chemistry reflect the form or quantity of pollutants scavenged from the atmosphere at sampling sites.

The interplay of meteorology and atmospheric chemistry affects precipitation chemistry and the amount of pollutants deposited via several factors:

- Precipitation amount
- Pollutant sources, composition, and concentrations
- Pollutant dispersion and transport
- Chemical and physical changes and transformations
- Particle and gas scavenging and deposition modes

Atmospheric deposition occurs during precipitation events as wet deposition and during dry weather as dry deposition. Wet deposition involves the chemicals contained in precipitation. Dry deposition involves gases and particles deposited on the surfaces of plants, soils, waters, and buildings. In general, the magnitude of either type of deposition increases with the airborne concentration of pollutants.

Figure 1-1 depicts pollutants cycling through the atmosphere. Some pollutants, such as soil particles, remain relatively unchanged during this cycle. Others undergo physical and chemical changes. For example, sulfur dioxide is a gas when emitted from its point source, such as a smokestack, but this gas may be transformed into sulfuric acid droplets or sulfate particles before being deposited.

Whether pollutants are relocated or are chemically transformed during the atmospheric cycle, atmospheric deposition can have a significant effect on the supply of both essential and potentially injurious compounds available in natural systems. It affects the nutrient status, growth, and development of plants on land and in surface waters. Deposition may benefit agricultural crops by adding nutrients that promote growth. Plant growth also may be stimulated when acids in precipitation accelerate the weathering of soils, making minerals more readily available. However, growth stimulation in certain unmanaged forests may make trees less hardy and more vulnerable to cold weather and disease. Adding nutrients to surface waters may boost algal production, but when these algae die, they can deplete the oxygen supply below levels that support fish and other aquatic species. Atmospheric deposition of acids and other trace constituents also can influence fish health and reproductive capacity. Mercury, a toxic trace environmental pollutant, is also of concern in aquatic environments as it bioaccumulates in the food chain to harmful levels for humans and animals.

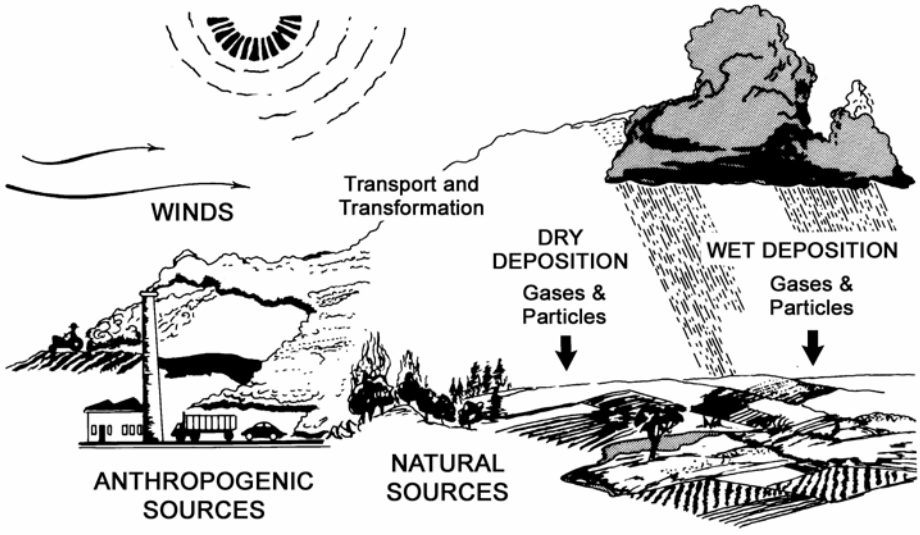

Figure 1-1. The atmospheric cycle of air pollutants

Atmospheric deposition of pollutants affects the weathering and corrosion rates of building materials and structures. Acidic precipitation can speed the corrosion of exposed metals and the weathering of unprotected stone building surfaces and statues.

Because precipitation is an efficient scavenger of particles and gases dispersed in the atmosphere, precipitation chemistry is a good indicator of atmospheric pollutants. Changes in precipitation chemistry reflect changes in atmospheric composition. Pollutant sources and emissions vary over time, so careful long-term measurements help monitor atmospheric health and exposure of natural and cultural resources to chemical deposition.

1.2. History of the National Atmospheric Deposition Program (NADP)

The National Atmospheric Deposition Program (NADP) originated in October 1977 within the North Central Region of the State Agricultural Experiment Stations (SAES) as Project NC-141 (“Chemical Changes in Atmospheric Deposition and Effects on Agricultural and Forested Land and Surface Waters in the United States”). Impetus for Project NC-141 originated as concern over reports of increasing acidity of rain and snow in the eastern United States (U.S.) and recognition that human activities had greatly increased emissions and deposition of atmospheric pollutants. By summer 1978, the NADP began collecting precipitation samples from a network of stations for analyses of acidic compounds, nutrients, and base cations.

1.2.1. The National Trends Network (NTN)

In October 1981, the U.S. Congress established the National Acid Precipitation Assessment Program (NAPAP) to study the causes and effects of acid precipitation. This program sought to operate a long-term, high-quality National Trends Network (NTN) to detect and measure acid precipitation. Federal agencies worked together in this comprehensive ten-year program of research, monitoring, and assessment activities intended to develop a firm scientific basis for reducing the adverse effects of acid precipitation. Under the NAPAP design, the U.S. Geological Survey (USGS) was charged with leading network development and operation. The NTN adopted NADP siting criteria, operating equipment, procedures, analytes of interest, and analytical laboratory, and the two networks merged as the NADP/NTN, which was shortened to NTN in 1998.

All four SAES regions endorsed the NADP as Interregional Project IR-7 in 1982, and the network grew to 106 sites in 41 states plus a site in American Samoa and three sites alongside Canadian network sites in the provinces of Alberta, Ontario, and Nova Scotia. In 1992, the SAES reclassified IR-7 as National Research Support Project 3 or NRSP-3, "The National Atmospheric Deposition Program–A Long-Term Monitoring Program in Support of Research on Effects of Atmospheric Chemical Deposition," as a national framework for collecting and disseminating quality-assured atmospheric deposition data. There were two reasons for doing this:

- To characterize geographic patterns and temporal trends in biologically significant chemical deposition.
- To support research activities related to (a) productivity of managed and natural systems; (b) chemistry of surface and groundwaters, including estuaries; (c) health of domestic animals, wildlife, and fish; (d) human health; (e) effects of atmospheric deposition on visibility and materials; and (f) source-receptor relationships.

1.2.2. The Atmospheric Integrated Research Monitoring Network (AIRMoN)

Complementing the NTN is the Atmospheric Integrated Research Monitoring Network (AIRMoN), which detects how sources and meteorology affect precipitation chemistry on a day-to-day basis. The AIRMoN joined the NADP in October 1992, and it measures the same analytes as the NTN. Scientists combine AIRMoN data with results from atmospheric models that track air movements. Together, AIRMoN measurements and air parcel trajectories are used to investigate the relationship between sources and precipitation chemistry. In addition, AIRMoN data are used to estimate nutrient loading to estuarine and other sensitive aquatic ecosystems. This network also evaluates sample collection and preservation methods designed to limit the biodegradation of the important nutrient ammonium, pH changes, and other sample changes.

1.2.3. The Mercury Deposition Network (MDN)

The Mercury Deposition Network (MDN) was formed in January 1996. The MDN reports total mercury concentrations in precipitation of all samples and methyl mercury concentrations in select samples. These data enable researchers to assess the amount of mercury

in wet deposition and the influence of this mercury on aquatic environments. This toxic pollutant from natural and anthropogenic sources bioaccumulates in the tissues of fish and other aquatic creatures. Such data provide information to evaluate regional patterns of mercury wet deposition and deposition changes over time.

1.3. Purpose of the NADP

Together, the three NADP networks provide quality-assured data and information on the exposure of managed and natural ecosystems and cultural resources to acidic compounds, nutrients, base cations, and mercury in precipitation. These data support informed decisions on air-quality issues related to precipitation chemistry and are used by scientists, policymakers, educators, and the public. Data are freely available via the Internet at nadp.sws.uiuc.edu, which enables on-line retrieval of individual data points, seasonal and annual averages, trend plots, concentration and deposition maps, reports, and other information.

In establishing the NADP, sponsors and participants have sought to ensure long-term commitment and uniformity of siting criteria, sampling protocols, analytical methods, and data validation procedures. Complemented by long-term operations, this uniformity is essential to obtain data on how the chemical climate in the nation's ecoregions is changing over seasons, years, and decades. This uniformity helps to ensure that data are geographically representative and comparable from site to site. To this end, NADP participation requires use of prescribed field equipment to collect and measure precipitation. Sites also must conform to fixed site selection and installation criteria and follow standard procedures for collecting, handling, and measuring samples (NADP, 1999; NADP, 2001).

1.4. Support for the NADP

The NADP is a public, nonprofit, unincorporated, interstate association of interested parties to investigate atmospheric deposition and its effects on the environment. It is structured as a cooperative program that represents coordinated efforts of many interested individuals and organizations to operate monitoring sites, report data, and oversee research activities related to atmospheric deposition. Dedication of NADP Sponsors and Site Operators continues to make the NADP one of the most successful cooperative programs in the United States.

1.4.1. Program Support

The NADP (NRSP-3) is a multistate activity that supports research on topics of concern to more than one state and region of the country. These multistate projects involve the SAES in partnership with the U.S. Department of Agriculture (USDA) Cooperative State Research, Education, and Extension Service (CSREES), and with other universities, institutions, and agencies. These projects can be approved for up to five years and renewed for successive periods. Four regional associations of SAES Directors (North Central, Northeast, Southern, and Western) are responsible for reviewing and approving NRSP proposals and renewal applications (USDA, 2002).

National research support projects, including NRSP-3, are eligible for off-the-top funding under the Agricultural Research, Extension, and Education Reform Act (AREERA) of 1998 for cooperative multistate activities (USDA, 2002). The USDA-CSREES provides these funds, as well as administrative oversight and authorization for them. Off-the-top support is allocated in annual increments. The support level is reviewed at the spring meetings of the four regional associations of SAES Directors. The Executive Directors pool their votes and forward a single recommendation to the CSREES for off-the-top funding in the next fiscal year. The USDA-CSREES provides off-the-top support of NRSP-3 to the NADP Program Office via the University of Illinois AES.

The USDA-CSREES also provides administrative oversight for NRSP-3 support from other federal government agencies, both inside and outside of the USDA. The USDA-CSREES receives these monies through interagency agreements that fund a cooperative agreement (NADP NRSP-3, Coordination and Chemical Analysis) between the USDA-CSREES and a land-grant institution, currently the University of Illinois. This cooperative agreement provides funds for (1) program coordination, (2) quality assurance, and (3) chemical analytical, site support, and data validation services.

These same services are provided for governmental agencies (federal, state, local, and tribal), the SAES, universities, and nongovernmental organizations that support the NADP through individual memorandums of agreement with the land-grant institution. Support includes direct sponsorship of NADP (NRSP-3) operations already described, as well as field operations and other program activities not funded through the NADP Program Office. Altogether, direct and in-kind support of the NADP involves more than 300 Cooperators (individuals and organizations) who operate monitoring sites, perform quality assurance (QA) and quality control (QC) activities, report data and information, etc. The NADP Program Office coordinates these activities to ensure that standard procedures are followed consistent with this document and other NADP Quality System Documents (see Section 3.2).

1.4.2. Program Office

The NADP Program Office, selected by the Executive Committee, is responsible for administering NADP operations (see Section 2.2.6). It is currently located at the Illinois State Water Survey (ISWS), an affiliated agency of the University of Illinois, Urbana-Champaign and a Division of the Illinois Department of Natural Resources. The ISWS functions administratively under the governing authority of the Illinois Board of Natural Resources and Conservation or BNRC (IDNR, 2003). The ISWS is located on the campus of the University of Illinois at Urbana-Champaign, which maintains facilities and grounds, provides utilities, and acts as the recipient and fiscal administrator of funds received in support of the NADP (NRSP-3).

The NADP Program Office is a Program and Section of the ISWS (See Appendix A). The Program Coordinator is the principal investigator of the USDA-CSREES cooperative agreement. The Program Coordinator serves on the ISWS Senior Management Team and the NADP Executive Committee and is responsible under the ISWS Chief and the NADP Executive

Committee for technical administration and supervision of work performed under terms and conditions of each grant, contract, cooperative agreement, or memorandum of agreement received in support of the NADP. The Program Coordinator serves with the approval of the Executive Committee, the University of Illinois at Urbana-Champaign, the ISWS Chief, and the BNRC (ISWS, 1999; IDNR, 2003).

1.4.3. Site Support

Support for NADP site operations comes from more than 250 Sponsors and Cooperators, ranging from landowners who provide a site location to agencies that fund and operate multiple sites. These agencies include federal, state, local, and tribal government agencies, the SAES, universities, nongovernmental organizations, and individuals. Resources for site support are allocated directly from the funding agency to the sites.

1.4.4. Support for External Quality Assurance (QA) Programs

The NADP maintains several externally administrated and supported QA programs to assess data quality independently and objectively. These programs are supported by the USGS, the U.S. Environmental Protection Agency (U.S. EPA) and other organizations.

1.5. QA in NADP Operations

Chemical measurements of precipitation samples require thorough QC and QA procedures to assure that data meet defined standards. Biases can result from sample handling; chemical losses to sample container walls; sample chemical, physical, and biological changes; and variations in collection and analytical procedures. Stringent QA and QC procedures are essential for obtaining unbiased, precise, and representative atmospheric deposition measurements and for maintaining sample integrity during collection, handling, and analysis. There must be equally stringent data management procedures to ensure that data accuracy is maintained.

All aspects of NADP operations stress quality. Each site must meet minimum siting standards, use approved equipment, and follow standard operating procedures (SOPs). The NADP analytical laboratories operate under well-defined QA programs with well-defined QC criteria. Processing, coding, and reporting data to the Program Office also entail QA, but QA procedures are not static sets of rules. Rather they are modified to accommodate program changes and in response to experience garnered from past practices.

1.6. Purpose of the NADP Quality Management Plan (QMP)

This document is the Quality Management Plan (QMP) for all NADP operations. It defines the NADP Quality System and describes quality management (QM) activities, policies, and procedures for NADP committees, field sites, analytical laboratories, and program management staff. Separate Quality Assurance Plans (QAPs) provide specific guidance for QA activities within NADP units (networks and analytical laboratories). Quality System elements

described in this QMP apply to QM and QA activities of all NADP units involved in collecting, reporting, and managing data and information.

1.7. NADP Quality System and Relationships with Cooperating Agencies

The NADP, as a cooperative program, represents many agencies and organizations. The NADP Quality System described in this QMP is intended to fulfill QM and QA requirements of these multiple stakeholders. The NADP Quality System and this QMP are consistent with the U.S. EPA's Quality System Requirements (U.S. EPA, 2000b), and the ISWS QMP (ISWS, 2002).

1.8. Source Documents

The NADP Quality System is consistent with the national consensus standard, *Specifications and Guidelines for Quality Systems for Environmental Data Collection and Environmental Technology Programs,* ANSI/ASQC E4-1994 (ANSI/ASQC, 1995). Additional direction was provided from *[US]EPA Requirements for Quality Management Plans,* EPA QA/R-2 for structure and content (U.S. EPA, 2001). However, as an agency extramural to the U.S. EPA, the NADP is not obligated to EPA QA/R-2 requirements beyond the specifications of ANSI/ASQC E4-1994 (U.S. EPA, 2000b). Quality System documents written to meet ANSI/ASQC E4-1994 standards conform with the ISO 9000 series of standards, "International Standards for Quality Management," although ANSI/ASQC E4-1994 standards are specifically for environmental data collection and environmental technology programs (IDQTF, 2003). As future revisions supersede the basis document ANSI/ASQC E4-1994, this NADP QMP will be reviewed and revised as appropriate to follow future national and international consensus standards. See Section 5.2.1 for further details.

1.9. Revision of the NADP QMP

The NADP QA Manager reviews and updates this QMP at least annually with input from NADP units and the Quality Assurance Advisory Group (QAAG). The review process is designed to maintain QM practices that are consistent with current NADP needs and documentation standards. See Section 5.5 for further details.

2. Management and Organization

2.1. Quality Management Policy

2.1.1. Mission Statement

The National Atmospheric Deposition Program provides quality-assured data and information in support of research on the exposure of managed and natural ecosystems and cultural resources to acidic compounds, nutrients, mercury, and base cations in precipitation.

2.1.2. Quality Management Policy

The QAAG formulates QM policy in conjunction with the Network Operations Subcommittee (NOS), Data Management and Analysis Subcommittee (DMAS), and Environmental Effects Subcommittee (EES) for approval by the Technical and Executive Committees. The overall goal is to ensure that all data collected and reported by or for the NADP are of defined quality and meet the needs of data users. Thus, NADP QA programs are intended to provide representative data of documented bias, precision, and completeness to assist data users in evaluating data appropriateness for a particular application. Specifically, it is the NADP QM policy to accomplish six goals:

- Implement QA programs and policies outlined in the QMP and the QAPs.
- Develop scientifically based methodologies for data collection and assessment to provide continued quality improvement.
- Provide quality assessments of network operations to assist network management and cooperating agencies in improving network monitoring strategies.
- Provide completeness, precision, bias, and representativeness criteria for all spatial and temporal data values reported.
- Provide complete and concise records of NADP policies, procedures, and quality assessments.
- Permanently link and archive metadata and QA documentation with reported data.

2.2. Program Management

The NADP organizational structure (Figure 2-1) is consistent with USDA guidelines for cooperative regional programs such as the NADP NRSP-3 (USDA, 1977). Bold text indicates principal decision-making bodies in the figure. Guidelines governing the NADP are shown in Appendix B.

This QMP addresses the managerial component of the NADP, which includes the Technical Committee, Executive Committee, the Budget Advisory Committee (BAC), the three subcommittees (NOS, DMAS, and EES), the Program Office, and the QAAG. This section provides an overview of these managerial units.

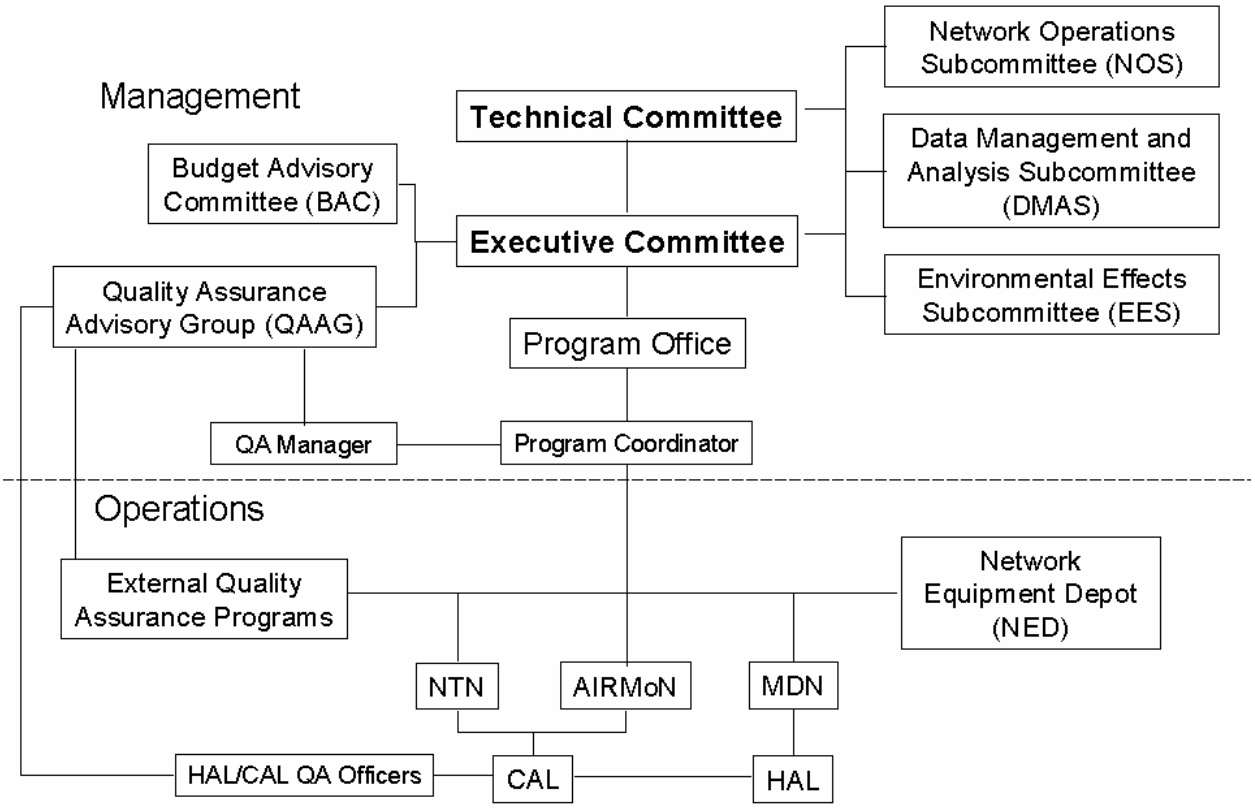

Figure 2-1. NADP organizational structure

2.2.1. Technical Committee

The Technical Committee is responsible for organizing the NADP structure and management in a way that effectively supports program objectives and procedures. The Technical Committee has changed its structure and committee membership as program needs have changed. For example, with substantial expansion of the NADP to meet NAPAP goals, federal agency representatives joined the Technical Committee and agreed to work within the committee structure (NADP, 1983). The Technical Committee can establish committees and subcommittees as needed for specific assignments and areas of responsibility (USDA, 1977). It has designated that the Executive Committee direct policy and review and approve procedures, including matters of QM and QA.

The Technical Committee operates as a "committee of the whole" to set policy and make decisions concerning technical and scientific aspects of the program. Three standing subcommittees (Section 2.2.3) provide advice and recommendations to the Technical and Executive Committees on network operations (NOS), data management (DMAS), and interfacing network measurements with the needs of environmental researchers (EES).

Table 2-1 lists standing and nonstanding members of the Technical Committee who all have equal voting rights on the committee. Termination of membership occurs when a standing member no longer serves in the capacity or office listed, or when a nonstanding member fails to attend an NADP meeting within a three-year period.

2.2.2. Executive Committee

The Executive Committee is responsible for executing the decisions and actions of the Technical Committee; making budgetary decisions; and ensuring program continuity, stability, and balance. The Technical Committee has authorized the Executive Committee to conduct Technical Committee business between meetings and to perform other duties assigned by the Technical Committee, including matters of QM and QA (USDA, 1977). The Executive Committee chooses the land-grant institution that hosts the Program Office. In fulfilling its responsibilities, the Executive Committee meets twice each year, and additional discussions and motions may be approved electronically. The Technical Committee Chair is responsible for planning and organizing Executive Committee meetings. Table 2-2 lists voting and nonvoting members of the Executive Committee.

Table 2-1. Members of the Technical Committee

Standing Members

SAES Regional Administrative Advisors
- North Central Region
- Northeastern Region
- Southern Region
- Western Region

SAES Participants
- Scientists, Technicians, and Other Participants at SAES

USDA-CSREES National Program Leader

NADP Officers
- Chair
- Vice Chair
- Secretary
- Past Chair

NAPAP Chair

Program Office
- Coordinator
- QA Manager
- Other Representatives

CAL/HAL
- Directors
- QA Staff
- Other Representatives

Network Field Sites
- Sponsoring Agency Representatives
- Operating Agency Representatives

Nonstanding Members

Persons attending NADP committee or subcommittee meetings

Persons requesting membership because of interest in atmospheric deposition, monitoring, or research stemming from NADP data

Table 2-2. Members of the Executive Committee

Elected Voting Members

Technical Committee Officers
- Program Chair
- Vice Chair
- Secretary
- Past Chair

Committee/Subcommittee Chairs
- Budget Advisory Committee Co-Chair
- Network Operations Subcommittee Chair
- Data Management and Analysis Subcommittee Chair
- Environmental Effects Subcommittee Chair

Ex-Officio Nonvoting Members

SAES Regional Administrative Advisors
- North Central Region
- Northeastern Region
- Southern Region
- Western Region

Other Advisors
- National Program Leader, USDA/CSREES
- NAPAP Chair
- NTN
- MDN
- AIRMoN

Agency Representatives
- Bureau of Land Management (BLM)
- Clean Air Status and Trends Network (CASTNet)
- U.S. Environmental Protection Agency (U.S. EPA)
- U.S. Fish & Wildlife Service (FWS)
- U.S. Geological Survey (USGS)
- National Oceanic and Atmospheric Administration (NOAA)
- National Park Service (NPS)
- Tennessee Valley Authority (TVA)
- U.S. Department of Agriculture/Forest Service (USDA/FS)

Other Representatives
- NADP Coordinator
- Associate NADP Coordinator for Heavy Metals
- Assistant NADP Coordinator and CAL Director
- NADP QA Manager
- NADP Recorder
- HAL Director

2.2.3. Technical Committee Subcommittees

Subcommittees ("standing" or "ad hoc") provide much of the technical guidance necessary to conduct the NADP mission. Whereas ad hoc subcommittees may be formed by either the Executive Committee or the Technical Committee to accomplish specific tasks over restricted time periods, standing subcommittees provide routine, ongoing input to the Executive and Technical Committees. The Technical Committee Chair also serves as the Executive Committee Chair and is responsible for setting the charge and membership of ad hoc committees. The Technical Committee is responsible for setting the charge and membership of the standing NADP subcommittees.

2.2.3.1. Network Operations Subcommittee (NOS)

The NOS has several charges:

- Evaluate siting criteria, equipment, procedures, methods, and technologies used by each network.
- Review and evaluate field-measurement procedures to ensure that SOPs are followed routinely, and make recommendations for change as appropriate.
- Periodically review the analytical laboratories to ensure that SOPs and appropriate QC and QA protocols are being followed.
- Evaluate and determine the acceptability of proposed changes in the analytical laboratories concerning analytical methods, laboratory procedures, and QC and QA protocols.
- Ensure that analytical data generated for the networks meet program needs and are accompanied by complete metadata and QA documentation. When program needs change, this subcommittee reviews and recommends QAP changes on matters of network operations.
- Review, evaluate, and approve instruction manuals/SOPs for site operations and propose changes as necessary.
- Recommend and review procedures for recording measurements and observations reported by Field Site Operators, analytical laboratories, and by the Program Office. This charge includes review and approval of the design of field sample report forms and precipitation gage records.
- Provide reports to the Technical Committee and the Executive Committee as appropriate.

2.2.3.2. Data Management and Analysis Subcommittee (DMAS)

The DMAS has several charges:

- Review and approve all SOPs related to data management and reporting, including all proposed changes to these documents. This charge includes all data screening and coding procedures used at field sites, analytical laboratories, the Program Office, and all criteria for data reporting.

- Review and approve the format of data reports and summaries from the Program Office and recommend changes consistent with reporting objectives, including evaluating and approving criteria for use of site data in these reports and summaries.
- Ensure that data management SOPs and appropriate QA and QC protocols are being followed by participating in technical reviews and audits of analytical laboratories and Program Office data management operations.
- Ensure that network data meet program needs and are accompanied by complete metadata and QA documentation, and review and recommend QAP changes on matters of data management as program needs change.
- Evaluate and determine the acceptability of proposed changes in data management procedures to improve accuracy or efficiency of current practices and to meet new or modified objectives.
- Provide reports to the Technical Committee and to the Executive Committee as appropriate.

2.2.3.3. Environmental Effects Subcommittee (EES)

The EES has several charges:

- Provide advice on atmospheric deposition data needs of effects researchers.
- Initiate publications and review their scientific approach and content.
- Make recommendations to the Executive Committee on priorities for research funding.
- Promote communication and cooperation among effects researchers.

2.2.4. Budget Advisory Committee (BAC)

The BAC is responsible for financial planning, and provides the Executive Committee with budgetary recommendations, including allocations for QM and QA. The BAC includes the Chair, Vice Chair, and Past Chair of the Technical Committee, the lead SAES regional administrative advisor, representatives of the principal NADP funding agencies, and the Program Coordinator. Principal funding agencies include the U.S. government agencies that support the NADP through interagency agreements with the USDA-CSREES, which sponsors the cooperative agreement with the University of Illinois for NADP coordination and chemical analysis; and any other agencies or sponsors that provide more than two percent of the overall NADP budget. Co-chairs of the BAC are the NADP Technical Committee Chair and a person elected by the BAC.

2.2.5. Quality Assurance Advisory Group (QAAG)

The QAAG advises the Executive Committee on matters of QM and QA for the NADP Program Office, networks, and laboratories. The QAAG also makes recommendations on the external QA programs and advises the Executive Committee on matters related to these programs, discussed further in Section 2.4. The QA Manager, a nonvoting ex-officio member of the Executive Committee, coordinates the QAAG. Other QAAG members are the laboratory QA

Staff, representatives of external QA programs sponsored by the USGS and the U.S. EPA, and additional participants appointed by the Executive Committee. The QAAG has several charges:

- Review and update NADP Quality System documentation (QMP, QAPs, etc.).
- Advise the QA Manager in implementation of the QMP and the network and laboratory QAPs.
- Provide input and recommendations for external QA programs.
- Coordinate and arbitrate QA matters referred by the Executive Committee, including remedial actions.
- Review QA documents and reports prepared by the QA Manager.
- Suggest areas of QA research to the Executive Committee.

2.2.6. Program Office

The Program Office is responsible for coordination and implementation of NADP activities including QM and QA (Figure 2-2). The Program Office carries out these responsibilities with the technical and administrative guidance of the Executive Committee.

The Program Office is responsible for promoting long-term network operations that comply with siting criteria, equipment specifications, and operating protocols. Ensuring the efficacy of QA programs is the responsibility of the QA Manager, who reports to the Program Coordinator and Executive Committee, but is organizationally independent of all NADP personnel involved with generating and reporting environmental data. Section 3.5 defines specific responsibilities of the Program Coordinator, Associate Coordinator for Heavy Metals, Assistant Coordinator, and QA Manager.

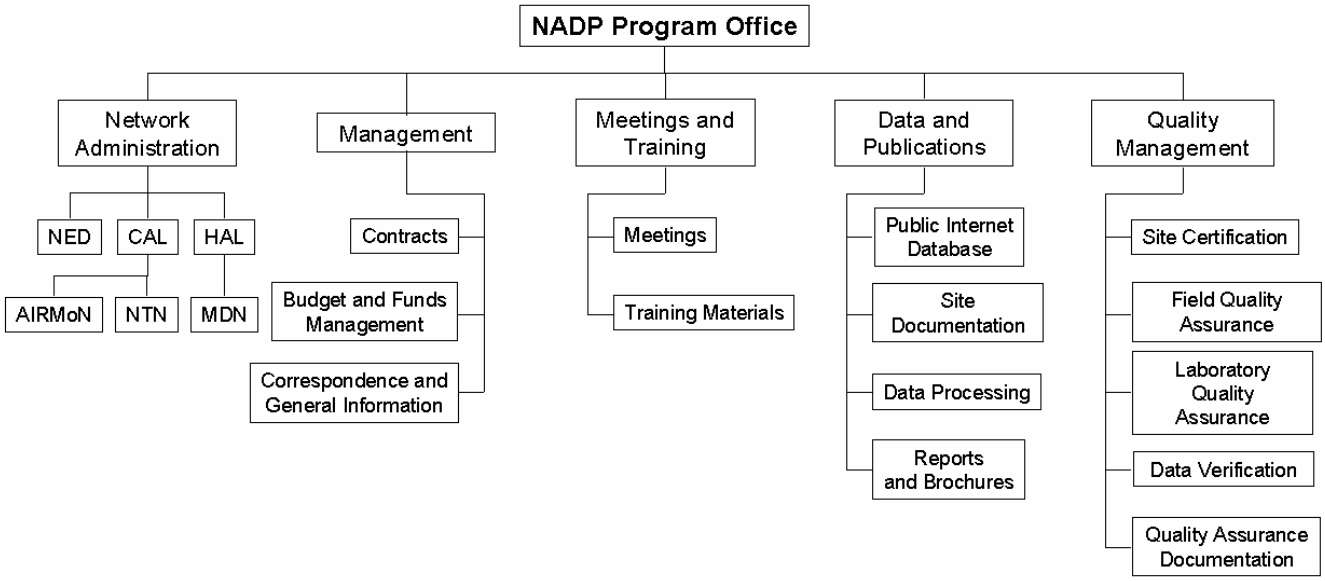

Figure 2-2. Organization of the NADP Program Office

In addition to its managerial responsibilities, the Program Office is responsible for provision of NADP operational components, including the networks, analytical laboratories, and the Network Equipment Depot (NED). These services may be provided via a contract with the land-grant institution that hosts the Program Office (see Section 8). The Program Office follows the land-grant institution's procedures for issuing and approving requests for proposals (RFPs). The Central Analytical Laboratory (CAL) currently provides site support, chemical analysis, and data management for the NTN and AIRMoN. The Mercury (*Hydrargyrum*) Analytical Laboratory (HAL) currently provides site support, chemical analysis, and data management for the MDN. The CAL and HAL each maintain their own QA Staff. Separate QAPs address the QA activities of the networks and laboratories (see Table 3-1).

Program Office administration covers all NADP units, including the NTN, MDN, and AIRMoN networks, the CAL and the HAL, and the NED. Primary Program Office responsibilities include:

- Program management and coordination
- Maintenance and continuity of QA programs
- Provision of Field Site Operator training
- Liaison support for site certification and operation
- Provision of chemical analytical, site support, and data validation services
- Management of the NADP central database
- Preparation and reporting of data summaries
- Development and implementation of special studies
- Coordination of annual meetings

2.3. Program Operations

The NADP operates three precipitation chemistry networks (NTN, AIRMoN, and MDN) two analytical laboratories (CAL and HAL), and the NED as described below. Each network has a particular objective and corresponding sampling analytes and periods (Table 2-3). Detailed operations of each monitoring network and analytical laboratory are described in separate QAPs (see Table 3-1).

2.3.1. National Trends Network (NTN)

The NTN is a nationwide network of sites that collect data on the amount and chemistry of precipitation for use in characterizing the geographic distribution and temporal trends of chemical deposition by precipitation. Precipitation samples are collected weekly according to strict clean-handling procedures. All samples are sent to the CAL for analysis of sample specific conductance and hydrogen ion (measured as pH), as well as chemical concentrations (mass/volume) of sulfate, nitrate, ammonium, orthophosphate, chloride, calcium, magnesium, potassium, and sodium. The NTN QAP contains further details of NTN operations and QA programs (see Table 3-1).

Table 2-3. NADP Monitoring Networks

	NTN	*AIRMoN*	*MDN*
Year initiated	1978	1992	1996
Analytes	conductivity [a] hydrogen ion [b] sulfate nitrate ammonium orthophosphate chloride calcium magnesium potassium sodium	conductivity [a] hydrogen ion [b] sulfate nitrate ammonium orthophosphate chloride calcium magnesium potassium sodium	total mercury methyl mercury
Laboratory	CAL	CAL	HAL
Sample period	weekly	event [c]	weekly [d]

Notes:
[a] Solution property, not analyte.
[b] Free hydrogen ion acidity measured as pH.
[c] Sample taken within 24 hours of precipitation onset.
[d] Select MDN sites collect samples on an event basis.

2.3.2. Atmospheric Integrated Research Monitoring Network (AIRMoN)

The AIRMoN measures the same analytes in precipitation as the NTN, but measurements were designed to provide data with a greater temporal resolution, and precipitation samples are collected daily. This short-term resolution enhances researchers' ability to evaluate the effect of emissions changes, such as the controls mandated by the Clean Air Act, the potential impact of new sources on Class I Wilderness Areas, or source-receptor relationships in atmospheric models on precipitation chemistry. The AIRMoN QAP contains further details of AIRMoN operations and QA programs (see Table 3-1).

2.3.3. Mercury Deposition Network (MDN)

The objective of the MDN is to develop a regional-scale database of total mercury concentrations in precipitation and the seasonal and annual flux in wet deposition. Researchers use MDN data to evaluate spatial and seasonal trends in total mercury deposited to surface waters, forested watersheds, and other sensitive receptors. The HAL analyzes precipitation samples for total mercury and also methyl mercury in select samples. The MDN QAP contains further details of MDN operations and QA programs (see Table 3-1).

2.3.4. Central Analytical Laboratory (CAL)

The CAL, located at the ISWS in Champaign, Illinois, provides site support, sample processing, chemical analyses, and data validation for precipitation samples collected at NTN and AIRMoN sites. Laboratory analyses include sample-specific conductance and hydrogen ion (measured as pH), as well as chemical concentrations (mass/volume) of sulfate, nitrate, ammonium, orthophosphate, chloride, calcium, magnesium, potassium, and sodium. The CAL QA Staff coordinate QA activities within the CAL. The CAL QAP contains further details of CAL operations and QA programs (see Table 3-1).

2.3.5. Mercury (*Hydrargyrum*) Analytical Laboratory (HAL)

The HAL, located at Frontier Geosciences, Inc., Seattle, Washington, provides site support, sample processing, chemical analyses, and data validation for precipitation samples collected at MDN sites. Laboratory analyses include total and methyl mercury. The HAL QA Staff coordinate QA activities within the HAL. The MDN QAP contains further details of MDN operations and QA programs (see Table 3-1).

2.3.6. Network Equipment Depot (NED)

The NED maintains a supply of replacement parts for distribution to field sites experiencing equipment failures. The NED, located at the Program Office, supplies parts to the CAL and HAL. Malfunctioning parts sent to the NED are refurbished in-house or sent to vendors for repair. Repairs performed off-site are verified and tested to ensure they meet NADP specifications at the NED before being sent to the CAL/HAL.

2.4. External QA Programs

The NADP maintains several externally administrated programs to evaluate data quality independently and objectively. These programs are “external” in that they are not administered directly by NADP committees or the Program Office. They are funded directly by the USGS (Precipitation Chemistry Quality Assurance Project) and the U.S. EPA (Site Systems and Performance Reviews). Although these programs receive QAAG input and recommendations, they operate independently. Section 6.3 further discusses external QA programs.

3. Elements of the NADP Quality System

The NADP Quality System ensures that data quality meets the needs of data users by providing a structured and documented QM system. This section outlines elements of the NADP Quality System, as well as staff responsibilities for their implementation. Quality System documents contain descriptions of objectives, policies, and organization of NADP management and operations, and discuss the use of various QM tools, including systematic planning, assessments, and training programs. Subsequent sections present details about NADP QM tools.

3.1. Systematic Planning

The Executive Committee and the Program Coordinator conduct NADP project planning under the authority of the Technical Committee. Systematic planning identifies program objectives, develops annual statements of work (SOWs), budgets, and schedules. Both QM and QA activities are included in the project planning process, along with the financial and human resources necessary for implementation of QA programs. Project-specific Data Quality Objectives (DQOs) are identified during planning so that data collected meet project goals. Section 4 presents further details of the systematic planning process.

3.2. Quality System Documentation

Quality System documents describe NADP management and operations. See Table 3-1 for a list of documents describing NADP operations. Appendix C lists current versions of these documents. Section 5 discusses specific procedures and responsibilities for preparation, approval, periodic review, and release of these documents.

Table 3-1. Operations Discussed in NADP Quality System Documents

Operation	*Document (See **Appendix C** for title of current version)*						
	NADP QMP	*NTN QAP*	*AIRMoN QAP*	*MDN QAP*	*CAL QAP*	*HAL QAP*	*External QAPs*
Project organization/ management	X						
QA policy/general requirements	X						
Establishment/ maintenance of field sites		X	X	X			
Field sample collection procedures		X	X	X			
Laboratory analysis/QA					X	X	
Data validation/ verification					X	X	
Public data release protocols	X						
External QA programs							X

3.2.1. Quality Management Plan (QMP)

The NADP QMP is the "umbrella" document that describes the NADP Quality System. The QMP defines QM practices for the entire NADP, including network, laboratory, and external QA operations. The NADP QMP also describes QA practices common to all network and laboratory operations, and defines authorities and responsibilities at interfaces among NADP units (Program Office, CAL, HAL, etc.). It is intended to meet the requirements of "Part A: Management Systems" of the consensus standard ANSI/ASQC E4-1994 (ANSI/ASQC, 1995). The Program Coordinator and QA Manager are responsible for implementation of the QMP and its elements.

3.2.2. Quality Assurance Plans (QAPs)

The QAPs, also referred to as "Quality Assurance Project Plans" (QAPPs), are documents that specifically describe the required QC, QA, and related technical activities for a specific project. This ensures that project deliverables are of sufficient quality to meet the project DQOs. Each current NADP network and analytical laboratory has developed and maintained QAPs to meet the requirements of "Part B: Collection and Evaluation of Environmental Data" of the consensus standard ANSI/ASQC E4-1994 (ANSI/ASQC, 1995). The Program Coordinator and QA Manager are responsible for ensuring that NADP QAPs are implemented.

3.2.3. Standard Operating Procedures (SOPs)

The SOPs and operations manuals are documents that describe the detailed procedures for chemical analyses, data management, instrument service, sample collection, etc. so that all participants perform the procedure consistently over a long period. The SOPs document required step-by-step procedures for consistently performing a task, often by multiple staff members, in accordance with technical and QA requirements. An SOP must be developed for each activity that is conducted on a routine basis. Areas appropriate for the development of SOPs include sample and data collection, field operations, laboratory operations, and data management (verification, screening, and reporting). Current SOPs are listed in the appropriate QAPs.

3.3. Assessments

3.3.1. Management Assessments

Management assessments are ongoing evaluations of the effectiveness of all components of the NADP Quality System in meeting program DQOs. The adequacy of the Quality System in meeting the needs of management and operations is assessed annually. Section 6 provides details of management assessment procedures.

3.3.2. Network and Laboratory Assessments

There are periodic assessments to evaluate NADP network and laboratory operations. The QA Manager, NOS, and DMAS ensure that these assessments occur. Assessments verify that SOPs are followed, that corrective actions are taken when necessary, and that DQOs are met. Standing NADP assessment programs include site systems and performance reviews, laboratory reviews, interlaboratory comparisons, and sample handling evaluations (see Section 6.2). These assessments evaluate documents, activities, materials, equipment operations, data, and other products that require technical verification for bias, precision, completeness, and representativeness. Individuals who conduct technical reviews are independent of the project team, but with equivalent experience and training in the project discipline. Section 6 provides details of network and laboratory assessments.

3.3.3. Data Quality Assessments

Data quality assessments determine whether data meet DQOs and also data validity in supporting scientific research. The QAPs document routine data quality assessment procedures at the network level and indicate staff responsible for conducting the assessments. The QA Manager and DMAS ensure that periodic data quality assessments are implemented. Section 6 provides details of data quality assessments.

3.4. Training

Appropriate training of NADP operations staff, including Field Site Operators and laboratory personnel, is implemented to ensure individuals have sufficient knowledge to perform their duties and meet QA requirements. The QAPs and/or SOPs specify minimum training requirements. Section 7 provides further details about training programs.

3.5. Responsibilities for Implementing the NADP Quality System

3.5.1. Responsibilities of All NADP Personnel

All NADP personnel have two primary responsibilities. They must:

- Be familiar with and comply with all QA and QC practices within their job duties outlined in QAPs, including task-specific SOPs or operations manuals.
- Report deviations from the approved QAPs, SOPs, or operations manuals, and take the necessary corrective actions.

3.5.2. Program Coordinator

The Program Coordinator, the principal investigator of the NADP (NRSP-3), is responsible for ensuring that the scientific, technical, and administrative work is in accordance with the terms and conditions of the grants, contracts, and cooperative agreements that fund the NADP. Program Coordinator responsibilities under this QMP include:

- Developing and implementing the NADP QMP in cooperation with the QA Manager, as well as other policies, programs, and activities approved by the Executive Committee.
- Ensuring that the Program Office is staffed with professionals who can carry out the administrative activities and responsibilities specified in the Program Office SOW, including maintenance of NADP QA programs.
- Overseeing network and laboratory operations as detailed in the corresponding QAPs.
- Participating in NADP management and operations assessments.
- Coordinating annual planning activities and approving SOWs for analytical laboratories.
- Presenting budgetary requests, including QA activities, for BAC and Executive Committee review and approval.

3.5.3. Associate Coordinator for Heavy Metals

The Associate Coordinator for Heavy Metals reports to the Program Coordinator and has technical and administrative responsibility for MDN operations, including:

- Implementing the NADP QMP and other policies, programs, and activities approved by the Executive Committee.
- Developing and implementing the activity-specific MDN QAP with the assistance of the QA Manager and HAL QA Staff.
- Developing, reviewing, and approving SOPs for MDN operations.
- Participating in NADP management and operations assessments.
- Coordinating MDN training programs.

3.5.4. Assistant Coordinator

The Assistant Coordinator reports to the Program Coordinator and has technical and administrative responsibility for the CAL, including:

- Implementing the NADP QMP and other policies, programs, and activities approved by the Executive Committee.
- Developing and implementing the activity-specific CAL QAP together with the QA Manager and CAL QA Staff.
- Developing, reviewing, and approving SOPs for NTN and AIRMoN operations.
- Participating in NADP management and operations assessments.
- Coordinating NTN and AIRMoN training programs.

3.5.5. QA Manager

The QA Manager reports to the Program Coordinator and Executive Committee, and is organizationally independent of other NADP personnel involved with the generation and reporting of environmental data. The QA Manager has the following responsibilities in implementing the NADP Quality System:

- Developing and implementing the NADP QMP in cooperation with the Program Coordinator with guidance from the Executive Committee and the QAAG.
- Developing and implementing activity-specific QAPs for current and future NADP networks with guidance from the Executive Committee and the QAAG.
- Ensuring that QAPs are developed and implemented by QA Staff of the analytical laboratories.
- Coordinating the QAAG.
- Coordinating periodic NADP systems audits, reviews, and data quality assessments for the NTN, MDN, and AIRMoN networks laboratories (CAL and HAL).

3.5.6. Analytical Laboratory QA Staff

Each current NADP analytical laboratory maintains separate QA Staff, who are independent of all personnel involved with the generation and reporting of environmental data. Analytical laboratory QA Staff report to the heads of the analytical laboratories. The QA Staff have the following responsibilities in implementing the NADP Quality System:

- Implementing the NADP QMP with guidance from the QA Manager and the QAAG.
- Developing and implementing activity-specific QAPs for laboratory operations.
- Developing and approving SOPs for laboratory operations and QA activities.
- Participating in NADP management and operations assessments.

4. Planning

The Executive Committee and the Program Coordinator conduct systematic planning within the NADP. The planning process identifies program objectives, and develops SOWs and corresponding budgets to support program activities. DQOs are established to meet program objectives. The project planning process includes QM and QA activities to ensure that data meet DQOs, and to provide impetus for continued quality improvement.

4.1. Establishment of Data Quality Objectives (DQOs)

As defined for the purposes of the NADP, DQOs are qualitative and quantitative statements that specify the technical characteristics of NADP data that are required to support the intended purposes and uses of the data. The DQOs are established through a systematic planning process that identifies QA and QC requirements for the data collected. These requirements include the acceptable level of confidence, the level of data validation and verification needed, and tolerance goals for the Data Quality Indicators or DQIs (ANSI/ASQC, 1995). The principal DQIs are:

- **accuracy/bias** –systematic or persistent distortion of a measurement process that causes errors in one direction (i.e., the expected sample measurement is consistently either higher or lower than the sample's true value).
- **comparability** – a measure of the confidence with which one data set can be compared to another.
- **completeness** – a measure of the amount of valid data obtained from a measurement system compared to the amount that was possible when SOPs are follwed.
- **precision** – a measure of mutual agreement among individual measurements of the same property, usually under prescribed similar conditions, expressed generally in terms of the standard deviation.
- **representativeness** – a measure of the degree to which data accurately and precisely represent the characteristic of a population, parameter variations at a sampling point, a process condition, or an environmental condition.

The DQOs are established for each network and laboratory operation within the NADP. The QAAG coordinates this process, and the Executive Committee approves the resulting DQOs. Standing subcommittees of the Technical and Executive Committee provide stakeholder input from sponsors, project personnel, and data users. Network and laboratory DQOs are documented in the network and laboratory QAPs (see Table 3-1).

4.2. Identification of Project Timetable, Budget, and Deliverables

Together, the Program Coordinator and Executive Committee develop project timetables and budget requirements through SOWs that include project deliverables, deliverable dates, and budgetary support for program activities, QA, and personnel. The Program Coordinator reviews and approves the SOWs for the analytical laboratories. The BAC advises the Executive Committee, makes recommendations on the NADP budget, and reviews income, expenditures, and spending plans annually.

4.2.1. Identification of Data Collection Needs

As part of the planning process, the standing subcommittees of the Technical and Executive Committee identify and approve data collection needs and methodology. As stated previously, the QAAG coordinates the establishment of DQOs based on data needs. Data collection methodology must meet stated DQOs in the SOW and corresponding QAPs.

4.2.2. Identification of Required QA and QC Protocols to Meet DQOs

The SOWs and QAPs describe in detail the QA protocols that will be used to meet specified DQOs. Responsible parties for implementing the QA program must be included, as well as a schedule for internal and external technical and systems audits. Section 6 further describes required assessments and audits.

4.3. NADP Special Studies

The NADP periodically conducts and supports special studies and research to evaluate new methods and equipment. Data from special studies do not necessarily comply with the NADP Quality System, implying that complete QA documentation and QA programs are not fully implemented.

4.4. Establishment of New Networks

Proposals for new NADP measurement initiatives submitted to the Executive Committee must address, at a minimum, the questions outlined in Appendix D. A QAP outlining DQOs and required QA activities must be prepared before new measurement networks begin operations. Section 5 specifies further details.

5. Documents and Records

Accurate and complete documents and records are an important resource for data users to evaluate data from NADP networks. This section outlines required NADP documents, as well as protocols for their preparation, review, approval, implementation, revision, and maintenance.

5.1. Required Documents and Records

Documents specify project plans, policies, procedures, and guidelines. Records are time-dependent, fixed information of activities. These documents and records include both printed and electronic media.

Management personnel of all current and future network and laboratory operations must prepare and maintain documents specified as part of the NADP Quality System (Section 3.2), including specific QAPs and SOPs. In addition, documents and records are prepared to support with evidence the results and activities of assessment, planning, and training activities described in Section 6. Table 5-1 summarizes document procedures, and the following sections describe specific details.

Table 5-1. Summary of Document Procedures and Responsibilities

	Quality Management Plan (QMP)	*Quality Assurance Plans (QAPs)*		*Standard Operating Procedures (SOPs)**		*Other Documents*
		Network	*Laboratory*	*Network*	*Laboratory*	
Format/standard	ANSI/ASQC E4-1994 (selected by QAAG/ Executive Committee)	ANSI/ASQC E4-1994 (selected by QAAG/ Executive Committee)	ANSI/ASQC E4-1994	Defined by NOS	Defined by laboratory	Defined by Executive Committee or Program Coordinator
Responsibility	Program Coordinator, QA Manager	Program Coordinator, QA Manager	Laboratory Manager, Laboratory QA Staff	Program Coordinator, QA Manager	Laboratory Manager, Laboratory QA Staff	Designated by Executive Committee or Program Coordinator
Review Time	2-mo. review by QAAG, then 2-mo. review by Executive Committee			3-mo. review by NOS and DMAS	1 mo. by QA Manager (inform only)	Designated by Executive Committee or Program Coordinator
Approval Personnel	Program Chair	Program Chair, Subcommittee Chairs	Program Coordinator, QA Manager	NOS Chair, DMAS Chair	Laboratory Manager, Laboratory QA Staff	Designated by Executive Committee or Program Coordinator
Acknowledgement Personnel	QA Manager	Program Coordinator, QA Manager	Laboratory Manager, Laboratory QA Staff	Program Coordinator, QA Manager, Site Liaison	Designated Laboratory Staff	Designated by Executive Committee or Program Coordinator
Effective Date	Effective from date of approval for a maximum period of five years unless specified otherwise.					
Distribution	NADP Internet site				Laboratory Personnel, QA Manager	Designated by Executive Committee or Program Coordinator
Revision Schedule (Expiration Date)	Annually or as needed; status and changes reported to Technical Committee and Executive Committee. Document revised/reissued at least every 5 years.					Designated by Executive Committee or Program Coordinator
Retention Times	Permanently at Program Office (unless specified otherwise)					

Note:
* Operations manuals and training videos are considered SOPs.

5.2. Preparation

5.2.1. Format

Management personnel of networks and analytical laboratories should establish consistent document control formats that allow easy tracking of document and record revisions. Documents and records should indicate an effective date and a record of previous versions. Header information on each page of the text should include the title of the document, effective date, and page number.

5.2.1.1. Quality Management Plan (QMP)

The QMP is the "umbrella" document that describes the NADP Quality System. The QMP describes QA practices common to all network and laboratory operations and deliverables, and defines authorities and responsibilities at interfaces among NADP units (Program Office, CAL, HAL, etc.). The NADP QMP meets the requirements of the consensus standard ANSI/ASQC E4-1994 (ANSI/ASQC, 1995) or succeeding documents. The NADP QA Advisory Group and Executive Committee must approve changes to the QMP standard.

5.2.1.2. Quality Assurance Plans (QAPs)

Quality Assurance Plans (QAPs) or Quality Assurance Project Plans (QAPPs) specifically describe the required QC, QA, and related technical activities for a specific project to meet project deliverables and so project data meet DQOs. The QAPs must be developed and maintained for each current NADP network and analytical laboratory to meet the requirements of "Part B: Collection and Evaluation of Environmental Data" of the consensus standard ANSI/ASQC E4-1994 (ANSI/ASQC, 1995). The NADP QAAG and Executive Committee must approve changes to the QAP standard. The QAPs specifically outline DQOs and how QA activities support and verify that these DQOs are met. **Note:** Although the terms "QAP" and "QAPP" are interchangeable, this document uses the term "QAP."

5.2.1.3. Standard Operating Procedures (SOPs)

The SOPs are documents that describe detailed procedures for a method of operations so that all participants can perform the procedure consistently over time. They document required step-by-step procedures for consistently performing a task, often by multiple staff members performing the same duty, in accordance with technical and QA requirements. They can be developed internally for specialized tasks or adopted from approved procedures developed by state and federal agencies or standards development organizations. The source for all SOPs must be referenced clearly if it originates from an external source.

An SOP must be developed for each activity that is conducted on a routine basis. Areas appropriate for the development of SOPs include routine sample and data collection, field operations, laboratory operations, and data management (verification, screening, and reporting). Operations manuals and training videos are considered SOPs. Current SOPs are listed in the appropriate QAPs.

5.2.1.4. Other Documents and Records

Documents and records not specifically mentioned above are prepared using an internally consistent standard format. The Executive Committee or Program Coordinator specifies required formats and standards.

5.2.2. Responsibility

5.2.2.1. Quality Management Plan (QMP)

The Program Coordinator and QA Manager are responsible for QMP preparation.

5.2.2.2. Quality Assurance Plans (QAPs)

The Program Coordinator and QA Manager are responsible for network QAP preparation. The Laboratory Manager and Laboratory QA Staff are responsible for laboratory QAP preparation.

5.2.2.3. Standard Operating Procedures (SOPs)

The Program Coordinator, QA Manager, and Site Liaison are responsible for network SOP preparation. The Laboratory Manager and Laboratory QA Staff are responsible for laboratory SOP preparation.

5.2.2.4. Other Documents and Records

Responsibility for preparing documents and records that support the results and activities of assessment programs are described in Section 6. The Executive Committee or Program Coordinator designates personnel to prepare other documents and records not mentioned above.

5.3. Review, Approval, and Acknowledgment

5.3.1. Quality Management Plan (QMP)

The QAAG has at least two months to review the QMP and successive revisions before submission to the Executive Committee. The Executive Committee has at least two months to review the QMP and successive revisions before final approval. The Program Chair approves the QMP and successive revisions. The QA Manager acknowledges approval of the QMP. Approval may be through electronic means, and the QA Manager maintains approval records.

5.3.2. Quality Assurance Plans (QAPs)

The QAAG has at least two months to review QAPs and successive revisions before submission to the Executive Committee. The Executive Committee has at least two months to review QAPs and successive revisions before final approval.

The Program Chair and the Subcommittee Chairs approve network QAPs. The Program Coordinator and QA Manager acknowledge approval of network QAPs. The Program Coordinator and QA Manager approve laboratory QAPs. The Laboratory Manager and Laboratory QA Staff acknowledge approval of laboratory QAPs. Approval may be through electronic means, and the laboratory QA Staff maintain approval records.

5.3.3. Standard Operating Procedures (SOPs)

The NOS and DMAS have at least three months to review network SOPs before final approval. The NOS and DMAS Chairs approve network SOPs. The Program Coordinator, QA Manager, and Site Liaison acknowledge approval of network SOPs.

The QA Manager should be informed of laboratory SOP changes one month before final approval, and the revised SOP should be made available for the QA Manager's review upon request. Laboratory SOPs are approved by the Laboratory Manager and laboratory QA Staff, and acknowledged by staff designated by the Laboratory Manager.

5.3.4. Other Documents and Records

Section 6 describes review, approval, and acknowledgment procedures for assessment programs. The Executive Committee or Program Coordinator specifies personnel to review, approve, and acknowledge documents and records not mentioned above.

5.4. Implementation

5.4.1. Effective Date

Unless otherwise stated, all documents and records become effective on the approval date. The QMP and QAPs are in effect for a period of no more than five years from the approval date. After this date, these documents are reissued or withdrawn.

5.4.2. Distribution

5.4.2.1. Quality Management Plan (QMP)

The Technical Committee, NADP personnel, and all other interested parties have access to the current version of the QMP via the NADP Internet site. The Program Office will inform Technical Committee members of updates to the QMP.

5.4.2.2. Quality Assurance Plans (QAPs)

The Technical Committee, NADP personnel, and all other interested parties have access to current versions of network and laboratory QAPs via the NADP Internet site, or as a link from it. The Program Office informs Technical Committee members of updates to the QAPs.

5.4.2.3. Standard Operating Procedures (SOPs)

The Network Site Liaison maintains a distribution list of Network Site Operators and Supervisors, and informs them of network SOP changes. Network Site Operators and Site Supervisors should receive copies of network SOPs (including operations manuals and training videos) via one of these three means:

- As printed hard copy or video.
- As an electronic file.
- As electronic media accessed via a server or the NADP Internet site.

Laboratory QA Staff maintain a distribution list of laboratory staff and inform them of laboratory SOP changes. Laboratory personnel should receive copies of laboratory SOPs via one of these three means:

- As printed hard copy.
- As an electronic file.
- As electronic media accessed via a server or the Internet.

The NADP QA Manager receives either printed or electronic copies of all approved network and laboratory SOPs.

5.4.2.4. Other Documents and Records

Section 6 describes distribution procedures for documents and records of assessment activities. Other documents and records not specified above are distributed via the NADP Internet site, or as specified by the Executive Committee or Program Coordinator.

5.5. Revision

The designated personnel in Section 5.2.2 should ensure that documents are reviewed on an annual basis, or more often if needed. Proposed changes will be reviewed and approved as outlined in Section 5.3. The designated personnel in Section 5.2.2 should report annual review status and approved changes to the Technical and Executive Committees.

5.6. Retention and Archival

5.6.1. Retention Time

The Program Office permanently retains final chemical and precipitation data, as well as final copies of all approved QMPs, QAPs, SOPs, operations manuals, QA reports, and assessment reports. Retention times for other documents and records are specified in the corresponding QAP or SOW. Unless otherwise specified, a retention period of five years is assumed for all documents and records.

5.6.2. Archival

Documents and records at the Program Office and the analytical laboratories are maintained in a secure location with adequate temperature control to maintain their integrity. Electronic records are archived on write-protected, secure electronic media following accepted data management practices.

6. Assessment and Response

Assessments are periodic objective examinations of NADP operations, administration, and structure to ensure that policies, procedures, and supporting activities comply with documented QAPs and SOPs, and to ensure that reported data meets stated DQOs.

6.1. Assessment Process

This section outlines management processes for establishing new assessment programs. Section 6.2 describes standing NADP assessment programs.

6.1.1. Selection of Assessment Tools

Standard assessment tools (U.S. EPA, 2000a) are described below. The QAAG sets assessment goals and selects appropriate assessment tools for new assessment programs.

- **assessment** – The evaluation process to measure the performance or effectiveness of a system and its elements. This all-inclusive term denotes evaluations, audits, or reviews (U.S. EPA, 2000a).
- **audit** – A systematic and independent examination to determine whether practices comply with documented QAPs and SOPs, and that these practices are implemented effectively and are suitable to achieve stated objectives (U.S. EPA, 2000a).
- **data quality assessments** – Scientific and statistical evaluations of validated data to determine if the data are of the right type, quality, and quantity to support their intended use (U.S. EPA, 2000a).
- **data quality audits** – Audits conducted on verified data to document the effectiveness of the data management system to collect, validate, analyze, summarize, and report data as specified in the QAP.
- **peer review** – A critical review of a specific scientific and/or technical product to corroborate scientific defensibility, which may include an in-depth assessment of the assumptions, calculations, extrapolations, alternative interpretations, methodology, acceptance criteria, and conclusions pertaining to specific scientific and/or technical products and supporting documentation.
- **performance evaluations** – A quantitative test of the ability of a measurement system to obtain results that meet tolerance limits.
- **readiness reviews** – Reviews conducted before specific technical activities are initiated to assess whether procedures, personnel, equipment, and facilities are ready for data collection according to the QAP.
- **surveillance** – Continuous or periodic assessments of the real-time implementation of an activity or activities to determine conformance to established procedures and protocols.
- **technical systems audits** – Audits that quantitatively document the degree to which processes specified in the approved QAP are being implemented.

6.1.2. Identification of Assessment Personnel

The QAAG selects individuals (assessors) to conduct assessments. These individuals should have knowledge, training, and experience in the technical area of the project. Assessors must have free access to all data records, staff, and QA information to conduct objective project reviews. The following points (U.S. EPA, 2000a) should be considered when selecting assessors:

- They should collectively possess adequate proficiency for the assessment. This standard applies to the assessors as a group, not necessarily to every individual assessor.
- They should be impartial, and be organizationally independent of the operation being assessed.
- They should use due professional care in conducting the assessment and in preparing related reports. Assessors should use sound professional judgment in determining the standards for assessment.

6.1.3. Documentation of Assessment Findings

The QAAG should indicate the appropriate assessment report format and submission deadline. If appropriate, the Program Chair, QAAG, QA Manager, or subcommittee Chair will designate individuals to review the assessment report and then approve the final draft. A copy of all assessment reports should be forwarded to the QA Manager and other appropriate subcommittees.

6.1.4. Assessment Response and Corrective Actions

The Program Chair, QAAG, QA Manager, or subcommittee Chair should indicate the appropriate assessment response format and submission deadline. The Program Coordinator and/or the QA Manager should designate staff to draft the response to assessment report findings. If corrective actions are required, a timeline for implementation should be indicated.

If appropriate, the Program Chair, QAAG, QA Manager, or subcommittee Chair should designate individuals to review assessment responses and then approve the final draft. The Program Chair, QAAG, QA Manager, or subcommittee Chair is responsible for ensuring that corrective actions are implemented. A copy of all assessment responses should be forwarded to the QA Manager and appropriate subcommittees.

6.1.5. Resolution of Conflict

Conflicts in the assessment process are referred to the Program Chair.

6.2. Standing NADP Assessment Programs

Standing assessment programs that apply to the entire NADP are described below. Either the CSREES administrative body or the Executive Committee has approved these programs.

6.2.1. NADP Program Review

The AREERA of 1998 requires "that all formula-funded research, including multistate research, undergo scientific peer review." This review is the responsibility of the regional associations of SAES Directors from which multistate activities originate (USDA, 2002).

6.2.1.1. Schedule

Experiment Station Committee on Organization and Policy (ESCOP) guidelines specify review of NRSPs in their fourth year (i.e., one year prior to the scheduled termination date) or at other times during the course of the project, if a review is deemed necessary based on consultation with the project administrative advisors.

6.2.1.2. Personnel

The responsible administrative advisor calls for a review to be conducted by a minimum of three peer scientists, one of whom may be a CSREES representative. There are four administrative advisors for NADP (NRSP-3), and the lead advisor is the responsible administrative advisor.

6.2.1.3. Format

The SAES Directors, in cooperation with the USDA, CSREES, and ESCOP, have developed guidelines for peer review, "Peer Review Guidelines: Performance Standards and Operational Guidelines for SAES" (USDA, 2002).

Reviewers provide written comments on multistate activities. The reviewers focus on: (1) quality, technical feasibility, and validity of the activity; (2) relevance of the activity to stated goals; (3) likelihood for completing stated objectives; (4) responsiveness to stakeholder needs; and (5) accuracy of claims of multidisciplinary, multistate collaboration.

6.2.1.4. Findings

Review results are made available prior to the spring meetings of the regional SAES Directors. Assessment reports are submitted to the Program Chair and Program Coordinator.

6.2.1.5. Response and Corrective Actions

The Program Chair designates individuals to draft the program review response and to outline a timeline for corrective actions. The Executive Committee approves the review response.

6.2.1.6. Resolution of Conflict

The Program Chair, administrative advisors, and CSREES National Program Leader resolve conflicts that arise during program reviews.

6.2.2. NADP Quality System Review

The NADP Quality System review is an external management review to evaluate the adequacy of the Quality System.

6.2.2.1. Schedule

The QA Manager conducts annual Quality System internal reviews. External reviews are conducted every three years, beginning in 2004.

6.2.2.2. Personnel

The QA Manager coordinates internal reviews. A three-member team appointed by the Program Chair conducts external reviews.

6.2.2.3. Format

The QAAG will set the format of Quality System reviews. Reviews may be performed on-site or via remote communication (email, mail, teleconference, etc.). A suggested review format is provided in *Guidance on Assessing Quality Systems* (U.S. EPA, 2003). The review should address four questions:

- Is the NADP's Quality System documented and fully implemented?
- Do NADP activities comply with the QMP?
- Are procedures outlined in the QMP implemented effectively?
- Does the NADP Quality System ensure data of sufficient quality to meet DQOs?

6.2.2.4. Reports

Review reports are be submitted to the QAAG, Executive Committee, subcommittee Chairs, and others upon request.

6.2.2.5. Response and Corrective Actions

The QA Manager drafts a response to the review findings and proposes a timeline for corrective actions. The QAAG and the Executive Committee approve the response. A copy of the response is forwarded to the Executive Committee, the subcommittee Chairs, and others upon request.

6.2.2.6. Resolution of Conflict

The Program Chair resolves conflicts that arise during Quality System reviews.

6.2.3. Laboratory Reviews

Laboratory reviews are systematic, objective examinations of laboratory operations to determine compliance of analytical, site support, and data management procedures with documented QAPs and SOPs, whether procedures are implemented effectively, and whether activities are sufficient and adequate to meet DQOs.

6.2.3.1. Schedule

External on-site laboratory reviews are conducted every three years, with the CAL and HAL reviews staggered by a year (e.g., CAL in 2002, HAL in 2003). A follow-up internal review is conducted within one year after the CAL/HAL receives the review report.

6.2.3.2. Personnel

External review teams consist of six members, comprised as follows:

- Two individuals chosen by the NOS Chair to conduct a laboratory technical system review.
- Two individuals chosen by the DMAS Chair to conduct a data quality review.
- A team leader chosen by the NOS and DMAS Chairs.
- The QA Manager, serving as an observer.

Laboratory personnel designated by the Laboratory Manager conduct internal reviews.

6.2.3.3. Format

The team leader chooses the format of the laboratory review. Reviews must be performed on-site at the laboratory location. A suggested, but not mandatory, format is provided in *Guidance on Technical Audits and Related Assessments for Environmental Data Operations* (U.S. EPA, 2000a). The review should, at a minimum, address these four questions:

- Are laboratory activities documented in the laboratory QAP and SOPs, and are these practices fully implemented?
- Do laboratory activities comply with the QAP and SOPs?
- Are laboratory activities outlined in the QAP and SOPs implemented effectively?
- Do laboratory activities ensure data of sufficient quality to meet DQOs and requirements outlined in the SOW?

6.2.3.4. Reports

The team leader compiles review comments and submits them as a written report to the QA Manager within 30 days of the review date. The QA Manager distributes the report in either paper or electronic format to the review team, Laboratory Manager, Program Coordinator, Executive Committee, and others upon request.

6.2.3.5. Response and Corrective Actions

The Laboratory Manager prepares a written response to review findings and propose a timeline for corrective actions. The review response should be submitted to the QA Manager within 60 days of the date that the final review report was received. The NOS and DMAS members review and approve the review response within one month from the date that the report was received. The QA Manager distributes copies of the final review report and response to the review team, Program Coordinator, Executive Committee, and others upon request.

6.2.3.6. Resolution of Conflict

The QA Manager and Program Chair, in consultation with the appropriate subcommittee, resolve conflicts arising during laboratory reviews.

6.2.4. Data Quality Assessments

Data quality assessments are scientific, statistical evaluations of validated data to determine if the data are of the right type, quality, and quantity to meet stated DQOs. As part of data quality assessments, data quality audits may be conducted on verified data to assess the capabilities of the project's data management system to collect, analyze, interpret, and report data as specified in the QAP.

6.2.4.1. Schedule

The QAAG, Executive Committee, Program Coordinator, or DMAS determine when data quality assessments are necessary.

6.2.4.2. Personnel

The QA Manager coordinates data quality assessments in coordination with individuals appointed by the QAAG or DMAS.

6.2.4.3. Format

The DMAS Chair and the QA Manager specify the format for data quality assessments. A suggested, but not mandatory, format is provided in *Guidance on Technical Audits and Related Assessments for Environmental Data Operations* (U.S. EPA, 2000a). The assessments should consider these questions:

- Were data verification and validation processes followed correctly, as specified in the QAPs and SOPs?
- Is sufficient documentation provided to ensure that verification and validation procedures have been followed?
- Are data of sufficient quality with respect to DQIs to meet DQOs?

6.2.4.4. Reports

Assessment reports are submitted to the DMAS, QAAG, Program Coordinator, Executive Committee, and others upon request. The QA Manager reports assessment findings in published annual QA Reports.

6.2.4.5. Response and Corrective Actions

The QA Manager proposes corrective actions for issues raised in data quality assessments. The DMAS Chair reviews and approves the proposed corrective actions.

6.2.4.6. Resolution of Conflict

The Program Chair resolves conflicts that arise during data quality assessments.

6.3. External QA Programs

The NADP maintains standing externally administrated QA programs to assess NADP data quality independently and objectively. These programs are supported by the U.S. EPA (see Section 6.3.1) and the USGS (see Section 6.3.2). A summary of each standing program is described below.

6.3.1. Site Systems and Performance Surveys

Site Systems and Performance Surveys are external reviews of field site operations administrated under contract from the U.S. EPA (U.S. EPA, 2002). During site surveys, audit teams verify field equipment operation and calibration, observe and evaluate operator performance, and document site conditions and compliance with NADP siting criteria.

6.3.1.1. Schedule

The U.S. EPA, in coordination with the contractor and the QA Manager, administer site survey schedules. Sites are surveyed approximately once every three years.

6.3.1.2. Personnel

Survey personnel are under contract from the U.S. EPA. The site survey QAP states required personnel qualifications (U.S. EPA, 2002).

6.3.1.3. Format

During site surveys, audit teams verify field equipment operation and calibration, observe and evaluate operator performance, and document site conditions and compliance with NADP siting criteria. The format of site surveys is documented in the site survey QAP (U.S. EPA, 2002). Site surveys answer these questions:

- Does the NADP site equipment meet specifications and operate within tolerance limits specified in NADP SOPs?
- Is the site location in compliance with NADP siting requirements specified in NADP SOPs?
- Do Site Operators collect NADP samples and report field data in compliance with NADP SOPs?

6.3.1.4. Reports

Survey reports are submitted to the QA Manager and the U.S. EPA Program Officer. Site personnel and the Site Liaison receive summary exit reports at the time of the survey.

6.3.1.5. Response and Corrective Actions

The QA Manager issues survey response reports with proposed corrective actions to Site Operators, Supervisors, and Funding Agency Representatives. The Site Operator and Supervisor are asked to respond to survey reports and indicate whether corrective action has been or can be

taken. The QA Manager reports site status to the NOS and the QAAG at semi-annual meetings and in published QA activity reports.

6.3.1.6. Resolution of Conflict

The QA Manager and the U.S. EPA Program Officer resolves conflicts that arise during Site Systems and Performance Surveys.

6.3.2. Precipitation Chemistry Quality Assurance Project

The USGS operates the Precipitation Chemistry Quality Assurance Project as an independent evaluation of data quality for NTN operations (USGS, 2003). Expansion of this program to include the MDN is planned.

6.3.2.1. Field Audit Program

The field audit program was designed to measure the effects of field exposure, handling, and processing on the chemistry of NTN precipitation samples. In this program, Site Operators place a specified amount of a known solution into a sampler bucket that has been in the field for a week when no precipitation occurred. The solution remains in the bucket for a minimum of 24 hours, after which the field blank is processed normally as specified in the *NTN Site Operation Manual* (NADP, 1999). Only the USGS knows the composition of the solution. Constituent concentrations from the bucket sample are compared to concentrations in the original sample, which is not exposed to field conditions. Both samples are shipped to the CAL for analysis as QA samples. Results are provided to the USGS for interpretation and publication.

6.3.2.2. Sample Handling Evaluation (SHE) Program

Sample Handling Evaluation (SHE) samples are used to assess sample changes due to Site Operator handling and shipping. Site Operators place a specified amount of a known solution into a clean sampler bucket. The solution remains in the bucket for a minimum of 24 hours, after which the SHE sample is processed normally as specified in the *NTN Site Operation Manual* (NADP, 1999). Constituent concentrations from the bucket sample are compared to concentrations in the original sample. Both samples are shipped to the CAL for analysis as QA samples. Results are provided to the USGS for interpretation and publication.

6.3.2.3. Intersite-Comparison Program

This program is a performance evaluation to assess precision and bias of pH and specific conductance measurements at NTN sites. Operators follow NTN SOPs to measure pH and specific conductance of an unknown solution. The results are reported to the USGS. The USGS initiates training and follow-up communications with sites when measurements fall outside tolerance limits.

6.3.2.4. Collocated Sampler Program

The collocated sampler program assesses the total error associated with NADP measurements of precipitation quality and quantity. A second complete set of site equipment,

consisting of a wet deposition collector and raingage, is installed at existing sites, and sampling is run in parallel following SOPs. Samples are shipped to the CAL for analysis as wet deposition samples. The results are provided to the USGS for interpretation and publication.

6.3.2.5. Interlaboratory Comparison Program

This program is a performance evaluation to assess the analytical precision of participating laboratories that analyze low ionic strength samples. The results are used to determine whether statistically significant differences exist between the laboratories for different precipitation monitoring networks in the Northern Hemisphere. Participating laboratories analyze unknown solutions and report the results to the USGS for interpretation and publication.

6.4. Other Assessment Programs

Individual QAPs should specify other assessment programs that verify compliance with DQOs.

7. Personnel Qualification and Training

An effective training program ensures that personnel have the knowledge, skills, and abilities needed to perform their duties in accordance with documented procedures.

7.1. NADP Policy on Personnel Qualification and Training Programs

It is NADP policy that qualified and trained individuals collect environmental data.

7.2. Responsibility

7.2.1. Field Operations

The Program Coordinator has overall responsibility for ensuring that training methods and materials are adequate to train Field Operators to perform their duties as documented in network QAPs and SOPs. Such training programs include:

- On-site training by qualified personnel
- NADP-sponsored training courses
- Training videos
- Internet training sites
- Printed operations manuals, including site installation, maintenance, and troubleshooting guides

The NOS approves new training materials and programs. Network Site Liaisons provide Site Operators and Supervisors with updated training materials and SOPs. Site Supervisors should ensure that Site Operators have adequate access to training programs.

7.2.2. Laboratory Operations

Laboratory Managers are responsible for ensuring that adequate resources for training programs and materials are available to train laboratory personnel to perform their duties as documented in laboratory QAPs and SOPs.

7.2.3. Program Office Operations

The Program Coordinator is responsible for ensuring that adequate resources are provided to support the professional development and training of Program Office personnel.

7.3. Implementation

7.3.1. Field Operations

Before field operations are implemented, Site Operators must be trained in proper field operations procedures via one of the training methods listed in Section 7.2.1. Field Operators should maintain proficiency by having an on-site copy of current operations manuals and training videos for at least annual review.

7.3.2. Laboratory Operations

Laboratory training programs are implemented as specified in the laboratory QAP.

7.3.3. Program Office Operations

Program Office personnel maintain proficiency in the NADP Quality System by having an on-site copy of the current NADP QMP for at least annual review.

7.4. Documentation

7.4.1. Field Operations

The Program Office maintains records of Site Operator and Supervisor attendees at annual NADP-sponsored training courses.

7.4.2. Laboratory Operations

Laboratory Managers document personnel qualifications and training as specified in the laboratory's QAP.

7.4.3. Program Office Operations

The Program Coordinator ensures that personnel qualifications and training are documented through annual performance evaluations.

8. Procurement of Items and Services

This section outlines protocols for ensuring that items and services procured for NADP operations are of sufficient quality to meet DQOs.

8.1. Field Operations

8.1.1. Field Equipment

8.1.1.1. Approved Equipment

Standard specifications for NOS-approved field equipment are documented in the network QAPs. The NOS approves any changes in equipment specifications or types.

8.1.2.2. Equipment Repair

Equipment repaired and/or calibrated on site by field personnel is serviced in accordance with NOS-approved procedures outlined in field operations manuals. Equipment serviced at the Program Office NED is tested to ensure that it meets NOS-approved specifications documented in the network QAPs and/or SOPs. The NED also tests and verifies vendor and subcontracted repairs to ensure that they meet NADP specifications. Equipment repaired under outside contract must meet tolerance and performance criteria stated in the contract, and comply with specifications documented in the network QAPs and/or SOPs. The NOS reviews and approves tolerance and performance criteria for repaired and/or refurbished equipment.

8.1.2. Field Supplies

Supplies used for field operations must comply with NOS-approved specifications approved by NOS outlined in field operations manuals. Supplies provided by the analytical laboratories for site use must meet specifications stated in the laboratory SOW.

8.2. Laboratory Operations

Analytical laboratory services provided for the NADP must meet the specifications stated in SOWs, and QA procedures outlined in the laboratory QAP. The Program Coordinator reviews and approves the CAL SOW, and the Associate Coordinator for Heavy Metals reviews and approves the HAL SOW to ensure that changes to NADP policies and procedures are reflected. Laboratories must provide QC information to assess the data quality of reported results for comparison to stated performance criteria. Supplies procured for laboratory use must meet the specifications stated in the laboratory QAP.

8.3. Other Items and Services

Items and services procured by the Program Office should meet the specifications stated in the purchase request and should be of acceptable quality to meet NADP objectives. Purchase requests for goods and services on bid should include adequate detail specifying the quality and performance expectations of the acquired items. Certifications of performance, quality, and warranty information that accompany goods and services must be maintained in a secure location

under the control of designated personnel. External laboratory services must provide adequate QC information to assess the bias and precision (uncertainty) of the reported results.

9. Computer Hardware and Software

9.1. Maintenance of Long-Term Data Integrity

9.1.1. NADP Data Archive Standard

At least one copy of all NADP monitoring data archived at the Program Office must be in standard ASCII comma-separated-variable (CSV) format. These archived data must be written to secure media compatible with current industry norms. Archived media must be stored in a secure, safe location to maintain integrity. The archive copy must be updated at least annually, and a duplicate copy transferred annually to the DMAS Chair for storage off-site.

9.1.2. Data Preservation

9.1.2.1. Analytical Laboratory Operations

The Laboratory Manager should ensure that data backups are performed at least weekly on all computers used for data processing, in conformance with industry norms. At least two backup media should be used in rotation, with at least one copy maintained off-site.

9.1.2.2. Program Office Operations

Data backups to secure media should be performed at least weekly on all networked computers used by the Program Office for data processing, including workstations, servers, and the central Structured Query Language (SQL) database. At least three backup media should be used in rotation, with at least one copy maintained off-site. Data recovery instructions and data backups should be transferred annually to the DMAS Chair for storage off-site.

9.2. Hardware Selection Procedures

9.2.1. Field Operations

All computer hardware chosen for field operations must be approved by NOS and meet the specifications stated in network QAPs and/or SOPs.

9.2.2. Laboratory Operations

Computer hardware selected for laboratory operations should be sufficient to provide the data deliverables stated in SOWs and meet specifications stated in the laboratory QAP.

9.2.3. Program Office Operations

Computer hardware selected for the Program Office should be sufficient to support long-term data storage, processing, and Internet retrieval consistent with current industry norms, and to provide the data deliverables stated in SOWs. In selecting computers and peripherals, consideration should be given to compatibility with existing hardware and software applications historically used by the NADP.

9.3. Software Selection Procedures

9.3.1. Field Operations

All software chosen for field operations must be approved by NOS and meet the specifications stated in network QAPs and/or SOPs.

9.3.2. Laboratory Operations

Computer software selected for laboratory operations should be sufficient to provide the data deliverables stated in SOWs and meet the specifications stated in the laboratory QAP.

9.3.3. Program Office Operations

Computer software selected for the Program Office should be sufficient to provide the data deliverables stated in SOWs. Software selected to perform mathematical or computational functions should include a description of the formulas and algorithms used, based on information available through the vendor. Certain types of software may require a source code to modify or customize the software for specific applications. Computer software covered under this section includes design, data handling, data analysis, modeling, data acquisition, geographic information system scripts, and database programs. Round off protocols (>5, truncation, etc.) should be stated when reporting data from commercially available spreadsheet and database products.

Internally developed software should contain adequate documentation clearly stating the purpose, program limitations, and applications for which the software was developed. The author of the software will be identified and, whenever practicable, a complete program listing of the source code will be available to users. All mathematical algorithms used in the software should be described in a narrative description accompanying the source code. Prior to use, newly developed software should be tested rigorously using predetermined acceptance criteria. When feasible, manual calculations should be conducted on test data sets and databases to confirm the software reliability prior to routine use.

9.4. Standards for Data Deliverables

The NADP database and reports are maintained as an on-line Internet repository with unrestricted access via the NADP Internet site at nadp.sws.uiuc.edu. The DMAS approves data formats for Internet delivery, compatible with standard industry norms. By special request, data are also made available by diskette, by electronic file transfer, or as hard copy.

9.5. Assessment Procedures for Evaluating Computerized Data Products

Data integrity can be compromised during data entry, electronic capture from automated instruments, and transfers between different computers and databases. Written procedures for ensuring the accuracy and reliability of computerized data products should be described in individual QAPs and may be explained in detail in task-specific SOPs developed for data verification purposes. Data verification methods may include double entry of manually entered

data, manual checking of a fixed percent of computer-generated data, or manual reentry of electronic data.

10. Implementation of Work

10.1. Responsibilities for Project Supervision

The Program Coordinator has overall responsibility for ensuring that work is performed according to approved SOWs, project proposals, QAPs, and other contractual requirements.

10.2. Development of SOPs for Routine, Standardized, or Critical Operations

Site Liaisons should identify the need for development of SOPs for field operations. Laboratory Managers should identify the need for development of SOPs for laboratory operations. The Program Coordinator should identify the need for development of SOPs for Program Office operations. All SOPs must be written and approved as outlined in Section 5.

10.3. Network Expansion

New sites seeking to join existing NADP networks must follow these procedures.

1. Every site seeking to join the NADP submits a complete set of documentation to the Program Office before start-up can be approved. Required documentation is listed in the *Instruction Manual: NADP/NTN Site Selection and Installation* (NADP, 2001).

2. The Site Liaison and QA Manager review the submitted documentation and determine if the site meets NADP siting criteria documented in the *Instruction Manual: NADP/NTN Site Selection and Installation* (NADP, 2001).

3. The Site Liaison works with Site Sponsors and other site personnel to ensure, insofar as possible, that a site meets the entire set of site selection guidelines (NADP, 2001).

4. When all guidelines cannot be met, approval is deferred for NOS consideration via a petition prepared by the Site Liaison and the Site Sponsor. A NOS vote for approval of a site not meeting all guidelines results in approval of the site with exceptions documented in the site information database. A vote against approval precludes the site from joining the NADP.

5. The Site Liaison notifies Site Sponsors and other site personnel of approval or rejection, once a decision is reached. When a site is approved, the Site Liaison requests that the site be sent start-up supplies from the network's analytical laboratory.

6. The Program Coordinator will ensure that appropriate agreements are in place for site sponsorship.

7. The Program Office Documents Manager ensures that new site information is entered into the site information database and that all relevant documentation for a site is added to the NADP archives.

8. The Program Office Database Manager posts site information on the NADP Internet site.

10.4. Deliverables and Schedules

The following lists of deliverables and schedules are separated into those that originate in the Program Office and those that originate in the analytical laboratories. The Program Office is responsible for the quality and timeliness of all deliverables, independent of their origin.

10.4.1. Program Office

10.4.1.1. Network Data

Validated data are loaded into the NADP central SQL database management system within 30 days of receipt from the CAL or HAL. The most recent data in this system should have a lag time of no more than 180 days after the end of the calendar quarter (e.g., January-March) when the samples were collected. The NADP database is maintained as outlined in Section 9.

10.4.1.2. Annual Reports to Site Operators, Supervisors, and Sponsors

Site Operators, Supervisors, and Sponsors receive site-specific annual reports of precipitation chemistry data. These reports should be made available within 9 months of the end of the calendar year (December 31).

10.4.1.3. Annual Precipitation Chemistry Data Summaries

An annual data summary is prepared and mailed to approximately 1000 data users within 9 months of the end of the calendar year (December 31). The current annual summary consists of a set of color isopleth maps of the geographical distribution of weighted-average chemical concentrations and annual deposition fluxes, along with other maps and figures.

10.4.1.4. Operator Training

At least one NTN/AIRMoN field operations course, conducted by CAL staff, and one MDN field operations course, conducted by HAL staff, annually provide training for field Site Operators.

10.4.1.5. Replacement Parts for Field Equipment

The Program Office maintains a supply of replacement parts, including motor boxes, sensors, and event recorders for the NADP wet deposition collector and clocks and mechanisms for the recording precipitation gage. The Program Office provides the CAL and HAL with a supply of each replacement part type, other than recording raingage mechanisms. The CAL and HAL are responsible for providing replacement parts to sites within 7 days of notification. Gage mechanisms are provided as needed to the CAL and HAL.

10.4.1.6. Reports

Reports summarizing the status and progress of Program Office operations are delivered, orally and in writing, at all NADP Technical, Executive Committee, and subcommittee meetings. Annual reports are also submitted to the SAES Regional Research Committees and National Information Management and Support System and to the USDA Current Research Information System.

10.4.1.7. QA Activity Reports

Reports that document and summarize the results of QA activities at the Program Office, as well as the principal results of CAL and HAL QA reports, are published annually. These reports include summaries of internal and external assessment programs. Report updates are delivered orally and in writing at all NADP Technical, Executive Committee, and subcommittee meetings.

10.4.2. Analytical Laboratories (CAL and HAL)

10.4.2.1. Supplies

The analytical laboratories must provide all active NTN and AIRMoN (CAL), and MDN (HAL) sites with supplies sufficient for uninterrupted sample collection, according to SOPs. The CAL and HAL are required to provide certain other supplies and materials on request. Lists of these supplies and time schedules for responding to supply requests are specified in the laboratory SOW. The NOS and the Executive Committee review and approve changes in the supply lists and time schedules.

10.4.2.2. Reports

- Laboratory Managers are responsible for giving presentations that address laboratory operations, productivity, and QA activities at all regularly scheduled NADP Committee and Subcommittee meetings.
- Each NTN, AIRMoN, and MDN Site Operator and Supervisor receives respective reports of field and laboratory data and information for data review and verification. Laboratory SOWs specify the content of these reports and time schedule for delivery.
- All NTN, AIRMoN, and MDN data files are delivered electronically to the NADP Program Office according to schedules in the CAL and HAL SOWs. These files include: (1) final screened and verified data; (2) expanded documentation for all samples requiring sampling protocol, screening level, or quality rating codes; (3) daily and weekly precipitation records; and (4) complete record replacements for any previously delivered data records that have been changed, and all related documentation supporting the change.
- Reports that summarize site problems, personnel or equipment changes, and other information obtained though site communications are delivered to the Program Office according to schedules in the CAL and HAL SOWs.
- The CAL and HAL deliver annual summary reports of internal QA activities. These reports cover, but are not limited to, changes in laboratory management, personnel,

procedures, or detection limits; results of measurements of standard reference materials; determination of precision and accuracy; frequency and results of various blank and replicate analyses; and results of other laboratory QA activities. The laboratory SOW describes report contents and schedules.

- Laboratory SOPs are reviewed and updated, as necessary. Proposed changes are forwarded to the QA Manager for acknowledgment. When approved and implemented, these changes are appropriately documented as outlined in Section 5.
- Reports and oral or poster presentations of accomplishments and activities within the applied research task are presented to the NADP Technical Committee and subcommittees at regularly scheduled meetings.

11. Quality Improvement

The QAAG is responsible for continued quality improvement in the NADP. The QAAG takes the lead in identifying DQOs, ensuring that they are achieved through assessment programs and meet the needs of data users via input from standing subcommittees.

Quality improvement programs focus both on field and laboratory operations. All individuals involved in NADP activities should seek continued quality improvement of DQIs. All participants should ensure that conditions adverse to data quality are prevented, identified promptly to determine the nature and extent of the problem, and corrected as soon as practical, including implementing appropriate corrective actions, documenting these actions, and tracking them to closure.

As an organization open to the free exchange of information, all individuals are encouraged to participate in these efforts to continue the overall improvement and scientific relevance of the NADP.

12. Acronyms, Abbreviations, Terms, and Definitions

accuracy – systematic or persistent distortion of a measurement process that causes errors in one direction (i.e., the expected sample measurement is different than the sample's true value).

acidic compound – a chemical compound capable of transferring a hydrogen ion in solution.

acidic precipitation – precipitation with **pH** below approximately 5.0.

AIRMoN – **NADP** Atmospheric Integrated Research Monitoring Network.

ANSI – American National Standards Institute.

ANSI/ASQC E4-1994 – "Specifications and Guidelines for Quality Systems for Environmental Data Collection and Environmental Technology Programs."

anthropogenic – a result of human activities.

AREERA – Agricultural Research, Extension, and Education Reform Act.

ASQC – American Society for Quality Control.

assessment – the evaluation process to measure the performance or effectiveness of a system and its elements; this all-inclusive term denotes evaluations, audits, or reviews.

atmospheric chemistry – chemical changes and transformations occurring in the atmosphere.

atmospheric deposition – removal of particles and gases from the atmosphere via fallout or precipitation.

audit – a systematic and independent examination to determine whether practices comply with documented **QAPs** and **SOPs**, and that these practices are implemented effectively and are suitable to achieve stated objectives.

BAC – **NADP** Budget Advisory Committee.

base cations – chemical compounds capable of accepting a hydrogen ion in solution; here typically defined as the compounds calcium, magnesium, potassium, and sodium.

bias – see **accuracy.**

bioaccumulation – increase in concentration of chemical compounds in animal tissues as organisms are consumed in the food chain.

biodegradation – changes to chemical concentrations in solution due to the activity of microorganisms.

BNRC – (Illinois) Board of Natural Resources and Conservation.

CAL – **NADP** Central Analytical Laboratory.

CASTNet – **U.S. EPA** Clean Air Status and Trends Network

comparability – a measure of the confidence with which one data set can be compared to another.

completeness – a measure of the amount of valid data obtained from a measurement system compared to the amount that was possible when **SOPs** are followed.

conductivity – a measure of a solution's capacity to conduct an electrical charge.

CSREES – **USDA** Cooperative State Research, Education, and Extension Service.

data quality assessment – scientific and statistical evaluations of validated data to determine if they are of the right type, quality, and quantity to support their intended use.

data quality audit – audits conducted on verified data to document the effectiveness of the data management system used to collect, validate, analyze, summarize, and report data as specified in the **QAP**.

Data Quality Indicator (DQI) – quantitative statistics and qualitative descriptors used to interpret the degree of acceptability or utility of data to the user: principally **bias**/**accuracy**, **precision**, **comparability**, **completeness**, and **representativeness**.

Data Quality Objective (DQO) – qualitative and quantitative statements that specify the technical characteristics of data that are required to support the intended purposes and uses of the data. May include tolerances on the **Data Quality Indicators.**

deposition – see **atmospheric deposition**.

dispersion – transport and spread of pollutants in the atmosphere.

DMAS – **NADP** Data Management and Analysis Subcommittee.

DQI – see **Data Quality Indicator**.

DQO – see **Data Quality Objective**.

dry deposition – removal of particles and gases from the atmosphere via natural fallout, not including precipitation.

ecoregion – a regional classification based on climate and terrain; defined by Robert G. Bailey, **USDA**, see www.fs.fed.us/institute/ecoregions/ecoreg1_home.html.

EES – **NADP** Environmental Effects Subcommittee.

emissions – release of pollutants from natural and human sources.

environmental data – any measurements or information that describe environmental processes, location, or conditions; ecological or health effects and consequences; or the performance of environmental technology. Environmental data include information collected directly from measurements, produced from models, and compiled from other sources such as databases or the literature.

environmental programs – work or activities involving the environment, including but not limited to characterization of environmental processes and conditions; environmental monitoring; environmental research and development; design, construction, and operation of environmental technologies; and laboratory analyses of environmental samples.

ESCOP – **USDA-CSREES** Experiment Station Committee on Organization and Policy.

free acidity – free hydrogen ions in solution not bound in other chemical compounds.

FWS – Fish and Wildlife Service.

HAL – **NADP** Mercury (*Hydrargyrum*) Analytical Laboratory.

independent assessment – an assessment performed by a qualified individual, group, or organization other than the organization directly performing and accountable for the work being assessed.

inspection – examination or measurement of an item or activity to verify conformance to specific requirements.

ISWS – Illinois State Water Survey.

management – those individuals directly responsible and accountable for planning, implementing, and assessing work.

management system – a structured, nontechnical system describing the policies, objectives, principles, organizational authority, responsibilities, accountability, and implementation plan of an organization for conducting work and producing items and services.

management systems review –qualitative assessment of a data collection operation and/or organization(s) to establish whether the prevailing **QM** structure, policies, practices, and procedures are adequate for ensuring that the necessary type and quality of data are obtained.

metadata – data and other information about another data set.

MDN – **NADP** Mercury Deposition Network.

NADP – National Atmospheric Deposition Program.

NADP/NTN – National Atmospheric Deposition Program/National Trends Network.

NAPAP – National Acid Precipitation Assessment Program.

NC-141 – North Central Regional Project 141, original designation for the NADP.

NED – **NADP** Network Equipment Depot.

NOS – **NADP** Network Operations Subcommittee.

NPS – National Park Service.

NRSP – National Research Support Project.

NTN – **NADP** National Trends Network.

nutrient – chemical compounds that enhance the growth of organisms.

peer review – a critical review of a specific scientific and/or technical product to corroborate scientific defensibility, which may include an in-depth assessment of assumptions, calculations, extrapolations, alternative interpretations, methodology, acceptance criteria, and conclusions pertaining to the specific scientific and/or technical products and of the supporting documentation.

performance evaluation – a quantitative test to determine whether a measurement system can obtain results that meet tolerance limits.

pH – a measure of free hydrogen ion in solution on a logarithmic scale.

pollutants – chemical compounds that have adverse effects on the environment.

precipitation – liquid water that falls from the atmosphere, generally snow, rain, and ice, but not fog.

precipitation chemistry – chemical changes occurring in a liquid state in the atmosphere.

precision – a measure of mutual agreement among individual measurements of the same property, usually under prescribed similar conditions, expressed generally in terms of the standard deviation.

QA – see **Quality Assurance.**

QAAG – **NADP** Quality Assurance Advisory Group.

QAP – see **Quality Assurance Plan**.

QAPP – see **Quality Assurance Plan.**

QC – see **Quality Control**.

QM – see **Quality Management**.

QMP – see **Quality Management Plan**.

Quality Assurance (QA) – an integrated system of management activities involving planning, implementation, documentation, assessment, reporting, and quality improvement to ensure that a process, item, or service is of the necessary type and quality expected by the client; generally implemented after an activity has occurred.

Quality Assurance Plan (QAP) – a formal document describing in comprehensive detail the necessary QA, QC, and other technical activities that must be implemented to ensure that the results of the work performed will satisfy stated performance criteria.

Quality Assurance Project Plan (QAPP) – see **Quality Assurance Plan**.

Quality Control (QC) – the overall system of technical activities to measure the attributes and performance of a process, item, or service against defined standards to verify that they meet the stated requirements established by the customer; operational techniques and activities that are used to fulfill requirements for quality; generally implemented while activities are being performed.

quality improvement – a management program to improve the quality of operations using a formal mechanism to encourage worker recommendations, timely management evaluation, and feedback or implementation.

Quality Management (QM) – that aspect of the overall management system of the organization that determines and implements the quality policy. Includes strategic planning, allocation of resources, and other systematic activities (e.g., planning, implementation, documentation, and assessment) pertaining to the quality system.

Quality Management Plan (QMP) – a document that describes the quality system in terms of the organizational structure, functional responsibilities of management and staff, lines of authority, and required interfaces for those planning, implementing, and assessing all activities conducted.

readiness review – reviews conducted before specific technical activities are initiated to assess whether procedures, personnel, equipment, and facilities are ready for data collection according to the **QAP**.

receptor – location where pollutants are deposited or ingested.

record – a completed document that provides objective evidence of an item or process. Records may include photographs, drawings, magnetic tape, and other data recording media.

representativeness – a measure of the degree to which data accurately and precisely represent the characteristic of a population, parameter variations at a sampling point, a process condition, or an environmental condition.

RFPs – Request for Proposals.

SAES – **USDA** State Agricultural Experiment Stations.

scavenge – removal of atmospheric pollutants by collision or interception with precipitation.

SHE – Sample Handling Evaluation; **NADP** external **QA** program.

SOP – see **Standard Operating Procedure**.

SOW – see **Statement of Work**.

specifications – a document stating requirements and that refers to or includes drawings or other relevant documents. Should indicate the means and criteria for determining conformance.

SQL – Structured Query Language.

Standard Operating Procedure (SOP) – a written document that details the method for an operation, analysis, or action with thoroughly prescribed techniques and steps. The officially approved method for performing certain routine or repetitive tasks.

Statement of Work (SOW) – a written document detailing the procedures and deliverables required to meet contract obligations.

supplier – any individual or organization furnishing items or services or performing work according to a procurement document or financial assistance agreement. This is an all-

inclusive term used in place of any of the following: vendor, seller, contractor, subcontractor, fabricator, or consultant.

surveillance – continuous or periodic assessments of the real-time implementation of an activity or activities to determine conformance to established procedures and protocols.

technical review – a documented critical review of work that has been performed within the state of the art. One or more qualified reviewers are independent of those who performed the work, but are collectively equivalent in technical expertise to those who performed the original work. An in-depth analysis and evaluation of documents, activities, material, data, or items that require technical verification or validation for applicability, correctness, adequacy, completeness, and assurance that established requirements are satisfied.

technical systems audit – audits that quantitatively document the degree to which the procedures and processes specified in the approved **QAP** are being implemented.

transformation – chemical changes due to chemical reactions.

transport – movement of pollutants in the atmosphere due to winds, dispersion, etc.

TVA – Tennessee Valley Authority.

uncertainty – a numerical value assigned to a measurement to take into account two major components of error: 1) systematic error, and 2) random error attributed to imprecision of the measurement process.

U.S. – United States.

USDA – United States Department of Agriculture.

USDA-FS – United States Department of Agriculture Forest Service.

U.S. EPA – United States Environmental Protection Agency.

USGS – United States Geological Survey.

wet deposition – removal of particles and gases from the atmosphere via precipitation.

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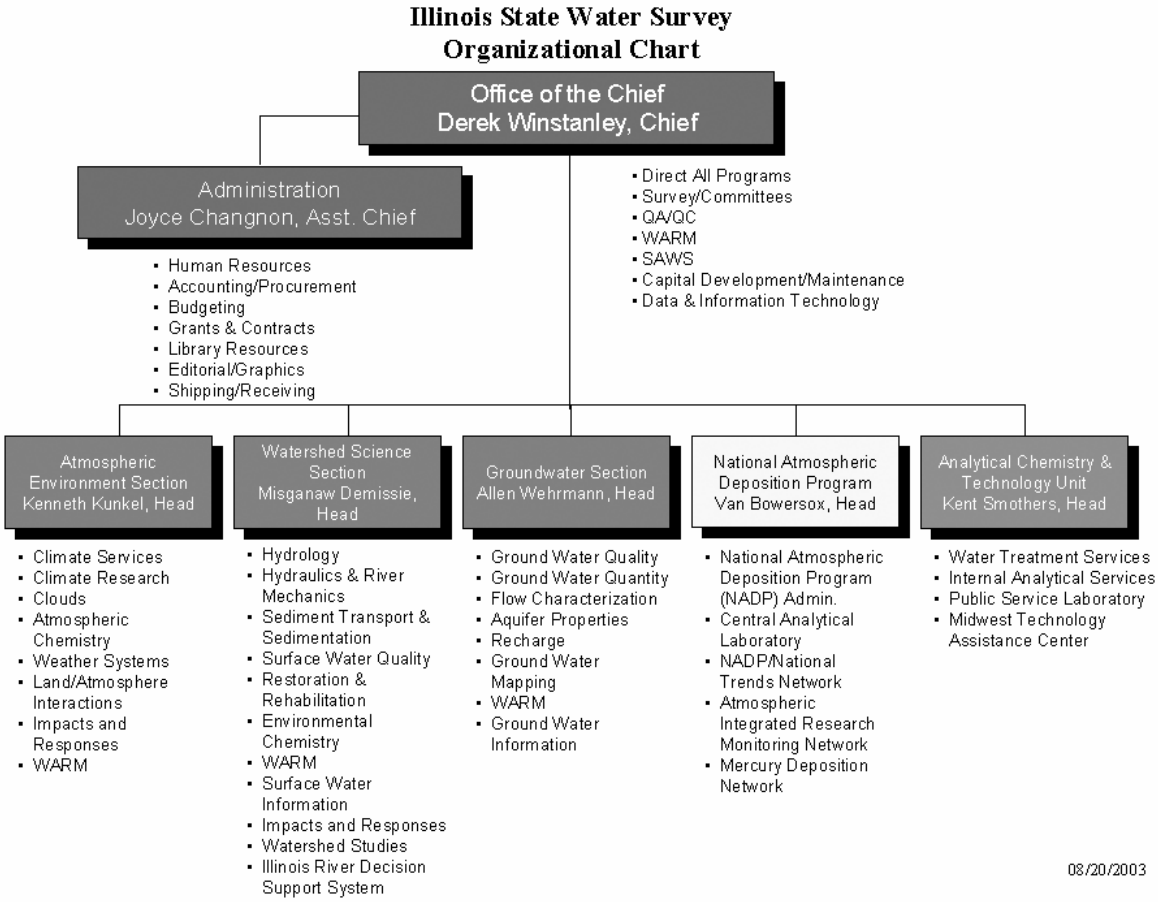
Appendix A. Illinois State Water Survey Organizational Chart



Appendix B. Guidelines Governing the National Atmospheric Deposition Program

Section 1. History and Structure

The National Atmospheric Deposition Program (NADP) was established in 1977 by the State Agricultural Experiment Stations (SAES) of the United States Department of Agriculture (USDA) to address problems of atmospheric deposition and its effects on agricultural crops, forests, rangelands, surface waters, and other natural and cultural resources of the nation. The NADP was organized initially as SAES North Central Regional Project NC-141 and involved the operation of 22 sites that commenced precipitation sampling on a weekly basis in 1978. In 1982, the NADP, which then became designated as SAES Interregional Project IR-7, combined its resources with those of the National Acid Precipitation Assessment Program (NAPAP), resulting in a single network of precipitation chemistry monitoring stations that became known as the National Trends Network (NTN). In 1992, the SAES IR-7 Project became reclassified as the SAES National Research Support Project NRSP-3. That same year, the Atmospheric Integrated Research Monitoring Network (AIRMoN) joined the NADP with the objective of collecting samples on each day that precipitation occurs. The Mercury Deposition Network (MDN), which samples precipitation weekly, joined the NADP in 1996. The NADP now serves as the parent organization overseeing the operations of these various complementary monitoring and research networks.

The NADP operates, as it has since its inception, as a public, nonprofit, unincorporated, interstate association of interested parties to investigate atmospheric deposition and its effects on the environment. The NADP is structured as a cooperative program that represents many interested individuals and numerous federal, state, academic, and private organizations that coordinate efforts to operate monitoring sites, report data, and oversee research activities related to atmospheric deposition.

All members of the NADP constitute the “Technical Committee”. The governing body of the NADP Technical Committee is the “Executive Committee”, a subset of the Technical Committee that is composed of elected officers and various institutional representatives. Management and various support activities of the NADP are carried out by the Program Office under guidance from the Executive Committee. The Budget Advisory Committee and several standing subcommittees advise the Executive Committee on various financial, technical, and scientific matters.

Section 2. Membership

Membership in the NADP is open to individuals and institutions interested in any aspect of atmospheric deposition monitoring or research stemming from NADP data. The collective body of members constitutes the NADP Technical Committee. Permanent members include the SAES regional representatives, representatives from the various offices and laboratories contracted to perform NADP support functions, as well as representatives from any organization that sponsors or operates one or more NADP monitoring sites. For other persons and

organizations, attendance at any official meeting of the NADP shall initiate a three-year period of active membership.

Privileges of active membership include notification of and the right to attend all meetings of the Technical Committee or any of its standing subcommittees, voting rights in the Technical Committee and its subcommittees, as well as receipt of NADP products and publications, and other benefits or privileges designated by the Technical Committee.

Termination of membership occurs once a nonpermanent member fails to attend or be represented at any NADP meeting within a three-year period. However, a nonpermanent member may request provisional membership on an annual basis by notifying the NADP Program Office of his or her continued interest in NADP activities. Provisional members shall have all the privileges of active membership except the right to vote. Provisional members shall become active members by attending an NADP-sponsored meeting. Membership may also end whenever an individual voluntarily notifies the Program Office of this intent.

Section 3. Technical Committee

A. General Description

The NADP Technical Committee operates as a "committee of the whole" to set policy and make decisions concerning the technical and scientific aspects of the program. Decisions of the Technical Committee are determined by a simple majority vote of members attending the annual business meeting.

B. Officers

The elected officers of the NADP Technical Committee shall consist of the Chair, the Past Chair, the Vice Chair, and the Secretary. The Secretary shall hold office for one year and then shall automatically assume the office of Vice Chair. The Vice Chair shall hold office for one year and then shall automatically assume the office of Chair for one year, and then the office of Past Chair for one additional year.

If, for any reason, the Chair is unable to carry out the duties of that office, the Vice Chair shall act in that capacity until the Chair can resume duties or until the term of office is completed. If neither the Chair nor the Vice Chair is able to complete the term of the Chair, then the Past Chair shall assume the duties of the Chair until the Executive Committee chooses a Chair to complete the term.

C. Duties of NADP Officers

The duties of NADP officers are the same as those of officers in similar organizations, unless prescribed otherwise by these Guidelines or assigned by the Technical Committee. NADP officers serve without honoraria.

Chair: The Chair shall preside at all meetings of the Technical Committee and of the Executive Committee. The Chair also serves as the co-chair of the Budget Advisory Committee. The Chair shall appoint chairs and members of all ad hoc committees under the Technical and Executive Committees, unless otherwise specified by these Guidelines or by the order creating the same. The Chair, in consultation with the Executive Committee, may delegate certain duties and perform such duties as usually pertain to this office. The Chair is responsible for planning and organizing the interim meeting of the Executive Committee and the annual meeting of the Budget Advisory Committee.

Vice Chair: The Vice Chair is responsible for planning and organizing the program of the annual Technical Committee meeting. The Vice Chair shall perform other duties as delegated by the Chair. In the event the Chair is unable to perform his or her duties, the Vice Chair shall assume the duties of the Chair.

Secretary: The Secretary shall assist the Vice Chair in planning and organizing the annual Technical Committee meeting. The Secretary shall become fully knowledgeable about NADP policies and functions, review the status of available NADP products, and help formulate a strategy for disseminating any new products. The Secretary shall perform other duties as delegated by the Chair.

Past Chair: The Past Chair is responsible for compiling all necessary information from NADP members to generate an annual report of the NADP. The Past Chair shall also assist in long-range planning for the continued health of the NADP, as well as assist the Chair as mutually agreed. In the event that neither the Chair nor the Vice Chair is able to perform the duties of the Chair, the Past Chair shall assume the duties of the Chair.

D. Election of Officers

A nominating committee, appointed by the outgoing Chair, shall submit nominations for Secretary to the Executive Committee for its approval prior to the closing business meeting of the annual Technical Committee meeting. Approved nominations shall be forwarded to the Technical Committee by the Chair, who will preside over the election at the closing business meeting and also accept, if seconded, additional nominations from the floor by any qualified member. All nominated persons must be members of the Technical Committee at the time of nomination. The Technical Committee elects the incoming Secretary by a simple majority of members in attendance at the closing business meeting. The terms of new officers shall commence at the adjournment of the annual Technical Committee meeting or as soon as possible thereafter.

E. Technical Committee Meetings

There shall be at least one meeting of the Technical Committee each year, typically in the autumn. This annual meeting shall include the NADP annual business meeting, and it shall also provide opportunities for a program of presentations and other activities relating to atmospheric deposition. The Vice Chair may call additional Technical Committee meetings as deemed necessary in consultation with the Executive Committee. The time and place of each NADP Technical Committee meeting shall be coordinated by the Vice Chair in consultation with the Executive Committee and with help from the Program Office. The NADP Program Office shall notify all NADP members at least 90 days prior to each Technical Committee meeting. The Program Office shall also provide a recorder at all business meetings, who shall collate, disseminate, and archive a written record of all actions.

F. Annual Business Meeting

At least one NADP business meeting shall be held in conjunction with the annual Technical Committee meeting and announced explicitly in the program for that meeting. For voting purposes, a quorum shall consist of the number of eligible members present at the business meeting. Reports of activities and motions of the Executive Committee and of all standing subcommittees and other groups appointed by the Executive Committee shall be presented by the respective chairs and approved by vote of the Technical Committee. Additionally, any member may introduce motions recommending changes in NADP operations or bring up other matters for discussion at the business meeting. All motions must be seconded by a member of the Technical Committee, and all votes at the business meeting shall be by simple majority. The Program Office shall provide a recorder at all business meetings, who shall collate, disseminate, and archive a written record of all actions.

Section 4. Executive Committee

A. Structure and Responsibilities

The Executive Committee is the governing body of the NADP that is responsible for executing the decisions and actions of the Technical Committee, making budgetary recommendations, and generally developing the vision required to ensure continuity, stability, and balance for the NADP. In general, the Executive Committee conducts NADP business between Technical Committee meetings and performs other tasks assigned by the Technical Committee. The voting members of the Executive Committee shall be empowered to set policy and make decisions concerning the technical and scientific aspects of the program on behalf of the Technical Committee membership. The Executive Committee also makes recommendations to the Technical Committee concerning administrative and budgetary aspects of the program.

The voting membership of the Executive Committee consists of the four elected officers of the Technical Committee (Chair, Vice Chair, Secretary, and Past Chair), as well as the Chair of each standing subcommittee (currently designated Data Management and Analysis, Network

Operations, and Environmental Effects) and the elected Co-chair of the Budget Advisory Committee. Nonvoting members of the Executive Committee are the regional administrative advisors representing the State Agricultural Experiment Stations (SAES), a representative of the Cooperative State Research Education and Extension Service (CSREES), representatives from each NADP network (currently the National Trends Network or NTN, the Atmospheric Integrated Research Monitoring Network or AIRMoN, and the Mercury Deposition Network or MDN), representatives of the analytical laboratories, the director of the National Acid Precipitation Assessment Program (NAPAP), and the Program Coordinator. Representatives of the various funding organizations are nonvoting, ex-officio members of the Executive Committee.

B. Executive Committee Meetings

The Executive Committee shall meet at least two times each year. One of these meetings must take place in person at the annual Technical Committee meeting. The interim meeting is typically held in conjunction with the Budget Advisory Committee meeting. When meeting in person is not possible for the interim meeting or for other meetings of the Executive Committee, a conference telephone call may be substituted. Additional discussions and voting may take place by U.S. or by electronic mail. Actions of the Executive Committee require approval by a simple majority of the voting members physically present at a meeting or of those responding electronically, by telephone, or by mail. The Program Office shall provide a recorder at all business meetings, who shall collate, disseminate, and archive a written record of all actions. The record of all meetings and discussions conducted by the Executive Committee will be made accessible to all Executive Committee members.

C. Budget Advisory Committee

The Budget Advisory Committee has overall responsibility for the financial planning of the NADP. The Budget Advisory Committee shall meet, upon request of the Technical Committee Chair, at least once each year to review the NADP income and expenditures, and to plan for future funding. Actions of the Budget Advisory Committee require approval by a simple majority of the voting members physically present at a meeting, or by responding to voting conducted by telephone, by mail, or by electronic means. The Budget Advisory Committee makes recommendations concerning the annual budget to the Executive Committee.

The Budget Advisory Committee is comprised of the Chair, Vice Chair, and Past Chair of the Technical Committee, the chair of the SAES regional administrative advisors, and representatives of the funding organizations for the NADP networks. The Budget Advisory Committee is co-chaired by the Chair of the NADP Technical Committee and one other member elected by the Budget Advisory Committee. At all meetings, the co-chairs of the Budget Advisory Committee designate a recorder, who shall provide a written record of all nonconfidential actions to the Program Office for dissemination to all members of the Budget Advisory Committee, the Executive Committee, and the archives.

Section 5. Subcommittees

A. Structure

Subcommittees provide much of the technical guidance necessary to conduct the NADP mission. In general, subcommittees may be either permanent ("standing") or temporary ("ad hoc"). Whereas ad hoc subcommittees may be formed by either the Executive Committee or the Technical Committee to accomplish specific tasks over restricted time periods, standing subcommittees shall exist indefinitely for the purpose of providing routine input to the Executive and Technical Committees.

Three standing committees currently coordinate the monitoring and research activities of the NADP networks. Specific matters considered by the standing subcommittees relate to (a) network operations, including siting criteria, site operations, methods development, and quality assurance (Network Operations Subcommittee or NOS); (b) data management, including data coding, analysis, and reporting (Data Management and Analysis Subcommittee or DMAS); and (c) interfacing the network monitoring program with environmental effects (Environmental Effects Subcommittee or EES). Each subcommittee may consider other matters as determined by assignment from the Executive Committee and/or by suggestions from its members.

Standing subcommittees convene at least once each year at the annual Technical Committee meeting and at additional times as needed. Membership and voting rights in the standing subcommittees are open to all Technical Committee members. Decisions in all subcommittees are made by a simple majority of the voting members present at an in-person meeting, or by responding to voting conducted by mail, by telephone, or by electronic means. Each subcommittee shall designate a recorder who shall prepare a written record of all actions and provide this record in a timely manner to the Program Coordinator for dissemination and archiving. Standing subcommittees shall provide input to the Technical Committee and the Executive Committee through reports and recommendations (as motions brought to the Technical Committee for approval).

B. Subcommittee Officers

Officers of each subcommittee shall be determined by the members of that subcommittee and shall serve without honoraria. Typically, officers consist of a Chair, Vice Chair, and Secretary. The Secretary shall hold office for one year and then shall automatically assume the office of Vice Chair. The Vice Chair shall hold office for one year and then shall automatically assume the office of Chair for one year. However, the arrangement and terms of subcommittee officers may differ from this model if agreed upon by the members of that subcommittee. The duties of NADP subcommittee officers are the same as those of officers in similar organizations, unless prescribed otherwise by these Guidelines or assigned by the Technical Committee.

C. Charges of the Standing Subcommittees

The Subcommittee on Network Operations (NOS) is charged with the following:

- Evaluating siting criteria, instrumentation, procedures, methods, and technologies proposed for use by each of the various NADP networks.
- Reviewing and evaluating field-measurement procedures to ensure that the proper protocols are routinely followed, making recommendations for change as appropriate.
- Periodically reviewing/auditing the analytical laboratories and the external quality assurance program to ensure that the proper procedures are being used and that appropriate quality control (QC) and quality assurance (QA) protocols are being followed.
- Evaluating and determining the acceptability of changes proposed for the analytical laboratories concerning analytical methods, laboratory procedures, and QC and QA protocols.
- Assuring that the analytical data generated for the networks meet program needs and are accompanied by complete QA documentation. When program needs change, this subcommittee reviews and recommends changes in the QA Plan on matters of network operations.
- Reviewing, evaluating, and approving the instruction manuals for site operations and proposing changes in these manuals as deemed necessary.
- Recommending and reviewing procedures for recording measurements and observations reported by field site operators, the analytical laboratories, the Program Office, and by external auditing agencies. This charge includes the review and approval of the design of the Field Observer Report Form and the precipitation gage records.
- Providing reports to the Technical Committee and the Executive Committee as appropriate. Copies of these reports are sent to the network QA manager and to the agency representatives of the external-audit and QA programs.

The Subcommittee on Data Management and Analysis (DMAS) is charged with the following:

- Reviewing and recommending proposed changes in data management procedures to improve accuracy or efficiency in current practices and to meet new or modified objectives.
- Reviewing and approving all standard operating procedures (SOPs) relating to data management and reporting, including all proposed changes to these documents. This charge includes all data screening and coding procedures used by sites, the analytical laboratories, the Program Office, and all criteria for data reporting.

- Reviewing and approving the format of data reports and summaries from the Program Office and recommending changes consistent with reporting objectives, including evaluating and approving the criteria for use of site data in these reports and summaries.
- Ensuring that appropriate data management procedures are being used and that appropriate QA and QC protocols are being followed by participating in the technical reviews and audits of the analytical laboratories and Program Office data management operations.
- Ensuring that the network data meet program needs and are accompanied by complete QA documentation and reviewing and recommending changes in the QA Plan on matters of data-management operations when the needs of the program change.
- Providing reports to the Technical Committee and to the Executive Committee as appropriate and sending copies of these reports to the network QA manager and the agency representatives of the external audit programs.

The Subcommittee on Environmental Effects (EES) is charged with the following:

- Advising the NADP on the needs for atmospheric deposition data by effects researchers.
- Reviewing scientific approaches and content in all interpretive publications of NADP.
- Making recommendations to the Executive Committee on priorities for research funding.
- Promoting communication and cooperation among effects researchers.

Section 6. Program Office

The Program Office is responsible for administering the activities of the NADP on a daily basis under the guidance of the Executive Committee. Primary responsibilities of the Program Office include, but are not limited to data management and dissemination; fiscal management; assistance to site operators, including hardware replacement; coordination of QA activities; the production of annual summaries and other reports; site documentation; contracting for analytical services; coordinating with cooperating agencies and other supporting programs; and performing other activities that enable the networks to function smoothly.

Program Coordinator: The Program Coordinator shall have the administrative responsibility for all Program Office activities. Specifically, the Program Coordinator shall be responsible for implementing the various policies, programs and activities approved by the Technical Committee and the Executive Committee. The Program Coordinator, appointed and employed by the institution at which the Program Office resides, shall be a voting member of the Technical Committee and a nonvoting member of the Executive Committee. The Program Coordinator shall oversee and archive the records of the NADP; distribute and archive the minutes of the various meetings of the Technical Committee, the Executive Committee, and the standing subcommittees; and prepare meeting announcements as advised by the Executive Committee for distribution to appropriate members in a timely manner. The Program Coordinator shall have on hand at all times these NADP Guidelines and the parliamentary rules of order, and shall perform other duties as may be delegated by the Technical Committee.

Staffing: The Program Office shall be staffed with appropriate professional specialists, under the direction of the Program Coordinator, to carry out the contractual and other responsibilities of the Program Office, including, but not limited to, providing suitable analytical services and support for NADP meetings.

Section 7. Amendments and Parliamentary Authority

These Guidelines may be amended as appropriate by a simple majority of voting members at any Technical Committee meeting.

A version of the parliamentary writings of General Henry M. Roberts approved by the Technical Committee shall govern the NADP in all instances not covered by these Guidelines.

Approved by the Technical Committee October 28, 1999
Revisions approved by the Technical Committee October 21, 2003

Appendix C. Current Versions of NADP Quality System Documents

Program Management	*Title*	*Revision Date*	*Location*
National Atmospheric Deposition Program	*Quality Management Plan: National Atmospheric Deposition Program*	2003	nadp.sws.uiuc.edu/lib/
Network Operations			
National Trends Network	*Quality Assurance Plan: NADP/NTN Deposition Monitoring*	June 1991*	request from Program Office
Mercury Deposition Network	*Quality Assurance Plan: Mercury Deposition Network*	1997*	request from Program Office
Atmospheric Integrated Research Monitoring Network	*Quality Assurance Plan: Atmospheric Integrated Research Monitoring Network*	1995*	request from Program Office
Laboratory Operations			
Central Analytical Laboratory	*Quality Assurance Plan: National Atmospheric Deposition Program, Central Analytical Laboratory*	July 2002	nadp.sws.uiuc.edu/lib/
Mercury (*Hydrargyrum*) Analytical Laboratory	*Quality Assurance Plan: Frontier Geosciences Inc.*	August 2003	http://www.frontiergeosciences.com
External QA Programs			
Site Systems and Performance Surveys	*Quality Assurance Plan for Conducting Systems and Performance Surveys of National Atmospheric Deposition Collection Stations*	August 2002	request from Program Office

Notes:
* Currently in revision

Appendix D. Proposal for New NADP Initiatives

Part 1: A Guide for the Presentation of New Initiatives to the NADP (NRSP-3)

Introduction

New initiatives encompass the proposed addition of new analytes (elements, ions, liquids, gases, particles, radiation, physical attributes of climate, climate-induced attributes, etc.), new sampling intervals, and new database or report procedures for such additions to the NADP. Less extreme changes to the existing NADP system can also be considered through this process, but the process is not meant to supplant the normal business conducted by the NADP standing Subcommittees: Environmental Effects, Network Operations, Data Management and Analysis, and QA/QC Steering Committee. An opinion as to whether a suggested change is major, and thus appropriate for this process, can be obtained from the Chair of the NADP working with the NADP Coordinator, and will be confirmed at the next Executive Committee (EC) meeting.

The contact for new initiatives is the NADP Chair through the Program Coordination Office. This initial contact may be verbal. The Chair will discuss with the petitioner the appropriateness of the initiative for the NADP and the procedures to be followed for new initiatives. If the petitioner wishes to continue with the new initiative process following this discussion, a brief written statement of the general concept of the new initiative will be required. The petitioner will be provided with the following documents:

- Strategic Plan for the NADP
- Guide for the Presentation of New Initiatives (this document)
- Process for Incorporating New Initiatives into the NADP
- Composition of Ad Hoc New Initiatives Committees

Full implementation of a new initiative will require a minimum of 6 months and possibly a year to complete. During this process, the advocate will be responsible for the following documents and presentations:

- Brief, written description of general concept of new initiative (to NADP Chair)
- Preliminary New Initiative Description, in writing, to EC
- Initial (oral) presentation to EC
- Final New Initiative Description, in writing, to EC
- Final (oral) presentation to EC and possibly to NADP Technical Committee

A **preliminary** "New Initiative Description," based on careful consideration of the 12 points outlined in this guide, must be submitted in writing to the Executive Committee (EC) of the NADP at least two weeks prior to an EC meeting. These meetings normally occur in late May and during the period of late September through early November. The advocate will also be expected to make an oral presentation before the EC, and use the presentation for real-time negotiation of the 12 points covered in the preliminary New Initiative Description. All 12 items

must be addressed; however, it is recognized that funding guarantees, working relationships, data handling items, etc. may not be finalized by the advocate or the NADP at this time. The purpose of this review is to obtain tentative approval by the EC, and establish an ad hoc committee composed of the Initiative Advocate and NADP members that will facilitate finalization of all 12 items in the following 6 to 12 months.

The **final** New Initiative Description must also be presented in writing (two weeks prior to an EC meeting), and orally to the EC for endorsement and referral to the full Technical Committee of the NADP.

New Initiative Descriptions

The following 12 items of information will allow the EC to determine the appropriateness of the new initiative for the NADP and explore how the new initiative will operate. These 12 items must be addressed in the written New Initiative Description and in both the preliminary and final oral presentations to the EC. At each meeting, the EC will either accept, reject, or send back for more work; thus, a straightforward presentation will help the advocate's cause in both cases.

1. **Initiative Name:** Give a concise title to the new initiative.
   Initiative Advocate: List the name of the advocate (contact person(s)), organizations) for the new initiative with address, phone and fax numbers.
   Objective: State the objective of the new initiative.
   Duration: State the duration of the new initiative.
   Background: Give a 1 to 3 paragraph background, justification statement not to exceed 1 page.

2. **How will the new initiative meet the Mission, Objective and Philosophy of the NADP?**

   It is the Mission of the NADP (NRSP-3) to: Discover and characterize biologically important geographical and temporal trends in the chemical climate of America.

   The Objective of the NADP (NRSP-3) is: To provide the scientific community, resource managers, and policy makers with information of the highest possible quality on the exposure of both natural and managed ecosystems to biologically important chemical deposition and other stresses resulting from changes in the chemical climate.

   It is the Philosophy of the NADP to: Share QA/QC data with all.

   Data collected, analyzed, and screened for adherence to quality control criteria are shared from a continuously updated computer data base about 6 months after field collection, and in written annual reports (if needed) about 9 months after the end of the calendar year. Site Operators and Site Scientists receive written, site-specific, preliminary data reports about 4 months after collection.

Linkage to USDA. The National Atmospheric Deposition Program is organized as a National Research Support Project (NRSP-3) under the Cooperative State Research Service in the United States Department of Agriculture (USDA). Identify how the new initiative will address the scope of research under the USDA and help meet the broad mission of that department.

3. **What information will be added to the NADP data base?**
   In the simplest terms, the NADP maintains and shares a data base of analytes at a given sampling interval, and a record of QA/QC protocols, field procedures, and laboratory procedures. What information do you envision adding to this knowledge base? A simple, but specific list will do.

4. **What data products are needed to meet the objectives of the New Initiative and NADP objectives?**
   Data products begin with documentation of field sampling protocols, progress to field sampling forms, laboratory protocols, magnetic data base structure at the analytical laboratory and at the data base facility, 4-month site operator/scientist reports, data selection and completeness criteria, and may end with the publication of various new written reports (or not), or with the incorporation of written data into existing reports.

5. **What protocols (field sampling, laboratory, and data) are needed?**
   (What is your plan of operation?)

6. **What QA/QC provisions are needed for field data and laboratory data?**

7. **What data quality criteria are proposed?**
   This should address how contaminated samples or otherwise unrepresentative data will be flagged and/or sequestered in the computer data base, and how much data is needed for annual or seasonal summaries (if needed)? This point and points 5 and 6 need your best first estimate in the initial description, but will usually require sharing of information at the Central Analytical Laboratory and the Coordination Office, as well as some give-and-take negotiation, prior to the final submission of the proposal.

8. **What are the time, staffing, and cost demands on:**
   - **the Coordination Office** (Publication of protocols, data handling, QA/QC protocols, computer data base entry and design, report preparation and distribution, annual contracting, etc.),
   - **the Central Analytical Laboratory** (Field sampling protocol and Field Operator Form processing, sample handling, container preparation, analysis, QA/QC, field operator/scientist's reports, field liaison, etc.),
   - **the Field Operator** (travel, sampling, instrument servicing, and QA/QC)?

9. What are the funding sources?
What expressions of interest have you had in this initiative? Where will the money come from for added staffing demands at the Coordination Office, field operation, laboratory analysis, and data handling? Degree of self support will be an important factor in the evaluation, particularly for major undertakings.

10. How will you handle money transfers to the Coordination Office, to the Central Analytical Laboratory, to site operators?

11. How will the new initiative operate within NADP?
Do you envision operating within existing NADP Subcommittees (Environmental Effects, Network Operations, Data Management and Analysis, and QA/QC Steering Committee), independently, with representatives from the standing subcommittees, or through some other structure?

12. What transition needs do you envision?
Give us a timetable of how you will proceed to complete the final description of the new initiative. Also, tell us what transitional data products, data comparability studies, protocol studies, consensus meetings, funding arrangements, staffing needs, siting criteria, etc. will be needed in the next 6 to 18 months. What are your plans in the transition period?

We ask that you prepare your 12-point New Initiative Description and send the original (unbound) to the Coordination Office for distribution to the Executive Committee of NADP (NRSP-3), other Program Representatives, Central Analytical Laboratory representative, and Chairs of the standing NADP Subcommittees. The unbound original can be copied and distributed to these people from the Coordination Office. Alternately, in the interest of time, you may request a list of these people and their addresses from the Coordination Office and mail the preliminary/final New Initiative Description directly, assuming the Coordination Office will still receive an unbound original at the time of mailing. We urge your close contact with the Chair of NADP and the Coordination Office. The Chair of NADP will need to provide time for your presentation in the agenda for the Executive Committee meeting.

Remember, you are providing the New Initiative Description for consideration by the Executive Committee of the NADP. Distribution to other people is for their information. You may contact the Coordination Office, the Central Analytical Laboratory, and members of the NADP standing Subcommittees, but they should limit their involvement to provision of proposal material, standard procedures and QA/QC information, price lists, and staffing costs that can largely be handled by phone or mail. After the preliminary, 12-point New Initiative Description is accepted and tentatively approved by the EC, the Chair will establish a formal Ad Hoc New Initiative Committee that can devote considerably more time and possibly travel to help in developing the final New Initiative Description.

Part 2. Process for Incorporating New Initiatives into the NADP (NRSP-3)

I. An advocate of the New Initiative contacts the Coordination Office and NADP Chair for copies of: "A Guide for the Presentation of New Initiatives to the NADP (NRSP-3)", this process document, and "The Composition of Ad Hoc New Initiative Committees." The Advocate may also request assistance in developing estimates of coordination and analysis costs at a later date and a list of Executive Committee members and other Program Representatives if he or she wishes to make a direct mailing of the completed, 12-point New Initiative Description to these people. Alternately, the Advocate may send the completed description to the Coordination Office for distribution.

II. The completed, 12-point, preliminary New Initiative Description is received by the Executive Committee (EC) at least two weeks prior to their meeting.

III. The Advocate makes an oral presentation to the EC, allows for real-time negotiation of items during the meeting, and requests action on the new initiative by the EC.

Possible EC actions:
A. EC rejects the new initiative as inappropriate for the NADP (NRSP-3).
B. EC expresses interest, but indicates that the preliminary New Initiative Description is too vague to grant tentative approval. The EC returns the 12-point description to the advocate for additional work.
C. EC tentatively approves the new initiative and may appoint an ad hoc committee to assist the advocate in developing the New Initiative Description further.
D. EC accepts the New Initiative Description with conditions for final approval of the new initiative; the Chair of NADP establishes an ad hoc committee to assist with the development of the transition plan and help satisfy the conditions for approval.

IV. The Advocate presents the final New Initiative Description to the EC. (Written version must be received by EC at least two weeks in advance of the formal oral presentation.)

Possible EC actions:
A. EC rejects the New Initiative Description as not having satisfied the conditions of approval.
B. EC accepts the New Initiative Description and recommends approval of the new initiative by the full Technical Committee of the NADP.

V. The Advocate presents the New Initiative Description to the full Technical Committee of the NADP with the endorsement of the EC.

Possible Technical Committee actions:
A. Technical Committee votes against the New Initiative.
B. Technical Committee votes for the New Initiative.

VI. Within 5 months of acceptance into the NADP/NTN, the Advocate completes a draft QA Plan that addresses the elements in the Table of Contents of the current NADP/NTN QA Plan. The Plan must address aspects of field sampling, laboratory operations and data management, and is submitted to the QA Steering Committee for approval.

VII. The Ad Hoc Committee reviews the performance of the Initiative after one year and reports to the EC.

Part 3. The Composition of Ad Hoc New Initiative Committees

An Ad Hoc New Initiative Committee is appointed by the Chair of the Executive Committee to work with the Advocate to finalize the 12-point New Initiative Description. This committee is responsible to the Executive Committee of the NADP and shall include a representative from each of the following:

1. Executive Committee of the NADP
2. Advocate of the New Initiative
3. Coordination Office
4. Central Analytical Laboratory
5. Advisory Group of NADP/NTN (CSRS, SAES, federal agencies)
6. Environmental Effects Subcommittee
7. Network Operations Subcommittee
8. Data Management and Analysis Subcommittee
9. AIRMoN Subcommittee
10. QA/QC Steering Committee

It is the responsibility of the Chair of the NADP to obtain a chair of the Ad Hoc Committee. The chair of the Ad Hoc Committee should have the following qualifications:

1. Be thoroughly experienced with the workings of NADP.
2. Be an existing participant in the NRSP-3 program.
3. Should not have a direct conflict of interest serving as chair of the Ad Hoc Committee. That is, will not have potential for monetary gain by arguing for a particular outcome.
4. Should not have the appearance of a conflict of interest.
5. Should be relatively impartial.

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ILLINOIS